McWANE CAST IRON PIPE CO.

MANUFACTURERS OF CAST IRON PIPE FOR WATER AND GAS
P. O. BOX 2001
BIRMINGHAM 2, ALABAMA

CUSTOMER'S COPY

CUSTOMER'S COPY

CUSTOMER'S ORDER NO.	DATE	OUR ORDER NO.	DATE REQUESTED	SHIPMENT NO.
	1-10-61	16252-B	Promptly	

SOLD TO: Coyne Construction and Engr. Co.
201 Richard Street
Gretna, Louisiana

MEMORANDUM FOR ENGINEERING PURPOSES

SHIP TO: Pipe Line Service Corporation
c/o Mr. Oscar Langhans
Harvey, Louisiana

WE ARE ENTERING YOUR RECENT ORDER AS INDICATED BELOW. PLEASE CHECK AND ADVISE PROMPTLY OF ANY ERRORS OR OMISSIONS. THIS ORDER IS ACCEPTED SUBJECT TO THE CONDITIONS SHOWN ON THE REVERSE SIDE HEREOF. NOTICE WILL FOLLOW WHEN SHIPMENT IS MADE. PLEASE ACCEPT OUR THANKS FOR FAVORING US.

McWANE CAST IRON PIPE COMPANY

BY

ROUTE: L&N-New Orleans-SP
F.O.B. TERMS: Fdry.Frt.Alwd.@$6.60NT
30 days net. Plus .25 Cwt
Plus $47.96 Switching charge per car

RATE: PREPAY@ $6.60NT
50,000#min.
Plus $47.96 Switching per car

QUANTITY ORDERED: PIECES	SIZE	LENGTH	CLASS	DESCRIPTION	BACK ORDERED PCS.	QUANTITY SHIPPED: PIECES	FEET	WEIGHT	UNIT PRICE	AMOUNT
				FOR WATER SERVICE						
5	8"	18'	150	Bell & Spigot C.I.Pipe, ASA Spec.A21.6,.41"MT, 665#nom.wt.enamelined, seal coated inside, UN-COATED OUTSIDE. (90')					ft. $3.54	
112	10"	18'	150	Bell & Spigot C.I.Pipe, ASA Spec.A21.6,.44"MT, 880#nom.wt. enamelined, seal coated inside, UN-COATED OUTSIDE (2016')			2		ft. $4.535	

NOTE TO SHIPPING DEPARTMENT:

BE SURE THERE IS NO PAINT OR COATING ON OUTSIDE OF PIPE.

THE PIPE LINE SERVICE CORPORATION WILL RECEIVE AND UNLOAD THE ABOVE MATERIAL FROM CARS AT HARVEY, LOUISIANA, AT WHICH POINT THE PIPE LINE SERVICE CORPORATION WILL GIVE THE ABOVE PIPE THE FOLLOWING TREATMENTS AND APPLICATIONS.

1. Cleaning by sand blasting
2. Priming with Bitumastic 70-B Primer.
3. Two coats Bitumastic 70-B Enamel (3/32" thickness).

SPECIAL INSTRUCTIONS

CONTINUED

51 LARGE

PLAINTIFF'S EXHIBIT
JMMC-234

FORM 1011—M—REV.

CUSTOMER'S COPY

McWANE CAST IRON PIPE CO.

MANUFACTURERS OF CAST IRON PIPE FOR WATER AND GAS
P. O. BOX 2601
BIRMINGHAM 2, ALABAMA

CUSTOMER'S COPY

EB:kh Pg. 2 of 2

CUSTOMER'S ORDER NO.	DATE	OUR ORDER NO.	DATE REQUESTED	SHIPMENT NO.
	1-10-61	16252-B	Promptly	

SOLD TO
Coyne Construction & Engr. Co.
201 Richard Street
Gretna, Louisiana

MEMORANDUM FOR BILLING PURPOSES

SHIP TO
Pipe Line Service Corporation
c/o Mr. Oscar Langhans
Harvey, Louisiana

WE ARE ENTERING YOUR RECENT ORDER AS INDICATED BELOW. PLEASE CHECK AND ADVISE PROMPTLY OF ANY ERRORS OR OMISSIONS. THIS ORDER IS ACCEPTED SUBJECT TO THE CONDITIONS SHOWN ON THE REVERSE SIDE HEREOF. NOTICE WILL FOLLOW WHEN SHIPMENT IS MADE. PLEASE ACCEPT OUR THANKS FOR FAVORING US.

McWANE CAST IRON PIPE COMPANY

BY_____

ROUTE L&N-NewOrleans-SP PREPAY@
F.O.B. Pdry.Frt.Alwd.@$6.60NT RATE $6.60NT
TERMS 30 days net Plus .25 CWT. 50,000#min.
Plus $47.96 Plus $47.96

QUANTITY ORDERED PIECES		BACK ORDER PCS.	QUANTITY SHIPPED PIECES	FEET	WEIGHT	UNIT PRICE	AMOUNT
	Switching charge FOR WATER SERVICE						
	4. One wrapping .020 MIL Fiberglass cloth wrapped over first coat of enamel.						
	5. Hot coat Bitumastic 70-B Enamel, 1/16" minimum thickness.						
	6. One wrap with 15 pound weight asbestos pipe line felt wrapping.						
	7. One wrap with heavy Kraft paper.						
	8. Electrical inspection of completed applications.						
	9. After the above applications and treatments have been completed the Pipe Line Service Corporation will load this pipe on trucks provided by Ribauls Transfer Company of Gretna, Louisiana and will prepare bill of lading consigning this material to the Coyne Construction and Engineering Company, c/o Port Sulphur Water District, Port Sulphur, Louisiana. The bill of lading will show shipping weights and trucking rate at $.25 a hundred weight. Ribauls Transfer Company will invoice us for trucking charges.						

[illegible] change in freight rate for purchaser's account.

July 12, 1960

REPORT ON CORROSION COMPLAINT AT PORT SULPHUR, LA.

The water system serving the area North and South of Port Sulphur, La. was installed in the summer of 1955 using cast iron pipe. At the same time a filtration plant was erected on the property of the Freeport Sulphur Company in the town of Port Sulphur. The company has a large open settling reservoir which receives its supply from the Mississippi River. In turn, this water is processed through a modern filtration plant and then delivered to an elevated storage tank which supplies water to about 11 miles of pipe laid both north and south of the plant on the levy road.

The town of Port Sulphur is devoted entirely to the transportation and shipping of bulk sulphur. The filter plant and tank are located adjacent to the sulphur handling equipment and the first 1800 feet of pipe leading out from the elevated storage tank is in close proximity to the sulphur handling activities. The ground surface is covered with wind blown sulphur and the entire soil area is highly polluted with this material.

The 10" main has failed on three or four locations with severe interruptions to the water service for the entire area, as this is the main supply feeder.

The local contractor, Coyne Construction and Engineering Company, have been making these repairs for the water district and they requested that we inspect the local conditions and offer

recommendations for the prevention of future failures, as they felt that a five year life for 10" cast iron pipe was entirely out of order.

Mr. Philip Coyne drove me from Gretna down to Port Sulphur where we met with Mr. George Johnson, Water Superintendent; and also with the corrosion engineer and civil engineer of the Freeport Sulphur Company. All of the pipe that has failed is on the property of the Sulphur Company.

The corrosion engineer made several specific recommendations to the Water Superintendent for the rehabilitating of this line. He was also familiar with the corrosion work located on their property conducted by one of the oil companies which has several large oil storage tanks and supply pipe lines on leased right-of-way through the area. Inside the oil company tank farm all of the pipe are placed above ground on wooden piers, and the balance are placed on the ground surface with only 2" or 3" of cover. These lines are heavily coated with asphaltic material and then protected with magnesium anodes. One of these 14" oil pipe lines parallel the 10" water main that had failed for a considerable distance with a separation of only ten feet. This line had a potential of .92 volts to $CuSO_4$ and was fully protected by the anodes.

The two most recent failures occurred in a location adjacent to a large Hersey water meter. The first joint west of this meter box failed first and then after another month or two

the second length failed. The failures of this pipe were of a complete nature, not merely a few pin holes. The entire outside area of the pipe was gone and only about 1/16" to 1/8" was left of the barrel of the pipe. Additional failures are expected by the Water Superintendent at anytime. The Corrosion Engineer for the Sulphur Company had already installed several magnesium anodes on this water line, hoping to extend its useful life. He was disappointed with the results obtained, stating that the anodes had only raised the potential one tenth of a volt. I told him that he would have to install an anode every 50-60 feet in order to supply sufficient protection. This would be very expensive and still might not completely protect the line.

A study of the soil showed that it was just about as corrosive as it is possible to find. The acid content on the surface of the ground in some spots had a pH of 1 which is practically pure acid. The water in the ditch had a pH of 3. Several pH tests indicated, as was plainly visible, that sulphur was freely mixed with the soil and very acid conditions were the order of the day. Electrical resistivity tests showed readings as low as 90 ohms cm^3. The average range was from 300 to 400 ohms cm. The best reading on the entire area was 720 ohms. The Azide test for sulfides was positive on all cases.

The soil conditions along this 1800 ft. of pipe are very bad and a short life would be expected. The trouble started in the

area of the water meter. The water table was only 8" below the ground surface and the soil would be saturated at all times.

RECOMMENDATIONS

I would suggest that the pipe line be replaced or relocated. The new pipe line should be installed above ground on creosote piers of 10" x 10" with at least 2½ ft. in the ground. The pipe should be securely strapped to the top of each pier, one pier for each length of pipe so that there will be no room for longitudal movement. At the ends of the lines and wherever there is a change in direction, the pipe should be securely tied together with steel rods and anchor clamps. After the pipe is installed, it should be given a good coating of bitumastic paint #50.

Inasmuch as this pipe line is located on the property of the Sulphur Company, they may not approve of it being placed above the ground surface. In that case, it might be more convenient to carry the new water line across the property now leased by the oil company, as all of their pipes are placed above ground.

The route of the new pipe line should be as far away as possible from the equipment handling the sulphur. In other words, the water main should be laid as far north on the property as possible.

The water meter should be removed from the pipe line, inasmuch as it is never used and has never registered. The bronze metal parts only accelerate the corrosion. If it is desired to have the meter in the line, it should then be placed above ground on a concrete pad.

The fittings in the line which require the use of bolts should be heavily coated with bitumastic #50 paint.

If it is impossible to place the new pipe above ground, through this acid area, then it should be protected by a heavy barrier of one nature or another, such as polyethylene coating and wrapping, followed by bonded joints and cathodic protection.

Inasmuch as most of the other pipe lines throughout the area are located above the ground surface I most sincerely recommend this water main also be removed from the acid soil conditions.

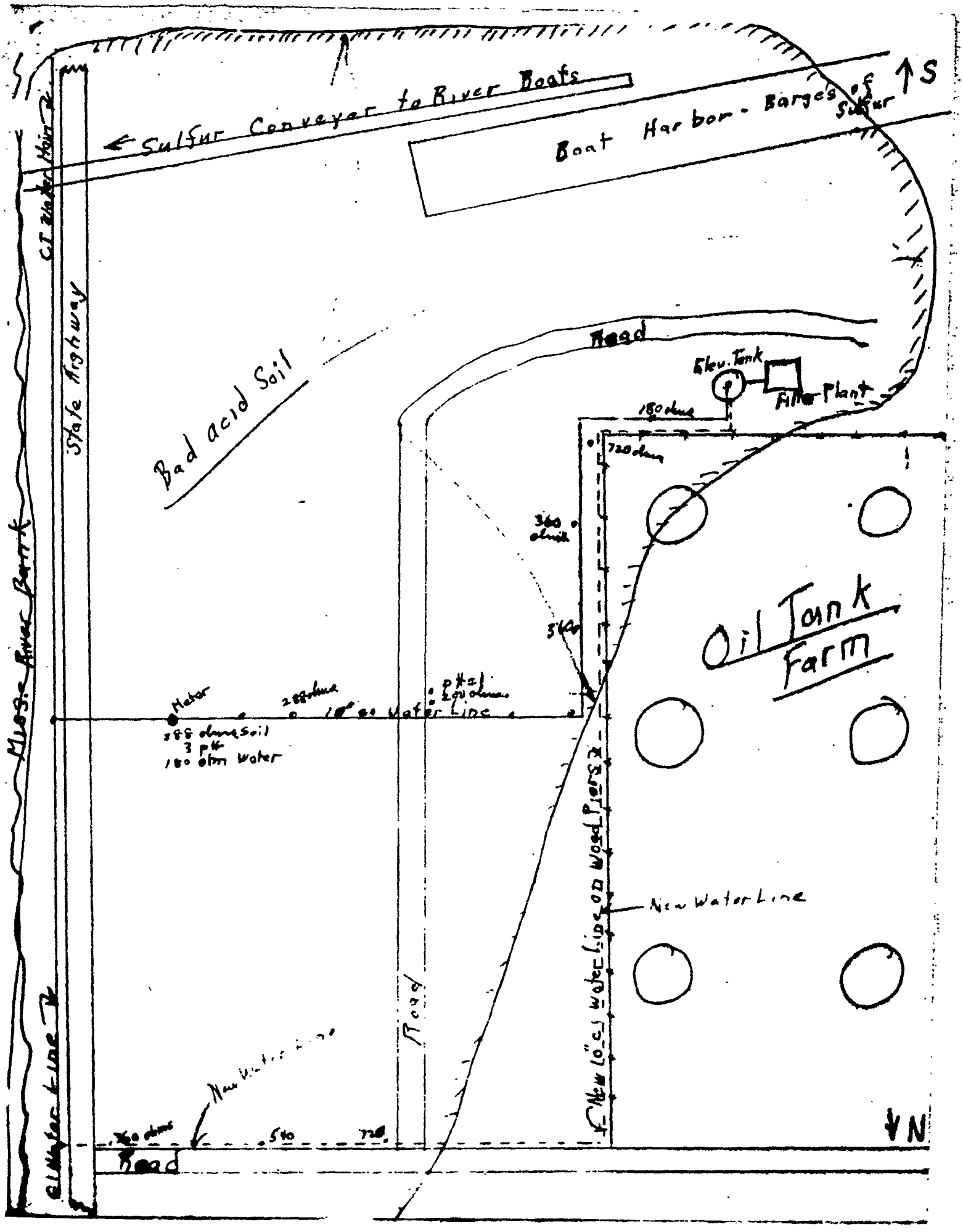
In the areas north and south of the plant where copper services are attached to the main in the black bog soil areas, I would also suggest the use of insulating corporation cocks or plastic bushings and that the service be wrapped with a 4 mil plastic tape for a distance of 30" from the main.

The soil along the Mississippi River levy is mostly loose loam of good agriculture quality and this soil should cause little or no corrosion.

I am attaching a sketch of the present and proposed route of the 10" pipe line.

DEWEY W. JOHNSON

DWJ:ss



Sulfur Conveyor to River Boats
Boat Harbor - Barges of Sulfur
S
C.T. Water Main
State Highway
Bad acid Soil
Road
Elev. Tank
Filter Plant
180 ohms
720 ohms
360 ohms
360
Oil Tank Farm
Meter
288 ohms
pH=1
200 ohms
10" Water Line
288 ohms Soil
3 pH
180 ohm Water
Miss. River Bank
New Water Line
New 10" C.I. Water Line on Wood Piers
Road
New Water Line
C.I. Water Line
360 ohms
540
720
Road
N

COPY FORM	INITIALS	DATE
	CSP	10-19-99

BOX NUMBER	SEGMENT NO!	REQUESTING PARTY
04-1913		B+B

NOTES