

Doc Number: **0837168**

01/22/2014 03:49 PM

OFFICIAL RECORDS

Requested By:
DC/PUBLIC WORKS

DOUGLAS COUNTY RECORDERS
Karen Ellison - Recorder

Page: 1 of 13 Fee: \$ 0.00

Bk: 0114 Pg: 3655



Deputy ar

Assessor's Parcel Number: N/A

Date: JANUARY 22, 2014

Recording Requested By:

Name: EILEEN CHURCH, PUBLIC WORKS
(NC)

Address: _____

City/State/Zip: _____

Real Property Transfer Tax: \$ N/A

CONTRACT AMENDMENT #2014.014

(Title of Document)

FILED

NO. 2014.014

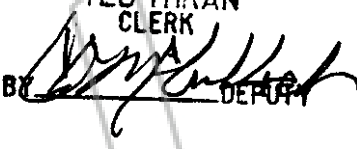
CONTRACT AMENDMENT NO. 001

2014 JAN 21 PM 12:41

A Contract between Douglas County, Nevada

and

HDR Engineering, Inc., a Nebraska Corporation
2365 Iron Point Road, Suite 300, Folsom, CA 95630

TED THIRAN
CLERK
BY  DEPUTY

for

Revised Scope of Work for the Zephyr Water Utility District UV Disinfection Project

WHEREAS, on June 21, 2012, Douglas County, a political subdivision of the State of Nevada ("County"), and HDR Engineering, Inc., an independent contractor ("Consultant") (the "Parties"), entered into a contract for engineering services in connection with the Zephyr Water Utility District UV Disinfection Project, in an amount of \$194,862 ("Contract");

WHEREAS, the County desires to modify the Contract Scope of Services and reallocate the costs to complete the Scope of Services. The following changes will be made to the Scope of Services:

1. Task 2 UV Equipment Procurement – Eliminate the following subtasks from Task 2:
 - a. Subtask 2.2 UV Equipment Bid Assistance and
 - b. Subtask 2.3 Submittal Review;
2. Task 5 Construction Engineering Services – Add the following items and subtasks to Task 5:
 - a. Review and recommend for approval contractors pay requests,
 - b. Review and recommend for approval contract change requests,
 - c. Review and respond to RFI's, and
 - d. Subtask 5.2.1 UV Equipment Submittal Review – Consultant will review the UV equipment submittals and provide comments to the Contractor.;
3. Task 6 Construction Management – Eliminate this task from the Scope of Services;
4. Task 7 Operations and Maintenance Manual – Add this task to the Scope of Services. (See, Exhibit "B"); and
5. Cost to complete the work according to the modified Scope of Services are shown in Exhibit "A."

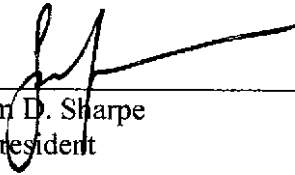
The original Scope of Services, together with these changes, are collectively known as the "Modified Work"; and

WHEREAS, the Parties mutually agree that Consultant shall perform the work on a time and material basis for a total cost not to exceed Zero Dollars (\$0.00) as consideration for the Modified Work.

NOW, THEREFORE, in consideration of the agreements herein made, the Parties mutually agree as follows:

1. The Contract sum will be increased by \$0.00, not to exceed a total contract amount of \$194,862.
2. Consultant will provide all labor and materials, as needed, to complete the Modified Work.
3. All other terms and conditions of the original Contract remain unchanged and in full effect.

HDR ENGINEERING, INC.

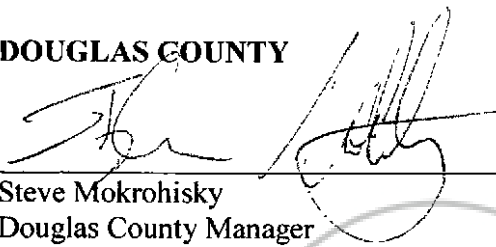


 Graham D. Sharpe
 Vice President

DEC 23, 2013

Date

DOUGLAS COUNTY



 Steve Mokrohisky
 Douglas County Manager

1-15-13

Date

**EXHIBIT A
 Cost Reallocation**

**Douglas County
 Zephyr Water Utility District UV Disinfection Project**

Task	Original Contract Amount	Modified Contract Amount per Amendment 001
1 – Project Management, Quality Assurance/Quality Control	\$25,909	\$25,909
2 – UV Equipment Procurement	\$22,591	\$12,738
3 – Design and Permitting Services	\$71,844	\$61,649
4 – Bid Assistance	\$10,040	\$3,218
5 – Construction Engineering Services	\$26,245	\$38,564
6 – Construction Management	\$38,233	\$0.00
7 – Operations and Maintenance Manual	\$0.00	\$52,784
Total	\$194,862	\$194,862

EXHIBIT B SCOPE OF SERVICES

Douglas County *Zephyr Water Utility District (ZWUD) Operations Manual*

BACKGROUND

Douglas County (County) would like to have a Plan of Operations to document and standardize operations at the Zephyr Water Utility District (ZWUD) ozone-ultraviolet (UV) water treatment plant, as required under Nevada Administrative Code (NAC) 445A.535 for all surface water treatment plants.

Numerous operational changes have occurred over the years since the original water treatment plant designed by Kennedy Jenks and constructed in 1998. In 2000, HDR Engineering, Inc., (HDR) produced a series of technical memoranda (TMs) that detailed recommendations for controls modifications to make the water treatment plant run more efficiently.

In 2010, HDR designed the ozone generator replacement project. With the addition of the new UV disinfection process in 2013-2014, documenting and standardizing the current plant operations and near future improvements is recommended. HDR anticipates completion of the Operations Manual in 2014, after completion of the UV Disinfection Project.

SCOPE OF WORK

Task 1 - Project Management

This task includes the management activities required for on-time, on-budget completion, and to address the County's concerns. CONSULTANT will prepare invoices and progress reports on a monthly basis. The monthly progress reports will summarize budget and schedule status in measurable terms. Other activities include scheduling of staff and coordinating the quality assurance effort.

Deliverables: Monthly invoices and progress reports.

Task 2 - Kick-off Meeting and Site Visits

CONSULTANT will conduct a kick-off meeting with County staff to understand and document key information to be included in the Operations Manual.

In addition, CONSULTANT has assumed two trips or meetings with County engineering and/or operations staff to review the plant operation and controls. It is assumed one site visit will be conducted following the kick-off meeting.

Deliverables: Meeting agenda and minutes.

Task 3 - Draft Operations Manual

CONSULTANT will obtain the latest programming descriptions from Tesco as part of the UV disinfection project. These descriptions and setpoints will be incorporated into the Operations Manual. The 2000 HDR TMs will be used as a reference for the water treatment plant operations and control descriptions. CONSULTANT will evaluate the PLC setpoints for ozone for additional streamlining and simplification of the plant operation, without affecting plant reliability. Any setpoints identified will be listed in a separate TM. This scope of work does not include reprogramming of the PLC to remove or modify these setpoints.

CONSULTANT will prepare a draft Operations Manual for County review. The following is a preliminary table of contents for the Operations Manual:

TABLE OF CONTENTS

- List of Figures
- List of Tables
- List of Equations

GLOSSARY OF TERMS

ABBREVIATIONS

CONVERSION FACTORS

1 INTRODUCTION

- 1.1 PURPOSE AND SCOPE
- 1.2 REFERENCE MATERIALS

2 SYSTEM OVERVIEW

- 2.1 SDWA REQUIREMENTS
 - 2.1.1 *Surface Water Treatment Rule (SWTR)*
 - 2.1.1.1 *Giardia Cyst and Virus Removal Requirements*

- 2.1.1.2 CT Requirements for *Giardia* Cyst and Virus Inactivation
- 2.1.2 *Long Term 2 Enhanced Surface Water Treatment Rule*
 - 2.1.2.1 *Cryptosporidium* Oocyst Disinfection
 - 2.1.2.2 Water Quality

2.2 TREATMENT FACILITIES

- 2.2.1 *Ozone Disinfection System*
 - 2.2.1.1 Ozone Contactors
 - 2.2.1.2 Ozone Quench Chamber
 - 2.2.1.3 Ozone Generators
- 2.2.2 *UV Disinfection System*
 - 2.2.2.1 UV Reactors
 - 2.2.2.2 UVT Monitor
- 2.2.3 *Pumping Systems*
 - 2.2.3.1 Lake Intake Pump Station
 - 2.2.3.2 High Service Pump Station
- 2.2.4 *Design Summary*
 - 2.2.4.1 Major Design Criteria
- 2.2.5 *Monitoring and Control System*
 - 2.2.5.1 General
 - 2.2.5.2 Plant Process Control
 - 2.2.5.3 Alarm Monitoring
 - 2.2.5.4 Standby Generator
 - 2.2.5.5 Plant Management

3 OZONE DISINFECTION

3.1 CT REQUIRED

- 3.1.1 *Ozone Dose*
 - 3.1.1.1 Dose Versus Residual
- 3.1.2 *Installed Facilities: Ozone Generator*
- 3.1.3 *Contact Time*
 - 3.1.3.1 Bubble Contactors
 - 3.1.3.2 Effective Contact Time, T_{10}
 - 3.1.3.3 Ozone Quenching
 - 3.1.3.4 Determining CT
 - 3.1.3.5 Selecting Dose Requirements
 - 3.1.3.6 Quench Chemical Dose Required

4 OZONE GENERATION EQUIPMENT

- 4.1 BACKGROUND
- 4.2 OZONE TOXICITY
- 4.3 OZONE GENERATORS
- 4.4 OZONE DISSOLUTION EQUIPMENT

- 4.4.1 *Theory*

- 4.5 OFF-GAS DESTRUCT UNIT
- 4.6 MONITORING

- 4.6.1 *Ambient Room Leak Detection*
 - 4.6.2 *High Concentration Ozone*
 - 4.6.3 *Dissolved Ozone Concentration*
 - 4.6.4 *Off Gas Monitoring*

5 LOX STORAGE

- 5.1 FACILITY DESCRIPTION

- 5.2 LIQUID OXYGEN (LOX) STORAGE

- 5.2.1 *Safety Precautions for Liquid Oxygen*
 - 5.2.2 *Cryogenic Considerations*
 - 5.2.3 *Replacement Parts*
 - 5.2.4 *Miscellaneous Safety Practices*
 - 5.2.5 *Liquid Oxygen Contact with Eyes or Exposed Skin*
 - 5.2.6 *Observe Safety Codes when Locating Oxygen Equipment*
 - 5.2.7 *General Safety Precautions*
 - 5.2.8 *Handling of Gaseous and Liquid Oxygen and Associated Hazards*
 - 5.2.9 *Basic Facts in Handling Liquid Oxygen*
 - 5.2.10 *Cleaning for Oxygen Service*
 - 5.2.11 *General Requirements of Cleaning Process*
 - 5.2.12 *Cleaning Agents*
 - 5.2.12.1 *Water Soluble Agents*
 - 5.2.12.2 *Solvents*

6 OZONE CONTACTOR

- 6.1 PROCESS OVERVIEW
- 6.2 EDUCTOR VAULT
 - 6.2.1 *Ozone Eductors*

7 UV DISINFECTION

- 7.1 PURPOSE
- 7.2 DESCRIPTION
- 7.3 EQUIPMENT

- 7.4 PROCESS CONTROL
- 7.5 PROCESS TROUBLESHOOTING
- 7.5 MAINTENANCE

8 SYSTEM OPERATION

- 8.1 GENERAL
- 8.2 DESIGN CRITERIA
- 8.3 OPERATING MODES
 - 8.3.1 *General*
 - 8.3.1.1 Preparation for Start-up
 - 8.3.2 *Local Operation*
 - 8.3.3 *Remote (Automatic) Operation*
 - 8.3.3.1 Control Panel 1 (Tesco PLC)
 - 8.3.3.1.1 Set Points and Descriptions
 - 8.3.3.2 Standby Mode
 - 8.3.3.3 Automatic Start-up
 - 8.3.3.4 SCADA Control/Monitoring
 - 8.3.3.5 Ozone Leak Detection
 - 8.3.3.6 Automatic Shutdown
 - 8.3.3.7 Troubleshooting
 - 8.3.4 *Preventative Maintenance*

9 OFF-GAS DESTRUCT SYSTEM

- 9.1 PROCESS OVERVIEW
- 9.2 MAINTENANCE
- 9.3 SHUTDOWN

10 CHEMICAL FEED SYSTEM

- 10.1 SODIUM BISULFITE
 - 10.1.1 *Design Criteria*
 - 10.1.2 *Metering Pumping*
 - 10.1.3 *Storage*
 - 10.1.4 *Control*
 - 10.1.4.1 Automatic Switch-over Panel
 - 10.1.4.2 Dilution Water Flow Control
 - 10.1.5 *Feed Point*
 - 10.1.6 *Troubleshooting*
- 10.2 SODIUM HYPOCHLORITE FEED SYSTEM

- 10.2.1 *Chemistry of Reactions*
- 10.2.2 *Design Criteria*
- 10.2.3 *Metering Pumps*
- 10.2.4 *Storage*
- 10.2.5 *Control*
 - 10.2.5.1 *Automatic Switch-over Panel*
 - 10.2.5.2 *Dilution Water Flow Control*
- 10.2.6 *Feed Point*
- 10.3 **SYSTEMATIC OPERATING PROCEDURES**
 - 10.3.1 *Startup*
 - 10.3.2 *Routine Operation*
 - 10.3.3 *Abnormal Operations*
 - 10.3.4 *Emergency Shutdown*
 - 10.3.5 *Maintenance*

11 COMPLIANCE MONITORING, RECORDING, AND REPORTING

- 11.1 **VALIDATED UV OPERATING PARAMETERS**
- 11.2 **SAMPLING LOCATIONS**
- 11.3 **COMPLIANCE REPORTING**
- 11.4 **GENERAL RECORDS KEEPING**

12 UTILITIES

- 12.1 **PURPOSE AND INTENT**
- 12.2 **DESIGN CRITERIA**
 - 12.2.1 *Electrical System*
 - 12.2.2 *Backup Engine-Generator*
 - 12.2.2.1 *Backup Engine-Generator*
 - 12.2.2.2 *Transfer Switch*
 - 12.2.3 *Potable Water System*
 - 12.2.4 *Fire Suppression System*
 - 12.2.5 *Heating and Ventilating*
 - 12.2.6 *Plant Drain System*
- 12.3 **ABNORMAL OPERATION**
 - 12.3.1 *Electrical System*
 - 12.3.2 *Backup Engine-Generator*
- 12.4 **MAINTENANCE**
 - 12.4.1 *Inspection and Adjustment*
 - 12.4.2 *Preventative Maintenance*

12.4.2.1 Lubrication Schedule

13 EMERGENCY OPERATING AND RESPONSE PROGRAM

13.1 PURPOSE AND INTENT

13.2 GENERAL RESPONSE PATTERN

13.2.1 *Early Warning Report*

13.2.2 *Investigate*

13.2.3 *Assess Severity of the Situation*

13.2.4 *Determine Response Course of Action and Implement Appropriate Plan*

13.2.5 *Notification*

13.3 EMERGENCY READINESS PROGRAM

13.3.1 *Mechanically Related Emergencies*

13.3.2 *Process Failures*

13.3.3 *Natural and "Acts of God" Type Emergencies*

13.3.4 *Specific Emergencies*

13.3.4.1 UV Lamp Breakage

13.3.4.2 Line Power Loss / power failure

13.3.4.3 Contamination of Potable Water

13.3.4.4 Equipment and Process Failures

13.3.4.5 Failure of Emergency Warning Equipment

13.3.4.6 Spills of Oil, Toxic, or Hazardous Materials

13.3.4.7 Personnel Injury

13.3.4.8 Hypochlorite Spill

13.4 EQUIPMENT VULNERABILITY ANALYSIS

13.4.1 *General*

13.4.1.1 Hypochlorite Feed Pump

13.4.1.2 High Lift Pumps

13.4.1.3 Lake Pumps

13.4.1.4 LOX Storage Tank

13.4.1.5 Contactor Level Sensor

13.4.1.6 Ozone Generators

13.4.1.7 UV Lamps/Reactors

13.4.1.8 UVT Monitor

14 SAFETY

14.1 GENERAL

14.2 SAFETY PROGRAM

14.2.1 *Safety Procedures*

- 14.2.2 Safety Meetings
- 14.2.3 Safety Attitudes
- 14.2.4 Personal Habits
- 14.2.5 Safety Clothing
- 14.2.6 Safety Equipment
- 14.2.7 Safety in Specific Areas and Disciplines
 - 14.2.7.1 Gases
 - 14.2.7.2 Specific Gases
 - 14.2.7.3 Chemicals
 - 14.2.7.4 Electrical
 - 14.2.7.5 Engine-Driven Equipment
 - 14.2.7.6 Pipes, Covered Conduits, and Covered Sumps
 - 14.2.7.7 Open Conduits, Pump Sumps, and Manholes
 - 14.2.7.8 Hypochlorite Feed Equipment
 - 14.2.7.9 Tools and Equipment
 - 14.2.7.10 UV Equipment
- 14.3 FIRST AID
- 14.3 ACCIDENT REPORTING

The table of contents shown above is for general information only, and sections may be revised based on feedback from the County.

Deliverables: PDF files of draft Operations Manual for review and comment by County staff.

Task 4 - Review Meeting

CONSULTANT will meet with County comments on the draft Operations Manual.

Deliverables: Meeting agenda and minutes.

Task 5 - Permitting Services

HDR will revise the draft Operational Manual in accordance to County comments, and will provide PDF of the updated draft Operations Manual for submission to the Nevada Division of Environmental Protection (NDEP) Bureau of Safe Drinking Water for review.

HDR will respond to NDEP Bureau of Safe Drinking Water review comments on the draft Operations Manual. For the purpose of this scope, HDR assumes two rounds of review comments from NDEP.

Deliverables: PDF files of updated draft Operations Manual for review and comment by NDEP staff.

Task 6 - Final Operations Manual

CONSULTANT will provide a final Operations Manual after incorporation of NDEP comments.

Deliverables: PDF and five bound copies of the final Operations Manual.

ITEMS TO BE FURNISHED BY THE COUNTY

- Access to the treatment plant facilities, as requested by HDR staff.
- Operation records and plant data, as requested by HDR staff.

Douglas County State of Nevada

CERTIFIED COPY

I certify that the document to which this certificate is attached is a full and correct copy of the original record on file in the Clerk-Treasurer's Office on this

22nd day of Jan, 2014
By [Signature] Deputy