



## Board of Aldermen Request for Action

**MEETING DATE:** 4/3/2023

**DEPARTMENT:** Public Works – Water

**AGENDA ITEM:** Resolution 1208, Authorization No. 99 – Engineering Design for Water Treatment Plant Improvements

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### **REQUESTED BOARD ACTION:**

A motion to approve Resolution 1208, authorizing and directing the mayor to execute Authorization No. 99 with HDR Engineering, Inc. for engineering design for water treatment plant improvements.

### **SUMMARY:**

The City uses lime to soften the water produced. The water treatment plant produces lime residuals that accumulate in lagoons, which are inert and non-hazardous.

There are many benefits to spreading lime on farms. Lime is a soil conditioner and controls the soil acidity by neutralizing the effects of acids from nitrogen (N) fertilizer, slurry and high rainfall. Other benefits include an increase in earthworm activity, improvement in soil structure and grass is more palatable to livestock. These lagoons have not been cleaned out for a number of years.

Additionally, water treatment plant improvements will include:

- Replacing filter media
- Replacement of several valves and actuators
- Replacement of lime and powder activated carbon feeder

HDR will provide engineering and project administration services for \$255,730.

### **PREVIOUS ACTION:**

Water treatment Plant improvements are included in the 2023 CIP.

### **POLICY ISSUE:**

Utilities infrastructure maintenance.

### **FINANCIAL CONSIDERATIONS:**

The 2023 Capital Improvement Plan for the Combined Water and Wastewater system includes \$1 million for this project.

### **ATTACHMENTS:**

- |                                                |                                              |
|------------------------------------------------|----------------------------------------------|
| <input type="checkbox"/> Ordinance             | <input checked="" type="checkbox"/> Contract |
| <input checked="" type="checkbox"/> Resolution | <input type="checkbox"/> Plans               |
| <input type="checkbox"/> Staff Report          | <input type="checkbox"/> Minutes             |
| <input type="checkbox"/> Other                 |                                              |

**RESOLUTION 1208**

**A RESOLUTION AUTHORIZING AND DIRECTING THE MAYOR TO EXECUTE AUTHORIZATION NO. 99 WITH HDR ENGINEERING, INC. FOR ENGINEERING SERVICES FOR WATER PLANT IMPROVEMENTS**

**WHEREAS**, the City maintains a Water Treatment Plant to provide safe drinking water; and

**WHEREAS**, improvements to the water treatment plant are necessary; and

**WHEREAS**, HDR Engineering Inc. has submitted Authorization No. 99 to complete the engineering design and specifications for Water Treatment Plant Residuals Removal and Treatment Plant improvements.

**NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF ALDERMEN OF THE CITY OF SMITHVILLE, MISSOURI:**

**THAT** the Mayor is hereby authorized to execute Authorization No. 99 with HDR Engineering, Inc. to complete the engineering design and specifications for Water Treatment Plant Improvements in an amount of \$255,730.

**PASSED AND ADOPTED** by the Board of Aldermen and **APPROVED** by the Mayor of the City of Smithville, Missouri, the 3<sup>rd</sup> day of April, 2023

\_\_\_\_\_  
Damien Boley, Mayor

ATTEST:

\_\_\_\_\_  
Linda Drummond, City Clerk

**AUTHORIZATION No. 99**  
**TO**  
**AGREEMENT BETWEEN**  
**CITY OF SMITHVILLE, MISSOURI**  
**AND**  
**HDR ENGINEERING, INC. (FORMALLY E.T. ARCHER CORPORATION)**  
**FOR**  
**PROFESSIONAL ENGINEERING SERVICES**

**WATER TREATMENT PLANT RESIDUALS REMOVAL, BERM REPAIR, AND PLANT IMPROVEMENTS 2023**

In accordance with Section 1.A. of the December 18, 2003 Agreement, ENGINEER is hereby authorized to provide design, bid, and construction services for the removal and disposal of residuals solids within the Water Treatment Plant (WTP) lagoons and Water Treatment Plant Improvements in Smithville, Missouri.

**PROJECT DESCRIPTION**

The Project consists of providing design, bid, and construction services for the following two contracts:

1. Removal and disposal of residuals solids within the water treatment plant (WTP) lagoons. After the solids have been removed from the lagoons, berm repair will occur as required by the Contract Documents.
2. Water treatment plant improvements consisting of the following items:
  - a. Removal of the existing filter media in five (5) filters and replacement with new media. The new media will be the same gradation and depths as originally installed. The City will provide HDR with details on the original gradations.
  - b. Repair of the underdrain in one of the filters.
  - c. Replacement of the filter influent mud valve in one of the filters.
  - d. Replacement of the 14-inch, 10-inch and 2-inch pneumatic actuators for each of the 5 filters with electrically motorized actuators.
  - e. Replacement of the pneumatic operated filter control panel with a push button or computer control panel that will operate the motorized actuators.
  - f. Replacement of one lime and one powder activated carbon small bag feeder.

**Assumptions**

1. Residuals Removal and Berm Repair
    - a. Comprehensive testing of residuals is not required since the treatment operations have not changed significantly since the work was performed in 2013. Two tests for each lagoon will be provided.
    - b. Will be removed no more than 645 dry tons of residuals.
    - c. The selected Contractor will obtain the rights to dispose of the solids on private land or remove the residuals to a licensed landfill. The Contractor shall maintain
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records of the amount and the location where the residuals are applied and meet the reporting requirements of the Missouri Department of Natural Resources (MDNR).

2. WTP Improvements
  - a. Ventilation and electrical improvements are not included. City indicated they upgraded to meet OSHA requirements.

## **SCOPE OF SERVICES**

Engineer will perform the following services.

- Task 1 – 4 – Residuals Removal and Berm Repair
- Task 1, 5 – 8 – WTP Improvements

### **Task 1 – Project Management**

1. Project Management activities including development of project management plan and safety plan, schedule/budget control, quality control (QC), and invoice management.
2. Perform an internal Project Approach and Resource Review (PARR) as part of HDR's QC program.

### **Task 2 – Preparation of Contract Bidding Documents - Residuals Removal and Berm Repair**

1. Conduct a site visit and meet with staff to obtain information concerning the lagoon residuals.
2. Prepare base maps showing the size, configuration, and volume of the lagoons.
3. Obtain two (2) samples from each lagoon and send samples to laboratory for testing.
4. Review laboratory testing results, perform calculations to estimate land application requirements for the various metals and residuals.
5. Review the design of the lagoon liner and provide repair options and costs.
6. Prepare Contract Documents (drawings and specifications).
7. Perform an internal QC review on the Contract Documents.
8. Meet with the City to review Contract Documents.
9. Receive solids disposal documentation from Contractor and Submit to MDNR for review and comment.
10. Prepare a final opinion of probable construction cost for residuals removal and disposal.

### **Task 3 – Bid Services - Residuals Removal and Berm Repair**

1. Prepare and submit Advertisement and Bid Package (submit electronically to City and Drexel Technologies for distribution to potential bidders).
2. Conduct a pre-bid conference with potential bidders.
3. Address questions from potential bidders and suppliers and prepare up to two (2) addenda.
4. Attend Bid Opening and prepare bid tabulation.
5. Evaluate bidders and prepare recommendation of award to the City.

6. Prepare Conformed to Bid Contract Documents and distribute four (4) copies for execution.
7. Prepare Notice of Award and Notice to Proceed to the selected bidder.

**Task 4 – Construction Services - Residuals Removal and Berm Repair**

1. Prepare and conduct a pre-construction meeting with the selected Contractor.
2. Review up to five (5) Contractor submittals.
3. Conduct up to six (6) virtual progress/coordination meetings.
4. Answer and/or issue up to two (2) RFIs, Field Orders, or Work Change Directives.
5. Review up to three (3) Contractor's Application for Payment and provide recommendation for payment to City.
6. Review and assist with submitting MDNR compliance reports as developed by the Contractor.
7. Perform Substantial Completion inspection and prepare punch list for Final Completion.
8. Perform Final Completion inspection and prepare documents for Project closeout.

**SCHEDULE - Residuals Removal and Berm Repair**

Task 1: Project Management

May 2023 through March 2024

Task 2: Preparation of Contract Bidding Documents

May 2023 through July 2023

Task 3: Bidding

August 2023 through October 2023

Task 4; Construction

October 2023 through March 2024

Scope and fee based upon 6-month construction duration. An extension beyond 6 months will result in a scope and fee amendment.

**DATA REQUEST - Residuals Removal and Berm Repair**

Chemical supplier and quantities information.

**DELIVERABLES - Residuals Removal and Berm Repair**

Two sets of lagoon residuals tests.

Contract Bidding Documents.

**Task 5 – Preparation of Contract Bidding Documents - WTP Improvements**

1. Conduct a site visit and meet with staff to obtain information concerning the filter repair and media replacement, valve replacement, and chemical feed replacement.
2. Replacement of existing pneumatic filter valve actuators with electric actuators.
3. Replacement of existing lime and PAC chemical feed package systems.
4. Prepare technical specifications and contracts for bidding.
5. Prepare drawings using the existing 1993 Water Treatment Plant Improvements Drawings by Larkin Engineers as the base drawings.
6. Perform an internal QC review on the Contract Documents.

7. Meet with City staff to review the proposed Contract Documents.
8. Modify or change the Contract Documents per the comments from the meeting with the City.
  - a. Submittal to MDNR not included to replacement of existing equipment and materials.
9. Prepare a final cost estimate for WTP Improvements.

**Task 6 – Bid Services - WTP Improvements**

1. Prepare and submit Advertisement and Bid Package (submit electronically to City and Drexel Technologies for distribution to potential bidders).
2. Conduct a pre-bid conference with potential bidders.
3. Address questions from potential bidders and suppliers and prepare up to two (2) addenda.
4. Attend Bid Opening and prepare bid tabulation.
5. Evaluate bidders and prepare recommendation of award to the City.
6. Prepare Conformed to Bid Contract Documents and distribute four (4) copies for execution.
7. Prepare Notice of Award and Notice to Proceed to the selected bidder.

**Task 7 – Construction Services – WTP Improvements**

1. Prepare and conduct a pre-construction meeting with the selected Contractor.
2. Review up to twenty (20) Contactor submittals.
3. Conduct up to eight (8) virtual progress/coordination meetings.
4. Answer and/or issue up to five (5) RFIs, Field Orders, or Work Change Directives.
5. Issue up to two (2) Change Orders.
6. Review up to eight (8) Contractor’s Application for Payment and provide recommendation for payment to City.
7. Perform up to four (4) site visits at key milestones during the Project.
  - a. PM, Process Engineer, and Process will attend four (4) milestone visits. Electrical Engineer will attend one (1) milestone visit.
8. Review Operation and Maintenance (O&M) manuals submitted by the Contractor.
9. Perform Substantial Completion inspection and prepare punch list for Final Completion.
10. Perform Final Completion inspection and prepare documents for Project closeout.
11. Prepare record drawings.

**SCHEDULE - WTP Improvements**

Task 1: Project Management

May 2023 through August 2024

Task 5: Preparation of Contract Bidding Documents

May 2023 through September 2023

Task 6: Bidding

October 2023 through November 2023

Task 7; Construction

January 2024 through August 2024

Scope and fee based upon 8-month construction duration. An extension beyond 8 months will result in a scope and fee amendment.

**DATA REQUEST- WTP Improvements**

Chemical Lime and Powder Activated Carbon supplier and quantities information.

**DELIVERABLES - WTP Improvements**

Contract Bidding Documents.

**FEE**

The CITY shall compensate ENGINEER for the services above in an amount not to exceed \$255,730.00 per Exhibit A.

This AUTHORIZATION shall be binding on the parties hereto only after it has been duly executed and approved by the CITY and ENGINEER.

IN WITNESS WHEREOF, the parties hereto have executed, or caused to be executed by their duly authorized officials, this AGREEMENT in duplicate on the respective dates indicated below.

CITY: SMITHVILLE, MISSOURI

By: \_\_\_\_\_

Damien Boley

\_\_\_\_\_  
Type or Print Name

Title Mayor

Date April 3, 2023

ENGINEER: HDR Engineering, Inc.

By: 

Cory Imhoff, P.E.

\_\_\_\_\_  
Type or Print Name

Title Sr. Vice President

Date Mar 24, 2023



EXHIBIT A

Staff Name	Saffels, R	Patrick, D	Koirala, A	Dinkel, T	Campbell, J	Fuller, T	Wiseman, D	McCann, V	Boyd, T	Steel, J	Bunch, D	Witte, N		
Rate Schedule Code	Senior Project Manager III	Engineer III	Engineer I	Cadd/GIS Technician IV	Senior Support Staff	Senior Support Staff	Senior Technical Specialist	Engineer II	Engineer IV	Engineer II	Senior Technical Specialist	Engineer IV		
Billing Rate	\$290.00	\$150.00	\$120.00	\$150.00	\$125.00	\$125.00	\$290.00	\$135.00	\$175.00	\$135.00	\$290.00	\$175.00	HDR Expenses	Total
<b>E. Task 5 - Preparation of Contract Bidding Documents - WTP Improvements</b>														
1 Site Visit/Kickoff Meeting	4	4	4										\$0	\$2,240
2 Replacement of existing pneumatic filter valve actuators with electric actuators		8	16						4	8				\$4,900
3 Replacement of existing lime and PAC chemical feed package systems		8	16						4	8				\$4,900
4 Prepare Contract Specifications	8	24	40		24		8	16	12	16				\$22,460
5 Prepare Contract Drawings	11	71	0	170	0	0	0	36	86	0				\$59,250
6 Contract Drawing QC Review		2					8				8	8	\$100	\$6,440
7 Meet with City to Review Proposed Documents	4	4	6										\$200	\$2,680
8 Modify or Change Contract Documents		2	4	16				2		2				\$3,720
9 Prepare Final Cost Estimate	2	2	4				2	2	2	4				\$3,100
<b>Subtotal Hours</b>	<b>29</b>	<b>125</b>	<b>90</b>	<b>186</b>	<b>24</b>	<b>0</b>	<b>18</b>	<b>56</b>	<b>108</b>	<b>38</b>	<b>8</b>	<b>8</b>		
<b>Subtotal Dollars</b>	<b>\$8,410</b>	<b>\$18,750</b>	<b>\$10,800</b>	<b>\$27,900</b>	<b>\$3,000</b>	<b>\$0</b>	<b>\$5,220</b>	<b>\$7,560</b>	<b>\$18,900</b>	<b>\$5,130</b>	<b>\$2,320</b>	<b>\$1,400</b>	<b>\$300</b>	<b>\$109,690</b>
<b>Total Task 5</b>														<b>\$109,690</b>
<b>F. Task 6 - Bid Services - WTP Improvements</b>														
1 Prepare Advertisement and Bid Package	1	2												\$590
2 Attend Pre-Bid Conference	4	4											\$200	\$1,960
3 Address Questions from Potential bidders and suppliers and prepare up to two (2) addenda	4	16	12	8				4	8				\$100	\$8,240
4 Attend Bid Opening and prepare bid tabulation	4	6											\$200	\$2,260
5 Evaluate bidders and prepare recommendation	1	4												\$890
6 Prepare Conformed to Bid Contract Documents		4	4	8									\$500	\$2,780
7 Prepare Notice of Award and Notice to Proceed		1	2											\$390
<b>Subtotal Hours</b>	<b>14</b>	<b>37</b>	<b>18</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>		
<b>Subtotal Dollars</b>	<b>\$4,060</b>	<b>\$5,550</b>	<b>\$2,160</b>	<b>\$2,400</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$540</b>	<b>\$1,400</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,000</b>	<b>\$17,110</b>
<b>Total Task 6</b>														<b>\$17,110</b>
<b>G. Task 7 - Construction Services - WTP Improvements</b>														
1 Conduct pre-construction meeting	4	4	4										\$200	\$2,440
2 Review up to twenty (20) Contractor submittals		16	24					12	12					\$9,000
3 Conduct monthly progress/coordination meetings (8 virtual meetings)	8	8	16						4					\$6,140
4 Address up to 5 RFIs, issue Field Orders or Work Change Directives		4	10						4					\$2,500
5 Issue up to 2 Change Orders		4	8											\$1,560
6 Review Contractor's application for payment (8 total)		8	8											\$2,160
7 Engineer site visits at key project milestones (4 total)	16	16	16						4					\$9,660
8 Review Operation and Maintenance manuals submitted by the Contractor		8	12						8					\$4,040
9 Perform substantial completion inspection and prepare punch list	4	4	4										\$200	\$2,440
10 Perform final completion inspection and project closeout documentation		4	4										\$200	\$1,280
11 Prepare record drawings		4	8	25									\$100	\$5,410
<b>Subtotal Hours</b>	<b>32</b>	<b>80</b>	<b>114</b>	<b>25</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>32</b>	<b>0</b>	<b>0</b>	<b>0</b>		
<b>Subtotal Dollars</b>	<b>\$9,280</b>	<b>\$12,000</b>	<b>\$13,680</b>	<b>\$3,750</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,620</b>	<b>\$5,600</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$700</b>	<b>\$46,630</b>
<b>Total Task 7</b>														<b>\$46,630</b>
<b>Total Hours</b>	<b>126</b>	<b>385</b>	<b>344</b>	<b>267</b>	<b>64</b>	<b>26</b>	<b>25</b>	<b>112</b>	<b>148</b>	<b>38</b>	<b>24</b>	<b>8</b>		<b>1,567</b>
<b>Total Billing Amount</b>	<b>\$36,540</b>	<b>\$57,750</b>	<b>\$41,280</b>	<b>\$40,050</b>	<b>\$8,000</b>	<b>\$3,250</b>	<b>\$7,250</b>	<b>\$15,120</b>	<b>\$25,900</b>	<b>\$5,130</b>	<b>\$6,960</b>	<b>\$1,400</b>	<b>\$7,100</b>	<b>\$255,730</b>

EXHIBIT A  
**HDR Engineering, Inc.**  
**2023 Hourly Billing Rates**

**Effective 1/1/2023 through 12/30/2023**

Enclosed are the 2023 Hourly Billable Rates for HDR Engineering, Inc. These billing rates shall be adjusted annually to reflect any salary adjustments incurred by employees. The rates listed below do not included reimbursable direct expenses as defined below.

<b>Description</b>	<b>Billing Rate/Hour</b>
Senior Technical Specialist/Senior Project Manager III	\$290
Technical Specialist/Senior Project Manager II	\$260
Senior Project Manager I	\$230
Project Manager III	\$200
Project Manager II	\$175
<u>Project Manager I</u>	<u>\$135</u>
Engineer VI	\$230
Engineer V	\$200
Engineer IV	\$175
Engineer III	\$150
Engineer II	\$135
<u>Engineer I</u>	<u>\$120</u>
Cadd/BIM Manager	\$195
Model Manager	\$185
Cadd/GIS Technician V	\$170
Cadd/GIS Technician IV	\$150
Cadd/GIS Technician III	\$130
Cadd/GIS Technician II	\$110
<u>Cadd/GIS Technician I</u>	<u>\$95</u>
Environmental/Water Quality Scientist IV	\$230
Environmental/Water Quality Scientist III	\$200
Environmental/Water Quality Scientist II	\$175
<u>Environmental/Water Quality Scientist I</u>	<u>\$155</u>
Senior Land Surveyor	\$175
Survey Technician III	\$130
Survey Technician II	\$90
<u>Survey Technician I</u>	<u>\$70</u>
Construction Manager III	\$200
Construction Manager II	\$175
Construction Manager I	\$150
Construction Inspector II	\$125
<u>Construction Inspector</u>	<u>\$110</u>
Senior Support Staff	\$125
Support Staff	\$100
Admin Assistant	\$85
 <b><u>Direct Expenses</u></b>	
Mileage	CURRENT IRS RATE
Printing	AT COST
Travel	AT COST
Subconsultants	AT COST