

13-5423

EM SUBMISSION NO.: EME0482013

PRESENTED: 11-14-13

ADOPTED: 11-18-13

BY THE EMERGENCY MANAGER:

Resolution Authorizing **Change Order #2** to the Lockwood, Andrews & Newnam Contract for the Implementation of Water Plant Operations

The City of Flint entered into a contract with Lockwood, Andrews & Newnam to study the feasibility and develop cost estimates for utilizing the Water Plant as a primary drinking water source in an amount not to exceed \$171,000.00; and

Authorization is needed to enter into change order #2 to the existing contract no. 13-046 with Lockwood, Andrews & Newnam for additional funding of \$962,800.00 for a total contract price not to exceed \$1,133,800.00. The additional services will include final design work, construction engineering and necessary regulatory submittals to operate the Water Plant off the river until the KWA water source is completed; and

These funds are made available in account in 591-536.100-801.000; and

IT RESOLVED, Appropriate City Officials are to do all things necessary to enter into change order #2 to the existing contract no. 13-046 with Lockwood, Andrews & Newnam for an additional contract price of \$962,800.00 for a total contract price not-to-exceed \$1,133,800.00. Funding will come from the account 591-536.100-801.000.

APPROVED AS TO FORM:

  
Peter M. Bade, Chief Legal Officer

APPROVED AS TO FINANCE:

  
Jerry Ambrose, Finance Director

**EM DISPOSITION:**

ENACT ✓ FAIL \_\_\_\_\_

DATED 11-18-13

  
Darnell Earley, Emergency Manager

ORDER NO. \_\_\_\_\_

DATE: \_\_\_\_\_

AGREEMENT DATE: \_\_\_\_\_

NAME OF PROJECT: Lockwood, Andrews, & Newnam Change Order #2

OWNER: City of Flint Utilities-Water Plant

CONTRACTOR: Lockwood, Andrews, & Newnam

THE FOLLOWING CHANGES ARE HEREBY MADE TO THE CONTRACT DOCUMENT:

Modify the scope of the contract to include additional services for final design work, construction engineering, and regulatory submittals to operate the Water Plant until KWA water source is completed not to exceed an amount of \$962,800.00 for a revised total of \$1,133,800.00

CHANGES TO CONTRACT PRICE

ORIGINAL CONTRACT PRICE: \$171,000.00

CURRENT CONTRACT PRICE ADJUSTED BY PREVIOUS CHANGES \$171,000.00

THE CONTRACT PRICE DUE TO THIS CHANGE WILL BE INCREASED BY \$962,800.00

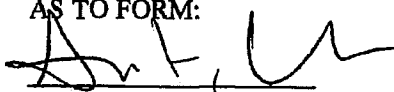
THE NEW CONTRACT PRICE DUE TO THIS CHANGE WILL BE \$1,133,800.00

APPROVED:

ACCEPTED:

AS TO FORM:

FIRM: Lockwood, Andrews, & Newnam



BY: \_\_\_\_\_

**Peter M. Bade**  
**CHIEF LEGAL OFFICER**

TITLE: \_\_\_\_\_

ADDRESS: One Oakbrook Terrace  
Oakbrook Terrace, Illinois 60181

**THE CITY OF FLINT,**  
**A MUNICIPAL CORPORATION**

BY: \_\_\_\_\_

**Darnell Earley**  
**EMERGENCY MANAGER**



Dayne Walling  
Mayor

**CITY OF FLINT, MICHIGAN**  
**Department of Finance**

City Hall, Room #203  
1101 South Saginaw Street  
Flint, MI 48502  
(810) 766-7268 / (810) 766-8675 (fax)

Darnell Earley  
Emergency Manager

Gerald Ambrose  
Finance Director

**TO:** Darnell Earley  
Emergency Manager

**FROM:** Jerry Ambrose  
Finance Director

**DATE:** November 14, 2013

**SUBJECT:** Resolution Authorizing a Change Order to the Contract with Lockwood, Andrews and Newman to provide for final design work, construction engineering and necessary regulatory submittals related to the expansion of the Water Treatment Plant

LAN was retained earlier this year with approval from the Department of Treasury at a cost of \$171,000 to study the feasibility of utilizing the Flint River as the City's source of water on a temporary basis, and to develop preliminary associated cost estimates for expanding the Water Treatment Plant.

LAN's work concluded that using the Flint River on a temporary basis only was feasible, and provided a cost estimate of between \$7 million and \$10 million, depending on the expenses associated with lime disposal. However, their work also concluded that work must begin immediately if the April 2014 deadline is to be met.

Accordingly, LAN was requested to provide us with a proposal for conducting final design work, construction engineering, and necessary regulatory submittals associated with the expansion of the Water Treatment Plant. Their proposal is for an amount not to exceed \$962,800.

We have been working with MDEQ to be assured that the course of action being pursued is consistent with their expectations. Most recently (this morning), we met with MDEQ representatives and reviewed the proposed course of action. While formal approval cannot be given until detailed working drawings are presented, the representatives indicated their conceptual approval.

Because time is of the essence, I recommend approval of the Change Order, and request that it be submitted to Treasury as soon as possible. I am attaching LAN's Scope of Work proposal, as well as a letter from Rowe Engineering stating that the Scope of Work is comprehensive and the price is reasonable.

Please contact me if you have any questions.



# ROWE PROFESSIONAL SERVICES COMPANY

*Large Firm Resources. Personal Attention.™*

November 13, 2013

Mr. Daugherty Johnson  
City of Flint – Utilities  
City Hall  
1101 S. Saginaw Street  
Flint, MI 48502

RE: WTP Proposal/Expenditures Review

Mr. Johnson:

I have completed the review of the scope of services and associated fee for the above referenced project and have found everything to be in line with industry standards for this type of project.

The proposal submitted by LAN (Lockwood, Andrews, & Newnam, Inc.) is all inclusive and the fee is within the appropriate percentage of construction (~5%) that is consistent with these types of projects.

Respectfully submitted,  
ROWE Professional Services Company

Rick A. Freeman, P.E.  
Senior Project Manager

**Proposed Scope of Upgrades to Flint WTP**

**Phase II - Segments I & II**

**1. Introduction**

The City of Flint plans to utilize their existing WTP to provide water on a continuous basis. The city plans to treat water from the Flint River until construction of the proposed KWA supply is complete and the WTP can then be used to treat water from Lake Huron. The following proposed improvements are needed to place the WTP into service next spring. These improvements will remain in service once the KWA is in service.

**2. Scope of Work**

The proposed upgrades have been categorized into Phase II – Segment I and are to be completed as soon as practical so that the WTP can be utilized to treat water from the river in the spring of 2014. Engineering services will include final design, plans, contract documents, bidding assistance. Since time is of importance, specifications and schematic drawings will also be provided for pre-procurement of long lead item equipment and are outlined within each section below. Contract administration and construction phase services are not included within the initial scope of services.

- Design Progress Meetings: Meet with City staff to provide project status updates and to discuss specific design issues and details in order to facilitate timely design decisions. Meetings will include design team personnel from each discipline as required, City operations staff and administrative staff. Five (5) design progress meetings are included.
- Prepare and update opinion of probable construction cost at for each project bidding document submittal (40%, 80% and Final Draft). Prepare final opinion of probable construction cost prior to bidding.
- Quality Assurance/Quality Control: A Quality Control Plan (QCP) will be developed and implemented specifically for this project. At each project submittal stage, the document deliverables will be checked and reviewed by experienced personnel to ensure that the design meets applicable standards and normal engineering practice.
- Deliverables:
  - 40% Bidding Documents (Drawings and Technical Specification Outline)
  - 80% Bidding Documents (Drawings and Technical Specifications)
  - Final Draft Bidding Documents (Drawings and Technical Specifications)
  - Final Bidding Documents (One printed and one electronic set of Drawings and Technical Specifications)
- Bidding Phase
  - Conduct pre-bid meeting.
  - Respond to contractor inquiries.
  - Prepare construction document addenda, as necessary.

Review bids and supporting bid documentation. Prepare bid report summarizing bids, contractor references, and contractor qualifications; make recommendation for contract award.

- **Construction Phase**

Review and respond to contractor submittals (First two reviews are included in level of effort, subsequent review cost will be paid for by contractor)

Respond to contractor's request for information

Prepare monthly payment documents

Negotiate and prepare change orders for client review and approval

Attend monthly project meetings

Provide periodic onsite technical observer (have included two weeks per month in level of effort)

Develop record documents (provide one hard and one electronic copy to owner)

**Specific Work Tasks:**

**Item 1 – Chemical Systems / Ozone**

The Michigan Department of Environmental Quality (MDEQ) requires 30 days of redundant storage of the chemical used in this treatment process. To bring the rehabilitated plant into regulatory compliance with the chemical storage requirements for primary use, additional storage facilities will need to be constructed for liquid oxygen and nitrogen.

One liquid oxygen and one liquid nitrogen storage tanks and unloading stations identical to the existing units will be installed north of the existing facilities. Details are listed as follows:

- |                            |                             |
|----------------------------|-----------------------------|
| • Liquid Oxygen            | Liquid Nitrogen             |
| Capacity – 9000 gallons    | Capacity – 540 gallons      |
| Diameter – 10 ft (maximum) | Diameter – 5.5 ft (maximum) |

Pre-procurement documents for the liquid oxygen and nitrogen tanks will be provided.

**Item 2 – Electrical**

The City of Flint Water Treatment Plant (WTP) represents a combination of administrative, process, and maintenance facilities which all require electrical power. At the completion of Phase I of the water treatment plant rehabilitation projects, much of the electrical distribution equipment such as motor control centers (MCCs), power/lighting panels, transformers, and electrical power feeders will have been upgraded. There is, however, significant additional work required to address remaining electrical equipment that has reached a point of obsolescence.

Switchgear in the sub-station was installed around 1960. It is antiquated and difficult to maintain. Very little work has been done to the station since its original installation. The plant has two 46 kV primary feeds into the sub-station. Replacement of the distribution switchgear with current technology

equipment would allow a higher degree of load protection, be serviceable by numerous sources, and have replacement parts availability. When the switchgear is replaced, the plant will have to stay in operation. Brief interruptions of power of selected plant processes could be accommodated during cut over to new equipment.

#### Proposed Substation Upgrade

- Coordinate upgrades to Consumers 46kV primary feeders to provide a single overhead 46KV primary service
- Replace the two Consumers 2.5kVA substation transformers and overhead structure with two 2.0 to 2.5 kVA 46KV pad-mounted transformers.
- Replace the City's substation switchgear in the substation building.

Pre-procurement documents for the pad mounted transformers and switchgear will be provided.

Pump Station No.4 contains the largest electrical loads in the plant. Four low service pumps and five high service pumps represent a combined total of approximately 4000 horsepower. Additional loads from HVAC, lighting, controls, and chemical feed are about 60 kVA. This represents a total load of 531 amps @ 2400 volts. The existing switchgear in Pump Station No.4 is antiquated and difficult to maintain. Current technology equipment will allow a higher degree of load protection.

#### Proposed Pump Station No. 4 Improvements

- Replace 2400V switchgear
- Provide one 15 MGD medium voltage VFD

Pre-procurement documents for the medium voltage VFD and switchgear will be provided.

As a base load facility capable of producing water at any time the Flint WTP must have the ability to deal with power outages. In order to meet these electrical need in the event of a loss of power to the plant site or the loss of one of the substation transformers a new standby diesel generator is proposed to be located adjacent to the new substation.

#### Proposed Standby Power Improvements

- One 2.0 to 2.5 mVA generators and fuel tank.

Pre-procurement documents for the generator set will be provided.

There are four 2400V to 480V transformers in Plant 2 that are antiquated and difficult to maintain. Replacement parts are no longer available and reliability is questionable.

#### Proposed Plant 2 Improvements

- Replace two 300kVA 2.4KV transformer/switchgear.
- Replace two 100kVA 2.4KV transformer/switchgear.

Pre-procurement documents for the transformers and switchgear will be provided.

### Item 3 – Mid-Point Chlorination

Mid-point chlorination facilities are proposed to increase reliability of the disinfection process and improve Ct. For this initial stage the existing chlorine equipment in Pump Station No. 4 will be used and a new chlorine solution line will be installed from Pump Station No. 4 to the filter influent channel in Plant 2. A chlorine scrubber system will be installed in Pump Station No.4 to protect against a leaking chlorine ton container.

#### Proposed Chlorine Improvements

- New chlorine solution line to filter gallery.
- Chlorine system improvements.
- Dry scrubber system.

### Item 4 – Low and High Service Pump Station No. 4

As a result of decreased demands, pumps at Pump Station No. 4 are “over-sized” and do not efficiently operate. Some of the pumps experience vibrations in the shafts and steady bearings. The existing pump station will be rehabilitated to replace “over-sized” pumps and obsolete equipment and provide needed maintenance.

#### Proposed Pump Station No. 4 Improvements

- Install one new High Service Pump (15 MGD @190 feet TH, vertically mounted pumps with 800 HP 2400/4160 V inverter duty motors, with 20 feet of shaft and steady bearings)
- Replacement of existing piping, valves, supports, and bearings
- New intermediate platforms, ladders, & stairs
- New ventilation (for exhausting heat from VFD's)
- Demolition of existing equipment to accommodate new equipment

Pre-procurement documents for the pump, motor, control valves and isolation valves will be provided.

### Item 5 – Raw Water Piping Connection

The proposed KWA raw water pipeline will connect to the existing 72” PCCP finished water supply line near Center and Pierson Roads. (East of this connection, the 72” PCCP will be utilized by GCDC-WWS for distribution of finished water in the GCDC-WWS service area.) Raw water from Lake Huron will be conveyed to the WTP site via the 72” PCCP pipeline. On the WTP site, the 72” pipeline will be tapped for a 42” pipe and for a 36” pipe to convey raw water for treatment. Connections to the existing pipe will be made at this time to avoid future plant shutdowns for connections.



Proposed Pump Station No. 4 Improvements

- 48-inch pipe connections
- 36-inch pipe connection
- 54-inch pipe connection

Pre-procurement documents for the valves and connection fittings will be provided.

**Phase II – Segment II:**

The proposed upgrade for item 6 has been categorized as Phase II – Segment II and is to be completed with the same urgency as the rest of the work so that the WTP can be utilized to treat water from the river in the spring of 2014. However, the use of the Bray Road lagoon for other disposal activities will require that this issue be addressed independently to certain extent as to isolate the problem areas while working with MDEQ to permit its use for lime sludge disposal.

**Item 6 – Softening Residuals Disposal**

Develop, evaluate, design and implement a lime residuals disposal plan to handle softening sludge for the interim period of operation using the Flint River as a water source. These options may include the use of Bray Road lagoon, construction of temporary dewatering and loading facilities, and other temporary storage options.

The use of Bray Road Lagoon will require additional survey, geotechnical and environmental testing at the site in order to assess the condition of the lime sludge in the basin and to verify the capacity of the lagoon system. Based on the findings of this evaluation, proposed improvements will be designed to accommodate the use of the facility in the interim basis while addressing some of the MDEQ concerns about the site and any unauthorized discharges into the nearby stream. Permitting for site use will be incorporated as part of the overall design improvements at the WTP and submitted to the MDEQ at the 80% design stage for their pre-permit review and comments. A final package will be submitted to the MDEQ at the 100% design stage for permit issuance and approval of work plan.

Pre-procurement documents for specific equipment may be provided as needed.

**3. Schedule**

The work included in this work authorization is anticipated to be performed in accordance with the following schedule, based on the Notice-To-Proceed (NTP) date of November 1, 2013. For the purposes of this proposal, we anticipate a 3 month design phase and 1 month bid phase. Schedule revisions may be necessary as information becomes available and work priorities change.

| <u>Project Milestone</u>             | <u>Date</u>       |
|--------------------------------------|-------------------|
| Project Kickoff Meeting              | November 6, 2013  |
| Equipment Procurement Documents      | December 6, 2013  |
| Submit 40% Bidding Documents         | December 18, 2013 |
| Submit 80% Bidding Documents         | January 10, 2014  |
| Submit Final Draft Bidding Documents | January 31, 2013  |
| Submit Final Bidding Documents       | February 7, 2014  |
| Bid Advertising                      | February 10, 2014 |
| Pre-Bid Meeting                      | February 17, 2014 |
| Bid Opening                          | TBD by City       |
| Recommendation of Contract           | TBD by City       |
| Contract Award issued by City        | TBD by City       |

**4. Compensation**

The Reimbursable Compensation method with a maximum not-to-exceed limit will be used for this contract. Labor rates shall be based on personnel classifications according to the existing rate sheet. Reimbursable expenses shall be invoiced at the actual cost times a factor of 1.0 for processing and handling. The estimated maximum not-to-exceed fee for this project is \$962,800 which includes a \$15,000 allowance for surveying and \$15,000 allowance for geotechnical services.

| <u>Description</u>                     | <u>Fee</u>        |
|--|-------------------|
| Design and Bidding Assistance          | \$ 752,800        |
| Surveying Allowance                    | \$ 15,000         |
| Geotechnical Allowance                 | \$ 15,000         |
| Construction Phase Services            | \$ 180,000        |
| <b>Total Maximum Not to Exceed Fee</b> | <b>\$ 962,800</b> |

Any other work beyond the Scope of Services herein will require a subsequent Work Authorization with prior approval from the City.