



WATER-RIGHT DOCKET

Fort Caroline National Memorial

Docket No: 3

SPANISH CAMP SWAMP WELL

Supporting Hydro Data

12-19-1966: duval drilling company: well data

WELLS  PUMPS

Duval Drilling Company

JACKSONVILLE, FLORIDA

D. J. FRENCH, FOUNDER

DAN M. FRENCH, OWNER

WELL DATA

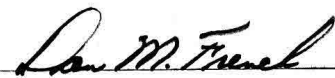
Date December 19, 1966

Fla. State Board of Health
Permit No. _____

1. Owner: Ft. Caroline National Memorial
One Castillo Cr., St. Augustine, Fla. 32084
Consulting Engineer: _____
Driller: Dan M. French
2. Well location: 106 ft. south of center line of Ft. Caroline Rd. in Old
Spanish Swamp.
Sec: _____ Twp: _____ Rge: _____ County: Duval City: Jacksonville
3. Elevation of well flange above sea level: _____ ft.
Static water level above or below well flange: _____ ft.
Total piezometric head above sea level: _____ ft.
4. Date started moving in drilling equipment: December 6, 1966
Date completed moving out drilling equipment: December 16, 1966
5. Total depth drilled: 700 ft. Total depth cased: 427 ft.
427 ft. of 6 in. weighing 19.45 lb./ft. seated at 427 ft.
_____ ft. of _____ in. weighing _____ lb./ft. seated at _____ ft.
_____ ft. of _____ in. weighing _____ lb./ft. seated at _____ ft.
Well is 6 in. inside diameter to a depth of 427 ft.
6. Yield by artesian flow ($Q=5.68 d^2 h^{3/4}$): 715 gpm. Jet head over 6 in pipe: 13 in.
7. Yield by pumping: _____ gpm. with pumping level below well flange: _____ ft.
8. Purpose of water supply: Lake level control Quality of water: Fresh
9. Formation samples forwarded: U. S. Geological Survey

Respectfully submitted,

DUVAL DRILLING COMPANY



(Driller's log on back)

Dark brown sand	0	10
White sand	10	20
Blue marl with shells	20	25
Blue marl	25	50
Blue marl with shell	50	62
Hard limestone	62	65
Hard limestone	65	67
Hard limestone	67	70
Soft limestone	70	80
Hard limestone	80	90
Grey marl	90	347
Hard limestone	347	350
Grey marl	350	372
Hard limestone	372	373
Green marl	373	397
Hard limestone	397	398
Green marl	398	399
Hard limestone	399	401
Green marl	401	420
Hard limestone	420	425
Ocala limestone	425	692
Avon Park limestone	692	700

The 6" pipe was cemented in place for its entire length.
There is left in place 25 ft. of 16" surface pipe.

Other Supporting Information



IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
Philadelphia Planning and Service Center
Design and Construction
Philadelphia, Pa. 19106

511-7-8-68
9/10

L54-PD

July 3, 1968

Memorandum

To: Chief, Branch of Water Resources, WSC

From: Chief, Design and Construction

Subject: Spanish Camp Pond, Fort Caroline

This is to confirm the telephone conversation of this date between you, Mr. Gary Moore, and Engineer Cummings of this office.

Enclosed are copies of correspondence related to the subject.

If we can be of further help, please advise.

H. Reese Smith

By: Richard G. Huber
Richard G. Huber, Acting

Enclosures:

2/24/66 ltr. from HEW to SERO
8/1/67 memo. from PSC-DC to SERO
8/4/67 memo. from SERO to PSC-DC
8/24/67 memo. from SERO to PSC-DC
2/9/68 memo. from Mr. Saladik, PSC-DC to Supt. Castillo
2/14/68 memo. from Supt., Castillo to Mr. Saladik, PSC-DC

cc:

Chief, Office of Land and Water Rights, WSC
Attention: Mr. Ketcham
Assistant Director, Design and Construction
Regional Director, Southeast (In duplicate)



DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
February 24, 1966

COMMUNICATIONS CENTER
ATLANTA, GEORGIA 30333
TELEPHONE: (404) 633-3311

RECEIVED

MAR - 1 1966

Regional Program Director
EEPR - PHS

Mr. Elbert Cox
Regional Director, SE Region
National Park Service
P.O. Box 10008
Richmond, Virginia 23240

Dear Mr. Cox:

The purpose of this letter is to provide you with preliminary information concerning control of the mosquito problem at Fort Carolina National Memorial, about 10 miles east of Jacksonville, Florida.

On January 28, 1966, in the company of Messrs. Harvey Wickware and Billy H. Edmondson, I visited the pond, which is known as the Spanish Campsite.

At the time of the survey, it was estimated that the deepest portion of the 10-15 acre pond was about 3 feet in depth. It feathered out toward the margins and there were extensive areas of dead vegetation around the periphery. A profuse growth of white water lilies was noted in the impoundment.

The shallow pond and the marginal areas appeared to have a high potential for the breeding of fresh-water species of mosquitoes. During extended dry periods, the pond has dried up; and this would afford excellent conditions for mosquito oviposition. Subsequent rains would cause large broods of mosquitoes to emerge.

In order to control the mosquito problem the following recommendations are made:

1. Provide for control of water in the pond. It is suggested that an artesian well be constructed to provide the necessary water.
2. Remove the dense vegetation from the margins and deepen the shores of the impoundment.
3. Plant mosquito-eating fish.

It is believed that the above measures would keep the mosquito problem under adequate control most of the time. In the event that a mosquito problem should arise, it would be relatively easy to larvicide the breeding areas with No. 2 fuel, plus a spreading agent. Under present conditions--with the heavily vegetated marginal areas--it is not feasible to carry out larvicidal measures.

Sincerely yours,

Leslie D. Beadle
Leslie D. Beadle
Sanitarian Director

cc
Paul Henderson, Region III ✓
Supr., Castillo de San Marcos National Monument
John McInerney, Florida State Board of Health
Regional Health Director, PHS, Region IV

John McInerney

Philadelphia Planning and Service Center
Design and Construction
143 South Third Street
Philadelphia, Pa. 19106

August 1, 1967

LL-450

Memorandum

To: Regional Director, Southeast Region

From: Chief, Design and Construction

Subject: Spanish Camp Pond, Fort Caroline

Enclosed are three prints of Drawing No. MEM-GAR 3077, Topography, Spanish Camp Pond, Fort Caroline. This topography was recently acquired by Finance Order through Emmett William Facetti and Associates, Consulting Engineers and Land Surveyors, St. Augustine, Florida.

This topography was acquired in anticipation of proceeding with the design for R-9, Construction Spanish Pond Parking Overlook and R-10, Construction Spanish Camp Pond. You will note that the Park Service property line is shown on the drawing. You will also note that the water edge of the pond extends east of Park Service lands.

U. S. Public Health Service Sanitary Director Leslie D. Doolittle's March 1, 1966 letter to Regional Director, Southeast Region, indicated the pond requirements for mosquito control. In view of Mr. Doolittle's requirements and the fact that the pond is not all contained within Park Service lands, we are at a loss as to how we can meet the requirements of the POP's in the limited pond area.

It is understood there is a problem of interpretation also and would appreciate receiving information as to the required shape of the pond and at what elevation the water surface should be held.

We are withholding any designing on this project until the land status, water surface elevation and interpretation aspects of the project are settled.

H. Roger Smith

(Sgd.) Eugene R. De Silets

By: Eugene R. De Silets, Acting

Enclosures

Chief Engineer
Chief, C&C
Chief Landscape Architect

CCO:mrj:mb

cc: Regional Director, Southeast Region, w/enc.
Chief, Construction Division, MEM
Chief, Project Design

4/16

Enc

Enc



UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

SOUTHEAST REGION, P. O. BOX 10008
FEDERAL BUILDING, RICHMOND, VA. 23240

AUG - 4 1967

IN REPLY REFER TO:

L1425-PD
SER(D)

AUG 7 1967
 CHIEF D & C
 ADM. OFF.
 CHIEF PLANNING
 CHIEF DESIGN
 CHIEF CONST.
 Date

Memorandum

To: Chief, Design and Construction, PSC

From: Assistant to the Regional Director, Program
Coordination

Subject: Spanish Camp Pond, Fort Caroline

We, too, were surprised to learn that we did not own the Spanish Camp Pond at Fort Caroline. As you know, property surveys are now being made to determine the land acquisition requirements, and as soon as we learn where we stand on this and other related matters, we will advise you.

W. E. O'Neil, Jr.

cc:
Supt., Castillo de San Marcos

UNITED STATES
DEPARTMENT OF THE INTERIOR

SPECIAL FORM 512-101

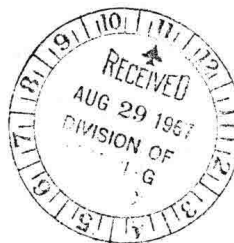
for early action. The PCP estimates for R-9 and M-19 included in the 1968 program were made about a year ago. We would appreciate your advice as to any possible increase in the costs as reflected in the PCP's. In this connection we understand, unofficially, that we shall not have to pay back funds for the well drilled with water resource funds.

W. E. O'Neil, Jr.

W. E. O'Neil, Jr.

cc:

Supt., Castillo de San Marcos



UNITED STATES GOVERNMENT

2-Way Memo

Subject: Spanish Camp Pond Parking Area & Overlook
Fort Caroline National Memorial

From:

MR. L. THEODORE DAVENPORT
SUPERINTENDENT
CASTILLO DE SAN MARCOS NM
ST. AUGUSTINE, FLORIDA

DATE OF MESSAGE	February 9, 1968
DATE OF REPLY	
INSTRUCTIONS Use routing symbols whenever possible. SENDER: Forward original and one copy. Conserve space. RECEIVER: Reply below the message, keep one copy, return one copy.	

5027-101

FOLD

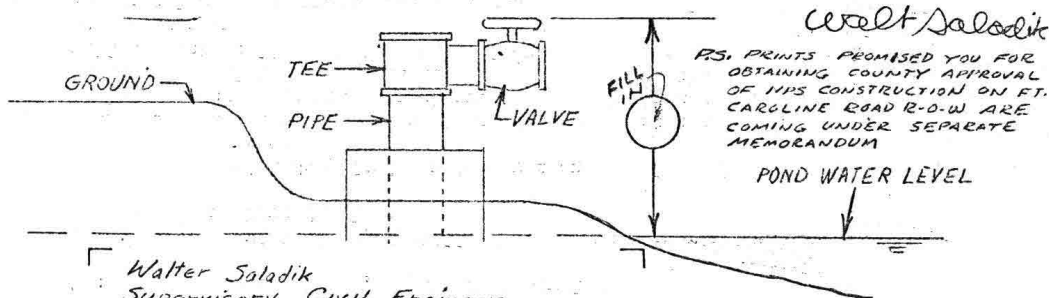
USE BRIEF, INFORMAL LANGUAGE

FOLD

This is a follow-up on Mr. Cummings' telephone conversation with you on Wednesday, February 8. As you'll recall, I was on the line.

Our design of the parking area and overlook at Spanish Camp Pond depends very much on knowing more about the existing well. The sketch below has a space to insert a critical dimension which we need. Mr. Cummings discussed this with you but we felt that a sketch would make things easier. When the measurement is made, notice should be taken as to whether the pond is at its normal level. If it isn't "normal," a note should be added as to how much higher or lower it is.

Of equal value would be a photo of the existing well. If you could send us, without too much delay, a Polaroid close-up photo showing the pipe, the tee, and the valve, it would be of great help. What we are looking for is whether the fittings and valve are screwed or flanged.



To:

Walter Saladik
Supervisory Civil Engineer
Philadelphia Planning & Service Center
143 S. Third Street
Philadelphia, Pa 19106

2. TO BE RETURNED TO ORIGINATOR

(buck)
OPTIONAL FORM 27
OCTOBER 1962
GSA, GEN. REG. NO. 27

February, 1968

Memorandum

To: Walter Saladik, Supervisory Civil Engineer, PSC

From: Superintendent, Castillo de San Marcos, Fort Matanzas
and Fort Caroline

Subject: Spanish Camp Pond parking area and overlook, Fort Caroline

There is enclosed a polaroid picture of the well at the Spanish pond. While the picture is not very clear, it will give you the information needed. The elevation at the top of the well where the shut-off valve will connect is 15.95 feet. Presently the cut-off on top of the valve is 6 feet above the water level. However the water level now is at least one foot low, which means that from the top of the valve to the water will be a distance of 5 feet. *level*

The parking lot will have to be to the east of the well, rather than west of it as proposed by your office. I am writing Reese Smith today to that effect, and furnishing him with photographs which will prove that it is not feasible to locate it as proposed by that office. *Reese*

L. T. Davenport
L. T. Davenport

Enclosure

P. S. C. - D. & C.	
FEB 16 1968	
CHIEF D & C	
ASST. CHIEF	
PLANNING	
DESIGN	
CONSTR.	
RECORDS	
TRAINING	
LABORATORY	
INSPECTION	
SALES	
ADMIN.	
MAIL ROOM	
CLERK	
RECEPTION	
DATE	

*this was answer (typed on back of
2 way memo of Feb 9, 1968) by supt
attached*



IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
WASHINGTON PLANNING AND SERVICE CENTER
1730 NORTH LYNN STREET
ARLINGTON, VIRGINIA 22209

029-7-1-68

Ft Car

EW
9/2

W54 WSC-OLW

June 28, 1968

To: Chief, Branch of Water Resources, WASO
Through: Chief, Office of Land and Water Rights, WSC

From: Supervisory Hydraulic Engineer, WSC

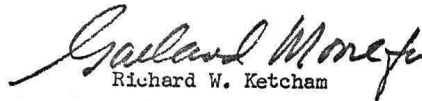
Subject: Field Trip to Fort Caroline
June 23-June 25, 1968

The historic Spanish Camp Swamp, located at Fort Caroline National Memorial is one of the primary interpretive points of this area. However, it was noted by adjacent land owners that if the swamp was maintained at a constant pool level to eliminate mosquitoes and to provide for the integrity of the area, their properties would constantly be inundated. The Park Service had planned to maintain this constant pool level near the mean normal high-water level with the use of a flowing well, drilled into limestone in the Ocala Group of the Floridan aquifer. When this well was tested it was flowing 500 g.p.m. and could easily provide enough fresh water to accomplish both objectives.

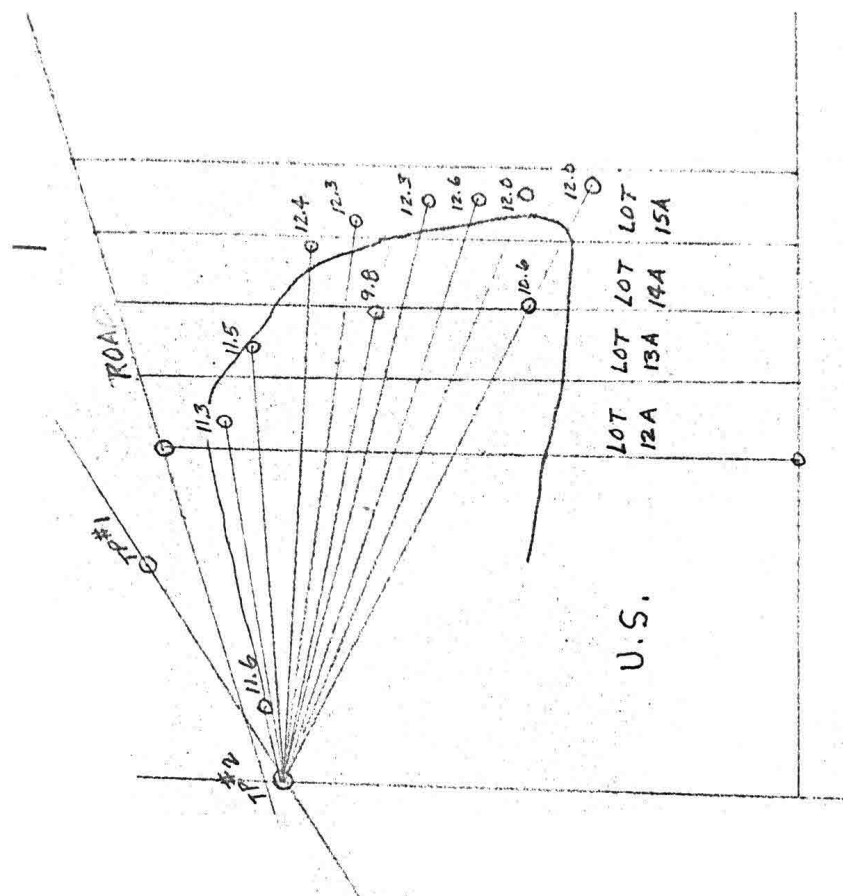
The impetus of this trip was made on Friday, June 21, when Mr. Stanton, Mr. Gray and myself met with Representative Charles Bennett of Florida to discuss the Fort and Spanish Camp Swamp. Representative Bennett had a deep personal regard for this area and was concerned because the Swamp had not been included and acquired originally. He felt that the land required should be acquired quickly, and indicated that, if elected next fall, he would donate \$10,000 of additional money for this purpose. He also stated that, due to the financial condition of the United States today, he probably would not introduce a bill to affect this acquisition by the government, but would vote for one if it was introduced. This, it seemed to me, was highly doubtful and financing would have to be found elsewhere. He indicated that the pond construction work could begin when funds were available, but not until after the properties underlying the Swamp were acquired. He did not feel that the mosquito problem was overly serious, but I brought home twenty bites after only four hour's work near the site, just to prove that it does exist.

I am attaching a plan of a survey made by Mr. Gray, Mr. Don Thompson of the Park Staff, and myself, showing the location of the pond with an elevation of 11.6. This is the elevation of the Swamp as proposed by the Design and Construction Office. We assume this level to be approximately six inches to one foot below the normal high-water mark. This was determined by the thick vegetation and large old trees located at about elevation 12.4'. I do not at present have a hydrological history of the pond as suggested by the Associate Solicitor Meyer's memorandum of June 21, but will attempt to determine if such a history exists.

Upon completion of the survey the notes were recorded as shown on the attached sheet. Mr. Stanton contacted two of the three owners immediately and obtained options to buy their property. One owner owns two properties. The third owner, now on vacation, has indicated his willingness to sell and we felt certain that a successful negotiation will be forthcoming. The final result of these acquisitions will provide the Park Service with control of the entire Swamp as suggested by Representative Bennett, and will eliminate a few mosquitoes that might come in contact with the visitor.


Richard W. Ketcham

Enclosure



SPANISH CAMP SWAMP
LOCATED
AT
ELEVATION 11.6

PROJECT STATUS UNDER WATER RESOURCES STUDIES AND WATER RIGHTS ACQUISITION PROGRAMS

<u>Washington</u>	<u>1967</u>	<u>12/31/66</u>
(Service Center Office)	(Fiscal Year)	(Date)

Fort Caroline National Memorial (SE)
(Area)

FUNDING STATUSM&PCONSTRUCTION

Flowing well at
Spanish Camp

(Site or Activity)

Park participation

Geological Survey

Private

AuthorizedObligatedPaidAuthorizedObligatedPaid

\$ 500 \$ 500

1,500 1,500

5,000 5,701 *

*Actual construction cost.

(Site or Activity)

Park participation

Geological Survey

Private

(Site or Activity)

Park participation

Geological Survey

Private

PROJECT PROGRESSREMARKS

11/21/66

Contract 14-10-1:396-002 awarded Duval Drilling Co.
December 3, 1966 beginning and January 11, 1967
expiration date of contract.

(Site or Activity)

12/6/66

Work begun by contractor.

12/20/66

Project completed. Highly satisfactory well - 700 feet
deep - yield by artesian flow 715 gpm.

(Site or Activity)

Increased cost of project due to increased depth of well.

(Site or Activity)

RECEIVED
JAN 6 10 40 AM '67
NATIONAL DATA SERVICE
WASHINGTON, D.C.

INTRODUCTION

In December 1966, a well was drilled for the National Park Service at Fort Caroline National Memorial near Jacksonville, Florida. The purpose for drilling the well was to provide a sufficient source of water to maintain a prescribed water level in the surrounding swamp and, thereby, stop the breeding of mosquitoes.

The Water Resources Division of the U. S. Geological Survey has been investigating the ground-water aquifers in the area since 1960. This well afforded an opportunity to obtain valuable information on the Floridan aquifer in a part of the area where hydrologic and geologic conditions were heretofore unexplored. Detailed geologic and hydrologic information were collected during and after construction of the well by representatives of the U. S. Geological Survey. This report presents this information and provides a permanent record of the data collected.

The well is in a historic marsh known as Spanish Camp Swamp, about 0.2 mile east of the entrance to Fort Caroline National Memorial (figure 1).

HYDROLOGIC SETTING

The area in the vicinity of Spanish Camp Swamp is one of low relief, consisting of swamps, marshes, and low sand ridges. Spanish Camp Swamp is completely surrounded by a chain of sand ridges. One ridge bordering on the northeast side of the swamp reaches an altitude of 90 feet.

The water level in the swamp during the investigation was at approximately 15 feet above sea level. A clay layer about 20 feet below the bottom of the swamp acts as a barrier to downward seepage of the water from the swamp. The sand ridges surrounding the swamp prevent surface drainage of water out of the swamp. Water may move out of the swamp only during drought periods when the water table in the dunes is low enough to permit lateral seepage of the water away from the swamp. A considerable amount of water is probably lost from the swamp through the processes of evapotranspiration. Further study of shallow wells in the area would be needed to obtain a better understanding of the hydraulic relationships between the sand dunes and the swamp.

GEOLOGIC FORMATIONS PENETRATED DURING DRILLING OF WELL

The oldest formation penetrated by the well is a sequence of hard light-brown crystalline dolomite of Eocene age called the Avon Park Limestone. Because of its dense nature and low permeability, this rock is usually regarded as a poor source of water. Only a few feet of the Avon Park were penetrated by the test well.

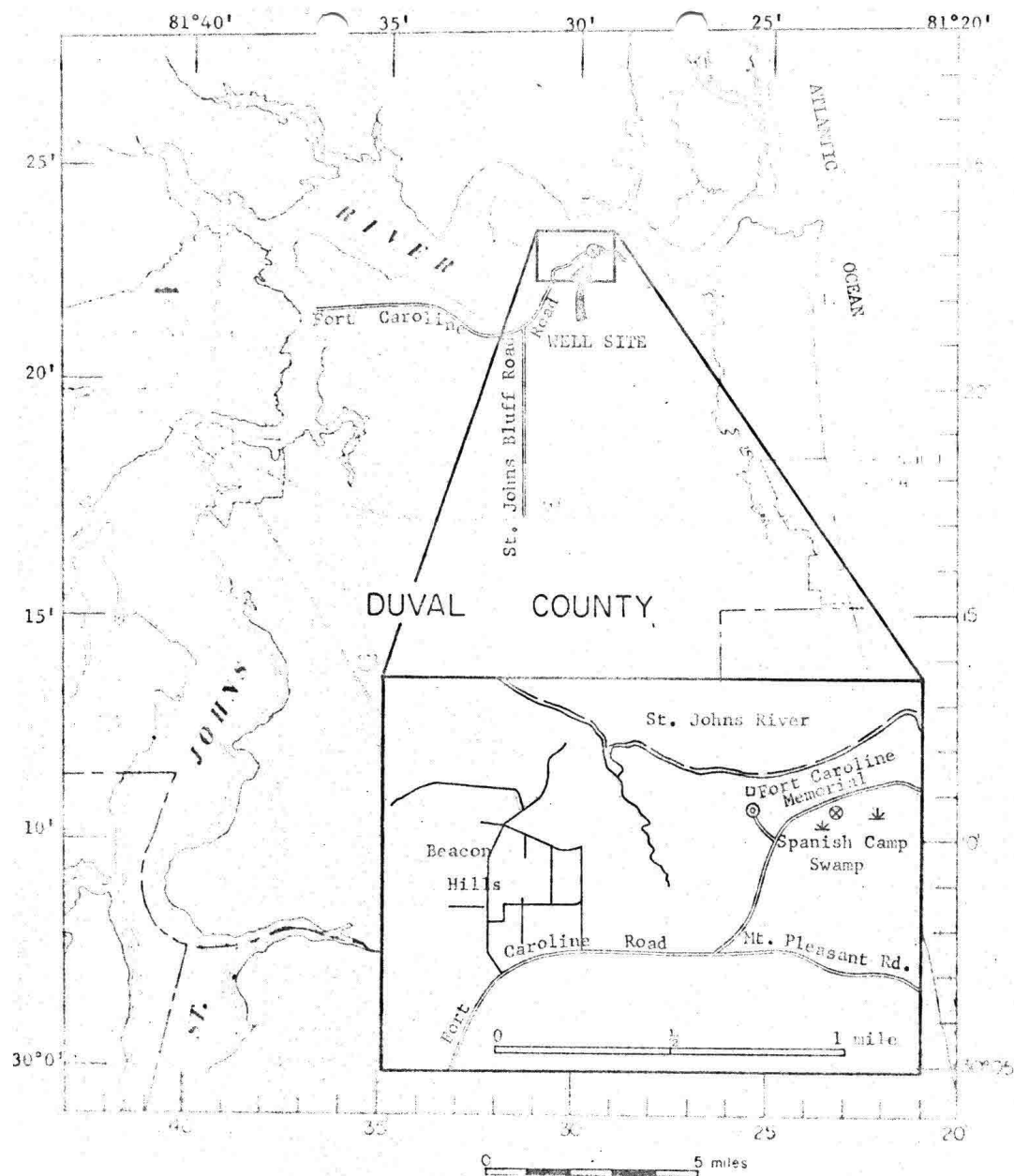


Figure 1. Index map to location of well site.

Overlying the Avon Park Limestone is a sequence of moderately^{1/} to highly permeable limestones of Eocene age called the Ocala Group. This group (part of the Floridan aquifer) is a major source of water throughout much of northern and central Florida. In the Jacksonville area, wells penetrating the Ocala Group produce large quantities of water by artesian flow. During the drilling of the Park well at Spanish Camp Swamp, a cavernous zone beginning at 480 feet below land surface was penetrated in the upper part of the Ocala Group.

A thick confining layer of sandy clay and clay overlies the Ocala Group and forms a barrier to upward movement of water from the Floridan aquifer. A major part of this confining layer consists of phosphatic sandy clay of the Hawthorn Formation of Miocene age. The Hawthorn Formation in this area is not generally used as a source of water.

Younger sediments overlie the Hawthorn Formation and occur from the surface down to a depth of 90 feet. They consist of sand, sandy clay, shell layers, and thin layers of porous, sandy limestone of post-Miocene age. Shallow "rock wells" in the area penetrate the permeable limestone which is a source of shallow artesian water. Such a shallow well furnishes water at the Fort Caroline visitor center.

DRILLING PROCEDURE AND WELL CHARACTERISTICS

The well was drilled by the hydraulic rotary method using drilling mud for the first 426 feet to hold open the hole and return cuttings to the surface. The well was cased to 426 feet with 6-inch, steel casing set in the top of limestone. Cement grout was forced between the outside of the casing and the wall of the hole and extends to the land surface. Below the casing, an open hole was drilled to a total depth of 700 feet.

During construction when the well penetrated the top of the Ocala Group (approximately 500 feet below land surface), water began to flow from the well at an estimated rate of 500 gpm (gallons per minute) while the drill pipe was still in the hole. This information, as well as inspection of well cuttings and electric and gamma-ray logs of the well, suggests that the major producing zone in the well is at the 480- to 500-foot interval.

^{1/} The Florida Geological Survey has adopted the Ocala Group (Crystal River, Williston, and Inglis Formations) as described by Puri (1953). The term "Ocala Group" has not been adopted by the U.S. Geological Survey.

Figure 2 is a graph of the drilling rate plotted against depth and shows a general increase in drilling rate below the 430-foot depth. Except for one hard zone just below 500 feet, the drilling rate was generally faster in limestone than in the overlying sand and clay. Total actual drilling time took 11.3 hours of which time it took 7.8 hours to drill through the sand and clay and 3.5 hours to drill through the limestone to the hard brown dolomite of the Avon Park Limestone.

Upon completion, the well flowed at an estimated rate of 650 to 700 gpm. This rate of flow is in excess of the amount needed to control the level of the pond. A 6-inch tee and control valve was installed on top of the well casing to control the rate of flow. (See fig. 3.) The water level in the well, measured with a pressure gage, was 28.7 feet above the top of the 6-inch flange or approximately 30.0 feet above land surface. Both the rate of flow and the water level of the well are comparable to that of the other wells in the area having similar diameter and depth.

QUALITY OF WATER

Samples of water from the well were collected at the well head when the well was 500 feet deep and when the well was 700 feet deep (final depth). These samples were analyzed by the U.S. Geological Survey, and the results are shown in table 1. As indicated by the analyses (samples A & B), there is very little, if any, change in the composition of the water derived from the 500-foot zone and in water derived from lower zones.

For purposes of comparison, partial chemical analyses for two wells in the Floridan aquifer in the area are listed in table 1. The analyses show that the water from all the wells is essentially the same. A cause for the difference in pH between wells A,B and C,D is not known but may possibly be due to a difference in the amount of time between collection and analysis of the samples. Except for the odor of H_2S in the water, it is of a good quality and suitable for public use.

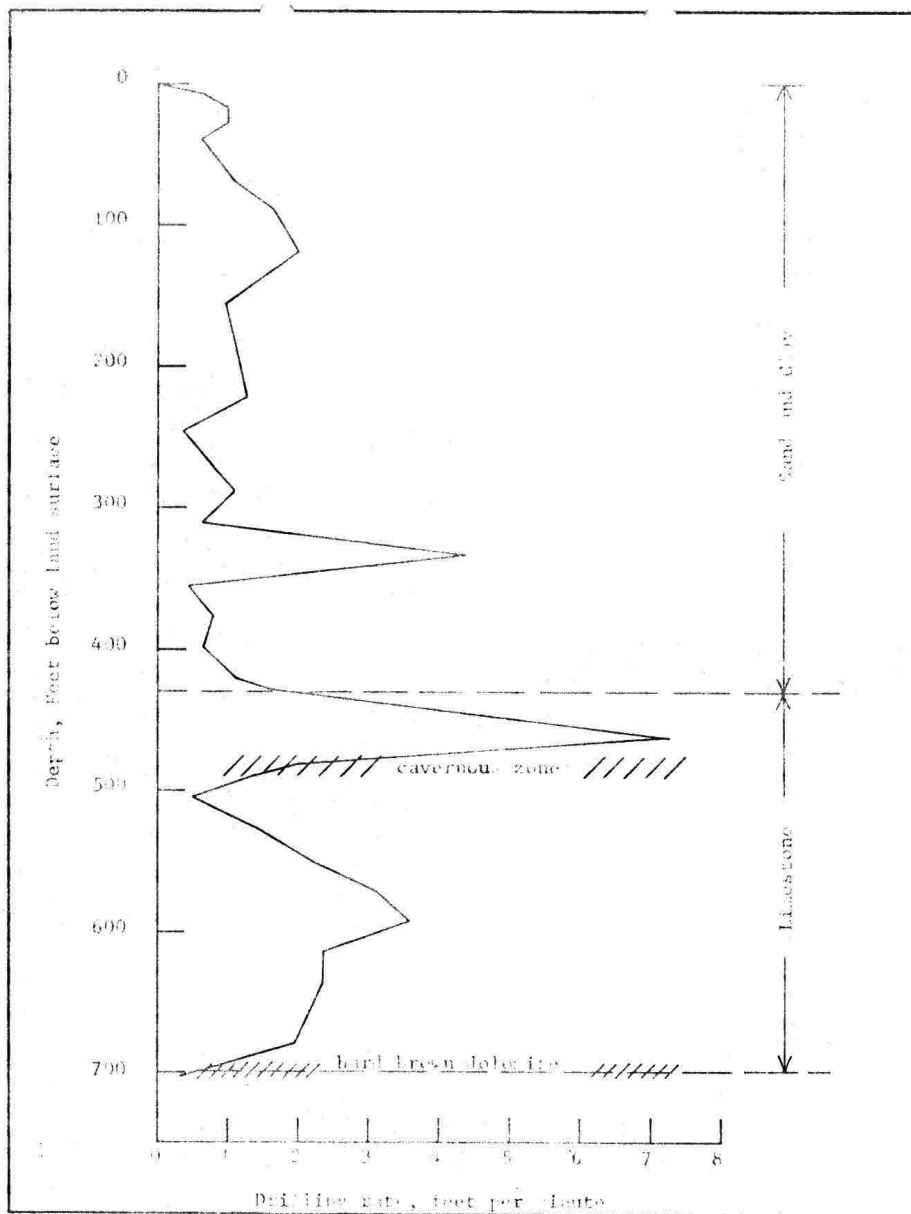


Figure 1. Graph showing variable drilling rate with depth.

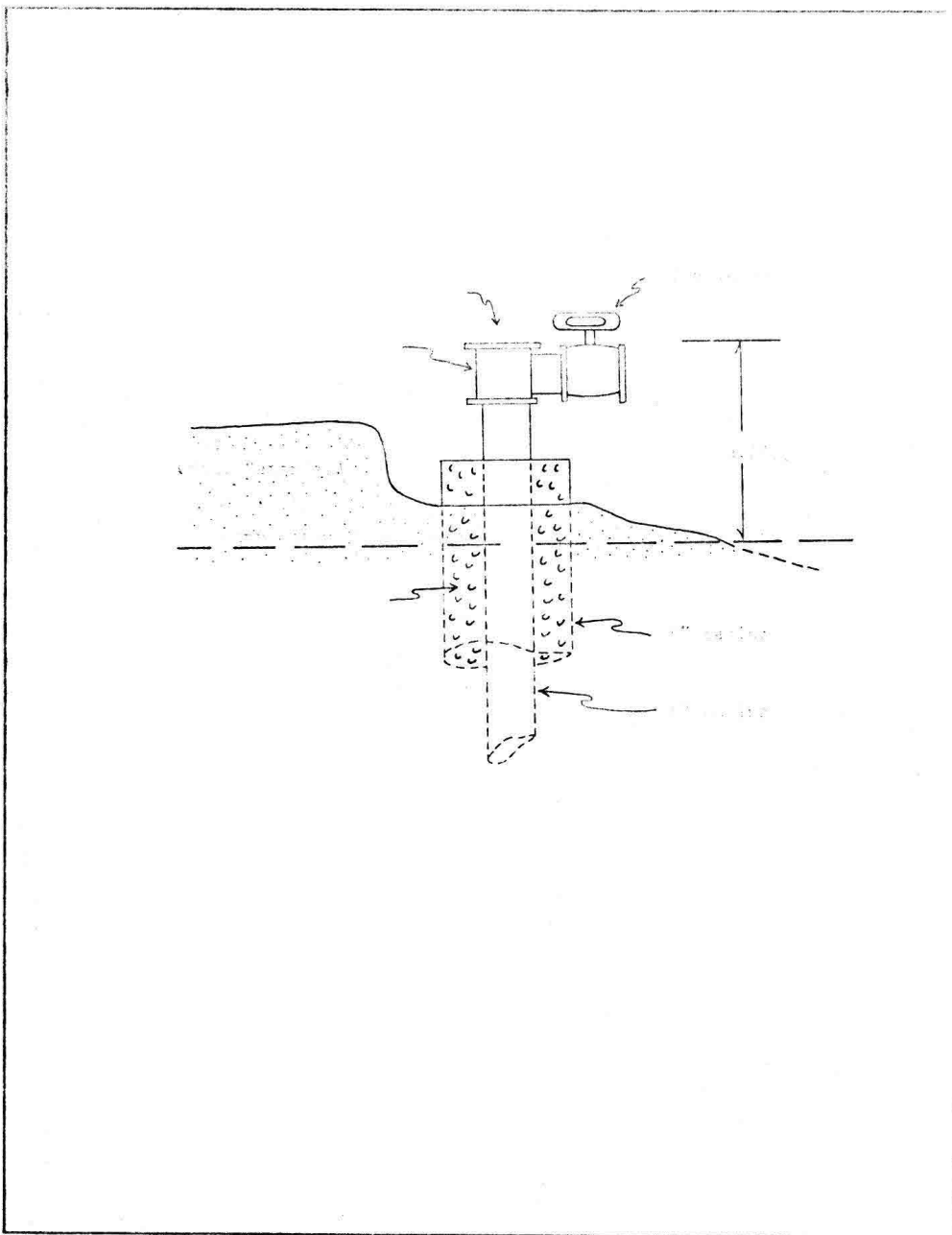


Figure 3. Sketch of well system in the vicinity of the well.

Table 1. Chemical analyses of water from artesian wells in the Fort Caroline National Memorial area.

SAMPLE	A	B	C	D
Conductance (micromhos)	540	550	540	530
SiO ₂ (ppm)	26	26	-	-
Ca "	63	62	61	61
Mg "	23	23	22	23
Na "	14	14	-	-
K "	2	2	-	-
NO ₃ "	.3	.4	-	-
HCO ₃ "	180	184	184	186
SO ₄ "	104	102	-	-
Cl "	19	18	16	14
F "	.8	.8	-	-
pH	7.7	7.8	8.4	8.5
Dissolved Solids (ppm)	341	339	324	318
Hardness: (ppm) as CaCO ₃	252	249	245	249
Non-carb.	104	98	94	96
Depth (ft.)	500	700	510	597
Date analyzed	2/15/67	2/15/67	5/13/66	5/13/66

A Spanish Camp 500-foot sample.

B Spanish Camp 700-foot sample.

C Well at Fort Caroline Memorial residence

D Well at Beacon Hills (1 mile west of Fort Caroline Memorial)

SUMMARY

The following information has been obtained from the geologic and hydrologic data:

- a) The Eocene limestone lies at a depth of 436 feet below land surface in the Fort Caroline area;
- b) The quantity of water that can be obtained from this well is between 650 and 700 gallons per minute by artesian flow and is comparable to other similar wells penetrating the Floridan aquifer in Duval County;
- c) Water from the Floridan aquifer in the Fort Caroline area is of comparable quality to water in other parts of northeast Florida and is suitable for drinking and most commercial and industrial uses.

The drilling of the Spanish Camp Swamp well at Fort Caroline National Memorial has fulfilled a twofold purpose in supplying water for conservation of a historical site and in furnishing additional hydrologic and geologic information in the Jacksonville area. Figure 4 is a graph showing the geologic and geophysical data obtained during the drilling and after completion of the well.

The well has been incorporated into the statewide network of observation wells to monitor ground-water conditions in northeastern Florida.

11/13
August 22, 1966

L54-SLW

Mr. Clyde C. Conover, District Chief
Water Resources Division
U. S. Geological Survey
P. O. Box 2315
Tallahassee, Florida 31304

Dear Clyde:

This letter formally confirms the request of the National Park Service, as discussed in our recent telephone conversations and correspondence, to have the U. S. Geological Survey aid in the drilling of a water well at Fort Caroline National Memorial, Florida. The well is to be drilled to provide a source of water to maintain the pond in the historic Spanish Camp Swamp as a means of controlling mosquitoes. A flowing well producing more than 100 gallons per minute is deemed capable of reaching this objective.

Funds in the amount of \$1,500 are available to cover the costs of U. S. Geological Survey participation, as indicated in your letter of July 29. The work will include the collection and description of drill cuttings, collection and analysis of water samples, technical advice to the Contracting Officer, and preparation of a short report for the record giving all pertinent information obtained from the drilling and testing of the well.

The funds will be available on a reimbursable basis. Billing should be to the Superintendent, Castillo de San Marcos National Monument, 1 Castillo Drive, St. Augustine, Florida, 32084. Fort Caroline National Memorial is under his supervision.

We request that any report prepared by the Survey be submitted to the Park Service for review before being released to the public.

Your cooperation and assistance in this program is greatly appreciated.

Sincerely yours,

E. W. Reed
Chief, Branch of Water Resources

cc:
Regional Director, Southeast
Superintendent, Castillo de San Marcos
Chief, D&C, PSC
Chief, Office of Land and Water Rights, WSC

cc: SLW
Mr. Reed - SLW
EMReed:ljc



IN REPLY REFER TO:

RECEIVED
UNITED STATES
DEPARTMENT OF THE INTERIOR

AUG 3 2 04 PM '66
NATIONAL PARK SERVICE
Castillo Drive
St. Augustine, Florida 32084



L54-SLWW

August 1, 1966

Memorandum

To: Chief, Branch of Water Resources, SLW

From: Superintendent, Castillo de San Marcos, Fort Matanzas
and Fort Caroline

Subject: Specifications for flowing well at Fort Caroline

Your proposed specifications for the well at Fort Caroline about which you wrote in your memorandum of June 29, have been reviewed and are considered adequate to give a satisfactory job.

1. In view of the fact that the water level of the Spanish Camp Swamp is fairly stable, the required 100 gallons yield per minute should be ample. Inquiries reveal that the maximum fluctuation in water level will not exceed three feet. It is my understanding that the important thing in controlling mosquitoes is only to keep the water fresh, and that a rapid rate of change in the level is not material. However, I am no authority on this, and it should be checked with someone who knows.
2. It is proposed to construct a manhole around the well.
3. Without knowing how much fill will be required for the adjacent parking lot, we cannot determine exactly what should be the length of the casing above the ground surface. Designers can give you this information.
4. The designers will be in better position to supply information about the tee, valve, and plug to be used on top of the casing.
5. Unless we can be assured that the well is yielding the 100 gallons per minute it is assumed we should have, we do not believe the pumping test should be omitted.

L. T. Davenport
L. T. Davenport

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July 20, 1966

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Mr. Clyde Conover
District Chief, Water Resources
Division
U. S. Geological Survey
P. O. Box 2315
Tallahassee, Florida 32304

Dear Clyde:

As per our telephone conversation on July 19, I am writing this letter to inform you of our plans to drill a flowing well at Fort Caroline National Memorial, Florida.

The purpose of the well is to maintain Spanish Camp Swamp, which is of historic significance, and also to control mosquitoes. A flowing well was drilled near the residence area in 1963-64 that reportedly flowed 354 gpm and is being used to supply the residence area and museum. Another well was drilled in 1961 at St. John's Bluff in which the water level reportedly stood 30 feet below ground level. The elevation of the ground surface at St. John's Bluff well (from topographic map) is about 60 feet above sea level whereas that at the flowing well is about 15 feet. These elevations may be as much as 20 feet off. Driller's logs of these wells are enclosed. Although both wells were drilled by the same company, the log of the well at the residence area is more detailed, but the logs correlate fairly well. On the basis of these logs I conclude that the artesian aquifer would be penetrated at about 430 feet. It is not known whether either of the wells penetrated the artesian aquifer completely.

We propose to drill a well at the site marked on the enclosed map. The specifications will call for a hole large enough to accommodate a 6 inch casing with a 2 inch grout ring to the top of the aquifer and a 6 inch open hole through the aquifer for about 80 feet, or more if a greater flow can be obtained by further drilling.

In view of your knowledge of the area, I would appreciate your advice on the feasibility of obtaining more than 100 gpm from such a well as that proposed. I have no information concerning the quality of the water except that the present wells are being used by visitors and staff. What would be the quality of the water? What are the chances

of getting water of poorer quality, especially an increase in chlorides, with increasing depths? Would it be advisable to specify galvanized casing even though the casing is to be grouted? Also, are the local drillers equipped to construct a well as proposed above or would you recommend some change in construction? I am having a draft of proposed specifications typed that I will transmit to you shortly. Any comments you may have will be welcome.

Finally, I would like an estimate of the cost of having one of your staff sit on the well during drilling, take samples of cuttings and of water, analyze the water samples, prepare a log, and be available for advice if any unusual situation should arise. In connection with the water samples and analyses, it would be desirable to sample any water bearing formations above the artesian aquifer for possible future needs. The estimate should also include the cost of a short report describing the drilling and listing all pertinent information for the record.

Your assistance in this matter will be greatly appreciated.

Sincerely yours,

SIGNED

E. W. Reed
Chief, Branch of Water Resources

Enclosure

cc:
Regional Director, Southeast
Superintendent, Castillo de San Marcos
Administrative Assistant, Fort Caroline
Chief, D&C, PSC
Chief, Office of Land and Water Rights, WSC
Chief, D&C, WSC, Attention: Mr. R. Montgomery
SLW

Mr. Reed - SLWW

EWReed:ljc

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W.R. Copy

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Memorandum

To: Chief, Design and Construction, PSC
From: Assistant to the Regional Director, Development
Subject: Drawing No. NMEN-CAR 3035, Spanish Pond Parking Overlook, Fort Caroline

The subject drawing was recommended by Superintendent Davenport and approved by Regional Director Cox on May 26.

We would appreciate assistance from your office in locating the well site on the ground so that we may proceed with arrangements for accomplishing that work with Water Resources Funds. The Superintendent suggests, and we agree, that the well and valve controls should be located under the sidewalk in one corner of the parking area where controls will be handy and where the access road to the site will be obliterated by the parking area construction.

We are forwarding a copy of this subject drawing to the Director for the attention of Mr. Edward W. Reed, Chief, Branch of Water Resources along with a copy of the memorandum.

The parking area and the Spanish Camp Swamp or Pond is already incorporated in the currently approved master plan for Fort Caroline. It does not appear that further action in this direction is needed.

(SIGNED)

W. E. O'Neil, Jr.

cc:

Director,

Attention: Mr. Reed, Chief, Branch of Water Resources, w/enc
Supt., Fort Caroline

Number of Documents in Docket	29		
Documents Dated from	2/24/1966	to	5/27/1986
Docket Compiled:	6/2/2016		