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CORPS OF ENGINEERS AND SOIL CONSER- VATION SERVICE PROJECTS

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HEARING

BEFORE THE

COMMITTEE ON WATER RESOURCES

OF THE

COMMITTEE ON PUBLIC WORKS

UNITED STATES SENATE

NINETY-THIRD CONGRESS

FIRST SESSION

JUNE 8, 1973

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CORPS OF ENGINEERS AND SOIL CONSERVATION SERVICE PROJECTS

FRIDAY, JUNE 8, 1973

U.S. SENATE,
COMMITTEE ON PUBLIC WORKS,
SUBCOMMITTEE ON WATER RESOURCES
Washington, D.C.

The subcommittee met at 9:35 a.m., pursuant to call, in room 4200, Dirksen Office Building, Senator Mike Gravel (chairman of the subcommittee) presiding.

Present: Senator Gravel.

Senator GRAVEL. Good morning, ladies and gentlemen.

Our purpose in scheduling today's hearings is to deal with proposed authorization of certain Corps of Engineer and Soil Conservation projects which have been recommended by those respective agencies and possible deauthorization of another proposed development for which it appears a need no longer exists.

The first item on the agenda is a proposal for protection of Ediz Hook, a breakwater at the outer reach of Port Angeles Harbor in the State of Washington, against serious erosion damage.

The plan devised by the Corps of Engineers for correcting the existing problem there has an amazingly high 17 to 1 benefit-cost ratio, and the full endorsement of Federal and local authorities affected by the project. Attesting to that level of support, the first witnesses to appear today will be my good friends and valued colleagues, Senators Maggie Magnuson and Scoop Jackson of Washington. A statement of endorsement from Congresswoman Julia Butler Hansen has also been submitted for the record.

Let me say at this point that Senator Jennings Randolph, the distinguished chairman of the full Public Works Committee, has also evidenced strong interest in the proposal because of its potential navigational benefits and he would have been here this morning to manifest that except for a prior commitment to chair a hearing on coal policy as it relates to the Nation's energy crisis.

Other witnesses who will speak for the proposal include Port Angeles Mayor Vernon Basom, State Senator Gordon Sandison, Brig. Gen. James Kelly and other representatives of the Corps of Engineers and Rear Adm. Edward Scheiderer, Coast Guard Chief of Staff.

Also scheduled for discussion are four Soil Conservation Service watershed proposals recently cleared for congressional action by the Office of Management and Budget. They are the Boxelder Creek, Colo. and Wyo.; Clarks Ford-Bullocks Creek, N.C. and S.C.; the East Fork of Whitewater River, Ind. and Ohio; and Winters Creek, Nebr. SCS witnesses will appear in support of these developments.

The deauthorization proposal involves the Lone Rock Lake project in Arkansas and is outlined in a bill (S. 1961) offered by Senator John McClellan. The plan has the consent of the Corps of Engineers and the Office of Management and Budget and the concurrence of Senator Fulbright of Arkansas.

With those comments we will proceed to discussion of the Ediz Hook proposal. It is with a sense of pride and pleasure that I approach the task of chairing this hearing and hearing room the distinguished senior Senator and junior Senator from the State of Washington. I can just say to my colleagues they start out with a greater affirmation on this issue than anything else I can say. So, gentlemen, the floor is yours and I guess the project is also. Senator Magnuson.

EDIZ HOOK PROJECT—PORT ANGELES, WASH.

STATEMENT OF HON. WARREN G. MAGNUSON, U.S. SENATOR FROM THE STATE OF WASHINGTON

Senator MAGNUSON. Thank you, Senator.

Both Senator Jackson and I will submit a statement for the record and highlight it. The matter before you has been one of continuing concern to all of us in that section of the State. Ediz Hook and the city of Port Angeles as you know lies on the Strait of Juan de Fuca right across from Victoria and Vancouver Island. That area has been subject to a great number of storms dating back for a long, long time. We will put that information in the record. It should have been repaired long ago but it was not.

The situation has now been aggravated a great deal and the seriousness of the erosion stems not only from the land use of the spit but also from its function in protecting the harbor in that area. The loss of access to the U.S. Coast Guard base would render the whole area and the harbor useless and would represent a considerable investment loss to the U.S. Government. A far greater consequence is the fact that the harbor will be virtually useless if the protection afforded by the spit is lost.

Loss of the harbor would force discontinuance of the export trade that now originates from there, it would increase transportation and operating costs to industries most dependent on the harbor to such an extent that they would likely be forced to move elsewhere. The thing for us to do is to do something about this.

Now this project has been a concern of Senator Jackson since he represented that district in Congress, that is how far back it dates. The cost/benefit ratio was good but with the further erosion and all the things that are happening the cost ratio for this project, I think the record will show, is 17 to 1 which is a pretty high cost benefit-cost ratio for any of these projects. The Corps of Engineers has recommended this highly and you have ample testimony in the record from them.

We have some very dramatic pictures here of what has been happening lately. I don't like to say this but the storms come out of Alaska and move down to the State, along the Puget Sound, and do quite a bit of erosion.

Senator GRAVEL. That makes it doubly bad.

Senator JACKSON. And they in turn come from Russia.

Senator MAGNUSON. They in turn come from Siberia.

There is a fiscal year 1974 capability for a \$500,000 expenditure for emergency work if congressional authorization and funds for this purpose are appropriated. Such action would permit the necessary interim works within 9 months, and I think it is an urgent matter; otherwise, Senator Jackson and the rest of us would not be here.

Also, Congresswoman Hansen has a statement which she put in the House record that required support for this project.

We are very hopeful that the \$5 million requested will be authorized and that \$500,000 would be used immediately and would be credited against the \$5 million authorization. I think that is the sensible way to approach it.

I ask that my full statement be put in the record.

Senator GRAVEL. Without objection it will be.

[The statement follows:]

STATEMENT OF HON. WARREN G. MAGNUSON, U.S. SENATOR FROM THE STATE OF WASHINGTON

Mr. Chairman, Ediz Hook and the City of Port Angeles, Washington, are about 100 miles northwest of Seattle, Washington. Ediz Hook is a low spit, composed of sand and gravel, extending easterly from the mainland about 3½ miles into the Strait of Juan de Fuca, which connects Port Angeles and Puget Sound with the Pacific Ocean. The spit has an average width of 300 feet over the westerly one third of its length, narrowing to 90 feet in the midsection, and thence widening to 750 feet near its outer extremity. The spit, which has an elevation of about 14 feet above mean lower low water (MLLW), provides natural breakwater protection for Port Angeles harbor. This harbor is the only deep-draft harbor on the north shore of the Olympic Peninsula.

The hook was breached numerous times during the early part of the 1900's, but there was sufficient littoral drift to close the breaches. The process of breaching and self-healing was also accompanied by a slow migration of the hook landward (south) as well as extending the hook eastward. The probability of any storm or combination of storms breaching the road and spit is higher than previously and the breaching probability increases as the beach profile continues to lower. Waves or swells which cause the erosion problem are generated by normal storm activity in the Pacific Ocean as well as local storms. The road breached on one occasion in 1970 and two occasions in 1971. The opening was closed by imported fill on each occasion. The hook is now breaching at more frequent intervals and required maintenance efforts and costs are increasing. Currently, the revetment placed by the city has subsided below the level of the road and the spit is in immediate danger of breaching. Severe wave action could break the revetment at any location along the hook.

The seriousness of the erosion problem stems not only from the land use of the spit, but also from its function in providing a protected harbor. While loss of access to the U.S. Coast Guard Base would render it useless and would represent a considerable investment loss to the U.S. Government, of far greater consequence is the fact that the harbor would be virtually useless if protection afforded by the spit is lost. Loss of the harbor would force discontinuance of the export trade and would increase transportation and operating costs to industries most dependent on the harbor to such an extent that they would likely be forced to move elsewhere. The number of employees directly and indirectly affected, including those affected by loss of the U.S. Coast Guard Base, is estimated to be one-half the labor force in Port Angeles.

A survey report by the Corps of Engineers recommending beach protection was submitted to the Secretary of the Army by the Chief of Engineers on August 21, 1972 with an indicated benefit-to-cost ratio of 17:1. A project, as recommended by the Chief of Engineers, could be authorized under Section 201 of Public Law 89-298. Normal funding procedures would permit appropriation of funds for advanced engineering and design in F.Y. 75 with a possible construction start in F.Y. 76. However, if the erosion process is permitted to continue during

this period, the hook is in imminent danger of breaching. The extent and severity of the breach cannot be predicted, but significantly increased construction costs and community hardships are probable. Accordingly, interim protective measures are urgently needed to preserve the integrity of the hook. The Corps of Engineers has indicated a F.Y. 73 or F.Y. 74 capability to construct necessary protective works at an estimated cost of \$500,000 if Congressional authorization and funds for this purpose are appropriated. Such action would permit completion of necessary interim works within nine months of receipt of funds.

That is why Senator Jackson, Congresswoman Hansen and I wrote to Chairman Randolph urging that this Section 201 Resolution, authorizing this project, also provide for advance construction of interim protective measures at an estimated cost of \$500,000. This \$500,000 would be credited against the \$5,000,000 requested by the Corps of Engineers. I ask that our letter to Chairman Randolph and his favorable response be placed in the Record.

Mr. Chairman, I hope that your Committee will give favorable consideration to this Section 21 Resolution with the above mentioned provision.

Senator GRAVEL. Congresswoman Hansen has submitted a statement also.

[The statement follows:]

STATEMENT OF HON. JULIA BUTLER HANSEN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WASHINGTON

The seaport community of Port Angeles, Washington is faced with a critical problem which threatens the existence of their harbor and which would result in the loss of employment for as much as one-half of the community's labor force.

Port Angeles is located on the Strait of Juan de Fuca and is protected from ocean waves by a natural sandspit $3\frac{1}{2}$ miles long, but only 100 feet wide. This land formation is known as Ediz Hook.

Erosion is now occurring that will break the hook unless protective measures are undertaken this year. The Corps of Engineers has studied this grave problem and recommends construction of permanent protective measures at a cost of approximately \$5,000,000. They also determined that the federal interest in the protective work represents 93.1 percent of the cost of the initial construction because the survival of a U.S. Coast Guard base is also dependent upon the spit.

Meanwhile, under normal authorization and funding procedures, the Corps cannot initiate construction prior to fiscal year 1976, and this community of more than 16,000 persons is faced with the task of providing the full cost of protecting the spit. Port Angeles has spent many thousands of dollars for protecting and repairing the spit in the past years. A major breach in the spit may now be beyond their capability of repair. Federal assistance is needed immediately.

I am proposing that the Section 201 Resolution authorizing the project also provide for advance construction of interim emergency protective measures at an estimated cost of \$500,000. This will prevent the series of economic losses of the threatened major break.

The Corps of Engineers has indicated they have the capability to construct the necessary protective works this year at an estimated cost of \$500,000. All that is needed is Congressional authorization and the appropriation of necessary funds. This would permit completion of the interim works within a nine month period after receipt of funds. It should be noted that the advance construction would be an integral part of the project as authorized.

It should be noted that the City of Port Angeles has for years leased a portion of Ediz Hook from the federal government. In return, the city is responsible for maintaining a roadway as access to the U.S. Coast Guard Air Station at the easterly end of Ediz Hook. The road also serves as access to log storage and sorting areas inside the harbor, in the south side of the Hook. In addition, there is a roadside park, restrooms, parking areas, boat launching ramp, and a concessionaire just west of the Coast Guard gates.

The northerly shoreline of Ediz Hook is at times subject to tremendous wave action. In 1951 the Coast Guard, various concerned industries, and the city combined in constructing a timber bulkhead faced with rock riprap at a cost of \$101,700. Since then, until 1967, the city has spent approximately \$5,000 a year in

renewing and replacing riprap. However, in 1967 an apparent change in wave action resulted in continuing extensive damage and repair costs.

In the period from 1967 to date, the city has expended \$268,988 for riprap replacement only. This does not include the city's cost in clearing and restoring the roadway and inside shoulder. The road has been eroded into the centerline. The damage in 1970 was so severe the U.S. Coast Guard assumed responsibility for protection of the area abutting their station. In all, since 1970, the Coast Guard has expended \$352,000 to date. In addition, they supplied the sheet piling worth approximately \$228,000.

Crown Zellerbach Corporation is experiencing difficulty in protecting their mill site at the base of Ediz Hook. At least twice since 1967 the mill has been shut down because of damage of flooding. They currently have a contract in force for constructing an additional three groins and adding 7,500 cubic yards of beach nourishment.

In December 1972 more action resulted in severe damage. Erosion has continued and riprap maintained by the city has been dangerously depleted.

In short, the city and the Coast Guard have been unable to keep up with the deteriorating situation. Any additional storms will surely result in more serious damage. A complete breaching of Ediz Hook is a definite possibility. In such an event, complete disruption could occur to harbor shipping and marine activity.

It is my sincere hope that the committee will give this important project its full support so that this threat to the economic life of the community of Port Angeles can, once and for all time, be solved.

Senator MAGNUSON. We have with us here the mayor of Port Angeles and the State Senator Gordon Sandison who has been long active in this matter and Councilman John Hordyk also of Port Angeles who will give you some real firsthand and timely information on this observations of the importance of this matter.

Senator GRAVEL. Thank you.

STATEMENT OF HON. HENRY M. JACKSON, A U.S. SENATOR FROM THE STATE OF WASHINGTON

Senator JACKSON. Senator, I will be very brief. I would like to have my statement appear in the record in order to save the time of the committee.

Senator GRAVEL. Without objection.

[Senator Jackson's statement follows:]

STATEMENT OF HON. HENRY M. JACKSON, U.S. SENATOR FROM THE STATE OF WASHINGTON

Mr. Chairman, I appreciate the opportunity to testify on behalf of the proposed Ediz Erosion Control Project and I am hopeful that early action will be taken to resolve this serious and long-standing problem.

I should point out that unless action is taken this year, the erosion that is now occurring may breach the hook again, thereby threatening the existence of the entire harbor, and resulting in unemployment of one-half of the labor force in Port Angeles. This harbor, which is the only deep-draft terminal on the north shore of the Olympic Peninsula, is protected from ocean waves in the Straits of Juan de Fuca by a natural sandspit—Ediz Hook—3½ miles long, but only 100 feet wide. The seriousness of the erosion problem stems not only from the land use of Ediz Hood, including the U.S. Coast Guard and the Crown Zellerbach Corporation, but also from its function of providing protection to the harbor. Continued erosion and unchecked breaches of the hook will render the whole harbor useless.

The existing road on Ediz Hook was breached on one occasion in 1970 and on two occasions in 1971. While the opening was closed by fill placed by the City on each occasion, the hook is now breaching at more frequent intervals and the

required maintenance efforts and costs are increasing. The fill previously placed by the City has now subsided below the level of the road, and the spit is in immediate danger of breaching.

The Corps of Engineers has studied the problem and recommends construction of permanent protective measures at a cost of approximately \$5 million. They also found that the Federal interest in the protective works represents 93.1% of the cost of the initial construction, because the survival of the U.S. Coast Guard base is dependent upon this spit of land. It is my understanding that the Office of Management and Budget has raised no objections to the Corps' proposal.

Normal funding procedures would permit appropriation of funds for advanced engineering and design in FY 1975, with a possible construction start in FY 1976. However, if the erosion process is permitted to continue during this period, the hook is in imminent danger of breaching. The extent and severity of the breach cannot be predicted, but significantly increased construction costs and community hardships are probable. In the meantime this community (population 16,000) is faced with the task of providing the full cost of protecting the spit. They have spent many thousands of dollars on protecting and repairing the spit in previous years, and a major breach in the spit now may well be beyond their capability to repair. Assistance is needed quickly.

The Corps of Engineers has indicated a FY 1973 capability to construct necessary interim protective works at an estimated cost of \$500,000 if Congressional authorization and funds for this purpose are appropriated. I am also informed that the Corps has the capability to expend an additional \$200,000 to begin advanced engineering and design work for the overall project. Having these funds available would permit completion of necessary interim protection within nine months of receipt of funds and insure that work on the remainder of the project can proceed rapidly thereafter.

The interim works would insure against early breaching of the hook before permanent works could be installed, avoid further expense to the City, and prevent escalation of the project cost, which would most assuredly occur with a major breach. Ultimately, a major portion of the cost of the proposed interim measures would be recovered, as they would become an integral part of the final project. I consider the expenditure of these funds for interim protective measures and advanced engineering and design essential.

Accordingly, I strongly recommend that the Corps of Engineers be authorized to proceed immediately with design and construction of the proposed interim protective works; and I further recommend approval of an emergency appropriation in the amount of \$500,000 to cover the cost of such work, and another \$200,000 through the regular appropriations process to carry out the necessary engineering and design work for the remainder of the project.

Senator JACKSON. The chairman has an overall aerial picture of Ediz Hook and the city of Port Angeles. I might merely point out that the erosion of Ediz Hook has been a problem for more than 30 years, and the corps has done I think a great job in trying to work out a scheme by which you can provide some stability.

Senator MAGNUSON. Patchwork, that is what it has been.

Senator JACKSON. Just put it this way. It has been on an emergency handling basis heretofore. The corps has had a difficult task in trying to work out the right engineering solution because obviously the problem is a severe one with storms and so on. There have been two or three breaches of the spit which of course compares the usability of the Coast Guard station which covers that entire area of the Northwest. It is the key station next to the area in which they have to operate.

In addition, of course, it protects the harbor of Port Angeles that would be exposed to the ocean because when you talk about the Strait of Juan de Fuca you are talking about the Pacific Ocean and there would be no protection for the harbor as a whole and to the industries that are served by the harbor.

I just want to say, Mr. Chairman, that the program here I think is a sound one and it is an increment. Senator Magnuson pointed out the initial interim protective works at a cost of \$500,000, and this will be a part of the project. It will also be a part of the saving process so that they can move ahead very rapidly. I strongly urge the committee to move forward on the project.

As Senator Magnuson has mentioned, Mayor C. Vernon Basom of Port Angeles is here on my right, and on my left is Senator Gordon Sandison. John Hordyk is a member of the city council; he will not be testifying but he is here accompanying the two witnesses. If it is appropriate, I would like to suggest that we call on the mayor at this time.

Senator GRAVEL. Mr. Mayor, we are pleased.

**STATEMENT OF HON. C. VERNON BASOM, MAYOR, CITY OF
PORT ANGELES, WASH.**

Mayor BASOM. Thank you, Senator.

Mr. Chairman, I have been a resident of Port Angeles for some 55 years. I have been retired from active employment for 9 years the first of August. I have been on the Port Angeles City Council for 4 years, reelected, and have been mayor for 1½ years.

The purpose, of course, of my testimony is to solicit your support for this project because the city of Port Angeles and the harbor are extremely vulnerable to the storms. This will be outlined in quite a detailed manner along with the prepared statement that we will have for the record. We have numerous copies of this. Also a statement from the present president of the commissioners of the Port of Port Angeles as to what would happen.

I have some up-to-date figures here of the industries that would be affected if this Ediz Hook was ever breached that was prepared by the Washington State Department of Employment Security as of June 1, 1973. There are eight major employers fronting the harbor of Port Angeles: Crown Zellerbach Corp. located on the basin of the spit; M. & R. Timber Co.; the Port of Port Angeles, a large exporter; the Pacific Maritime Association, representing the longshoreman industry; the Peninsula Plywood Corp.; ITT Rayonier, Inc.—and I might add that this plant in Port Angeles makes the bulk of the pulp that is used in the manufacture of film in the United States. One of the things that makes it possible for them is not just because they are able to produce the pulp but due to the clean air that we have at Port Angeles with the prevailing West winds, there is no contamination, and this is a very vulnerable thing that they have to overcome.

Also, we have the Black Ball Transport, Inc., and the Angeles Gravel and Concrete Co.

All of these employers represent some 1,770 employees and an annual payroll of some \$18,206,000.

We cannot stress too strongly the necessity of emergency funds to protect the spit until something more permanent can be installed.

Thank you, Senator.

Senator GRAVEL. Thank you.

Senator JACKSON. Mr. Chairman, Senator Gordon Sandison is a native of the city and he is a senior member of the State legislature and chairman of the education committee and has followed, of course, the problems of Ediz Hook since he was a little boy, and I am delighted to have Senator Magnuson and myself introduce him to the committee. Also, Mr. Basom was the head of the Fiberboard Corp. for many, many years.

STATEMENT OF GORDON SANDISON, STATE SENATOR, JEFFERSON COUNTY, WASH.

Mr. SANDISON. Thank you, Senator Jackson.

Mr. Chairman, I think it has been pretty well covered what would happen. Of course it is very obvious that in the event that this Ediz Hook is breached our economy will be in very disastrous shape. It is the only port on the whole North Olympic Peninsula on the Juan de Fuca Strait wherein deepwater draft vessels can go in.

Last Monday, I believe it was, there were two freighters in a collision in the Strait of Juan de Fuca, a Panamanian freighter and a Liberian freighter. These ships were both severely damaged, one at midship and one on the bow. They both had to be brought into Seattle which was the nearest drydock that was available to them. Had there been stormy weather, as there has been in the past, there would be no harbor other than Port Angeles for these ships to go into on their way to Seattle unless they were to go to Victoria, and in stormy weather that is a very difficult harbor to get into.

The economy of the two counties involved here pretty much is funneled in the Port Angeles area. We do not have adequate rail transportation. Highway transportation over to the main part of the Puget Sound area requires crossing a floating bridge and going on a ferry other than going down a long circuitous route to the south part of the Puget Sound area.

In Port Angeles because of the fact that it is primarily dependent upon the timber, of course the processing of which would be involved here, we have been very happy to receive a kind of another industry and that it has become the focal point for a great many people who are retiring. I might point out from your State, Senator, there are many Alaskans who have retired in that area; they like the climate. They still call themselves Alaskans, however, but they do take part in the community. Even two former legislators are down there.

Those people came into the area because of the fact that within this small cosmopolitan area there are the necessary medical professionals and other services which they require. Eighteen percent of the county is now on social security. If in the event that there would be a severe economic displacement and cause of the harbor being damaged and industry having to move out, of course these services would move out also. So I would point out that the displacement would not only be in the industrial world but it would also be those who are retired.

Every morning in the Port Angeles area when there has been some sort of a blow or storm the first question is, how is Ediz Hook? It is a concern, it is an overriding worry I think to most of the people in the community whether they are directly dependent upon the harbor or not. It has been a worry and a constant threat to people in my

memory. I know I speak for the people in the area; they would be most happy to be relieved of this worry by some sort of a constant program which would ease the situation.

Thank you.

Senator GRAVEL. Thank you very much, Senator.

Senator MAGNUSON. Mr. Chairman, I have got to go to an appropriations meeting at 10 o'clock but I just wanted to add one thing. If and when we get the Alaska pipeline built, we are going to need Ediz Hook more than ever. That is the one place where some of the traffic is going to come through, and the strong Coast Guard unit at this place which furnishes some haven in a harbor. So we are going to join together on this but you will need Ediz Hook.

Senator GRAVEL. Senator Magnuson, I can only say that I feel as strongly about that as you do. I can assure you that we will be taking this proposal up as expeditiously as circumstances will permit.

Thank you, gentlemen.

Senator JACKSON. Thank you, Mr. Chairman. We are most appreciative for this early meeting.

Mayor BASOM. What about the other photographs of damages, would you care for those?

Senator GRAVEL. We would like to have them for the record.

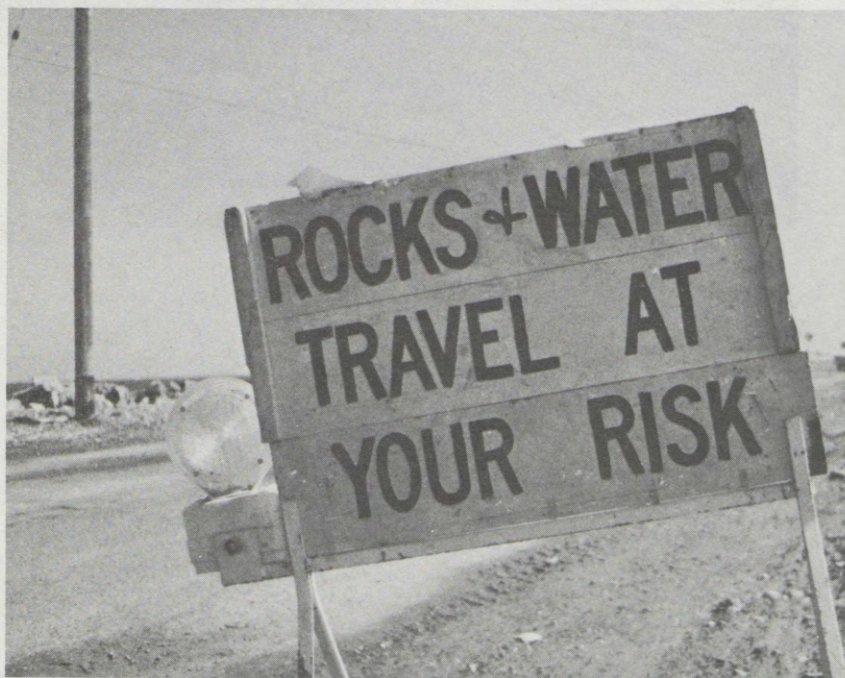
[The photographs referred to together with the combined statement of Mayor C. Vernon Basom, State Senator Gordon Sandison, and Councilman John Hordyk, and the statement of Clifford G. Swain, president of the commissioners, Port of Port Angeles, follow:]

**THE FOLLOWING PHOTOGRAPHS ILLUSTRATE THE EROSION DAMAGE
TO EDIZ HOOK**









STATEMENT OF MAYOR C. VERNON BASOM, STATE SENATOR GORDON SANDISON AND
COUNCILMAN JOHN HORDYK, ALL OF PORT ANGELES, WASH.

The urgency of protecting Ediz Hook is greater today than it was when the Corps of Engineers report on this project was completed two years ago. The storms of two more winters have taken their toll. What little beach remained then to break high wave action has disappeared. The waves now are breaking with full force on riprap and sheet piling, the Hook's last line of defense. We feel that unless some protective work is undertaken this year, another winter may well see the Hook breached for good.

IMPACT

Should this three-mile spit of land which protects our harbor be lost, the impact on Port Angeles and the area it serves would be ruinous. The Corps' report sums up the economic impact of such a disaster in considerable detail. Permit us to make just a few points.

The basic economy of the North Olympic Peninsula is wood products—timber production, logging and the manufacture of lumber, pulp and paper. The raw product comes from our forests and funnels into Port Angeles for processing, and the finished products are shipped out almost entirely by water. Water transportation, which depends on a safe harbor, is basic to this industry. Logs sold for export move out of Port Angeles harbor by ship. Much of the finished product manufactured in Port Angeles mills is exported by water. One pulp mill sells half its output to overseas customers. Even the products destined for domestic markets move out largely by water because our isolation makes movement by rail and truck too costly and circuitous. The loss of Ediz Hook would be disastrous to this basic industry and could even wipe it out completely.

Recreation and the tourist trade is our second largest industry. Port Angeles is headquarters, and the gateway, of Olympic National Park which last year attracted more than three million visitors. The park is surrounded by the Olympic National Forest which has many visitor facilities. The State Department of Natural Resources has large timber holdings in the area and many visitor attractions. A thriving ferry service between Port Angeles and Victoria, the capital of British Columbia, has more business than it can handle during the four summer months. Many visitor-oriented facilities are operated by private interests throughout the area. Without the services maintained in Port Angeles to support it, this important recreation industry would be seriously hampered.

Retirees are moving into Port Angeles and nearby areas. The Social Security Administration tells us that the number of people receiving benefits from this agency in Clallam and Jefferson counties is 18 percent of the population, twice the national average, and growing. Retirees are entirely dependent on the service industry, which in turn is largely made possible by the work force and payroll of the wood products industry. Retirees have come to the area believing this was their last move, and causing them to relocate would be an extreme hardship.

The Federal Government, itself, has a great deal at stake in preserving Port Angeles as a secure harbor. The Coast Guard, which operates an air station on the tip of Ediz Hook and has an ocean-going cutter based in the harbor, is the most obvious Federal involvement. Port Angeles is a port of entry from Canada, with both customs and immigration services represented. Based at Ediz Hook is a pilot station, from where specially licensed pilots are put aboard or taken off commercial ships moving in and out of Puget Sound. U.S. Navy ships from the Puget Sound Naval Shipyard at Bremerton often put in here while on shake-down and training cruises. The Trident Submarine Base to be developed at Bangor on Hood Canal doubtless will find use for this harbor. Port Angeles itself was created by President Lincoln, who proclaimed it the nation's second national city in 1862, twenty-seven years before Washington became a state. In more recent history, Port Angeles was rated an All-America City in 1953.

LOCAL EFFORT

We at the local level have done all we can to handle the erosion problem at Ediz Hook without asking for help.

The city for many years has been putting in riprap, sheet piling and groins. Up to 1967 the average cost was about \$5,000 a year. Since 1967, however, the problem has multiplied and the city has been spending an average of \$54,000 a year for riprap alone, not counting repair and maintenance work.

Crown Zellerbach Corporation, which has a pulp and paper mill at the base of the Hook, has spent \$465,000 since the winter of 1967 for riprap and timber pile groins to protect its area. Twice in that period the mill has been shut down because of damage and flooding.

The city has reached the limit of its financial ability to pay for this kind of stop-gap treatment, and it is unable to bear the entire cost of a permanent solution.

We have been informed that the Coast Guard, which has spent \$352,000 plus another \$228,000 worth of sheet piling, since 1970 to protect its base on the Hook, has decided it cannot use any more of its funds for this purpose.

RECENT INVESTMENTS

Some major investments are being made by private industry in Port Angeles, and these would go for naught if Ediz Hook were to be lost. Crown Zellerbach recently spent upwards of \$10 million to rehabilitate its mill. Crown also has spent \$3 million on a treatment plant for solid waste and is committed to spending \$500,000 more on pollution control measures by 1975. The ITT Rayonier mill has just completed \$5 million worth of pollution control work and is building a \$26 million waste recovery and burning facility. The city, itself, recently spent \$2.5 million on an interceptor sewer system, primary treatment plant and outfall. These are heavy investments to be endangered by the Ediz Hook erosion problem.

FUTURE PLANS

Port Angeles, like any city, is planning for its future. A professional engineering firm has been retained to study the feasibility of building a public commercial pier in Port Angeles harbor and a community center on the waterfront. Businessmen and property owners in the downtown area are actively exploring means to revitalize and upgrade the central core area on the waterfront. Plans for a joint city-county government complex in the downtown area have been in the discussion stage for at least two years and now are at the point of decision. Many other plans of lesser magnitude are being made. All these plans, however, are contingent on a permanent solution to the Ediz Hook problem.

CONCLUSION

The proposal of the Corps of Engineers for Ediz Hook carries a 17-to-1 benefit to cost ratio. We cite this highly favorable investment factor, along with the reasons outlined above, as justification for authorizing the Ediz Hook erosion control project.

STATEMENT OF CLIFFORD G. SWAIN, PRESIDENT, PORT OF PORT ANGELES

The Port of Port Angeles wishes to express its interest and concern for the preservation of Ediz Hook in Clallam County, Washington which forms and protects the Harbor of Port Angeles.

The maintenance of the natural formation is essential to the continual use of the harbor not only by the Port and its facilities but by the existing private industries located inside the harbor. Those that would be seriously damaged and forced to cease their activities by massive breaching of the spit are the newsprint mill operated by Crown Zellerbach Corp., the lumber mill operated by M & R Timber, the plywood mill operated by ITT-Pen Ply, the ferry terminal operated by Black Ball Transport, Angeles Gravel and Concrete Co. and the cellulose pulp facility operated by ITT Rayonier. The total employment involved is in the neighborhood of 1,500 to 1,700 jobs in the plants plus many others in raw material supply and support service.

Port activities for 1972 alone produced almost 900,000 tons of cargo which is practically all export. In addition a combination recreational and commercial Boat Haven is dependent upon Ediz Hook for protection. This facility currently harbors over 400 fishing and pleasure boats.

The program as presented by the Corps of Engineers and the Congressional Delegates is one which will permit immediate and ultimately permanent solution of the problem. We urge your support and approval of the project as proposed.

Senator GRAVEL. General Kelly, Colonel Driscoll, it is a pleasure having you both. The floor is yours.

STATEMENTS OF BRIG. GEN. JAMES KELLY, DEPUTY DIRECTOR FOR CIVIL WORKS AND COL. PAUL DRISCOLL, ASSISTANT DIRECTOR OF CIVIL WORKS FOR PACIFIC DIVISIONS, ACCOMPANIED BY IRVING REISLER, PLANNING DIVISION, OFFICE OF THE CHIEF OF ENGINEERS

General KELLY. Thank you very much, Mr. Chairman.

I am accompanied this morning by Lieutenant Colonel Driscoll, the Assistant Director of Civil Works for the Pacific Divisions, and Mr. Reisler, the Chief of Planning Division.

On this project Colonel Driscoll will give the corps' testimony.

Colonel DRISCOLL. Mr. Chairman, this report concerns beach erosion control measures on Ediz Hook at Port Angeles, Wash. Our report responds to a resolution of the Committee on Public Works of the U.S. Senate adopted September 13, 1968, and a resolution of the Committee on Public Works of the U.S. House of Representatives adopted October 8, 1968.

Ediz Hook is located on the south shore of the Strait of Juan de Fuca in the extreme northwestern part of the State of Washington about 100 miles northwest of Seattle. The Hook is a low, bare, sand and gravel spit extending in a slight arc about $3\frac{1}{2}$ miles into the Strait. It affords protection to Port Angeles Harbor, the only deep draft harbor on the north shore of the Olympic Peninsula. The city of Port Angeles, with a 1970 population of 16,770, is the major population center of the area. Its economy is based principally on processing and shipping timber and timber products. A major air-sea rescue station operated by the U.S. Coast Guard is located at the outer end of the spit, and a large papermill is located at the landward end.

An existing Federal navigation project in Port Angeles Harbor provides for a small boat mooring basin with breakwater protection, which was completed in 1959. The removal of a shoal area in the main commercial harbor is classified as an "inactive" project.

Without the natural protection provided by Ediz Hook, Port Angeles Harbor would be subject to high wave attack from northerly and westerly storms resulting in reduced shipping activity, damage to port facilities, and probable loss of the harbor for deep and shallow draft vessels. Loss of the roadway on the spit would greatly curtail the use of the spit for recreation and would restrict the use of the Coast Guard Station, forcing relocation of all the Coast Guard activities at this site.

Senator GRAVEL. Could I interrupt. What is the extent of recreation? Is it on the spit itself for fishing?

Colonel DRISCOLL. Just normal beach type recreation along the spit. There is a great deal of public access existing there at the present time.

Senator GRAVEL. All right.

Colonel DRISCOLL. The permanent breaching of the spit would be a major socioeconomic catastrophe to the area since one-half of the jobs in the Port Angeles area would be jeopardized.

Local interests desire a long-range plan of erosion control for Ediz Hook to preserve the spit from continued erosion and inevitable severing. Several alternatives for erosion control, including no action, were investigated. Current studies indicate that permanent breaching of the spit will occur even if the existing protective works are maintained. The resulting loss of the harbor and access to the Coast Guard Station would be disastrous. Other alternatives considered included a seawall, offshore breakwaters, groin field, elevated roadway, beach nourishment, restoration of natural supply of beach nourishment material, a porous-walled breakwater, and industrial fill north of the Hook. The primary disadvantage of these alternatives was either a much higher cost than the recommended plan, a plan that did not achieve a much higher cost than the recommended plan, a plan that did not achieve the objectives, or a combination of the two.

The proposed report of the Chief of Engineers recommends construction of 10,000 feet of new rock revetment plus a program of annual beach nourishment as the most desirable plan and the most economical method of accomplishing the needed protection, both subject to certain items of local cooperation. The proposed shore protection would insure that the activities associated with local industries, the navigation facilities, and the Coast Guard Station operation would continue. The estimated Federal cost is \$4,553,000. The benefit/cost ratio is 17.0 at an interest rate of 5½ percent.

The first costs of construction and maintenance and operation costs of the proposed project would be shared between the Federal Government and local interests in accordance with navigation and beach erosion policies established by law. All costs allocated to general navigation would be assumed by the Federal Government. The cost-sharing for shore restoration and protection would be based on actual conditions of ownership and use at the time of construction.

In addition to providing the necessary lands, easements and rights-of-way required for construction of the project, holding and saving the United States from damage claims, local interests would be required to pay, prior to or during construction, their share of the first costs of the beach protection works as well as the estimated present value of project maintenance and repair required over the life of the project except that the Federal Government would assume the cost of periodic nourishment for an additional period of 10 years.

In addition, local interests would be required to assume continued public ownership of the shore upon which Federal participation was based as well as maintain and provide for public access necessary for realization of the estimated recreation benefits. Estimated non-Federal first costs are \$337,000. Adequate assurances of local cooperation have been given by the city of Port Angeles in a letter dated July 23, 1971.

Minor and temporary adverse impacts on the local fish and wildlife resources would take place during construction since the project would increase the turbidity of the local waters for a short period. The borrow areas for beach replenishment stockpiles would require landscape treatment upon completion of the project. The recommended plan forms the best combination of technical and ecological elements. No organized groups have indicated concern regarding the environmental

impact of this proposed project. A draft environmental impact statement was filed with CEQ on April 3, 1972. Comments on the draft environmental impact statement by the State of Washington and the Federal agencies indicates concern that the beach nourishment borrow sites must be located, operated, and maintained, and closed in a manner least harmful to the environment.

Coordination with Federal, State, and local interests was achieved through three public meetings during the planning of the project as well as through the issuance of five public information brochures which described the various aspects of the alternatives. The proposed report of the Chief of Engineers and the draft environmental impact statement were provided to the State of Washington and the interested Federal agencies for review and comment on April 30, 1972.

The Departments of Interior and Transportation and the State of Washington indicated concern that the report did not provide detailed discussion on where the borrow material for the initial beach nourishment would be obtained and recommended that a supplemental environmental impact statement covering the borrow area plan be issued when planning had progressed further. The Department of the Interior further recommended that the report show compliance with State and Federal procedures relating to historical preservation.

During the advance engineering and design stage, detailed studies will be made concerning the best borrow sites available for beach nourishment materials. Borrow site selection and operation will be coordinated with all appropriate interested agencies and groups. If the development of the finally selected borrow source is determined to have significant environmental impacts, a supplemental environmental impact statement will be prepared.

Mr. Chairman, this concludes my statement.

Senator GRAVEL. Thank you very much.

Could I get a copy of the letter, if you have it handy, which the city addressed to you, dated July 23 assuring local participation? Could we have that for the record?

Colonel DRISCOLL. Yes, sir. That will be provided.

[The letter referred to follows:]

CITY OF PORT ANGELES,
Port Angeles, Wash., July 23, 1971.

Col. HOWARD L. SARGENT, Jr.,
District Engineer,
Seattle, Wash.

DEAR SIR: In regard to the proposed rock revetment, with beach nourishment improvement of Ediz Hook, the City Council at their regular meeting on July 20, 1971 unanimously expressed their willingness to provide the following items:

- a. Provide at their own expense all necessary lands, easements, and right-of-way as necessary for project construction and maintenance;
- b. Hold and save the United States free from claims for damages that may result from construction or maintenance of the protective works;
- c. Bear approximately 6.9 percent of the total first cost, a sum presently estimated at \$337,000 with the final apportionment of the first cost to be made after actual costs and values have been determined and based on existing conditions.
- d. Assure maintenance and repair of the revetment works and periodic beach nourishment, during the economic life of the project as may be required to serve the intended purpose subject to Federal participation in the cost of periodic nourishment for an initial period of 10 years. The non-Federal share of nourishment costs for the 10-year period is presently estimated at \$5,100 annually (6.9% of the cost of nourishment). The non-Federal share of maintenance cost for revet-

ment works for the life of the project is presently estimated at \$7,300 annually (10.9% of the cost of maintenance of rock revetment).

e. Assure continued public ownership of the above shore upon which the amount of Federal participation is based, and its administration for public use during the economic life of the project.

Very truly yours,

JOHN B. WARDER,
Acting City Manager.

Senator GRAVEL. You stated the situation very well. The damage, of course, would be to the waterfront businesses if the spit were breached, with resulting water action on the shore front installations. That is where the damage would take place.

Colonel DRISCOLL. With the permanent breach in that spit, the protective aspect of the spit would not be there and high wave action would pretty well eliminate any kind of navigational activity anywhere near the scope that is going on now.

Senator GRAVEL. With the size of the proposed revetments, would you be altering present wind conditions as they affect the port and make it a nicer harbor or more sheltered harbor?

Colonel DRISCOLL. No, sir. Just the existence of a barrier itself is sufficient to reduce the wave action inside the harbor. However, the revetment itself has to be rather substantial in order that it won't continually wash away and create new problems in the future.

Senator GRAVEL. Will the revetment be considerably higher than the present terrain or would it just be a barrier at about the same level? I see the existing road, so we are not talking about a tremendous height.

Colonel DRISCOLL. Sufficiently high so the waves would not be continually overtopping and getting behind on a more erodeable material.

Senator GRAVEL. Understood.

I have no additional questions, Colonel.

Thank you very much, gentlemen.

Colonel DRISCOLL. Thank you.

[Attachments to the Corps of Engineers statement follow:]

EDIZ HOOK
PORT ANGELES, WASHINGTON

Location: Ediz Hook and the City of Port Angeles, Washington, are located on the south shore of the Strait of Juan de Fuca, about 100 miles northwest of Seattle, Washington. The Hook is a low, bare sand and gravel spit extending about 3-1/2 miles into the Strait of Juan de Fuca which connects Puget Sound with the Pacific Ocean. The spit provides natural breakwater protection for Port Angeles Harbor, the only deep draft harbor on the north shore of the Olympic Peninsula. A major air-sea rescue station operated by the United States Coast Guard is located at the outer end of the spit and a major commercial development is located at the landward end of the spit.

Authority: Committee on Public Works of the United States House of Representatives resolution adopted 8 October 1968 and Committee on Public Works of the United States Senate resolution adopted 13 September 1968.

Existing Projects: An existing navigation project provides for (1) a small-boat mooring basin 15 feet deep, with breakwater protection for the basin and entrance channel, which was completed in 1959; and (2) removal of a shoal area to 30 feet near the ITT Rayonier, Incorporated, dock, which has been classified as "inactive." In addition to Federal improvements, local interests have invested about \$5,400,000 in commercial terminal and transfer facilities and moorage facilities for small craft. Also, approximately \$900,000 has been expended since 1930 by local interests and the United States Coast Guard for construction of erosion control protective works along the Strait side of Ediz Hook. There are no authorized Federal projects for beach erosion in the vicinity of the proposed project.

Needs: The City of Port Angeles, supported by local governing bodies and interested individuals and industries, desires a long-range plan of erosion control for the preservation of the spit and harbor. It is believed that a major cause of erosion at Ediz Hook is the decrease in feeder material resulting from construction of dams on the Elwha River and pipeline protective works along the base of the sea cliffs. In addition, the concentration of wave energy along the neck of the spit, near its base, contributes to an offshore movement of littoral material with a corresponding reduction in alongshore movement. Although studies indicate that about 75 percent of the material moving from the west is being lost, Ediz Hook continues to grow in an easterly direction. The shore to the west of the spit has been progressively eroded by the easterly migration of beach material, resulting in the general lowering of the beach profile and the concentration of deep water wave energy directly against the spit. If this process is permitted to continue, Ediz Hook is in danger of being breached permanently. Loss of access to the United States Coast Guard Base would render it useless and Port Angeles Harbor would be destroyed if the protection afforded by the spit is lost.

Alternatives for Satisfying Needs & Related Environmental Impacts:
Several alternative proposals for erosion control, including no action,

were identified and analyzed. Each of the alternatives is listed and discussed below.

a. Do nothing. Current studies indicate that without further protective works, the spit would be breached even if existing protective works are maintained, resulting in a loss of protection provided to Port Angeles Harbor as well as the roadway atop the spit, the industries who rely on the spit for their existence, & the land access to the Coast Guard Station. This would result in severe damage to the existing socioeconomic environment.

b. Seawall. A concrete seawall would serve the same purpose as a rock revetment if beach nourishment were added. However, costs would be much greater (\$10 million) and the aesthetic advantage of a seawall over rock revetment is not considered sufficient to justify the increased cost.

c. Offshore breakwaters. Offshore breakwaters or sunken ships frozen in place would provide some degree of protection to the Hook and would not be overly disruptive to the environment. However, both alternatives would be more costly (\$10-12 million) and would not insure against occasional breaching of the spit and roadway by wave attack at high tide. Nourishment and continued high maintenance cost of these facilities would be required.

d. Groin field. A groin field with beach nourishment would require a comparable initial capital investment (\$4.0 million), but long-term costs for an adequate supply of nourishment material could be higher. Also, there are indications of a strong offshore-littoral movement in the thin neck section of the spit and groins would not assist appreciably in holding material at that location. The offshore movement would also be detrimental to down-drift areas by intercepting and directing offshore a greater portion of the littoral material than is now being lost.

e. Elevated roadway. An elevated roadway to the Coast Guard facility would be costly (\$10 million) and would have most of the social and economic disadvantages of no action at all. This alternative was not selected for detailed study because it would pose too great a risk of degradation of the spit and the harbor.

f. Beach nourishment. Beach nourishment programs without protective works, such as a revetment or restoration of a buffer beach, would cost \$4-5 million and would probably stabilize the beach profile, but would allow storm waves to attack the upper beach and occasionally erode roadway and interrupt utility service. Environmental impacts associated with rock revetment would not occur with this alternative.

g. Restoration of natural supply of beach nourishment material. Restoration of natural beach feed materials by removing the dams on the Elwha River and the riprapped waterline west of Ediz Hook would be very

costly (removal of the waterline is estimated at \$2 million) and it is doubtful if the supply of materials would be adequate to restore and maintain the beach.

h. A porous-walled breakwater. A porous-walled breakwater has high costs (\$18-20 million) and would provide the same effects as offshore breakwaters.

i. An industrial fill north of the Hook. A fill north of the Hook would be beneficial to the economic climate by providing additional industrial areas. However, the proposal would be detrimental to the environment because extensive estuarine filling would be costly (\$18-20 million) and would require protective works along the Strait side of the fill.

Recommended Plan of Improvement: Of the alternatives considered, rock revetment and beach nourishment is the most desirable plan. The revetment works would protect the roadway and utilities, establish a last line of defense against any severe winter storm, and allow continued present use of the spit. The nourishment material would maintain the beach profile, thereby minimizing scour of the revetment toe. In the winter, if accreted material from the nourishment program is lost exposing the revetment toe, the danger of breaching and exposing the harbor to wave attack is not imminent. The weighted toe would adjust to the lowered beach profile and maintain the integrity of the spit. Also, there would be minimal disruption of the environment. In addition, this alternative is the most economical method of accomplishing the foregoing. Each of the other alternatives, when considered in comparison with the foregoing, is less desirable.

The plan of improvement consists of 10,000 lineal feet of new rock revetment and periodic beach nourishment. Top elevation would be 18 feet above mean lower low water for 7,500 feet beginning at the western end of the revetment works and 16 feet above mean lower low water for the remaining portion. An initial fill of gravel and cobbles would be placed along the seaward toe of the revetment works. The remaining portions of the shore line within the recommended project limits would be monitored periodically to determine if additional protective works are required. Prior to project construction, as part of preconstruction planning and design, a beach-feed prototype test program will be conducted to evaluate material movement rate and determine optimum locations to stockpile artificial nourishment material.

Estimated Cost: (March 1971 price level)

Federal	\$4,553,000
Non-Federal*	<u>337,000</u>
Total	\$4,890,000

Project Economics: (Interest rate of 5-1/2%)

	Federal	Non-Federal*	Total
<u>Annual Charges:</u>	\$	\$	\$
Int. & Amort.	268,900	19,900	288,800
Main & Oper (nourish)	68,400	5,100	73,500
Main & Oper (rock revet)	<u>59,500</u>	<u>7,300</u>	<u>66,800</u>
Total	396,800	32,300	425,100
<u>Annual Benefits:</u>			
Navigation	\$6,757,000		
Beach Erosion	<u>516,000</u>		
Total	\$7,273,000		

Benefit-Cost Ratio: 17.0

*Final cost sharing will be based on actual conditions of ownership and use at time of construction.

Local Cooperation: The construction, maintenance, and operation costs of the proposed project will be shared between the Federal Government and local interests in accordance with policy established by law. The Federal Government would assume responsibility for the costs of improvements allocated for general navigation. The percentages for cost sharing for shore restoration and protection would be based on actual conditions of ownership and use at the time of construction. However, prior to construction, local interests must furnish assurances satisfactory to the Secretary of the Army that they will:

- a. Provide without cost to the United States all necessary lands, easements, and rights-of-way required for project construction and subsequent beach nourishment;
- b. Hold and save the United States free from claims for damages that may result from construction or maintenance of the project;
- c. Contribute in cash the required share of the first costs of the beach protection works to be paid in a lump sum prior to start of construction, or in installments prior to start of pertinent work items in accordance with construction schedules as required by the Chief of Engineers, the final apportionment of the first cost to be made after actual costs and values have been determined and to be based on existing conditions of public use and ownership at the time of construction;

d. Contribute in cash the required share of the costs during the life of the project for: maintenance and repair of the revetment works; and periodic beach nourishment, as may be required to serve the intended purpose, subject to Federal participation in the cost of periodic nourishment for an initial period of 10 years;

e. Assure continued public ownership of the shore upon which the amount of Federal participation is based and its administration for public use during the economic life of the project; and

f. Provide and maintain public access, parking, and appurtenant facilities for recreation necessary for realization of project benefits.

Environmental Impact: The proposed project, in conjunction with existing protective works, would protect Ediz Hook from erosion. As a consequence, Port Angeles Harbor and small boat basin would be protected from direct wave attack, the Coast Guard Station would not be severed from the mainland and Ediz Hook would be maintained as a day-use recreation area for an estimated 300,000 visitors annually. In general, the complex socioeconomic environment upon which a large segment of the people on the north Olympic Peninsula depend would be preserved. The eventual closure of harbor facilities and relocation or permanent closure of plant facilities of industries dependent upon waterborne transportation would be avoided. The beach nourishment material stockpile area would cover existing beach, but additional stabilized beach would be created along the thin neck section of the Hook. The larger cobbles in the beach nourishment material could provide more suitable hold-fasts for kelp growth. Observers indicate that proliferant growths of kelp may disperse energy in onshore waves. As an additional part of the project, a test section of the Elwha Delta 1/2 to 1 mile offshore may be littered with 6- to 12-inch cobbles and growth and effects on kelp noted. Details for this study could be worked out in the design phase of the project.

The revetment work would alter the natural appearance of the area, but would not obstruct the view from the Hook of the Strait of Juan de Fuca. Replacement of gravel areas in about 20 acres of intertidal zone with quarry spalls and coarse fill would create new habitat for rockfish and bottomfish, although the existing minor organisms would be covered and lost. Increased populations of small crustaceans would provide a food source for numerous species of fish. Concentrations of small fish using these areas would also be an attractive food source for numerous species of larger fish and certain species of waterfowl. However, an increase in the population of rockfish could increase predation on migratory juvenile salmon.

If a local borrow and process site for the beach nourishment program is selected, the natural setting of the area would be altered, but the site could be used for beneficial purposes. For example, if Site D were used, the excavation could be filled with garbage from an existing dump on the site and covered with fines taken from beach nourishment material. This

action would be beneficial from the standpoint of aesthetics and sanitation. Other possibilities for minimizing adverse impacts at borrow sites include landscaping, use for wood disposal sites and the creation of parks. Further studies are being conducted on the potential borrow sites' environmental impacts of their use and possible means of eliminating or minimizing adverse effects. Action on borrow sites would be coordinated with all appropriate interested agencies, particularly fishery management and Indian Agencies, to ensure that any harmful effects are avoided or minimized. Processing of the revetment works rock would be at existing commercial quarries and would have an adverse effect to the extent that the existing quarry is expanded to obtain project material.

There would be some short-term impacts associated with construction of the project. This would include increased noise and dust levels, short-term turbidity, possible traffic congestions and general inconveniences. There would be some temporary loss of recreational opportunity during construction of the proposed project. Additional impairment of access to the beach would be minimal since 80 percent of the Hook is currently revetted. Improvement of pedestrian access to the beach over the revetments would be included in the project design stage.

Coordination: Three public meetings during which the environmental aspects of the proposed project and alternatives were discussed took place on 13 October 1970, 23 February 1971, and 29 June 1971. The general consensus at all these meetings was that the preservation of the Hook was of fundamental importance. No environmental issues were raised. Five Public Information Brochures which described the various aspects of the alternatives were distributed to all interested agencies, groups and individuals for review and comment. The proposed report of the Chief of Engineers and the draft Environmental Impact Statement were provided to the State of Washington and the interested Federal agencies for review and comment on 30 April 1972. Their comments are summarized below.

a. State of Washington. The State of Washington fully supports and requests the early authorization of the plan to control erosion at Ediz Hook. The State emphasizes that, subsequent to project authorization, detailed analysis should be accomplished regarding the location, treatment, and operation of beach nourishment borrow sites.

b. Department of the Interior. The Department of the Interior indicates concern that the report lacks a detailed discussion on where the borrow material for the initial work or annual nourishment would be obtained and recommends that a supplemental environmental impact statement covering the borrow area plan be issued when planning has progressed further.

The Department also recommends that the report show compliance with Section 106 of the National Historic Preservation Act of 1966 in accordance with the procedures of the Advisory Council on Historic Preservation. Comments should also be obtained from the Historic Preservation Officer for the State of Washington concerning the project's effects on historical and archeological resources.

c. Department of Transportation. The Department of Transportation strongly supports the project and urges early implementation. The Department believes, however, that the environmental statement should better depict the importance of the Coast Guard station in the saving of life and property in that area and utilize, to an appropriate extent, the data subsequently furnished by the Coast Guard. In addition, the location of the borrow pits and their subsequent restoration should be treated more comprehensively.

d. Department of Health, Education, and Welfare. The project does not appear to represent a hazard to public health and safety. It is suggested that the final environmental impact statement reflect the current status of the Crown-Zellerbach treatment plant.

e. Environmental Protection Agency. The draft environmental impact statement appears to clearly state the environmental changes which would result if the project is undertaken.

Issues: The State of Washington, the Department of the Interior, and the Department of Transportation expressed concern on the environmental impact of the beach nourishment borrow sites. All suggested that the impact of the location and operation of the borrow sites should be treated more comprehensively.

Actions to Resolve Issues. Borrow site selection and operation will be coordinated with all appropriate interested agencies and groups, including the Federal Bureau of Sport Fisheries and Wildlife and Indian Affairs. If the development of the finally selected borrow source is determined to have significant environmental impacts, a Supplemental Environmental Impact Statement will be prepared.

Status. The report of the Chief of Engineers with accompanying papers and the final Environmental Impact Statement were transmitted to the Congress by the Secretary of the Army on 7 May 1973. The final Environmental Impact Statement was submitted to the Council on Environmental Quality on the same date.

DEPARTMENT OF THE ARMY
Washington, D. C. 20310

7 May 1973

Honorable Jennings Randolph
Chairman, Committee on Public Works
United States Senate
Washington, D. C. 20510

Dear Mr. Chairman:

I am transmitting herewith a favorable report dated 21 August 1972, from the Chief of Engineers, Department of the Army, together with accompanying papers and illustrations, on Ediz Hook, Port Angeles, Washington, requested by resolutions of the Committees on Public Works, United States Senate and House of Representatives, adopted 13 September and 8 October 1968.

The views of the Governor of Washington, the State of Washington, the Departments of the Interior, Transportation, Health, Education, and Welfare and the Environmental Protection Agency are set forth in the inclosed communications. The environmental statement required by the National Environmental Policy Act has been submitted to the Council on Environmental Quality.

It is noted that the project limits for observation extend beyond the limits of recommended beach protective works and that additional protective works could be constructed within the limits for observation if the monitoring program establishes a need for such works. The cost-sharing provisions outlined in the report are considered reasonable with respect to the beach protective works for the reach from station W75+00 to station E41+00. However, should post-authorization modifications involve extension of the protective works beyond these limits, the Chief of Engineers would be expected to recommend to the Secretary of the Army appropriate cost-sharing provisions for such modifications.

Since this project meets all the requirements of Section 201 of the Flood Control Act of 1965 and involves little or no controversy, I recommend that the project be approved for appropriations.

Honorable Jennings Randolph

The Office of Management and Budget advises that there is no objection to the submission of the proposed report to the Congress; however, it states that no commitment can be made at this time as to when any estimate of appropriation would be submitted for construction of the project, if authorized by the Congress, since this would be governed by the President's budgetary objectives as determined by the then prevailing fiscal situation. A copy of the letter from the Office of Management and Budget is inclosed as part of the report.

Sincerely,

(Signed)

1 Incl
As stated

Robert F. Froehlke
Secretary of the Army

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

April 19, 1973

Honorable Robert Froehlke
Secretary of the Army
Washington, D.C. 20310

Dear Mr. Secretary:

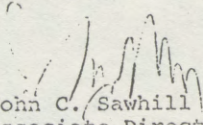
Mr. Kenneth E. Belieu's letter of January 10, 1973, submitted the favorable report of the Chief of Engineers on Ediz Hook, Port Angeles, Washington, requested by resolutions of the Committees on Public Works, United States Senate and House of Representatives, adopted September 13 and October 8, 1968.

The assumptions and methodology used to estimate the navigation benefits is unacceptable and should be avoided in all future analyses. The probability of a permanent breach resulting in total loss of the Port Angeles harbor occurring can not be assumed as 100 percent in the initial year of the 50-year period of analysis. This assumption leads to an inflated claim of annual benefits and a misleading benefit to cost ratio. Information subsequently provided by the Corps of Engineers staff indicated that the average annual costs for maintaining the spit together with the recreation benefits and the benefits related to operation of the Coast Guard station on the spit justify the costs of the recommended improvements. However, the benefit evaluation used in the report should not be used as a precedent in future shore protection or navigation projects. The discrepancies in benefit-cost calculation cited above have been noted by the Board of Engineers for Rivers and Harbors and we are informed that your office has instructed the Corps of Engineers to use more appropriate analytical methods in future feasibility studies.

Subject to the views expressed above the Office of Management and Budget advises that there would be no objection to the submission of the proposed report to the Congress. No commitment, however, can be made at this time as to

when any estimate of appropriation would be submitted for construction of the project, if authorized by Congress since this would be governed by the President's budgetary objectives as determined by the then prevailing fiscal situation.

Sincerely,



John C. Sawhill
Associate Director



DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF ENGINEERS
WASHINGTON, D.C. 20314

IN REPLY REFER TO

21 AUG 1972

SUBJECT: Ediz Hook, Port Angeles, Washington

THE SECRETARY OF THE ARMY

1. I submit for transmission to Congress my report on a survey of Ediz Hook Erosion Control, Port Angeles, Washington, in response to resolutions of the Committees on Public Works of the United States Senate and House of Representatives, adopted 13 September and 8 October 1968, respectively, requesting a survey of the shores of Ediz Hook, Washington, and such adjacent shores as may be necessary in the interest of beach erosion control and related purposes. My report includes the report of the Board of Engineers for Rivers and Harbors, accompanied by the reports of the District and Division Engineers.
2. The District and Division Engineers find that erosion control works, consisting of 10,000 lineal feet of new rock revetment and artificial beach fill with periodic nourishment, along the toe of the revetment works, are economically justified. They estimate the cost of improvements at \$4,890,000 of which \$4,553,000 would be Federal and \$337,000 would be local. They estimate the annual charges at \$423,800 and the annual benefits at \$7,273,000, resulting in a combined project benefit-cost ratio of 17.0 based on a 50-year period of analysis.
3. The Board of Engineers for Rivers and Harbors concurs generally in the plan of improvement recommended by the reporting officers and recommends that a Federal project be undertaken subject to certain items of local cooperation.
4. I concur in the views and recommendations of the Board.

F. J. CLARKE
Lieutenant General, USA
Chief of Engineers

Board of Engineers for Rivers and Harbors, Washington, D. C. 20315
24 February 1972

TO: Chief of Engineers, Department of the Army

1. Ediz Hook and the city of Port Angeles, Washington, are about 100 miles northwest of Seattle, Washington. Ediz Hook is a low spit, composed of sand and gravel, extending easterly from the mainland about 3-1/2 miles into the Strait of Juan de Fuca, which connects Port Angeles and Puget Sound with the Pacific Ocean. The spit has an average width of 300 feet over the westerly one-third of its length, narrowing to 90 feet in the mid-section, and thence widening to 750 feet near its outer extremity. The spit, which has an elevation of about 14 feet above mean lower low water (M.L.L.W.), provides natural breakwater protection for Port Angeles Harbor. This harbor is the only deep-draft harbor on the north shore of the Olympic Peninsula.

2. Port Angeles, with a 1970 population of 16,770, is the governmental, commercial, and industrial center of Clallam and Jefferson Counties. The two counties had a combined 1970 population of 45,431. Forecasts indicate that the area's population will more than double during the next 50 years. The principal industries in the tributary area are forest products, agriculture, and tourism. In 1969, 94 percent of the manufacturing employment in the two-county area was in lumber, paper, and allied products. The primary commodities contributing to the commerce of the area are lumber, shakes, shingles, plywood, wood chips, veneer, pulp and paper products, and logs for export. The economy of the Port Angeles area is dependent on the maintenance of a usable harbor.

3. An existing navigation project provides for (1) a small-boat mooring basin 15 feet deep, with breakwater protection for the basin and entrance channel, which was completed in 1959; and (2) removal of a shoal area to 30 feet near the ITT Rayonier, Incorporated, dock, which has been classified as "inactive." In addition to Federal improvements, local interests have invested about \$5,400,000 in commercial terminal and transfer facilities and moorage facilities for small craft. Also, approximately \$900,000 has been expended since 1930 by local interests and the United States Coast Guard for construction of erosion control protective

works along the Strait side of Ediz Hook. There are no authorized Federal projects for beach erosion in the vicinity of the proposed project.

4. It is believed that a major cause of erosion at Ediz Hook is the decrease in feeder material resulting from construction of dams on the Elwha River and pipeline protective works along the base of the sea cliffs. In addition, the concentration of wave energy along the neck of the spit, near its base, contributes to an offshore movement of littoral material with a corresponding reduction in alongshore movement. Although studies indicate that about 75 percent of the material moving from the west is being lost, Ediz Hook continues to grow in an easterly direction. The shore to the west of the spit has been progressively eroded by the easterly migration of beach material, resulting in the general lowering of the beach profile and the concentration of deep water wave energy directly against the spit. If this process is permitted to continue, Ediz Hook is in danger of being breached permanently. Loss of access to the United States Coast Guard Base would render it useless and Port Angeles Harbor would be destroyed if the protection afforded by the spit is lost.

5. The city of Port Angeles, supported by local governing bodies and interested individuals and industries, desires a long-range plan of erosion control for the preservation of the spit and harbor.

6. During reconnaissance studies, 13 alternative plans were considered for erosion control. Of the alternatives considered, the District Engineer finds that rock revetment with periodic nourishment is the most desirable plan for long-range erosion control. The revetment works would provide protection to the roadway and utilities and would establish a line of defense against severe winter storms. The nourishment program would maintain the beach profile, thereby minimizing scour of the revetment.

7. The District Engineer proposes a plan of improvement consisting of 10,000 lineal feet of new rock revetment and periodic beach nourishment. Top elevation of the revetment would be 18 feet above M.L.L.W. for 7,500 feet beginning at the western end and 16 feet above M.L.L.W. for the remaining portion. An initial fill of gravel and cobbles would be placed along the seaward toe of the revetment works. The remaining portions of

the shore line within the recommended project limits would be monitored to determine if additional protective works are required. It is proposed that prior to project construction, as part of preconstruction planning and design, a beach-feed prototype test program be conducted to evaluate the rate of littoral movement and to determine optimum locations for stockpiling nourishment material.

8. The District Engineer estimates the first cost of his recommended plan at \$4,890,000, of which the Federal share would be \$4,553,000, based on March 1971 prices and exclusive of preauthorization costs. He estimates annual charges at \$423,800, including annual operation and maintenance costs of \$140,300 of which \$127,900 would be Federal costs. Annual charges are based on a 50-year period of analysis and a 5-3/8 percent interest rate. Project benefits are estimated at \$7,273,000 annually, including navigation benefits of \$6,757,000 and erosion prevention benefits of \$516,000. The benefit-cost ratio is 17.0 to 1.

9. A paper and pulp mill is located at the base of Ediz Hook on the western end, and the United States Coast Guard Base is at the eastern end. The intervening narrow strip is publicly owned with few improvements. The seaward side of Ediz Hook is used for recreational purposes and the landward side for log storage and other commercial purposes. Shoreline ownerships that would be most seriously affected by continued erosion are given below.

<u>Ownership</u>	<u>Shoreline length (feet)</u>
Federal:	
Coast Guard Base	12,500
Under lease to Port Angeles	6,200
Public:	
City of Port Angeles	3,800
Private:	
Crown-Zellerbach Corporation	<u>1,400</u>
Total	23,900

10. The Federal Government would assume responsibility for the costs of improvements for general navigation. Federal aid toward shore restoration and protection, as prescribed by Section 103 of Public Law 87-874 approved 23 October 1962, would be determined by the shore ownership. The area on Ediz Hook which would be afforded protection by the proposed improvement includes Federally owned shores (Category I), publicly owned, non-Federal shores other than parks and conservation areas (Category III), and privately owned shores (Category V). The frontage and Federal or non-Federal interest in each type of ownership are as follows:

<u>Shore Category</u>	<u>Length (feet)</u>	<u>Apportionment of Cost (percent)</u>	
		<u>Federal</u>	<u>Local</u>
I	18,700	100	0
III	3,800	50	50
W	<u>1,400</u>	0	100
Total	23,900		

Based on these shoreline ownerships and the criteria for project cost allocation to general navigation and beach erosion control described above, the apportionment of costs between local and Federal interests is as follows:

Federal first cost (93.1 percent)	\$4,553,000
Local first cost (6.9 percent)	<u>337,000</u>
Total first costs	4,890,000

Apportionment of annual beach nourishment for the first 10 years of project life, on the same basis as the apportionment of first costs, is as follows:

Federal cost (93.1 percent)	\$68,400
Local cost (6.9 percent)	<u>5,100</u>
Total first costs	73,500

After the initial 10 years, local interests would be required to maintain nourishment for all but the Federal shores and the annual beach nourishment would be apportioned as follows:

Federal cost	(89.1 percent)	\$65,500
Local cost	(10.9 percent)	<u>8,000</u>
Total		73,500

As local interests are required to maintain protective works benefiting non-Federal lands, maintenance of rock revetment would be apportioned as follows:

Federal cost	(89.1 percent)	\$59,500
Local cost	(10.9 percent)	<u>7,300</u>
Total		66,800

11. The District Engineer finds that the rock revetment with artificial nourishment would provide adequate protection, that it is necessary and economically feasible, and that the City of Port Angeles, a legally constituted public body, has expressed its willingness and ability to provide the required local cooperation. He, therefore, recommends that erosion control measures at Ediz Hook be authorized at this time. The Division Engineer concurs.

12. The Division Engineer issued a public notice stating the recommendations of the reporting officers and affording interested parties an opportunity to present additional information to the Board. Careful consideration has been given to the communications received.

Views and Recommendations of the Board of Engineers for Rivers and Harbors.

13. Views.--The Board of Engineers for Rivers and Harbors concurs in general in the views and recommendations of the reporting officers. The recommended improvements are needed and economically feasible, and the requirements of local cooperation are appropriate. The Board carefully considered the environmental effects of the proposed improvements, including those discussed in the preliminary draft environmental statement dated August 1971. It believes that any significant adverse effects would be prevented by careful design, construction, and maintenance of the project.

14. The Board notes that the reporting officers have analyzed the proposed improvement of Ediz Hook on the basis that a breach may occur immediately and that therefore the proposed improvement would preserve the full utility of the Hook and the works protected by the Hook for the entire 50-year period of project life. In its review, the Board has considered the likelihood that a breach might occur at different points in time and has evaluated the damages that would occur without the proposed project. The resulting benefits and benefit-to-cost ratios under these varying conditions are as follows:

<u>Year of breaching</u>	<u>Average annual benefits</u>	<u>Benefit-to-cost ratio</u>
10	\$4,106,000	10
20	2,242,000	5
30	1,110,000	3
40	417,000	0.98

This analysis demonstrates that the recommended project would be economically justified if the breach occurred prior to the fortieth year of the project life. Because the breaching of the spit would be dependent on the force of the storm as well as the tide level and flooding, it is extremely difficult to assess the probability of such an event occurring at any specific point in time during project life. In view of the reduced availability of littoral material, it is apparent that the spit will become increasingly vulnerable to storm attack over time and the probability of permanent breaching will increase. Considering the magnitude of the damage which would result from permanent breaching as well as the damages which have occurred in recent years, the Board agrees with the reporting officers that the likelihood of such an event occurring prior to the fortieth year of project life is sufficiently great to assure economic justification of the protection project.

15. The Board also considered the effects of the proposed project on the objectives of national economic efficiency, environmental quality, regional economic development, and social well-being as required by Section 122 of Public Law 91-611, enacted by the Congress of the United States, 31 December 1970. It noted that a permanent breach of Ediz Hook would result in the loss of the Coast Guard Station and would drastically reduce the utilization of the harbor at Port Angeles for navigation purposes. Increased

transportation and operating costs for local industries would result in an economic loss to the nation. In addition, capital losses on fixed investments would be incurred by companies that would be forced to relocate. The underutilization and displacement of resources that would occur in the area represent net national losses. From an environmental viewpoint, the existing spit offers a rare opportunity for panoramic sightseeing in the unusually scenic Puget Sound setting and a protected harbor for recreational boating and commercial shipping. A spit such as Ediz Hook, an unusual ecosystem and geologic feature in Puget Sound, enhances the environment. Five species of Pacific salmon, as well as steelhead, rockfish, and trout, are found in the waters near the Hook. These fish use the area as a feeding zone and migration route. They contribute to the sport and commercial fisheries of the Pacific Ocean, Puget Sound, and adjacent waters. Intensive sport fishing occurs both outside and inside the Hook. A modest shellfish population is found in the leeward littoral zone. The spit and the harbor it shelters are frequented by geese, loons, grebes, diving ducks, puddle ducks, sandpipers, gulls, and terns. The sand dune habitat on the outer hook with its associated plant life and avian fauna is rare in Puget Sound and thus particularly valuable. The loss of the spit would destroy these values and would expose several miles of waterfront properties to the destructive forces of wind-driven waves. From a regional viewpoint, the competitive position of Port Angeles industries, as well as the competitive position of the timber industry in the tributary area, would be seriously affected by the loss of the harbor. The jobs of approximately one-half of the labor force of Port Angeles would be jeopardized. Finally, the economic and environmental losses resulting from a permanent breach of Ediz Hook would force a large portion of the population to relocate elsewhere, leaving behind vacated residences and business establishments and underutilized public facilities. These disruptions would have long-range adverse effects on the economy of the area and the social well-being of the people.

16. Recommendations. --The Board recommends adoption of a project for beach erosion control, navigation, and recreation by construction of approximately 10,000 feet of new rock revetment, initial beach fill, and periodic nourishment of the beach, with Federal aid for nourishment limited initially to a period of 10 years; all generally in accordance with the plan of the District Engineer and with such modification thereof as in the discretion of the

Chief of Engineers may be advisable, at an estimated first cost to the United States of \$4,553,000, or 93.1 percent of the total first cost for construction and \$127,900 annually during the first 10 years of project life and \$125,000 thereafter for periodic nourishment and revetment maintenance; the Federal cost sharing to be in accordance with policy established by law, the percentage to be based on actual conditions of ownership and use at the time of construction: Provided that, prior to construction, local interests furnish assurances satisfactory to the Secretary of the Army that they will:

a. Provide without cost to the United States all necessary lands, easements, and rights-of-way required for project construction and subsequent beach nourishment;

b. Hold and save the United States free from claims for damages that may result from construction or maintenance of the project;

c. Contribute in cash the required share of the first costs of the beach protection works, presently estimated at \$337,000, to be paid in a lump sum prior to start of construction, or in installments prior to start of pertinent work items in accordance with construction schedules as required by the Chief of Engineers, the final apportionment of the first cost to be made after actual costs and values have been determined and to be based on existing conditions of public use and ownership at the time of construction;

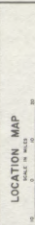
d. Contribute in cash the required share of the costs during the life of the project for: maintenance and repair of the revetment works, presently estimated at \$7,300 annually; and periodic beach nourishment, presently estimated at \$5,100 annually for the first 10 years and \$8,000 annually thereafter, as may be required to serve the intended purpose, subject to Federal participation in the cost of periodic nourishment for an initial period of 10 years;

e. Assure continued public ownership of the shore upon which the amount of Federal participation is based and its administration for public use during the economic life of the project; and

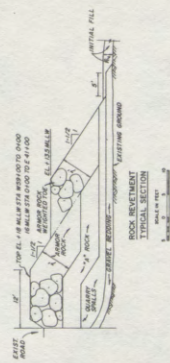
f. Provide and maintain public access, parking, and appurtenant facilities for recreation necessary for realization of project benefits.

FOR THE BOARD:

/s/ W. Roper
W. ROPER
Major General, USA
Chairman



ELEMENTS OF BEACH PROTECTION			
STATION	EXISTING PROTECTION		PROPOSED PROTECTION
	NONE		BEACH FEED STOOLPILE
W 1000 TO W 7500	DOWN TILLER/BEACH ROCK REINFORCEMENT	BEACH FEED	
W 7500 TO W 15000	CITY ROCK	BEACH FEED	
W 15000 TO W 25000	REINFORCEMENT	BEACH FEED	
W 25000 TO W 35000	COAST GUARD SHEET	BEACH FEED	
W 35000 TO W 45000	PILE WITH ROCK	BEACH FEED	
E 1500 TO E 3500	FACING	BEACH FEED	
E 1500 TO E 3500		BEACH FEED	
E 4000 TO E 5200	COAST GUARD STOOLPILE	NONE	
E 3200 TO E 5200		NONE	

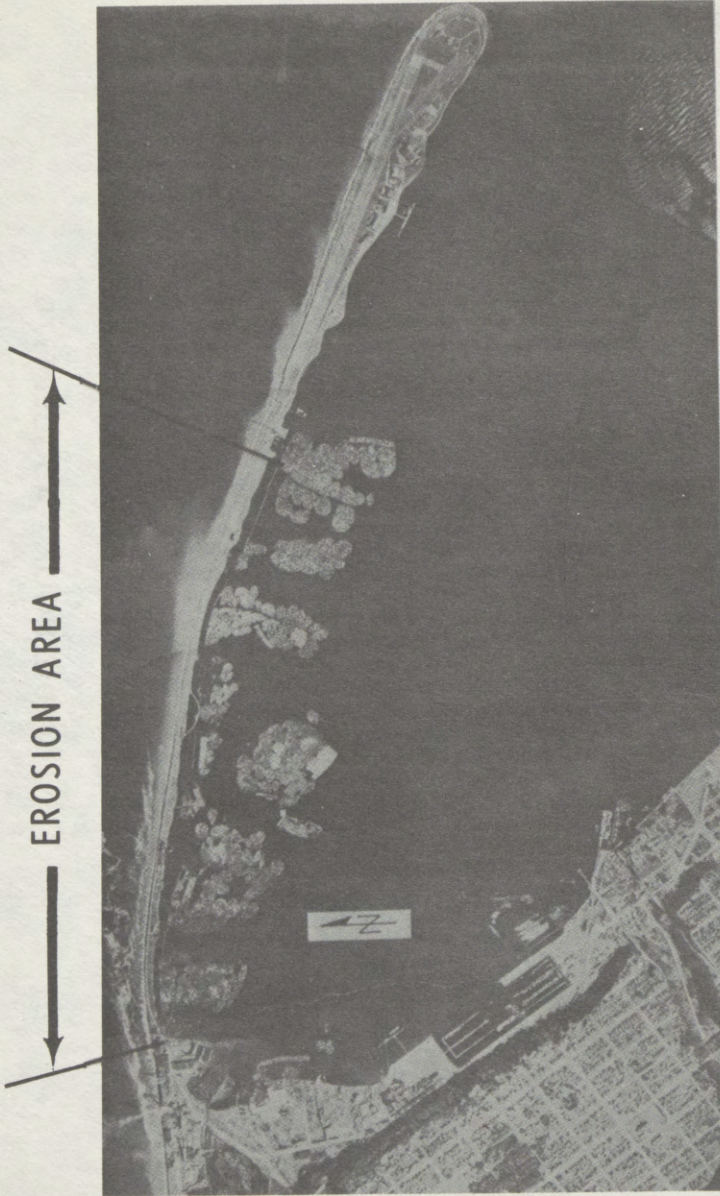


PORT ANGELES

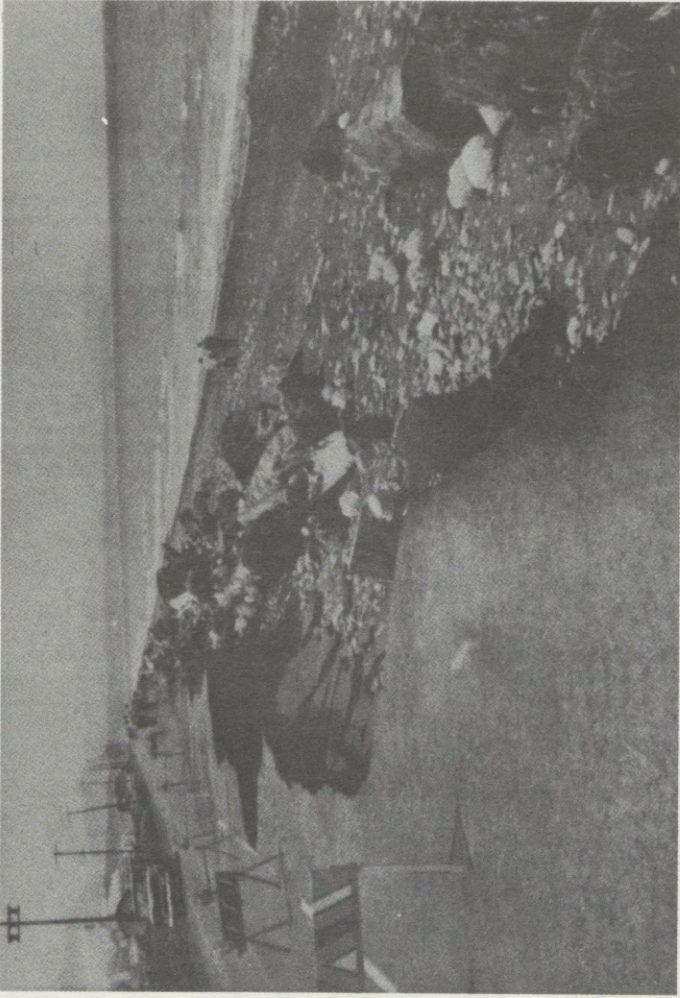
EDIZ HOOK
RECOMMENDED EROSION CONTROL

WASHINGTON

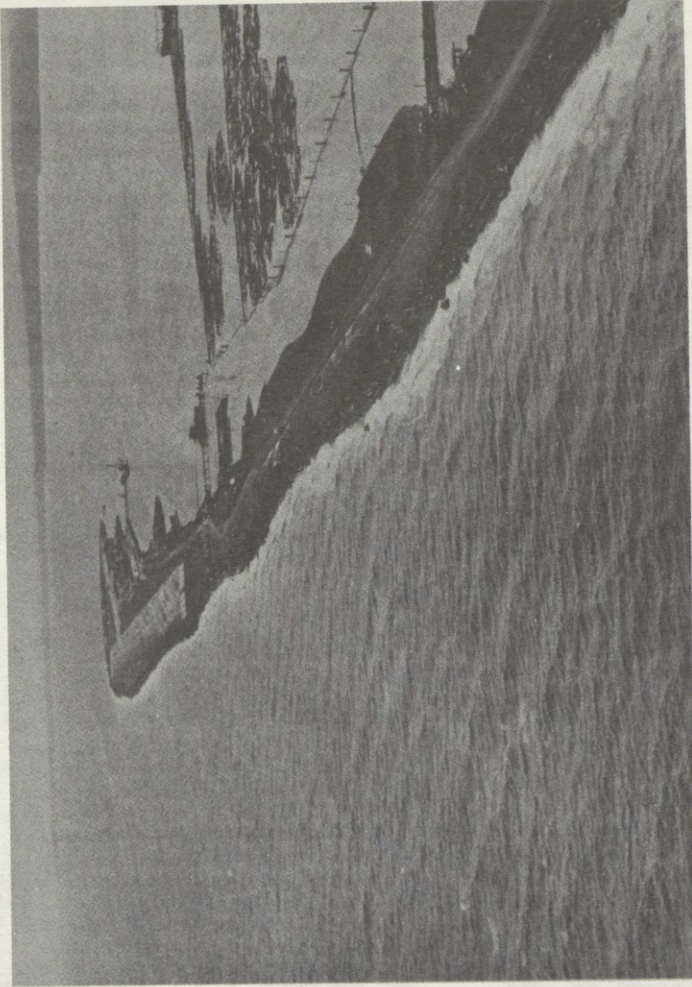
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EDIZ HOOK PORT ANGELES



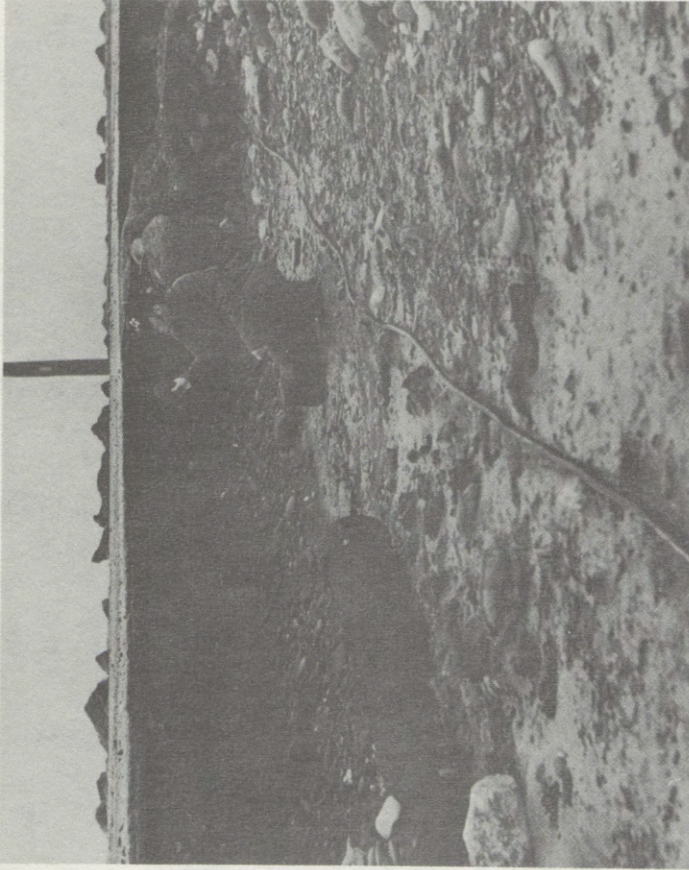
EDIZ HOOK - AUGUST 1970



EDIZ HOOK - JANUARY 1971

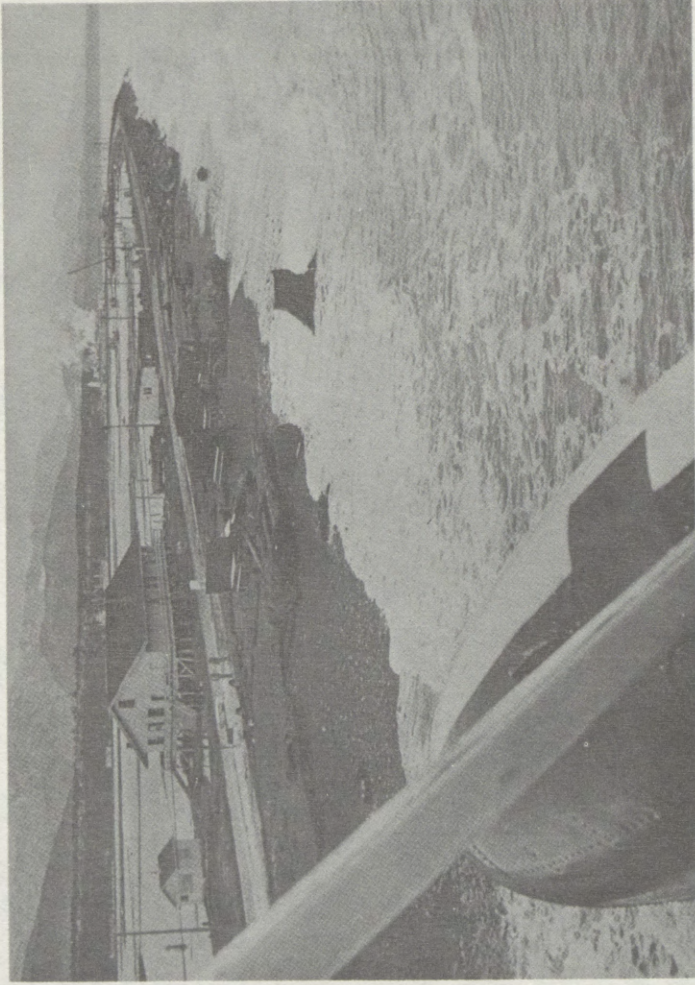
U.S. COAST GUARD STATION AT OUTER END OF HOOK.

NOTE STABLE BEACH COVERED WITH DEBRIS AND NO ROCK REVETMENT



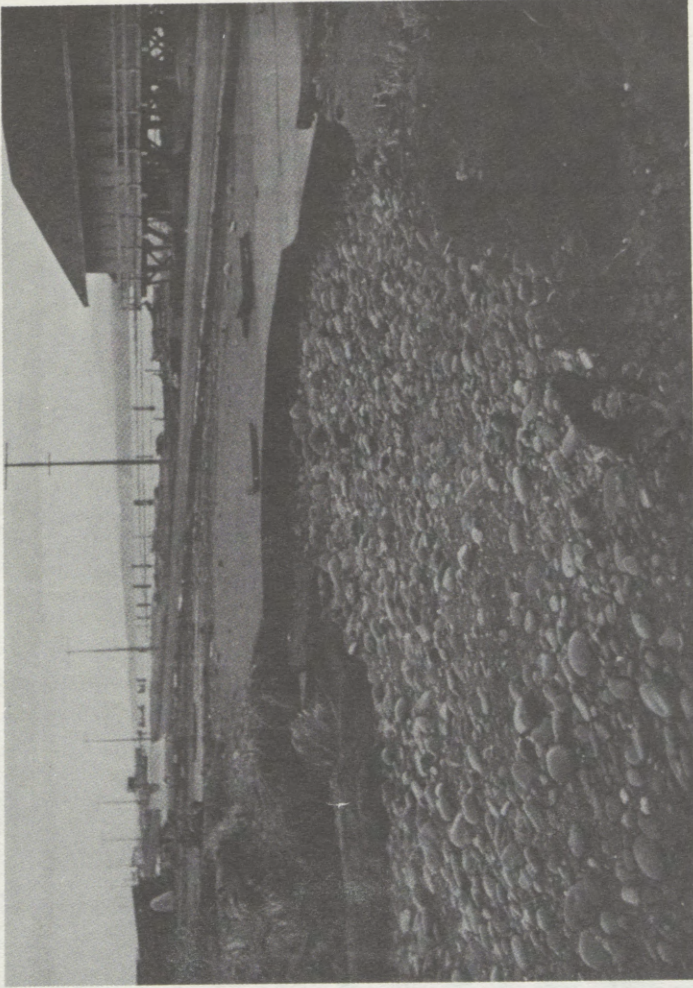
EDIZ HOOK - JANUARY 1972
EROSION ALONG ROAD

NOTE EXPOSED UTILITY LINES THAT SERVE THE U.S. COAST GUARD STATION AT THE OUTER END OF THE HOOK



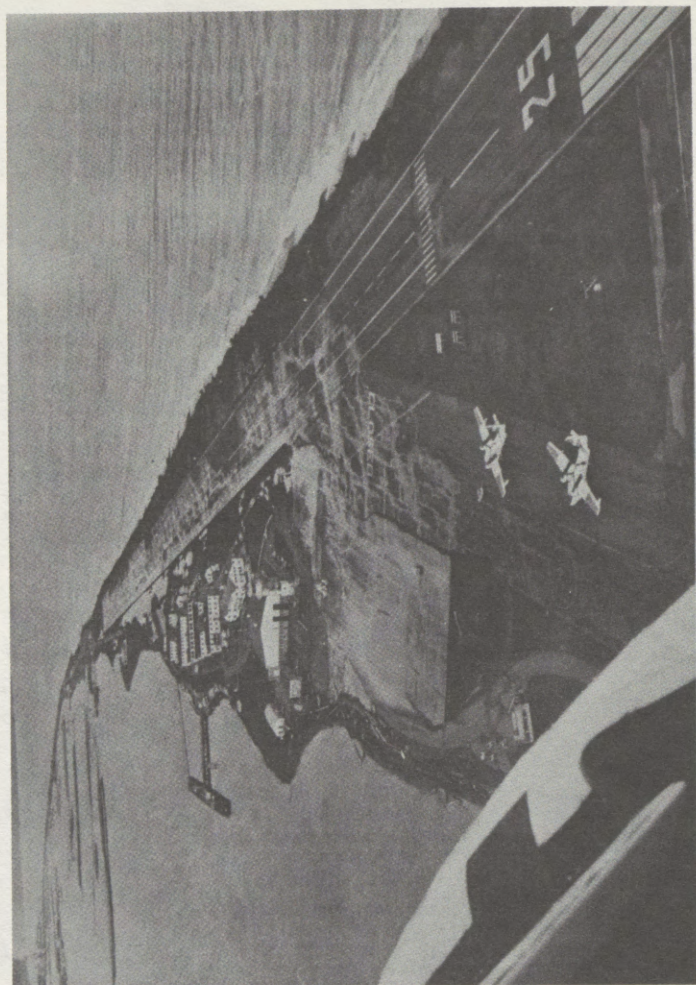
EDIZ HOOK - JANUARY 1973

NOTE NEW EROSION NEAR END OF ROCK REVETMENT AND UNDERMINED PICNIC SHELTERS



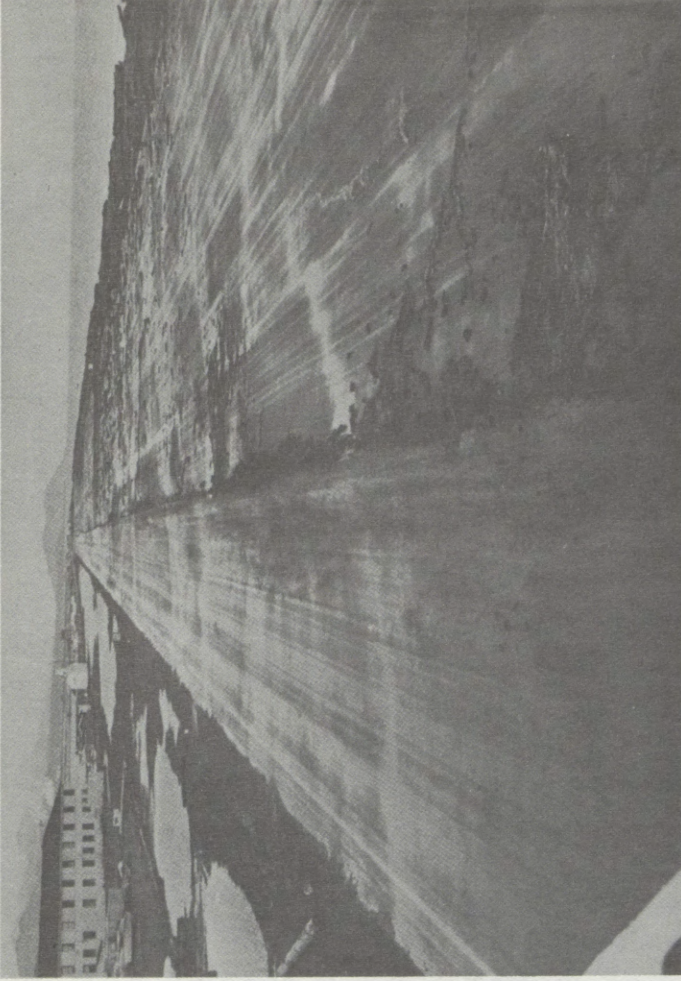
EDIZ HOOK - JANUARY 1973

NEW EROSION NEAR PICNIC SHELTER



EDIZ HOOK - JANUARY 1973
U.S. COAST GUARD STATION

NOTE DEBRIS AND WATER ON AIRPORT RUNWAY



EDIZ HOOK - JANUARY 1973
U.S. COAST GUARD STATION
NOTE DEBRIS ON AIRPORT RUNWAY

Senator GRAVEL. At this time we will hear from the Coast Guard. Admiral Scheiderer.

**STATEMENT OF REAR ADM. EDWARD SCHEIDERER,
COMPTROLLER, U.S. COAST GUARD**

Admiral SCHEIDERER. I have a short statement here which I believe the staff received from the Coast Guard.

Mr. Chairman and members of the committee, I appreciate the privilege of appearing before you today to support the U.S. Army Corps of Engineers' project for erosion control on Ediz Hook, Port Angeles, Wash.

The Coast Guard has operated Port Angeles Air Station which is located on the easterly end of Ediz Hook since the late 1930's. The missions of this important station are search and rescue, marine environmental protection, law enforcement, and support functions for group Port Angeles. The Coast Guard operates aircraft and boats from this facility in support of these missions.

As indicated on page 3 of the August 1972 final environmental impact statement on the Ediz Hook Beach erosion control project, the station responded to 384 search and rescue cases which resulted in 36 lives saved and over \$3 million worth of property assisted from July 1969 to June 1970.

During the last 4 years Ediz Hook has been subjected to storm and tidal action resulting in damage to the spit and roadway. Erosion of the sand spit continues to be a major concern for the Coast Guard. If the sand spit is breached, then land access to the air station would be severed, thereby adversely affecting our operational and support capability.

As reported on page 6 of the Environmental Statement, the Coast Guard has spent \$242,000 in repairing storm damage and bolstering protective works along the shoreline during the summers of 1970 and 1971. Since that time the Coast Guard has spent an additional \$98,000 repairing storm damage on Ediz Hook.

Port Angeles Air Station is vital in executing the Coast Guard missions in the Strait of Juan de Fuca area. I am confident that the erosion control project before you will provide added protection to Ediz Hook and the access road to the air station. The Department of Transportation and the Coast Guard endorse this project.

Thank you.

Senator GRAVEL. Thank you very much, Admiral.

I appreciate your coming forward with the obvious figure of what it would cost the Government if the station were lost or its operations hampered.

Do you have a contingency plan? If you had to ferry into the station, can you give us a figure off the top of your head on the cost of that?

Admiral SCHEIDERER. Yes, sir, we would be faced with precisely that action because you see we have about 147 people total operating out

there. It is not only an air station, Mr. Chairman, it is also a group office operating small boats and there is also a 95-foot vessel tied up there. As a practical matter we value our plant out there at something like about \$4.5 million as you heard before. As I pointed out here, since 1970 up until this date we have spent about a third of a million dollars just in keeping that road in some kind of a state of repair. So progressively we are by dribs and drabs spending almost as much as the preliminary figure you are talking about in order to do a decent job.

Senator GRAVEL. We could be helping your budget if we get it in the Corps budget.

Admiral SCHEIDERER. Yes.

Senator GRAVEL. Obviously Ediz Hook right there in Juan de Fuca services very effectively that part of the Puget Sound area. Do you have any other stations in the Puget Sound area? Which is the main one?

Admiral SCHEIDERER. This is the main one, sir. We have other stations there, of course, small stations in the area, but this is the main one.

Senator GRAVEL. It seems to be one for the whole Puget Sound area?

Admiral SCHEIDERER. They will operate on call. Normally our smaller stations operate within about a 10-mile radius of a station but this, sir, is the only air station we have between Annette and Astoria, Oreg., for aircraft purposes. We have three fixed-wing aircraft and three helicopters operating there.

Senator GRAVEL. Senator Magnuson right at the end of his testimony talked of the pipeline and mentioned that Port Angeles would be one of the routes figuring in oil shipments. Would your station have an extra mission with respect to the additional oil shipping that would be occasioned by the Alaska pipeline?

Admiral SCHEIDERER. Yes, sir. We would anticipate that there would be a great deal of activity that would fall to our lot in connection with potential pollution problems, cleanup work, perhaps a much more extensive traffic control problem than we now have. This is the sort of thing that we would visualize and would significantly increase our responsibilities in that area, Mr. Chairman.

Senator GRAVEL. I don't mean to ask you this question but maybe someone here can provide the answer. What is the relation of the Arco refinery to Ediz Hook? Could anyone point on the map to where that refinery is?

FROM THE FLOOR. Yes. It is right at Cherry Point.

Senator GRAVEL. Can you spot it?

FROM THE FLOOR. It would be about here, in the general area [indicating]. Right about there.

See, you have traffic through this whole area.

Another thing I just point out to the chairman is that Port Angeles now is being studied by the Corps of Engineers as a possible deep water port for oil in the future, so this is looking ahead, too. It may become a deep water port facility; it is very high on that priority list.

Senator GRAVEL. Thank you very much. You can tell Senator Magnuson the second point was made to reinforce his point.

Thank you.

Admiral SCHEIDERER. Thank you, Mr. Chairman.

Senator GRAVEL. General Kelly, would you want to add anything on the deep water port aspect? If you have anything to give us, that would be valuable in this regard.

General KELLY. Actually I have nothing specific to comment on that point, sir. The study is in progress. I know they looked at quite a number of sites out in the area of potential fall away from the Washington to the southern California coast but I have not received any specific input from the field on that yet.

Senator GRAVEL. The winds in that area of Puget Sound are westerly?

General KELLY. I gather that from the statement of the mayor, yes.

Senator GRAVEL. They would be coming inland from the sea. Very good.

I have no further questions, General.

Thank you, Admiral.

We are going to move to another project.

General, if you want to proceed with the Arkansas project.

PROPOSED DEAUTHORIZATION OF LONE ROCK LAKE PROJECT, ARKANSAS

STATEMENT OF BRIG. GEN. JAMES KELLY, DEPUTY DIRECTOR FOR CIVIL WORKS, U.S. ARMY CORPS OF ENGINEERS

General KELLY. We have been asked to testify this morning on the authorization of the Lone Rock Lake project.

The bill proposed by Senator McClellan would deauthorize the Lone Rock Lake project on Buffalo River, Ark., in recognition of the designation of the Buffalo River as a national river by Public Law 92-237.

Public Law 92-237 includes provisions of the Wild and Scenic Rivers Act, Public Law 90-542 (82 Stat. 906), relating to construction or appropriation requests for initiating construction of any water resources projects that would have a direct and adverse effect on the values for which the national river was established. Although not specifically precluding construction, the provisions require (1) prior notification of the Secretary of the Interior of the intention to construct and (2) reporting to the Committees on Interior and Insular Affairs of the U.S. House of Representatives and U.S. Senate the nature of the project involved and the manner in which it would conflict with the purposes of Public Law 92-237 or would affect the national river and the values to be protected by it under that act. Therefore, under certain conditions the project, authorized by the Flood Control Act of 1938, could be proposed for and constructed within existing authorizations. The proposed bill is intended to remove any possibility of such construction.

The Buffalo River is recognized as among the few sizable, free-flowing streams remaining in mid-America. It is unpolluted, undeveloped,

and looks today much as it did in days past. This Department's views on preserving such rivers from development were expressed in our report on the Wild and Scenic Rivers Act, Public Law 90-542, where it was stated:

The basic position of the Department of the Army on the numerous bills which have been introduced with a view to setting aside certain streams as "wild," or "scenic," rivers may be stated briefly as follows:

First, that the Nation can well afford to forego the development of streams of unusual natural beauty.

Second, that since decisions to set aside such streams must be based largely upon intangible factors, and since the evaluation of such factors is primarily a matter of legislative judgment, the Congress should decide which of the Nation's streams should be preserved in their natural state.

Third, that if Congress is to reach a wise decision, it must have a full report and definite plan for each potential wild river, and that this plan should be developed by joint and coordinated action of all the agencies, both Federal and State, concerned with the development, utilization, and conservation of the Nation's rivers. Only in this way is it possible with an optimum comprehensive plan for the river basin in which it is located * * *

Since these conditions have been essentially fulfilled in the case of the Buffalo River and Congress enacted Public Law 92-237 establishing Buffalo River as a national river, the Department of the Army has no objection to deauthorization of the Lone Rock Lake project.

The Office of Management and Budget advises that, from the standpoint of the administration's program, there is no objection to the deauthorization of the Lone Rock Lake project as proposed.

That concludes my statement, Mr. Chairman.

Senator GRAVEL. Thank you.

Senator McClellan will be submitting a statement for the record on this proposal.

[Senator McClellan's statement and a copy of the bill S. 1961 follow:]

STATEMENT OF HON. JOHN L. MCCLELLAN, U.S. SENATOR FROM THE
STATE OF ARKANSAS

Mr. Chairman, in 1938, it appeared appropriate to place a dam on the Buffalo River. At that time, none of the White River Basin reservoirs had been constructed and Arkansas was subject each year to great amounts of damage by flooding. Large amounts of land which are now in cultivation were impossible to farm. Since 1938, we have seen the construction of a number of flood prevention impoundments in the White River Basin. In addition, the Congress of the United States enacted, and the President signed Public Law 92-237, making the Buffalo River a National River. This was done to preserve for all time the Buffalo River as a free-flowing natural stream.

Mr. Chairman, as you know, a number of changes have occurred since 1938 in the attitude of our citizens towards our rivers which constitute one of the Nation's greatest assets. Sec. IV of P.L. 92-237 reads as follows:

"Sec. 4. The Federal Power Commission shall not license the construction of any dam, water conduit, reservoir, powerhouse, transmission line, or other project works under the Federal Power Act (41 Stat. 1063), as amended (16 U.S.C. 791a et seq.), on or directly affecting the Buffalo National River and no department or agency of the United States shall assist by loan, grant, license, or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such river is established, as determined by the Secretary . . ."

Because of the above language, I believe it is entirely appropriate that the Congress at this time deauthorize Lone Rock Lake on the Buffalo River.

I appreciate this opportunity to submit a statement and I hope that the Committee will act favorably on S. 1961.

93^D CONGRESS
1ST SESSION

S. 1961

IN THE SENATE OF THE UNITED STATES

JUNE 7, 1973

Mr. McCLELLAN introduced the following bill; which was read twice and referred to the Committee on Public Works

A BILL

To amend the Flood Control Act of 1938.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*
3 That the part of the plan for flood control on the Mississippi
4 River and tributaries authorized by the Flood Control Act of
5 1938, as amended, providing for the authorization of the
6 Lone Rock Lake, Buffalo River, Arkansas, be and is hereby
7 modified.

8 SEC. 2. The authorized plan for flood control and
9 other purposes for the White River Basin, Missouri and
10 Arkansas, as described in House Document Numbered 499,
11 Eighty-third Congress, second session, is hereby modified

- 1 by the deauthorization of the Lone Rock Lake, Buffalo
- 2 River, Arkansas, in recognition of the designation of the
- 3 Buffalo River as a national river by Public Law 92-237
- 4 and the environmental concern and values expressed by the
- 5 people of the State and Nation concerning the preservation
- 6 of the Buffalo River as a national stream.

Senator GRAVEL. Mr. Karl R. Klingelhofer from the Soil Conservation Service will be our next witness as we consider watershed proposals.

The first project we will take up will be the Boxelder Creek, Colorado and Wyoming.

Sir, you have the floor.

BOXELDER CREEK, COLORADO AND WYOMING

STATEMENT OF KARL R. KLINGELHOFER, SOIL CONSERVATION SERVICE

Mr. KLINGELHOFER. Mr. Chairman, members of the committee, the Boxelder Creek Watershed outlets near Fort Collins, Colo., and extends north 3 miles into Wyoming. It covers an area of 160,640 acres. The watershed is about 32 miles long and 8 miles wide. Boxelder Creek is a tributary of Cache la Poudre River which is a tributary of the South Platte River in north central Colorado.

Land use in the watershed is 19 percent irrigated cropland, 8 percent nonirrigated cropland, 48 percent grassland, 11 percent brushland, 8 percent forest land, 1 percent wildlife areas and 5 percent miscellaneous. Ninety-two percent of the watershed is private land and about 8 percent is State land.

The climate is semiarid with an average annual precipitation of 14 inches and uneven distribution. The principal source of precipitation is from high intensity, short duration, convective type thunderstorms occurring generally from April to October. Soils in the watershed vary from exposed bedrock to deep loams in the irrigated areas.

The watershed consists of broad rolling plateaus, hogback ridges, and narrow mesas interspersed with narrow valleys and canyons, and rolling plains. The flatter portion of the plains area contains most of the irrigated and nonirrigated cropland. Altitudes range from 7,720 feet in the north to 4,860 feet at the lower end.

Agriculture and manufacturing are the major sources of income in Larimer County with hay, sugar beets, barley, cattle, and sheep being dominant in the agricultural section. The watershed economy is basic-

ally agricultural. Fort Collins is a major trade center for one of the State's foremost agricultural areas. The city's economy is further stimulated by the production of gypsum, gravel, ornamental rock, oil and gas, diversified industrial development, and outstanding recreational and educational opportunities.

Land values range from \$800 per acre for irrigated cropland, \$100 for nonirrigated cropland, \$50 for rangeland and \$1,500 for agricultural land converted to suburban development. Population within the watershed is presently estimated at 1,300 using the 1970 census. Wellington has a population of 691.

Major water resources problems in the watershed are floodwater, sediment, and erosion damages that result from runoff produced by high intensity and short duration summer thunderstorms. Damage occurs throughout the flood plain to agricultural land and crops, irrigation facilities, highway embankments, and bridges, to parts of the residential section in the town of Wellington and other improvements in the flood plain. During the last 65 years 24 damaging storms have occurred.

In 1961 a storm caused \$76,000 of damages in the vicinity of Wellington by flooding 40 basements and damaging other agricultural and nonagricultural property. In 1967 four lives were lost at a county road bridge washout during a storm. Under present conditions a 10-year frequency storm will flood 3,517 acres of irrigated cropland. Damages occur to sugar beets, dried beans, corn, alfalfa, and small grain.

The proposed project includes land treatment measures for watershed protection, land and vegetative improvement, irrigation water management, and wildlife enhancement. Proposed structural measures include five single-purpose floodwater-retarding structures and one grade stabilization structure.

The installation of this project will reduce agricultural damages by 78 percent and nonagricultural damages by 89 percent on an average annual basis. Peak flows from storms will be reduced, thereby reducing areas and depths of flooding, and damages from erosion and sediment.

Total project costs are estimated to be \$3,640,000 of which \$2,252,000 is to be provided by Public Law 566 funds. Average annual benefits are estimated to be about \$252,000, giving a benefit/cost ratio of 2 to 1.

This concludes my presentation, Mr. Chairman. I will be happy to try to answer any questions you or members of the committee may have.

Senator GRAVEL. Thank you very much. Your statement is self-explanatory.

Mr. KLINGELHOFFER. Thank you.

[A data sheet on the Boxelder Creek project follows:]

COLORADO

BOXELDER CREEK

Size and Location.—160,640 acres in Larimer and Weld Counties, Colorado and Albany and Laramie Counties, Wyoming.

Sponsors.—Fort Collins Soil Conservation District; West Greeley Soil Conservation District; Larimer County Board of Commissioners; North Poudre Irrigation Company; Colorado State Soil Conservation Board; Frontier Soil and Water Conservation District; Laramie Rivers Soil and Water Conservation District.

Purposes.—Watershed Protection and Flood Prevention.

Principal Measures.—Soil conservation practices on farms and ranches; and structural measures consisting of 5 floodwater retarding structures and one grade stabilization structure. The total storage capacity of the structure is 13,656 acre-feet.

Annual benefits	Dollars	Percent
To agricultural acreage (land and crops).....	128,700	51
To agricultural improvements.....	9,500	4
To nonagricultural improvements.....	73,500	29
Indirect.....	18,900	7
Secondary.....	21,700	9
Total.....	252,300	100

Project costs	Public Law 566 funds		Other funds		Total dollars
	Dollars	Percent	Dollars ¹	Percent	
Land treatment measures.....	84,000	6	1,325,000	94	1,409,000
Structural measures flood prevention.....	1,901,000	98	46,000	2	1,947,000
Project administration.....	267,000	94	17,000	6	284,000
Total.....	2,252,000	62	1,388,000	38	3,640,000

¹ For land treatment measures this is primarily the cost of applying land treatment measures by landowners. Cost-sharing from funds appropriated for the rural environmental assistance program may be available if included in the county program. For structural measures this is the cost of land rights and project administration. It may also include costs for construction or engineering services for purposes other than flood prevention.

² The value of measures already installed (\$1,205,000) increases this to 54 percent.

Note.—Benefit-cost ratio, 2 to 1.

Senator GRAVEL. At this point statements relating to the Boxelder project will be included in the record.

[The statements referred to follow:]

STATEMENT OF HON. PETER H. DOMINICK, U.S. SENATOR FROM THE STATE OF COLORADO

Mr. Chairman, thank you for the opportunity to testify. The watershed area of Boxelder Creek covers approximately 251 square miles in Larimer and Weld Counties, Colorado, and Albany and Laramie Counties, Wyoming. Of this watershed area, 48% is grassland, 19% is irrigated cropland, 11% is brushland, 8% is non-irrigated cropland, 8% is forestland, 1% is wildlife areas and 5% miscellaneous.

A number of local groups supported by technical assistance provided primarily by the Soil Conservation Service of the Agriculture Department have developed a comprehensive work plan which envisions the construction of five flood water retarding structures to be installed over a five-year period. The total installation costs are estimated to be approximately \$3.6 million.

My support for the Boxelder Creek Watershed Project, which you will be considering today, is prompted by the past floods which have originated in the Creek and have caused extensive damage to the surrounding farmland and to the town of Wellington, Colorado. For example, just last month there was severe flooding along the South Platte River in Colorado resulting in about \$50 million worth of damage and caused by high tributary flow—including that of the Cache La Poudre River into which Boxelder Creek flows. The damage which the watershed project seeks to alleviate occurs throughout a floodplain in this northern Colorado area where irrigation facilities service 100,000 acres of the state's finest agricultural land.

Mr. Chairman, I have received numerous letters encouraging your Subcommittee's approval of this project; there have been no negative comments regarding the project. Not only would the project prevent much of the flooding damage, which I have mentioned, but it would also dispense with sediment and erosion

damage. Further, the area sought to be protected consists in part of valuable farmland which on the average of every ten years is subjected to the harsh impact of excessive tributary inflow. In this time of rising food costs, one should be particularly sensitive to the fact that the watershed economy in Larimer County, in which all but 31 square miles of the watershed is located, is primarily agricultural. The County ranks third in Colorado in tons of hay harvested, sixth in tons of sugar beets and fourth in barley and dairy cattle. The average annual agricultural floodwater damage alone is estimated to be about \$65,000. But it is not only the crops themselves that need protection—the accompanying irrigation facilities, farmsteads, surrounding highways, embankments and bridges will also be benefited. Annual floodwater damages to this private and public property, other than agricultural property, amount to \$61,000.

Mr. Chairman, there are two more subjects involved in this project which I would like to bring to your attention. First, although floodwater depth is generally shallow, there is a great danger to life at many of the twenty-seven county road crossings which would be protected by this project. In 1967, four lives were lost at one of these washed out crossings. This fact alone illustrates the importance of the approval of the Boxelder Project.

Second, the impounded floodwaters would soak into the underground drainage system of Boxelder Creek. There are approximately one thousand irrigation wells that would benefit by this added water supply. Further, the water supply for the town of Wellington is from wells which become inundated in the event of flooding. This project will eliminate these unfortunate occurrences.

In terms of cost-benefit analysis, the average annual benefits resulting from the Boxelder Creek Watershed Project are estimated at \$264,280. This can be broken down between land treatment measures and structural measures. This, however, does not include the immense benefits not subject to evaluation which will accrue as a result of preventing future damages that would occur to residential and commercial developments without project floodplain zoning and would occur from the interruption of irrigation services to agricultural land resulting from breaks and sedimentation.

The Watershed Protection and Flood Control Act (Public Law 83-566; 68 Stat. 666) permits authorization for this and other similar projects. Further, the Soil Conservation Service has supported and approved the Boxelder Project insofar as their projected involvement is concerned. Thus, all that remains is authorization and appropriation by the Congress. It is my contention that tributary control is a necessary aspect of the solution to the continuing flood damage resulting in northern Colorado from the Boxelder Watershed runoff.

Mr. Chairman, I, therefore, strongly encourage your Subcommittee's approval of the project, and I am sure that these hearings will provide the needed opportunity to examine and define in detail all aspects of this long-needed project.

STATEMENT OF HON. CLIFFORD P. HANSON, U.S. SENATOR FROM THE STATE OF WYOMING

UNITED STATES SENATE,
COMMITTEE ON VETERANS' AFFAIRS,
Washington, D.C., June 6, 1973.

HON. MIKE GRAVEL,
Chairman, Subcommittee on Water Resources, Senate Public Works Committee,
4202 Dirksen Senate Office Building, Washington, D.C.

DEAR MR. CHAIRMAN: I am writing to request the Subcommittee's approval of the Boxelder Creek Flood Control Project, which was proposed several years ago under the provisions of Public Law 566, the Watershed Protection and Flood Prevention Act. This project would aid Laramie and Albany Counties in Wyoming, and Larimer and Weld Counties in adjoining Colorado.

Proponents of the project have indicated, and, indeed, the final environmental impact statement has noted, that completion of the project would bring the following benefits:

By means of installation of five floodwater-retarding structures and one grade stabilization structure, as well as conservation land treatment, this project would reduce annual flood damage in the area by 85 per cent; protect 463 homes and 18 businesses; reduce sedimentation in irrigation reservoirs by 77 per cent; reduce overbank deposition by 95 per cent; reduce flood plain erosion by 90

per cent; improve general farming and range conditions and wildlife habitat; provide increased fire protection to rangeland and forestland; contribute toward stabilizing the rural population by creating employment; and contribute to the local economy.

It is contemplated that long-term economic benefits of the project resulting from reduced flood damage would include more stable agricultural enterprises. Annual expenditures by farm operators in the area are expected to increase by an estimated \$63,000; net returns to farmers will increase by \$71,000 annually; farmers will hire annually six additional man years of labor, purchase 230 tons of additional fertilizer and 900 bushels of additional seed; and other farm practices would contribute about \$46,000 annually to the local economy.

The proposal has a favorable benefit-cost ratio of two to one. The total project cost is estimated at \$3.6 million, with \$2.2 million to be provided from federal sources and the balance from landowners.

The project enjoys the support of local governmental and community organizations in the counties involved.

I am pleased to give this project my full endorsement and respectfully urge the Subcommittee's approval of it. As well, I would appreciate it if my letter of endorsement could be included in the record of your June 8 hearings on this and other pending P.L. 566 projects.

Thank you for your consideration.

Sincerely yours,

CLIFFORD P. HANSEN,
U.S. Senate.

STATEMENT OF HON. FLOYD K. HASKELL, U.S. SENATOR FROM THE STATE OF COLORADO

First, Mr. Chairman, I would like to thank you for this opportunity to present my testimony supporting the *Box Elder Watershed Project* to this Subcommittee. My comments will be brief, and will serve mainly to summarize the major objectives of the project.

At this time I would like to submit, for the record of these proceedings, letters from the Fort Collins Soil Conservation District, the West Greeley Soil Conservation District, the Larimer County Board of Commissioners and the Colorado Soil Conservation Board. I will also submit a letter from Mr. Clarence Svedman, who is a Colorado farmer and President of the Fort Collins District. These letters will indicate the degree to which this project has the support of the people of Larimer and Weld County areas of Colorado.

The Box Elder Watershed Project will serve the above mentioned Soil Conservation Districts in Colorado plus one District in the State of Wyoming. In my research into the Soil Conservation Service, I have been gratified to learn of the fine work that is being done by the groups of volunteers that serve on the District Boards across our Nation. I have learned that the landscape now includes millions of miles of strip cropping and terraces; hundreds of eroding and flood-torn watersheds stabilized with dams; improved channels and land treatment; newly planted forests; windbreaks and wildlife plantings; and the restoration and protection of other millions of acres to productive and attractive uses—all contributing to the nation's economic, recreational and environmental needs, and all due to the work of the Soil Conservation Districts.

Specifically, the Box Elder Watershed Project is proposed for funding under Public Law 566. It will involve 160,640 acres in Larimer and Weld Counties in Colorado, and Albany and Laramie Counties in Wyoming.

The principal measures involved in this project are: soil conservation practices on farms and ranches; and structural measures consisting of 5 floodwater retarding structures and one grade stabilization structure. The total storage capacity of the structures is 13,656 acre-feet.

The total cost of the project will be \$3,640,000, of which \$2,252,000 will be P.L. 566 funds. The Box Elder project is computed to have a benefit/cost ratio of 2.0-1.

I have carefully studied the final Environmental Impact Statement which was filed last March by the Department of Agriculture, and I have found that the Project will have at least five important environmental advantages:

(1) Land treatment will improve vegetative stands and cover resulting in reduced erosion and sedimentation damages to flood plain lands. Hydrologic conditions of these lands will be improved.

(2) The combination of land treatment and structural measures will reduce erosion in the flood plain by 90 percent.

(3) The project will reduce flooding by a 100 year frequency flood from 7,182 acres to 2,300 acres, and will reduce average annual flood damages by about 85 percent.

(4) The installation of this project, especially the conservation land treatment, will improve the aesthetics of the area.

(5) The reduced sediment load in streams will improve water quality for ground water recharge.

The project will have substantial long and short term economic effects as well. Short term effects will result from the actual construction activities during the first five years. Approximately \$500,000 will be expended as local labor project costs. These funds will help to generate increased demand for local goods, and thereby increase employment levels.

In the long run, economic impacts will result from reduced annual flood damages and will thus create more stable agricultural enterprises and further development of protected flood plain residential and commercial areas. It is estimated that net returns to farmers will increase by \$71,200 annually. Farmers will hire 6 additional man years of labor, purchase 230 tons of additional fertilizer and 900 bushels of additional seed.

This has been only a brief summary of what I consider to be the substantial benefits of the Box Elder Watershed Project. I hope this, along with the other material that you will review, will help to convince you that this project is well worth our pursuit.

WEST GREELEY SOIL CONSERVATION DISTRICT,
Greeley, Colo., June 1, 1973.

Hon. FLOYD HASKELL,
New Senate Office Bldg., Room 5237,
Washington, D.C.

DEAR SIR: AS co-sponsor of the Boxelder Watershed project in Larimer County I am asking you to support it in the Public Works Committee meeting on June 8, 1973.

Our interest in the project is two-fold. First some of our District contributes to run-off and flooding in this watershed and secondly the drainage crosses one of the main immigration supply canals of the northern part of our District which can be seriously effected by erosion and sediment collection in time of flooding.

Probably the most important reason for us to support the project is from the experiences we have had in the completed Coal Bank Watershed in our District. The project consists of a flood prevention dam and two grade stabilization structures along with the needed land treatment measures of 109 farmers above the structures. Prior to the construction of the project there had been frequent and devastating flooding along the watershed. Since the finish of construction in 1963 the project has functioned 8-10 times with all crop, public roads, irrigation canals and other private losses completely eliminated. We have had many words of praise from residents effected by the watershed run-off.

From our experience in the Coal Bank Watershed we are positive that the Boxelder Watershed will give flood relief to land users and the public in that area. In the past flooding of the Boxelder has caused serious loss of property, both private and public, and even in human life. The damage done in past floods has caused severe sediment production resulting in serious sedimentation to major irrigation systems and irrigation reservoirs. This has decreased storage capacity of reservoirs and the interruption of vital irrigation delivery systems which serve the croplands of the area.

I am sure the Fort Collins District has supplied you the cost benefit ratios for the project which is very important but the loss of even one human life is immeasurable in monetary value.

The people of Larimer and Weld Counties have worked for many years to bring this project to construction stage and our Board certainly urges the immediate funding so construction can proceed.

Again we ask for your support in the Public Works Committee of the United States Senate and would greatly appreciate your advising us of the outcome.

Sincerely yours,

CARL FELTE,
President, West Greeley Soil Conservation District.

WYOMING-UTAH-NEVADA CHAPTER,
OUTDOORS UNLIMITED, INC.,
Ogden, Utah, June 4, 1973.

HON. FLOYD K. HASKELL,
*Chairman, Subcommittee on Public Lands, Committee on Interior and Insular
Affairs, United States Senate, Washington, D.C.*

DEAR SENATOR HASKELL: The Wyoming-Utah-Nevada Chapter of Outdoors Unlimited wishes that the following statement be included in the record following the June 4 meeting of your committee at Casper, Wyoming:

The WUN Chapter supports a supervised predator control program that will protect the production of domestic livestock and wild game meat from the public lands. We also support an intensification of research on the development of more effective control methods.

The report made to your committee by Mr. T. Ray Theurer, representing the Utah Farm Bureau, outlines statistics and the results of studies that support a sound predator control program. We consider that statement an excellent presentation of pertinent facts.

Very sincerely yours,

JOEL L. FRYKMAN,
President.

COLORADO WATER CONSERVATION BOARD,
Denver, Colo., May 31, 1973.

Re Boxelder Creek Watershed Project

HON. FLOYD K. HASKELL,
*New Senate Office Building,
Washington, D.C.*

DEAR SENATOR HASKELL: There is now pending before the Senate Public Works Subcommittee the approval of an appropriation in the amount of \$2,251,500 for construction of the Boxelder Creek Watershed project under the authority of Public Law 566. This is a project which has been designed by the Soil Conservation Service to reduce erosion and for the prevention of floods in the Boxelder Creek drainage which traverses Larimer and Weld counties in Colorado and Albany and Laramie counties in Wyoming. The approved plan calls for the construction of five flood water retarding structures with the total capacity of about 11,500 acre-feet. The total cost of the project is estimated at about \$3,640,000. Local sponsors and existing programs will provide the costs over and above the \$2,251,500 sought by congressional appropriation.

This board strongly endorses the construction of the Boxelder Creek Watershed project. In the past, floods originating on Boxelder Creek have caused considerable damages to farmlands in both Colorado and Wyoming, and have caused damages to the town of Wellington in Colorado. The recent severe flooding along the South Platte River in Colorado was caused by high tributary inflow. Damages in the South Platte basin here in Colorado have already exceeded \$50,000,000 this year alone and are continuing. Tributary control is part of the solution to these continuing flood damages. We therefore respectfully urge your support of the requested appropriation for the construction of the Boxelder Creek Watershed project.

Respectfully yours,

FELIX L. SPARKS,
Director.

FORT COLLINS SOIL CONSERVATION DISTRICT,
Ft. Collins, Colo., June 1, 1973.

HON. FLOYD HASKELL,
*New Senate Office Building, Room 5237,
Washington, D.C.*

DEAR SENATOR HASKELL: The members of the Fort Collins Soil Conservation District have been aware of the need for flood control on the Boxelder Drainage long before the enactment of the Watershed Protection and Flood Control Act PL-566. Following the organization of the District in 1945 one of the top priority goals was flood control on the Boxelder.

Our efforts have finally been rewarded. The Boxelder Project submitted under PL-566 has been approved by the Soil Conservation Service and has been for-

warded to the Congressional Public Works Committee. This project has a cost ratio benefit of 2:1.

Our District owns and operates conservation equipment for the benefit of our cooperators. Consequently there has been more than the average amount of conservation work on the land completed in the Boxelder Drainage. Most of this work, such as land leveling, lining of concrete ditches, terracing and drainage was cost shared by an agency of the United States Department of Agriculture. Without the Boxelder Flood Control Project, a great amount of this conservation work could be severely damaged.

You are aware that the members of the District Board of Supervisors serve without compensation for their duties. All of the Board Members have worked diligently in obtaining the required rights of way and easements. Through the support of these men many of the easements and rights of way were secured without cost. Although the funds of the District are limited, the Board has agreed to advance the funds required for other easements.

There are over one thousand cooperators in our District and it is encouraging that we have their support even though the majority will not be directly benefited by the project.

As the Soil Conservation Service, United States Department of Agriculture will submit technical and engineering information as to the benefits that will be derived by the project we will not report on that aspect of the project.

Our Board of Supervisors has developed plans to actively assist in the administration of the construction work on the project so that the work will be carried out in the most efficient and economical manner possible.

We have been informed that the Public Works Committee of the Senate will be holding hearings on the Boxelder Project in the near future. Your attendance at the hearing and your support will be deeply appreciated.

Sincerely,

ROY E. SWANSON,
President.

CLARENCE SVEDMAN,
Board Secretary, Fort Collins Soil Conservation District.

THE NORTH POUDE IRIGATION COMPANY,
Wellington, Colo., June 1, 1973.

HON. FLOYD HASKELL,
*New Senate Office Building,
Washington, D.C.*

DEAR SENATOR HASKELL: It has been brought to the attention of the North Poudre Irrigation Company Board that the Boxelder Watershed Project Work Plan will come before the Public Works Committee for approval on June 8, 1973.

The North Poudre Irrigation Company is a mutual irrigation company. Its stockholders are the owners of the irrigated lands under its irrigation system. The area irrigated is approximately 35,000 acres. The number of stockholders is approximately 400. The average size of farms is around 80 acres.

The North Poudre Main Ditch is the highest ditch diverting from the Poudre River and has a greater flood problem than other ditches. The Main Ditch is 35 miles long and intersects five normally dry creeks which in flood seasons carry torrential flows varying from 100 to 11,000 second feet. These floods originate on an area of 175.5 square miles of rough untimbered, uncultivated slopes, with poor vegetative cover, and converge in the Boxelder Creek drainage, which is all irrigated, highly developed, valuable land.

These floods cause extensive damage in many ways, some of which are:

(a) Silting of ditches, decreasing carrying capacity and increasing maintenance costs. The average annual flood expense of the North Poudre Irrigation Company over a 15 year period is \$10,000 per year.

(b) The flood waters carry large quantities of silt and sand. This silt and sand deposited in the storage reservoirs causes the loss of valuable storage. Examples are listed below:

[In acre-feet]

	Original storage	1967 storage
Clark Lake	3,000	871
Boxelder No. 1	570	0
North Poudre No. 3	4,000	3,000
Stuckel	320	0

The cost of replacing this much needed storage would be approximately \$5,000,000.00.

(c) Erosion of farm lands and loss of crops adjacent to the flood channel had been extensive.

The Boxelder Watershed Project when completed will eliminate these problems completely.

The North Poudre Irrigation Company has joined with the Fort Collins Soil Conservation District and the Larimer County Commissioners in sponsoring the Boxelder Watershed Project.

In addition to protecting the many irrigation systems, the protection of new development and the protection of the area for future development makes the project more feasible and necessary.

Sincerely,

HARLAN SEAWORTH,
President,
North Poudre Irrigation Company.

COLORADO ASSOCIATION OF SOIL CONSERVATION DISTRICTS,
May 31, 1973.

Hon. FLOYD HASKELL,
U.S. Senate, New Senate Office Building,
Washington, D.C.
Attn: Tom Buckley

DEAR SENATOR HASKELL: On June 8, 1973 the House Sub-Committee on Public Works is scheduled to take action on the proposed Boxelder Creek Watershed Project in Larimer and Weld Counties, Colorado and Albany and Laramie Counties, Wyoming.

The Colorado Association of Soil Conservation Districts strongly support operations approval for the Boxelder Project.

I am sure you are aware of the critical need for the protection from flooding to communities and agricultural lands that this project will afford. The Association therefore solicits your assistance in expediting favorable committee action on the Boxelder Project.

Your efforts will be greatly appreciated.

Sincerely,

MILTON MEKELBURG,
President.

STATEMENT OF CLARENCE SVEDMAN

I am Clarence Svedman here to represent the sponsors of the Boxelder Watershed.

DESCRIPTION, SIZE AND LOCATION

The Boxelder Creek Watershed covers an area of 251 square miles or 160,640 acres in parts of Larimer and Weld Counties, Colorado and Albany and Laramie Counties, Wyoming. The watershed is about 32 miles in length and averages about 8 miles in width. It consists of Boxelder Creek heading in the north-western part of the watershed being joined on the east by several southerly flowing tributaries; Sand Creek, Rawhide Creek, Coal Creek and Indian Creek, forming a common alluvial flood plain which continues south to its confluence with the Cache La Poudre River about 3 miles southeast of Fort Collins, Colorado. The Cache La Poudre is tributary to the South Platte River in north central Colorado. About 19 percent is irrigated cropland, 48 percent is grassland, 11 percent is brushland, 8 percent is forest land, 8 percent is non-irrigated cropland, 1 percent is wildlife areas and 5 percent is miscellaneous. About 92 percent of the watershed is private land and about 8 percent is State land. Land values per acre are \$800 for irrigated cropland, \$100 for non-irrigated cropland, \$50 for rangeland and \$1,500 for agricultural land converted to suburban development.

SPONSORING ORGANIZATIONS

This work plan was prepared by the Fort Collins and West Greeley Soil Conservation Districts in Colorado; Frontier and Laramie Rivers Soil and Water Conservation Districts in Wyoming; Larimer County Board of Commissioners,

Colorado; North Poudre Irrigation Company, Colorado and Colorado State Soil Conservation Board. Technical assistance was provided by the United States Department of Agriculture through the Soil Conservation Service and the U.S. Forest Service, Colorado Water Conservation Board, Colorado Division of Game, Fish and Parks, Colorado State Forest Service, Wyoming State Forestry Division, and the Wyoming State Soil and Water Conservation Commission.

Other agencies who assisted in preparation of or furnished technical material for the work plan include:

Federal.—Geological Survey, Weather Bureau, Corps of Engineer, Agricultural Stabilization and Conservation Service, Agricultural Research Service, Bureau of Sport Fisheries and Wildlife, and Farmers Home Administration.

State.—Colorado and Wyoming Boards of Land Commissioners, Colorado Division of Water Resources, and Colorado Highway Department.

Local.—Larimer County Planning Commission, Poudre Valley Rural Electrification Association, and Wellington Town Council.

WATERSHED PROBLEMS

Major problems are floodwater, sediment and erosion damages that result from runoff produced by high rainfall intensity and short duration summer thunderstorms.

Damage occurs throughout the flood plain to agricultural land and crops, irrigation facilities servicing 100,000 acres, farmsteads, highways, embankments and bridges, to parts of the residential section in the town of Wellington and improvements in the flood plain.

PROJECT OBJECTIVES

The project objectives are to reduce damages to agricultural land and crops, irrigation facilities serving 100,000 acres, farmsteads, highways, embankments and bridges from 10-year frequency storms or larger and to the town of Wellington from the 100-year frequency storms. Consideration is to be given to measures that will preserve, enhance or protect watershed values and natural beauty and prevent environmental pollution.

FLOODWATER DAMAGE

Extensive floodwater damage occurs throughout the flood plain to agricultural land, crops, irrigation systems serving 100,000 acres, State and County roads, and residential and commercial properties. It is difficult to determine the amount of other related and associated damages occurring as a result of direct damages. An estimate of these indirect damages will be made. As a result of reduction of the direct project damages, secondary benefits will occur.

FREQUENCY OF FLOODING

Damaging floods have occurred on Boxelder Creek on an average of once every year to once every three years, according to local records and statements from local land owners and tenants covering 65 years. In this period of record, 24 damaging storms have occurred. These floods occurred throughout the entire watershed. In addition to the major events quite a few localized storms occur over the irrigated land causing floodwater, sediment, and erosion damages that are largely unpreventable.

FLOODS OF RECORD

Floods occurred in 1969, 1967, 1965, 1963, 1961, 1947, 1937, 1933, 1930, 1922, 1909 and 1904. Generally damages on agricultural land begin to occur about the 2-year frequency or 50 percent chance storm and damages to rural and land property begin with the 5-year frequency or 20 percent chance storm.

Information obtained in August 1969 from land owners in the flood plain for the years 1959 through 1969 indicate that flood damage occurs somewhere in the watershed each year. Estimated damage from these storms follow:

August 1, 1961, one 50 to 100-year frequency storm in the vicinity of Wellington, Colorado. Forty basements were flooded in addition to agricultural and non-agricultural crops and property, with damages estimated at \$76,150.

June 1963 one 25 to 50-year frequency storm over a very small area. Estimated damages \$7,200.

June 14-17, 1965, one 2-year, two 1-year and one 25-year frequency storms with some overlapping of areas. Estimated damage \$96,000.

May 30 and June 4, 1967, two 25-year frequency storms—overlapping over a relatively small area in the vicinity of Wellington, Colorado. Estimated damages of \$46,100 with four lives lost at a county road bridge washout.

August 4, 1969, a 1-year frequency storm occurring over a small area. Damages are estimated at \$4,000.

FLOOD DAMAGE PROTECTION

The 5 single purpose floodwater retarding structures have combined capacities of 13,657 acre feet for flood water retention and 100 year sediment retention. Multiple purpose uses for irrigation storage, and recreation development were studied but found to be infeasible because of geologic characteristics of the available structure sites and the high cost needed to purchase irrigation water rights for water storage for these purposes.

Flood water depth over most of the flood plain currents tends to be wide and shallow. The principal hazard to life is at stream crossings where bridge and culvert washouts may occur. Four lives were lost at a washed-out county road crossing in the 1967 flood.

The domestic well system for Wellington, Colorado is subject to flooding at the 10-year frequency storm runoff and the sewer system is subject to damage from the 25-year frequency storm runoff. There are 463 existing and project residences and 18 businesses in Wellington and east of Fort Collins that will be protected from the 100-year storm event.

The project will reduce flooding from the 100-year flood event from 7,182 acres to 2,300 acres; from the 10-year flood from 4,645 acres to 1,160 acres and from the 2-year storm from 2,009 acres to 290 acres. Average annual flood damages will be reduced about 85 percent with erosion reduced about 90 percent and sediment about 95 percent. Sediment entering irrigation reservoirs will be reduced by 77 percent.

The project will have definite impact on the economy of the area. Short term effects resulting from the employment of local labor will generate about 65 years of employment valued at \$500,000. Long term effects from increased expenditures of farmers are estimated at \$63,400 annually which in turn will generate an additional \$45,830 of business annually to the local agricultural services sector. The average annual benefits of \$252,330 and the average annual costs of \$127,145 provides a benefit cost ratio of 1.98 to 1.00. If the project is not installed agriculture would continue to absorb annual flood losses of \$150,430 and private and public property owners will lose \$92,120 annually. Society would continue to endure hazards to life and health and the environmental values could be allowed to continue to deteriorate. The net annual benefits amounting to \$127,910 would not be realized.

Senator GRAVEL. Next is the Clarks Fork-Bullocks Creek, North and South Carolina.

We will now hear from Senator Thurmond.

CLARKS FORK-BULLOCKS CREEK, NORTH AND SOUTH CAROLINA

STATEMENT OF HON. STROM THURMOND, U.S. SENATOR FROM THE STATE OF SOUTH CAROLINA

Senator THURMOND. Thank you very much, Mr. Chairman.

Mr. Chairman and members of this distinguished committee, it is a pleasure for me to appear before you today to give my support for the Clarks Fork-Bullock Creek watershed project in York County, S.C.

For many years I have been personally aware of the flooding and erosion problems in that area of York County and aware of the desires of the people living there to do something about the problems.

My interest in the small watershed protection and flood prevention program extends back to the 1930's. We are fortunate to have a pilot project in the Twelve Mile Creek watershed in Pickens, S.C., and this

project clearly demonstrates what can be done to control floods and reduce erosion damages when local people work together in partnership with Federal and State agencies.

After observing the effectiveness of the Twelve Mile Creek project, local interest in flood protection and erosion control began to develop in many watersheds throughout the State. To date, 10 Public Law 566 projects have been completed and 21 additional projects are in various stages of construction. We have 12 projects in the planning stage. The sponsors of these projects, with the help of the Soil Conservation Service and other Federal and State agencies, have installed 57 flood-water-retarding dams and improved over a hundred miles of stream channel in addition to installing needed erosion control measures on thousands of acres.

These 57 lakes are providing water for many beneficial uses in addition to flood protection—for agricultural uses, rural fire protection, fish and wildlife, and recreation. Six of the 57 lakes have additional storage for rural and city water supply, and 1 provides 110 surface acres for fishing and other public recreation opportunity.

These new water supplies created by watershed projects have enabled rural communities to attract new industries and provide needed jobs. The watershed projects thereby help to slow the trend toward population movement to the big cities. This is what I call rural development at the grassroots level.

Another important part of any rural development effort must be environmental improvement. Watershed projects perform this function very well through reducing flooding hazards, stopping sediment from filling streams and lakes, and improving land-use patterns.

I have been personally involved in many of South Carolina's watershed projects and have had an opportunity to visit and talk with the people who live in them. It is a heart-warming experience to hear the people tell of the problems they had and how the watershed program and SCS assistance have helped them.

The people of Clarks Fork-Bullocks Creek have worked hard since the early 1960's to develop a plan for their watershed. With the help of the SCS and many other Federal and State agencies, they have come up with what I believe is a sound plan for treating the watershed.

The plan calls for treatment of approximately 18,000 acres to prevent erosion and rapid water runoff. Three hundred and sixty acres of critical area treatment are planned, along with six floodwater-retarding dams that will reduce flooding and provide almost 394 acres of lake fisheries to accommodate an estimated 29,550 visitor-days annually. The plan also includes a 6-acre lake that will accommodate an estimated 2,030 visitor-days of recreation annually. The Kings Mountain State Park, of which the lake will be a part, is presently unable to meet recreational demands. In all, the watershed project will return \$2.40 in benefits for each dollar of project cost.

Mr. Chairman, the project has strong local support as evidenced by the referendum to create the Clarks Fork-Bullocks Creek Watershed Conservation District. A total of 147 landowners voted for the district, and only three against. The project has strong support as well from the South Carolina Department of Parks, Recreation, and Tourism and from the Soil Conservation Service.

I strongly believe that at a time when America faces possible food shortages, environmental decline, and a great imbalance in living space, this watershed project is vitally needed. It can help eliminate resource problems, strengthen agriculture by protecting the fertile bottomlands, help restore water quality and improve recreational opportunities. In short, it can help build the kind of South Carolina and the kind of America that we want.

Thank you.

Senator GRAVEL. Senator, we are very happy to have you here and to receive your added testimony which adds great strength to the project.

Senator THURMOND. Thank you very much.

Senator GRAVEL. Our next witness will be Joseph S. Haugh, Soil Conservation Service.

STATEMENT OF JOSEPH S. HAUGH, SOIL CONSERVATION SERVICE

Mr. HAUGH. Mr. Chairman and members of the committee, the Clarks Fork-Bullocks Creek watershed is located in north-central South Carolina in York County, with about 2 percent of the area extending into Cleveland County, N.C. The watershed is 30 miles southwest of Charlotte, N.C., and 3 miles west of York, the county seat of York County. The watershed consists of 77,500 acres of rolling to steep topography in the piedmont area. Drainage is primarily in a southerly direction. Land use consists of 11 percent cropland, 20 percent grassland, 65 percent woodland, and 4 percent miscellaneous.

Portions of Kings Mountain State Park and Kings Mountain National Military Park lie in the northern portion of the watershed. This area is the site of the Battle of Kings Mountain, which is regarded by historians as the turning point of the Revolutionary War. The State park is heavily used for swimming, picknicking, camping, and other recreational activities.

The economy is primarily dependent upon agriculture. Principal farming enterprises are livestock, grain, soybeans, peaches, poultry, and forest products. The 340 farms in the watershed average 200 acres in size. All of the land is in private ownership except for 7,000 acres in the State and national parks.

A major problem in the watershed is flood damage to 3,355 acres of fertile flood-plain land. Flood damage has caused increased production costs, hampered good management practices, and prevented intensive agricultural use of some of the flood-plain land. Floods also damage roads, bridges, and other improvements. Infertile sediment deposition on the flood plain adds to the problem. About 360 acres of critically eroding upland need treatment. Additional recreational facilities are needed at Kings Mountain State Park to relieve present overcrowding and meet future demands.

Measures planned to help solve these problems include land treatment measures to reduce erosion and sediment. Structural measures consist of six floodwater retarding structures and one multiple-purpose structure for flood prevention and recreation. The multiple-purpose structure will impound a 650-acre lake. The associated recreation development area will become a part of and be managed with the existing Kings Mountain State Park.

The average annual flood damages will be reduced by about 87 percent. These benefits will accrue to about 100 rural families allowing them to improve their standard of living. In addition, the sediment yield at the watershed outlet will be reduced by 77 percent. The multiple-purpose structure will attract an estimated 230,000 recreation visits each year.

The total project installation cost is estimated to be \$4.1 million, of which Public Law 566 funds will provide \$2.2 million. The average annual benefits are \$535,000, and the ratio of benefits to cost is 2.4 to 1.

This concludes my presentation, Mr. Chairman. I will be happy to try to answer any questions you or other members of the committee may have.

Senator GRAVEL. Thank you very much. I think it is self-explanatory, and your testimony says it all. Thank you.

Mr. HAUGH. Thank you.

[A data sheet on the Clarks Fork-Bullocks Creek project, and a statement from Senator Ernest F. Hollings, follow:]

CLARKS-FORK BULLOCKS CREEK

Size and Location.—77,500 acres in York County, South Carolina and Cleveland County, North Carolina.

Sponsors.—York Soil and Water Conservation District, Clarks Fork-Bullocks Creek Watershed Conservation District, and the South Carolina Department of Parks, Recreation and Tourism.

Purposes.—Watershed Protection, Flood Prevention and Recreation.

Principal Measures.—Soil conservation practices on farms and woodlands; and structural measures consisting of 6 floodwater retarding structures and one multiple-purpose reservoir with storage capacity for recreation and recreation facilities. The total storage capacity is 35,120 acre-feet.

ANNUAL BENEFITS

	Dollars	Percent
To agricultural acreage (land and crops).....	87,600	16
To agricultural improvements.....	11,200	2
To nonagricultural improvements.....	3,300	1
Indirect.....	5,600	1
Recreation.....	345,000	64
Incidental.....	26,300	5
Secondary.....	56,000	11
Total.....	535,000	100

PROJECT COSTS

	Public Law 566 funds		Other funds		Total dollars
	Dollars	Percent	Dollars ¹	Percent	
Land treatment measures.....	164,000	22	566,000	78	730,000
Structural measures:					
Flood prevention.....	1,141,000	77	341,000	23	1,482,000
Recreation.....	656,000	41	930,000	59	1,586,000
Project administration.....	263,000	84	50,000	16	313,000
Total.....	2,224,000	51	1,887,000	46	4,111,000

¹ For land treatment measures this is primarily the cost of applying land treatment measures by landowners. Cost-sharing from funds appropriated for the rural environmental assistance program may be available if included in the county program. For structural measures this is the cost of land rights and project administration. It may also include costs for construction or engineering services for other than flood prevention.

² The value of measures already installed \$1,100,000 increases this to 57 percent.

Note: Benefit-cost ratio, 2.4 to 1.

STATEMENT OF HON. ERNEST F. HOLLINGS, U.S. SENATOR FROM THE STATE OF SOUTH CAROLINA

Mr. Chairman: I greatly appreciate this opportunity to testify in behalf of the Clarks Fork-Bullocks Creek Watershed project being considered today.

The watershed is located in north-central South Carolina in York County, with about two per cent of the area extending into Cleveland County, North Carolina. The total watershed area is 77,500 acres. This includes 1,880 acres owned by the U.S. Department of Interior in the Kings Mountain National Military Park and 5,070 acres owned by the South Carolina Department of Parks, Recreation and Tourism in the Kings Mountain State Park.

The population of the watershed area is about 4000, mainly rural. Agriculture is the main source of income and most of the 340 farms are low income family farms.

The need for this project grows each year. At the present time, flood damage occurs to 3,355 acres of flood plain land. Some areas flood as often as five times a year and the estimated total average annual flooding damage is \$50,400. Erosion and sediment damage are severe in many areas.

Kings Mountain State Park is the main recreation facility in the area but the present facilities are overcrowded and additional recreational facilities are badly needed.

The proposed project will take care of many of the problems I have outlined and will give the economy of the area a significant boost. The project will reduce erosion and sediment production by about 77 per cent. The average acres flooded annually, including repetitive flooding, will be reduced from 6,900 to 1,150. The annual flood damages will be reduced from \$79,400 to \$10,000. The economic benefits would play a major role in improving the standard of living of about 100 families.

The project provides for a 650 acre recreation lake and recreation facilities for picnicking, camping, boating, fishing and hiking. This will draw people from throughout the region, bringing more money into the area and more visitors to the State and National Parks.

I feel this project gives us an excellent opportunity to increase employment, enhance agricultural production, preserve and protect natural resources and provide recreational facilities. It is not often that we have all of these factors on the same side of the scale. I urge the Subcommittee to act favorably on this project.

Senator GRAVEL. Next is the east fork of Whitewater River, Ind. and Ohio. Our witness is Mr. James W. Bean, Soil Conservation Service.

EAST FORK OF WHITEWATER RIVER, INDIANA AND OHIO

STATEMENT OF JAMES W. BEAN, SOIL CONSERVATION SERVICE

Mr. BEAN. The east fork of Whitewater River watershed is an area of about 246,000 acres, of which about 20 percent are in Darke and Preble Counties, Ohio, and the remainder divided among five counties in east-central Indiana. The principal watercourse originates in Ohio and flows southwest through the city of Richmond to join the west fork of Whitewater River at Brookville, Ind. Total population of the watershed is about 69,000, of which 44,000 are in the city of Richmond. There are three other urban centers of from 900 to 1,800 population, and about 19,000 rural residents.

The topography features glaciated uplands, glaciated river terraces or outwash plains, and recent alluvial plains. Average annual precipitation is about 38 inches, well distributed throughout the year. The current land use is about 62-percent cropland, 12-percent grassland, 13-percent forest land, and 13-percent other or miscellaneous. Principal

crops grown are corn, soybeans, oats, wheat, and hay. There are about 1,200 farms in the watershed.

Flood damages affect 6,230 acres of land, some two to three times each year. Floodwater damages both farming and nonagricultural values in the flood plain. Sediment deposition is filling up watershed reservoirs at a rate of nearly 150 acre-feet per year, displacing the equivalent of 47 million gallons of water that could be put to beneficial use. The average annual floodwater and sediment damage is estimated at more than \$73,000.

Poor drainage is a problem on over 600 acres of farmland in the Ohio portion of the watershed. Stream water quality and the need for advanced waste treatment facilities and/or low-flow augmentation are becoming problems downstream from the city of Richmond. Projections of the need for water supplies for the city of Richmond indicate a demand 4.5 times the present rate by the year 2020. Regional studies of need for recreational facilities show a rapidly rising demand within the life of the proposed project because the area is within the zone of influence of Dayton and Cincinnati on the east and Indianapolis on the west.

The proposed project is planned to relieve these problems by a combination of land treatment and structural measures. The land treatment measures to be installed through accelerated information, education, and technical assistance throughout the watershed, are those which are effective in reducing runoff and erosion or which otherwise aid in achieving project objectives.

The structural measures consist of six reservoir-type structures, about 20 miles of flood prevention and drainage channels, and about 10 miles of channel recreation development. Three of the reservoir structures will have storage capacity for municipal and industrial water supply as well as floodwater detention, and three others will have storage capacity for recreation with associated recreational facilities. Of the total capacity of 24,6000 acre-feet, 9,500 is for floodwater and sediment, 8,100 for recreation, and 7,000 for water supply.

The project will provide control for floodwater runoff from an area of about 71 square miles above structures with flood-detention capacity. The water supply capacity will triple that presently available from existing reservoirs and enable serving an estimated 85,000 people by 1990. The recreational facilities are expected to provide over a quarter million annual visitations. An area of about 600 acres in Ohio will be provided adequate drainage as well as flood protection.

The total project installation cost is estimated at about \$10.5 million, of which \$3.2 million is Public Law 566 funds and \$7.3 million is other funds.

With total benefits of \$607,700 and total annual costs of \$439,200, the estimated benefit-cost ratio is 1.4 to 1.

That concludes my testimony, Mr. Chairman.

Senator GRAVEL. Thank you very much. I think it is self-explanatory also.

Mr. BEAN. Thank you.

[A data sheet and additional statements relating to this project follow:]

EAST FORK OF WHITEWATER RIVER WATERSHED

Size and Location.—246,000 acres in Darke and Preble Counties, Ohio and Randolph, Wayne, Union, Fayette and Franklin Counties, Indiana.

Sponsors.—Wayne, Union, Randolph, Fayette and Franklin Counties Soil and Water Conservation Districts and Whitewater Valley Conservancy District state of Indiana; Darke and Preble County Soil and Water Conservation Districts; Darke and Preble Counties Commissioners; and the Jefferson Township Park District state of Ohio.

Purposes.—Watershed Protection, Flood Prevention, Drainage, Municipal Water Supply and Recreation.

Principal Measures.—Soil conservation practices on farms and woodlands; and structural measures consisting of one floodwater retarding structure, 5 multiple purpose reservoirs (2 with municipal water supply and 3 with recreation storage and facilities), about 19.6 miles of channel improvement, and 1 channel recreation development. The total storage capacity is 24,589 acre-feet.

ANNUAL BENEFITS

	Amount	Percent
To agricultural acreage (land and crops).....	\$19,200	3
To nonagricultural improvements.....	13,100	2
Indirect.....	1,800	
Recreation.....	429,000	71
Municipal water supply.....	70,000	11
Incidental.....	9,300	2
Secondary.....	65,300	11
Total.....	607,700	100

PROJECT COSTS

	Public Law 566 funds		Other funds		Total dollars
	Dollars	Percent	Dollars	Percent ¹	
Land treatment.....	836,000	20	3,319,000	80	4,155,000
Structural measures:					
Flood prevention.....	463,000	67	227,000	33	690,000
Drainage.....	5,000	45	6,000	55	11,000
Recreation.....	1,263,000	35	2,286,000	65	3,559,000
M. & I. water supply.....	25,000	20	1,279,000	98	1,304,000
Project administration.....	619,000	80	156,000	20	775,000
Total.....	3,211,000	31	7,283,000	* 69	10,494,000

¹ For land treatment measures this is primarily the cost of applying land treatment measures by landowners. Cost-sharing from funds appropriated for the rural environmental assistance program may be available if included in the county program. For structural measures this is the cost of land rights and project administration. It may also include costs for construction or engineering services for purposes other than flood prevention.

² The value of measures already installed (\$3,001,000) increases this to 76 percent.

Note: Benefit-cost ratio—1.4 to 1.

STATEMENT OF HON. VANCE HARTKE, U.S. SENATOR FROM THE STATE OF INDIANA

UNITED STATES SENATE,
COMMITTEE ON VETERANS' AFFAIRS,
Washington, D.C., June 18, 1973.

Hon. MIKE GRAVEL,
Chairman, Water Resources Subcommittee, Public Works Committee, U.S. Senate,
Washington, D.C.

DEAR MR. CHAIRMAN: I have reviewed the proposed Work Plan for the East Fork of the Whitewater River Watershed and would like to share with you and the members of your Committee my thoughts thereon.

As Mr. Howard of the Whitewater Valley Conservancy District recently indicated in his statement before the Committee, it has now been three long years since local sponsoring organizations in the Watershed first formulated their Work Plan and submitted it to relevant state and federal agencies for appropri-

ate review and comment. After encountering a number of harrowing and often inexplicable delays, the Work Plan has at last cleared its way through this complicated administrative review process and now awaits final Congressional approval.

For those unfamiliar with it, the watershed project in question is located in a seven-county area of east-central Indiana and southwestern Ohio. Altogether, some 246,000 acres of highly productive agricultural land are drained by the watershed.

Among the several major problems facing residents of the watershed are: the woeful lack of adequate recreational opportunity; the need for additional municipal and industrial water supply; the recurrent threat of flooding, particularly in bottomland areas; and, the erosion and/or sedimentation of floodplains, channels, roads, bridges and existing reservoirs.

It is the intention of project sponsors to seek resolution of these problems through the combined application of land treatment and structural measures. Specifically, the land treatment portion of the Work Plan calls for the construction of 47 small pools or reservoirs throughout the Watershed during the next eight years. The purpose of these structures would be to control water, erosion and sedimentation and responsibility for their installation will be assumed by individual landowners with technical assistance being provided by the Soil Conservation Service as well as state and federal Forestry officials. Total cost for the land treatment is estimated to be \$4.1 million, of which \$835,000 would be funded under authority of Public Law 566.

As for the Work Plan's proposed structural measures, they include five multi-purpose impoundments, one major flood control structure, 10 miles of stream corridor development for public recreation, and nearly 20 miles of multiple purpose channel improvement. Estimated cost of these structures is \$6.1 million, of which approximately \$2.3 million would be assumed under PL-566. As in the case of the land treatment measures, the installation period for these major structural facilities is eight years.

Of particular concern in an undertaking of this magnitude are the anticipated economic benefits which would accrue from implementation of project measures. In this regard, the East Fork Work Plan appears to be well justified and hence deserving of public financial support. While annual costs on the project would slightly exceed \$400,000, primary benefits, in terms of flood control, drainage, recreation, and water supply, would surpass \$600,000 each year, thus giving the project an overall benefit to cost ratio of 1.5:1.

It is for these reasons, Mr. Chairman, that I lend my voice in strong support of the East Fork of Whitewater River Watershed Project and urge that it be given favorable consideration by your Committee. In my judgment, continued delay in securing final approval of the Plan will only result in an unnecessary waste of both local and federal money. In addition, further delay could seriously undermine local support for this program by placing sponsors of the Watershed in the unenviable position of asking for a fourth consecutive year of tax levy without any visible sign of accomplishment to their credit. The swift action of this Committee will help to avert these dangerous possibilities and thereby assure the success of this much needed project.

Sincerely,

VANCE HARTKE.

STATEMENT OF LEE HAMILTON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF INDIANA

CONGRESS OF THE UNITED STATES,
HOUSE OF REPRESENTATIVES,
Washington, D.C., June 4, 1973.

HON. JENNINGS RANDOLPH,
Chairman, Senate Public Works Committee,
Dirksen Building, Washington, D.C.

DEAR SENATOR RANDOLPH: I am writing in regard to the East Fork of the Whitewater River Watershed Project, located in Wayne, Union, Fayette, Franklin and Randolph Counties in Indiana and Darke and Preble Counties in Ohio.

I have been advised by the Office of Management and Budget that their review of the Project has been completed and that the Project has been transmitted to your Committee for approval.

I want to notify you of my strong support for this Project and to urge your favorable consideration of the Work Plan in order that the Project be activated by the Soil Conservation Service.

Thank you very much for any assistance you may be able to provide in this matter.

Sincerely,

LEE H. HAMILTON, M.C.

Senator GRAVEL. The next witness is Mr. Floyd Howard.
Mr. Howard.

STATEMENT OF FLOYD E. HOWARD, EXECUTIVE SECRETARY, WHITEWATER VALLEY CONSERVANCY DISTRICT, ACCOMPANIED BY T. J. WRIGHT, CHAIRMAN, BOARD OF DIRECTORS, AND CHAIRMAN OF THE BOARD, WAYNE DAIRY MANUFACTURING COMPANIES, RICHMOND, IND.; DON McBRIDE, SECRETARY, BOARD OF DIRECTORS, AND SUPERINTENDENT, RICHMOND PARK DEPARTMENT, RICHMOND, IND.; AND ROBERT WHITE, MEMBER, BOARD OF DIRECTORS, AND FARMER IN EAST CENTRAL INDIANA

Mr. HOWARD. Mr. Chairman, I appreciate very much the opportunity to appear before your committee in support of this Whitewater River project. I have a prepared statement which I have given to the staff and submit it for entry in the record.

[The statement referred to appears at p. 73.]

Mr. HOWARD. I have with me three gentlemen who are local citizens who are members of the board of directors of the Whitewater Valley Conservancy District, one of the local sponsors of this project. They have taken time out of their busy schedules and have come here at their own expense which to me typifies the kind of support that this project has in east central Indiana and west central Ohio.

With me I have Mr. Don McBride who is, among other things, the director of the Richmond Park Department and secretary of our board of directors; Mr. T. J. Wright, chairman of our board of directors and also chairman of the board of the Wayne Dairy Manufacturing Companies in Richmond, Ind.; and Mr. Robert White, a member of our board of directors who is a farmer in east central Indiana, and need I say he understands the problems of our watershed because he is out there on the land and he sees what happens when it rains. He lives near the highest point in the State of Indiana, and between that point and Brookville, which is the lower end of this watershed, is half of the fall between there and the Gulf of Mexico.

So we have land that has not only very good agricultural productivity capability but it is also erodible, some is steep. We have torrential rains and therefore the erosion control problem is one of the major problems that we see in our watershed.

Of course, if we control the water, keep it clean, keep it available for public, industrial, and municipal use, this is important. In our watershed we have contributed to the total good of our Nation. So I think that we have a well-balanced project here that well deserves the support of your committee.

I have also submitted to your staff copies of a little brochure that we have prepared principally to show you the broad public support

that is present in Whitewater Valley for erosion control and water resource conservation. It shows that we worked for many years and many people contributed their time, their money and their energies in order to get this project to the point where it is today. I give you copies of the brochure and I hope you will read it and understand we are trying to show the broad base substantially of the project.

Then I would like to give the opportunity to my fellow companions here if they have anything they would like to add.

Senator GRAVEL. Do you have anything you would like to add?

Mr. WRIGHT. All I can say is that we worked many years in order to develop this thing and we still have hopes that we will accomplish something that will be quite beneficial to the great State of Indiana and our neighbors Ohio and the Nation generally. I think with the shortage of food supply facing us we better save this good soil, keep it where it is for future production as it will be needed.

Senator GRAVEL. I think that is a very good statement. I am impressed with your presence and the interest you have demonstrated in coming here. I can assure you the project will be studied very carefully.

Thank you very much.

Mr. HOWARD. Thank you.

[Mr. Howard's prepared statement follows:]

STATEMENT OF FLOYD E. HOWARD, EXECUTIVE SECRETARY, WHITEWATER VALLEY
CONSERVANCY DISTRICT

I am Floyd E. Howard, Executive Secretary of the Whitewater Valley Conservancy District. I wish to submit testimony in behalf of the Board of Directors for the record of the proceedings of this distinguished committee.

The East Fork of the Whitewater River Watershed contains 246,000 acres and is located in part of Darke and Preble Counties in Ohio; and Randolph, Wayne, Union, Fayette and Franklin Counties in Indiana.

You are considering a work plan for this watershed area which was prepared by the Soil Conservation Service along with the conscientious guidance of local steering committees. This plan truly reflects the wishes of local people. We are proud of this watershed plan because of this fact that it does represent our views. It is not simply a plan which has been handed to us by the technical planning team without extensive interchange of knowledge and ideas.

The public view in the Whitewater Valley is overwhelmingly in favor of proper water management and conservation. We want to keep a good environment. The conservation of soil and water is accepted as worthwhile and needed.

There is a real concern among the sponsors and supporting citizens of this project that the natural resource base of the Whitewater Valley be conserved and adequate for the increasing needs of the population. This opportunity through PL-566 will provide the needed impetus to accomplish the proper use of our natural resources and human resources.

If the resources of the Valley are to adequately satisfy future needs it is essential that we provide for additional future water supply, flood control, improved drainage, erosion and sediment control, outdoor recreation, and the maintenance of a healthful attractive environment.

This watershed plan, like most small watershed projects, provides for added funds to accelerate conservation treatment of watershed lands, storage dams to reduce peak stream flows to reduce flood damage, improvements for the orderly removal of excess water, and development of the river water resources.

There are unique features of this plan which are significant and should be recognized. The local sponsors of this project feel that recreation development of the suitable works of improvement is a needed part of the project. In order to determine the recreation features which should be included, a regional recreational study and report of the Whitewater Valley Conservancy District has been completed with the assistance of a private engineering company, Midwestern

Engineers, Inc. This report serves as the basis for the recreation plans in the East Fork of the Whitewater River Watershed Work Plan, and identifies potential recreation opportunities in the West Fork of Whitewater River, where two additional projects are in the planning stage.

The recreation report includes information which is used to show the current supply of outdoor recreation, standards of use, future recreation demand, possible additions to the supply and the remaining need after the suggested improvements have been installed. The report is based on a conservative estimate of future demand and clearly shows that a large need will remain even if all the suggested recreation facilities are installed. The use of a study such as this provides sound basis for the recreation which is planned in the East Fork project.

A feature of the project which is currently well accepted by the public is the proposed channel recreation development, sometimes called the riverside green-strip. This includes a strip of land on both sides of the stream from Richmond to a point near Abington where it will connect with the Corps of Engineers' Brookville Reservoir project. Access points and trails will allow public use for hiking, riding, fishing, canoeing, and picnicking. Although no PL-566 funds are included in the plan for this development it is an important part of the total project.

A continuing high level of application of soil and water conservation practices on private land in this watershed is vital to maintaining the soil resource base and maintenance of adequate supplies of useable water. Due to the steepness of much of the land and general erosiveness of the soils in this watershed, the stream water resources and the lakes are particularly vulnerable to damage from sedimentation and soil borne water pollutants. This, coupled with the fact that the Soil Conservation Service now must reduce its going program, makes it very necessary to have added technical assistance for accelerated land treatment installation which is contained in the plan. The local sponsors of this project all place high priority upon the need for conservation land treatment in the watershed areas.

The Whitewater Valley Conservancy District is particularly enthusiastic about the feature of this plan called special land treatment measures. These large pond or small lakes for multiple purpose uses are well accepted both by the general public and the owners of land on which they will be located. For the investment proposed in the plan, these ponds will return great benefits in the form of sediment and pollution control, erosion control, reduced flooding, beautification of the land, fish and wildlife benefit, recreation, and enhancement of the countryside.

The structural measures or dams in the Indiana portion of this watershed plan will allow the sponsors to accomplish several purposes which include municipal water supply for future development for the city of Richmond, flood prevention, sediment control, and providing needed recreation in connection with beneficial water management.

The channel improvements in the Ohio portion of the watershed will provide flood relief, drainage improvement, environment improvement and improvement of conditions for fish and wildlife.

The funding required to accomplish the East Fork Watershed plan would be very difficult to obtain from the local tax base without federal assistance. The funds included from PL-566 in the plan are essential if the work is to be completed.

An effect which federal assistance can provide is the incentive for local people to carry out this project which they do need. It is a capital improvement to the community with local benefits which will profit the State of Indiana and the United States. The overall improvement of our country requires that we improve its parts.

This watershed plan has been conceived on the premise that regional conservation and development of soil and water resources on the basis of the total watershed will act to promote total overall development. Business and economic opportunities, housing and outdoor environmental enhancement should progress with the implementation of this plan.

This Committee and the Congress will do well to approve this watershed plan as well as others like it for the total benefit of our people and our Nation. The proper use and development of our natural resources is vital if we are to have a strong, prosperous, and healthy Nation in the future.

Senator GRAVEL. Senator Buckley could not be here to discuss the East Fork of Whitewater River Watershed project. He has, however, submitted some questions on this and other projects which will be inserted in the record at this point.

[The questions submitted by Senator Buckley follow:]

GENERAL

1. Do you know how many watershed applications are on file in the Department?

Response: As of June 8, 1973, 2,929 applications are on file for assistance under authority of Public Law 83-566. These applications are in various stages of service, with 1,257 being unserved—not authorized for planning.

2. Do you know how many watershed projects that have been approved by the Department have not been completed?

Response: Out of 2,929 applications, 1,078 projects have been approved for installation. Of the 1,078 projects approved, 735 have not been completed, 455 are under construction and 180 are in pre-construction stage (land rights acquisition and detailed designs are underway).

3. What is the average length of time between submission of applications and approval by the Department?

Response: The time lapse is presently estimated to be 8 years. There has been a significant time increase between submission application and plan approval. Without a significant increase in funds and manpower, it can be expected to increase to 10 years in fiscal 1974. There was an increase of over 4 years from 1963 to 1970. This increase has been brought about by personnel and financial resources not keeping pace with the increased cost of doing business and the additional requirements of more comprehensive planning. Implementation of the National Environmental Policy Act of 1969 and the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 have made a serious impact on this time period during the last 2 years.

4. What is the average length of time between Congressional approval and completion?

Response: The average length of this period is 7 years. Work plans are developed with an agreed to installation period of from 5 to 10 years depending on the complexity of the project to be installed. There is considerable variation from one project to another in actual completion periods due to problems that local sponsors may encounter in regards to arranging for their share of funds or in acquiring the necessary land rights.

5. How many projects are now under consideration for approval?

Response: Fifty projects are not in the final stages for approval. Of these 50 plans, 14 are awaiting development of the final environmental statement, 22 are undergoing interagency review, 1 is in the Secretary's office, 5 are in the Office of Management and Budget, and 8 are in Congressional Committees.

6. Could you explain the factors that account for the length of time required to complete projects?

Response: There are a number of factors that have significantly increased the length of time required to complete projects. These are as follows:

(a) The trend to more comprehensive planning and recognition that projects should be multiple-purpose whenever possible.

(b) The new public awareness of maintaining and improving the quality of our environment. The National Environmental Policy Act of 1969 was a demonstration of this awareness and placed very significant additional requirements on the planning and installation of watershed projects.

(c) The desire of the general public to become more involved in the planning and decision making process. More public meetings are now needed and frequent contacts must be made with the general public, interested organizations, and other agencies. Their inputs must be solicited, evaluated, and utilized whenever possible. This takes additional time.

(d) Implementation of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 which requires more detailed analysis of land rights problems in the planning stage and more complex procedures in acquiring needed land rights in the installation stage.

(e) Increased cost of installation. By the time a project is approved for installation, there may have been a significant increase in cost. Federal funds may not be available or local sponsors may have problems in increasing their contribution. Making these adjustments often takes additional time.

7. How could the time period effectively be shortened?

Response: This time period can be shortened by providing more man power and financial inputs to each watershed being serviced or reducing the detail and comprehensiveness of our activities. In light of today's knowledge, the latter alternative would not be desirable. We are, of course, attempting to improve our efficiency through more training and improved technology. We have been in a transitional and adjustment period during the implementation of the National Environmental Policy Act and this has accelerated the increase in the time lapse during the past 2 years. We expect that there will be some reduction in the time lapse and definitely a levelling off.

8. With your budget authority over the last number of years, how can you cover such a large number of projects?

Response: We have not been able to service projects as applications are received. This is demonstrated by the 1,257 unserved applications listed in the response to question No. 1. All of these applications will not result in feasible projects. However, resources have not permitted preliminary studies to determine which have the most potential. Applications are serviced based on priorities established by non-federal state agencies.

9. Do you have any restrictions on acceptance of new applications?

Response: There are no restrictions. We have always felt that the Act provided local sponsors in need of assistance the opportunity to file a request for such assistance. All applications are accepted that meet the intent and requirements of the Law.

EAST FORK OF WHITEWATER RIVER WATERSHED (INDIANA AND OHIO)

1. The project includes 19.6 miles of stream channelization. Could you provide a brief summary of the environmental impact of this channel work? How much will this channelization cost? If the project were approved without channelization, what specific impact would that fact have on the annual benefits of the project?

Response: About 52 acres of vegetative cover will be lost temporarily during channel construction until wildlife plantings can be established. The plan's provisions to avoid or mitigate losses reduces other adverse environmental impacts to a minimum. The 19.6 miles of channel work will cost an estimated \$270,600. If the channel work were to be deleted from the project, about \$18,900 of annual benefits would be foregone. Farmers in the area served by the proposed channel work could not use the land as intensively for crop production, and some of the cropland would probably revert to idle land because of the flood hazard.

2. What is the nature of the "channel recreation development" in this project?

Response: About 10.3 miles of stream channel and 465 acres of adjacent land will be purchased and developed for public recreational use and wildlife sanctuaries. Four public access points will be provided. Recreation features will include canoeing, hiking, nature walks, horse trails, bicycling, fishing and picnicking.

3. Could you specify what are the "incidental" and "secondary" benefits of this project?

Response: Incidental benefits are the recreation benefits expected to accrue at the two multiple-purpose flood prevention and municipal water supply reservoirs. Recreation use is incidental to the flood prevention and water supply purposes for which the structures are to be built. The sponsoring local organization will provide access to these two reservoirs and sanitary facilities in accordance with state and local health regulations. The recreation use will be limited primarily to fishing and non-power boating.

Secondary benefits represent the increased net returns which accrue to local businesses and industries economically associated with the production and utilization of goods and services produced as a direct result of the project. This also involves the transportation, processing and marketing facilities associated with the increased output of goods and services.

4. *Over 70 percent of the benefits of this project are computed as "recreation." Sixty-four percent of the project's benefits of the Clarks Fork-Bullocks Creek project are listed as "recreation." Could you tell us what percentage of the existing P.L. 566 projects contain higher recreational benefits than each of these projects that I mentioned. What is the legal or administrative basis for a positive recommendation on projects that are so heavily recreational in nature?*

Response: To date, about 219 watershed projects include recreation as a project purpose. We do not maintain statistical records showing the percentage relationship of recreation benefits to total benefits. However, several projects have been approved which contain recreational benefits in the same percentage range as these two. We consider the proportion of P.L. 566 project funds being used for recreation to be a more meaningful indicator of the importance of recreation compared to the total project than the benefit relationship. For the East Fork of Whitewater River Watershed, about 39 percent of the total P.L. 566 funds will be for recreation and for the Clarks-Fork Bullocks Creek project, it amounts to 30 percent. The sponsors are investing nearly 3 million dollars for recreation in the East Fork of Whitewater River Watershed and about one million dollars in the Clarks-Fork Bullocks Creek project.

Regarding the legal or administrative basis for inclusion of recreation in watershed projects, Public Law 83-566 states, "The Secretary shall be authorized to participate in recreational development in any watershed project only to the extent that the need, therefore, is demonstrated in accordance with standards established by him, taking into account the anticipated man-days of use of the projected recreational development and giving consideration to the availability within the region of existing waterbased outdoor recreational developments.

Department policy states, "to be eligible for assistance under the Act, measures for recreation and fish and wildlife must be an integral part of a watershed project which includes structural measures providing substantial benefits for flood prevention, irrigation or drainage, or any combination thereof."

WINTERS CREEK WATERSHED, NEBRASKA

1. *Could you specify the exact nature of the "nonagricultural improvements" and the "indirect" benefits listed for this project?*

Response: The nonagricultural improvements listed as receiving floodwater and sediment damage reduction benefits are 20 residences and 21 commercial or industrial properties in the City of Scottsbluff. Indirect benefits involve reduction of identifiable losses resulting from floods, even though direct contact with floodwater is not involved. The indirect damages in this watershed include such things as extra travel when transportation facilities are damaged, health hazards, and interruption of irrigation water delivery. The majority of indirect damages occur when the tri-state irrigation canal, at the Winters Creek crossing, is breached and rendered unusable. The resulting disruption of delivery of irrigation waters severely reduces crop yields on about 62,000 acres served by the canal.

2. *The project includes 7.2 miles of channel and canal work. If this work was deleted from the project, what impact would that deletion have on the costs and the benefits of the project?*

Response: The installation cost for the channel work and its appurtenances is estimated to be \$1,663,000. Deletion of this work would result in an unsuitable project because of the resulting low level of flood protection to life and property in the City of Scottsbluff. The combination of the floodwater retarding structure and the channel work as proposed in the plan will provide protection from floods up to and including the 100-year frequency flood event in the City of Scottsbluff. Monetary benefits were not evaluated separately for retarding structures and the channel work. The channel work on Winters Creek includes the reconstruction of an existing water control structure. A fish ladder is to be installed in the water control structure to provide access to about 5 miles of additional spawning area for rainbow trout which presently are restricted to the stream

downstream from this point. Deletion of this channel work would preclude the anticipated increased production of trout.

Senator GRAVEL. Next is the Winters Creek, Nebr., project.

Our next witness is Mr. Richard D. Parker of the Soil Conservation Service.

WINTERS CREEK, NEBR.

STATEMENT OF RICHARD D. PARKER, SOIL CONSERVATION SERVICE

Mr. PARKER. Mr. Chairman, the Winters Creek Watershed consists of 89,700 acres located in Scotts Bluff and Sioux Counties in western Nebraska. The city of Scottsbluff is located within the watershed. The creek flows in a southerly direction through the eastern portion of Scottsbluff and is a direct tributary to the North Platte River.

The economy of the area is based upon the production of irrigated crops with rangeland being used for summer grazing of cattle. Fifty-six percent of the area is rangeland, 35 percent is cropland and 9 percent is in urban and miscellaneous uses. The principal crops are sugar beets, corn, and dry edible beans with some alfalfa, potatoes, and small grains also being grown. The current market value for the irrigated cropland is \$600 per acre and \$40 per acre for the rangeland.

The 1,600-acre flood plain is subject to frequent flooding. Some flooding occurs on the average of once each year—most frequently during May, June, and early July when crops are most susceptible to damage. In addition to severe damages to crops during flood events, about 20 residences and 21 commercial or industrial properties in Scottsbluff are subject to substantial damages.

Another serious flood damage occurs when the Tri-State irrigation canal, at the Winters Creek crossing, is breached and rendered unusable. This crossing is located just below the proposed location of the floodwater retarding structure. The resulting disruption of delivery of irrigation waters severely reduces crop yields on about 62,000 acres served by the canal. For instance, the June 1951 flood caused the complete loss of about one-third of the crops in the irrigated area because of the lack of water delivery before the canal breaks could be repaired.

The planned project consists of conservation land treatment practices supplemented by a floodwater retarding structure, about 7.2 miles of channel work, and the reconstruction of an existing water control structure in the Winters Creek channel. The retarding structure will control about 51 percent of the drainage area of the entire watershed.

Installation of the project is expected to result in about a 65-percent reduction of damages to farmlands. It is estimated that the delivery of sediment each year to the North Platte River will be reduced about 53 percent. The city of Scottsbluff will receive flood protection from floods up to and including the 100-year frequency flood event.

Rainbow trout from Lake McConaughy, located about 100 miles downstream on the North Platte River, migrate up the river tributaries to spawn. Winters Creek presently contains about 12 percent of the total spawning habitat for these fish. In order to enhance this fishery resource, a fish ladder will be installed in the water control

structure and a ported riser will be installed in the floodwater retarding structure to provide access to about 5 miles of additional spawning area. It is anticipated that these measures will greatly increase the trout production of this stream.

The total project costs are estimated to be \$3,887,000 with Federal assistance amounting to \$2,312,000 or about 60 percent. Benefits resulting from the project are estimated to be \$194,800 annually, with a resultant benefit-cost ratio of 1.1 to 1.

This concludes my testimony, Mr. Chairman.

Senator GRAVEL. Thank you very much. I think it is self-explanatory and there is no need to pursue it any further.

Thank you.

Mr. PARKER. Thank you.

[Winters Creek watershed data sheet follows:]

WINTER CREEK WATERSHED

Size and Location.—89,700 acres in Scotts Bluff and Sioux Counties.

Sponsors.—The Scotts Bluff County Commissioners and the Scotts Bluff Soil and Water Conservation District.

Purposes.—Watershed Protection, Food Prevention and Fish and Wildlife.

Principal Measures.—Soil conservation practices on farms; and structural measures consisting of one floodwater retarding structure, about 7.2 miles of channel and canal improvement, and 1 water control structure. The total storage capacity of the floodwater retarding structure is 5,020 acre-feet.

ANNUAL BENEFITS

	Dollars	Percent
To agricultural acreage (land and crops).....	6,800	4
To agricultural improvements.....	1,300	1
To nonagricultural improvements.....	82,100	42
Indirect.....	86,900	45
Secondary.....	17,700	9
Total.....	194,800	100

PROJECT COSTS

	Public Law 566 funds		Other funds		Total dollars
	Dollars	Percent	Dollars	Percent ¹	
Land treatment measures.....	175,000	16	922,000	84	1,097,000
Structural measures:					
Flood prevention.....	1,851,000	75	622,000	25	2,473,000
Fish and wildlife.....	13,000	48	14,000	52	27,000
Project administration.....	273,000	94	17,000	6	290,000
Total.....	2,312,000	60	1,575,000	240	3,887,000

¹ For land treatment measures this is primarily the cost of applying land treatment measures by landowners. Cost sharing from funds appropriated for the rural environmental assistance program may be available if included in the county program. For structural measures this is the cost of land rights and project administration. It may also include costs for construction or engineering services for purposes other than flood prevention.

² The value of measures already installed (\$248,000) increases this to 44 percent.

Note: Benefit-cost ratio, 1.1 to 1.

Senator GRAVEL. Mr. Davey, I wonder if you have any general comments that you would like to make sort of wrapping all of this up. For my own edification I have one question to ask as chairman of the subcommittee. Could you just summarize briefly what are the actual activities that are done in relation to the soil conservation program with these various projects? Will you just describe it briefly?

STATEMENT OF WILLIAM B. DAVEY, DEPUTY ADMINISTRATOR
FOR WATER RESOURCES, SOIL CONSERVATION SERVICE

Mr. DAVEY. Yes, sir; I would be happy to do this.

These projects are developed under the Watershed Protection and Flood Prevention Act which offers a variety of technical and financial assistance on a number of natural resource problems, particularly those relating to flood prevention and agricultural water management, irrigation, and drainage. It also offers assistance for water-based recreation, municipal, and industrial water supply, and fish and wildlife. The land treatment aspect of the program provides for revegetating and installing necessary works in behalf of erosion and sediment control and the like. These measures are developed based on an application from local sponsoring groups.

There are some rather stringent requirements on the part of the sponsors in terms of installation and maintenance responsibilities, the acquisition of easements and rights-of-way, and we regard these really as a local project with Federal assistance rather than a Federal project per se. These projects presented today are similar to a series that we are developing plans on and we would hope to have others before the committee later this year.

Senator GRAVEL. Thank you very much, Mr. Davey. I think that gives us what we need.

We will receive the statement of any person who wishes to place one in the record relative to any of these projects.

At this time we will adjourn.

[Whereupon, at 10:47 a.m., the subcommittee adjourned.]