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SAN JACINTO RIVER CONSERVATION
AND RECLAMATION DISTRICT
CONROE, TEXAS

MASTER PLAN REPORT FOR THE
FULL SCALE DEVELOPMENT OF THE
SAN JACINTO RIVER

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NOVEMBER, 1943

FOREWORD

The San Jacinto River Conservation and Reclamation District was created by the State Legislature for the purpose of developing the San Jacinto River watershed. It comprises all of Montgomery County and parts of Waller, Grimes, Walker, San Jacinto and Liberty Counties. It is controlled by six directors, appointed by the State Board of Water Engineers, who may reside either within or without the District. It is a non-profit state agency acting under state legislation and in appropriate instances under approval or direction of the State Board of Water Engineers and accountable to the State Auditor. Water rates must be fixed upon a reasonable non-profit basis. In case of disagreement between the District and water users, application may be made to the State Board of Water Engineers to fix rates to be charged.

The program herein described may contribute much to the operations of war industries and to the war effort in general; at the same time preparing to play a most important part in the post-war era. Our local problems must be solved by our own communities - sound planning must be done if full use is to be made of our natural resources and our opportunities.

No greater problem confronts, and no greater opportunity

could be presented to the area drained and served by the San Jacinto River, than the conservation, reclamation and development of the natural resources of its watershed. The storing and supplying of adequate water for municipal, industrial and irrigation purposes are absolute necessities if our progress is to continue. Water of unusually high quality is available in ample quantities to meet all requirements of this area for many years to come.

Present and anticipated future water needs of Houston, Galveston, Texas City, Pasadena and the Tri-Cities and vast agricultural lands present a challenge to individuals and local governments of this area. These efforts should be undertaken upon the principle of the greatest good for the greatest number of people over the greatest period of time. Every sub-division of government involved should stand ready to recognize the rights and equities of all other areas. Each has an essential place in the picture and everyone within its general scope must be fairly served.

The District takes pride in publishing this synopsis of its Master Plan of Development as approved by the Board of Water Engineers of Texas and the Reclamation Department of the General Land Office of Texas. Our program will proceed as rapidly as is consistent with prevailing conditions and with due regard for the rights of all interested political subdivisions within the

area. The policy of the district shall be one of full cooperation with such subdivisions and with the state and federal governments and agencies thereof, to the end that there may be brought great and lasting benefits to the people of this area.

SAN JACINTO RIVER CONSERVATION AND RECLAMATION DISTRICT

BOARD OF DIRECTORS

<u>W. G. Hall</u>	W. G. Hall, president
<u>F. N. Read</u>	F. N. Read, vice president
<u>Chas. R. Scott</u>	Chas. R. Scott, secretary
<u>A. R. Woodson</u>	A. R. Woodson, Treasurer
<u>Doyle F. McAdams</u>	Doyle F. McAdams, Director
<u>C. A. Deese</u>	C. A. Deese, Director

ENGINEERS:

Haile & McClendon
Consulting Engineers
Houston, Texas

Freese & Nichols
Consulting Engineers
Fort Worth, Texas

William W. McClendon
for the engineers

COUNSEL:

James V. Allred

MASTER PLAN APPROVED:

Board of Water Engineers of Texas

By

C. A. Clark

A. H. Dunlap

John W. Pritchett

Reclamation Department of General
Land Office of Texas

2-18-44

By

Bascom Giles

Commissioner

For that part applicable
to the State Reclamation
Dept. Act as Amended,
provided that detailed
plans of improvements
under said Act be submitted
for further approval.

MASTER PLAN

FOR THE COORDINATION OF THE DEVELOPMENT OF
THE NATURAL RESOURCES WITHIN THE WATERSHED
OF THE SAN JACINTO RIVER AND ITS TRIBUTARIES

ADOPTED BY

THE BOARD OF DIRECTORS

OF THE

SAN JACINTO RIVER CONSERVATION AND RECLAMATION DISTRICT

In keeping with the mandate given to the San Jacinto River Conservation and Reclamation District by the Legislature of Texas under the authority of Article XVI, Section 59, of the Constitution of Texas, commonly known as the Conservation Amendment, to develop a master plan for the coordination of the conservation, reclamation and development of the natural resources of the watershed of the San Jacinto River and its tributaries, the Board of Directors of said District hereby adopts the general plan hereinafter set out which, when approved by the State Board of Water Engineers of Texas and the Reclamation Department of the General Land Office of Texas, as provided by law, shall be substantially followed in the conservation, reclamation and development of the natural resources within said watershed for the purposes and in the manner provided by said Conservation Amendment and the Acts of the Legislature of Texas creating and prescribing the powers of this District. It is hereby found and

declared that this plan provides for the coordination of improvements which are deemed adequate to serve said watershed as a whole.

Among the specific powers granted to the San Jacinto River Conservation and Reclamation District and the duties and obligations imposed upon the District by the Acts of the Legislature creating and defining the powers, duties and purposes of the District, are the following:

"(a) To provide through every practical and legal means for the control and the coordination of the regulation of the waters of the watershed of the San Jacinto River and its tributaries as a unit, including the power to cooperate with the United States Government or any agency thereof in effecting such purposes.

"(b) To provide by adequate organization and administration of the preservation of the equitable rights of the people of the different sections of the watershed area of the beneficial use of storm and flood waters of the San Jacinto River and its tributary streams.

"(c) For storing, controlling, and conserving storm and flood waters of the San Jacinto River and its tributaries, and the prevention of the escape of any of such waters without the maximum of public services; for the prevention of devastation of lands from recurrent overflow, and the protection of life and property in such watershed area from uncontrolled flood waters.

"(d) For the conservation of waters essential for the domestic uses of the people of the watershed of the San Jacinto River and its tributaries, including all necessary water supplies for cities and towns.

"(e) For the irrigation of lands in the watershed of the San Jacinto River and its Tributary streams where irrigation is required for agricultural purposes or may be deemed helpful to more profitable agricultural production; and for the equitable distribution of

storm and flood waters to the regional potential requirements for all uses, domestic, manufacturing, and irrigation. All plans and all works provided by said District and as well, all works which may be provided under authority of said District, should have primary regard to the necessary and potential needs for water, by or within the respective areas constituting the watershed of the San Jacinto River and its tributary streams.

"(f) For the better encouragement and development of drainage systems and provisions for drainage of lands in the valleys of the San Jacinto River and its tributary streams needing drainage for profitable agricultural production; and drainage for other lands in the watershed area of the District requiring drainage for the most advantageous use.

"(g) For the purpose of encouraging the conservation of all soils against destructive erosion and thereby preventing the increased flood menace incident thereto.

"(h) To control and make available for employment flood and storm waters in the development of commercial and industrial enterprises in all sections of the watershed area of the District.

"(i) For the control, storing, and employment of flood and storm waters in the development and distribution of hydro-electric power, where such use may be economically coordinated with other and superior uses, and subordinated to the uses declared by law to be superior.

"(j) For the encouragement, aid, and protection of navigation, and the protection of harbor improvements.

"(k) And for each and every purpose for which flood and storm waters when controlled and conserved may be utilized in the performance of a useful service as contemplated and authorized by the provisions of the Constitution and the public policy therein declared.

"(l) To forest and reforest and to aid in the foresting and reforesting of the watershed area of the San Jacinto River and its tributaries and to prevent and aid in the prevention of soil erosion and floods in, on, and upon all lands situated within the boundaries of said District."

In an effort to give effect to and carry out the spirit and purpose of the constitutional and statutory provisions which prescribe the functions to be performed and the purposes to be accomplished by this District, the Board of Directors of the District have employed competent Engineers to make surveys and investigations and to secure all available data and information which would be beneficial in adopting a general plan for the development of the natural resources of the watershed. The plan herein adopted is the result of several years of investigation and study by the Board of Directors and the Engineers of the District, together with valuable information, data and counsel from the State Board of Water Engineers of Texas, the State Reclamation Engineer of the General Land Office, the United States Geological Survey, the Corps of Engineers of the United States Army, and other public and private agencies, including the United States Weather Bureau and the United States Department of Agriculture.

I.

GENERAL PROVISIONS

It is recognized that the piecemeal development of a part of the resources of this River and its tributaries by a few of the numerous public agencies situated within the watershed for the individual needs of each without regard to the full and

complete development of the watershed for all conservation purposes and for the equal benefit of all persons residing therein alike, will lead to inequities between various sections and groups within the watershed and will hinder and prevent the maximum utilization of the natural resources of the watershed for the maximum benefit of all the people residing therein.

It is further recognized that the full development of this River and its tributaries for all such purposes cannot be accomplished immediately, but will require constant and persistent effort under a long-range program of stage by stage development, presently conceived and consummated as rapidly as circumstances will permit over a period of many years. It is therefore declared that the primary objective of this plan shall be the conservation, reclamation and utilization of the natural resources of the entire watershed of the San Jacinto River and its tributaries for all purposes contemplated by Article XVI, Section 59, of the Constitution of Texas and for the equal and impartial benefit of all people, all political subdivisions and all geographical sections within the watershed as provided in the Acts of the Legislature creating and defining the powers of this District.

Nothing herein shall be construed to affect or impair vested rights or the rights of water control and improvement districts, fresh water supply districts, municipal corporations,

and other public agencies within the watershed, to own and operate water systems for the purpose of supplying water to the inhabitants thereof for all lawful purposes. The incorporated City of Houston has heretofore been granted a permit issued by the State Board of Water Engineers to impound 152,000 acre feet of the storm and flood waters of the San Jacinto River by the construction of a dam and reservoir at a point on the main stem of the River shown in said permit, and to divert 112,000 acre feet per annum of the waters thus impounded. Nothing herein shall impair or affect the right of the City of Houston to fully enjoy and develop a water supply under the terms of this permit for all the purposes authorized by law.

The general plan of development shall be divided into the following classifications:

1. Flood Control and Protection of Navigation.
2. Water supply for Domestic, Municipal, Industrial, Irrigation and all Other Useful Purposes.
3. Soil Conservation and Reclamation of Overflowed Lands.
4. Reforestation.
5. Recreation.

The foregoing classifications of development shall be so coordinated as to provide for the maximum utilization of the natural resources of the watershed so that each classification

shall be developed to the fullest extent possible.

The improvements to be constructed shall be in substantial compliance with Exhibit A, attached hereto and made a part of this plan for all purposes, and as shown on a map designated Exhibit B, attached hereto and made a part of this plan for all purposes. No substantial change in the plan of development as herein set out shall be made unless and until this plan shall be amended by an order duly adopted by the Board of Directors of the District and approved by the State Board of Water Engineers and the Reclamation Department of the General Land Office of Texas.

II.

FLOOD CONTROL AND PROTECTION OF NAVIGATION

The Legislature of Texas having found and declared that the recurrent, devastating floods in the valley of the San Jacinto River which have, over a long period of years, caused a deplorable loss of life and property, and the erosion of the soil, and a depletion of the fertility of the land in said valley and the watershed served by the San Jacinto River in Texas, and the public highways and structures and lands belonging to the State of Texas situated within said watershed, to be a public calamity, the control and prevention of such floods shall be one of the prime purposes and objectives of this plan. The

control and prevention of floods shall be accomplished by the construction of a series of dams upon the San Jacinto River and some of its principal tributaries, by clearing, widening and changing the course of the channels of the various streams within the watershed and by the construction of levees and other improvements as more fully shown in Exhibit A attached to this plan and made a part hereof for all purposes.

In addition to protecting the land within the valley of the San Jacinto River and its tributaries, which is now subject to overflow, from further devastating floods, the program for the control and prevention of floods shall have as another of its prime objectives the protection of navigation on the navigable portion of the River. It is recognized that the present uncontrolled floods cause tremendous damage to the lower stretches of the River and particularly that part which constitutes a section of the ship channel of the Harris County-Houston Ship Channel Navigation District, frequently requiring the closing of the Ship Channel to ocean-going vessels and which leads to the deposit of large amounts of silt in the ship channel which must be removed at great expense. The large volume of commerce which moves upon this ship channel and the importance of the channel to the entire State of Texas requires that, to the fullest extent consistent with the development of said watershed for all other conservation purposes, the navigable portion of said River shall be protected from future devastating

floods. This shall be accomplished in the manner set out in Exhibit A attached hereto and made a part hereof for all purposes.

III.

WATER SUPPLY

The official records of the State Board of Water Engineers of Texas, the United States Geological Survey, the United States Weather Bureau and other public agencies reveal that the average annual run-off of the San Jacinto River and those of its tributaries which flow into the River above the confluence of the East and West Forks is approximately 1,400,000 acre feet, or 426 billion gallons, per year. This is equivalent to approximately one and one-quarter billion (1,250,000,000) gallons per day. With proper storage facilities, a large percentage of this annual run-off can be captured and made available for beneficial uses. The rate of run-off fluctuates sharply, however, and the flow of the River has been known to drop below 20,000,000 gallons per day. Substantial storage is therefore essential to provide a firm and secure supply in excess of the minimum rate of flow. The quality of water is one of the best of any river in Texas and is such that it can be used for many industrial purposes without treatment and can be treated at low cost for all industrial, domestic and other uses.

If properly captured and stored, the available water in this River is amply sufficient to take care of all needs within the watershed for many years to come. The average daily run-off of one and one-quarter billion (1,250,000,000) gallons compares with a total of approximately one hundred and twenty-five million (125,000,000) gallons average daily consumption for industrial, domestic and municipal purposes in the Houston metropolitan, the Tri-Cities and the Galveston-Texas City areas combined, during the year 1942. This latter volume represents a large majority of the total amount of water used in the entire watershed with the exception of the water pumped from wells for rice irrigation in the Katy area. It thus appears that the average daily run-off of the River is approximately ten times the volume of water pumped in these principal industrial areas in 1942. It is believed that a minimum of sixty per cent (60%) of the run-off can be captured and stored by the construction of a series of dams and reservoirs, thereby insuring a firm supply in excess of seven hundred million (700,000,000) gallons per day. This will take care of all present needs, including that of the new synthetic rubber industries located along the Houston Ship Channel and at Texas City, and leave a large margin to provide for future growth and expansion. Supplemented by the available underground water supply which is estimated to be capable of providing a minimum firm volume in excess of seventy-five million (75,000,000) gallons per day in the Houston-Tri-Cities

area alone, it is clear that this development would insure an adequate water supply for the entire watershed for many years to come.

It is hereby declared that the water stored in the reservoirs created by the construction of the dams described in Exhibit A shall be used, and made available for use, for the maximum public benefit consistent with the orderly and equitable development of the watershed for all conservation purposes. It is further declared that the sale of such stored water at low rates will stimulate the development of agriculture, industry, business and commerce within the watershed of the San Jacinto River and its tributaries, and that such water should be sold, and made available for sale, at the lowest rates possible within the limits of a sound business administration of the general conservation program within the watershed.

It is recognized, however, that the only income which the District may anticipate receiving from the development of its conservation program, other than tax grants made by the State of Texas and grants received from Federal agencies, will be that obtained from the sale of water and the sale of hydro-electric power, if any should be produced. It is, therefore, provided that the following principles shall control in the development of a surface water supply from the San Jacinto River and its tributaries:

- (1) The water of the River and its tributaries shall be made available to all users within the District and within Harris and Galveston Counties on an equitable and impartial basis and without discrimination as between different sections, localities or groups and subject to the requirements of law in regard to the priority of uses of such waters.
- (2) The rates charged by the District for the sale of water shall always be reasonable and, if practicable, lower than rates charged for water of the same or similar quality in other watersheds. The waters which are stored and otherwise produced from San Jacinto River and its tributaries shall be sold and distributed for lawful and beneficial uses and the income therefrom shall be applied as follows:
 - (a) First, to the payment of the reasonable cost of maintaining, operating, repairing, extending and improving the dams, reservoirs, canals, pump stations, pipe lines, crossings, and other facilities constructed or acquired for the storage, transportation, treatment and distribution of the waters of the River and its tributaries;

- (b) Second, to the payment of principal and interest on the bonds and other evidences of indebtedness which may hereafter be issued for the purpose of constructing the improvements described in the next preceding sub-paragraphs, and to establish necessary sinking funds and reserve accounts provided for in the resolutions which authorize the issuance of each series of bonds.
- (c) Third, the first \$50,000.00 available each year for the next ten years, beginning January 1, 1944, out of the net revenues of the District after provision has been made for the payment of the items set forth in subsections (a) and (b) of this paragraph, shall be set aside and used exclusively for the prevention of soil erosion and the reclamation of overflowed lands within the district.
- (d) Fourth, to construct and acquire other improvements and facilities which will be beneficial to the development of the conservation measures provided for in this general plan.

IV.

SOIL CONSERVATION AND RECLAMATION OF OVERFLOWED LANDS

The construction of the improvements provided for in Exhibit A attached hereto shall be effected in such a manner, consistent with other conservation purposes, as to reclaim and make available for beneficial uses the lands within the valley of the San Jacinto River and its tributaries, which are now recurrently inundated and overflowed with the result that their productivity and usefulness are diminished or destroyed. In addition to the dams described in said Exhibit A, drainage ditches and levees shall be provided when necessary and when sufficient funds are available, to facilitate the run-off of storm and flood waters and to drain lands which are overflowed and prevent, as far as possible, the further inundation of such lands. Provision shall be made for a survey to determine where drainage ditches and levees can be most effectively and economically placed to obtain the maximum benefits for the smallest expenditure of funds.

Any person, or group of persons, within the watershed may file an application with the District setting forth a particular area or areas, wherein drainage ditches or levees should be constructed. As soon as practicable thereafter, the Board of Directors of the District shall cause an investigation to be made of the facts set forth in such application, and if the Board of Directors determines that the application should be

granted, shall classify the proposed improvements on the basis of the benefits to be received and the cost of such improvements in comparison with the benefits and cost of other like improvements. Approved projects shall thereafter be constructed in the order of priority established by the Board of Directors as funds will permit. In providing such drainage ditches or levees, the Board of Directors shall take into consideration the benefits which have theretofore been received, and which are reasonably anticipated to be received, from the construction of the improvements described in Exhibit A. The Board may, at its discretion, reclassify any approved application to conform to changed conditions brought about by the construction of new improvements.

The provisions of this paragraph shall also apply to the clearing, widening, and relocation of the channels of the various streams within the watershed for the purpose of facilitating the flow of water and reclaiming lands which are subject to overflow.

Insofar as legally possible, the San Jacinto River Conservation and Reclamation District shall cooperate with proper agencies of the United States of America and The State of Texas in the prevention of soil erosion and the prevention of the further depletion of the fertility of the soil within the San Jacinto River watershed. Such part of the funds provided for in subsection (c) of Paragraph III hereof as the Board of

Directors shall deem proper shall be used for the purpose of purchasing machinery and equipment for the purpose of terracing lands, constructing low-water dams and providing facilities for other soil conservation measures within the District. The remainder of such funds shall be used for the purposes stated in said subsection (c) in such manner as the Board of Directors shall determine from time to time to be proper in the light of continuously changing conditions. The provisions of this paragraph in regard to filing applications with the Board of Directors and classifying projects for the purpose of reclaiming overflowed lands, etc., shall also apply to projects relating to the soil conservation and the prevention of soil erosion.

V.

REFORESTATION

The conservation and development of the forests of the State are expressly covered by the provisions of the Conservation Amendment to the Constitution of Texas. It is recognized that the development of forests is in the public interest not only for the purpose of providing a future supply of timber but also for the purpose of preventing the erosion of soil by action of the elements including both wind and water. It is therefore expressly provided that the District shall cooperate with the United States Forestry Service and other appropriate governmental agencies in

the development of a program of reforestation and the preservation of existing forests throughout the watershed. The Board of Directors shall determine from time to time, based upon progressively changed conditions, a plan of development which will provide the maximum utilization of the opportunities and facilities for the development of this program, either independently or in cooperation with other governmental agencies.

VI.

RECREATION

The District shall, wherever practicable, acquire title to lands which are immediately contiguous to any reservoir or lake which the District shall construct or acquire in order that the general public shall have access to such lakes and reservoirs for recreation purposes under rules and regulations to be established by the Board of Directors of the District. The District shall take such other steps and measures as shall be necessary to protect all water supply reservoirs from pollution and to provide adequate health safeguards.

Subject to the primary obligation to protect water supplies against pollution and unsanitary conditions, the District shall make available to the general public all of its lakes and other improvements for fishing, boating, swimming and other means of recreation.

TEXAS

EXHIBIT "A" TO ACCOMPANY MASTER REPORT PLAN
(Listed in Proposed Order of Construction)

Name of Dam	Location	Acres Under Water	Capacity in Acre-Feet	Drainage Area in Sq. Mi.	Elevation Crest of Dam	Estimated Cost
East San Jacinto No. 1	Located on the East Fork of the San Jacinto River near Cleveland	5950	107,000	307.	157.0'	\$2,237,000.
East San Jacinto No. 0	Located on the East Fork of the San Jacinto River just below its confluence with Luce Bayou	22000	276,000	968.	83.5'	6,335,000. (See note on p. 2)
San Jacinto No. 3	Located on the West Fork of the San Jacinto River above Conroe near the dividing line of the John Cronkhite and the John C. Clark Surveys	6000	150,000	392.6	206.0'	3,750,000.
Lake Creek No. 1	Located on Lake Creek in the Archibald Hodge Survey	6000	105,000	271.5	175.0'	2,625,000.
Spring Creek No. 1	Located on Spring Creek just below confluence of Spring & Cypress Creeks	5500	104,000	270.	85.0'	2,600,000.
Spring Creek No. 2	Located on Cypress Creek just West of Westfield	4180	58,520	100.	115.0'	1,500,000.
San Jacinto No. 1	Located on West Fork of San Jacinto River at the confluence with Lake Creek	3890	33,525	784.	155.0'	925,000.
San Jacinto No. 4	Located on the West Fork of San Jacinto River in the J. Whitaker survey	2744	25,210	234.3	222.0'	700,000.

Name of Dam	Location	Acres Under Water	Capacity in Acre-Feet	Drainage Area in Sq. Mi.	Elevation Crest of Dam	Cost
Caney Creek No. 1	Located on Caney Creek in the B.Blake Survey	805	6,930	83		\$400,000.
San Jacinto No. 2	Located on the West Fork of the San Jacinto River near the dividing line of the C.Koenig & A.Palmer tracts in the J.W.Singleton Survey	1032	5,830	428.6	170.0	375,000.
Peach Creek No. 1	Located on Peack Creek vicinity of BySpot	485	5,380			150,000.
Lake Creek No. 2	Located on Lake Creek below the Santa Fe	1018	3,075	212	200.0'	225,000.
Peach Creek No. 2	Located on Peach Creek Northwest of BySpot	277	2,750	12.2	297.0'	200,000.
Stewart Creek No. 1	Located on Stewart Creek in the edge of Conroe	300	2,400	13.3	208.0'	175,000.
SUB TOTAL FOR DAM CONSTRUCTION		60,181	885,620	(See Note 2/ Below)		22,197,000.

Note 1/ The estimate on East San Jacinto No. 0 and included in the totals is for the construction of a spillway to the ultimate height. Estimated cost of \$4,000,000.00 as submitted to War Board and used in negotiation called for construction of a temporary service spillway, no protection for emergency spillway and a spillway elevation 12 ft. lower than the ultimate, and did not include the additional land clearing and grubbing that would be required for the ultimate completed construction. The final construction was to be completed at a date subsequent to the war.

Note 2/

Drainage Area West Fork San Jacinto	--	1857 Sq. Miles
Drainage Area East Fork San Jacinto	--	1030 Sq. Miles
TOTAL Drainage Area San Jacinto (Confluence of Rivers)		<u>2887</u> Sq. Miles

CHANNEL RECTIFICATION

<u>Name of Channel</u>	<u>Location</u>	<u>Length in Miles</u>	<u>Estimated Cost</u>
Lake Creek	Beginning above Richards and extending to North End of Lake Creek No. 2 near Dobbins	19	\$240,000.00
Caney Creek (Grimes County)	Beginning at the confluence with Lake Creek and extending Northwest	16	225,000.00
Garrett Creek	Beginning at the confluence with Lake Creek and extending Northwest	5	25,000.00
Winters Bayou	Beginning at the Walker and San Jacinto County line and extending Southeast to the vicinity of Hills Store	7	150,000.00
Robertson Creek	Beginning at the confluence with Lake Creek and extending Northeast	7	25,000.00
Miscellaneous	Various creeks eliminating bends	10	300,000.00
	SUB TOTAL FOR CHANNEL RECTIFICATION	64	985,000.00
	GRAND TOTAL		23,162,000.00