

TECHNICAL COMMITTEE MEETING MINUTES

Wednesday, January 28, 2015

2nd Floor Conference Room

Plant Site, 111 Harbor View Avenue

5:30 p.m.

Daniel Capano	Chairman, Technical Committee
Gerald Bosak Jr.	Committee Member (Absent)
Edward Kelly	Committee Member
William Brink	Executive Director, WPCA
William Degnan	Plant Supervisor, WPCA (Absent)
Prakash Chakravarti	Supervising Engineer, WPCA
Catherine Mallon	ARCADIS-US
Edward Kowalski	ARCADIS-US
Ryan Kowalski	ARCADIS-US

1. Call to Order and Roll Call

D Capano called the meeting to order at 4:35 pm.

2. Approval of January 14, 2015 Technical Committee Meeting Minutes

E Kelly made the motion to approve the minutes of the meeting for Jan 14, 2015. Seconded by D Capano; the motion carried 2-0-0.

3. Presentation by ARCADIS on the SCADA needs assessment and approval of Contract Amendment No.1 – Phase II -- Design Phase Task 5 for Upgrade of SCADA System.

R Kowalski of ARCADIS did a PowerPoint presentation for the technical committee on the SCADA needs assessment they have done as of this day. He gave a brief summary on their approach to the just completed needs assessment and the life cycle analysis. He outlined their review and selection process for procurement of hardware and software with the pros & cons of the SCADA systems on the market. R Kowalski also presented their recommendations based on ARCADIS's professional expertise and experience. He provided the committee with the scope of services and the fees for the Design Phase of the project including SCADA Standards Development.

Following the presentation Ed Kelly motioned to recommend approving ARCADIS's scope of services and fees and amendment to their contract for the design phase of upgrading the SCADA system. (The PowerPoint presentation and the scope of services and fee proposal is being made part of this meeting minutes)

4. Update on projects

P Chakravarti provided the following update to the committee:

a. Ductwork in the solids processing building.

The bid opening for the ductwork modifications was postponed by one day to Jan 29, 2015.

b. Infiltration and Inflow (I/I) Analyses

CDM Smith will begin installing flow meters beginning Feb 2, 2015. They will

be installing approximately 40 meters on the basis of roughly 30,000 linear feet of sewer per meter.

c. Wedgemere sewer project.

The design for Wedgemere sewer is about 80% complete. Easements for installing the sewers on private properties have to be acquired.

d. Raw Sewage Pump Station pipe supports replacement

Nutmeg Utilities have completed six of the concrete supports and two of the steel supports. They have had extra manpower to speed up the job but the weather related delays has been an issue.

5. Old Business

W Brink mentioned that Jeff Pinnette of Wright-Pierce was looking into getting a price quote for a smaller recirculation pump for the primary odor control scrubbers instead of a VFD controls for the existing motor. He also mentioned that the carbon canisters have been procured and are being installed at the septage receiving station and the sludge trailers.

6. New Business

D Capano stated that the article he authored on the Stamford WPCF based wireless proof of concept will be published as the cover story in the February issue of Control Engineering Magazine, a trade publication dealing with industrial automation.

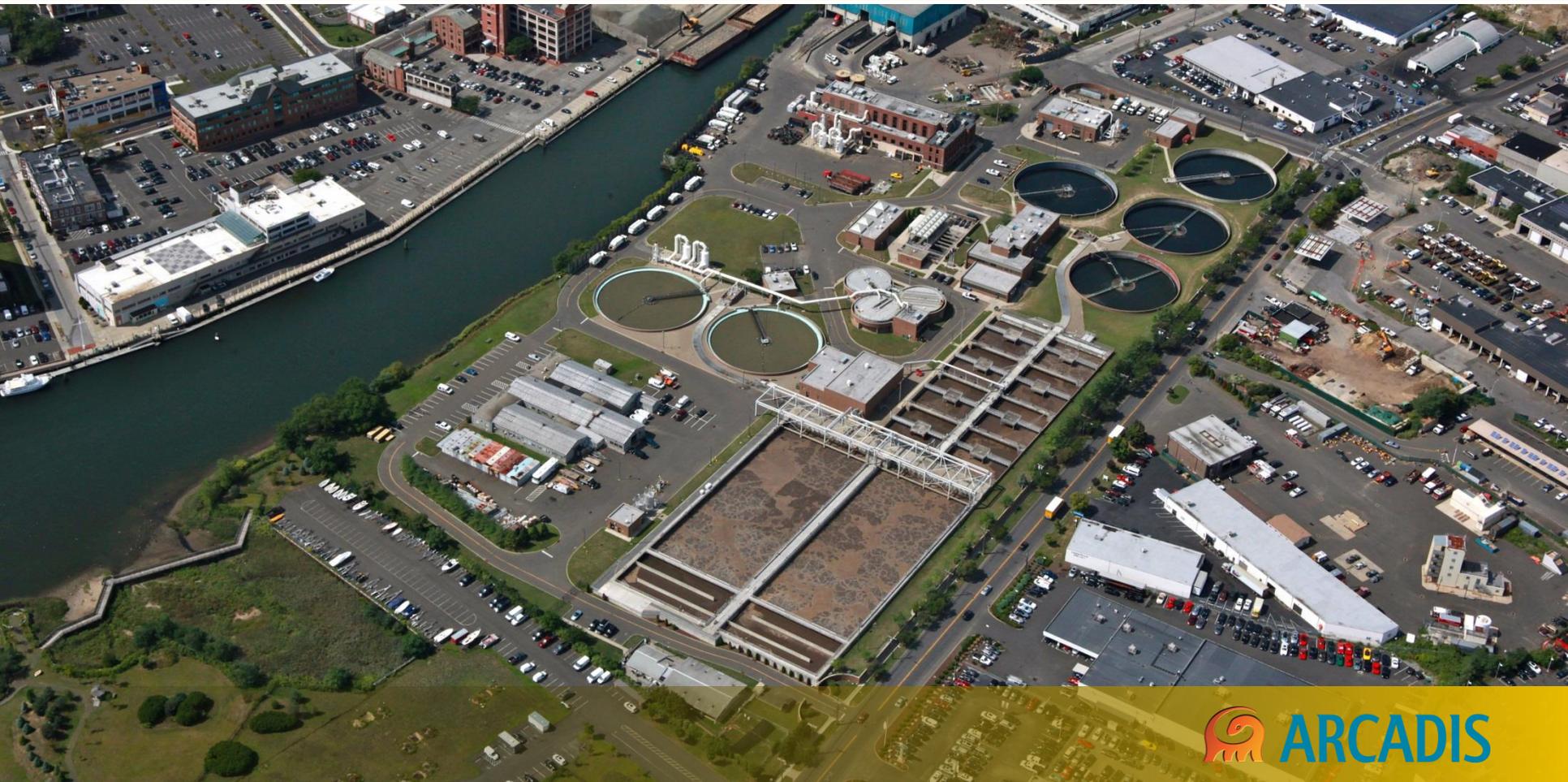
There being no other issues to discuss Ed Kelly made a motion to adjourn the meeting, seconded by D Capano; motion carried 2-0-0. The meeting was adjourned at 5:55 pm.



January 28, 2015

SWPCA Task 5: Upgrade of SCADA System

Technical Committee Meeting



Presentation Agenda

Introduction

Phase I Approach

Needs Assessment

Life Cycle Analysis

Next Steps

Phase II Scope and Fee

Questions

Phase I Approach

Needs Assessment

- Collection / Documentation
- Categorization
- Prioritization

Life Cycle Analysis

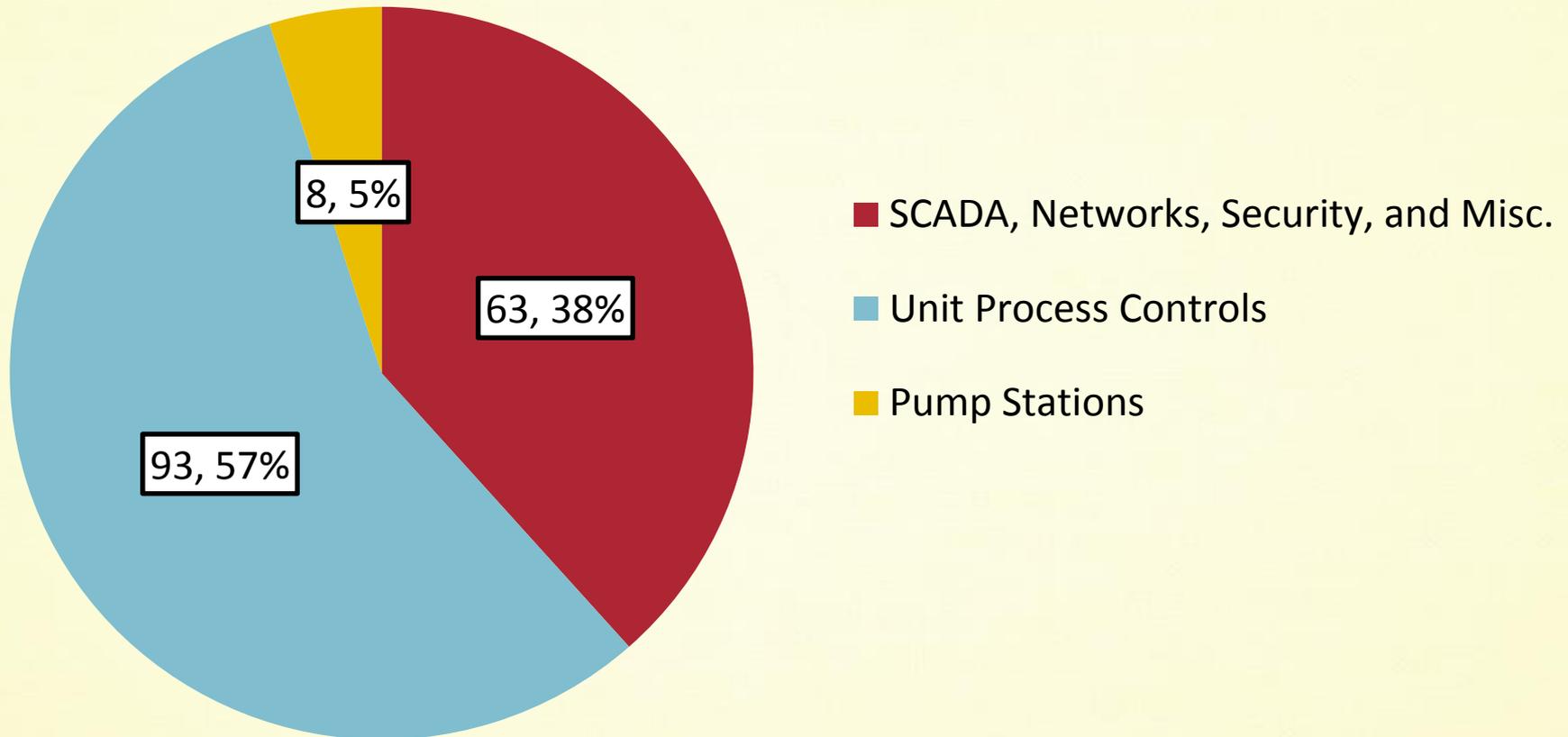
- Platform Identification and Comparison
- Future Proofing for SWPCA needs
- Cost / Schedule
- Recommendations

Options Review

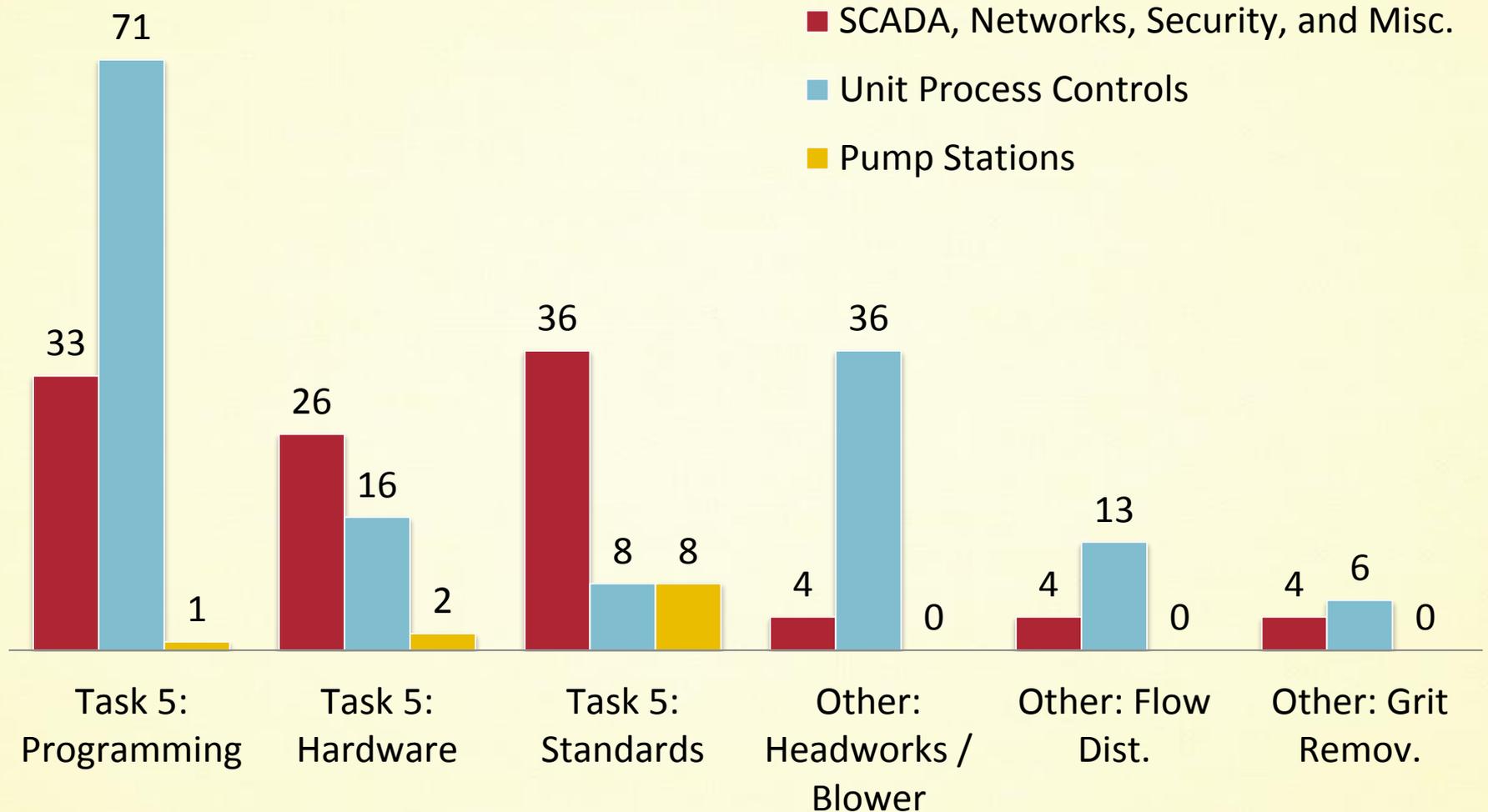
- PLC Hardware and HMI/Historian Software Selection
- Procurement



Needs Assessment: Categorization of Needs

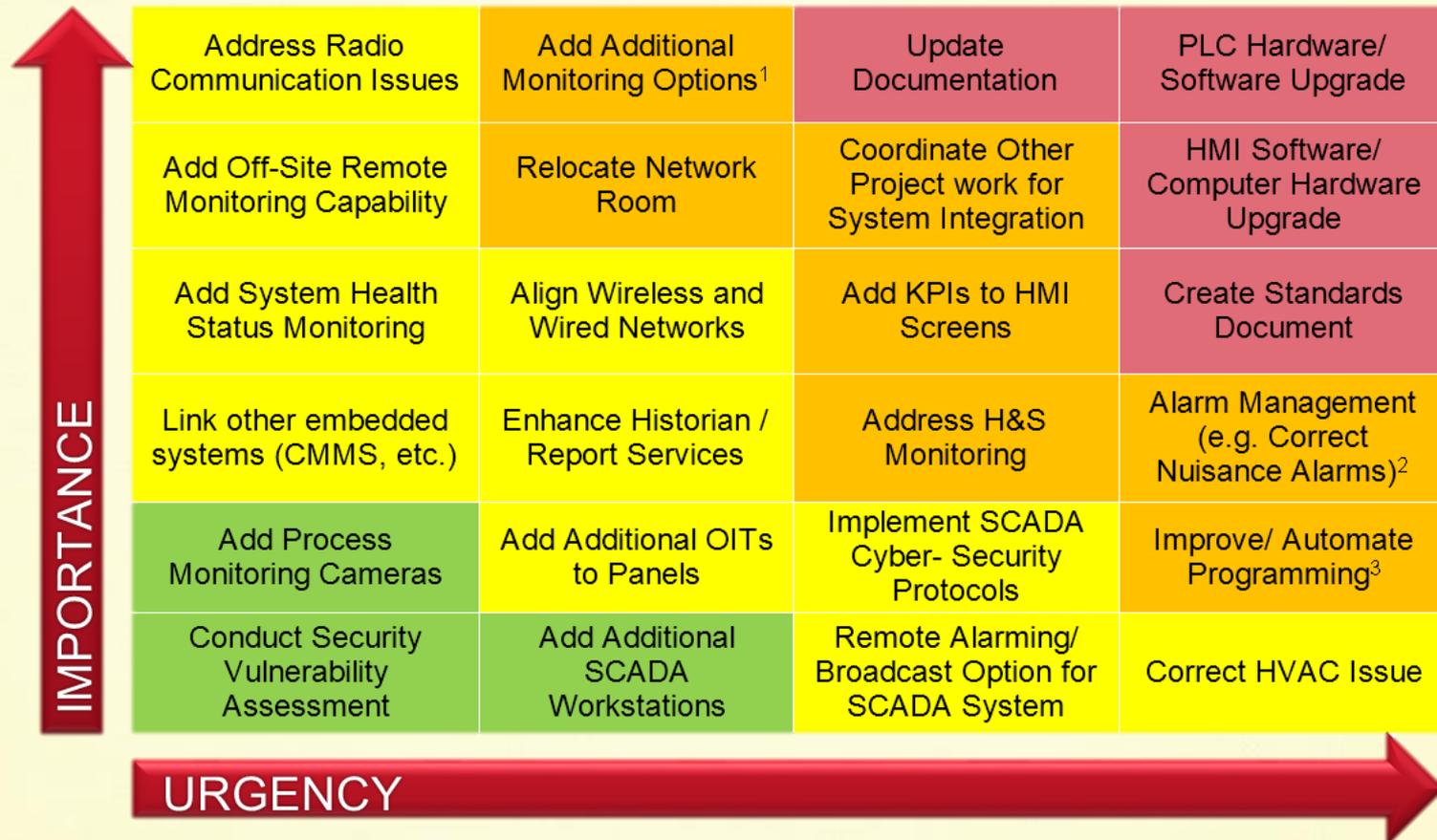


Needs Assessment: Further Breakdown



Needs Assessment: Prioritization

- SCADA Needs “Heat Map”



Needs Assessment: Summary

Key Items Identified:

- Control Panel Hardware, HMI / Historian Software, and SCADA System Computer Hardware requires upgrade and/or replacement **(PRIORITY)**
- SCADA System Upgrade design to include some modifications to process controls. Major changes to be completed under Other Contract Work.

Life Cycle Analysis: Methodology

Definition of Goal and Scope

- SWPCA Desired Goals for the SCADA Upgrade Project.

Platform Analysis

- Identification of technical PLC/HMI/DCS platforms and possible migration paths.

Cost Analysis

- Analysis of the implementation and short and long-term impacts to SWPCA for each option analyzed. This section includes a financial analysis in the form of a 20-year Life Cycle Cost Analysis (LCCA).

Selection Assessment

- Final comparison and evaluation of the inventory analysis and cost analysis as to meeting SWPCA goal and scope for the project.

Recommendations

- System Selection and Direct Application Strategy Planning.

Life Cycle Analysis: Pool of identified Manufacturers for Platform Comparisons

Manufacturer	PLC Hardware / Software	HMI / Historian Software
Emerson Process Management	Ovation DCS; Controlwave Series / OpenBSI	OpenEnterprise HMI / Historian
GE Intelligent Platforms	RX3i or RX7i Series / Machine Edition	Proficy iFix / Proficy Historian
Honeywell	Experion XPS DCS (C300)	Experion XPS DCS
Rockwell Automation	Allen-Bradley Logix Series / RSLogix	FactoryTalk (PlantPax) / Historian
Schneider Electric	Modicon Quantum, M340, Momentum Series / ProWORX	CitectHMI, ClearSCADA Archestra (Wonderware) / Historian
Siemens	Simatic S7 PLC	WinCC HMI / Historian

Life Cycle Analysis: Identified Manufacturers for Platform Comparison

Manufacturer	PLC Hardware / Software	HMI / Historian Software
Iconics	Not Applicable	Genesis64
Trihedral	Not Applicable	VT SCADA
Inductive Automation	Not Applicable	Ignition

Life Cycle Analysis: Hardware Platform Selection

- **4 Platform Options Selected for Assessment:**
 - Honeywell C300 Migration
 - New DCS Platform
 - New HMI / Rockwell Automation PLC
 - New HMI / Non-Rockwell Automation PLC
- **5 Factors Considered:**
 - Market Penetration and Local Support
 - Longevity, Scalability and Upgrade Life-Cycle
 - Versatility and Open-Architecture
 - Maximize Leverage of Existing Wiring and panel Installations
 - “Best-Value” (Life Cycle Cost Evaluation)
- **The 4 options listed were assessed** based on the 5 factors and ARCADIS’s professional expertise & experience.
- **Best option selected and informed hardware selection**

Life Cycle Analysis: Software Selection

- **6 HMI Software Packages Selected for Assessment**
- **8 Factors Considered:**
 - Company profile
 - Network Architecture
 - HMI Workstation Environment and Configuration Platform
 - HMI Software Features
 - Alarm and Event Handling
 - Historian Features
 - Data Management and Reporting
 - Maintainability
- **The 6 software packages were assessed** based on the 8 factors and ARCADIS's professional expertise & experience.
- **Best option selected and informed software selection**

Life Cycle Analysis: Results

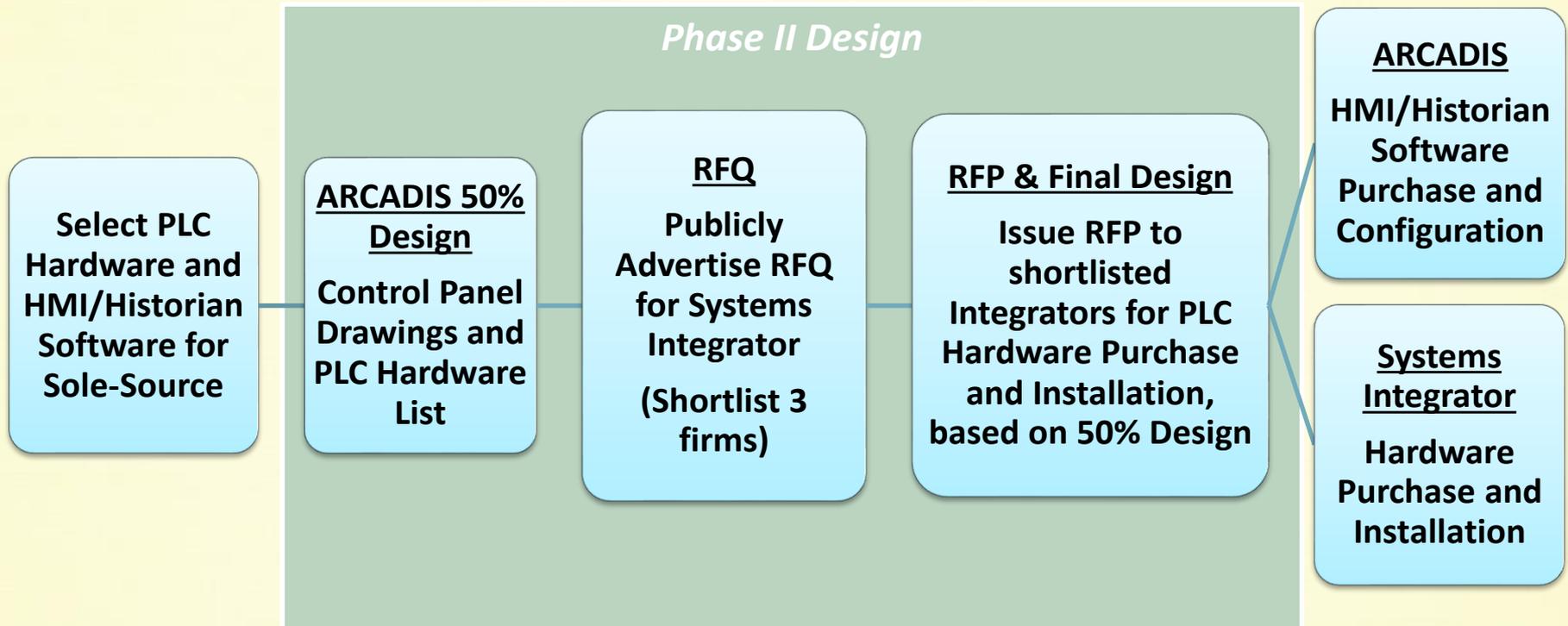
- **ARCADIS' recommended options:**

- *Open architecture PLC hardware and HMI software solution*
- *Hardware easiest to stage and install, minimize "downtime"*
- *"Active" life-cycle stage*
- *High flexibility, connectivity, longevity*
- *Price-competitive support and long-term maintenance options*
- *Hardware matched with a high performance software*

- **Recommendations for Next Steps:**

- To receive best pricing for identified hardware and software, an Integrator RFQ and RFP procurement approach is recommended.

Next Steps: Design & Procurement



RFQ = Request for Qualifications

RFP = Request for Proposal

Phase II: Scope and Fee

Phase II Tasks:

- Task 5.2 – Standards and Conceptual HMI Development
- Task 5.3 – Design & Bidding
- Task 5.4A – Preliminary PLC/HMI Logic Review/Documentation
- *Fee : \$136,000 billed as Lump Sum*

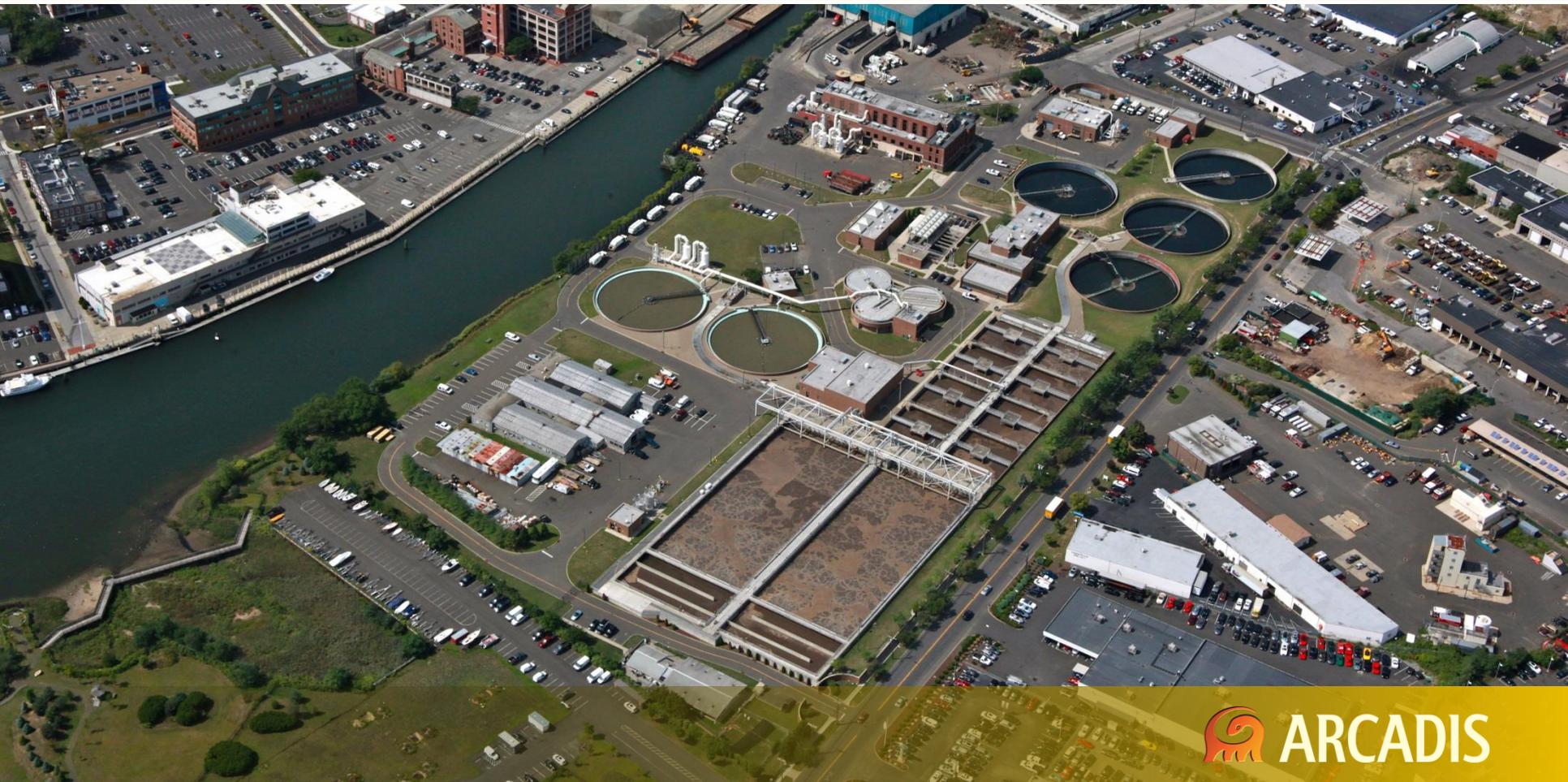
As-needed Review and Input to Other Work Packages:

- Consulting services for Other Contract Work Design Packages (Control Room Improvements, Aeration Blower and Raw Water Pump Station, etc.)
- Performed at the direction of the SWPCA only
- *Fee : \$30,000 billed as Time and Materials*

Questions?



Thank you!





William P. Brink, P.E., BCEE
Executive Director
City of Stamford
Purchasing Department
111 Harbor View Avenue
Stamford, CT 06902

Subject:

SWPCA Task 5 – Upgrade of SCADA System, Contract Amendment No.1 – Phase II Design Phase

Dear Mr. Brink:

ARCADIS U.S., Inc. (ARCADIS) appreciates the opportunity to continue assisting the City of Stamford Water Pollution Control Authority (SWPCA) with the SCADA Upgrade as outlined in the City's *Wastewater Engineering Services RFQ No. 619 Task 5 Upgrade of SCADA System*.

In September of 2014, ARCADIS was authorized to commence work on this project. The first phase, a study phase, involved a Needs Analysis and Life Cycle Analysis for the SCADA system. The purpose of this phase was to funnel selection of a suitable upgrade path from both a SCADA hardware and software point of view, as well as to identify the scope of improvements that will be designed. The overall results from this phase will be presented to the City's forthcoming Technical Committee meeting.

We are pleased to move into the next Phase of this project, Phase II, which will involve design of the recommended improvements. This Phase will also include preparation of SCADA Standards documents that will form the basis for input to the ongoing design of other capital improvement projects for the SWPCA facilities being performed by other consultants.

On Wednesday January 21, 2015, ARCADIS met with the SWPCA and reviewed our proposed design approach and budget to move the project into the next phase of work. As discussed, the scope of work and associated budget has been broken down into two components:

Imagine the result

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44 South Broadway
15th Floor
Box 751
White Plains
New York 10602-0751
Tel 914 694 2100
Fax 914 694 9286
www.arcadis-us.com

WATER DIVISION

Date:

January 26, 2015

Contact:

Catherine Mallon Traynor

Phone:

914-641-2604

Email:

Catherine.Mallon@arcadis-us.com

Our ref:

00420003.0000

- (1) **Phase II Work.** Standards Development and Design of the SCADA upgrade in the lump sum amount of \$136,000;
- (2) **As-needed Review and Input to Other Work Packages.** Assistance with review and input on other work prepared by other consultants for a not-to-exceed budget of \$30,000. All work associated with this task will only be performed upon approval and in accordance with our Hourly Rate Schedule included in the contract between ARCADIS and the City executed on September 2, 2014. This schedule has been attached to this document for reference.

Enclosed are scope and budget breakdown for these services. It is our understanding that this work will be authorized as an amendment to the current ARCADIS contract.

We are excited about continuing to work with SWPCA and advancing this project to upgrade the SCADA system at its wastewater facilities. If you have any questions or would like to discuss further, please do not hesitate to contact us.

Sincerely,

ARCADIS U.S., Inc.



Catherine Mallon Traynor
Vice President



Edward Kowalski, P.E., BCEE
Associate Vice President

Attachments:

1. Scope and Fee Document for Phase II and As-needed Review and Input to Other Work Packages
2. Stamford Task 5 – Budget Breakdown – Phase II (Tasks 5.2, 5.3, 5.4A)
3. Stamford Task 5 - Budget Breakdown – As-needed Review and Input to Other Work Packages.
4. ARCADIS Hourly Rate Schedule

**STAMFORD WPCF
AMENDMENT NO.1
TASK 5: UPGRADE OF SCADA SYSTEM
SCOPE AND FEE**

SCOPE**PHASE II: DESIGN****5.2 STANDARDS AND CONCEPTUAL HMI DEVELOPMENT**

General Scope: *Prepare SCADA standards and conceptual HMI development. {Note that conceptual HMI development will be for SCADA upgrade of the existing systems only and not extend under this task to other ongoing CIP projects}.*

Subtasks:

- 5.2.1. Develop Draft Standards Document
- 5.2.2. *SCADA Workshop #4: Standards Review.* Review draft standards document.
- 5.2.3. Continue standards development, prepare mock HMI screens/structure
- 5.2.4. *SCADA Workshop #5: Standards Finalization & Conceptual (Human Machine Interface) HMI Review.* Review final draft and concept HMI.
- 5.2.5. *Prepare Final Working Standards Document.*

Task 5.2 Deliverables:

- SCADA Standards Draft Document
- SCADA Standards Final Document
- Preparation for and attendance at workshops (Workshops 4 and 5)

5.3 DESIGN & BIDDING

General Scope: *Perform 30%, 60%, 90% and 100% design submittals with interim reviews for design of the SCADA upgrade. Incorporate Maintenance of Plant Operations (MOPO) and touch points with other contracts. Delineate scope limits clearly. It is assumed that procurement of the necessary hardware and control panel retrofit work will be through an RFQ/RFP process.*

Subtasks:

- 5.3.1. Basis of Design
- 5.3.2. SCADA Workshop #6: 30%/BOD Review
- 5.3.3. Design development
- 5.3.4. SCADA Workshop #7: 60% Review
- 5.3.5. Detailed design
- 5.3.6. SCADA Workshop #8: 90 % Review
- 5.3.7. RFQ/RFP Development
- 5.3.8. RFQ/RFP Process

Task 5.3 Deliverables:

- Basis of Design (30%) Documents
- 60% Construction Documents
- 90% Construction Documents
- Preparation for and attendance at workshops (Workshops 6, 7 and 8)
- RFQ/RFP Document

5.4a Preliminary PLC/HMI Logic Review/Documentation

General Scope: Perform preliminary development of HMI and controller code for SCADA upgrade. This task includes work necessary to download all existing controller programs in native format, document controller program files, and field check I/O points against existing control panel drawings.

Sub-Tasks:

- 5.4a.1 Collect controller programs from 8 existing control panels.
- 5.4a.2 Prepare controller code documentation in .PDF format.
- 5.4a.3 Field check I/O points against existing control panel documents.
- 5.4a.4 Prepare preliminary SOP for 8 control panel cut overs.

Task 5.4a Deliverables:

- Preliminary SOPs/MOPO for control panel cut overs.
- As-built Control Panel I/O Lists

ADDITIONAL SERVICES

Task: As-needed Review and Input to Other Work Packages

General Scope: Provide consulting services for Other Contract Work Design Packages to confirm designs align with the SWPCA SCADA Standards. These services include participation in coordination meetings, review of design packages with respect to SCADA and unit process control integration, and other review and input. These packages could include planned Control Room Improvements, Aeration Blower and Raw Water Pump Station Contract, and/or other ongoing work the City would like ARCADIS input on.

Budget

ARCADIS is proposing to perform the services under Phase II on a lump sum basis. The budget for Phase II, based on the tasks described in the scope of services, is \$136,000.

The budget for the additional services as described in the scope of services is \$30,000. All work associated with this item will only be performed upon approval in accordance with our Hourly Rate Schedule provided in the contract.

At the request of the City, for both of these budgets, a standard CT 5700-41 form has been developed to provide an estimated breakdown of the work.

Sub Task	Fee	Type of Payment
5.2 Standards & Conceptual HMI Development; 5.3 Design & Bidding; 5.4a Preliminary PLC/HMI Logic Review/Documentation	\$136,000	Lump Sum (estimated breakdown attached)
As-Needed Review and Input to Other Work Packages	\$30,000	Hourly Rate (estimated breakdown attached, payment in accord with standard charge schedule, attached)



Cost or Price Summary for Professional Services Subagreements

State of Connecticut - Department of Energy and Environmental Protection
Water Bureau - Clean Water Fund Program

FORM
5700-41

1. GRANTEE Stamford WPCA		2. GRANT NUMBER CWF-	
3. NAME OF CONTRACTOR OR SUBCONTRACTOR ARCADIS US, Inc.		4. SUBAGREEMENT DATE	
5. ADDRESS OF CONTRACTOR OR SUBCONTRACTOR (Include Zip Code) 44 S. Broadway, 15th Floor White Plains, NY 10601		6. TYPE OF SERVICE TO BE FURNISHED Wastewater Engineering Services RFQ No. 619 Task 5 Upgrade of SCADA System	

7. DIRECT LABOR (Specify labor categories)	ESTI- MATED HOURS	HOURLY RATE	ESTIMATED COST	TOTAL
Administration/Construction Clerk	16	\$31.77	\$508	
Technician/Designer	240	\$34.20	\$8,208	
Engineer	220	\$39.45	\$8,679	
Project Engineer	180	\$54.10	\$9,738	
Sr. Project Engineer	160	\$67.00	\$10,720	
Technical Advisor	24	\$77.00	\$1,848	
Project Manager	24	\$68.50	\$1,644	
Project Officer	8	\$93.00	\$744	
DIRECT LABOR TOTAL:			872	\$42,089

8. INDIRECT COSTS (Specify indirect cost pools)	RATE	ESTIMATED COST	TOTAL
	1.79	42,089	\$75,340
INDIRECT COSTS TOTAL:			\$75,340

9. OTHER DIRECT COSTS		ESTIMATED COST	TOTAL
a. TRAVEL			
(1) TRANSPORTATION		\$600	
(2) PER DIEM			
TRAVEL SUBTOTAL:			\$600
b. EQUIPMENT, MATERIALS, SUPPLIES (Specify Categories)		ESTIMATED COST	
EQUIPMENT SUBTOTAL:			\$0
c. SUBCONTRACTS		ESTIMATED COST	
SUBCONTRACTS SUBTOTAL:			
d. OTHER (Specify Categories)		ESTIMATED COST	
Mail		\$100	
Outside Repro/Mtg Expenses		\$500	
OTHER SUBTOTAL:		\$600	
e. OTHER DIRECT COSTS TOTAL:			\$1,200

10. TOTAL ESTIMATED COST	\$118,629
11. FIXED FEE OR PROFIT	\$17,912.65
12. TOTAL PRICE Check one : <input type="checkbox"/> Cost plus fixed fee <input checked="" type="checkbox"/> Lump sum <input type="checkbox"/> Other:	\$136,542



Cost or Price Summary for Professional Services Subagreements

State of Connecticut - Department of Energy and Environmental Protection
Water Bureau - Clean Water Fund Program

FORM
5700-41

1. GRANTEE Stamford WPCA	2. GRANT NUMBER CWF-
3. NAME OF CONTRACTOR OR SUBCONTRACTOR ARCADIS US, Inc.	4. SUBAGREEMENT DATE
5. ADDRESS OF CONTRACTOR OR SUBCONTRACTOR (Include Zip Code) 44 S. Broadway, 15th Floor White Plains, NY 10601	6. TYPE OF SERVICE TO BE FURNISHED Wastewater Engineering Services RFQ No. 619 Task 5 Upgrade of SCADA System

7. DIRECT LABOR (Specify labor categories)	ESTI- MATED HOURS	HOURLY RATE	ESTIMATED COST	TOTAL
Administration/Construction Clerk	8	\$31.77	\$254	
Technician/Designer	0	\$34.20	\$0	
Engineer	8	\$39.45	\$316	
Project Engineer	16	\$54.10	\$866	
Sr. Project Engineer	40	\$67.00	\$2,680	
Technical Advisor	40	\$77.00	\$3,080	
Project Manager	8	\$68.50	\$548	
Project Officer	16	\$93.00	\$1,488	
DIRECT LABOR TOTAL:	136			\$9,231
8. INDIRECT COSTS (Specify indirect cost pools)		RATE	ESTIMATED COST	
	1.79	9,231	\$16,524	
INDIRECT COSTS TOTAL:				\$16,524
9. OTHER DIRECT COSTS				
a. TRAVEL			ESTIMATED COST	
(1) TRANSPORTATION			\$500	
(2) PER DIEM				
TRAVEL SUBTOTAL:			\$500	
b. EQUIPMENT, MATERIALS, SUPPLIES (Specify Categories)			ESTIMATED COST	
EQUIPMENT SUBTOTAL:			\$0	
c. SUBCONTRACTS			ESTIMATED COST	
SUBCONTRACTS SUBTOTAL:			\$0	
d. OTHER (Specify Categories)			ESTIMATED COST	
Mail			\$50	
Outside Repro/Mtg Expenses			\$120	
OTHER SUBTOTAL:			\$170	
e. OTHER DIRECT COSTS TOTAL:			\$670	
10. TOTAL ESTIMATED COST				\$26,425
11. FIXED FEE OR PROFIT				\$3,928.74
12. TOTAL PRICE Check one : <input type="checkbox"/> Cost plus fixed fee <input type="checkbox"/> Lump sum <input checked="" type="checkbox"/> Other:				\$30,354
				Hourly Rate

ARCADIS

Hourly Rate Schedule

This document describes the basis for compensation and terms of payment. All rates presented apply to services rendered after January 1, 2014 and will be adjusted annually thereafter.

In addition to these fees, clients will also be responsible for any sales or value-added taxes that may apply to engineering services performed.

Hourly Rates: Charges for services provided will be in accordance with the following schedule:

2014 CONV	
Design Tech II/Field Technician II	69
Drafter I/Field Technician III and IV	82
Drafter II/Field Technician V	94
Document Tech	118
Project Assistant I and II	132
CADD Designer /Field Supervisor	182
Engineer/Scientist	123
Staff Engineer/Scientist/Architect	138
Project Engineer/ Scientist/Architect	148
Senior Engineer/ Scientist/Architect I	153
Senior Engineer/Scientist/Architect II	183
Principal Engineer/Scientist/Architect I	230
Principal Engineer/Scientist/Architect II	263
Engineer/Scientist Director	279

Other Direct Costs: All expenses incurred for a project, except in-house services specified below, from outside vendors will be invoiced at cost plus 10% to cover administrative expenses. These items may include, but are not limited to: shipping charges; printing; supplies; equipment; traveling expenses; special insurance; licenses; permits; or subcontractors.

In-house services consist of:

- Transportation - \$0.62 per mile for vehicles.
- Equipment - a schedule of usage rates for specialty equipment is available for field assignments
- Web Hosting – a schedule of monthly web hosting rates is available for client access web sites

Payment: All invoices are due and payable within 30 days of billing date. Any attorney's fees, court costs, or other related expenses incurred in collecting delinquent accounts shall be paid by the client. Delinquent bills are subject to finance charges of 1.5% per month.

Rates will be adjusted on an annual basis in accordance with the CPI-U index +1%.

CONV