

1885

The Atlantic and Gulf Coast Canal and Okeechobee Land Company: chartered by special act of the Legislature of Florida, 1881 : capital, \$10,000,000, one million shares, par value, \$10.00.

Kreamer, James M.

Salinger, Richard

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21/1/1911

LAKE TONGUEWATER TO ATLANTIC OCEAN.



LAKE OKEECHOBEE TO LAKE HERRINGWELL



OKEECHOBEE DRAINAGE CO.

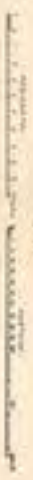
LEWIS M. WILKINSON,

CHIEF ENGINEER.

Specification Book of Improvements

Transmitting Report for 1888.

SCALE.



LAKE OKEECHOBEE TO LAKE TONGUEWATER



LAKE CALOOSAHATCHIE RIVER TO ATLANTIC OCEAN.



Handwritten text on the left page, possibly a list or index, with several lines of text and a small diagram or table at the bottom.

Handwritten text on the right page, featuring a large, prominent diagram or table with multiple columns and rows, possibly representing a classification or a set of data.

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Handwritten text on the right page of the second spread, featuring a large, prominent diagram or table with multiple columns and rows, similar to the one on the first page.

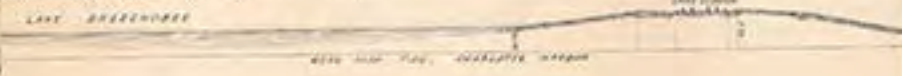
LAKE BUFFUM TO LAKE KISSIMMEE.



LAKE OKECHOBEE



SAWYER RIVER TO ATLANTIC OCEAN



OKEECHOBEE DRAINAGE CO.

JAMES M. KREMER,
CHIEF ENGINEER.

Sections in line of Improvement.
To accompany Report for 1914.

SCALE



THE ATLANTIC
AND
GULF COAST CANAL
AND
OKEECHOBEE LAND
COMPANY.

CHARTERED BY SPECIAL ACT OF THE LEGISLA-
TURE OF FLORIDA, 1881.

CAPITAL, \$10,000,000.

One Million Shares.

Par Value, \$10.00.



FEBRUARY, 1899.

OFFICERS

<i>President,</i>	CHARLES H. GROSS.
<i>Vice President,</i>	WM. H. WRIGHT.
<i>Treasurer,</i>	HAMILTON DUSTON.
<i>Secretary,</i>	RICHARD SALINGER.
<i>Chief Engineer,</i>	JAMES M. KREANER.

DIRECTORS.

CHARLES H. GROSS,	Philadelphia.
HAMILTON DUSTON,	Philadelphia.
WM. H. WRIGHT,	Philadelphia.
T. HENRY ASBURY,	Philadelphia.
LEWIS W. KLAGE,	Philadelphia.
JAMES L. HILL,	Philadelphia.
ARCH. C. HAYNES,	Philadelphia.
JAMES M. KREANER,	Philadelphia.
ROBERT W. GIBSON,	Philadelphia.
SAMUEL H. GREY,	Camden, N. J.
F. A. HENRY,	Fort Myer, Virginia.



LANDS FOR SALE.

The lands acquired by this Company are offered for sale at graded prices, from \$5.00 per acre upwards, according to the location and quality.

The lands of this Company are within the counties of Orange, French, Polk, Manatee and Monroe.

The greater part of them are in the region adjacent to the Caloosahatchee and Kissimmee Rivers. They are accessible and specially well adapted to settlement, and the culture of all tropical fruits and crops; also, of early vegetables for northern markets.

Along the coast and rivers in Monroe and Manatee counties are many tracts specially suited to coconut and pineapple culture.

There are, also, in the Caloosahatchee and Kissimmee country, many tracts specially suited for stock pasturage.

For sugar planting, either on large or small scale, this Company owns thousands of acres that are unoccupied. At present, these are for sale at the low price of \$20 per acre.

Lands of similar quality in Louisiana are held at from \$200 to \$250 per acre.

Applications for land should be addressed, and remittances made to

W. T. FORBES,

Land Commissioner, Jacksonville, Fla.



PROSPECTUS.

The Company was chartered by special act of the Legislature of Florida, March 26, 1835, and has a concession from the Board of Internal Improvement of the State of Florida, by the resolution of all bodies being made at Treasury 24 and east of First Creek, to the southern portion of the State; this concession amounting upwards of eight millions of acres.

The Board of Visitors of the Internal Improvement Fund (representing the State lands sold, by agreement, to "grow, graze, pasture and feed the extensive millions of head of live stock and live water belonging to the State, now possessed, or that may hereafter be acquired within the limits of this work, which may be retained, and then resolved to be cultivated, such lands to be conveyed in such quantities and at such times as may be pointed by the work.")

This new and most fertile tract of Florida Land is based on the character of its productions, climate and nature of the soil, including the "high and low lands," "low, second and third rate grass," and "young lands."

The soil of the first rate second rate grass lands is interspersed with diversified fields and farms, cultivated by means of other farmers or men, and will, without the aid of fertilizers, furnish large and numerous crops of corn, rice, sugar, cotton and tobacco, and is well adapted to the cultivation of oranges, lemons, limes, guavas, small fruits, jacks and other fruits and tropical plants. The limestone lands, and those bordering the Kissimmee River, the Calumuckee River, Lake Oklawaha and the various streams thereof, and the soil bordering included in said work of the Mahanock River, are peculiarly adapted to producing remarkably productive grounds, and particularly adapted to the cultivation of sugar cane, which may be considered as a business of the soil of the soil, as it is grown without manure, although one of the most productive crops known. The choice sugar lands of Louisiana are said to bear from 30 to 40 tons per acre, and are similar in character to those not described, which require the most judicious culture and are located before the work has.

Lake Oklawaha, which runs the course of the Kissimmee river, is a tract of very fertile lands by means of a canal or water, by means of a canal of some two thousand square miles. It has no outlet, but receives the drainage of a number of lakes interspersed by the Kissimmee River and other streams. During very heavy falls of water, this lake runs to such a point as to be but only a few feet high, but to cause the waters of the river to be held up so that the current becomes more or less interrupted and the waters find the Ocean and Gulf through the various and numerous channels or widely scattered streams.

This Company proposed to partially acquire these particular tracts, by the opening of a canal from Lake Oklawaha to the St. Johns and Calumuckee Rivers, that will not only permanently lower the level of the lake, but at all times furnish a safe outlet to the Gulf and Ocean for the waters of the lake and adjacent streams, and which will also afford means of communication for the products of the Kissimmee Valley and surrounding regions.

These matters have been considered by a series of committees. The report of these committees are attached herewith a statement of the total tonnage of the various rail routes through the various states in the West of Florida.

Quantities have been also set up by the various rail lines of the West from their ends in the north of the California line, from the end of Mexico through the end of the Company into Lake Thracian, thence to the north branch of Lake Thracian through the Government line, the end of the Company and Lake Thracian, a distance of 100 miles. Between the two main lines, which only to some extent is in the way of a through route, something was accomplished, including, some, which are either, under, a separate and is required by government. It proved to be largely by the setting of out of the Company's freight at the end.

The operations of the Company have been examined by us this date, and were a great deal of money has been expended in the work, and further expenditures will grow in the next few months. The work has been, generally speaking, and the success of the engineering, however, of the plant of the Company plant, several miles.

The following report of the engineer in charge of the work, gives a clear and concise statement of the operations of the Company, and the future progress of its various lines.

EDWARD WALKER,

General

REPORT OF ENGINEER AND SUPERINTENDENT.

JACKSONVILLE, FLORIDA, February, 1884.

To the President and Directors of the Atlantic and Gulf Coast Canal and Okechobee Land Company.

GENTLEMEN:—The following report, covering the operations of your Company for the year 1883, is respectfully submitted:—

TITLE: WORK AND IMPROVEMENTS.

An opportunity offered, during the year 1883, investigations were made with a view of preparing plans for the further drainage of Lake Okechobee and the bordering lands to the southeast.

These observations extended over the spring, summer and fall months, and a prolonged trip was made during the rainy season, in order to gain the conditions at that period. It having been reported that from Lake Halpogah—located five miles west of Lake Okechobee—a natural outlet occurred in waters with the southeast gales; and desiring to take advantage of a condition so favorable, a party was organized, and careful examinations of the shore lines of the lake and country adjacent was made. The result of this expedition established the fact that no natural exit for the waters of this lake looked anywhere exists, and that a permanent lowering of the water could only be attained by the construction of sufficient canals.

The soil bordering the lake is composed entirely of loam, mingled with a small percentage of sand and disintegrated marine deposits, underlain by a stratum of shell sand—the whole resting upon a coralline or limestone formation. The soil has a growth of the most luxuriant character, the lake margin being covered by a dense vegetation, dotted by numerous bunches of willow, cotton apple, etc., and great areas of towering glory vines, these latter have sprung up since the completion of the drainage canal connecting Lake Flot, at the head of the Columbus River, with Lake Okechobee. The presence of this species of vegetation is conclusive evidence as to the efficiency of your operations in that portion of the drainage system, and indicates that plant life is rapidly changing from the aquatic to the dry land variety. To the westward of Halpogah, the pine timber borders these rich lands, at several points being dotted but

three or four miles. From the lake, approaches may be made by canal or roadway south, west which the leader for construction, etc., could be transported to points on this lake or Okuchobee, and southwest. Lake Okuchobee is located in townships 24 and 25 north, and range 21 east, and is about six miles in its greatest diameter. Southwest from this lake is a suitable location for a drainage canal, having a course slightly east of south, and running in the direction of "Bosley's Landing," a point about two miles east of the western border of township 24 north, of range 21 east.

This canal would be on a general line which isolates the Everglades proper, from the main head on the west, and located in a natural depression into which the rain and waters of surplus flow in their way to the Gulf.

This canal would also do the requirements of a main line for the drainage of Lake Okuchobee, by constructing a branch extending south from, and tapping the lake in range 24 or 25 east. The waters of drainage would then be largely directed from the Caloosahatchee Valley and carried to the Gulf—via the improvement designated—filling the marginal depression of the Everglades on the west, and through the Harvey River.

This canal, constructed of adequate dimensions, could be made an avenue for the drainage of a large portion of the Northern Everglades. Lateral canals at intervals, tapping the rich bottom lands to the east and west, would have the effect of permanently reducing the water level of this region, and reclaiming a territory inaccessible on the basis of its soil, and capable of producing crops peculiar to this latitude, and which cannot be grown in any other section of the United States.

The construction of these canals should begin on the borders of the lakes, and be projected southwest. Supplies, etc., would reach the dredge boats and levees employed, via either the Kissimmee or Caloosahatchee Rivers, ample water communication having already been provided, by which water of the above nature could be used as a haul of supplies. In order to determine a close approximation of the cost of such an extended line of operations, it will be necessary to conduct the required field work, surveys, etc., to secure positive data as to the location, situation, profile, and character of material to be excavated, etc. I may say, however, that the general conditions of soil, surface growth, and general topography, are most favorable to the construction of canals necessary to the accomplishment of object in view.

A reconnaissance of the south shore of Lake Okuchobee, extending through the center of the Everglades to the head waters of Harvey's River, and thence to the Gulf of Mexico, was made during the winter of 1891.

The extreme south end of Lake Okanogan was ascertained and found to be about $44^{\circ} 40' 30''$ north. In this locality, eight bays were examined; they extend in a westerly direction, from the general shore line of the lake, from one to two miles, through low ground, to the sea-green, where they cease. These bays are from one hundred to three hundred feet wide, and from eight to ten feet deep, with soft mud bottoms. In many places, the banks of these bays are elevated from one to two feet above the lake surface; the soil is of a rich, dark color, and of fine quality. The marginal lands support a growth of willow, coastal apple, etc. In projecting the meridian line, south from this point, frequent soundings were made with a ten fath rod. No rock was found until a point thirty miles south of the lake had been reached, when, at a depth of eight and one-half fath, soft sandstone was struck. At thirty-five miles, rock was found again and reached the lake surface. At about fifty-five miles, rock was found at four feet. At this point, the northern limit of the lower Everglades was reached. The route of General Childs, from Miami to "Wasp Halls," leading, as laid down on the Jeff. Davis map of the State of Florida, may be considered the dividing line between the upper and lower Everglades. The upper or northern glades, being composed of a solid body of dense saw-grass, extending thirty miles east and west, and fifty miles north and south, and which has hitherto been considered impenetrable. As before noted, the surface of this soil is at times exposed, and it is only during, or subsequent to a heavy rainy season, that it is possible to proceed with a light draft, and even, advantage may be taken of the natural drains of the saw-grass. If there was an absence of the dense saw-grass, no difficulty would be experienced in traversing this country in any direction. A few feet reduction in the surface of the water of this region would be sufficient for purposes of cultivation, etc.

The surface of the country is generally unbroken by ponds or sloughs, and, due to marginal causes, is becoming more and more elevated, and the side of one vast expanse of rich soil which nature has been creating up for ages. There is a marked difference in the characteristics of the lower Everglades. It is made up of numerous rich islands, with saw-grass borders, separated by sloughs, which form allied avenues for traversing the country. Another mark, the lower Everglades is a saw-grass region, cut up by numerous natural water courses, having a course generally westerly, and filled by thousands of islands. The surface of the lower glades is well elevated above the level, but, due to the rise of an overlapping low rock extending along the Gulf and Atlantic borders, the water, in a great measure, impounded and retained at a varying elevation above the tide. Land and

measurements taken at Lake Worth, established the surface of the fresh water of the Everglades to be ten and one-half feet above the tide waters of the Atlantic, and that a canal seven hundred feet long, would afford relief for a vast area westward. Examinations at Miami and other points, disclosed the presence of this rocky rim, whose crest was elevated above the normal level of the waters of the ocean. It would be perfectly feasible to cut this rim at frequent intervals, and permit the impounded water to flow out into the Gulf or Atlantic. This would result in exposing great tracts of soil, now practically valueless. From these points, drainage canals could be projected into the interior.

These recent observations as to the topography and natural barriers of the Everglades Region, and feasibility of reclaiming the same, are merely following in the line of research, respecting this interesting territory, begun many years ago. The earliest extracts taken from a letter written by General Thomas S. Jesup, to the Hon. J. D. Wadsworth, United States Senator, dated February 17th, 1847, show the intelligent observations had been made by the United States Officers engaged in the Seminole war. He says:—

"From my own observations, when commencing the survey, extending to
"the country ten years ago, as well as from reports made by, and infor-
"mation derived from intelligent officers, who operated there, and who
"explored the Everglades and the large lake, Okechobee, north of them,
"I have no doubt the glades are about fifty feet above the level of the
"sea. * * * * * The practicability of draining both, I take for
"granted. * * * * * The effect of the measure would be, to reclaim
"many hundred thousands of acres, without including the bed of the
"Everglades, now subject to inundation for several months every year,
" * * * * * Were the surface of the lake and the glades lowered,
"these low lands would be reclaimed, and would soon be converted into
"as valuable sugar plantations as any in the world. The hammocks of
"this country are exceedingly rich. These reclaimed lands would be con-
"verted into rice, wheat, and orange plantations, and would be cultivated
"by a numerous white population. * * * * *

Druckmiller, in a report to the United States Senate, dated June 27, 1847, on the feasibility of draining the Everglades, made use of valuable information conveyed in a letter written by General Wm. S. Harvey, of the United States Army, dated January 23d, 1847. Not following extracts:—

"During the late Seminole war, I was repeatedly in the Everglades,
"and on the rim or margin at different points, and crossed it from Miami
"to Black Key. * * * * * Of the practicability of draining them,

"I have no question. That such work would reclaim millions of acres of highly valuable land, I have no doubt. My plan for doing the work would be, to dig a large and deep canal from Lake Okechobee, into the Caloosahatchee River, on the west side, and a like canal from the lake to the Lochowatchee River on its east side, and similar canals from the glades into the head of the Kaptowee, Little River, North Creek, Miami, Shark River, and other outlets on both sides of the Peninsula. I am satisfied these canals and drains once opened, the glades will become dry. No person can say, with positive certainty, what the soil of the Everglades when drained, would or would not produce; but it is my opinion, it would be the best sugar land in the world, and also excellent for rice and corn. It would, in that behalf, be such valuable for raising tropical fruits; and it is the only region of the present United States in which they can be raised. * * * I do not know of a project that I regard as more calculated to benefit the country than this. * * * It affords the Union just the kind of cultivable land that is wanted to render us, to a great extent, independent of the West Indies."

The work performed by your Company has already improved our means of health identical with those just referred to, and also a large quantity whose soil differs somewhat from the rich deposits of human excrement to the Everglades regions. I refer to what is known as the granite and pine lands of the Southern Peninsula. These the rich land, so essential to the prosperity of plants in the Northern and Eastern States, is not an indispensable condition with vegetable life. An examination of this soil shows it to be composed largely of decomposed carbonates of lime and phosphate shell life of animals of distinct sea animals, and the fossilized remains of the gentle life of some tropical waters. It has been estimated that each cubic foot of this debris of decomposed vegetable life, shell fish, etc., represents about one thousand times that quantity of original matter. Here, indeed, we have in the soil a natural fertilizer of no mean quality, upon which a permanent vegetation flourishes without extraordinary effort, and where even up cultivation may be conducted throughout the entire year. This peculiar character of the soil is not confined to the recent formation of the Gulf and Atlantic Coasts, but it is a distinguishing feature of the lands of the interior, where, at elevations of twenty feet and upwards above the surface of tidal waters, shell and other marine deposits constitute a large percentage of the soil, and are ever present to neutralize the acids of decomposing vegetable life, thus rendering an immediate and profitable cultivation of either the heavy bottom lands or the elevated marsh adjacent.

It will be desirable to still further improve the channel of the upper Caloosahatchee River, in the vicinity of Fort Thompson. An outcropping ledge of soft loam rock exists at this point, causing a natural constriction in

the above channel. The work already performed by the Company has had the effect of preventing the periodical overflow of the lands adjacent. The river at the head of this construction receives the waters from Lake Okoshabea, Hehpahtee, and the general water shed intervening. It also receives a large percentage of the drainage of the great Calawachichie Slough, extending from the north, and which, at times, flows in more water than the sources just noted. By diverting the waters of the Calawachichie into the Okoshabea, at a point several miles west of Fort Thompson, this condition could be readily modified, and accomplished at a moderate cost.

KOONAMON VALLEY.

Regarding the Koonamon River, and the lake region (encompassed by and at the head of the same), several reports have already been prepared. During the past season, however, additional data has been secured, which will essentially aid in determining the best lines to be pursued in the further improvement of the river channel for navigation and drainage. Work is now progressing on this river south of Lake Koonamon, consisting in cutting off bends and straightening the channel, and already the distance to Lake Okoshabea is considerably lessened over the old line of river travel. It will be perfectly feasible, by additional work in this locality, to lower Lake Koonamon several feet. This will create a great reservoir for the accumulation of storm waters, and render much land at present uncultivated.

Several examinations have recently been of Lake Koonamon develops a continuous marsh, extending to Lake Cypress. It is partly on the east range line of township 23 north, range 35 west, and affords a practicable line for constructing a drainage canal, about five and one-half miles long, for the better relief and lowering of the waters of Lake Cypress. It is proposed, however, before this is done, to connect Lake Cypress with Lake Hehpahtee, by a canal about two miles long—a work which will possibly be in hand at the time of proceeding this report. This canal will be thirty six feet wide and six feet deep, and completed before next rainy season.

The dividing line between townships 22 and 23 north is the southern boundary of the drainage district. About nine miles north is Lake Cowsey, the summer level of this reservoir, and from which the water breaks away in several directions. This basin has an area of about sixteen square miles, and is elevated one hundred and six feet above tide-water. On its east bank, several channels descend southwest by Peggy Creek, and by oblique a percentage of its waters flow into East Tokeopolatiga Lake.

The porosity of the soil permits the waters of surrounding bays, etc., to percolate into these lakes, which, normally, are land-locked reservoirs, and thus maintain a constant surface level. East Tohopekaliga is thirty-five feet lower than Conway, and its surplus waters naturally find an outlet through the rich marshes of "Cross Prairies," connecting it with Lake Tohopekaliga; the latter situated about four miles to the south-east, and normally six feet lower than East Tohopekaliga. The drainage from Lakes Isabel, Alligator and Gentry, and Canoe Creek, is into Lake Cypress, with a fall of twelve feet from surface of Lake Alligator to Cypress.

General Gillmore, in his report of June, 1882, to the Senate Committee, on feasibility of constructing an inland canal across the peninsula of Florida, from St. John's River to Charlotte Harbor, and whose observations were largely made within the limits of the drainage district, in speaking of the nature of the soil, remarks:—

"The subsoil is a well stocked receptacle and storage magazine, from which, by innumerable veins and rivulets, the lakes and ponds are fed. * * * * * An open and comparatively deep cut would soon cause a very active flow of these subterranean waters to its bed, which would probably be abundantly supplied with water from this source for a certain length of time. But gradually the level of these subterranean waters will be lowered by the unceasing drain, the stock of stored up waters will become exhausted, and, while the swamps may be reclaimed by the operation, their usefulness, as direct or indirect feeding reservoirs to the canal will be destroyed, or very materially impaired."

This opinion, of one of the ablest engineers in the United States, is confirmed by the operations of the drainage canals on the Caloosahatchie and Kissimmee rivers.

CONSTRUCTION.

Dredge No. 3.

On August 1st, of 1884, Dredge No. 3 was completed, and a trial of her capacity made. A detailed statement of size of hull, machinery and operations of this boat, has already been presented.

The material in excavation on the several lines of our operations, varies in its nature, consisting of all grades, from pure muck or humus, to sand, marl and soft lime-strata, and an admixture of two or more of these materials. Dredges which will economically and rapidly remove muck, do not operate so satisfactorily in tenacious deposits, and with less efficiency in the other classes of excavation.

In order to correct these difficulties, it was determined to construct a dredge to operate on a different principle from those already in possession of the Company. The new design was that of a suction dredge provided with an apparatus to cut or break up the material to be removed, and drop it at the mouth of the suction pipe. This dredge is capable of excavating a canal six to ten feet wide and twelve feet deep. It is supplied with a fifteen inch catwalk pump, operated by a Westinghouse engine of 125 horse power, which, with the gearing and connections, are placed upon a iron table located on the forward part of the boat. A fifteen inch pipe connecting with the pump, projects over the bow of the boat, and when in position for cutting, is set at an angle dependent upon the depth of excavation. This pipe, by means of machinery operating the iron table, is given a lateral motion, in cutting and discharging the cut of a circle, the end of which measures sixty feet. At the end of the pipe is a vertical cutting or excavating apparatus, consisting of a series of iron shovels with cutting edges, connected to a vertical shaft, capable at one rotation of making a cut about eight feet deep, and its power of penetration now few of back only limited by nature of material. The driving power is supplied by the main engine. In and, as an indicator of cost and work, this apparatus gives complete satisfaction; we find, however, in use deep excavations, that a stratum composed of thin layers of material resembling sandstone exists. In this, the operation of the cutting apparatus was not satisfactory. In order to correct this difficulty, a new form of cutter is now being supplied, which it is believed will fill the requirements. The excavated material is elevated through the suction pipe, and catwalk pump, and forced through a pipe extending laterally from the side of the boat, and deposited beyond the margin of the excavation. This boat completes her canal as she proceeds.

While working under this system, have been in successful operation in other sections of the Canal. Dredge No. 2 was built at Keokuk City, under the supervision of Captain Row, Assistant Superintendent, who is credited with the general plan of combining the excavating apparatus with the operation of the catwalk pump.

Dredge No. 4

This boat was constructed in 1853, and chiefly fitted with coal and tackle for towing logs, etc. While in this condition, she did a large amount of work in Tiger Creek, between Lake Keokuk and Walk-in-Water, in removing snags, cutting off points, etc. She was also engaged on Cow Path between Lake Ojibwa and Hackmata. It was dismantled in 1854.

prove her efficiency by the introduction of steam hoisting machinery, which could also be made to do service by cutter attachments, in widening and deepening river channels and cutting off lands, etc.

On April 24th, 1884, she arrived at Kaminson for the purpose of introducing the machinery. While there, she was remodelled, a second story was added, and more comfortable quarters for crew provided.

On May 27th, she was completed and started north.

TRAWLER "KINLOCH"

For the purpose of securing a more expeditious service in supplying our bridges and locks operating at points remote from Kaminson, and also to provide the officials of the Company prompt and speedy service in reaching our works, and for purposes of maintenance, it was determined to construct a steam launch, capable of carrying needed supplies, and affording accommodations for a party of ten. The "Kinloch" was built at Kaminson, completed in September, and was placed in commission, and has been a valuable aid ever since. She is forty feet long, ten feet beam, seven wheel, spright boiler, Worthington engine, etc. Speed about seven miles per hour. She handles remarkably well on the turbulent waters of the river. On my several trips north, we never experienced any difficulty in navigating this boat from Kaminson to the Gulf. She fills all the present requirements in this department.

DISCHARGE CANALS

In this department, the operations of the Company for the year, have been confined to the upper Colosuchashie, between Lake Flit and Lake Oshichobee, on the Kaminson River, between Oshichobee and Lake Kaminson, and in the upper portion of our drainage system, canals have been constructed, extending north from Lake Koo Tokegahlyg to Lake Hahkasho.

OPERATIONS ON DREDGE NO. 1

Dredge Boat No. 1, carrying nine thousand in necessary repairs to machinery, etc., has been in active service since January, 1884.

Her work began at Lake Flit, in the Upper Colosuchashie Valley, at a point where navigation ceased, and between which and Lake Oshichobee the accumulation of sand and vegetable deposits, etc., was, in great measure, an insurmountable barrier. No outlet had been created in her line of operations. From Sugar Berry Hamock to Lake Oshichobee, a distance of about seven miles, the canal was constructed through a body of new-grass lands; she reached Oshichobee Lake December 20th, 1884.

During year 1883, she was occupied in improving the drainage of country west of Sugar Ferry Hammock, and returned to vicinity of Lake Flot in winter of that year. During 1884, No. 1 was probably engaged in constructing additional reach east of Lake Flot, and completed a canal along the entire southern border of the lake. Under ordinary conditions, the water of drainage is diverted to this canal, and the lake bed is largely exposed, and could be cultivated, being composed of a deposit of fine soil. About April 25th, the dredge passed Coffin Mill Hammock, and reached Sugar Ferry Hammock in June, having accomplished such additional work. At this point she lay up for general repairs—had her rigging and water pumps of Machinery connections renewed, and such other work done as yet had in complete order.

During first work in August, the steamer "Beulah Lee," a large Mississippi boat, was towed and fifty feet long, passed the dredge to the mouth of the canal, on west shore of Lake Halgachoo. The "Beulah Lee" had passed through the canal and impinged directly on Kinsman City, and was on her way to the Gulf.

On August 13th, Dredge No. 1 commenced the work of doubling the capacity of the canal from Halgachoo westward, and to January 2d, 1885, had excavated for and two-thirds miles, leaving a finished width of sixty-six feet wide and six and one-half feet deep. This canal is open and free from obstructions, in many places due to excessive action of water flowing with a velocity of two and one-half miles per hour, a deepening has taken place.

It is reported that, since the lowering of the general water level in this portion of pond drainage territory, the surface water, in its direct rapid flow to the canal and river, has washed out well defined channels. In many places these beds are twenty to thirty feet in width, and extend to the creek on each side. The water surface of Lake Halgachoo is two feet lower than in January of 1885, and the surface of Lake Okuchoo is eighteen feet lower than at that date.

Captain J. F. Mays, in charge of operations at this point, reports that high land growth is taking possession of the unwatered low ground regions, and the surface of the soil is much lower than on any spot during the fall of 1884.

Total distance excavated by No. 1, during 1884, and 2) 1885) about 100, or 2.17 miles.

This would represent an excavation of 314,400,000 cubic

Appended is a monthly statement, showing operations of No. 1 for the year 1884.

Operations of District No. 1, for Year 1884.

		Total	Value	Per Cent
Jan.	No. sailing for week, arrived in District, from other ports, Transferred from other ports, Remained District,	10 10 10	10 10 10	10
Feb.	No. arrived from other ports,	10 10	10 10	10
March	Remained from other ports, No. arrived from other ports, Remained District,	10 10 10	10 10 10	10
April	Remained from other ports, No. arrived from other ports, Remained from other ports, Remained District,	10 10 10 10	10 10 10 10	10
May	No. sailing from other ports, Remained from other ports, Remained District,	10 10 10	10 10 10	10
June	Remained from other ports, Remained from other ports, Remained from other ports, Remained District,	10 10 10 10	10 10 10 10	10
July	Remained from other ports, Remained from other ports, Remained District,	10 10 10	10 10 10	10
		Total	Total	Total

OPERATIONS OF DITCH NO. 1, FOR YEAR 1884.—Continued.

		Week of Month	Days in Year	Cost
<i>August forward</i>				
August	Sawmill "Dodge Lumber" moved No. 1, from Upper Ferry to Lake Tulepoko- lga; on 14th commenced work of hauling "saw" from Tulepoko- lga forward.	1st	100	
		2nd	111	
		3rd	122	
		4th	133	1,000
<i>September forward</i>				
September	Continued work to work in delay.	1st	144	
		2nd	155	
		3rd	166	
		4th	177	1,000
<i>October forward</i>				
October	No serious delay in operations for month. Resumed work now and here at various points.	1st	188	
		2nd	199	
		3rd	210	
		4th	221	1,000
<i>November forward</i>				
November	Said and well along. Fragments of night, but commence work. Night repairs.	1st	232	
		2nd	243	
		3rd	254	
		4th	265	1,000
<i>December forward</i>				
December	Sawing better; better and in fact for work requiring better mt.	1st	276	
		2nd	287	
		3rd	298	
		4th	309	1,000
				4,000 total

OPERATIONS OF DITCH NO. 2.

Ditch No. 2, has been in service since the early summer of 1871.

At present, the fall and upper works are sound, better and engine in good order, and machinery in very fair condition. As in all forms of this character, and operating in this class of work, it is necessary to periodically renew water parts subject to constant wear and friction.

This year, during the year 1884, has been largely engaged in excavating a canal thirty-six feet wide and six feet deep, to connect Lake Tulepoko-
lga with Lake East Tulepoko-
lga.

The work is begun on a line established through the low bottom lands of Cross Prairie. The difference of level between these two lakes in 1884,

before any work had been performed, was found to be six feet six inches; the fall being to the southeast. During month of May, 1884, when the water of East Tebegekuliga was at its normal level, and Lake Tebegekuliga at its lowest normal level, a difference of nine feet between the surface of the two lakes was noted. After the rainy season, State Agent J. M. Dancy established the difference in elevation between these two lakes, at seven feet six inches, or about thirty inches fall per mile.

The work of constructing the canal was commenced in January, 1885, and on January 26, 1886, No. 1 was finished from Lake Tebegekuliga first downward six hundred feet. The land comprising the canal at the present, and costing her one hundred, necessitated the construction of two dams in order to obtain excessive depth of excavation. The first dam was commenced during latter part of February; dams were also built in May and July.

The dredge passed the Fairy Run on June 12th. On 17th of same month, in company with First Lieutenant H. A. Dwyer, a general inspection of lake and her operation was made.

Due to the gross nature of the material entering into construction of dams by lock filling, some difficulty was experienced in keeping them clear, and in several instances, wash-outs occurred. These were repaired however, with but little loss of time, and at small expense. From August 15th to September 25th, the dredge crew, as indicated by water table, was employed in constructing the last dam near East Tebegekuliga Lake.

The canal was completed September 1st. From the date said November 2nd, the work consisted in the construction of jetties to prevent the growth of the canal, and deepening bed of lake within line of jetties.

During this time, the boat was generally overhauled, and new chain completed. On November 2nd, the several dams on line of canal were cut, and water given to the water of the lake. A number of jetties were added to witness the increasing current. The first rush of the water carried away the last vestige of the dams and accumulation in the canal, and the velocity of current established, was sufficient to move out the entire drain, comprising the bed of canal, to a depth of several feet below the line of excavation. For about ten days there was but little difference noted in velocity and force of current. The rapid reduction in the surface level of the lake, however, soon told on the flow in the canal which gradually diminished in force. During the last thirty days, the lake surface fell thirty-six inches.

There was some apprehension that this rapid flow of water would cause an obstruction due to Lake Tebegekuliga. The result, however, was that the lake rose at rate of one half inch per day, for last ten days, after

which the rise was hardly perceptible up to December 14th, when it reached a maximum of nine inches above the level, at time of cutting the dike.

This lake is now steadily falling, and will soon be at its reduced normal level. The tertiary through which the canal tunnels is composed of soft loam, the soil being identical with that hereafter described, and well-passed in fertility. Since completion of this work, the surface waters have been lowered, the soil has dried out and could be utilized for cultivation. Where the dredge crew worked in their bed of sand and water, the surface of the soil is now dry, and water-level in canal 31 feet within 100 yards.

Lake East Tahqualegn, formerly surrounded by cypress and marsh margins, has developed a beautiful wide sand beach, the bordering lands are cleared and marshes changed to rich vegetable lands.

No. 2, for the twelve months averaged one thousand and eighteen linear feet of canal, thirty-six feet wide by six feet deep. Since the end of November she has averaged, cutting and disposing the canal generally, throughout its entire length. Her work would show more economical results, if she were confined with time consumed in waiting an opportunity to cut the dike.

During the year, No. 2 has excavated twelve thousand one hundred and thirty-two feet of canal, six feet by thirty-six feet, and sixteen thousand seven hundred and seventy-five feet of canal, ten feet by thirty-six feet, making a total excavation of one hundred and sixteen thousand one hundred and fifty-seven cubic yards.

OPERATIONS ON LAKE NO. 2, FOR YEAR 1884.

		Work done by No. 2	Quantity of material disposed	Total
January	Cutting between Lake Tahqualegn and East Tahqualegn.	100	300	5,112
	Excavation—dike, sand, beach.	100	200	
		20	100	
		10	112	
February	Cutting head and tail canal, also work- ing rapidly; canal banks slightly higher above water level; also normal flow.	100	300	1,000
		100	100	
		20	100	
		10	100	
March	Excavation to work, at tail.	10	10	1,000
	Excavated by other steam and wheel dredges.	100	100	
		20	100	
	General work during 1884 to 1885.	10	100	
Grand Total.				1,000

Table of Contents

	Page	Page
I	1	1
II	2	2
III	3	3
IV	4	4
V	5	5
VI	6	6
VII	7	7
VIII	8	8
IX	9	9
X	10	10
XI	11	11
XII	12	12
XIII	13	13
XIV	14	14
XV	15	15
XVI	16	16
XVII	17	17
XVIII	18	18
XIX	19	19
XX	20	20
XXI	21	21
XXII	22	22
XXIII	23	23
XXIV	24	24
XXV	25	25
XXVI	26	26
XXVII	27	27
XXVIII	28	28
XXIX	29	29
XXX	30	30
XXXI	31	31
XXXII	32	32
XXXIII	33	33
XXXIV	34	34
XXXV	35	35
XXXVI	36	36
XXXVII	37	37
XXXVIII	38	38
XXXIX	39	39
XL	40	40
XL I	41	41
XL II	42	42
XL III	43	43
XL IV	44	44
XL V	45	45
XL VI	46	46
XL VII	47	47
XL VIII	48	48
XL IX	49	49
XL X	50	50
XL XI	51	51
XL XII	52	52
XL XIII	53	53
XL XIV	54	54
XL XV	55	55
XL XVI	56	56
XL XVII	57	57
XL XVIII	58	58
XL XIX	59	59
XL XX	60	60
XL XXI	61	61
XL XXII	62	62
XL XXIII	63	63
XL XXIV	64	64
XL XXV	65	65
XL XXVI	66	66
XL XXVII	67	67
XL XXVIII	68	68
XL XXIX	69	69
XL XXX	70	70
XL XXX I	71	71
XL XXX II	72	72
XL XXX III	73	73
XL XXX IV	74	74
XL XXX V	75	75
XL XXX VI	76	76
XL XXX VII	77	77
XL XXX VIII	78	78
XL XXX IX	79	79
XL XXX X	80	80
XL XXX XI	81	81
XL XXX XII	82	82
XL XXX XIII	83	83
XL XXX XIV	84	84
XL XXX XV	85	85
XL XXX XVI	86	86
XL XXX XVII	87	87
XL XXX XVIII	88	88
XL XXX XIX	89	89
XL XXX XX	90	90
XL XXX XXI	91	91
XL XXX XXII	92	92
XL XXX XXIII	93	93
XL XXX XXIV	94	94
XL XXX XXV	95	95
XL XXX XXVI	96	96
XL XXX XXVII	97	97
XL XXX XXVIII	98	98
XL XXX XXIX	99	99
XL XXX XXX	100	100

OPERATIONS OF DESERT No. 3.

Desert No. 3 is the biggest, and, in her appointments, the most complete boat in the service of the Company.

On August 28, 1884, she was placed in service at Soulport, at the mouth end of Lake Tshopetakihi, in the work of enlarging and deepening the canal leading to Lake Cypress. The original canal had been excavated thirty-six feet wide, and six feet deep. No. 3 is engaged in removing from the east side of the canal, an additional section, thirty-five feet wide and ten feet deep, besides deepening a portion of the bed of the original canal.

Her work in the lower and mid bed of Little River, at the mouth of canal, was somewhat retarded by the presence of numerous rotten logs, etc. Cypress trees, on the line of excavation, two and three feet in diameter, imbedded eight feet below the surface, caused frequent delays and troubled with a mass of cotton and bird tracks.

Her machinery worked satisfactorily, and remarkably smooth, and, in all respects to work at wood, her record of efficiency was very good.

She handled fully twenty-five per cent. of sand through her pumps, leaving a clear channel and level bed in the canal.

Due to an accident, arising from a defective connecting rod, which developed after the boat had been in service about one month, the design, on September 15th, was taken to Kankonau for repairs.

A close inspection disclosed a flaw in one of the main cylinders, which was not apparent when the work was first up, or on the trial run, prior to commencing the work. It was found a new cylinder would be required, the Waukegan & Co. agreed to furnish free of charge, excepting transportation. After careful handling, however, the engine, on September 25th, was again placed in service, and has run smoothly since.

By October 15th, she had completed the deepening of lower, etc., and began widening of canal proper; as she progressed in this work, a thin stratum of lime rock, underlying the rock and sand, was encountered at a depth of about seven feet below the surface of the water, or ten feet below the surface of the soil; the drainage effected by the original canal, having already developed banks three feet high. The presence of this rocky stratum retarded rapid progress, and added materially to cost of excavation. At points it would dip below the bed of completed canal, and again was found nearer the surface, and less tenacious in its character. In sand and rock, the pump usually handled from twenty-five per cent. to forty per cent. of sand material. With no sand, and the solid regions noted, the engine would not break down and driven more than five per cent. or ten per cent. of capacity of pump. After several experiments to improve

the efficiency of the cutter in use, it was found that the cutting blades, revolving in a horizontal plane, could not be forced into the face of the excavation, without damage to the suction pipe or tank lead gear, etc.

It was then decided to construct an excavator, the cutting blades of which would have a vertical action. The boat was withdrawn from service during November, for purpose of making the alterations decided upon.

The construction of an economical and effective excavating apparatus will render this one of the most satisfactory and efficient boats in port service.

Her log shows that she was in service about three months, having worked under great disadvantages, only fifty days of actual working time was recorded. During this interval she constructed two thousand five hundred and thirty five lineal feet of canal.

Total excavation by No. 2, to date, forty five thousand and sixty two cubic yards. The operations in detail are furnished in following statement:

OPERATIONS OF DREDGE NO. 2, FOR YEAR 1874.

		Work of Month.	Days in Month Used.	Total.
August	No. 2 went into service during month of August. Operations largely experimental; apparatus not suitable, and not used.	1st,	000	794
		2nd,	161	
		3rd,	121	
		4th,	112	
September	Boiler becoming out of repair; excavator not used from 1st to 7th instant in consequence of repairs needed to tank gear.	1st,	00	320
		2nd,	00	
		3rd,	175	
		4th,	145	
October	Cutting off point in cut (over) at night and high water besides with some in canal proper; some mud work; accident to suction pipe.	1st,	411	379
		2nd,	140	
		3rd,	172	
		4th,	11	
November	Trouble with cutter blades; jet reversing gear in cutter shaft, and main and belt stay in excavation; injury to suction pipe.	1st,	71	400
		2nd,	71	
		3rd,	158	
		4th,	100	
December	Sickness in bed of excavator; returned to Engineer to change form of cutter blades and other modifications.	1st,	000	71
		2nd,	000	
		3rd,	71	
		4th,	000	
Total working.				5,411

OPERATIONS OF DRIFT NO. 4.

From January 1st, 1884, to July 4th, this boat was engaged in improving the natural channel connecting Lake Cypress and Kiamiswau, locally known as the Cow Path; during this time she cut two thousand one hundred and sixty-two linear feet of canal, forty feet wide and four feet deep.

From February 24th to 1st, she was laid up in Ready Creek, at the Lake Cypress. On February 12th, No. 4 was engaged in extending the piles at mouth of canal, at headport, and continued there until April 10th. At this time the boat was without steam power, and only supplied with a crab, tackle and shore poles for hauling logs, etc. The excavation was performed principally by manual labor, and proved both efficient and economical. Her labor on the Cow Path rendered it possible for the large Mississippi steamer, "Bertha Lee," to ascend to Kiamiswau City. During the latter part of April, the boat was taken to Kiamiswau City, where she was, in great measure, rebuilt; a second miter, for accumulation of cope was added, and steam hoisting engine, boilers and other appliances put in.

This work was completed May 27th, and she started south as usual, and engaged in some important work in the canal to Lake Cypress, arriving there about July 1st.

Prior to this a new counter-shaft, pistons and valve wheels had been added, also, larger and stronger winding drums. In this work, she improved a channel two thousand three hundred and sixty-two linear feet.

Since July 1st, in fact, No. 4 has been steadily at work on the river south of Lake Kiamiswau. In her improved condition, she works with remarkable facility in straightening and improving the tortuous course of the river.

Many cuts, not exceeding one hundred yards in length, shorten the course of the river from one-half to one mile. One cut, twelve hundred feet in length, avoids a run of three miles, and avoids five very sharp bends. The cut on which she is engaged at present, will be two thousand feet long, and avoid more than five miles of exceedingly tortuous river track. Besides, she has removed many trees, stumps, etc.

These improved channels average fifty feet wide, and from two to six feet deep.

The effect on the drainage of Lake Kiamiswau, by this shortening of the river, is quite evident.

The channel constructed on the lower river measures six thousand seven hundred and eighty-eight linear feet. The material excavated amounts to eighty-three thousand five hundred cubic yards.

Statement of Debits No. 2, for Year 1864.

		1864	1865	Total
Jan	Spending in Early Term and for the balance of Term before the Midwinter closing of work.	533.00	200.00	733.00
Feb	Travelling money to school, and in and out of town before the close of school, and for miscellaneous expenses.	333.00	111.00	444.00
Mar	Being made current in going to the school in Washington.	333.00	0.00	333.00
Apr	Travelling money to school, and in and out of town before the close of school.	333.00	0.00	333.00
May	Being in the year before the close of school, and for miscellaneous expenses.	333.00	0.00	333.00
Jun	Spending in going to school, and for the balance of the year.	333.00	0.00	333.00
Jul	Being in the year before the close of school, and for miscellaneous expenses.	333.00	0.00	333.00
Aug	Being in the year before the close of school, and for miscellaneous expenses.	333.00	0.00	333.00
Total		2400.00	311.00	2711.00

OPERATIONS OF DREDGE NO. 2, FOR YEAR 1894.—Continued.

		Work at month	Contract or Special Pay	Total
<i>Receipts received.</i>				1,731
September.	Removing mugs and bars: completed and No. 2.	1st.	600	
		2nd.	600	
		3rd.	600	
		24.	131	
October.	Out all second hands. Removed mugs, etc. Completed runs Nov. 4, 5, 6.	1st.	600	
		2nd.	343	
		3rd.	373	
		24.	180	
				1,496
November.	Completed canal which runs off the bars and channels into tank and mill-race.	1st.	600	
		2nd.	600	
		3rd.	600	
		24.	1,600	
				3,700
December.	December 2d, finished run off, and stopped down to College Blk., removed mugs, etc. finished run and returned cable.	1st.	600	
		2nd.	750	
		3rd.	600	
		24.	300	
				1,250
Grand total.				11,476

STEAM TUGS.

The steamer "Okechabee," has been constantly employed during the year, and, with exception of removal of main shaft, has required but little repair. She has been employed in conveying supplies to dredge boats, and in making almost daily trips to the scene of operations with parties desiring to inspect the reclaimed lands, and the engine propulsion established at Southport, on soil which was, until recently, permanently covered with three feet of water.

The steam launch "Kowalee," has been steadily in service since her completion; she is a most valuable aid as a quick messenger and supply boat, and has been repeatedly utilized by officers of the Company in surveying and reconnaissance. She handles remarkably well in the narrow windings of the river, and is adapted to tidal water service. She meets the requirements of the Company in the western portion of the drainage system, and can be utilized for rapid runs to Lake Okechabee and the Calumetanchee River.

GENERAL SUMMARY.

The excessive rainfall throughout the drainage district, during the summer and autumn of 1884, has been a severe test of the efficiency of your operations in this.

The benefit of the work performed west of Lake Kinnear, on the line of Tiger Creek, which intercepts Lakes Tiger, Rosalie and Walk-in-Water, has been very marked.

In this work sixty-five thousand four hundred linear feet of channel was improved and enlarged to a width of forty feet, and depth of ten five feet. Eight thousand two hundred and twenty-one stags were removed, and one thousand three hundred and thirty-five trees cut down, besides two hundred and thirty-six becks in creek were straightened.

These several lakes have been maintained at a reduced level, and at no time has their surface risen within two inches of the normal summer level.

Lake Fort Taboekakiga has fallen, since the opening of canal, in November, three feet and ten inches, a remarkable reduction.

Lake Taboekakiga, covering an area of twenty-six square miles, drains an extensive watershed; it has also received the waters from Lake East Taboekakiga, covering an area of twenty-five square miles. A rise of only nine inches occurred from the rapid discharge from East Lake, which ceased after the five days' stay. Under these adverse circumstances, the highest level reached by the waters of Lake Taboekakiga, was two feet eight inches lower than the plane of reference which established the normal level of this lake when we began operations.

The several lakes south of Taboekakiga have been maintained at a lower level than normal, and the great Lake Okonobabee, is eighteen inches lower than one year ago, and Lake Hahpachee is two feet lower.

The low water level of the stream, has had the effect of rapidly draining the territory adjacent, and, as a consequence, new lateral water-courses have been formed, which materially aided to carry off surface water.

The improvement of the Columbian River at Fort Thompson, consisting in the removal of such obstructions to navigation and drainage, has benefited that country very much.

Total excavation by the several dredge boats for the year 1884, as shown by weekly reports, aggregate as follows:—

Dredge No. 1.	114,485 cubic yards.
" " 2.	119,817 " "
" " 3.	47,495 " "
" " 4.	82,100 " "
Yield	463,897 cubic yards.

RECOMMENDATIONS.

1st. Supplemental to the recommendations heretofore submitted, and in order to rapidly prosecute the work of reclamation, it would be advisable to still further add to the efficiency of your service, by the construction of one or more design locks to be used on work along the Atlantic and Gulf Coast.

There are many available points along these margins where canals of sixty feet wide and an half mile in length would penetrate through the natural sand ridges of the coast, to the impounded waters of the Everglades, and reclaim large tracts of rich lands, which could be profitably made plying in the commercial trade.

These locks are all elevated above tidal overflow.

2d. The construction of a large canal, leading from south shore of Lake Okechobee to the lower Everglades region, in vicinity of Bowlegs Landing, and the addition of a supplementary canal from Lake Hixson to connect therewith. This would insure a rapid reduction in water level of Lake Okechobee.

3d. Additional work should be done in removing the rocky ridge outcropping on the Caloosahatchee River, at Fort Thompson, which causes a obstruction in natural water course at that point. The work already performed there has been most efficient in causing to carry off storm waters. For much benefit would result from an additional enlargement of the river channel at that point.

4th. The large rolls of oak and palmetto trees forming obstructions in flow of water and navigation, should be removed from the Caloosahatchee River, between Fort Thompson and Fort Howard, and the floating rafts hindered the banks of the river removed. This would prevent the waters gorging after every rising period, and would produce sufficient current to efficiently wash out sand bars, etc., which have accumulated in vicinity of these obstructions.

Government aid should be had in the prosecution of this work.

5th. It will be advisable to direct the waters of the Collier's creek slough, which enters the Caloosahatchee at Fort Thompson, by constructing a low levee at that point, and by an artificial channel directing this flow into the river farther to the westward.

6th. Great benefit has already accrued from the straightening of the Kissimmee River, south of Lake Kissimmee. It would be advisable to still

rather add to the efficiency of this department by placing another dredge boat of larger capacity in that service.

20. The construction of a canal direct from Lake Cypress to Lake Calumet is recommended, and should be commenced as soon as land connecting Lake Cypress with Lake Hawthorn is completed.

21. It would be advisable, as early as possible, to connect the main river and canal system in the northern portion of the drainage district by lateral canals, through which a more rapid discharge of storm water will be effected. And as the portion of your territory in receiving navigation flows within and adjacent to, and is that part of the drainage area in which your acquired lands are located, it is advisable to perfect the work there in all of its details.

The above are the most important lines of improvements which the operations and observations extending over the past year, have shown to be advisable at present.

LAND ACQUISITION.

Your operations have long since resulted in the reclamation of large areas which at present are occupied by swamps or unproductive lands more desirable for cultivation and settlement. This has been effected by the reduction of the water level of the upper basin of the drainage area, enlargement of natural water ways, opening of natural drains long closed by sand bars and other obstructions, construction of drainage canals, the improvement of the tributaries of the Kankakee River, and opening other channels and canals in the lower system of drainage, connecting Lake Okauchee with the Gulf of Mexico; thus effecting a reduction of several feet in the water level of Lake Okauchee, and the great natural reservoir at the head of the Calumet and Lake River, and affording an easy line of water communication from the central portion of the State to the Gulf and Ocean.

Mineralogical specimens of large capacity have, during the past year, crossed the Gulf and ascended by improved water ways to Kankakee City, making a journey of three hundred and sixty miles of inland navigation, which, prior to the improvements made by the drainage Company, was absolutely impossible.

Your Company acquires gradually the land in the wild sections throughout its territory, leaving the open sections for the cultural companies, which lands are equally benefited and raised in market value by our operations. During the years 1873 and 1874 the State agents, appointed under the provisions of your contract, visited the lands reclaimed, and, under their report, grants have been made by the State to the Company of such land adjudged improved and susceptible for cultivation.

ASSETS.

The Assets of the Company consist in the value of their working plant, permanent improvements, lands already acquired from the State by their operations, and the value of the franchise under which your scheme of drainage is conducted.

Under the first heading we have—

VALUE OF DESIGN BOOKS, ETC.

Design No. 1,	\$11,000
" " 2,	11,000
" " 3,	20,000
" " 4,	1,000
Blueprint "Architects,"	1,000
" " "Engineers,"	1,000
" " "Engineers,"	1,500
Estimates, maps, ship yard, docks, houses, etc.,	11,500
Total,	\$68,000

LANDS ACQUIRED.

Lands awarded to the Company under their contract with the State, and for which drafts have been received, amount to one million one hundred and fifty-five thousand four hundred and thirty-five acres. This represents a tract of land one mile wide and over eighteen hundred miles long. The general location of this land are noted later.

There still remains about seven million acres within the drainage territory, from which awards will be made to your Company as the work of reclamation progresses.

Your contract with the State is valid in every particular, and cannot be interfered with; nor is there any possibility of other parties participating in the advantages arising from other schemes of same nature within your territory.

The Company has fully complied with the spirit letter of the contract, and, as an evidence of good faith on part of the Company, I would call your attention to the clause requiring the Company to perform a service equivalent to the labor of one hundred men per day. It evinces that the smallest of the design books employed would exceed this service by several hundred per cent., and the introduction of steam excavating appliances of most improved construction, is equal to the efficiency of the department.

ELEVATIONS OF LAKES, ETC.

The levels taken on any of the Calumet, Kankakee Rivers, and Lakes adjoining, represent the mean depressed level of the adjacent water shed.

In order to demonstrate that the land in the drainage district is well elevated above the Ocean and Gulf, and susceptible of drainage, I append some names of elevations above tide level:—

	Mean above the
Lake Conway,	106.00 feet.
Lake East Tahoeyskaliga, near Kankakee Cr.,	70.50 "
Lake Tahoeyskaliga, " " "	84.50 "
Lake Isabel, " " "	71.00 "
Lake Alligator, " " "	71.40 "
Lake Haghschid, " " "	60.45 "
Lake Kankakee, " " "	55.00 "
Lake Tiger, " " "	56.50 "
Lake Walk to the Water, " " "	67.00 "
Lake Lewis, " " "	91.50 "
Lake Little Tiger, " " "	95.50 "
Lake Crooked, " " "	121.00 "
Lake Hoffman, " " "	128.00 "
Lake Evely, " " "	74.00 "
Everglades at Lake Worth,	66.50 "
Everglades at Miami River,	1.5 "

MAP AND PROFILE.

Accompanying the report is a general map, showing the boundary of the drainage territory. The townships in which lands have been acquired, are appropriately designated.

The profiles are self-explanatory, and can readily be referred to general maps for more specific locations.

TERRITORY OF THE DRAINAGE COMMISSION.

Northward from the extreme southern portion of the peninsula of Florida, the territory covered by your franchise extends over two hundred miles, and spreads from the mouth of the Calumet, on the Gulf of Mexico, to its western boundary, a distance of one hundred and ten miles.

Through this territory, covering an area of about six million acres, are the only really tropical water systems in the United States. The Kankakee River, reaching southward from the extreme northern portion of the drainage system, empties into Lake Okechobee; from its source to its

work, it is distinctive in soil, shores, water and vegetation, leading to the large and beautiful Lake Tolupekalipi; it intercepts, in its course, a chain of smaller lakes of pure, clear water, which reflect its valley from the mountainous character of long rivers. The soil bordering the river is wonderful in quality, and is capable of producing, in season, the most luscious crops. Oak and palm-tree forests, and forests of red bay and other tropical woods, are found along the shore lines, at intervals. The rich bottom-lands and prairie, extending on the high point lands on east and west, characterize this section. These prairie lands are numerous, situated with favorable position, interspersed with clumps of oak trees and palm-trees of from two to two acres each.

The Calumetahle, which empties into the Gulf of Mexico in lat. 20° 30', is a large and beautiful river, in season, extending inland a distance of forty miles long in season, or over a mile in width. It then narrows to a deep channel, about fifty yards wide, with precipitous banks, and continues to Fort Thompson, where it intercepts Lake Flit. From that point to Lake Okucholaw, no navigation is afforded until provided by the canal of your Company. The river is navigable by vessels drawing about six feet, and the bordering lands support a growth of live oak, sufficient to supply the Navy of the United States for a quarter of a century. The scenery on the river is strictly tropical. Great forests of oak trees, magnolias, palm-trees and pines, all covered and interlocked with a mass-work of immense vines, brilliant with vegetation, leaves of all colors, flowers of bright hues, and bunches laden with delicious smelling blossoms, add to the natural character of the scenery; all a general growth, beginning the landscape at a time when the Northern States are wrapped in snow and ice. Besides these rivers are numerous lakes, of all shapes and sizes, scattered throughout the drainage region, from ponds of a few acres in extent to spacious lakes of fifty to sixty miles in area. Lake Okucholaw covers an area of one thousand square miles, and is the largest lake within the bounds of any State in the Union.

These lakes have palm-trees and pine clad shores, and the pleasant borders of rice, almond, mandarin and other open regions for the prevailing seasons of season. They are frequently overlooked by land trails or sailing boats; their waters pure, and brimming with fish.

The soil of this territory has been heretofore described, and its capabilities for producing paying crops well ascertained.

DESCRIPTION OF BOTTOM-LANDS.

From the look-out on your dredge boats, the characteristics of the most fertile bottom-land, before and after season, under the aspect of rich-

surface, is readily noted. The dredge boat, plunging her way through what has hitherto been an impassable marsh, actually operates on the face of the artificial sea, or depressed portion of the surface. When working on the Vinn Puhia canal, the boat was encountering an unsteady, wavy grade, due to which the soil is found really suspended in the influence of the canal system. An inspection in the direction of Fao Taloa-kaliga, revealed a vast area of such bottom land, entirely covered with water, which, seeping through the luxuriant growth of sea grass and aquatic plants, flowed in a steady stream into the head of the canal, and over the sides of that portion of the canal had completely. On the other hand, on examination of the country to the east, and through which the canal passes, presents an entirely different aspect. The water has disappeared from the surface, aquatic plants, overtopped by the surface vegetation, are leeward and dead, and the sea grass, water lily, etc., are giving place to maritime grasses and wild herbs, affording a most luxuriant grazing field for stock.

In trace of the dredge the signs of life appear, extending a few yards back. In one case are banks of earth flanking the existing surface, and leading at the very head of your canal, upon a spacious and highly nutritious vegetation. In absence of the boat, the soil is yielding and lumpy, in the opposite direction, dry and well flaking is afforded. The soil of the bottom-land is homogeneous, and does not partake of the character of water land in the North, in which banks and deep holes wherever are the normal conditions. The soil is a heavy rich loam, lumpy compound of loam, it deeply varying from three to ten feet, and upwards. Beneath the surface soil is a bed of rich rock sand, which, in a measure, has been incorporated into the overlying stratum. These heavy particles, in their slow downward change, take up and neutralize the acidity due to decaying plant life. The surface of all level of this character is uniform, with sufficient grade to afford ready drainage. The value of this land for the purposes of immediate cultivation, has been conclusively demonstrated during the past season.

At Southport, on face of Lake Taloa-kaliga, a tract of land adjacent the coast, and which had been previously covered with dense beds of water, is now under a high state of cultivation for sugar cane and other crops. Immediately after the land was cleared and prepared for tillage, a large field of sugar cane was planted. Upon the same ground a crop of corn was raised, which matured before the sugar cane had fairly commenced, and commenced to grow. A yield of fully eight bushels of corn per acre was harvested from the first planting. On soil of same character and in same location, vegetation were grown to a high state of perfection, and quantities of large size and unsurpassed quality were produced.

The accompanying certificate of the Honorable Jas. M. Fryer and Clay Johnson, Esq., an expert Louisiana sugar planter, fully attests as to the value of these lands for sugar cane and crops of an exhaustive character.

The lands on which this cane was grown, and on which there is now a ten fold of cane in full bloom, as "sacchar" cane, previous to the operations of the Chesapeake Drainage Company, previously covered with from two to three feet of water. The canal draining these lands was completed February 10th, 1882; on January 26, 1884, active operations were begun in clearing the reclaimed lands; plowing immediately followed the clearing work. Between February 24th and 26th, 1884, the cane was planted—our year subsequent to completing the canal. For breaking the land, a team of two ordinary mules was equal to cultivating, one man. The season has been unseasonably very dry spring and a very wet fall; the yield is, however, enormous, the stand perfect, and the average length of cane stalks satisfactory—twelve feet, many stalks measuring fifteen feet of natural cane. Average diameter of cane, 1 1/2 inches.

No expenditure in any time or labor necessary.

The cost, per acre, to clear the land, break and ditch it, bulldoze, and cane, planting and cultivation, has been less than \$100 per acre, including all expenses to date.

Louisiana City, Jackson, January 26th, 1884

We, the undersigned, being the following members of the Board of the land of sugar cane, under January 26th, 1884, to wit: the said being such persons, names and residences as:

Cane on five acres of land of the Southern sugar cane, and efficient, as such, has been sent.

Number of stalks of cane,	500
Gallons of juice expressed,	500
Gallons of syrup (18 lbs)	21
Average yield of juice per stalk,	1 quart
Maximum yield of single stalk,	2 quarts

The stock required to average with cane of 100—

Mules per acre,	\$1,000
Gallons of juice per acre,	\$200
Gallons of syrup (18 lbs) per acre,	50

Some persons to correct errors, as one selling at Chesapeake City, Md. as 1000 per gallon, &c.

The apparatus on which this soil was made is very crude and imperfect, the soil being a very small incrustation over a soil, at least 15 per cent consisting in the "bagasse," the "bagasse" being so saturated with juice, that sometimes could be wrung out of it with the hand. No attempts at distilling were attempted, the resulting syrup being simply evaporated over a fire, with no addition of any kind. With proper apparatus, the soil would be left at per cent, guano.

CLAY JOHNSON,
JOS. M. BRYAN.

NORTHERN DRAINAGE.

While the surface is generally level, it is not of that flat and monotonous nature usually described as characteristic of South Florida.

Within the drainage district are vast tracts of undulating country, presenting attractive scenery and a rich soil, supporting a luxuriant vegetation, and offering to the agriculturist unsurpassed advantages in its capability for producing the varied fruits and crops of the country.

Low Ground.

Besides, there are extensive rich prairies, or pastures adapted to cattle and sheep grazing, which has proven a most profitable industry. Many of the rich cattle men of this section commenced business a few years ago on a very limited scale. The richness of the climate; proximity of water; rich, nutritious grasses on the low prairie; timbered country, affording wood and charcoal for the stock; no want of food for winter use; good foreign markets, and an increasing home consumption, opens an attractive and profitable business to men of large means.

There is no State in the Union in which the climate is so favorable to stock grazing, as Florida. Several hundred thousand head of horses, cattle, sheep and swine, are at present ranging through the drainage district; the permanent vegetation affording an abundance of food during the entire year for these large and increasing herds.

TIMBER.

Adjoining the coast, there are extensive and rich woodswamp tracts, which have been all forest. The live oak, hickory, black, sweet bay, palmetto, mangrove and mudica, constitute the principal ones. Large tracts of cypress, accessible to points of shipment, are scattered over the country. The level and rolling lands are generally covered with growths of yellow and pink pine, which furnish fine saw and mill.

Of all the States, Florida has the largest area of original growths of pine timber, and the territory under cultivation is covered by timber in

sufficient quantity for all home requirements, and would afford a large supply for export to various departments.

FRUITING.

In range and variety of its products, it surpasses every other section of the United States, of equal size; side by side with the staple crops and vegetables, may be grown every fruit, berry, shrub, plant or product, that grows in any tropical country of the world. It is the region of the orange, lime, lemon, pineapple, banana, coconuts, guava, sugar apple, luscious fruit, almond, fig olive, etc., etc.

It is not the province of this paper to enumerate in detail the long list of productions which may be grown within your territory with more liberality and less care than elsewhere, with the added advantage in many cases of requiring, with a similar amount of care, the same year. Within this territory most of the products of both the temperate and tropical climes may be raised growing side by side, and the land is always capable of producing paying crops in one form or another. Citrus, cane, wine, tobacco, rice, and all field crops pay handsomely. The long season on our island coast, is raised mostly upon a hillside yet, the yield averaging about two hundred pounds per acre; the species of coconuts is only raised on the sea islands bordering South Carolina, Georgia, and in Florida; the best here raising over one half the total crop. Fibrous plants, which come so largely into the trade of the country, continue in production to the southern portion of the State. Iron, coal, hemp, and cotton, are successfully grown. Here we produce cassava and sweetroot as a stock for starch, lignum and ginseng, and the southern peninsula is the only territory in the United States where these strictly tropical plants can be grown; six hundred bushels of cassava per acre is no excessive yield from average good land. There is no month in the year in which food vegetables of all kinds may not be produced, either for home consumption or northern markets. The soil is so early cultivated, that most garden work can be performed with one third the labor required North. No frozen stock to break, or seeds to sow. The soil producing all species of cultivated means large and tender vegetables, early and luscious fruit. A single season will afford strawberries from the setting out; raspberries from two year old cuttings; grapes the second year; peaches the second and third year; oranges from the land in two to four years. All little root and aromatic, and can enjoy fresh-plucked from the whole year.

CUMBER, MEXICO, ETC.

This is the region for purely tropical fruits, and for the benefits of a summer climate during the winter months.

From personal experience of all seasons, I am satisfied the climate is desirable throughout the year; the temperature at no time falling so high as in the Middle States during oppressive summer weather. At Kilauea City, during the past year, the thermometer never registered higher than 88° at an *alack*, noon, and at Tulla Falls, on the Gulf Coast, the U. S. Signal Service, in a period of twelve years, recorded the highest temperature of the thermometer at 91°.

The institutions of this section of the State, is unsurpassed by any portion of the Union.

There was never known a case of malarial or hepatic fever; pneumonia is unknown; no erysipelas and small-pox. Yellow fever has never been known to exist there; and whenever named at any point in the State, this disease was brought there by infected vessels; in no case was it of local or spontaneous origin.

One of the best attested receipts as to the excellent healthfulness of this portion of the State, is shown by the reports respecting the condition of the laws employed by Occidental Druggists Company, which has been operating on the line of the rock bottom-lands since the year 1854. Our employees come from almost every State in the Union and foreign countries. No colored labor is employed on our work.

During this interval, and after a continuous service, without interruption, during the warmest months, there has never been a death from any cause whatever; and a physician in a professional capacity has never visited our work. The health of our men, not only, but of the women throughout the district, is unsurpassed at this time.

With water transportation blank for a distance of three hundred and sixty miles already provided; and the steamships now regularly plying to the Gulf coast; and annual national transportation into this region; and other lines of communication regularly opened, this will be found to be one of the most delightful portions of America—healthy and agreeable, and capable of the highest state of agricultural development; while the pressure and products of its salt water coast by jacking, fish, oysters and shells; of its charming lakes and rivers for boating and sailing; of its fields, groves and gardens, affording a new country to the agriculturist, and a profitable and convenient source for the successful propagation of tropical and semi-tropical fruits, and juicy products of the soil. This territory

in which great lands are located, will remain in excellent, at all seasons, an attractive form, and the best and most delicious of all foods that human beings crave.

Appended is an extract from the annual message of the Hon. W. D. Blochman, Governor of the State of Florida; also, an expression from General U. S. Grant, which are interesting and important in this connection.

Yours, very respectfully,

JAMES M. KESTAMER,
Chief Eng. and Gen'l Supt.

EXTRACT FROM MESSAGE OF W. D. BLOCHMAN, GOVERNOR AND
AGRICULTURIST OF STATE OF FLORIDA.

FRIDAY, JANUARY 22D, 1892.

"The Atlantic and Gulf Coast Canal and Manufacturing Land Company, under their contract with the State, for the reclamation of lands in the southern portion of the Peninsula since the year 1886, have steadily prosecuted the work of constructing drainage canals, the improvement of the natural stream courses within their portion, and have added efficient mechanical appliances by which the companies of the great work contemplated under their franchise with the State will be materially hastened.

"A brief summary of the operations of this Company, shows a completed canal for drainage and irrigation, covering the low water of the Calumet-River and Oklawaha, commencing in its course, Lake Pile and Oklawaha, the same being at least some half mile in width in diameter, between practically adjacent. This canal penetrates a portion of the State between Jacksonville, and Orlando a large territory.

"The connecting bridge of business through which the Calumet-River at Fort Thompson flows its way, has been skillfully removed to provide a channel to width and direct communication with general branches of irrigation. The Company is engaged in deepening the Oklawaha River, much efficient work having already been accomplished. In some instances, one of five thousand of a mile, without the expense by all other channels above these cities.

"Dike Crows, connecting Lake Oklawaha with Lake Tigua, Bunkie and Wells to the Water on the west, has been deepened, deepened, and improved, by removal of obstructions, &c.

"The water shed of the upper system of drainage has been permanently reduced, by the recent completion of a canal connecting Lake Tulepohatchee with the drainage system south.

"This canal is supplementary to the large one long since completed by Lake Cypress, by which the upper level of Lake Tulepohatchee, covering an area of twenty six square miles, was reduced more than

The success of the measures for relief of the poor necessitates such legislation, unless there should arise, but it is felt that the Government, in its policy, should not neglect to take steps which would be of benefit to the welfare of the nation in addition to those which are necessary to the welfare of the poor.

Further, the Government is to be held responsible for the success of the measures, the more actively it is engaged in carrying out the measures for relief of the poor. It is felt that the Government should be held responsible for the success of the measures, the more actively it is engaged in carrying out the measures for relief of the poor. It is felt that the Government should be held responsible for the success of the measures, the more actively it is engaged in carrying out the measures for relief of the poor.

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URGENT MEASURES FOR THE RELIEF OF THE POOR, AFTER A PAUSE OF TWO YEARS

(Extract from the Philippine Report)

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—The Report of the

L. S. GARDNER



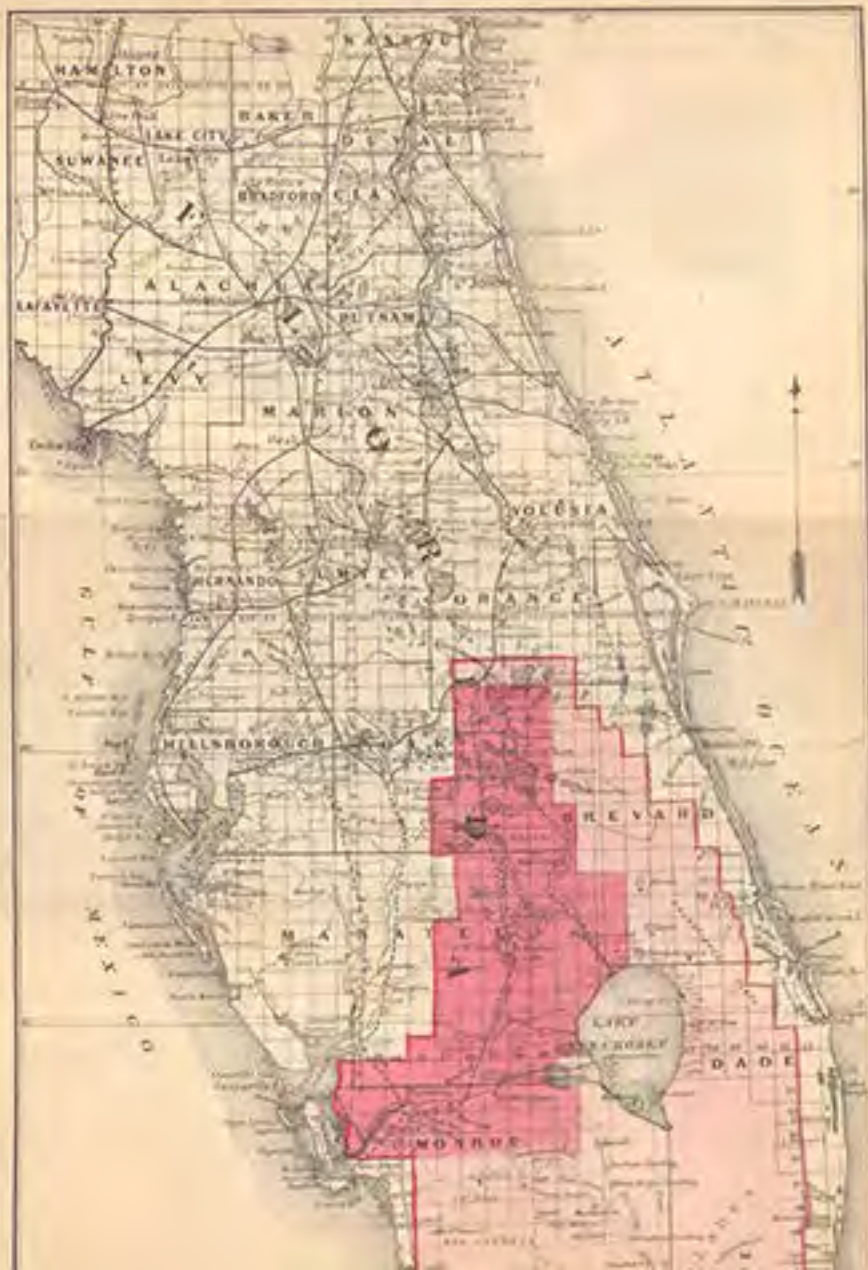


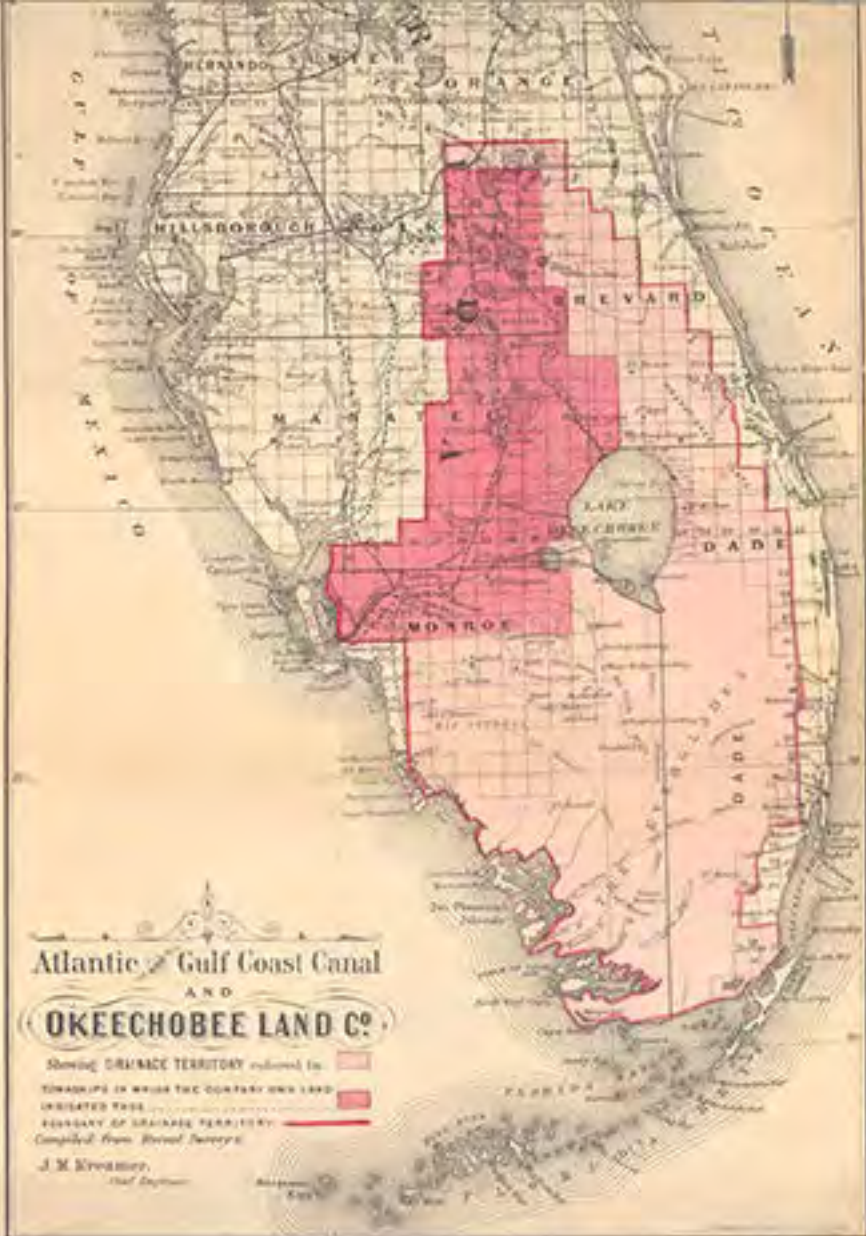
Atlantic & Gulf Coast Canal

OKEECHOBEE LAND CO.

Shows 1,000,000 Acres owned by
 Okeechobee Land Company
 Land under contract
 Land under option

Scale 1:100,000





Atlantic & Gulf Coast Canal
 AND
OKEECHOBEE LAND CO.

Showing DRAINAGE TERRITORY enclosed in
 TOWNSHIPS IN WHICH THE COMPANY OWNS LAND
 INDICATED THIS
 BOUNDARY OF DRAINAGE TERRITORY
 Compiled from *United States*

J. M. KIRWAN,
 Chief Engineer



Shaded Contour and Great Lake Umbagog map.
 Lake area in black, portion of Wingosheep and Oregosheep in pink. — Photo-etched portion; City Engraving Co.
 U. S. G. S., Appropriation's Land. Ed. Shepard. Contour Interval, 100 feet.

Showing Depleted Areas from the Little Toluquahs work.



Scale of the map. 1 inch = 1 mile. The map was prepared by the U.S. Geological Survey and the U.S. Fish and Wildlife Service. The map is published by the U.S. Government Printing Office. The map is available for sale by the Superintendent of Documents, Washington, D.C.

