184192

AMENDMENT NO. 3

CONTRACT NO. 38083

FOR

CBWTP Wet Weather Screening Facility

Pursuant to Ordinance No. 181841

This Contract was made and entered by and between CH2M HILL, hereinafter called Contractor, and the City of Portland, a municipal corporation of the State of Oregon, by and through its duly authorized representatives, hereinafter called City.

1. Additional work is necessary as described in the Exhibit A attached.

2. Additional compensation is necessary and shall not exceed $178,302.

3. The contract expiration date shall be extended to 12/31/2011.

All other terms and conditions shall remain unchanged and in full force and effect.

This contract amendment may be signed in two (2) or more counterparts, each of which shall be deemed an original, and which, when taken together, shall constitute one and the same contract amendment.

The parties agree the City and Contractor may conduct this transaction by electronic means, including the use of electronic signatures.

CONTRACTOR SIGNATURE:

CH2M HILL

By: _____ Date: 9/10/2010

Name: David T Mustonen

Title: Designated Manager

184192

Contract No. 38083 Amendment/Change Order No. 3

Contract Title: CBWTP Wet Weather Screening Facility

CITY OF PORTLAND SIGNATURES:

By: _____ Date: _____
Purchasing Agent

By: _____ Date: _____
Elected Official

Approved:

By: _____ Date: _____
Office of City Auditor

Approved as to Form:

By: APPROVED AS TO FORM _____ Date: 9/16/10
Office of City Attorney
CITY ATTORNEY

EXHIBIT A

CONTRACT No. 38083

Amendment No. 3

WWSF Amendment 3 for Additional Software Services

This amendment to the Wet Weather Screening Facility Scope of Work is for additional software professional services requested by the City BES staff. The major work elements are:

Task A. Chemically Enhanced Primary Treatment (CEPT)

Task B. Convert WWCL from Concept to Unity Pro

Task C. Integrate WWCL with WWSF/CEPT

Task D. Convert SEDI from Concept to Unity Pro

Task E. Integrate SEDI with WWSF/CEPT/WWCL

Task F. Setpoint Save

Task G. Runtimes from Historian ON status

Task H. Configuration Offline Database (COD) updates

Task A -- Chemically Enhanced Primary Treatment (CEPT)

The CEPT process is currently being designed by Brown & Caldwell. Functionality for this process will be programmed into the new Wet Weather Screenings Facility (WWSF) PLC processor. The overall objectives of this task are to provide programming guidance for BES AST staff, software configuration files from COD, testing reports, and some startup support.

Deliverables:

- Integrate CEPT into the balance of the process; detailed SCS design
- Program Flow Diagram, for use by BES staff in program development.
- Suggested layout for IFIX screens, alarm definition, operator notification, and verification
- COD iFIX and PLC configuration files; COD database at project completion.
- Detailed testing plan/reports
- On-site testing support

Assumptions:

- Process and loop narratives (by others) will be complete and convey software requirements.
- Loop list, I/O list, and Instrument list available in electronic format
- PLC and HMI software development by BES AST staff.
- Based on 90% Brown & Caldwell design
- Program Flow Diagrams will be developed for more complex portions of code or where new DFBs used.
- Up to 2 trips to the plant will be provided during PLC and HMI development phases
- Up to 1 trips to the plant will be provided to support ORT1 testing
- Up to 5 trips to the plant will be provided during ORT2 and PAT testing

Task B -- Convert WWCL from Concept to Unity Pro

The existing Wet Weather Clarifier (WWCL) PLC program is currently in an older version of PLC programming software (Concept). The plant standard is currently Unity Pro. In coordination with BES programming staff, this task will facilitate converting the program from Concept to Unity Pro.

Deliverables:

- Converted software for BES to implement and test
- Detailed testing plan/report
- On-site testing support of BES staff

Assumptions:

- All EFB and DFBs used in existing application will convert automatically
- BES to provide any necessary hardware, and a software license
- COD database is up to date, fully in sync with iFIX and Concept
- Up to 2 days of on-site testing support will be provided

Task C -- Integrate WWCL with WWSF/CEPT

The City recognizes there are benefits to combining PLC programs of closely related processes, such as with the Wet Weather Clarifiers (WWCL), Wet Weather Screenings Facility (WWSF), and Chemically Enhanced Primary Treatment (CEPT), as well as Secondary Diversion (SEDI) in a later task. The overall objective of this task is to facilitate merging the WWCL, WWSF, and CEPT processes into one PLC program running under a redundant set of PLC processors.

Memory allocation and usage will be reviewed, COD point attribute ranges will be reviewed and adjusted if necessary, coordination with iFIX and PLC programmer will take place, and COD databases will be merged. Some on-site support will be provided.

Deliverables:

- An integrated system COD file incorporating WWCL, WWSF, and CEPT.
- Detailed testing plan/report
- On-site testing support of City staff

Assumptions:

- Hardware and materials will be supplied by the City. Field work to be performed by the City.
- Standard memory mapping scheme will apply
- Existing COD databases are up to date, fully in sync with iFIX and Concept
- Existing WWCL I/O mapping will remain the same (WWSF, CEPT, and SEDI will adjust accordingly)
- PLC and HMI software development by City AST staff.
- No PLC logic changes will be required
- Up to 3 days of on-site testing support will be provided.

Task D -- Convert SEDI from Concept to Unity Pro

The existing Secondary Diversion (SEDI) PLC program is currently in an older version of PLC programming software (Concept). The plant standard is currently Unity Pro. In coordination with City programming staff, this task will facilitate converting the program from Concept to Unity Pro.

Deliverables:

- Converted software for City to implement and test
- Detailed testing plan/report
- On-site testing support of City staff

Assumptions:

- All EFB and DFBs used in existing application will convert automatically
- City to provide any necessary hardware, and a software license
- COD database is up to date, fully in sync with iFIX and Concept

- Up to 1 day of on-site testing support will be provided

Task E -- Integrate SEDI with WWSF/CEPT/WWCL

The City recognizes there are benefits to combining PLC programs of closely related processes. The existing Secondary Diversion (SEDI) process also is closely related to the WWSF, CEPT, and WWCL processes. The overall objective of this task is to facilitate merging the SEDI, WWCL, WWSF, and CEPT processes into one PLC program running under a redundant set of PLC processors.

Memory allocation and usage will be reviewed, COD point attribute ranges will be reviewed and adjusted if necessary, coordination with iFIX and PLC programmer will take place, and COD databases will be merged. Some on-site support will be provided.

Deliverables:

- An integrated system COD file incorporating SEDI, WWCL, WWSF, and CEPT.
- Detailed testing plan/report
- On-site testing support of City staff

Assumptions:

- Hardware and materials will be supplied by the City. Field work to be performed by the City.
- Standard mapping scheme will apply
- Existing COD databases are up to date, fully in sync with iFIX and Concept
- Existing WWCL I/O mapping will remain the same (WWSF, CEPT, and SEDI will adjust accordingly)
- PLC and HMI software development by City AST staff.
- No PLC logic changes will be required
- Up to 2 days of on-site testing support will be provided.

Task F -- Setpoint Save

A significant amount of effort goes into determining proper set points and tuning constants during the testing and commissioning phase of any project. While the COD database maintains tagname records and many of the properties of each tagname, it does not maintain the real-time values, which can be modified through the SCADA system at any time by O&M staff. Additionally, those values can be lost if the PLC program is not backed-up regularly (time consuming) and the processor fails. Parameters can also be lost if a program is not downloaded correctly.

A utility to automatically capture those setpoints and tuning parameters on a regular time interval, or on demand, and store them in a database, with the ability to restore those parameters on demand, would be valuable insurance against losing these parameters and simplify the process of restoring them. The primary objective of this task is to provide such a utility within the BES SCADA system environment.

A workshop will be held with plant staff to discuss utility functionality, how to best apply functionality to plant, discuss server needs, etc. A technical memorandum will be provided summarizing the decisions made. Following development and installation of the utility, some training will be provided.

Deliverables:

- Technical memo summarizing workshop decisions
- An install and initially configured application
- Training on use and configuration of application

Assumptions:

- COD utility and/or updated data structure in place to allow configuration of which points to save (see later task)
- Up to 4 days of on-site configuration, testing, and training support will be provided.

Task G -- Runtimes from Historian ON status

Equipment runtimes are valuable in the operation and preventative maintenance in any plant. However, collecting those runtimes can be a very time consuming process. Often maintenance staff are physically visiting the various starters where runtime meters are installed, manually writing down the hours, and transferring those hours to a computerized maintenance management system (CMMS) which can then finally determine when to issue preventative maintenance work orders.

One step towards streamlining that process and reducing time spent collecting data is to leverage the SCADA system historical data for determining runtimes. By logging the ON status of a piece of equipment monitored by the SCADA system, scripts can be written to query the historian and then derive the runtime from those discrete ON/OFF status events. In the future that runtime data could be utilized to automatically seed the CMMS system.

A workshop will be held with City staff to discuss this and other hardware approaches to collecting runtime data. A technical memorandum will be provided summarizing the meeting and the decisions made. If still in line with City needs, CH2M HILL staff will then proceed to develop the code necessary to accomplish the functionality described above, develop a couple reports that maintenance staff can directly utilize, and install the application in the BES SCADA system environment. Some addition support following initial installation and configuration will also be provided.

Deliverables:

- Technical memorandum summarizing workshop
- SQL code and reports
- Training on use and configuration of application

Assumptions:

- Two configurable runtime reports will be developed
- Up to 4 days of on-site configuration, testing, and training support will be provided.
- Does not include CMMS system configuration to automatically leverage runtime data.

Task H -- Configuration Offline Database (COD) Updates

City BES AST and Engineering staff have been using the same version of COD for several years, running under MS Access 2003. Since that version went into use, other customized versions of COD have been developed and used on other client projects which contain features City staff have expressed interest in. For example, reverse engineering from iFIX, and additional testing/commissioning features. However those versions cannot be used directly in the BES environment. For example, certain newer features only reside in a MS Access '97 version of COD (to meet the licensing need of a particular client), or some BES specific features would be lost or modified by overwriting the current application.

Additionally, support for exporting directly to Unity Pro PLC programming software has been requested by City staff, but will need to be developed as it is not available in any version.

The primary objectives of this task are to bring the features used by other clients into the BES environment, and develop a new Unity Pro export feature. Additionally, the various project specific COD data databases in use at the plant will also need to be updated to support the newer functionality. Training on the new features will also be provided.

Deliverables:

- New versions of COD containing iFIX reverse engineering, additional testing/commissioning features, and support for Unity Pro.
- Updated COD data databases
- Updated plant master COD database structure, if necessary
- Updated COD Management tool (keeps master COD updated from individual databases to support right-click, etc.)
- Training

Assumptions:

- Existing plant COD data database are all at same version

- Up to eight(8) COD data databases will be modified to accommodate the latest functionality
- Up to ½ day training course on new features
- Up to 5 days on-site will be provided

City of Portland BES
CEPT & Miscellaneous
I&C Software Services

CH2M Hill Proposal Cost Schedule

		Labor Summary											
		Project Manager	Senior I&C Consultant	I&C Engr	COD / VB programmer				Task Total	Labor Total	Expenses	Task Total (Labor+Expenses)	Days on site to meet baseline need
Task	Description	Jason Krumsick	Jim Black	Craig Rawie	Zhenj Jie (ZJ)	n/a	BES Mark M	BES Loren Stover					
A	CEPT Software Services	6	8	276	0	0	0	0	290	$48,636	$200	$48,836	10
B	Convert WWCL to Unity	2	0	100	0	0	0	0	102	$16,878	$100	$16,978	4
C	Integrate WWCL with WWSF/CEPT	2	0	104	0	0	0	0	106	$17,543	$100	$17,643	5
D	Convert SEDI to Unity	2	0	92	0	0	0	0	94	$15,547	$100	$15,647	3
E	Integrate SEDI with WWSF/CEPT	2	0	88	0	0	0	0	90	$14,881	$100	$14,981	4
F	Setpoint Save	1	0	68	8	0	0	0	77	$12,353	$100	$12,453	6
G	Runtimes from Historian ON status	1	0	64	16	0	0	0	81	$12,607	$100	$12,707	6
H	Update COD version plant-wide and train	2	0	78	60	0	0	0	140	$20,113	$100	$20,213	5
z	Optional Programming Tasks (12.5% of Task A-H labor hours)	3	1	109	0	0	0	0	113	$18,744	$100	$18,844	11
									0			$0	
	Labor Hour Subtotal:	21	9	979	84	0	0	0	1093				
								TOTALS:		$177,302	$1,000	$178,302	

EXHIBIT A