



Request for Proposal
SCADA System Upgrade
RFP# B2015-SWR-01

Town of Seabrook, New Hampshire
Wastewater Treatment Facility



SCADA System Upgrade

REQUEST FOR PROPOSALS # B2015-SWR-01

You are cordially invited to submit a Proposal for the upgrade of the Wastewater Facilities SCADA System in accordance with the attached specifications, terms and conditions. Prospective respondents are advised to read this information over carefully prior to submitting a proposal.

Five (5) copies of the Technical/Qualifications Proposal must be submitted in a sealed envelope, plainly marked:

*RFP # B2015-SWR-01
Town Managers Office
Town of Seabrook
c/o Shaylia Marquis
99 Lafayette Rd
Seabrook, NH 03874*

A pre-proposal meeting will be held on Wednesday, August 26th, 2015 at 10:00am on Location

All proposals/bids must be received by September 17th, 2015 at 2:00 pm EST



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I. PURPOSE OF PROPOSAL

The Town of Seabrook is soliciting proposals for the upgrade of the Supervisory Control and Data Acquisition System located at the Seabrook Wastewater Treatment Facility located at 274 Route 286, Wrights Island, Seabrook NH. 03874. Only properly licensed and insured contractors are invited to submit proposals.

II. PROPOSAL TERMS

The Town of Seabrook reserves the right to accept or reject any and all proposals in whole or in part received as a result of this RFP. If a proposal is selected it will be the most advantageous regarding price, quality of service, the contractors qualifications and capabilities to provide the specific service. The Town reserves the right to consider proposals for modifications at any time before a contract be awarded, and negotiations would be undertaken with that contractor whose proposal is deemed to best meet the Town's specifications and needs. There will be no reimbursement to any candidate if the selection process is terminated. The Town of Seabrook reserves the right to waive defects and informalities of the proposals.

In the event it becomes necessary to revise any part of the RFP, addenda will be provided. Deadlines for submission of RFP's may be adjusted to allow for revisions. To be considered, original proposals with amended proposals must be submitted before the date and time specified.

Contractors are requested to submit a complete qualification package for review by the Owner that demonstrates successful performance on similar projects. Contractors making proposals must respond in writing to all requirements of this Request for Proposal (RFP). Responses should reflect detailed considerations of the issues and opportunities presented by this specific project. Any additional information or tasks that are felt to be relevant by the applicant should be included together with the submittal requirements.

a. Reporting of Contractor.

The contractor will work closely with the Wastewater Superintendent and will confer with him as necessary to insure satisfactory work progress. The Town reserves the right to inspect the contractor's activities during the term of this contract.

b. Personnel.

The contractor will provide the required services personally and will not subcontract or assign services without the town's written approval. The contractor will not hire any town employee for any of the required services without the town's written approval.

c. Indemnification.

The contractor will protect, defend and indemnify the town, its officers, agents, servants, volunteers and employees for any and all liabilities, claims, liens, fines, demands and costs including legal fees, of whatsoever kind and nature which may result in injury or death to any persons, including the contractor's own employees, and for loss or damage to any property, including property owned or in the care, custody or control of the town in connection with or in any way incident to or arising out of the occupancy, use, service, operations, performance or non-performance of work in connection with this contract resulting in



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whole or in part from negligent acts or omissions of contractor, any sub-contractor, or any employee, agent or representative of the contractor.

d. Insurance Requirements.

All insurance (Worker's Compensation, Comprehensive General Liability, and/or Automobile) shall be maintained at the expense of the contractor during the term of this contract. Certificate of insurance shall be included with the submitted bid package.

e. Compliance with Laws and Regulations.

The contractor will comply with all federal, state and local laws and regulations.

f. Interest of Contractor.

The contractor promises that it has no interest which would conflict with the performance of services required by the contract. The contractor also promises that, in the performance of this contract, no officer, agency, employee of the town, or member of its governing bodies, may participate in any decision relating to this contract which effects his/her personal interest or interest of any corporation, partnership or association in which he/she is directly or indirectly interested, or has any personal or pecuniary interest.

g. Assigns and successors.

This contract is binding on the town and the contractor, their successors and assigns. Neither the town nor the contractor will assign or transfer in this contract without the written consent of the other.

h. Termination of Contract.

Termination without cause. Either party may terminate the contract by giving ten (10) days written notice to the other party.

III. PROPOSAL SPECIFICATIONS

The proposal should include all of the following information:

- A. Contractor's qualifications, years in business, staff profile and experience in providing the level and type of service outlined in this proposal.
- B. Bidders must include at least three references of former agreements covering similar services listed in the proposal. Include company name, contact name and phone number.
- C. Proposals should be prepared simply and economically providing a straight-forward, concise description of the contractor's ability to meet the requirements of the RFP.

All proposals must be received no later than 2:00pm on September 17th, 2015 by the office of the Town Manager and must be plainly marked

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The submittal package shall include five (5) copies of the proposal. No telephone, email or facsimile proposals will be accepted. All proposals received after the deadline will be returned unopened.



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A pre-proposal meeting will be held on Wednesday, August 26th, 2015. Attendees should meet at the Seabrook Wastewater Treatment Facility located at 274 Route 286, Wrights Island, Seabrook NH. 03874. Attendance is not required but is recommended.

Proposals must be signed by an official authorized to bind the contractor to its provisions for at least a period of 90 days. Failure of the successful bidder to accept the obligation of the contract may result in the cancellation of any award.

“The undersigned certifies under penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this section the word “person” means any natural person, joint venture, partnership, corporation or other business or legal entity.”

(Authorized Signature)

(Date)

(Company & Title)

The Town will not reimburse any applicant for costs incurred in the preparation of a proposal in response to this RFP. Submission costs shall be the sole responsibility of the applicant submitting the proposal.

IV. SELECTION OF FINAL BIDDERS

The successful contractor will provide: a high quality proposal response; demonstrate the most advantageous combination of experience, cost, approach, and provide recommendations for reducing project cost and managing schedule. To ensure as nearly as possible that purchases are made so as to obtain maximum value to the Seabrook residents and recognizing the town’s intent to consider quality product and standardization as well as cost in making final decision on which contract to choose, the following is considered:

- 1. Value/Pricing Structure and Price Levels – The price is commensurate with the value offered by the proposer
- 2. Suitability of the Proposal – the proposed solution meets the needs and criteria set forth in the RFP.
- 3. Candidate Experience – Candidate has successfully completed similar projects and has the qualifications necessary to undertake this project.
- 4. Proposal Presentation – The information is presented in a clear, logical manner and is well organized.



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SECTION 13450

SCADA SYSTEM UPGRADE

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Abbreviations/Definitions:

1. SCADA- Supervisory Control and Data Acquisition
2. SCADA system refers to system of hardware and software including PLCs, PCs, Industrial PCs, Control Stations, SCADA software, HMI/OITs, HMI/OIT software, networking devices associated and all programming and integration.
3. PLC- Programmable Logic Controller
4. PC- Personal Computer
5. Industrial PC – Rugged personal computer, freestanding or panel mounted, typically located in process areas.
6. Control Station- PC or Industrial PC equipped with centralized SCADA system software, runtime or view only.
7. HMI/OIT - Human Machine Interface/ Operator Interface Terminal to interface with PLC and hardware other than the PC.
8. I/O- Input/Output referring to PLC physical modules and software database

B. Overview of Existing System and Modifications:

1. The existing SCADA System located at the Seabrook Wastewater Treatment Plant consists of the following hardware:

Control Station #1 – Operations Office

Control Station #2 – Laboratory

Control Station #3 – Sludge Building

Control Station #4 – MTU Industrial PC

Control Station #5 – Sludge RTU Industrial PC

Remote Station #1 – Existing Laptop, to be reused



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2. The MTU and RTUs at the site contain Allen Bradley PLCs. Communication between the SCADA control stations and connected hardware is via Ethernet protocol over fiber-optic media and Ethernet cable.
3. Existing software loaded on one or more control stations includes: Wonderware InTouch SCADA Servers and Clients, SCADAalarm dialing software, Wonderware Reporting, LogmeIn and MS Office suite.
4. The following new SCADA system station shall be furnished:

Remote Station #2 – Handheld Device (Tablet)

C. SCOPE OF WORK (GENERAL):

1. The Integrator shall upgrade the existing Wonderware SCADA system software with the most updated software versions available. In addition, new licenses or software products may be required to meet the functionality required. The Integrator shall be responsible for all costs associated with the upgrade including licensing fees.
2. The Integrator shall replace SCADA system hardware with updated devices equipped with the latest Windows operating systems compatible with the software supplied.
3. The Integrator shall provide all tools, materials, labor to complete the upgrade from the existing hardware and software to the new hardware and software, while maintaining functionality of the SCADA system. The WWTF operations, monitoring, alarming, data collection, trending, reporting, communication, and remote access shall function properly at the end of the upgrade.
4. The existing alarm dialing software module (SCADAalarm) is obsolete. The Integrator shall furnish, install, fully configure and test Win911/Pro third party alarm dialing software. Training and all licensing and support fees shall be included in the bid.
5. Furnish, install, configure, program and test a complete Supervisory Control and Data Acquisition (SCADA) system including hardware, software and all auxiliary and accessory devices necessary for proper performance.
6. Provide all other software, drivers, configuration, programming, materials and labor required to allow the wastewater system to be monitored and controlled to retain current functionality and any additional functions described herein.



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7. The existing SCADA software screens shall be updated and relocated to the new control stations.
8. Furnish, install, program and test software required for remote monitoring of the facility from remote stations, via existing secured high speed Internet connection.

D. SCOPE OF WORK DETAIL:

1. Control Station #1

- a. One (1) main SCADA Control Station at the Wastewater Treatment Plant including hardware and software.
- b. Upgrade the existing Wonderware InTouch (v 9.5) Development Studio unlimited tag license and software to the latest Wonderware InTouch Development version. Transfer the existing SCADA system configuration and graphics to the new hardware. Provide at least two (2) new screens using existing tags and system monitoring information. Provide training on any new features of the upgraded software.
- c. Replace Control Station Hardware including computer, monitor, printer and appurtenances.
- d. Furnish and install an external hard drive for Control Station #1. Configure automatic back up and data download to the external drive. Train the operators with respect to back-up, download, and retrieval operations.
- e. Replace the obsolete alarm notification software with Win911 Pro. Configure and test the software fully. Provide training on the new alarm notification software.
- f. Furnish and configure a Telephony Card/Voice Modem and Cellular Modem for use with the Win911 Pro software. Coordinate with the Owner to assist in set-up of cellular data plan. Monthly cellular data service fees shall be at the Owner's expense.
- g. Upgrade the existing Wonderware HMI Reports software version 3.4 to the Wonderware replacement software Dream Reports 50 tag version 4.5. Provide all labor and materials to successfully migrate and configure the reports to retain existing functionality.



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- b. Upgrade the existing Wonderware InTouch (v 9.5) Runtime 60,000 tag license and software to the latest Wonderware InTouch Runtime version. Transfer the existing SCADA system configuration and graphics. Provide at least two (2) new screens using existing tags and system monitoring information. Provide training on any new features of the upgraded software.
4. Control Station #4 and Control Station #5
 - a. Upgrade two (2) Control Stations at the MTU control panel in the Operations Building and at the Sludge RTU control panel including software required to connect to the PLC network.
 - b. Upgrade the existing Wonderware InTouch (v 9.5) 3,000 tag Runtime license and software to the latest version. Transfer the existing SCADA system configuration and graphics to the new hardware. Provide at least two (2) new screens using existing tags and system monitoring information.
 - c. Provide training on any new features of the upgraded hardware and software.
 - d. Replace the existing Wonderware Panel PC panel-mounted hardware with Industrial PC sized to fit the existing enclosure cutout.
5. Remote Station #1
 - a. The existing laptop Remote Station #4 hardware shall be reused.
 - b. Install upgraded remote control software. Test remote access from Remote Station #4 to the upgraded SCADA System.
6. Remote Station #2
 - a. Provide a new Remote Station #2 handheld device (tablet) and software for remote access to the SCADA System.
 - b. Furnish, configure and install software and applications on the tablet to access the SCADA System software remotely via the Internet over wireless networks and cellular networks.
 - c. Test the remote access and provide training on the new handheld device.



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1.02 QUALITY ASSURANCE:

- A. The Integrator shall demonstrate at least five (5) years of experience performing similar work. Provide the contact names of references for at least five (5) clients where the Integrator completed similar SCADA System Upgrade.
- B. Due to work associated with existing control panels, the Integration firm shall hold UL certification.
- C. The specifications direct attention to certain required features of the equipment but do not purport to cover all details entering into its design and construction. Nevertheless, the Contractor shall furnish the SCADA system complete in all details and ready for operation.
- D. The SCADA system forms an integrated system with the treatment facility control panel PLCs and all remote sites. The Integrator shall be responsible to maintain the satisfactory operation of the entire control system during the SCADA System Upgrade. The Integrator shall be responsible for successful communications between the upgrade equipment and all existing control equipment in the network.

1.03 SUBMITTALS:

- A. Submit detailed Shop Drawing information on the proposed Control Station PCs with clearly identified options.
- B. The contractor shall supply draft layouts of any new graphic screens to the Engineer and Owner for review. The Integrator shall attend at least one (1) review meeting with the Owner and Engineer.
- C. Submit shop drawing information for UPS backup power device and sizing calculations for the connected load.
- D. Submit product data for all software to be loaded on control stations and remote stations.
- E. Electronic operations and maintenance manuals shall be provided, as well as at least one (1) hard copy of the manuals for each product submitted. Operation and Maintenance Manuals and User Manuals shall be bound or secured in 3-ring binders.
- F. Licensing and warranty for the SCADA system software shall be provided to the Owner upon substantial completion. The SCADA software licenses shall be in the name of the Owner. The SCADA system shall be guaranteed for one (1) year following final acceptance. Service contracts for hardware and software shall be three (3) years, unless otherwise noted.



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- G. Three (3) final copies of the programmed and configured SCADA software files for the project shall be submitted prior to final payment.

PART 2 - PRODUCTS

2.01 CONTROL STATIONS AND ACCESSORIES:

A. Control Station #1 - Supply hardware with the following specifications:

1. Intel E5-1620 v2 XEON processors with minimum 3.7 GHz clock speed
2. 8 GB DDR3 1600 MHz RAM
3. First Hard Drive: 500 GB 3.5" SATA Hard Drive, 10,000 RPM
4. Second Hard Drive: 500 GB 3.5" SATA Hard Drive 10,000 RPM
5. 8x DVD R/W
6. Telephony Card/Voice modem
7. Cellular modem
8. Gigabit Ethernet card
9. Keyboard and Wireless Mouse
10. 2 GB RAM Graphics Card and high resolution 22-inch color flat panel wide-screen display.
11. One (1) Laser Printer shall be equivalent to Dell B2360d.
12. External hard drive with 1.5 TB capacity and USB 2.0 interface.
13. DVI connection for the monitor.
14. Operating system shall be Windows 7 Professional SP1 64-bit and compatible with SCADA software being provided and as approved by the Engineer.



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15. Control stations shall be equivalent to Dell Precision T5810 mini-tower workstation computer with dual hard drives and RAID 1 configuration, or equivalent system. The Control Station shall house the historical data on its hard drives. The Control Station shall be configured to perform automatic scheduled daily data and monthly system backups and downloads to the external hard drive.
 16. Furnish and configure Microsoft Office Pro on the control station and provide on disk with the appropriate licensing.
 17. Provide a three (3) year manufacturer warranty, service and support contract from the computer manufacturer.
- B. Control Station #2 - Supply hardware with the following specifications:
1. Intel Core i7-3770 processors with minimum 3.4 GHz clock speed
 2. 4 GB, 1600 MHz RAM
 3. Hard Drive: 320 GB 2.5" SATA Hard Drive, 3.0 GB//s
 4. 8x DVD R/W
 5. Gigabit Ethernet card
 6. Keyboard and Wireless Mouse
 7. 2 GB RAM Graphics Card and high resolution 22-inch color flat panel wide-screen display.
 8. Operating system shall be Windows 7 Professional SP1 64-bit and compatible with SCADA software being provided and as approved by the Engineer.
 9. Control stations shall be equivalent to Dell Optiplex mini-tower workstation computer, or equivalent system.
 10. Furnish and configure Microsoft Office Pro on the control station and provide on disk with the appropriate licensing.
 11. Provide a three (3) year manufacturer warranty, service and support contract from the computer manufacturer.



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- C. Control Station #4 and Control Station #5 - Supply hardware with the following specifications:
1. Intel ATOM processor with minimum 1.9 GHz clock speed
 2. 4 GB, DDR RAM
 3. Hard Drive: 180 GB SATA SSD
 4. Video – HDMI/VGA
 5. Two (2) 10/100/1000Mbps Ethernet ports
 6. Four (4) USB ports
 7. One (1) Serial port
 8. Power Supply shall be 24 Volt VDC
 9. Environmental Ratings:
 - a. IP66/NEMA 4X
 - b. 32-144 degrees F
 - c. Shock – DIN EN 600068-2-27
 - d. Vibration – DIN EN 60068-2-64
 - e. LED backlight up to 100,000 hours in Eco
 10. 17-inch graphic display screen integrated with 1280x1024 resolution, cutout dimensions to fit the existing panel cutout (408 mmx313 mm). Stainless Steel display material with resistive touch screen.
 11. Operating system shall be Windows 7 Embedded 32-bit and compatible with SCADA software being provided and as approved by the Engineer.
 12. The control station shall be modular design Industrial PC with no moving parts, fanless, tool-less removable components, and able to be bundled with Wonderware InTouch SCADA software.
 13. Control stations shall be equivalent to Wonderware Industrial 17” InTouch Panel PC with Windows Embedded 7.
 14. Provide a three (3) year manufacturer warranty, service and support contract from the computer manufacturer.



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- D. It is the Contractor's responsibility to ensure that all hardware and software, regardless of manufacture or supply will be compatible with each other and with existing systems as necessary to provide a fully functioning system.

2.02 HANDHELD DEVICE (TABLET) AND ACCESSORIES:

- A. Remote Station #2 - The Contractor shall provide one (1) handheld tablet workstation; with the following specifications:
1. A8X chip with 64-bit architecture
 2. M8 motion coprocessor
 3. Hard Drive: 128 GB
 4. iOS 8 Operating System
 5. 9.7-inch (diagonal) LED-backlit widescreen Multi-Touch display with IPS technology (Retina display), 2048-by-1536-pixel resolution at 264 ppi
 6. 8MP iSight camera, autofocus, *f*/2.4 aperture, Five-element lens
 7. 1080p HD video recording (30 fps), Slo mo (120 fps), 3x video zoom
 8. Compatible with the following carriers: AT&T, Sprint, Verizon, T Mobile, GigSky
 9. Wi-Fi & Cellular capability: Wi Fi (802.11a/b/g/n/ac); dual channel (2.4GHz and 5GHz); HT80 with MIMO
 10. Bluetooth 4.0 technology
 11. UMTS/HSPA/HSPA+/DC HSDPA (850, 900, 1700/2100, 1900, 2100)
 12. Frequency response: 20Hz to 20,000Hz
 13. Audio formats supported: AAC (8 to 320 Kbps), Protected AAC (from iTunes Store), HE-AAC, MP3 (8 to 320 Kbps), MP3 VBR, Audible (formats 2, 3, 4, Audible Enhanced Audio, AAX, and AAX+), Apple Lossless, AIFF, and WAV
 14. User-configurable maximum volume limit



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15. Video formats supported: H.264 video up to 1080p, 60 frames per second, High Profile level 5.0 with AAC-LC audio up to 160 Kbps, 48kHz, stereo audio in .m4v, .mp4, and .mov file formats; MPEG-4 video up to 2.5 Mbps, 640 by 480 pixels, 30 frames per second, Simple Profile with AAC-LC audio up to 160 Kbps per channel, 48kHz, stereo audio in .m4v, .mp4, and .mov file formats; Motion JPEG (M-JPEG) up to 35 Mbps, 1280 by 720 pixels, 30 frames per second, audio in ulaw, PCM stereo audio in .avi file format

16. External Buttons:

- Home/Touch ID sensor
- Built-in stereo speakers
- Lightning connector
- 3.5 mm stereo headphone jack
- Dual microphones
- On/Off Sleep/Wake
- Volume up/down

17. Built-in 27.3-watt-hour rechargeable lithium-polymer battery

18. Lightning to USB Cable

19. USB Power Adapter

20. Portable Work Station (Tablet) shall be equivalent to iPad Air 2.

B. The following accessories shall be provided:

1. Provide a two (2) year manufacturer service and support contract for the tablet furnished such as Apple Care +.
2. Griffin Technology Survivor GB40336 case, which features a rigid polycarbonate frame, silicone cladding and hinged plugs for reliable protection. A built-in screen protector deflects wind and rain, or approved equal.
3. Remote control software for remote access to the SCADA system such as "Log me-in" or approved equivalent software capable of being configured for Internet based access including configured app for the tablet. Tablet and computer remote access shall be fully tested for functionality. See Section 2.06 of this specification.



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2.02 SCADA NETWORK:

- A. The existing SCADA network hardware shall be reused. Disconnect and reconnect control stations as required to restore functionality. Modify configuration as needed to maintain a functional network.

2.03 SCADA SOFTWARE:

A. General Requirements

- 1. The Contractor shall supply all materials and labor necessary to provide a fully debugged and operating SCADA system. The software required shall consist of those programs necessary for the system to efficiently perform the existing functions and any additional functions described herein. The Contractor shall assume complete responsibility for the successful operation of all software and application programs provided as part of the system.
- 2. The system software shall be the latest, state-of-the-art versions from the software manufacturer. The system software will include all software options required to monitor and control the facility as described in this Section.

- B. Software Licensing. The supplier shall include all necessary licensing and license upgrades in the name of the Owner for proper operation of the software.

C. System Security:

- 1. Maintain the existing system security levels and configuration.
- 2. The system shall support using Microsoft Windows security in lieu of, or in addition to the package's own security system. If using Windows security, the system shall authenticate a user on any security domain without requiring the system to be re-started.

D. Process Control

- 1. Maintain existing intended process control functions.
- 2. Investigate the existing SCADA system configuration and programming to determine errors and inefficiencies.
- 3. Provide diagnostics and debugging of the existing system prior to upgrading, including vendor applications engineer review and troubleshooting.



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E. SCADA Software Required:

1. Wonderware In Touch Development Studio (1 station), upgrade existing version 9.5
2. Wonderware In Touch 2014R2 Runtime 60,000 tag with I/O (1 station), upgrade existing version 9.5
3. Wonderware InTouch Factory Focus (1 station), upgrade existing version 9.5 single node
4. Dream Report for Wonderware 50 Tags version 4.5 (2 stations), upgrade existing 3-report version 3.4
5. Wonderware InTouch Runtime 3,000 tag with I/O (2 stations), upgrade from version 9.5 panel/tablet
6. Wonderware Historian 5,000 Tag (1 station)
7. Wonderware Historian Client (1 station)

F. SCADA Software Setup and Programming:

1. The SCADA system shall include process graphic screens to mimic all of the existing screens. Integrator shall transfer, modify, upgrade and migrate all of the existing graphic screens unless otherwise noted herein.
2. An additional two (2) SCADA software screens shall be included in the Contract. The layout and functionality of the screens shall be determined based upon up to four hours of meetings with the Owner and Engineer. The Integrator shall assume the screens are related to the processes and are as complicated as the most detailed screen in the existing system.
3. Up to three (3) existing reports shall be recreated in the new upgraded report software.

2.04 Alarm Notification Software:

- A. Supply Win 911 Pro software or equivalent to interface with the SCADA software database to handle alarms and annunciate alarms.



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- B. The SCADA system shall continue to act as an annunciator system, and shall activate contacts within the new alarm dialing software. The critical alarms that currently dial out shall be configured to dial out via the new software. The Integrator shall set up phone, email, and text (SMS) message notification in the Win911 Pro software.

2.05 Remote Access Software:

- A. Supply remote access software to be installed on Control Station #1, Remote Station #1 and Remote Station #2.
- B. Remote access software shall be Log-me-in, PRO

2.06 UNINTERRUPTIBLE POWER SUPPLY SYSTEM (UPS):

- A. An Uninterruptible Power Supply System shall be provided for each control station (total 3 stations).
- B. The UPS shall provide a minimum of 30 minutes of operating time following a power failure.
- C. The Uninterruptible Power Supply System shall consist of a regulated rectifier to operate from commercial AC power, a battery to store emergency power, and an all static inverter to convert DC power from the rectifier or battery to high quality AC for the Control Station, Video Monitor and peripherals.
- D. The Uninterruptible Power Supply will automatically initiate system shutdown in a timely fashion when battery power reserves reach a preset level.
- E. The power supply system shall have a minimum continuous duty output rating of 2.5 KVA minimum in ambient temperature of 10 degrees Celsius to 40 degrees Celsius.
- F. The output/input voltage shall be 120 volt 60 Hertz, single phase with voltage as required for the equipment.
- G. The system batteries shall be of the gel sel or NiCad type and shall reside in the same enclosure as the UPS.



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PART 3 - EXECUTION

3.01 TESTS AND ACCEPTANCE:

A. Some of the tests to be performed shall include but not be limited to the following:

1. Building and loading the System Data Base.
2. Conduct on-line modifications to the data base.
3. Demonstrate operability of the communication network.
4. Demonstrate all system software functions as specified.
5. Verify the displays and interactive capabilities of the SCADA Control Stations.
6. Simulate selected operating conditions to verify the performance of the monitoring and control functions. Perform process operations from each Control Station.
7. Generate reports using test data, or real-time data.
8. Demonstrate data and program backup procedures and restoration procedures.
9. Demonstrate Historian archiving functions and Historian Client data access.
10. Demonstrate operability of remote access to the SCADA system via Remote Stations #1 and #2.
11. Demonstrate the Win911 Alarming software. Simulate alarms to call each programmed number, send text message, send an email, and locally annunciate. Test alarm acknowledgement from remote stations.
12. During the test, the Engineer and/or Owner's representative shall have unrestricted access to the system, and all faults identified during this period shall be corrected and retested prior to completion of testing. All test data and procedures followed during testing shall be logged, and certified copies of logs shall be provided to the Engineer and Owner.



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3.02 INSTRUCTION:

- A. The cost of training programs shall be included in the Contract price, to be conducted with designated Owner's personnel, covering programming, operation, and maintenance of the system as specifically set forth hereinafter. The training and instruction, insofar as practicable, shall be directly related to the system being supplied here under, specifically the SCADA System components that are new or modified from the old system. The training programs shall include a field training program consisting of hands-on instruction utilizing the Owner's system.
- B. An initial field training program shall be run at the Owner's site and consist of one (1), four (4) hour day of instruction, exclusive of travel time, with the Owner's personnel, covering; system operation, program modification, troubleshooting, and maintenance procedures, This training program will be run at a time chosen by the Owner and will be exclusive of any instruction given at the time of system startup.
- C. Additional field training at the Owners site shall consist of one (1), four (4) hour day of instruction, exclusive of travel time, with the Owner's personnel covering Owner's questions about the SCADA system and additional detailed instruction on components chosen by the Owner. The additional training session shall take place approximately 3-months after final acceptance of the SCADA system by the Engineer and Owner.

3.03 WARRANTY:

- A. The SCADA hardware and software including custom graphics, database, alarming, trending and reporting shall be guaranteed to perform without error for a period of one year from the date of SCADA System acceptance. This date of acceptance shall be defined as the date when all programming is complete, testing and checkout complete with documentation submitted, operation and maintenance manuals approved and on site, documentation of the installed system on site, and at least four hours of training completed. The Integrator shall prepare a document for the Owner to sign indicating the date of SCADA system acceptance.

END OF SECTION