

Office of the Mayor JAMES W. SANDERS

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April 27, 2015

Jacqueline Trotta Enforcement Analyst Water Division Arkansas Department of Environmental Quality 5301 Northshore Drive North Little Rock, AR 72118

This letter represents my response to the issues addressed regarding the City of Blytheville's Wastewater system. Enclosed with this letter you will find the Updated Corrected Action Plans for case numbers AR0022560 (West Plant), AR0022578 (South Plant) and AR0022586 (North Plant) that were prepared by our engineering firm, SSR. I have examined these plans, along with my Treatment Coordinator, and believe they will assist us in continuing to upgrade our system. I will be presenting these plans to East Arkansas Planning and Development and the USDA to search for grant opportunities to assist in funding. I will keep your office updated on the status of any funding we are able to secure.

Sincerely, James W. Sanders Mayor

# **CITY OF BLYTHEVILLE**

**BLYTHEVILLE, ARKANSAS** 

# **CORRECTIVE ACTION ORDER UPDATE**

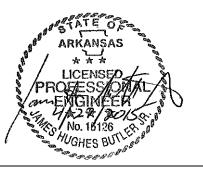
BLYTHEVILLE NORTH WASTEWATER TREATMENT FACILITY ASSESSMENT AND RECOMMENDED PLAN FOR CORRECTIVE MEASURES



# SSR

# **CORRECTIVE ACTION ORDER UPDATE**

Blytheville North Wastewater Treatment Facility Assessment and Recommended Plan for Corrective Measures



Bo Butler, P.E. Senior Principal

Mall

Prepared for: City of Blytheville

Prepared by: Smith Seckman Reid, Inc. 2650 Thousand Oaks Blvd. Suite 3200 Memphis, TN 38118 Tel 901.683.3900 Fax 901.683.3990

> SSR Project No.: 14-41-027.1

> > Date: April 27, 2014

Marshall Fall, E.I Project Manager

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# **1 Executive Summary**

In February 2015, ADEQ requested that the City issue a detailed Corrective Action Order Update (CAOU). The CAOU report should address the status of the facility's compliance to I&I issues, the potential effluent violations and additional measures to be taken to maintain compliance of the NPDES. The report should also address the status of compliance in regards to total recoverable mercury (Hg) concentrations, and address measures to be taken by the City to begin locating any sources of contamination in the waste stream.

After reviewing plant data and the existing operations at the plant, the following corrective actions were developed. Once implemented by the City, these corrective actions should allow the treatment facility to maintain compliance with the NPDES permit and reduce the concentration of Hg concentrations.

- 1. Based on previous completed studies, complete collection system rehabilitation on a priority basis focusing on high priority areas first.
- 2. Aggressively track and locate sources of Hg in the waste stream flow and require sources to incorporate pre-treatment to remove the Hg from the flow.
- 3. Conduct rate study and review capital expenditure plans to ensure adequate revenue stream to allow for effective operation, maintenance, repair, and replacement of WWTF equipment.
- 4. Install synthetic media in the primary basin of the plant to encourage the growth of nitrifying bacteria and prevent bacteria from washing out of the facilities during heavy flow events.

# **2** General Information

## 2.1 Description of Wastewater Treatment Facility

The City treats wastewater at three treatment facilities. This CAP will address operations at the North facility (NWWTF). The facility is a modified lagoon that incorporates the BIOLAC® technology. The facility consists of traveling screens, a primary aeration and mixing basin, integral clarifiers to facilitate settling, a basin that incorporates both aerated and non-aerated polishing, and ultra-violet disinfection. The capacity of the NWWTF is 0.8 MGD. The facility was built adjacent to a retired non-aerated lagoon that was repurposed as sludge disposal basin for the facility. The facility was constructed and commissioned in 1989.

The source of wastewater for the NWWTF is 22 pumping stations with a combined total capacity of 7,100 gallons per minute (GPM). The capacity of each pumping station is summarized in Table 2.1.

Table 2.1- Flow Source (PS Capacities)

North Plant

)		
	Walmart	800 GPM
	Lockard	1500 GPM
	Ward/Normandy	200 GPM
	Ruddle Road	200 GPM
	Riggs	180 GPM
	Grandview	225 GPM
	Walker Park	600 GPM
	Comfort Inn	250 GPM
	Interstate	200 GPM
	Universal	225 GPM
	Borg-Warner	300 GPM
	Terra	225 GPM
	Hwy 151	180 GPM
	Hwy 312	180 GPM
	Hardhat	450 GPM
	Wisdom Road	180 GPM
	Briarcrest #1	200 GPM
	Briarcrest #2	200 GPM
	Ridgeway	200 GPM
	Golf Links	200 GPM
	Country Club	225 GPM
	Wheeler Lane	180 GPM
	· · · · · · · · · · · · · · · · · · ·	

#### 2.2 Description of Need

In the last 24 months, the NWWTF has experienced continuous events of excessive flow volumes that exceed the facility's designed capacity. Excessive flows can "wash out" the facility causing the loss of valuable nitrifying bacteria that are critical to the proper treatment of the waste stream. I&I must be reduced to allow the facility to operate as designed. Additionally, under the existing NPDES permit issued in January of 2014, the concentration of Hg in the effluent will be required to meet a limit by January 2017. Recent monitoring records show the facility may have an issue meeting the limits for Hg set forth in the NPDES permit on a consistent basis.

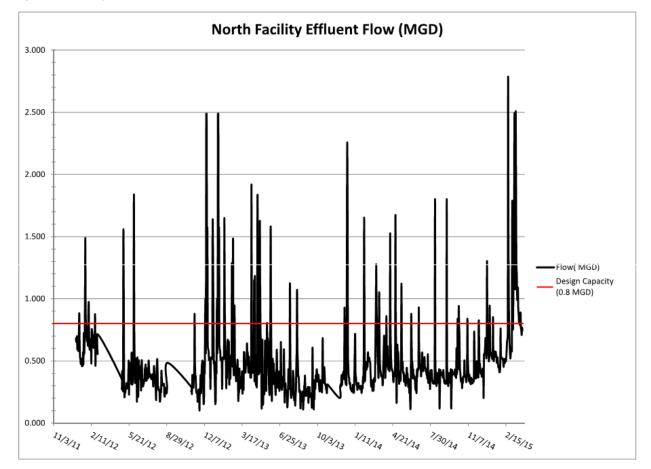
#### 2.3 Influent and Effluent Flows

The daily effluent flows for the treatment facility are summarized in Table 2.2. During a heavy rain event, the facility can go multiple days where influent flows exceed the facility's design capacity, As evidenced by Figure 2.1 below. Over the last two years, influent flows have exceeded the design flow by as much as 350 percent.

Table 2.2 – Daily Effluent Flows

Flow Condition	North Plant (million gallons)
Minimum Day	0.101
Average Day	0.487
Maximum Day	2.778

Figure 2.1 – Daily Effluent Flows



These flow excursions are directly related to rainfall events as identified in the Daily Operation Report Calculations (DOR's) provided by the City. During these spikes, the plant loses a majority of its microbial treatment ability due to the washout of the nitrifying organisms from the treatment basins. This is confirmed by the Daily Monitoring Reports (DMRs) that show lower-than-normal mixed liquor suspended solids (MLSS) concentrations in the primary mixing basin (as compared to pre-rainfall concentrations) and high total suspended solids (TSS) concentrations in the effluent after every rain event that increased plant flow. The carbonaceous biochemical oxygen demand (CBOD) loading in the influent flow also drops significantly during and immediately after every rainfall event that affects flow due to dilution by inflow and infiltration. This diluted CBOD loading further promotes degradation of the biomass used to treat the wastewater.

The facility was originally designed to have a hydraulic residence time of between 24 and 48 hours to allow for adequate treatment. When the plant receives flows in excess of the design flow, three conditions occur that affect the treatment capabilities of the plants: (1) the hydraulic residence time is reduced such that there is not adequate time for treatment to occur; (2) the additional flow has a very low concentration of CBOD, sharply decreasing the strength of the waste stream, and depriving the biomass of needed nutrients for growth and treatment abilities; and (3) the MLSS concentration in the treatment basin is significantly reduced due to washout of the biomass from the basins, thereby preventing adequate treatment of subsequent incoming flows. As a result of these conditions, the facility could possibly be out of compliance for several days while the biomass attempts to reestablish itself.

## 2.4 Influent and Effluent Quality

Facility MORs were analyzed for the NWWTF to diagnose the concerns by ADEQ that the plant will not continue to produce quality effluent. The information submitted covered nearly five years of operating data from 2011 to 2015 for the facility. The data included influent and effluent properties that are monitored on a regular basis to verify the plant's compliance with the NPDES permits and its ability to treat the waste stream. Overall the NWWTP looks to be a very biologically healthy facility. The facility experiences frequent events of excessive volumes of flow due to I&I and rebounds back to normal operation very quickly. There are still possibilities of noncompliance for brief periods during and immediately after heavy rain events so a reduction in I&I would only further benefit the facility.

## 2.4.1 Total Recoverable Mercury (Hg)

For several years, the NWWTP has been reporting higher than acceptable Hg limits in the effluent stream. Starting three years after the issuance date of the current permit (April 2012), the facility was required to meet a specified limit for Hg in lieu of just reporting the reading. According MOR data, the facility continually fails to meet the limits stipulated in the NPDES. Data shows that in 2008 there was a spike in the influent and effluent concentrations suggesting that attention should be focused on locating a source for influent contamination.

# **3** Proposed Treatment Plant Corrections

The proposed treatment facility corrective actions described below intend to mitigate violations of the facility's NPDES permit by attempting to utilize existing facilities and personnel to the greatest extent practical. Recommendations are made on the basis of priority ranking, high priority, medium priority, and low priority.

# 3.1 High Priority

 Based on Appendix A, from a report titled "Sanitary Sewer Collection System Report" issued to ADEQ in February of 2012 by Smith, Seckman, Reid, Inc. (SSR), the city shall focus on fixing the sections of pipe listed as "high priority", as funds become available. The City shall also continue efforts to indentify additional inflow and infiltration locations within the collection system. This action shall be an immediate and continuous effort. Inflow and infiltration should show signs of reduction by June 2016.

- a. If additional funding is necessary to accomplish this in a timely matter, application to the proper authority should be submitted as soon as possible.
- Conduct trace studies to track sources of Hg contamination and confirm whether or not the proper equipment has been installed and is in working order. If a source is identified that does not incorporate proper pre-treatment, equipment such as amalgam particle separators shall be installed at the source.
  - a. A review of customer records shall be completed to determine any actions that may have taken place in 2008 that might be contributing to the high concentration levels in the flow stream.
  - b. Testing and monitoring should continue until all sources are identified and have pretreatment installed.
    - i. A database shall be created to track and monitor testing results to ensure appropriate recording/reporting procedures are followed and for proper enforcement.
  - c. This action shall be an immediate and continuing effort. Concentrations of Hg in the influent and effluent streams should show reasonable potential to meet the allowable permit limits by May, 2016.
  - d. If amalgam particle filters are found to be inadequate at removing contaminates, the city shall require the customers that continue to discharge contaminates to design and construct activated carbon adsorption beds.
- 3. Review budget capital plans and fares for adequate revenue stream.

## 3.2 Medium Priority

- 1. Based on Appendix B, from a report titled "Sanitary Sewer Collection System Report" issued to ADEQ in February of 2012 by Smith, Seckman, Reid, Inc. (SSR), the city shall focus on fixing the sections of pipe listed as "medium priority" as funds become available.
- 2. Testing of the existing sludge for Hg contamination should be completed. If the sludge should be found contaminated, a plan shall be developed immediately to have the sludge removed from the pond and disposed of as funds become available.
- 3. Repair and or replace any equipment that may not be performing as designed or is not operable.

## 3.3 Low priority

1. If after extensive pipeline repairs have taken place within the collection system do not fix the I&I problem and the plant continues to be washed out during rain events, the City shall install a system of synthetic media in the primary basins of each plant to provide the nitrifying bacteria a surface

area for attached growth. This improvement will mitigate washout of ammonia removing bacteria during high flow events. The anticipated date for completion of this action is January 2018.

# APPENDIX A HIGH PRIORITY AREAS

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			IABL		ORITY REPAIRS		·		-	
Upst MH # to Dnst MH#	Line Length (ft)	PIPE TYPE	No. of Services	Line Conditions	Recommendations	Uni	t Cost*	Service Connect		Cost
705-1										
WD5	· .			FAIR/SMOKE						
WD4	346.1	LINER	2	LEAK	BURST/RELAY/CIPP	\$	70.00	\$ 500.00	\$	25,227.00
· ·							705-	-1 Subtotal:	5	25,227.00
705-2								·		<u> </u>
WD33				POOR/SMOKE					T	
WD32	121	CONC	1	LEAK	BURST/RELAY/CIPP	\$ ·	70.00	\$ <u>500.00</u>	\$	8,9 <u>70.00</u>
WD34										
WD33	156.4	CONC	1	POOR	BURST/RELAY/CIPP	\$	70.00	\$ 500.00	\$	11,448.00
WD35									.	
WD34	336.8	CONC	2	POOR	BURST/RELAY/CIPP	<u></u>	70.00	\$ 500.00	\$	24,576.00
WD40				· · ·						
WD2	232.7	LINER	0	POOR	BURST/RELAY/CIPP	\$	70.00	\$ 500.00	S	16,289.00
WD47				POOR/SMOKE		1.	·			
WD46	234.1	CONC	1	LEAK	BURST/RELAY/CIPP	S.	. 70.00	\$ 500.00	\$	16,887.00
WD53	l			POOR/SMOKE						
WD51 ·	197.4	CONC	. I	LEAK	BURST/RELAY/CIPP	\$	70.00	\$ 500.00	\$	14,318.00
WD55				POOR/FULL OF	н. · · .					
WD54	163	CONC	?	GROUT	RELAY	\$	90.00	\$ 500.00	\$	14,670.00
	. <sup>.</sup> .						705	-2 Subtotal	\$	107,158.00
705-3			· .	· .	···					
WD16		·		FAIR/SMOKE		ļ	-	· .		
WD7	249.1	CONC	2	LEAK	BURST/RELAY/CIPP	\$	70.00	\$ <u>500.00</u>	.\$	18,437.00
WD21				POOR/SMOKE				] ·		
WD20	172.1	CONC	2	LEAK	BURST/RELAY/CIPP	\$	70.00	\$ 500.00	\$	13,047.00
WD22				POOR/SMOKE	:					
WD21	216.1	CONC	2 ·	LEAK	BURST/RELAY/CIPP	\$	70.00	\$ 500.00	-\$	16,127.00
			•				705	-3 Subtotal	\$	47,611.00

**HIGH PRIORITY REPAIRS Page 1 of 8** 

Upst MH #	Line	PIPE	No. of	Line	ORITY REPAIRS			S	ervice		Cost
to Dnst MH#	Length (ft)	TYPE	Services	Conditions	Recommendations	Uni	t Cost*	С	onnect		Cost
7-1											• .
WP18				POOR/SMOKE	· · ·						•.
WP17	245.2	CONC	3	LÉAK	BURST/RELAY/CIPP	\$	70.00	<u>S'</u>	500.00	S	18,664.0
WP21				POOR/SMOKE		1					
WP20	75.2	CONC	1	LEAK	BURST/RELAY/CIPP	\$	70.00	\$	500.00	<u>\$</u>	5,764.0
WP27		-		POOR/SMOKE							
WP24	206.1	CONC	3	LEAK	BURST/RELAY/CIPP	<u>\$</u>	70.00	\$	500.00	\$	15,927.
WP29				POOR/SMOKE							
WP22	168.2	CONC	2	LEAK	BURST/RELAY/CIPP	\$	70.00	\$	500.00	\$	12,774.
WP30											
WP31	199.1	CONC	3	POOR	BURST/RELAY/CIPP	\$	70.00	\$	500.00	\$	15,437.
WP35				· ·		] .					
WP34	400	CONC	4	POOR	BURST/RELAY/CIPP	\$	70.00	\$	500.00	\$	30,000.
WP44				· ·		.					
WP42	363.9	CONC	3	POOR	BURST/RELAY/CIPP	\$	70.00	\$	500.00	\$	26,973.
WP40				FAIR/SMOKE							
WP39	410.3	LINER	6	LEAK	BURST/RELAY/CIPP	\$	70.00	S	500.00	\$	31,721.
					· .			-		æ	72 410
							1767	-1 8	ubtotal:	\$	72,410.
7-2		·		· · · · · · · · · · · · · · · · · · ·		1				<u> </u>	
WP78	4			POOR/SMOKE				<b>_</b>			
WP2	464	CONC	5	LEAK	BURST/RELAY/CIPP	\$	70.00	\$	500.00	\$	34,980
• WP79	4				· · · · · · · · · · · · · · · · · · ·		-			_	<b>a</b>
WP78	350.2	CONC	1	POOR	BURST/RELAY/CIPP	\$	70.00	\$	500.00	\$	25,014
WP80	4	· ·		POOR/SMOKE			· . ·				
WP79	80	CONC	. 0	LÉAK	BURST/RELAY/CIPP	\$	70.00	S	500.00	\$	5,600.
WP82	4	·.		POOR/SMOKE				<u> </u>			
WP81	391.6	CONC	2	LEAK	BURST/RELAY/CIPP	\$	70,00	\$	500.00	<u>s</u>	28,412.
							1767	-2 S	ubtotal:	5	94,006
idle-1					· · · · · · · · · · · · · · · · · · ·						

HIGH PRIORITY REPAIRS Page 2 of 8

Upst MH #	Line	PIPE	No. of	Line	URITY KEPAIKS		Service	
to Dast MH#	Length (ft)	ТҮРЕ	Services	Conditions	Recommendations	Unit Cost*	Connect	Cost
ND6	Longen (10)				· · · ·			
ND6A	17,2	CLAY	· ?	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 1,204.00
ND7	17,2	CLAI	;	POOR/SMOKE	- BOADTAILLATION C			- , <u> </u>
ND6	216.7	CLAY	1	LEAK	RELAY	\$ 90.00	\$ 500.00	\$ 20,003.00
ND8	210.7	CONT.	1	Lente				
ND3	282	CLAY	3	POOR	RELAY	\$ 90.00	\$ 500.00	\$ 26,880.00
ND7 ND9	2.52							
ND8	290	CLAY	2	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 21,300.00
ND10	2.0.	QL/II		1004				· · ·
ND9	404	CLAY	4	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 30,280.00
ND11		· · · ·						
ND10	160.6	CLAY	1 T	POOR	BURST/RELAY/CIPP	S 70.00	\$ 500.00	\$ 11,742.00
ND12								
ND11	205	CLAY	1	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 14,850.00
ND15	· ·	· · ·		· .				
ND14	146.5	CLAY	4	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 12,255.00
ND16				POOR/SMOKE				
ND15	182.3	CLAY	4	LEAK	BURST/RELAY/CIPP	\$ 70.00	S 500.00	\$ 14,761.00
ND17								
ND13	92.1	CLAY	1	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 6,947.00
ND19				FAIR/SMOKE				
ND6A	140.9	PVC	0	LEAK	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ <u>9,863.00</u>
ND21A						T	· . ·	
ND21	174.5	CLAY	5	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 14,715.00
ND21		·	· ·					
ND20	120.6	CLAY	3	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 9,942.00
ND22				POOR/SMOKE		T		
ND21A	209.7	ÇLAY	2	LEAK	BURST/RELAY/CIPP	\$ 70,00	\$ 500.00	\$ 15,679.00
ND23				POOR/SMOKE	• • • •			
ND22	233.8	CLAY	2	LEAK	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 17,366.00
ND26	· .							

HIGH PRIORITY REPAIRS Page 3 of 8

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TABLE 1 - HIGH PRIORITY REPAIRS											
Upst MH # to Dnst MH#	Linc Length (ft)	PIPE TYPE	No. of Services	Line Conditions	Recommendations	Unit Cost*	Service Connect		Cost		
ND25	570	CLAY	4	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	41,900.00		
ND27	· · ·										
ND25	235.4	CLAY	5	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	18,978.00		
					· ·	Ruddle	1 Subtotal:	<u>\$</u>	288,665.00		
Walker Park 1	·		·		· · · · · · · · · · · · · · · · · · ·		<u> </u>				
NC49A		<b>CIT</b> 1 TT		BOOD '		\$ 70.00	\$ -500.00	\$	18,191.00		
NC49	231.3	CLAY	4	POOR	BURST/RELAY/CIPP	\$ 70.00	3 300.00	9	18,171.00		
NC49B		a in		BOOD	DIDOTIDEI AV/CIDD	\$ 70.00	\$ 500.00	\$	21,248.00		
NC8	246.4	CLAY	8	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	4	21,248.00		
NC49				baob	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	24,660.00		
NC49B	288.0	CLAY	.9	POOR	BUKSI/RELAY/CIPP	\$ 70.00	3 200.00	φ	24,000.00		
NC50				7007		\$ 70.00	\$ 500.00	\$	9,197.00		
NC9	117.1	ÇLAY	2	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 300.00	Ð	9,197.00		
NC51				TOOT		\$ 70.00	\$ 500.00	s	17,106.00		
NC50	215.8	CLAY	. 4	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	17,100.00		
NC53	4					<b>* 70.00</b>	5 500.00	¢.	19,610.00		
NC52	273.0	CLAY	1	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ <u>·</u>	19,010.00		
NC54A				·		<b>5</b> 0,00			2 621 00		
NC54	43.3	CLAY	1	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	3,531.00		
• <u>NC54</u>	·				· · · · · · · · · · · · · · · · · · ·				8 000 00		
NC10A	<b>98</b> .6	CLAY	2	POOR	BURST/RELAY/CIPP	S 70.00	\$ 500.00	\$	7,902.00		
SERVICE CAP	1		i		· · · · · · · · · · · · · · · · · · ·				11.000.00		
NC52	143.8	CONC	2	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	. <u>\$</u>	11,066.00		
SERVICE CAP	1					1	:				
NC54A	47.2	CLAY	· <u>1</u>	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500,00	\$	3,804.00		
Locust & Lilly	]	· ·									
Popular & Lilly	229	CLAY	3	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	17,530.00		
NC 20A	· ·							ł			
NC19	703	CONC	3	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	50,710.00		
NC15A						. ·					

HIGH PRIORITY REPAIRS Page 4 of 8

to Part MII#    Length (ft)    TYPE    Services    Conditions    Recommendations    Unit Cost*    Connect    Connect    Connect      NC15    426.2    CLAY    9    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    34,334.00      NC16    23.7    CLAY    0    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    1,659.00      NC24    2    LEAK    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    21,370.00      NC25    344    CLAY    2    LEAK    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    29,580.00      NC25    344    CLAY    11    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    29,580.00      NC24    193.9    CLAY    3    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    15,073.00      Walker Park 2	TABLE 1 - HIGH PRIORITY REPAIRS											
NC15    H26.2    CLAY    9    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    34,334.00      NC15    23.7    CLAY    0    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    1,659.00      NC16    23.7    CLAY    0    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    1,659.00      NC24    291    CLAY    2    LEAK    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    21,370.00      NC25    344    CLAY    11    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    15,073.00      NC25    344    CLAY    3    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    15,073.00      Walker Park 2	Upst MH #		PIPE	No. of Services	Line Conditions	Recommendations	Unit Cost*	Service Connect		Cost		
NC15    Interference    Interference <thinterference< th="">    Interference</thinterference<>		5, 7				DI DOTO DI AV(CIDD	A 20.00		¢	24 224 00		
NC16    23.7    CLAY    0    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    1,659.00      NC24    2    POOR/SMOKE    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    21,370.00      NC23    291    CLAY    2    LEAK    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    21,370.00      NC25    344    CLAY    11    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    29,580.00      NC25    344    CLAY    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    15,073.00      Walker Park 2		426.2	CLAY	9	POOR	BUKST/RELAY/CIPP	\$ 70.00	\$ 500.00	3	34,334.00		
NC24    2011    CLAY    2    POOR/SMOKE    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    21,370.00      NC25    344    CLAY    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    29,580.00      NC25    344    CLAY    11    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    29,580.00      NC24    193.9    CLAY    3    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    15,073.00      Walker Park 2      1    67.6    CLAY    1    POOR    RELAY    \$    90.00    \$    500.00    \$    6,584.00      NC66    80.6    CONC    2    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    7,851.00      NC66    80.6    CONC    2    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00 <td< td=""><td></td><td>- I ·</td><td>·</td><td></td><td></td><td></td><td></td><td>#` coo oo</td><td>æ</td><td>1 (50.00</td></td<>		- I ·	·					#` coo oo	æ	1 (50.00		
NC23    291    CLAY    2    LEAK    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    21,370.00      NC25A    344    CLAY    11    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    29,580.00      NC25    344    CLAY    11    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    29,580.00      NC24    193.9    CLAY    3    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    15,073.00      Walker Park 2		23.7	CLAY	0		BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	<u> </u>	1,639.00		
NC25A    344    CLAY    11    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    29,580.00      NC25    344    CLAY    11    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    29,580.00      NC25    193.9    CLAY    3    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    15,073.00      Walker Park 1    Subtetal:    \$    306,571.00      Walker Park 2		4										
NC25    344    CLAY    11    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    29,580.00      NC25    193.9    CLAY    3    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    15,073.00      Walker Park 1    Subtotal:    \$    306,571.00    \$    306,571.00    \$    306,571.00      Walker Park 2    -    -    -    -    -    306,571.00    \$    500.00    \$    6,584.00      NC66    80.6    CONC    2    POOR    BURST/RELAY    \$    90.00    \$    500.00    \$    6,584.00      NC66    80.6    CONC    2    POOR    BURST/RELAY    \$    85.00    \$    500.00    \$    28,965.00      NC86    349.5    CLAY    9    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    28,965.00      NC86    397    CLAY    12    POOR		291	CLAY	2	LEAK	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	5	21,370.00		
NC25    Initial    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 15,073.00      Walker Park 2    Image: Clay 2    67.6    CLAY 1    POOR    RELAY    \$ 90.00    \$ 500.00    \$ 500.00    \$ 6,584.00      Walker Park 2    Image: Clay 2    67.6    CLAY 1    POOR    RELAY    \$ 90.00    \$ 500.00    \$ 6,584.00      NC66    80.6    CONC 2    POOR    BURST/RELAY    \$ 85.00    \$ 500.00    \$ 7,851.00      NC65    80.6    CONC 2    POOR    BURST/RELAY    \$ 85.00    \$ 500.00    \$ 7,851.00      NC86    349.5    CLAY 9    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 28,965.00      NC87    3    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 33,790.00      NC86    397    CLAY    12    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 17,768.00      NC88    232.4    TRUSS    3    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 25,				· .								
NC24    193.9    CLAY    3    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 15,073.00      Walker Park 2      1    0    0    8    500.00    \$ 306,571.00      Walker Park 2	NC25	344	CLAY	11	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	29,580.00		
Walker Park 2    Walker Park 1 Subtotal:    \$ 306,571.00      1    67.6    CLAY    1    POOR    RELAY    \$ 90.00    \$ 500.00    \$ 6,584.00      NC66    0    0    8    500.00    \$ 500.00    \$ 6,584.00      NC66    0    0    0    8    500.00    \$ 500.00    \$ 6,584.00      NC66    0    0    0    0    \$ 500.00    \$ 7,851.00      NC86    0    0    0    \$ 500.00    \$ 7,851.00      NC86    349.5    CLAY    9    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 28,965.00      NC86    397    CLAY    12    POOR    BURST/RELAY/CIPP    \$ 500.00    \$ 33,790.00      NC86    397    CLAY    12    POOR    BURST/RELAY/CIPP    \$ 500.00    \$ 33,790.00      NC88    232.4    TRUSS    3    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 25,510.00      NC93    300.1    CONC    3 </td <td>NC25</td> <td></td> <td>1</td> <td></td> <td></td> <td></td> <td>· ·</td> <td>•</td> <td></td> <td></td>	NC25		1				· ·	•				
Walker Park 2    1    POOR    RELAY    \$ 90.00    \$ 500.00    \$ 6,584.00      NC66    0 </td <td>NC24</td> <td>193.9</td> <td>CLAY</td> <td>3</td> <td>POOR .</td> <td>BURST/RELAY/CIPP</td> <td>\$ 70.00</td> <td>\$ 500.00</td> <td>\$</td> <td>15,073.00</td>	NC24	193.9	CLAY	3	POOR .	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	15,073.00		
Walker Park 2    1    POOR    RELAY    \$ 90.00    \$ 500.00    \$ 6,584.00      NC66    0 </th <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>· ·</th> <th></th> <th></th> <th>•</th>							· ·			•		
1    67.6    CLAY    1    POOR    RELAY    \$ 90.00    \$ 500.00    \$ 6,584.00      NC66    80.6    CONC    2    POOR    BURST/RELAY    \$ 85.00    \$ 500.00    \$ 7,851.00      NC86    349.5    CLAY    9    POOR    BURST/RELAY    \$ 70.00    \$ 500.00    \$ 28,965.00      NC86    349.5    CLAY    9    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 28,965.00      NC87    9    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 33,790.00      NC86    397    CLAY    12    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 33,790.00      NC86    397    CLAY    12    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 17,768.00      NC88    232.4    TRUSS    3    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 25,510.00      NC93    300.1    CONC    1    POOR    BURST/RELAY/CIPP    \$ 70.00    \$					· · ·		Walker Park	: 1 Subtotal: ·	<u>\$</u>	306,571.00		
2    67.6    CLAY    1    POOR    RELAY    \$ 90.00    \$ 500.00    \$ 6,584.00      NC66	Walker Park 2	·		· ·								
NC66    80.6    CONC    2    POOR    BURST/RELAY    \$    \$500.00    \$    7,851.00      NC86	1.	T										
NC66    80.6    CONC    2    POOR    BURST/RELAY    \$    85.00    \$    500.00    \$    7,851.00      NC86    349.5    CLAY    9    POOR    BURST/RELAY    \$    85.00    \$    500.00    \$    7,851.00      NC85    349.5    CLAY    9    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    28,965.00      NC87	2	67.6	CLAY	· 1 .	POOR	RELAY	\$ 90.00	\$ 500.00.	\$	6,584.00		
NC86    349.5    CLAY    9    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 28,965.00      NC85    349.5    CLAY    9    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 28,965.00      NC87	NC66	1				·	· ·	·				
NC85  349.5  CLAY  9  POOR  BURST/RELAY/CIPP  \$  70.00  \$  500.00  \$  28,965.00    NC87	NC65	80.6	CONC	2	POOR	BURST/RELAY	\$ 85.00	\$ 500.00	\$	7,851.00		
NC87    397    CLAY    12    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 33,790.00      NC86    397    CLAY    12    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 33,790.00      NC89	NC86											
NC86    397    CLAY    12    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 33,790.00      NC89	• NC85	349.5	CLAY	9	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	28,965.00		
NC89    232.4    TRUSS    3    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    17,768.00      NC93	NC87									· ·		
NC88  232.4  TRUSS  3  POOR  BURST/RELAY/CIPP  \$  70.00  \$  500.00  \$  17,768.00    NC93  343  CONC  3  POOR  BURST/RELAY/CIPP  \$  70.00  \$  500.00  \$  25,510.00    NC92  343  CONC  3  POOR  BURST/RELAY/CIPP  \$  70.00  \$  500.00  \$  25,510.00    NC94  300.1  CONC  1  POOR  BURST/RELAY/CIPP  \$  70.00  \$  500.00  \$  21,507.00    NC93  300.1  CONC  1  POOR  BURST/RELAY/CIPP  \$  70.00  \$  500.00  \$  21,507.00    NC95	· NC86	397	CLAY	12	POOR	BURST/RELAY/CIPP	\$ 70:00	\$ 500.00	\$	33,790.00		
NC93    343    CONC    3    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    25,510.00      NC94	NC89	· ·		· .								
NC92    343    CONC    3    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    25,510.00      NC94	NC88	232.4	TRUSS	3	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	17,768.00		
NC94	NC93											
NC93    300.1    CONC    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    21,507.00      NC95	NC92	343	CONC	3	POOR	BURST/RELAY/CIPP	\$ 70.00	S 500.00	\$	25,510,00		
NC95    320.3    CONC    1    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 22,921.00      NC99	NC94	· · ·	<b>—</b> · · · ·	· ·	·······					i		
NC95    320.3    CONC    1    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 22,921.00      NC99    NC99    NC99    NC91		300.1	CONC	1	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	21,507.00		
NC94    320.3    CONC    1    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 22,921.00      NC99                 22,921.00								1				
NC99		320.3	CONC	1	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	22,921.00		
				· ·		· · · · · · · · · · · · · · · · · · ·			† · · · ·			
	NC98	240	CONC	5.	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	19,300.00		
NC100												

HIGH PRIORITY REPAIRS Page 5 of 8

Upst MH #	Line	PIPE	No. of	Line	DRITT REPAIRS	Units Coust	Service	Cost
to Dnst MH#	Length (ft)	TYPE	Services	Conditions	Recommendations	Unit Cost*	Connect	Cost
NC99	217.1	CONC	5	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 17,697.00
NC102								
NC101	263.2	CONC	6	POOR	BURST/RELAY/CIPP	\$ 70 <u>.00</u>	\$ 500.00	\$ 21,424.00
NC103								
NC92	361.9	CLAY	. 7	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 28,833.00
NC104				POOR/SMOKE				
NC103	563	CLAY	4	LEAK	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 41,410.00
NC105				POOR/SMOKE				
NC104	246	CLAY	1	LEAK	BURST/RELAY/CIPP	<u>\$</u> 70.00	\$ 500.00	\$ 17,720.00
NC108								
NC107	250	CLAY	3	POOR	RELAY	\$ 90.00	\$ 500.00	\$ 24,000.00
NC109				• .				1
NC108	242.7	CLAY	4	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 18,989.00
NC110 ·					· .			
• NC109	160.7	CLAY	4	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 13,249.00
NC111 -			•					
NC110	264.9	CLAY	4	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500,00	\$ 20,543.00
NC72				. •	•			
NC71	257.4	CONC	4	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 20,018.00
NC74								
NC73	335.5	CONC	2.	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 24,485.00
NC75								
NC74	245.9	CONC	2	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 18,213.00
NC112				POOR/SMOKE				
NC109	86,1	CLAY	2	LEAK	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 7,027.00
EOL				•	•			
<u>NC24</u>	148.3	CLAY	2	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 11,381.00
					. •	Wallton Davis	1 Cubistal	\$ 469,185.00
Ward 1		·····				Walker Park	4 Suptoral:	a 407,103,00
90W3	<u> </u>							
<u>50115</u>	1	I .			· ·	t ·	I	1

HIGH PRIORITY REPAIRS Page 6 of 8

Upst MH #	Line	PIPE	No. of	Line	URITI KEFAIKS		Service	
to Dnst MH#	Length (ft)	TYPE	Services	Conditions	Recommendations	Unit Cost*	Connect	Cost
90W2	323.7	CONC	2	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 23,659.00
LOCUST & LILY								
POPLAR & LILY	272.4	CLAY	4	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 21,068.00
MICHAELS JEWEL								
TEE IN LINE	183.9	CONC	6	POOR	BURST/RELAY/CIPP	<b>\$</b> 70.00	\$ 500.00	\$ 15,873.00
WF105				· .'				
W\$31	225	CONC	5	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 18,250.00
WF108					· · ·			
WF107	296.4	CONC	3	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 22,248.00
WF109			· · · ·					
WF108A	206.9	CONC	1	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 14,983.00
WF110								
WF109	340.7	CONC	3	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 25,349.00
WF111		İ						
WF110	305.8	CONC	5	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 23,906.00
WF115								
ŴF114	507.2	CONC	12	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 41,504.00
WF116								
WF107	347.6	CONC	3	POOR	BURST/RELAY/CIPP	<u>\$ 70.00</u>	\$ 500.00	\$ 25,832.00
WF118								
WF117	287.2	CONC	5	POOR	BURST/RELAY/CIPP	\$ 70.00	\$. 500.00	\$ 22,604.00
WF119								
WF118	359.8	CONC	8	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 29,186,00
<u>WS1</u>				· .				
PS	51	CONC	0	POOR	BURST/RELAY/CIPP	\$ 70.00	<b>\$ 500.00</b>	\$ 3,570.00
W\$30			·.					
· W\$29	247.4	CONC	4	- POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 19,318.00
<u>WS31</u>								
WS29	62.4	CLAY	. 2	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 5,368.00
WS18					· · · ·			
WS15	115	CLAY	2	FAIR	PC & INSTALL MH	\$ 2,000.00		\$ 2;000.00

HIGH PRIORITY REPAIRS Page 7 of 8

TABLE I - HIGH PRIORITY REPAIRS												
Upst MH # to Dnst MH#	Line Length (ft)	PIPE TYPE	No. of Services	Line Conditions	Recommendations	Unl	t Cost*		Service Connect		Cost	
WS24					·	ľ						
WS23	175.2	CLAY	4	POOR	BURST/RELAY/CIPP	<u>\$</u> ·	70.00	\$	500.00	\$	14,264.00	
		÷.					Ward	18	ubtota <u>l:</u>	\$	328,982.00	
Ward 2												
WF57					· ·			ŀ				
WF56	94,4	CONC	0	POOR	BURST/RELAY/CIPP	\$	(70.00)	\$	500.00	\$	6,608.00	
WF63						Γ						
WF62	138.5	CONC	1	POOR	BURST/RELAY/CIPP	\$	70.00	\$	500.00	\$	10,195.00	
WF68								1				
WF67	252	PVC	. ?	PIPE MISSING	RELAY	\$	90.00	\$	500.00	\$	22,680.00	
WF72				· .				[ .		•		
WF71	447.4	CONC	17	POOR	BURST/RELAY/CIPP	<u>\$</u>	70.00	\$	500.00	\$	39,818.00	
WF71					· · ·		-					
WF70	319.8	CONC	4	POOR .	BURST/RELAY/CIPP	\$	70.00	\$	500:00	\$	24,386.00	
· . ·		•	. ·	: -			Ward	2 5	ubtotal:	\$	103,687.00	
• .					· · · ·	ligh I	Priority	Are	a Total:	\$	1,843,502.00	

\*Unit costs for BURST/RELAY/CIPP=\$70 per LF, RELAY/BURST=\$85 per LF, RELAY=\$90 per LF, REPAIR SERVICE or POINT REPAIR=\$1000

EA, SMH=\$2000 EA

# **APPENDIX B** MEDIUM PRIORITY AREAS

			1	ABLE 2 -	MEDIUM P	RIORITY REPAIRS				
Upst MH # to Dnst MH#	Line Length	Pipe Size	PIPE TYPE	No. of Services	Line Conditions	Recommendations	Unit Cost*	Service Connect	,	Total Cost
705-2		19-14			00220000		L			
WD3			l	I .		·		1		
WD3	238.4	8"	LINER	1	POOR	RELAY/BURST	\$ 85.00	\$ 500.00	i \$	20,764.00
WD27	250.4		DIVER		TOOR		4 00.00			
WD2	184.9	10*	LINER	0	POOR	PT. REPAIR	\$ 1,000.00	\$ 500.00	\$	1,000.00
WD42						·				· · ·
WD41	252.2	8"	LINER	1	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	18,154.00
						· · · · · · · ·				
			•				705	-2 Subtotal:	\$	39,918.00
705-3										
WD20										
WD19	110.9	<b>8</b> "	CONC	0	POOR	BURST/RELAY/CIPP	<u>S 70.00</u>	\$ 500.00	\$	7,763.00
WD24					· · .					
WD23	40.7	8"	CONC	0	POOR	BURST/RELAY/CIPP	\$ 70.00	<u>S 500.00</u>	\$	2,849.00
							- 705	-3 Subtotal:	· \$	10,612.00
1767-1				<u> </u>						
WP41						· .	1.		Ι.	· · · · · · ·
WP40	379.6	· 8"	CONC	4.	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	28,572.00
WP48										
WP47	249	8"	CONC		POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	17,930.00
							1767	-1 Subtotal:	5	46,502.00
1767-2			,				1/0/	-1 Subtotal.	4	
WP81				Ī			1	T		
WP80	384.8	8"	CONC	2	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	· \$	27,936.00
					:					•
							1767	-2 Subtotal:	\$	27,936.00
Ruddle-1		· .								

TABLE 2 - MEDIUM PRIORITY REPAIRS

MEDIUM PRIORITY REPAIRS Page 1 of 4

NEEDS M/H

\$ 2,000.00

\$

2,000.00

POOR

EOL ND10

82.8

6

CLAY

2

**TABLE 2 - MEDIUM PRIORITY REPAIRS** Service Upst MH # Line Pipe PIPE No. of Line Total Cost Unit Cost\* Recommendations Connect Conditions Length Services to Dnst MH# Size TYPE EOL 83.1 POOR \$ 2,000.00 S 166,200.00 ND22 CLAY NEEDS M/H 6 1. ND6A ND5 PVC POOR RELAY \$ 90.00 \$ 500.00 29,345.00 320.5 \$ 8 I ND14 24,559.00 **ND13** 293.7 6 CLAY 8 POOR BURST/RELAY/CIPP \$ 70.00 \$ 500.00 \$ ND20 BURST/RELAY/CIPP \$ 500.00 30,670.00 ND19 381 6 CLAY 8 POOR S 70.00 \$ ND24 ND23 200.6 CLAY BURST/RELAY/CIPP \$ 70.00 \$ 500.00 \$ 15,542.00 6 3 POOR ND25 BURST/RELAY/CIPP 70.00 500.00 23,071.00 ND21 315.3 6 CLAY 2 POOR \$ \$ \$ Ruddle-1 Subtotal: \$ 291,387.00 Walker Park 1 NC27 4,298.00 NC26 61.4 6" CONC ? \$ 70.00 \$ 500.00 \$ POOR BURST/RELAY/CIPP NC28 NC20 154.7 6" CONC BURST/RELAY/CIPP 70.00 \$ 500.00 \$ 0 \$ POOR 10,829.00 NC52 NC51 353.3 6" POOR 500.00 27,731.00 6 \$ \$ CLAY BURST/RELAY/CIPP 70.00 \$ NC16 NC37 485.6 ·10<sup>n</sup> CONC 2 POOR BURST/RELAY/CIPP \$ 70.00 \$ 500.00 \$ 34,992:00 NC17 NC16 10" 27.9 CONC 0 POOR BURST/RELAY/CIPP 500.00 \$ 1,953.00 \$ 70.00 \$ NC18 NC30 42.3 10" CONC 0 POOR \$ 500.00 \$ BURST/RELAY/CIPP \$ 70,00 2,961.00 NC19 NC18 10<sup>n</sup> 18.9 CONC 0 POOR BURST/RELAY/CIPP \$ \$ 1,323.00 70.00 \$ 500.00

MEDIUM PRIORITY REPAIRS Page 2 of 4

POOR

BUR\$T/RELAY/CIPP

\$

70.00 \$

500.00 \$

16,394.00

NC30

10"

234.2

CONC

0

TABLE 2 - MEDIUM PRIORITY REPAIRS											
Upst MH # to Dnst MH#	Line Length	Pipe Size	PIPE TYPE	No. of Services	Line Conditions	Recommendations	Unit Cost*	Service Connect	1	lotal Cost	
				•			Walker Park	1 Subtotal:	\$	100,481.00	
Walker Park 2	2										
NC81A											
NC58	162	8"	CLAY	0	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	11,340.00	
NC81					· .	•					
NC81A	318.9	8"	CLAY	. 2	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	23,323.00	
NC85 NC84	-152.7	8 <sup>ii</sup>	CLAY	4	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$.	12,689.00	
NC91	100.0				1001		-		-		
NC91A	319.4	10"	CONC	2	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	S	23,358.00	
NC107			l.								
NC106	512.8	8*	CLAY	9	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	40,396.00	
. NC73										.*	
NC68	316.8	8"	CONC	ï	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	22,676.00	
NC88											
NC59	328.1	8"	TRUSS	1	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	23,467.00	
NC57 NC56	434.1	12"	CONC	0	POOR	BURST/RELAY/CIPP.	\$ 70.00	\$ 500.00	\$	30,387.00	
Rest	<b>4</b>	12	conc	V	ТОЛК	BORDINEER INCHT.	4 70.00	φ	47	50,507100	
							Walker Park	2 Subtotal:	\$	187,636.00	
Ward 1		•			•						
WS20											
WS19	400.2	10"	CLAY	· 4	FAIR	PC & REPAIR SERVICE	\$ 1,000.00	\$ 500.00	\$	1,000.00	
WF102											
WF101	506.9	6"	CONC	13	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	41,983.00	
WF106											
WF93	168.7	10"	CONC	1	FAIR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	-\$	12,309.00	
WF107											
WF106 .	200.5	10"	CONC	3	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	15,535.00	
WF108A			1		-				1		

# TABLE 2 - MEDIUM PRIORITY REPAIRS

MEDIUM PRIORITY REPAIRS Page 3 of 4

**TABLE 2 - MEDIUM PRIORITY REPAIRS** Upst MH # PIPE No. of Service : Line Pipe Line Total Cost Unit Cost\* Recommendations Connect TYPE to Dast MH# Length Size Services Conditions \$ 500.00 10,173.00 6" BURST/RELAY/CIPP \$ 70.00 **\$** ` WF108A 123.9 CONC 3 FOOR WF114 3,360.00 \$ 500.00 8" BURST/RELAY/CIPP 70.00 WF113 48 CONC 0 POOR S \$ WF117 BURST/RELAY/CIPP 70.00 \$ 500.00 24,993.00 WF116 299.9 8" CONC 8 POOR \$ \$ WS6 WSS 364.1 8" CLAY POOR BURST/RELAY/CIPP \$ 500.00 28,487.00 6 70.00 \$ \$ W\$29 BURST/RÉLAY/CIPP WS28 6"<sup>°</sup> \$ 500.00 22,350.00 305 CONC 2 POOR \$ 70.00 s **WS21** 8" \$ 500.00 27,803.00 WS20 382.9 CLAY 2 POOR BURST/RELAY/CIPP 70.00 \$ \$ Ward 1 Subtotal: \$ 187,993.00 Ward 2 × . WF4A 10" WF57 56 BURST/RELAY/CIPP 3,920.00 CONC 0 POOR \$ 70.00 \$ .500.00 \$ WF56 WF55 12" POOR BURST/RÊLAY/CIPP \$ 500.00 CONC 30,523.00 428.9 1 \$ 70.00 \$ WF60 8" BURST/RELAY/CIPP WF59 CONC 2 POOR 70.00 \$ 500.00 22,490.00 307 S \$ WF62 WF61 8" CONC BURST/RELAY/CIPP 313.8 70.00 \$ 500.00 24,966.00 6 POOR S \$ WF70 311.6 '8" CONC POOR BURST/RELAY/CIPP 70.00 500.00 WF59 1 S S 22,312.00 Ward 2 Subtotal: \$ 104,211.00 Medium Priority Total Cost: \$ 996,676.00 \*Unit costs for BURST/RELAY/CIPP=\$70 per LF, RELAY/BURST=\$85 per LF, RELAY=\$90 per LF, REPAIR SERVICE or POINT

REPAIR=\$1000 EA, SMH=\$2000 EA

MEDIUM PRIORITY REPAIRS Page 4 of 4

# **CITY OF BLYTHEVILLE**

**BLYTHEVILLE, ARKANSAS** 

# **CORRECTIVE ACTION ORDER UPDATE**

BLYTHEVILLE SOUTH WASTEWATER TREATMENT FACILITY ASSESSMENT AND RECOMMENDED PLAN FOR CORRECTIVE MEASURES



# SSR

# **CORRECTIVE ACTION ORDER UPDATE**

Blytheville South Wastewater Treatment Facility Assessment and Recommended Plan for Corrective Measures



Bo Butler, P.E. Senior Principal

Ifall

Prepared by: Smith Seckman Reid, Inc.

City of Blytheville

Prepared for:

2650 Thousand Oaks Blvd. Suite 3200 Memphis, TN 38118 Tel 901.683.3900 Fax 901.683.3990

> SSR Project No.: 14-41-027.1

> > Date: April 27, 2014

Marshall Fall, E.I Project Manager

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# **1** Executive Summary

In April 2014, the City of Blytheville (City) received a Notice of Violation (NOV) from the Arkansas Department of Environment Quality (ADEQ). The NOV was in response to a review of monthly operating reports (MORs) from the City's South Wastewater Treatment Facility (SWWTF), which showed violations of the plant's National Pollutant Discharge Elimination System (NPDES) permit (No. AR0022578). This NOV described two violations concerning nitrogen-ammonia concentrations in the SWWTF effluent.

In February 2015, ADEQ requested that the City issue a detailed Corrective Action Order Update (CAOU). The CAOU report should address the status of the facility's compliance to I&I issues, the potential effluent violations and additional measures to be taken to maintain compliance of the NPDES. The report should also address the status of compliance in regards to total recoverable mercury (Hg) concentrations, and address measures to be taken by the City to begin locating any sources of contamination in the waste stream.

After reviewing plant data and the existing operations at the plant, the following corrective actions were developed. Once implemented by the City, these corrective actions should allow the treatment facility to return to compliance with the NPDES permit.

- 1. Based on previous completed studies, complete collection system rehabilitation on a priority basis focusing on high priority areas first.
- 2. Aggressively track and locate sources of Hg in the waste stream flow and require sources to incorporate pre-treatment to remove the Hg from the flow.
- 3. Conduct rate study and review capital expenditure plans to ensure adequate revenue stream to allow for effective operation, maintenance, repair, and replacement of WWTF equipment.
- 4. Install synthetic media in the primary basin of the plant to encourage the growth of nitrifying bacteria and prevent bacteria from washing out of the facilities during heavy flow events.

# **2 General Information**

# 2.1 Description of Wastewater Treatment Facility

The City treats wastewater at three treatment facilities. This CAOU will address issues at the SWWTF. The facility is a modified lagoon that incorporates the BIOLAC® technology and consists of traveling screens, a primary aeration and mixing basin, integral clarifiers to facilitate settling, a basin that incorporates both aerated and non-aerated polishing, and ultra-violet disinfection. The design capacity of the SWWTF is 1.4 MGD. The facility was built adjacent to a retired non-aerated lagoon that was repurposed as sludge disposal basin for the facility. The facility was constructed and commissioned in 1989.

The source of wastewater for the SWWTF is 16 pumping stations with a combined total capacity of 10,535 gallons per minute (GPM). The capacity of each pumping station is summarized in Table 2.1.

South Plant	County Road	6000GPM
	Willie B. Reed	180 GPM
	College	200 GPM
	Barker Lane	600 GPM
	Dogwood #1	225 GPM
	Dogwood #2	180 GPM
	Ross Road	200 GPM
	Ed's Catfish	180 GPM
	New School	180 GPM
	Lake Street	600 GPM
	8 <sup>th</sup> Street	450 GPM
	Sarah	180 GPM
	Chickasaw Courts	180 GPM
	Promised Land	180 GPM
	Jake Rhodes	200 GPM
	McHaney Street	800 GPM

#### Table 2.1- Flow Source (PS Capacities)

### 2.2 Description of Need

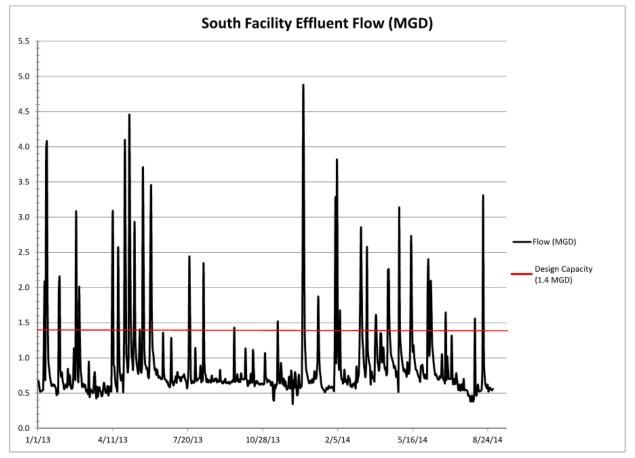
In the last 24 months, the SWWTF has experienced continuous events of excessive flow volumes that exceed the facility's designed maximum capacity. Excessive flows can "wash out" the facility causing the loss of valuable nitrifying bacteria critical to the proper treatment of the waste stream. I&I must be reduced to allow the facility to operate as designed. Additionally, under the existing NPDES permit issued January, 2014, the concentration of Hg in the effluent will be required to meet a limit for by January 2017,. Recent monitoring records show the facility may have an issue meeting the limits for Hg set forth in the NPDES permit on a consistent basis.

### 2.3 Influent and Effluent Flows

The daily effluent flows for the facility are summarized in Table 2.2. During a heavy rain event, the facility can go multiple days where influent flows exceed the facility's design capacity, as evidenced by Figure 2.1 below. Over the last two years, influent flows have exceeded the design flow by as much as 340 percent.

Flow Condition	South Plant (million gallons)
Minimum Day	0.343
Average Day	0.854
Maximum Day	4.851

Table 2.2 – Da	ily Effluent Flows
----------------	--------------------



These flow excursions are directly related to rainfall events as identified in the Daily Operation Report Calculations (DOR's) provided by the City. During these events, the plant loses a majority of its microbial treatment ability due to the washout of the nitrifying organisms from the treatment basins. This is confirmed by the Daily Monitoring Reports (DMRs) that show lower-than-normal mixed liquor suspended solids (MLSS) concentrations in the primary mixing basin (as compared to pre-rainfall concentrations) and high total suspended solids (TSS) concentrations in the effluent after every rain event that increased plant flow. The carbonaceous biochemical oxygen demand (CBOD) loading in the influent flow also drops significantly during and immediately after every rainfall event that affects flow due to dilution by inflow and infiltration. This diluted CBOD loading further promotes degradation of the biomass used to treat the wastewater.

The facility was originally designed to have a hydraulic residence time of between 24 and 48 hours to allow for adequate treatment. When the plant receives flows in excess of the design flow, three conditions occur that affect the treatment capabilities of the plants: (1) the hydraulic residence time is reduced such that there is not adequate time for treatment to occur; (2) the additional flow has a very low concentration of CBOD, sharply decreasing the strength of the waste stream, and depriving the biomass of needed nutrients for growth and treatment abilities; and (3) the MLSS concentration in the treatment basin is significantly reduced due to washout of the biomass from the basins, thereby preventing adequate treatment of subsequent incoming flows. As a result of these conditions, the facility could possibly be out of compliance for several days while the biomass attempts to reestablish itself.

#### 2.4 Influent and Effluent Quality

Plant MORs were analyzed for the SWWTF to diagnose the violations reported by ADEQ. The information submitted covered nearly four years of operating data from 2011 to 2014 for the facility. The data included influent and effluent properties that are monitored on a regular basis to verify the plant's compliance with the NPDES permits and ability to treat the waste stream.

#### 2.4.1 Ammonia

Table 2.4

The ammonia level in the effluent flow is a direct reflection of the amount of nitrification provided by biological processes within the lagoon treatment facility. Ammonia is removed from the waste stream by conversion into nitrites and nitrates by nitrifying bacteria. The NPDES permit has three effluent discharge limitations that must be met to avoid violations (i.e., monthly average concentration, 7-day average concentration, and monthly mass loadings). MOR data suggests that the facility will have continued difficulty meeting permit requirements during and after heavy rain events unless the I&I is reduced. A summary of SWWTF effluent ammonia data is provided in Table 2.4.

Effluent Reading	Reading /Permit Limit
7-day avg. (mg/L)/Permit Limit	0.7/3.0
Monthly Avg. (mg/L)/ Permit Limit	0.7/2.0
Mass (lb//Day)/ Permit Limit	5.2/23

#### 2.4.2 Total Recoverable Mercury (Hg)

For several years, the SWWTF has been reporting higher than acceptable Hg limits in the effluent stream. Starting three years after the issuance date of the current permit (January 2014), the facility will be required to meet a specified limit for Hg. According to the past recorded concentrations, the facility does not show reasonable potential to meet the limits on a regular basis without the implementation of proper treatment. Data shows that in 2008 there was a spike in the influent and effluent concentrations suggesting that attention should be focused on locating a source for influent contamination.

# **3** Proposed Treatment Plant Corrections

The proposed treatment facility corrective actions described below intend to mitigate violations of the facility's NPDES permit by attempting to utilize existing facilities and personnel to the greatest extent practical. Recommendations are made on the basis of priority ranking, high priority, medium priority, and low priority.

### 3.1 High Priority

- Based on Appendix A, from a report titled "Sanitary Sewer Collection System Report" issued to ADEQ in February of 2012 by Smith, Seckman, Reid, Inc. (SSR), the city shall focus on fixing the sections of pipe listed as "high priority", as funds become available. The City shall also continue efforts to indentify additional inflow and infiltration locations within the collection system. This action shall be an immediate and continuous effort. Inflow and infiltration should show signs of reduction by June 2016.
  - a. If additional funding is necessary to accomplish this in a timely matter, application to the proper authority should be submitted as soon as possible.
- Conduct trace studies to track sources of Hg contamination and confirm whether or not the proper equipment has been installed and is in working order. If a source is identified that does not incorporate proper pre-treatment, equipment such as amalgam particle separators shall be installed at the source.
  - a. A review of customer records shall be completed to determine any actions that may have taken place in 2008 that might be contributing to the high concentration levels in the flow stream.
  - b. During an earlier investigation, high concentration levels of Hg were found in the Dogwood, County Road, and the College pumping stations.
    - i. These stations shall be re-tested to confirm contamination and the sources should implement proper pre-treatment in the form of amalgam particle separators immediately.
  - c. Testing and monitoring should continue until all sources are identified, recorded and have pre-treatment installed.
    - i. A database shall be created to track and monitor testing results to ensure appropriate recording/reporting procedures are followed and for proper enforcement.
  - d. This action shall be an immediate effort. Concentrations of Hg in the influent and effluent streams should show reasonable potential as defined in the NPDES to meet the allowable permit limits by May, 2016.
  - e. If amalgam particle filters are found to be inadequate at removing contaminates, the city shall require the customers that continue to discharge contaminates to design and construct activated carbon adsorption beds.
- 3. Review budget capital plans and fares for adequate revenue stream.

### 3.2 Medium Priority

- 1. Based on Appendix B, from a report titled "Sanitary Sewer Collection System Report" issued to ADEQ in February of 2012 by Smith, Seckman, Reid, Inc. (SSR), the city shall focus on fixing the sections of pipe listed as "medium priority" as funds become available.
- 2. Testing of the existing sludge for Hg contamination should be completed. If the sludge should be found contaminated, a plan shall be developed immediately to have the sludge removed from the pond and disposed of as funds become available.
- 3. Repair and or replace any equipment that may not be performing as designed or is not operable.

## 3.3 Low priority

1. If extensive pipeline repairs have taken place within the collection system and the I&I problem at the facility continues the City shall install a system of synthetic media in the primary basins of each plant to provide the nitrifying bacteria a surface area for attached growth. This improvement will mitigate washout of ammonia removing bacteria during high flow events for a period sufficient to allow for additional collection system study and rehabilitation. The anticipated date for completion of this action is January 2018.

# APPENDIX A HIGH PRIORITY AREAS

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· ·

			IABI		ORITY REPAIRS		·				
Upst MH # to Dnst MH#	Line Length (ft)	PIPE TYPE	No. of Services	Line Conditions	Recommendations	Unit Cost		Serv. Conn			Cost
705-1											
WD5	· .			FAIR/SMOKE							
WD4	346.1	LINER	. 2	LEAK	BURST/RELAY/CIPP	\$	70.00	\$ 50	0.00	\$	25,227.00
							705-	-1 Subto	tal:	\$	25,227.00
705-2											
WD33				POOR/SMOKE							
WD32	121	CONC	1	LEAK	BURST/RELAY/CIPP	\$ ·	70.00	<u>\$50</u>	0.00	\$.	8,9 <u>70.00</u>
WD34											
WD33	156.4	CONC	1	POOR	BURST/RELAY/CIPP	\$	70.00	\$ 50	0.00	\$	11,448.00
WD35										· .	
WD34	336.8	CONC	. 2	POOR	BURST/RELAY/CIPP	<u></u>	70.00	\$ 50	0. <u>00</u>	\$	24,576.00
WD40				· · ·							
WD2	232.7	LINER	0	POOR	BURST/RELAY/CIPP	\$	70.00	\$ 50	0.00	Ş	16,289.00
WD47				POOR/SMOKE		1.	·				
WD46	234.1	CONC	1	LEAK	BURST/RELAY/CIPP	S.	. 70.00	\$ 50	0.00	\$	16,887.00
WD53	l			POOR/SMOKE							
WD51 ·	197.4	CONC	. I	LEAK	BURST/RELAY/CIPP	\$	70.00	<u>\$ 50</u>	0.00	\$	14,318.00
WD55				POOR/FULL OF	н. · · .						
WD54	163	CONC	?	GROUT	RELAY	\$	90.00	\$ 50	0.00	\$	14,670.00
	. <sup>.</sup> .						705	-2 Subt	otal:	\$	107,158.00
705-3			· .	· .	···						
WD16		·		FAIR/SMOKE		ļ	-	•			
WD7	249.1	CONC	2	LEAK	BURST/RELAY/CIPP	\$	70.00	\$ 50	0.00	.\$	18,437.00
WD21				POOR/SMOKE							
WD20	172.1	CONC	2	LEAK	BURST/RELAY/CIPP	\$	70.00	\$ 50	0.00	\$	13,047.00
WD22				POOR/SMOKE	:						
WD21	216.1	CONC	2 ·	LEAK	BURST/RELAY/CIPP	\$	70.00	\$ 50	0.00	·\$	16,127.00
			•				705	-3 Subt	otal:	\$	47,611.00

**HIGH PRIORITY REPAIRS Page 1 of 8** 

Upst MH #	Line	PIPE	TABI	f Line	Decommondations		Unit Cost*		ervice		<i>C</i> -4
to Dust MH# Length (ft) TYPE Services Conditions		Conditions	Recommendations Unit C			tt Cost^ Connect			Cost		
7-1											• .
WP18				POOR/SMOKE							·.
WP17	245.2	CONC	3	LEAK	BURST/RELAY/CIPP	\$	70.00	S'	500.00	S	18,664.0
WP21				POOR/SMOKE							
WP20	75.2	CONC	1	LEAK	BURST/RELAY/CIPP	\$	70.00	\$	500.00	<u>\$</u>	5,764.0
WP27	<u> </u>	-		POOR/SMOKE							· .
WP24	206.1	CONC	3	LEAK	BURST/RELAY/CIPP	<u>\$</u>	70.00	\$	500.00	\$	15,927.0
WP29				POOR/SMOKE							
WP22	168.2	CONC	2	LEAK	BURST/RELAY/CIPP	\$	70.00	\$	500.00	\$	12,774.0
WP30											
WP31	199.1	CONC	3	POOR	BURST/RELAY/CIPP	\$	70.00	\$	500.00	\$	15,437.0
WP35				· · ·		].					
WP34	400	CONC	4	POOR	BURST/RELAY/CIPP	\$	70.00	\$	500.00	\$	30,000.
WP44											•
WP42	363.9	CONC	3	POOR	BURST/RELAY/CIPP	\$	70.00	\$	500.00	\$	26,973.
WP40		· · · · ·		FAIR/SMOKE	· ·	ľ					
WP39	410.3	LINER	6	LEAK	BURST/RELAY/CIPP	\$	70.00	S	500.00	\$	31,721.
					· .					\$	
							1767-1 Subtotal:				72,410.
7-2	· .									<u> </u>	·
WP78				POOR/SMOKE							
WP2	464	CONC	5	LEAK	BURST/RELAY/CIPP	\$	70.00	\$	500.00	\$	34,980.
WP79											
WP78	350.2	CONC	1	POOR	BURST/RELAY/CIPP	\$	70.00	\$	500.00	\$	25,014.
WP80				POOR/SMOKE		· ·	· · ·				•
WP79	80	CONC	. 0	LEAK	BURST/RELAY/CIPP	\$	70.00	Ŝ	500.00	\$	5,600.
WP82		5. S		POOR/SMOKE							
WP81	391.6	CONC	2	LEAK	BURST/RELAY/CIPP	\$	70,00	\$	500.00	<u> </u>	28,412.
							1767	.2 8	ubtotal:	S	94,006
ddle-1					· · · · · · · · · · · · · · · · · · ·		1/0/	-20	abtotal;	UP.	24,000

HIGH PRIORITY REPAIRS Page 2 of 8

Upst MH #	Line	PIPE	No. of	Line	URITY KEPAIRS		Service	
to Dast MH#	Length (ft)	ТҮРЕ	Services	Conditions	Recommendations	Unit Cost*	Connect	Cost
ND6	Longen (10)				· · · ·			
ND6A	17,2	CLAY	· ?	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 1,204.00
ND7	17,2	CLAI	;	POOR/SMOKE	- BOADTAILLATION C			- , /
ND6	216.7	CLAY	1	LEAK	RELAY	\$ 90.00	\$ 500.00	\$ 20,003.00
ND8	210.7	CONT.	1	Lente				
ND3	282	CLAY	3	POOR	RELAY	\$ 90.00	\$ 500.00	\$ 26,880.00
ND7 ND9	2.52							
ND8	290	CLAY	2	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 21,300.00
ND10	2.0.	QL/II		1004				· · ·
ND9	404	CLAY	4	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 30,280.00
ND11		· · · ·						
ND10	160.6	CLAY	1 T	POOR	BURST/RELAY/CIPP	S 70.00	\$ 500.00	\$ 11,742.00
ND12								
ND11	205	CLAY	1	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 14,850.00
ND15	· ·	· · ·		· .				
ND14	146.5	CLAY	4	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 12,255.00
ND16				POOR/SMOKE				
ND15	182.3	CLAY	4	LEAK	BURST/RELAY/CIPP	\$ 70.00	S 500.00	\$ 14,761.00
ND17								
ND13	92.1	CLAY	1	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 6,947.00
ND19				FAIR/SMOKE				
ND6A	140.9	PVC	0	LEAK	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ <u>9,863.00</u>
ND21A						T	· . ·	
ND21	174.5	CLAY	5	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 14,715.00
ND21		·	· ·					
ND20	120.6	CLAY	3	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 9,942.00
ND22				POOR/SMOKE		T		
ND21A	209.7	ÇLAY	2	LEAK	BURST/RELAY/CIPP	\$ 70,00	\$ 500.00	\$ 15,679.00
ND23				POOR/SMOKE	• • • • •			
ND22	233.8	CLAY	2	LEAK	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 17,366.00
ND26	· .							

HIGH PRIORITY REPAIRS Page 3 of 8

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			TABL	E I - HIGH FRI	ORITY REPAIRS				
Upst MH # to Dnst MH#	Linc Length (ft)	PIPE TYPE	No. of Services	Line Conditions	Recommendations	Unit Cost*	Service Connect		Cost
ND25	570	CLAY	4	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	41,900.00
ND27	· · ·								
ND25	235.4	CLAY	5	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	18,978.00
							288,665.00		
Walker Park 1	·		·		· · · · · · · · · · · · · · · · · · ·		<u> </u>		
NC49A		<b>CIT</b> 1 TT		BOOD .		\$ 70.00	\$ -500.00	\$	18,191.00
NC49	231.3	CLAY	4	POOR	BURST/RELAY/CIPP	\$ 70.00	3 300.00	9	18,171.00
NC49B		a in		BOOD	DIDOTIDEI AV/CIDD	\$ 70.00	\$ 500.00	\$	21,248.00
NC8	246.4	CLAY	8	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	4	21,248.00
NC49				baob	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	24,660.00
NC49B	288.0	CLAY	.9	POOR	BUKSI/RELAY/CIPP	\$ 70.00	3 200.00	φ	24,000.00
NC50				7007		\$ 70.00	\$ 500.00	\$	9,197.00
NC9	117.1	ÇLAY	2	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 300.00	Ð	9,197.00
NC51				TOOT		\$ 70.00	\$ 500.00	s	17,106.00
NC50	215.8	CLAY	. 4	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	17,100.00
NC53	4					<b>* 70.00</b>	5 500.00	¢.	19,610.00
NC52	273.0	CLAY	1	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ <u>·</u>	19,010.00
NC54A				·		<b>T</b>			2 621 00
NC54	43.3	CLAY	1	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	3,531.00
• <u>NC54</u>	·				· · · · · · · · · · · · · · · · · · ·				8 000 00
NC10A	<b>98</b> .6	CLAY	2	POOR	BURST/RELAY/CIPP	S 70.00	\$ 500.00	\$	7,902.00
SERVICE CAP	1		i		· · · · · · · · · · · · · · · · · · ·				11.000.00
NC52	143.8	CONC	2	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	. <u>\$</u>	11,066.00
SERVICE CAP	]					1	:		
NC54A	47.2	CLAY	· 1	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500,00	\$	3,804.00
Locust & Lilly	]	· ·							
Popular & Lilly	229	CLAY	3	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	17,530.00
NC 20A	· ·							ł	
NC19	703	CONC	3	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	50,710.00
NC15A						. ·			

HIGH PRIORITY REPAIRS Page 4 of 8

to Part MII#    Length (ft)    TYPE    Services    Conditions    Recommendations    Unit Cost*    Connect    Connect    Connect      NC15    426.2    CLAY    9    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    34,334.00      NC16    23.7    CLAY    0    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    1,659.00      NC24    2    LEAK    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    21,370.00      NC25    344    CLAY    2    LEAK    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    29,580.00      NC25    344    CLAY    11    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    29,580.00      NC24    193.9    CLAY    3    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    15,073.00      Walker Park 2						URITY REPAIRS			_	<del>_</del> _
NC15    H26.2    CLAY    9    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    34,334.00      NC15    23.7    CLAY    0    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    1,659.00      NC16    23.7    CLAY    0    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    1,659.00      NC24    291    CLAY    2    LEAK    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    21,370.00      NC25    344    CLAY    11    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    15,073.00      NC25    344    CLAY    3    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    15,073.00      Walker Park 2	Upst MH #		PIPE	No. of Services	Line Conditions	Recommendations	Unit Cost*	Service Connect		Cost
NC15    Interference    Interference <thinterference< th="">    Interference</thinterference<>		5, 7				DI DOTO DI AV(CIDD	A 20.00	·	¢	24 224 00
NC16    23.7    CLAY    0    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    1,659.00      NC24    2    POOR/SMOKE    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    21,370.00      NC23    291    CLAY    2    LEAK    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    21,370.00      NC25    344    CLAY    11    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    29,580.00      NC25    344    CLAY    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    15,073.00      Walker Park 2		426.2	CLAY	9	POOR	BUKST/RELAY/CIPP	\$ 70.00	\$ 500.00	3	34,334.00
NC24    2011    CLAY    2    POOR/SMOKE    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    21,370.00      NC25    344    CLAY    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    29,580.00      NC25    344    CLAY    11    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    29,580.00      NC24    193.9    CLAY    3    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    15,073.00      Walker Park 2      1    67.6    CLAY    1    POOR    RELAY    \$    90.00    \$    500.00    \$    6,584.00      NC66    80.6    CONC    2    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    7,851.00      NC66    80.6    CONC    2    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00 <td< td=""><td></td><td>- I ·</td><td>·</td><td></td><td></td><td></td><td></td><td>#` coo oo</td><td>æ</td><td>1 (50.00</td></td<>		- I ·	·					#` coo oo	æ	1 (50.00
NC23    291    CLAY    2    LEAK    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    21,370.00      NC25A    344    CLAY    11    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    29,580.00      NC25    344    CLAY    11    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    29,580.00      NC24    193.9    CLAY    3    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    15,073.00      Walker Park 2		23.7	CLAY	0		BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	<u> </u>	1,639.00
NC25A    344    CLAY    11    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    29,580.00      NC25    344    CLAY    11    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    29,580.00      NC25    193.9    CLAY    3    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    15,073.00      Walker Park 1    Subtetal:    \$    306,571.00      Walker Park 2		4								
NC25    344    CLAY    11    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    29,580.00      NC25    193.9    CLAY    3    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    15,073.00      Walker Park 1    Subtotal:    \$    306,571.00    \$    306,571.00    \$    306,571.00      Walker Park 2    -		291	CLAY	2	LEAK	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	5	21,370.00
NC25    Initial    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 15,073.00      Walker Park 2    Image: Clay 2    67.6    CLAY 1    POOR    RELAY    \$ 90.00    \$ 500.00    \$ 500.00    \$ 6,584.00      Walker Park 2    Image: Clay 2    67.6    CLAY 1    POOR    RELAY    \$ 90.00    \$ 500.00    \$ 6,584.00      NC66    80.6    CONC 2    POOR    BURST/RELAY    \$ 85.00    \$ 500.00    \$ 7,851.00      NC65    80.6    CONC 2    POOR    BURST/RELAY    \$ 85.00    \$ 500.00    \$ 7,851.00      NC86    349.5    CLAY 9    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 28,965.00      NC87    3    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 33,790.00      NC86    397    CLAY    12    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 17,768.00      NC88    232.4    TRUSS    3    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 25,				· .						
NC24    193.9    CLAY    3    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 15,073.00      Walker Park 2      1    0    0    8    500.00    \$ 306,571.00      Walker Park 2	NC25	344	CLAY	11	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	29,580.00
Walker Park 2    Walker Park 1 Subtotal:    \$ 306,571.00      1    67.6    CLAY    1    POOR    RELAY    \$ 90.00    \$ 500.00    \$ 6,584.00      NC66    0    0    8    500.00    \$ 500.00    \$ 6,584.00      NC66    0    0    0    8    500.00    \$ 500.00    \$ 6,584.00      NC66    0    0    0    0    8    500.00    \$ 7,851.00      NC86    0    0    0    0    \$ 500.00    \$ 7,851.00      NC86    349.5    CLAY    9    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 28,965.00      NC86    397    CLAY    12    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 33,790.00      NC88    232.4    TRUSS    3    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 25,510.00      NC93    300.1    CONC    3    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 25,510.00	NC25		1				· ·	•		
Walker Park 2    1    POOR    RELAY    \$ 90.00    \$ 500.00    \$ 6,584.00      NC66    0 </td <td>NC24</td> <td>193.9</td> <td>CLAY</td> <td>3</td> <td>POOR .</td> <td>BURST/RELAY/CIPP</td> <td>\$ 70.00</td> <td>\$ 500.00</td> <td>\$</td> <td>15,073.00</td>	NC24	193.9	CLAY	3	POOR .	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	15,073.00
Walker Park 2    1    POOR    RELAY    \$ 90.00    \$ 500.00    \$ 6,584.00      NC66    0 </th <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>· ·</th> <th></th> <th></th> <th>•</th>							· ·			•
1    67.6    CLAY    1    POOR    RELAY    \$ 90.00    \$ 500.00    \$ 6,584.00      NC66    80.6    CONC    2    POOR    BURST/RELAY    \$ 85.00    \$ 500.00    \$ 7,851.00      NC86    349.5    CLAY    9    POOR    BURST/RELAY    \$ 70.00    \$ 500.00    \$ 28,965.00      NC86    349.5    CLAY    9    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 28,965.00      NC87    9    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 33,790.00      NC86    397    CLAY    12    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 33,790.00      NC86    397    CLAY    12    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 17,768.00      NC88    232.4    TRUSS    3    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 25,510.00      NC93    300.1    CONC    1    POOR    BURST/RELAY/CIPP    \$ 70.00    \$					· · ·		Walker Park	: 1 Subtotal: ·	<u>\$</u>	306,571.00
2    67.6    CLAY    1    POOR    RELAY    \$ 90.00    \$ 500.00    \$ 6,584.00      NC66	Walker Park 2	·		· ·						
NC66    80.6    CONC    2    POOR    BURST/RELAY    \$    \$500.00    \$    7,851.00      NC86	1.	T								
NC66    80.6    CONC    2    POOR    BURST/RELAY    \$    85.00    \$    500.00    \$    7,851.00      NC86    349.5    CLAY    9    POOR    BURST/RELAY    \$    85.00    \$    500.00    \$    7,851.00      NC85    349.5    CLAY    9    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    28,965.00      NC87	2	67.6	CLAY	· 1 .	POOR	RELAY	\$ 90.00	\$ 500.00.	\$	6,584.00
NC86    349.5    CLAY    9    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 28,965.00      NC85    349.5    CLAY    9    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 28,965.00      NC87	NC66	1				·	· ·	·		
NC85  349.5  CLAY  9  POOR  BURST/RELAY/CIPP  \$  70.00  \$  500.00  \$  28,965.00    NC87	NC65	80.6	CONC	2	POOR	BURST/RELAY	\$ 85.00	\$ 500.00	\$	7,851.00
NC87    397    CLAY    12    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 33,790.00      NC86    397    CLAY    12    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 33,790.00      NC89	NC86									
NC86    397    CLAY    12    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 33,790.00      NC89	• NC85	349.5	CLAY	9	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	28,965.00
NC89    232.4    TRUSS    3    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    17,768.00      NC93	NC87									· ·
NC88  232.4  TRUSS  3  POOR  BURST/RELAY/CIPP  \$  70.00  \$  500.00  \$  17,768.00    NC93  343  CONC  3  POOR  BURST/RELAY/CIPP  \$  70.00  \$  500.00  \$  25,510.00    NC92  343  CONC  3  POOR  BURST/RELAY/CIPP  \$  70.00  \$  500.00  \$  25,510.00    NC94  300.1  CONC  1  POOR  BURST/RELAY/CIPP  \$  70.00  \$  500.00  \$  21,507.00    NC93  300.1  CONC  1  POOR  BURST/RELAY/CIPP  \$  70.00  \$  500.00  \$  21,507.00    NC95	· NC86	397	CLAY	12	POOR	BURST/RELAY/CIPP	\$ 70:00	\$ 500.00	\$	33,790.00
NC93    343    CONC    3    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    25,510.00      NC94	NC89	· ·		· .						
NC92    343    CONC    3    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    25,510.00      NC94	NC88	232.4	TRUSS	3	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	17,768.00
NC94	NC93									
NC93    300.1    CONC    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    21,507.00      NC95	NC92	343	CONC	3	POOR	BURST/RELAY/CIPP	\$ 70.00	S 500.00	\$	25,510,00
NC95    320.3    CONC    1    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 22,921.00      NC99	NC94	· · ·	<b>—</b> · · · ·	· ·	·······					i
NC95    320.3    CONC    1    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 22,921.00      NC99    NC99    NC99    NC91		300.1	CONC	1	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	21,507.00
NC94    320.3    CONC    1    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 22,921.00      NC99                 22,921.00								1		
NC99		320.3	CONC	1	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	22,921.00
				· ·		· · · · · · · · · · · · · · · · · · ·			† · · · ·	
	NC98	240	CONC	5.	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	19,300.00
NC100										

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Upst MH #	Line	PIPE	No. of	Line	DRITT REPAIRS	Units Coust	Service	Cost
to Dnst MH#	Length (ft)	TYPE	Services	Conditions	Recommendations	Unit Cost*	Connect	Cost
NC99	217.1	CONC	5	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 17,697.00
NC102								
NC101	263.2	CONC	6	POOR	BURST/RELAY/CIPP	\$ 70 <u>.00</u>	\$ 500.00	\$ 21,424.00
NC103								
NC92	361.9	CLAY	. 7	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 28,833.00
NC104				POOR/SMOKE				
NC103	563	CLAY	4	LEAK	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 41,410.00
NC105				POOR/SMOKE				
NC104	246	CLAY	1	LEAK	BURST/RELAY/CIPP	<u>\$</u> 70.00	\$ 500.00	\$ 17,720.00
NC108								
NC107	250	CLAY	3	POOR	RELAY	\$ 90.00	\$ 500.00	\$ 24,000.00
NC109				• .				1
NC108	242.7	CLAY	4	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 18,989.00
NC110 ·					· .			
• NC109	160.7	CLAY	4	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 13,249.00
NC111 -			•					
NC110	264.9	CLAY	4	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500,00	\$ 20,543.00
NC72				. •	•			
NC71	257.4	CONC	4	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 20,018.00
NC74								
NC73	335.5	CONC	2.	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 24,485.00
NC75								
NC74	245.9	CONC	2	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 18,213.00
NC112				POOR/SMOKE				
NC109	86,1	CLAY	2	LEAK	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 7,027.00
EOL				•	•			
<u>NC24</u>	148.3	CLAY	2	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 11,381.00
						Wallton Davis	1 Cubistal	\$ 469,185.00
Ward 1		·····				Walker Park	4 Suptoral:	a 407,103,00
90W3	<u> </u>							
<u>50115</u>	1	I .			· ·	t ·	I	1

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Upst MH #	Line	PIPE	No. of	Line	URITI KEFAIKS		Service	
to Dnst MH#	Length (ft)	TYPE	Services	Conditions	Recommendations	Unit Cost*	Connect	Cost
90W2	323.7	CONC	2	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 23,659.00
LOCUST & LILY								
POPLAR & LILY	272.4	CLAY	4	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 21,068.00
MICHAELS JEWEL								
TEE IN LINE	183.9	CONC	6	POOR	BURST/RELAY/CIPP	<b>\$</b> 70.00	\$ 500.00	\$ 15,873.00
WF105				· .'				
W\$31	225	CONC	5	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 18,250.00
WF108					· · ·			
WF107	296.4	CONC	3	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 22,248.00
WF109			· · · ·					
WF108A	206.9	CONC	1	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 14,983.00
WF110								
WF109	340.7	CONC	3	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 25,349.00
WF111		İ						
WF110	305.8	CONC	5	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 23,906.00
WF115								
ŴF114	507.2	CONC	12	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 41,504.00
WF116								
WF107	347.6	CONC	3	POOR	BURST/RELAY/CIPP	<u>\$ 70.00</u>	\$ 500.00	\$ 25,832.00
WF118								
WF117	287.2	CONC	5	POOR	BURST/RELAY/CIPP	\$ 70.00	\$. 500.00	\$ 22,604.00
WF119								
WF118	359.8	CONC	8	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 29,186,00
<u>WS1</u>				· .				
PS	51	CONC	0	POOR	BURST/RELAY/CIPP	\$ 70.00	<b>\$ 500.00</b>	\$ 3,570.00
W\$30			·.					
· W\$29	247.4	CONC	4	- POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 19,318.00
<u>WS31</u>								
WS29	62.4	CLAY	. 2	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 5,368.00
WS18					· · · ·			
WS15	115	CLAY	2	FAIR	PC & INSTALL MH	\$ 2,000.00		\$ 2;000.00

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				E I - HIGH PRE	URITY REPAIRS						
Upst MH # to Dnst MH#	Line Length (ft)	PIPE TYPE	No. of Services	Line Conditions	Recommendations	Unl	t Cost*		Service Connect		Cost
WS24					·	ľ					
WS23	175.2	CLAY	4	POOR	BURST/RELAY/CIPP	<u>\$</u> ·	70.00	\$	500.00	\$	14,264.00
		÷.					Ward	18	ubtota <u>l:</u>	\$	328,982.00
Ward 2											
WF57					· ·			ŀ			
WF56	94,4	CONC	0	POOR	BURST/RELAY/CIPP	\$	(70.00)	\$	500.00	\$	6,608.00
WF63						Γ					
WF62	138.5	CONC	1	POOR	BURST/RELAY/CIPP	\$	70.00	\$	500.00	\$	10,195.00
WF68								1			
WF67	252	PVC	. ?	PIPE MISSING	RELAY	\$	90.00	\$	500.00	\$	22,680.00
WF72				· .						•	
WF71	447.4	CONC	17	POOR	BURST/RELAY/CIPP	<u>\$</u>	70.00	\$	500.00	\$	39,818.00
WF71					· · ·		-				
WF70	319.8	CONC	4	POOR .	BURST/RELAY/CIPP	\$	70.00	\$	500:00	\$	24,386.00
· . ·		•	. ·	: -			Ward	2 5	ubtotal:	\$	103,687.00
• .					· · · ·	ligh I	Priority	Are	a Total:	\$	1,843,502.00

\*Unit costs for BURST/RELAY/CIPP=\$70 per LF, RELAY/BURST=\$85 per LF, RELAY=\$90 per LF, REPAIR SERVICE or POINT REPAIR=\$1000

EA, SMH=\$2000 EA

# **APPENDIX B** MEDIUM PRIORITY AREAS

			1	ABLE 2 -	MEDIUM P	RIORITY REPAIRS				
Upst MH # to Dnst MH#	Line Length	Pipe Size	PIPE TYPE	No. of Services	Line Conditions	Recommendations	Unit Cost*	Service Connect	,	Total Cost
705-2		19-14			00220000		L			
WD3			l	I .		·		1		
WD3	238.4	8"	LINER	1	POOR	RELAY/BURST	\$ 85.00	\$ 500.00	i \$	20,764.00
WD27	250.4		DIVER		TOOR		4 00.00			
WD2	184.9	10*	LINER	0	POOR	PT. REPAIR	\$ 1,000.00	\$ 500.00	\$	1,000.00
WD42						·				· · ·
WD41	252.2	8"	LINER	1	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	18,154.00
						· · · · · · · ·				
			•				705	-2 Subtotal:	\$	39,918.00
705-3										
WD20										
WD19	110.9	<b>8</b> "	CONC	0	POOR	BURST/RELAY/CIPP	<u>S 70.00</u>	\$ 500.00	\$	7,763.00
WD24					· · .					
WD23	40.7	8"	CONC	0	POOR	BURST/RELAY/CIPP	\$ 70.00	<u>S 500.00</u>	\$	2,849.00
							- 705	-3 Subtotal:	· \$	10,612.00
1767-1				<u> </u>						
WP41						· .	1.		Ι.	· · · · · · ·
WP40	379.6	· 8 <sup>H</sup>	CONC	4.	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	28,572.00
WP48										
WP47	249	8"	CONC		POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	17,930.00
							1767	-1 Subtotal:	5	46,502.00
1767-2			,				1/0/	-1 Subtotal.	4	
WP81				Ī			1	T		
WP80	384.8	8"	CONC	2	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	· \$	27,936.00
					:					•
							1767	-2 Subtotal:	\$	27,936.00
Ruddle-1		· .								

TABLE 2 - MEDIUM PRIORITY REPAIRS

MEDIUM PRIORITY REPAIRS Page 1 of 4

NEEDS M/H

\$ 2,000.00

\$

2,000.00

POOR

EOL ND10

82.8

6

CLAY

2

**TABLE 2 - MEDIUM PRIORITY REPAIRS** Service Upst MH # Line Pipe PIPE No. of Line Total Cost Unit Cost\* Recommendations Connect Conditions Length Services to Dnst MH# Size TYPE EOL 83.1 POOR \$ 2,000.00 S 166,200.00 ND22 CLAY NEEDS M/H 6 1. ND6A ND5 PVC POOR RELAY \$ 90.00 \$ 500.00 29,345.00 320.5 \$ 8 I ND14 24,559.00 **ND13** 293.7 6 CLAY 8 POOR BURST/RELAY/CIPP \$ 70.00 \$ 500.00 \$ ND20 BURST/RELAY/CIPP \$ 500.00 30,670.00 ND19 381 6 CLAY 8 POOR S 70.00 \$ ND24 ND23 200.6 CLAY BURST/RELAY/CIPP \$ 70.00 \$ 500.00 \$ 15,542.00 6 3 POOR ND25 BURST/RELAY/CIPP 70.00 500.00 23,071.00 ND21 315.3 6 CLAY 2 POOR \$ \$ \$ Ruddle-1 Subtotal: \$ 291,387.00 Walker Park 1 NC27 4,298.00 NC26 61.4 6" CONC ? \$ 70.00 \$ 500.00 \$ POOR BURST/RELAY/CIPP NC28 NC20 154.7 6" CONC BURST/RELAY/CIPP 70.00 \$ 500.00 \$ 0 \$ POOR 10,829.00 NC52 NC51 353.3 6" POOR 500.00 27,731.00 6 \$ \$ CLAY BURST/RELAY/CIPP 70.00 \$ NC16 NC37 485.6 ·10<sup>n</sup> CONC 2 POOR BURST/RELAY/CIPP \$ 70.00 \$ 500.00 \$ 34,992:00 NC17 NC16 10" 27.9 CONC 0 POOR BURST/RELAY/CIPP 500.00 \$ 1,953.00 \$ 70.00 \$ NC18 NC30 42.3 10" CONC 0 POOR \$ 500.00 \$ BURST/RELAY/CIPP \$ 70,00 2,961.00 NC19 NC18 10<sup>n</sup> 18.9 CONC 0 POOR BURST/RELAY/CIPP \$ \$ 1,323.00 70.00 \$ 500.00

MEDIUM PRIORITY REPAIRS Page 2 of 4

POOR

BUR\$T/RELAY/CIPP

\$

70.00 \$

500.00 \$

16,394.00

NC30

10"

234.2

CONC

0

			1	ABLE 2 -	NECTION P	RIORITY REPAIRS				
Upst MH # to Dnst MH#	Line Length	Pipe Size	PIPE TYPE	No. of Services	Line Conditions	Recommendations	Unit Cost*	Service Connect	1	lotal Cost
							Walker Park	1 Subtotal:	\$	100,481.00
Walker Park 2	2									
NC81A										
NC58	162	8"	CLAY	0	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	11,340.00
NC81					1 A.	•				
NC81A	318.9	8"	CLAY	. 2	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	23,323.00
NC85 NC84	-152.7	8 <sup>ii</sup>	CLAY	4	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$.	12,689.00
NC91	12211						• • • • • • •		_	
NC91A	319.4	10"	CONC	2	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	S	23,358.00
NC107			l.							
NC106	512.8	8*	CLAY	9	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	40,396.00
. NC73								ľ		.*
NC68	316.8	8"	CONC	ï	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	22,676.00
NC88										
NC59	328.1	8"	TRUSS	1	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	23,467.00
NC57 NC56	434.1	12"	CONC	0	POOR	BURST/RELAY/CIPP.	\$ 70.00	\$ 500.00	\$	30,387.00
Rest		12	conc	v	TOOR	BORDINELEMINELT.	1.4 10.00		41	20,001100
							Walker Park	2 Subtotal:	\$	187,636.00
Ward 1		•			•					
W\$20										
WS19	400.2	10"	CLAY	· 4	FAIR	PC & REPAIR SERVICE	\$ 1,000.00	\$ 500.00	\$	1,000.00
WF102										
WF101	506.9	6"	CONC	13	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	41,983.00
WF106										
WF93	168.7	10"	CONC	1	FAIR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	·\$	12,309.00
WF107										
WF106 .	200.5	10"	CONC	3	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	15,535.00
WF108A			1		·				1	

## TABLE 2 - MEDIUM PRIORITY REPAIRS

MEDIUM PRIORITY REPAIRS Page 3 of 4

**TABLE 2 - MEDIUM PRIORITY REPAIRS** Upst MH # PIPE No. of Service : Line Pipe Line Total Cost Unit Cost\* Recommendations Connect TYPE to Dast MH# Length Size Services Conditions \$ 500.00 10,173.00 6" BURST/RELAY/CIPP \$ 70.00 **\$** ` WF108A 123.9 CONC 3 FOOR WF114 3,360.00 \$ 500.00 8" BURST/RELAY/CIPP 70.00 WF113 48 CONC 0 POOR S \$ WF117 BURST/RELAY/CIPP 70.00 \$ 500.00 24,993.00 WF116 299.9 8" CONC 8 POOR \$ \$ WS6 WSS 364.1 8" CLAY POOR BURST/RELAY/CIPP \$ 500.00 28,487.00 6 70.00 \$ \$ W\$29 BURST/RÉLAY/CIPP WS28 6"<sup>°</sup> \$ 500.00 22,350.00 305 CONC 2 POOR \$ 70.00 s **WS21** 8" \$ 500.00 27,803.00 WS20 382.9 CLAY 2 POOR BURST/RELAY/CIPP 70.00 \$ \$ Ward 1 Subtotal: \$ 187,993.00 Ward 2 × . WF4A 10" WF57 56 BURST/RELAY/CIPP 3,920.00 CONC 0 POOR \$ 70.00 \$ .500.00 \$ WF56 WF55 12" POOR BURST/RÊLAY/CIPP \$ 500.00 CONC 30,523.00 428.9 1 \$ 70.00 \$ WF60 8" BURST/RELAY/CIPP WF59 CONC 2 POOR 70.00 \$ 500.00 22,490.00 307 S \$ WF62 WF61 8" CONC BURST/RELAY/CIPP 313.8 70.00 \$ 500.00 24,966.00 6 POOR S \$ WF70 311.6 '8" CONC POOR BURST/RELAY/CIPP 70.00 500.00 WF59 1 S S 22,312.00 Ward 2 Subtotal: \$ 104,211.00 Medium Priority Total Cost: \$ 996,676.00 \*Unit costs for BURST/RELAY/CIPP=\$70 per LF, RELAY/BURST=\$85 per LF, RELAY=\$90 per LF, REPAIR SERVICE or POINT

REPAIR=\$1000 EA, SMH=\$2000 EA

MEDIUM PRIORITY REPAIRS Page 4 of 4

# **CITY OF BLYTHEVILLE**

**BLYTHEVILLE, ARKANSAS** 

# **CORRECTIVE ACTION ORDER UPDATE**

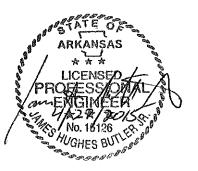
BLYTHEVILLE WEST WASTEWATER TREATMENT FACILITY ASSESSMENT AND RECOMMENDED PLAN FOR CORRECTIVE MEASURES



# SSR

# **CORRECTIVE ACTION ORDER UPDATE**

Blytheville West Wastewater Treatment Facility Assessment and Recommended Plan for Corrective Measures



Bo Butler, P.E. Senior Principal

Mall

Prepared for: City of Blytheville

Prepared by: Smith Seckman Reid, Inc. 2650 Thousand Oaks Blvd. Suite 3200 Memphis, TN 38118 Tel 901.683.3900 Fax 901.683.3990

> SSR Project No.: 14-41-027.1

> > Date: April 27, 2015

Marshall Fall, E.I Project Manager

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### **1** Executive Summary

In April 2014, the City of Blytheville (City) received a Notice of Violation (NOV) from the Arkansas Department of Environment Quality (ADEQ). The NOV was in response to a review of monthly operating reports (MORs) from the City's West Wastewater Treatment Facility (WWWTF). This facility had 13 violations of NPDES Permit No. AR0022560. The violations included excessive fecal coliform (colonies), ammonia concentrations, and total suspended solids (TSS) concentrations in the WWWTF effluent.

In August of 2014, the facility was mandated by the NPDES to start meeting a specified limit for total recoverable mercury (Hg) concentrations in the effluent. The facility at this time does not meet the limit on a consistent basis.

In February 2015, ADEQ requested that the City issue a detailed Corrective Action Order Update (CAOU). The CAOU report should address the status of the facility's compliance to I&I issues, the potential effluent violations and additional measures to be taken to maintain compliance of the NPDES. The report should also address the status of compliance in regards to total recoverable mercury (Hg) concentrations, and address measures to be taken by the City to begin locating any sources of contamination in the waste stream.

After reviewing plant data and the existing operations at the facility, the following corrective actions were developed. Once implemented by the City, these corrective actions should allow the treatment facility to return to compliance with the NPDES permit.

- 1. Based on previous completed studies, complete collection system rehabilitation on a priority basis focusing on high priority areas first.
- 2. Aggressively track and locate sources of Hg in the waste stream flow and require sources to incorporate pre-treatment to remove the Hg from the flow.
- 3. Conduct rate study and review capital expenditure plans to ensure adequate revenue stream to allow for effective operation, maintenance, repair, and replacement of WWTF equipment.
- 4. Install synthetic media in the primary basin of the plant to encourage the growth of nitrifying bacteria and prevent bacteria from washing out of the facilities during heavy flow events.

### **2 General Information**

#### 2.1 Description of Wastewater Treatment Facility

The City treats wastewater at three treatment facilities. This CAOU will address issues at the (WWWTF). The facility is a modified lagoon that incorporates the BIOLAC® technology and consists of traveling screens, a primary aeration and mixing basin, integral clarifiers to facilitate settling, a basin that incorporates both aerated and non-aerated polishing, and ultra-violet disinfection. The design capacity of the WWWTF is 1.5 million gallons per day (MGD). The facility was built adjacent to a retired non-aerated lagoon that was repurposed as sludge disposal basin for the facility. The facility was constructed and commissioned in 1989.

The source of wastewater flow for the WWWTF is 17 pumping stations with a combined total capacity of 5,565 GPM. The capacity of each pumping station is summarized in Table 2.1.

West Facility	Shop Lift	1,000 GPM
	21 <sup>st</sup> Street	600 GPM
	Cypress	200 GPM
	Howard	80 GPM
	Division	800 GPM
	Wards	300 GPM
	5 <sup>th</sup> Street	225 GPM
	Broadmoor	225 GPM
	East Jr. High	180 GPM
	River Oaks	200 GPM
	Alert Pad	225 GPM
	Dog Pound	180 GPM
	820	600 GPM
	705	300 GPM
	1649	200 GPM
	2000	250 GPM

Table 2.1-	Flow	Source	(PS	Capacities)	
10010 2.1-	11011	oource		oupdoincoj	

#### 2.2 Description of Need

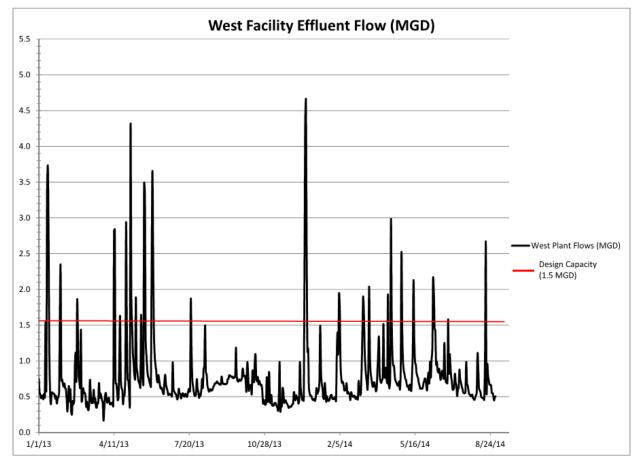
In the last eighteen months, the WWWTF has experienced ongoing effluent violations of the NPDES permit. Violations have included ammonia (both concentrations and loads), fecal coliform colonies, TSS concentrations, and since April, 2014, total recoverable mercury (Hg). Recent analysis of monitoring records show the facility continues to have an issue meeting the limits set forth in the NPDES due to I&I and also the limits for Hg mandated by the NPDES in April, 2014.

#### 2.3 Influent and Effluent Flows

The daily effluent flows for the facility are summarized in Table 2.2. During a heavy rain event, the facility can go multiple days where the influent flows exceed the facility's design capacity, as evidenced by Figure 2.1 below. Over the last two years, influent flows have exceeded the design flow by as much as 350 percent.

Flow Condition	West Facility (million gallons)
Minimum Day	0.148
Average Day	0.687
Maximum Day	5.274

Table 2.2 – Daily Effluent Flows



These flow excursions are directly related to rainfall events as identified in the Daily Operation Reports (DOR's) provided by the City. During these spikes, the plant loses a majority of its microbial treatment ability due to the washout of the nitrifying organisms from the treatment basins. This is confirmed by the Daily Monitoring Reports (DMRs) that show lower-than-normal mixed liquor suspended solids (MLSS) concentrations in the primary mixing basin (as compared to pre-rainfall concentrations) and high total suspended solids (TSS) concentrations in the effluent after every rain event that increased plant flow. The carbonaceous biochemical oxygen demand (CBOD) loading in the influent flow also drops significantly during and immediately after every rainfall event that affects flow. This is due to dilution by inflow and infiltration. This diluted CBOD loading further promotes degradation of the biomass used to treat the wastewater.

The facility was originally designed to have a hydraulic residence time of between 24 and 48 hours to allow for adequate treatment. When the facility receives flows in excess of the design maximum flow, three conditions occur that affect the treatment capabilities of the facility: (1) the hydraulic residence time is reduced such that there is not adequate time for treatment to occur; (2) the additional flow has a very low concentration of CBOD, sharply decreasing the strength of the waste stream, and depriving the biomass of needed nutrients for growth and treatment abilities; and (3) the MLSS concentration in the treatment basin is significantly reduced due to washout of the biomass from the basins, thereby preventing adequate treatment of subsequent incoming flows. As a result of these conditions, the facility could possibly be out of compliance for multiple permit limits for several days while the biomass attempts to reestablish itself.

#### 2.4 Influent and Effluent Quality

Plant MORs were analyzed for the WWWTF to diagnose the violations reported by ADEQ. The information submitted covered nearly four years of operating data from 2011 to 2014 for the facility. The data included influent and effluent properties that are monitored on a regular basis to verify the plant's compliance with the NPDES permits and ability to treat the waste stream.

#### 2.4.1 Ammonia

The ammonia level in the effluent flow is a direct reflection of the amount of nitrification provided by biological processes within the lagoon treatment facility. Ammonia is removed from the waste stream by conversion into nitrites and nitrates by nitrifying bacteria. The NPDES permit has three effluent discharge limitations that must be met to avoid violations (i.e., monthly average concentration, 7-day average concentration, and monthly mass loadings). MOR data suggests that the facility will have continued difficulty meeting permit requirements during and after heavy rain events unless the I&I is reduced. A summary of the average effluent ammonia data is provided in Table 2.4.

#### Table 2.4 – Effluent Ammonia Readings

	Reading/Permit Limit					
Effluent Reading	Winter Months (Oct - Mar)	Summer Months (Apr-Sept)				
7-day avg. (mg/L)/Permit Limit	2.1/5.0	2.8/5.0				
Monthly Avg. (mg/L)/ Permit Limit	2.1/3.0	1.8/2.8				
Mass (lb//Day)/ Permit Limit	12.5/38	14.0/35.0				

#### 2.4.2 Total Suspended Solids (TSS)

TSS is a measurement of solids of a particular size in the waste stream. This measurement is typically reported in units of mg/L (concentration) or lbs/day (mass). Excessive levels of TSS in a plant effluent can have several adverse effects on the receiving waters. High levels of TSS can cause scum to collect at or near discharge sites which can harbor harmful pathogens. TSS can also block out sunlight that native organisms in the receiving water body depend on for survival. One of the most important effects of high TSS levels is the effect it has on disinfection. High TSS levels will inhibit the effectiveness of the UV disinfection process by limiting the transitivity of the ultraviolet rays. In short, the suspended solids block the ultraviolet rays from reaching the target organisms. A high level of TSS in an effluent stream can also indicate that the hydraulic residence time for treatment is insufficient.

Based on MOR data, as influent flows increase beyond the design capacity of the plant, the TSS concentrations in the effluent also increases due to solids being washed out of the plant. Additionally, MOR data suggests that the facility will have continued difficulty meeting permit requirements during and after

heavy rain events unless the I&I is reduced. A summary of the average effluent TSS data is provided in Table 2.6.

Effluent Reading	Reading/Limit
7-day Average (mg/L)	12.9/45
Monthly Average (mg/L)	13.1/30
Monthly Average (lb/day)	102.3/375

#### 2.4.3 Fecal Coliform

Fecal coliform is a bacterium found in the intestines of warm blooded animals. It is an indicator organism that can suggest the presence of more harmful pathogenic organisms. High levels of fecal coliform can indicate poor treatment process performance of the plant. The plant has violated the NPDES discharge permit twice by exceeding the allowable concentration of fecal coliform in the plant effluent. An analysis of the plant data indicates that the dates of the violations correlate to the dates the plant received an excessive volume of flow causing solids to be washed out of the plant. A high concentration of solids in the effluent stream can reduce the effectiveness of the UV disinfection system causing pathogens to survive through the process. MOR data suggests that the facility will have continued difficulty meeting permit requirements during and after heavy rain events unless the I&I is reduced. A summary of the average effluent fecal coliform readings for the 2011-2014 data is provided in Table 2.7.

	West Plant/Permit Limit					
ffluent Reading -day avg. (colonies/100 ml)	Winter Months	Summer Months				
	(Oct - Mar)	(Apr-Sept)				
7-day avg. (colonies/100 ml)	361/2000	172/400				
Monthly Avg. (colonies/100 ml)	400/1000	238/200				

#### 2.4.4 Total Recoverable Mercury (Hg)

For several years, the WWWTP has been reporting higher than acceptable Hg limits in the effluent stream. In April of 2014, three years after the issuance date of the current permit, the facility was required to meet a specified limit for Hg for failing to reduce the concentration in the effluent. According to the recent MORs, there has not been any improvement in the concentrations of Hg in the effluent and additional measures must be taken to trace and locate sources. A study of data collected back to October of 2005 shows a spike in the influent concentrations of Hg in late 2008 and looks to be consistent through the South Plant also. Also a study of the data graphed shows a pattern of spikes in the concentrations every 3 or 4 months.

### **3 Proposed Treatment Plant Corrections**

The proposed treatment facility corrective actions described below intend to mitigate violations of the facility's NPDES permit by attempting to utilize existing facilities and personnel to the greatest extent practical. Recommendations are made on the basis of priority ranking, high priority, medium priority, and low priority.

#### 3.1 High Priority

- 1. Based on Appendix A, from a report titled "Sanitary Sewer Collection System Report" issued to ADEQ in February of 2012 by Smith, Seckman, Reid, Inc. (SSR), the city shall focus on fixing the sections of pipe listed as "high priority" as funds become available.
  - a. If additional funding is necessary to accomplish this in a timely matter, application to the proper authority should be submitted as soon as possible.
  - b. The City shall continue efforts to indentify additional inflow and infiltration locations within the collection system.
  - c. This action shall be an immediate and continuous effort. Inflow and infiltration should show signs of reduction by June 2016.
- 2. Re-confirm previous sources of mercury discharge based on prior studies, and confirm whether or not the proper equipment has been installed and is in working order. If a source is identified that does not incorporate proper pre-treatment, equipment such as amalgam particle separators shall be installed at the source.
  - a. A review of customer records shall be completed to determine any actions that may have taken place in 2008 that might be contributing to the high concentration levels in the flow stream.
  - b. A review of customer records shall be completed to help determine any actions that may be repeated every 3 or 4 months.
  - c. Testing and monitoring should continue until all sources are identified and have pretreatment installed.
    - i. A database shall be created to track and monitor testing results to ensure appropriate recording/reporting procedures are followed and for proper enforcement.

- d. This action shall be an immediate and continuing effort. Concentrations of Hg in the influent and effluent streams should show reasonable potential to meet the allowable permit limits by May, 2016.
- e. If amalgam particle filters are found to be inadequate at removing contaminates, the city shall require the customers that continue to discharge contaminates to design and construct activated carbon adsorption beds.
- 3. Review budget capital plans and fares for adequate revenue stream.

#### 3.2 Medium Priority

- 1. Based on Appendix B, from a report titled "Sanitary Sewer Collection System Report" issued to ADEQ in February of 2012 by Smith, Seckman, Reid, Inc. (SSR), the city shall focus on fixing the sections of pipe listed as "medium priority" as funds become available.
- 2. Testing of the existing sludge for Hg contamination should be completed. If the sludge should be found contaminated, a plan shall be developed immediately to have the sludge removed from the pond and disposed of as funds become available.
- 3. Repair and or replace any equipment that may not be performing as designed or is not operable.

#### 3.3 Low Priority

1. If after extensive pipeline repairs have taken place within the collection system do not fix the I&I problem and the plant continues to be washed out during rain events, the City shall install a system of synthetic media in the primary basins of each plant to provide the nitrifying bacteria a surface area for attached growth. This improvement will mitigate washout of ammonia removing bacteria during high flow events. The anticipated date for completion of this action is January 2018.

# APPENDIX A HIGH PRIORITY AREAS

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· ·

			IABL		ORITY REPAIRS		·		-	
Upst MH # to Dnst MH#	Line Length (ft)	PIPE TYPE	No. of Services	Line Conditions	Recommendations	Uni	t Cost*	Service Connect		Cost
705-1										
WD5	· .			FAIR/SMOKE						
WD4	346.1	LINER	2	LEAK	BURST/RELAY/CIPP	\$	70.00	\$ 500.00	\$	25,227.00
· ·							705-	-1 Subtotal:	5	25,227.00
705-2								·		<u> </u>
WD33				POOR/SMOKE					T	
WD32	121	CONC	1	LEAK	BURST/RELAY/CIPP	\$ ·	70.00	\$ <u>500.00</u>	\$	8,9 <u>70.00</u>
WD34										
WD33	156.4	CONC	1	POOR	BURST/RELAY/CIPP	\$	70.00	\$ 500.00	\$	11,448.00
WD35									.	
WD34	336.8	CONC	2	POOR	BURST/RELAY/CIPP	<u></u>	70.00	\$ 500.00	\$	24,576.00
WD40				· · ·						
WD2	232.7	LINER	0	POOR	BURST/RELAY/CIPP	\$	70.00	\$ 500.00	S	16,289.00
WD47				POOR/SMOKE		1.	·			
WD46	234.1	CONC	1	LEAK	BURST/RELAY/CIPP	S.	. 70.00	\$ 500.00	\$	16,887.00
WD53	l			POOR/SMOKE						
WD51 ·	197.4	CONC	. I	LEAK	BURST/RELAY/CIPP	\$	70.00	\$ 500.00	\$	14,318.00
WD55				POOR/FULL OF	н. · · .					
WD54	163	CONC	?	GROUT	RELAY	\$	90.00	\$ 500.00	\$	14,670.00
	. <sup>.</sup> .						705	-2 Subtotal	\$	107,158.00
705-3			· .	· .	···					
WD16		·		FAIR/SMOKE		ļ	-	· .		
WD7	249.1	CONC	2	LEAK	BURST/RELAY/CIPP	\$	70.00	\$ <u>500.00</u>	.\$	18,437.00
WD21				POOR/SMOKE				] ·		
WD20	172.1	CONC	2	LEAK	BURST/RELAY/CIPP	\$	70.00	\$ 500.00	\$	13,047.00
WD22				POOR/SMOKE	:					
WD21	216.1	CONC	2 ·	LEAK	BURST/RELAY/CIPP	\$	70.00	\$ 500.00	-\$	16,127.00
			•				705	-3 Subtotal	\$	47,611.00

**HIGH PRIORITY REPAIRS Page 1 of 8** 

Upst MH #	Line	PIPE	No. of	Line	ORITY REPAIRS			S	ervice		Cost
to Dnst MH#	Length (ft)	TYPE	Services	Conditions	Recommendations	Uni	t Cost*	С	onnect		Cost
7-1											• .
WP18				POOR/SMOKE	· · ·						•.
WP17	245.2	CONC	3	LÉAK	BURST/RELAY/CIPP	\$	70.00	<u>S'</u>	500.00	S	18,664.0
WP21				POOR/SMOKE		1					
WP20	75.2	CONC	1	LEAK	BURST/RELAY/CIPP	\$	70.00	\$	500.00	<u>\$</u>	5,764.0
WP27		-		POOR/SMOKE							
WP24	206.1	CONC	3	LEAK	BURST/RELAY/CIPP	<u>\$</u>	70.00	\$	500.00	\$	15,927.
WP29				POOR/SMOKE							
WP22	168.2	CONC	2	LEAK	BURST/RELAY/CIPP	\$	70.00	\$	500.00	\$	12,774.
WP30											
WP31	199.1	CONC	3	POOR	BURST/RELAY/CIPP	\$	70.00	\$	500.00	\$	15,437.
WP35				· ·		] .					
WP34	400	CONC	4	POOR	BURST/RELAY/CIPP	\$	70.00	\$	500.00	\$	30,000.
WP44				· ·		.					
WP42	363.9	CONC	3	POOR	BURST/RELAY/CIPP	\$	70.00	\$	500.00	\$	26,973.
WP40				FAIR/SMOKE							
WP39	410.3	LINER	6	LEAK	BURST/RELAY/CIPP	\$	70.00	S	500.00	\$	31,721.
					· .			-		æ	72 410
							1767	-1 8	ubtotal:	\$	72,410.
7-2		·		· · · · · · · · · · · · · · · · · · ·		1				<u> </u>	
WP78	4			POOR/SMOKE				<b>_</b>			
WP2	464	CONC	5	LEAK	BURST/RELAY/CIPP	\$	70.00	\$	500.00	\$	34,980
• WP79	4				· · · · · · · · · · · · · · · · · · ·		-			_	<b>a</b>
WP78	350.2	CONC	1	POOR	BURST/RELAY/CIPP	\$	70.00	\$	500.00	\$	25,014
WP80	4	· ·		POOR/SMOKE			· . ·				
WP79	80	CONC	. 0	LÉAK	BURST/RELAY/CIPP	\$	70.00	S	500.00	\$	5,600.
WP82	4	·.		POOR/SMOKE				<u> </u>			
WP81	391.6	CONC	2	LEAK	BURST/RELAY/CIPP	\$	70,00	\$	500.00	<u>s</u>	28,412.
							1767	-2 S	ubtotal:	5	94,006
idle-1					· · · · · · · · · · · · · · · · · · ·						

HIGH PRIORITY REPAIRS Page 2 of 8

Upst MH #	Line	PIPE	No. of	Line	URITY KEPAIRS		Service	
to Dast MH#	Length (ft)	TYPE	Services	Conditions	Recommendations	Unit Cost*	Connect	Cost
ND6	Longen (10)				· · · ·			
ND6A	17,2	CLAY	· ?	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 1,204.00
ND7	17,2	CLAI	;	POOR/SMOKE	- BOADTAILLATION C			- , /
ND6	216.7	CLAY	1	LEAK	RELAY	\$ 90.00	\$ 500.00	\$ 20,003.00
ND8	210.7	CONT.	1	Lente				
ND3	282	CLAY	3	POOR	RELAY	\$ 90.00	\$ 500.00	\$ 26,880.00
ND7 ND9	2.52							
ND8	290	CLAY	2	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 21,300.00
ND10	2.0.	QL/II		1004				
ND9	404	CLAY	4	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 30,280.00
ND11		· · · ·						
ND10	160.6	CLAY	1 T	POOR	BURST/RELAY/CIPP	S 70.00	\$ 500.00	\$ 11,742.00
ND12								
ND11	205	CLAY	1	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 14,850.00
ND15	· ·	· · ·		· .				
ND14	146.5	CLAY	4	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 12,255.00
ND16				POOR/SMOKE				
ND15	182.3	CLAY	4	LEAK	BURST/RELAY/CIPP	\$ 70.00	S 500.00	\$ 14,761.00
ND17								
ND13	92.1	CLAY	1	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 6,947.00
ND19				FAIR/SMOKE				
ND6A	140.9	PVC	0	LEAK	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ <u>9,863.00</u>
ND21A						T	· . ·	
ND21	174.5	CLAY	5	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 14,715.00
ND21		·	· ·					
ND20	120.6	CLAY	3	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 9,942.00
ND22				POOR/SMOKE		T		
ND21A	209.7	ÇLAY	2	LEAK	BURST/RELAY/CIPP	\$ 70,00	\$ 500.00	\$ 15,679.00
ND23				POOR/SMOKE	• • • • •			
ND22	233.8	CLAY	2	LEAK	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 17,366.00
ND26	· .							

HIGH PRIORITY REPAIRS Page 3 of 8

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			TABL	E I - HIGH FRI	ORITY REPAIRS				
Upst MH # to Dnst MH#	Linc Length (ft)	PIPE TYPE	No. of Services	Line Conditions	Recommendations	Unit Cost*	Service Connect		Cost
ND25	570	CLAY	4	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	41,900.00
ND27	· · ·								
ND25	235.4	CLAY	5	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	18,978.00
					· ·	Ruddle	1 Subtotal:	<b>\$</b>	288,665.00
Walker Park 1	·		·		· · · · · · · · · · · · · · · · · · ·		<u> </u>		
NC49A		<b>CIT</b> 1 TT		BOOD .		\$ 70.00	\$ -500.00	\$	18,191.00
NC49	231.3	CLAY	4	POOR	BURST/RELAY/CIPP	\$ 70.00	3 300.00	9	18,171.00
NC49B		a in		BOOD	DIDOTIDEI AV/CIDD	\$ 70.00	\$ 500.00	\$	21,248.00
NC8	246.4	CLAY	8	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	4	21,248.00
NC49				baob	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	24,660.00
NC49B	288.0	CLAY	.9	POOR	BUKSI/RELAY/CIPP	\$ 70.00	3 200.00	φ	24,000.00
NC50				7007		\$ 70.00	\$ 500.00	\$	9,197.00
NC9	117.1	ÇLAY	2	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 300.00	Ð	9,197.00
NC51	<b> </b>			TOOT		\$ 70.00	\$ 500.00	s	17,106.00
NC50	215.8	CLAY	. 4	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	17,100.00
NC53	4					<b>* 70.00</b>	5 500.00	¢.	19,610.00
NC52	273.0	CLAY	1	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ <u>·</u>	19,010.00
NC54A				·		<b>5</b> 0,00			2 621 00
NC54	43.3	CLAY	1	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	3,531.00
• <u>NC54</u>	·				· · · · · · · · · · · · · · · · · · ·				8 000 00
NC10A	<b>98</b> .6	CLAY	2	POOR	BURST/RELAY/CIPP	S 70.00	\$ 500.00	\$	7,902.00
SERVICE CAP	1		i		· · · · · · · · · · · · · · · · · · ·				11.000.00
NC52	143.8	CONC	2	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	. <u>\$</u>	11,066.00
SERVICE CAP	]					1	:		
NC54A	47.2	CLAY	· 1	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500,00	\$	3,804.00
Locust & Lilly	]	· ·							
Popular & Lilly	229	CLAY	3	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	17,530.00
NC 20A	· ·							ł	
NC19	703	CONC	3	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	50,710.00
NC15A						. ·			

HIGH PRIORITY REPAIRS Page 4 of 8

			TADE	E I - JIIGH I KI	URITY REPAIRS		-		
Upst MH # to Dnst MH#	Line Length (ft)	PIPE TYPE	No. of Services	Line Conditions	Recommendations	Unit Cost	* Service Connect		Cost
	5,7				DUDST/DELAN//CDD	\$ 70.00		\$	34,334.00
NC15	426.2	CLAY	9	POOR	BURST/RELAY/CIPP	\$ 70.00	5 500.00	ð	54,554.00
NC15	·					n <b>n</b> ò		æ	1 (50.00
<u>NC16</u>	23.7	CLAY	0	POOR	BURST/RELAY/CIPP	\$ 70.00	) \$ 500.00	\$	1,659.00
NC24				POOR/SMOKE					
NC23	291	CLAY	2	LEAK	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	21,370.00
NC25A									
NC25	344	CLAY	11	POOR	BURST/RELAY/CIPP	\$ 70.00	) \$ 500.00	\$	29,580.00
NC25									
NC24	· 193.9	CLAY	3	POOR .	BURST/RELAY/CIPP	\$ 70.00	) \$ 500.00	\$	15, <u>073.00</u>
						Wallow Day	k 1 Subtotal:	5	306,571.00
Walker Park 2			<del>.</del>	· · ·	······································	11 AIKÇI FAJ	KI SUDUJAL	<u> </u>	500,571.00
	<b>I</b>			·			<u> </u>		
1									6 694 00
2	67.6	CLAY	<u> </u>	POOR	RELAY	\$ 90.0	) \$ 500.00.	\$	6,584.00
NC66	_							· ·	
NC65	80.6	CONC	2	POOR	BURST/RELAY	\$ 85.0	0 <u>\$ 500.00</u>	\$	7,851.00
NC86	· .				· ·				
• NC85	349.5	CLAY	9	POOR	BURST/RELAY/CIPP	\$ 70.0	D \$ 500.00	\$	28,965.00
NC87									
• NC86	397 -	CLAY	12	POOR	BURST/RELAY/CIPP	\$ 70:0	0 \$ 500.00	\$	33,790.00
NC89			· .				· .		
NC88	232.4	TRUSS	3	POOR	BURST/RELAY/CIPP	\$ 70.0	D \$ 500.00	\$	17,768.00
NC93		· .						]	
NC92	343	CONC	3	POOR	BURST/RELAY/CIPP	\$ 70.0	0 \$ 500.00	\$	25,510.00
. NC94			· ·				1		
NC93	300.1	CONC	_1	POOR	BURST/RELAY/CIPP	\$ 70.0	0 \$ 500.00	\$	21,507.00
NC95		· · .							_
NC94	320.3	CONC	1	POOR	BURST/RELAY/CIPP	\$ 70.0	0 \$ 500.00	\$	22,921.00
NC99	+		· .	· · · ·				1	
NC98	240	CONC	5.	POOR	BURST/RELAY/CIPP	\$ 70.0	0 \$ 500.00	\$	19,300.00
NC100			l						

HIGH PRIORITY REPAIRS Page 5 of 8

Upst MH # to Dnst MH#	Line Length (ft)	PIPE TYPE	No. of Services	Line Conditions	Recommendations	Unit	Cost*	Service Connect		Cost
NC99	217.1	CONC	5	POOR	BURST/RELAY/CIPP	\$	70.00	\$ 500.00	\$	17,697.00
NC102										
NC101	263.2	CONC	6	POOR	BURST/RELAY/CIPP	\$	70.00	\$ 500.00	S	21,424.00
NC103										
NC92	361.9	CLAY	. 7	POOR	BURST/RELAY/CIPP	\$	70.00	\$ 500.00	\$	28,833.00
NC104				POOR/SMOKE						
NC103	563	CLAY	4	LEAK	BURST/RELAY/CIPP	\$	70.00	\$ 500.00	\$	41,410.00
NC105				POOR/SMOKE						
NC104	246	CLAY	1	LEAK	BURST/RELAY/CIPP	S	70.00	\$ 500.00	\$	17,720.00
NC108						] ·				
NC107	250	CLAY	3	POOR	RELAY	\$	90.00	\$ 500.00	\$	24,000.00
NC109				• .					ļ	
NC108	242.7	CLAY	4	POOR	BURST/RELAY/CIPP	\$	70.00	\$ 500.00	\$	18,989.00
NC110 ·										
· NC109	160.7	CLAY	4	POOR	BURST/RELAY/CIPP	\$	70.00	\$ 500.00	S	13,249.00
NC111			•							
NCI10	264.9	CLAY	4	POOR	BURST/RELAY/CIPP	\$	70.00	\$ 500,00	\$	20,543.00
NC72				. •						
NC71	257.4	CONC	4	POOR	BURST/RELAY/CIPP	\$	70.00	\$ 500.00	\$	20,018.00
NC74										•
NC73	335.5	CONC	2	POOR	BURST/RELAY/CIPP	\$	70.00	\$ 500.00	\$	24,485.00
NC75										
NC74	245.9	CONC	2	POOR	BURST/RELAY/CIPP	\$	70.00	\$ 500.00	\$	18,213.00
NC112				POOR/SMOKE						
NC109	86,1	CLAY	2	LEAK	BURST/RELAY/CIPP	\$	70.00	\$ 500.00	\$	7,027.00
EOL										
<u>NC24</u>	148.3	CLAY	2	POOR	BURST/RELAY/CIPP	\$	70.00	\$ 500.00	\$	11,381.00
	· ·				······	Walke	r Park	2 Subtotal:	\$	469,185.00
Ward 1	<b></b>				· · · · · · · · · · · · · · · · · · ·	1				
90W3	J		·			ł				

HIGH PRIORITY REPAIRS Page 6 of 8

Upst MH #	Line	PIPE	No. of	Line			Service	
to Dnst MH#	Length (ft)	TYPE	Services	Conditions	Recommendations	Unit Cost*	Connect	Cost
90W2	323.7	CONC	2	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 23,659.00
LOCUST & LILY								
POPLAR & LILY	272.4	CLAY	4	POOR	BURST/RELAY/CIPP	S 70.00	\$ 500.00	\$ 21,068.00
MICHAELS JEWEL								
TEE IN LINE	183.9	CONC	6	POOR	BURST/RELAY/CIPP	<b>\$</b> 70.00	\$ 500.00	\$ 15,873.00
WF105			•	• .'				
W\$31	225	CONC	5	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 18,250.00
WF108								•
WF107	296.4	CONC	3	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 22,248.00
WF109			· · · ·					
WF108A	206.9	CONC	1	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 14,983.00
WF110								
WF109	340.7	CONC	3	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 25,349.00
WF111							1	
WF110	305.8	CONC	5	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 23,906.00
WF115								
ŴF114	507.2	CONC	12	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 41,504.00
WF116								
WF107	347.6	CONC	3	POOR	BURST/RELAY/CIPP	<u>\$ 70.00</u>	\$ 500.00	\$ 25,832.00
WF118								
WF117_	287.2	CONC	5	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 22,604.00
WF119								
WF118	359.8	CONC	8	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 29,186,00
<u>W</u> S1								
PS ·	51	CONC	0	POOR	BURST/RELAY/CIPP	\$ 70,00	<u>,</u> \$ 500.00	\$ 3,570.00
W\$30			·.					* .
· WS29	247.4	CONC	4	- POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$ 19,318.00
WS31								· ·
WS29	62.4	CLAY	2	POOR	BURST/RELAY/CIPP	\$ 70.00	<u>\$ 500.00</u>	\$ 5,368.00
WS18				•			· ·	
WS15	115	CLAY	2	FAIR	PC & INSTALL MH	\$ 2,000.00	-	\$ 2;000.00

HIGH PRIORITY REPAIRS Page 7 of 8

TABLE I - HIGH PRIORITY REPAIRS											
Upst MH # to Dnst MH#	Line Length (ft)	PIPE TYPE	No. of Services	Line Conditions	Recommendations	Unl	t Cost*	Service Connect			Cost
WS24					·	ľ					
WS23	175.2	CLAY	4	POOR	BURST/RELAY/CIPP	<u>\$</u> ·	70.00	\$	500.00	\$	14,264.00
		· .					Ward	18	ubtota <u>l:</u>	\$	328,982.00
Ward 2											
WF57					· ·			ł			
WF56	94,4	CONC	0	POOR	BURST/RELAY/CIPP	\$	.70.00	\$	500.00	\$	6,608.00
WF63						Γ					
WF62	138.5	CONC	1	POOR	BURST/RELAY/CIPP	\$	70.00	\$	500.00	\$	10,195.00
WF68								1			
WF67	252	PVC	. ?	PIPE MISSING	RELAY	\$	90.00	\$	500.00	\$	22,680.00
WF72				· .						•	
WF71	447.4	CONC	17	POOR	BURST/RELAY/CIPP	\$	70.00	\$	500.00	\$	39,818.00
WF71					· · ·		-				
WF70	319.8	CONC	4	POOR .	BURST/RELAY/CIPP	\$	70.00	\$	500:00	\$	24,386.00
		· ·	. ·	: -			Ward	2 S	ubtotal:	\$	103,687.00
• .					· · · ·	ligh I	riority .	Are	a Total:	\$	1,843,502.00

\*Unit costs for BURST/RELAY/CIPP=\$70 per LF, RELAY/BURST=\$85 per LF, RELAY=\$90 per LF, REPAIR SERVICE or POINT REPAIR=\$1000

EA, SMH=\$2000 EA

HIGH PRIORITY REPAIRS Page 8 of 8

# **APPENDIX B** MEDIUM PRIORITY AREAS

			1	ABLE 2 -	NUCLUI ON P	RIURITY REPAIRS				
Upst MH # to Dust MH#	Line Lèngth	Pipe Size	PIPE TYPE	No. of Services	Line Conditions	Recommendations	Unit Cost*	Service Connect		Total Cost
705-2	Congen	3146		ISCI VICCA	Conditions		L	<b>Q</b>		
			T	I				1	<u> </u>	
WD3 WD2	238.4	8"	LINER	1	POOR	RELAY/BURST	\$ 85.00	\$ 500.00	\$	20,764.00
WD27										
WD2	184.9	10"	LINER	0	POOR	PT. REPAIR	\$ 1,000.00	\$ 500.00	\$	1,000.00
WD42									[	
WD41	252.2	8"	LINER	1	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	18,154.00
							705	-2 Subtotal:	\$	39,918.00
705-3							· · ·			
WD20			· ·				-	•		
WD19	110.9	8"	CONC	0	POOR	BURST/RELAY/CIPP	<u>S 70.00</u>	\$ 500.00	\$	7,763.00
WD24					· ·				ł	
WD23	40.7	8"	CONC	0	POOR	BURST/RELAY/CIPP	\$ 70.00	S 500.00	\$	2,849.00
							705	-3 Subtotal:	\$	10,612.00
1767-1					•					
WP41					1	· ·			<u> </u>	
WP40	379.6	- 8 <sup>H</sup>	CONC	4	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	28,572.00
WP48										
WP47	249	8"	CONC	!	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	17,930.00
							1767	-1 Subtotal:	\$	46,502.00
1767-2			• ••							
WP81	·									
WP80	384.8	8"	CONC	2	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	· \$	27,936.00
						•	1763	-2 Subtotal:	\$	27,936.00
Ruddle-1					•					

TABLE 2 - MEDIUM PRIORITY REPAIRS

MEDIUM PRIORITY REPAIRS Page 1 of 4

NEEDS M/H

\$ 2,000.00

\$

2,000.00

POOR

EOL ND10

82.8

6

CLAY

2

**TABLE 2 - MEDIUM PRIORITY REPAIRS** Service Upst MH # Line Pipe PIPE No. of Line Total Cost Unit Cost\* Recommendations Connect Conditions Length Services to Dnst MH# Size TYPE EOL 83.1 POOR \$ 2,000.00 S 166,200.00 ND22 CLAY NEEDS M/H 6 1. ND6A ND5 PVC POOR RELAY \$ 90.00 \$ 500.00 29,345.00 320.5 \$ 8 I ND14 24,559.00 **ND13** 293.7 6 CLAY 8 POOR BURST/RELAY/CIPP \$ 70.00 \$ 500.00 \$ ND20 BURST/RELAY/CIPP \$ 500.00 30,670.00 ND19 381 6 CLAY 8 POOR S 70.00 \$ ND24 ND23 200.6 CLAY BURST/RELAY/CIPP \$ 70.00 \$ 500.00 \$ 15,542.00 6 3 POOR ND25 BURST/RELAY/CIPP 70.00 500.00 23,071.00 ND21 315.3 6 CLAY 2 POOR \$ \$ \$ Ruddle-1 Subtotal: \$ 291,387.00 Walker Park 1 NC27 4,298.00 NC26 61.4 6" CONC ? \$ 70.00 \$ 500.00 \$ POOR BURST/RELAY/CIPP NC28 NC20 154.7 6" CONC BURST/RELAY/CIPP 70.00 \$ 500.00 \$ 0 \$ POOR 10,829.00 NC52 NC51 353.3 6" POOR 500.00 27,731.00 6 \$ \$ CLAY BURST/RELAY/CIPP 70.00 \$ NC16 NC37 485.6 ·10<sup>n</sup> CONC 2 POOR BURST/RELAY/CIPP \$ 70.00 \$ 500.00 \$ 34,992:00 NC17 NC16 10" 27.9 CONC 0 POOR BURST/RELAY/CIPP 500.00 \$ 1,953.00 \$ 70.00 \$ NC18 NC30 42.3 10" CONC 0 POOR \$ 500.00 \$ BURST/RELAY/CIPP \$ 70,00 2,961.00 NC19 NC18 10<sup>n</sup> 18.9 CONC 0 POOR BURST/RELAY/CIPP \$ \$ 1,323.00 70.00 \$ 500.00

MEDIUM PRIORITY REPAIRS Page 2 of 4

POOR

BUR\$T/RELAY/CIPP

\$

70.00 \$

500.00 \$

16,394.00

NC30

10"

234.2

CONC

0

o Dnst MH# Length Size TYPE Services Conditions Recommendations Unit Cost* Connect Total Cost Walker Park 1 Subtotal: \$ 100,481.00	TABLE 2 - MEDIUM PRIORITY REPAIRS										
Walker Park 2    NC81A    S 70.00    \$ 500.00    \$ 11,340.00      NC81A    318.9    8"    CLAY    2    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 23,323.00      NC85    NC84    152.7    8"    CLAY    4    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 12,689.00      NC91A    319.4    10"    CONC    2    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 23,358.00      NC107    NC106    512.8    8"    CLAY    9    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 22,676.00      NC68    316.8    8"    CONC    1    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 23,467.00      NC59    328.1    8"    TRUSS    1    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 23,467.00	Upst MH # to Dnst MH#	-	-				Recommendations	Unit Cost*	et*		Fotal Cost
NC81A    NC81A    NC8    I62    8"    CLAY    0    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    11,340.00      NC81    S    70.00    \$    500.00    \$    23,323.00      NC81    NC81    S"    CLAY    2    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    23,323.00      NC84    152.7    8"    CLAY    4    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    12,689.00      NC91    NC91    NC91    NC106    S12.8    8"    CLAY    9    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    22,676.00      NC68    316.8    8"    CONC    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$ <th></th> <th></th> <th></th> <th>· · ·</th> <th>· .</th> <th></th> <th>,</th> <th>Walker Park</th> <th>1 Subtotal:</th> <th>\$</th> <th>100,481.00</th>				· · ·	· .		,	Walker Park	1 Subtotal:	\$	100,481.00
NC58    162    8"    CLAY    0    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    11,340.00      NC81    318.9    8"    CLAY    2    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    23,323.00      NC81    318.9    8"    CLAY    2    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    23,323.00      NC84    152.7    8"    CLAY    4    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    12,689.00      NC91	Walker Park 2										
NC81.    NC81.    State    CLAY    2    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    23,323.00      NC85    NC84    152.7    8"    CLAY    4    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    12,689.00      NC91A    319.4    10"    CONC    2    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    12,689.00      NC91A    319.4    10"    CONC    2    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    23,358.00      NC107    NC106    512.8    8"    CLAY    9    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    22,676.00      NC73    NC68    316.8    8"    CONC    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    23,467.00      NC59    328.1    8"    TRUSS	NC81A										·
NC81A    318.9    8"    CLAY    2    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    23,323.00      NC85    NC84    152.7    8"    CLAY    4    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    12,689.00      NC91    NC91    ONC    2    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    12,689.00      NC91    NC91    CONC    2    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    23,358.00      NC106    512.8    8"    CLAY    9    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    22,676.00      NC68    316.8    8"    CONC    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    23,467.00      NC59    328.1    8"    TRUSS    1    POOR    BURST/RELAY/CIPP    \$	NC58	162	8"	CLAY	0	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	11,340.00
NC85    O    CLAY    4    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    12,689.00      NC91    319.4    10"    CONC    2    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    12,689.00      NC91    319.4    10"    CONC    2    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    23,358.00      NC106    512.8    8"    CLAY    9    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    23,358.00      NC106    512.8    8"    CLAY    9    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    22,676.00      NC58    316.8    8"    TRUSS    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    23,467.00      NC56    434.1    12"    CONC    0    POOR    BURST/RELAY/CIPP    \$						· .	•		· · ·		
NC84    152.7    8"    CLAY    4    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    12,689.00      NC91    319.4    10"    CONC    2    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    23,358.00      NC107    NC106    512.8    8"    CLAY    9    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    23,358.00      NC106    512.8    8"    CLAY    9    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    22,676.00      NC73    NC68    316.8    8"    CONC    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    23,467.00      NC59    328.1    8"    TRUSS    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    23,467.00      NC56    434.1    12"    CONC    0		318.9	8"	CLAY	. 2	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	23,323.00
NC91    NC91    319.4    10"    CONC    2    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    23,358.00      NC107    NC106    512.8    8"    CLAY    9    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    23,358.00      NC106    512.8    8"    CLAY    9    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    22,676.00      NC68    316.8    8"    CONC    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    22,676.00      NC68    NC68    NC59    328.1    8"    TRUSS    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    23,467.00      NC56    434.1    12"    CONC    0    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    10,3387.00      WS20    WS19    400.2							· ·			· .	
NC91A    319.4    10"    CONC    2    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    23,358.00      NC107    NC106    512.8    8"    CLAY    9    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    40,396.00      NC73    NC68    316.8    8"    CONC    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    22,676.00      NC68    316.8    8"    CONC    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    22,676.00      NC59    328.1    8"    TRUSS    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    23,467.00      NC56    434.1    12"    CONC    0    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    30,387.00      Vs19    400.2    10"    CLAY    4	· · · · · · · · · · · · · · · · · · ·	- 152.7	8"	CLAY	4	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	12,689.00
NC107    NC106    512.8    8"    CLAY    9    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    40,396.00      NC73    NC68    316.8    8"    CONC    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    22,676.00      NC68    316.8    8"    CONC    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    22,676.00      NC59    328.1    8"    TRUSS    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    23,467.00      NC57    NC56    434.1    12"    CONC    0    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    30,387.00      Vard 1    12"    CONC    0    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    1,000.00      WF102    WS19    400.2    10"    CLAY									·		
NC106    512.8    8"    CLAY    9    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    40,396.00      NC73    NC68    316.8    8"    CONC    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    22,676.00      NC88    8"    TRUSS    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    22,676.00      NC89    328.1    8"    TRUSS    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    23,467.00      NC56    434.1    12"    CONC    0    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    30,387.00      Vard 1    2"    CONC    0    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    10,000.00      WS19    400.2    10"    CLAY    4    FAIR    PC & REPAIR SERVICE    \$ </td <td></td> <td>319.4</td> <td>10"</td> <td>CONC</td> <td>2</td> <td>POOR</td> <td>BURST/RELAY/CIPP</td> <td>\$ 70.00</td> <td>\$ 500.00</td> <td>8</td> <td>23,358.00</td>		319.4	10"	CONC	2	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	8	23,358.00
NC73    NC68    316.8    8"    CONC    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    22,676.00      NC88    NC59    328.1    8"    TRUSS    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    23,467.00      NC59    328.1    8"    TRUSS    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    23,467.00      NC57    NC56    434.1    12"    CONC    0    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    30,387.00      Vard 1    2"    CONC    0    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    1,000.00      WS10    400.2    10"    CLAY    4    FAIR    PC & REPAIR SERVICE    \$ 1,000.00    \$    500.00    \$    1,000.00      WF102    WF101    506.9    6"    CONC    13 </td <td></td> <td>- 1 -</td> <td></td> <td></td> <td></td> <td>DOOD</td> <td></td> <td>A 30.00</td> <td></td> <td>a a</td> <td>40.206.00</td>		- 1 -				DOOD		A 30.00		a a	40.206.00
NC68    316.8    8"    CONC    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    22,676.00      NC59    328.1    8"    TRUSS    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    23,467.00      NC57		512.8	8"	CLAY	9	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	3	40,396.00
NC88    NC59    328.1    8"    TRUSS    1    POOR    BURST/RELAY/CTPP    \$    70.00    \$    500.00    \$    23,467.00      NC57    NC56    434.1    12"    CONC    0    POOR    BURST/RELAY/CTPP    \$    70.00    \$    500.00    \$    30,387.00      WC56    434.1    12"    CONC    0    POOR    BURST/RELAY/CTPP    \$    70.00    \$    500.00    \$    30,387.00      Ward 1    CONC    0    POOR    BURST/RELAY/CTPP    \$    70.00    \$    500.00    \$    30,387.00      Ws20    Ws20    Ws19    400.2    10"    CLAY    4    FAIR    PC & REPAIR SERVICE    \$ 1,000.00    \$    500.00    \$    1,000.00      WF102    Ws101    506.9    6"    CONC    13    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    14,983.00      WF106    168.7    10"    CONC <t< td=""><td></td><td>116.0</td><td>07</td><td>00010</td><td></td><td>, DOOD</td><td></td><td># 20.00</td><td>¢ 500.00</td><td>l e</td><td>22 676 00</td></t<>		116.0	07	00010		, DOOD		# 20.00	¢ 500.00	l e	22 676 00
NC59    328.1    8"    TRUSS    1    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    23,467.00      NC57    NC56    434.1    12"    CONC    0    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    30,387.00      Walker Park 2 Subtotal:    \$    187,636.00      Walker Park 2 Subtotal:    \$    187,636.00      Vard 1    CLAY    4    FAIR    PC & REPAIR SERVICE    \$    1,000.00    \$    500.00    \$    1,000.00      WS10    400.2    10"    CLAY    4    FAIR    PC & REPAIR SERVICE    \$    1,000.00    \$    500.00    \$    1,000.00      WF102    CONC    13    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    41,983.00      WF106    MF93    168.7    10"    CONC    1    FAIR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$		310.8	8	CONC	l .	POOK	BUKSI/KELAY/CIPP	\$ 70.00	\$ 300.00	•₽ ·	22,870.00
NC57    NC56    434.1    12"    CONC    0    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    30,387.00      Walker Park 2 Subtotal:    \$    187,636.00      Ws20      WS19    400.2    10"    CLAY    4    FAIR    PC & REPAIR SERVICE    \$ 1,000.00    \$    500.00    \$    1,000.00      WF102    WF101    506.9    6"    CONC    13    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    41,983.00      WF106    WF93    168.7    10"    CONC    1    FAIR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    12,309.00      WF107    WF106 </td <td></td> <td>229.1</td> <td>он</td> <td>TDUGG</td> <td>1</td> <td>POOR</td> <td></td> <td>\$ 70.00</td> <td>\$ 500.00</td> <td>¢</td> <td>23 467 00</td>		229.1	он	TDUGG	1	POOR		\$ 70.00	\$ 500.00	¢	23 467 00
NC56    434.1    12"    CONC    0    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    30,387.00      Walker Park 2 Subtotal:    \$    187,636.00      Ward 1    CONC    10"    CLAY    4    FAIR    PC & REPAIR SERVICE    \$    1,000.00    \$    500.00    \$    1,000.00      WS19    400.2    10"    CLAY    4    FAIR    PC & REPAIR SERVICE    \$    1,000.00    \$    500.00    \$    1,000.00      WF102    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    41,983.00      WF106    Burst/RELAY/CIPP    \$    70.00    \$    500.00    \$    12,309.00      WF106    200.5    10"    CONC    3    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    12,309.00      WF106    200.5    10"    CONC    3    POOR    BURST/RELAY/CIPP    \$    70.00 <t< td=""><td></td><td>326.1</td><td><u> </u></td><td>IKUSS</td><td></td><td>FOOK</td><td>DUK51/KELA1/CIFF</td><td>10.00</td><td>a 100.00</td><td>φ</td><td>23,407.00</td></t<>		326.1	<u> </u>	IKUSS		FOOK	DUK51/KELA1/CIFF	10.00	a 100.00	φ	23,407.00
Walker Park 2 Subtotal: \$ 187,636.00      Ward 1    WS20    State    State<		434 1	12"	CONC		POOR	BURST/RELAV/CIPP	\$ 70.00	\$ 500.00	\$	30 387 00
Ward 1    WS20    Kard 1    Kard 1 <td>NC30</td> <td>434.1</td> <td>12</td> <td>conc</td> <td>V</td> <td>FOOR</td> <td>BORSTALLATIONT.</td> <td>φ 70.00</td> <td></td> <td>47</td> <td>30,307.00</td>	NC30	434.1	12	conc	V	FOOR	BORSTALLATIONT.	φ 70.00		47	30,307.00
Ward 1    WS20    Kard 1    Kard 1 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Walker Park</td> <td>2 Subtotal:</td> <td>\$</td> <td>187.636.00</td>								Walker Park	2 Subtotal:	\$	187.636.00
WS20  WS19  400.2  10"  CLAY  4  FAIR  PC & REPAIR SERVICE  \$ 1,000.00  \$ 500.00  \$ 1,000.00    WF102											
WS19  400.2  10"  CLAY  4  FAIR  PC & REPAIR SERVICE  \$ 1,000.00  \$ 500.00  \$ 1,000.00    WF102							· · · · · · · · · · · · · · · · · · ·		· · ·	<u> </u>	
WF102  WF101  506.9  6"  CONC  13  POOR  BURST/RELAY/CIPP  \$  70.00  \$  500.00  \$  41,983.00    WF106  WF93  168.7  10"  CONC  1  FAIR  BURST/RELAY/CIPP  \$  70.00  \$  500.00  \$  41,983.00    WF93  168.7  10"  CONC  1  FAIR  BURST/RELAY/CIPP  \$  70.00  \$  500.00  \$  12,309.00    WF107  200.5  10"  CONC  3  POOR  BURST/RELAY/CIPP  \$  70.00  \$  500.00  \$  15,535.00		400.2	10"	CLAY	· 4	FAIR	PC & REPAIR SERVICE	\$ 1,000.00	\$ 500.00	s	1,000.00
WF101    506.9    6"    CONC    13    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    41,983.00      WF106	· · ·				<u> </u>				·	ŕ	
WF106    WF93    168.7    10"    CONC    1    FAIR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    12,309.00      WF107    WF106    200.5    10"    CONC    3    POOR    BURST/RELAY/CIPP    \$    70.00    \$    500.00    \$    12,309.00		506.9	6"	CONC	13	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	\$	41,983.00
WF107    WF106    200.5    10"    CONC    3    POOR    BURST/RELAY/CIPP    \$ 70.00    \$ 500.00    \$ 15,535.00				· ·							
WF106 200.5 10" CONC 3 POOR BURST/RELAY/CIPP \$ 70.00 \$ 500.00 \$ 15,535.00	WF93	168.7	10"	CONC	1	FAIR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	-\$	12,309.00
	WF107				· ·						
WF108A	WF106	200.5	10"	CONC	3	POOR	BURST/RELAY/CIPP	\$ 70.00	\$ 500.00	s	15,535.00
	WF108A					-					

## TABLE 2 - MEDIUM PRIORITY REPAIRS

MEDIUM PRIORITY REPAIRS Page 3 of 4

**TABLE 2 - MEDIUM PRIORITY REPAIRS** Upst MH # PIPE No. of Service : Line Pipe Line Total Cost Unit Cost\* Recommendations Connect TYPE to Dast MH# Length Size Services Conditions \$ 500.00 10,173.00 6" BURST/RELAY/CIPP \$ 70.00 **\$** ` WF108A 123.9 CONC 3 FOOR WF114 3,360.00 \$ 500.00 8" BURST/RELAY/CIPP 70.00 WF113 48 CONC 0 POOR S \$ WF117 BURST/RELAY/CIPP 70.00 \$ 500.00 24,993.00 WF116 299.9 8" CONC 8 POOR \$ \$ WS6 WSS 364.1 8" CLAY POOR BURST/RELAY/CIPP \$ 500.00 28,487.00 6 70.00 \$ \$ W\$29 BURST/RÉLAY/CIPP WS28 6"<sup>°</sup> \$ 500.00 22,350.00 305 CONC 2 POOR \$ 70.00s **WS21** 8" \$ 500.00 27,803.00 WS20 382.9 CLAY 2 POOR BURST/RELAY/CIPP 70.00 \$ \$ Ward 1 Subtotal: \$ 187,993.00 Ward 2 × . WF4A 10" WF57 56 BURST/RELAY/CIPP 3,920.00 CONC 0 POOR \$ 70.00 \$ .500.00 \$ WF56 WF55 12" POOR BURST/RÊLAY/CIPP \$ 500.00 CONC 30,523.00 428.9 1 \$ 70.00 \$ WF60 8" BURST/RELAY/CIPP WF59 CONC 2 POOR 70.00 \$ 500.00 22,490.00 307 S \$ WF62 WF61 8" CONC BURST/RELAY/CIPP 313.8 70.00 \$ 500.00 24,966.00 6 POOR S \$ WF70 311.6 '8" CONC POOR BURST/RELAY/CIPP 70.00 500.00 WF59 1 S S 22,312.00 Ward 2 Subtotal: \$ 104,211.00 Medium Priority Total Cost: \$ 996,676.00 \*Unit costs for BURST/RELAY/CIPP=\$70 per LF, RELAY/BURST=\$85 per LF, RELAY=\$90 per LF, REPAIR SERVICE or POINT

REPAIR=\$1000 EA, SMH=\$2000 EA

MEDIUM PRIORITY REPAIRS Page 4 of 4