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Transcript Exhibit(s) 2016 MAY 26 P 3: 37

AZ CORP COMMISSION
DOCKET CONTROL

Docket #(s): W-01445A-15-0277

Arizona Corporation Commission
DOCKETED
MAY 26 2016

DOCKETED BY KE

Exhibit #: WA 1-5362, WA 1-5166, WA 1-5306, WA 1-5032, WA 1-5263, WA 1-5309, WA 1-5360, WA 1-5324, WA 1-5325, WA 1-5326, WA 1-5327

Part 12 of 12

For parts 1-11, see barcodes 0000170605 through 0000170615

Western Group Rate Case

Exhibit FKS-1

5362 PV Well No. 31

ARIZONA WATER COMPANY
WORK AUTHORIZATION

W.A. NUMBER: 1-5362
P.E. NUMBER:
BUDGET ITEM NO.: Special No. 30
SHEET NO.: 1 of 2

SYSTEM:	CASA GRANDE	RETENTION REQUIRED:	☑ YES ☐ NO
DIVISION:	PINAL VALLEY	WORK TO START BY:	UPON AUTHORIZATION
RESPONSIBLE PERSON:	JAMES WILSON	WORK TO BE FINISHED BY:	WITHIN 60 DAYS
TAX CODE:			

DESCRIPTION OF WORK:

Pull the pump, video inspect the well, and replace the National E12MC 8-stage pump, 560 LF of 10-inch column pipe, 1/4-inch stainless steel air line and 3/4-inch PVC sounding line at Well No. 31 in the Pinal Valley water system. Prior to reinstalling the new pump, company engineers will inspect the existing oil tube and line shaft and replace failed components. Company engineers also anticipate brushing and bailing the well prior to retuning the well to service.

FACTORS JUSTIFYING WORK:

Production from Well No. 31 recently decreased from approximately 1,200 gpm to 900 gpm. The pump and equipment in this well have been in service for approximately 9 years and have reached the end of their service life. Well No. 31 is critical to meeting peak water demands and necessary to continue to provide a safe, adequate and reliable drinking water supply to the Pinal Valley water system.

COST ESTIMATE	
COST OF WORK:	
MATERIAL	0
LABOR	8,600
CONTRACT PORTION	96,026
OVERHEAD	12,600
TOTAL AUTHORIZED EXPENDITURES CHARGEABLE TO THIS W.A.	$ 117,226
FUNDS RECEIVED:	
CONTRIBUTIONS RECEIVED	0
REFUNDABLE ADVANCES RECEIVED	0
TOTAL CONTRIBUTIONS/ADVANCES	0
NET COMPANY CASH REQUIRED	$ 117,226

AUTHORIZATION	DATE
PREPARED BY: James Wilson	
REVIEWED FOR ESMT/ROW VERIFICATION: Charles Briggs	
REVIEWED BY: Mario Mendez	
APPROVED BY ENGINEERING: Fredrick Schneider	
APPROVED BY FINANCE: Joseph Harris	
SPECIAL ITEM EXCEEDING $10,000; AUTHORIZED BY PRESIDENT: William Garfield	
SPECIAL ITEM EXCEEDING $10,000; AUTHORIZED BY CHAIRMAN: M. L. Whitehead	

COMMENTS:

Transfer $117,226 from WA 1-5300 (Pinal Valley Office) to fund this project.

CONSTRUCTION RELEASE:

ARIZONA WATER COMPANY

WORK AUTHORIZATION - DETAIL SHEET

W.A. NUMBER: 1-5362
P.E. NUMBER:
BUDGET ITEM NO.: Special No. 30
SHEET NO.: 2 of 2

RETIREMENT PROPERTY UNITS	PLANT PROPERTY ACCOUNT	UNIT DESCRIPTION	QUANTITY	YEAR INSTALLED AND W.A. NUMBER
	325	National E12MC 8-stage pump	1	2007, 1-3873
	325	10-inch column pipe	560	2007, 1-3873
	325	3x1-15/16 oil tube and shaft	560	2007, 1-3873
	325	1/4-inch air line	560	2007, 1-3873
	325	3/4-inch air line	560	2007, 1-3873

PROJECT DESCRIPTION:

Pull the pump, video inspect the well, and replace the National E12MC 8-stage pump, 560 LF of 10-inch column pipe, 1/4-inch stainless steel air line and 3/4-inch PVC sounding line at Well No. 31 in the Pinal Valley water system. Prior to reinstalling the new pump, company engineers will inspect the existing oil tube and line shaft and replace failed components. Company engineers also anticipate brushing and bailing the well prior to retuning the well to service.

	DESCRIPTION	PLANT PROP ACCT	QUANTITY	UNIT COST	TOTAL
CONTRACT WORK	Labor to pull and replace pump assembly	325	1	$ 7,650.00	$ 7,650
	Deliver 200 HP motor and pick up 250 HP motor and install	325	1	1,000.00	1,000
	Provide and install Simflo SP12C 11-stage bowl assembly complete	325	1	10,597.00	10,597
	Provide and install 10" x 20' taper thread seamless column pipe	325	28	1,240.00	34,720
	Provide and install 3/4" solvent weld PVC line	325	560	0.50	280
	Provide and install 1/4" stainless steel airline with gauge & valve	325	560	2.50	1,400
	Video well with downward and side scan, log and provide 2 DVDs	325	2	850.00	1,700
	Provide and install all misc materials (buckles, bandits, tape etc)	325	1	1,035.00	1,035
	Provide and install 3"x1-15/16" x 20' oil tube and shaft	325	28	773.00	21,644
	Brush and Bail Well Casing	325	40	225.00	9,000
	Mobilize and De-Mobilize Cable Tool Rig	325	1	2,500.00	2,500
	Contracting Tax	325	1	3,000.00	3,000
	Performance and Payment Bond	325	1	1,500.00	1,500
	SERVICE CONNECTIONS COMPLETE: DOUBLE-LONG	345			
	SERVICE CONNECTIONS COMPLETE: DOUBLE-SHORT	345			
	SERVICE CONNECTIONS COMPLETE: SINGLE-LONG	345			
	SERVICE CONNECTIONS COMPLETE: SINGLE-SHORT	345			
TOTAL CONTRACT WORK					$ 96,026
MATERIALS					
	SERVICE CONNECTIONS: DOUBLE-LONG	345			
	SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	SERVICE CONNECTIONS: SINGLE-LONG	345			
	SERVICE CONNECTIONS: SINGLE-SHORT	345			
	METERS	346			
TOTAL MATERIALS					$ -
LABOR	Engineering Design and Project Management	325	60	$ 55.00	$ 3,300
	TESTING FEE	325	1	$ 2,000.00	2,000
	PERMIT FEE				
	SURVEY FEE				
	FIELD INSPECTION	325	60	55.00	3,300
	INSTALL SERVICE CONNECTIONS: DOUBLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-SHORT	345			
TOTAL LABOR					$ 8,600
SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR					$ 104,626
OVERHEAD					12,600
TOTAL	REFUNDABLE PORTION ☐	NON-REFUNDABLE PORTION ☐		COST ESTIMATE	$ 117,226

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, AZ 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6874 • TOLL FREE: (800) 533-6023 • www.azwater.com

July 15, 2015

Mr. Michael Richardson
Southwest Waterworks Contractors, Inc.
P. O. Box 6339
Phoenix, AZ 85005

Re: Request for Proposal/Contract

Dear Mr. Richardson:

You are hereby invited to submit a formal written bid for the Pinal Valley Well No. 31 pump replacement, in accordance with Arizona Water Company's *General Conditions of Contract, Construction Specifications* and *Standard Specification Drawings*, and with specific plans and related construction drawings for this project.

Bids must be submitted on the enclosed Proposal forms. Sealed bids will be received at the above address until July 31, 2015. Return both completed proposal forms with original signatures to the Company. There will be no formal bid opening.

A current Certificate of Insurance from the bidder must be on file with Arizona Water Company before the bidder's proposal will be considered. A **bid bond** will be required for this project.

Before a bidder is awarded a contract, the bidder may be required to demonstrate to Arizona Water Company's satisfaction that the bidder has the necessary facilities, ability, and financial resources to perform the work in a satisfactory manner within the time stipulated, and that the bidder has experience in the same or similar construction work. The bidder may also be required to furnish references concerning the bidder's qualifications.

Arizona Water Company reserves the right to reject or accept any bid.

A discussion of this project and a tour of the construction site may be scheduled by calling me at the above number.

Very truly yours,

James T. Wilson, P. E.
Senior Engineer
jwilson@azwater.com

afh
Enclosure

ARIZONA WATER COMPANY

Pinal Valley - Casa Grande
220 E. 2nd Street

PROPOSAL/CONTRACT

CONTRACTOR: SOUTHWEST WATERWORKS CONTRACTORS	SYSTEM: PINAL VALLEY
ADDRESS: P. O. BOX 6339	W.A. No(s): 1-5362
CITY ST ZIP: PHOENIX, AZ 85005	BID DUE DATE: July 31, 2015

CONTRACTOR SUBMITS this PROPOSAL/CONTRACT to ARIZONA WATER COMPANY, an Arizona corporation (the "Company"), to perform the work and complete the project described on Page 2 (the "Project"), as an independent prime contractor.

1. Contractor certifies that it has a complete copy of, and has read, understands and accepts, the Company's General Conditions of Contract, and the Company's Construction Specifications and Standard Specification Drawings, (the "Specifications"), all of which are attached hereto. Contractor has examined the specific plans and related construction drawings for the Project (the "Drawings"), copies of which are also attached hereto. The General Conditions of Contract, Specifications and Drawings are incorporated into this Proposal/Contract. Contractor affirms that all work and materials to be furnished or purchased for the Project will be in strict conformance with the General Conditions of Contract, Specifications and Drawings.
2. Contractor represents and warrants that it has satisfied and complied with the provisions of Section 6, Contractor Understands Work and Working Conditions, of the General Conditions of Contract prior to submitting this Proposal/Contract.
3. Contractor represents that this Proposal/Contract is fair and honest in all respects, is submitted in good faith and is not submitted in collusion with any other company, entity or person
4. Contractor acknowledges that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work.
5. Prior to the commencement of work, Contractor will submit to the Company a list of all materials to be used in the Project. The materials list will include the manufacturer, part number, price and quantity included in this Proposal/Contract.
6. Contractor will furnish all labor, tools, equipment and materials required to complete the Project according to the General Conditions of Contract, Specifications and Drawings. No materials purchased by Contractor to be incorporated into the Project are subject to tax at the time of purchase and Contractor will not charge the Company for any such tax. Contractor will pay the applicable transaction privilege tax (the "Contracting Tax") on the Project after Contractor receives payment of the final Project invoice from the Company. The cost of materials incorporated into the Project which are exempt by Arizona Revised State Statues ("A.R.S.") from the Contracting Tax, for example, pipes or valves having a diameter of four (4) inches or larger, including equipment, fittings and any other related part that is used in operating the pipes or valves (A.R.S. §42-5061 B.6.), will not be included in the total cost of the labor and materials upon which the Contracting Tax is computed. Contractor retains full liability and obligation to pay the Contracting Tax and will defend and indemnify the Company against any demand or obligation to pay the Contracting Tax.
7. Contractor will maintain detailed accounting records of all materials purchased and incorporated into the Project. Such records will include all supporting original vendor invoices for all materials purchased. Following completion of the Project, Contractor will submit an itemized accounting to the Company which will include all supporting original vendor invoices and satisfactory evidence of payment thereof. The Company will not pay Contractor for materials not actually incorporated into the Project, and the disposition of such materials will remain Contractor's responsibility.
8. The Estimated Total Cost of the Project, shown on Page 2, is based on estimated labor and material quantities to be furnished. It includes an estimate of the Contracting Tax and the cost of the required Performance and Payment Bonds. Contractor will not cancel, modify or withdraw this Proposal/Contract during a ninety-day (90) period commencing on the Bid Due Date. The Company may accept this Proposal/Contract by signing and mailing, or otherwise delivering, a copy hereof to Contractor during such ninety-day (90) period. If the Company does not accept this Proposal/Contract during such ninety-day (90) period, Contractor may cancel this Proposal/Contract by giving written notice of cancellation to the Company.
9. Prior to the commencement of work, Contractor will provide the Company with a detailed construction schedule, in either Gantt or CPM form, identifying all tasks to be performed from the date of the written Commencement Notice through completion of the Project, including testing, training of Company Personnel and final Project invoicing. Contractor will provide the Company with a copy of such construction schedule documenting the progress of work on the Project at least monthly.
10. Contractor will not commence work on the Project until the Company gives Contractor a written Commencement Notice. Contractor will complete the Project within _____ calendar days after the Commencement Notice is issued.
11. Following the Company's written notice of satisfactory completion of the Project, and upon receipt of the final Project invoice from Contractor, the Company shall pay Contractor the actual total cost of the Project, which will be calculated as shown on Page 2, except that actual labor and material quantities installed/constructed will be substituted for the estimated labor and materials quantities and the Contracting Tax will be recalculated based on such actual labor and materials quantities.
12. The amount of applicable liquidated damages for Contractor's failure to deliver or perform within the time limit shown in Paragraph 10 may be deducted from the Company's payment of the final Project invoice. This provision shall not limit the Company's ability to terminate this Proposal/Contract for Contractor's unsatisfactory performance or failure to perform as provided in the General Conditions of Contract, Specifications or Drawings, or in this Proposal/Contract.

SPECIAL CONDITIONS:

Contractor is allowed one progress payment.
See attached Equipment Specifications dated July 15, 2015.

CONTRACTOR	PROPOSAL/CONTRACT ACCEPTED:
SOUTHWEST WATERWORKS CONTRACTORS	*ARIZONA WATER COMPANY*
By:	By:
Print Name:	Print Name: Fredrick K. Schneider, PE
Title:	Title: Vice President - Engineering
Date:	Date:

AFH

ARIZONA WATER COMPANY

Pinal Valley - Casa Grande
220 E. 2nd Street
Casa Grande, AZ 85122 PH: 520-836-8786

PROPOSAL/CONTRACT

CONTRACTOR: SOUTHWEST WATERWORKS CONTRACTORS, INC.		SYSTEM: PINAL VALLEY
AZ CONTRACTOR LICENSE NO:	CLASSIFICATION:	W A No(s): 1-5362
ADDRESS: P. O BOX 6339		BID DUE DATE: July 31, 2015
CITY ST ZIP PHOENIX, AZ 85005		BID BOND REQUIRED ☑ Yes ☐ No

DESCRIPTION OF PROJECT: Pull and replace the pump and column pipe and brush the casing at Pinal Valley Well No. 31.

1-2. MATERIALS EXEMPT FROM CONTRACTING TAX (per Paragraph 6)	QUANTITY	UNIT PRICE LABOR	UNIT PRICE MATERIALS		TOTAL COST LABOR	TOTAL COST MATERIALS
				1		2

3. Total Labor to Install Exempt Materials (add the amounts in column 1) 3
4. Total Exempt Materials (add the amounts in column 2) 4

5-6. NON-EXEMPT MATERIALS	QUANTITY	LABOR	MATERIALS		LABOR	MATERIALS
Labor to pull and replace pump assembly	1					
Deliver 200 HP motor and pick up 250 HP motor from Keller Electrical and install	1					
Provide and install Simflo SP12C 11-stage bowl assembly complete	1					
Provide and install 10" x 20' taper thread seamless column pipe	28					
Provide and install 3/4" solvent weld PVC line	560 ft					
Provide and install 1/4" stainless steel air line with gauge and valve	560 ft					
Video well with downward and side scan; log and provide 2 DVD copies	2			5		6
Provide and install all miscellaneous materials (buckles, bandits, tape, etc.)	Lot					
Provide and install 3" x 1-15/16" x 20' oil tube and line shaft	8					
Brush and bail well using cable tool rig	40 hr.					
Acid wash with corrosion inhibitor, swab well, passivate the well casing and neutralize the discharge. Price Only	Lot					

7. Total Labor to Install Non-Exempt Materials (add the amounts in column 5) 7
8. Total Non-Exempt Materials (add the amounts in column 6) 8
9. Subtotal A (add lines 3, 7 and 8) 9
10. Contracting Tax Base (multiply the amount on line 9 by 0.65) 10
11. Applicable Contracting Tax Rate 11
12. Contracting Tax (multiply the amount on line 10 by line 11) 12
13. Subtotal B (add lines 4, 9 and 12) 13
14. 100% Performance and Payment Bonds Cost 14
15. Estimated Total Cost (add lines 13 and 14) 15

ARIZONA WATER COMPANY

CASA GRANDE WELL NO. 31 – CASA GRANDE, AZ
EQUIPMENT SPECIFICATIONS
JULY 15, 2015

Existing Well Information

Location:	1697 E. Elaine Court, Casa Grande, AZ 85122
Drilled by:	Zim Industries, Inc. - 2006
Casing:	Mild Steel, 18 in. from 0 ft. to 1,500 ft., perforated from 580 ft. to 800 ft and from 820 ft. to 1,480 ft.
Pump:	National E12MC 8-stage, Pump Setting @ 560 ft.
Column:	10-inch taper thread
Oil Tube:	3-inch
Shaft:	1-15/16-inch
Sounding line:	¾-inch PVC
Airline:	¼-inch stainless steel
Motor:	US Motors 200 HP

Special Conditions

- All waste materials removed from the well shall be disposed of by the contractor.
- Deliver existing 200 HP motor to Keller Electrical.
- Pick up 250 HP motor at Keller Electrical and install on Well No. 31.

Design Conditions

- 1,200 GPM @ 557 ft. TDH
- Pump Setting @ 560 ft.
- Static Water Level 303 ft. BLS
- Pumping Water Level 409 ft. BLS
- Discharge Pressure 52 psi.

Equipment to be Furnished and Installed by Pump Company

- One Simflo SP12C 11-stage (9.175-inch full trim impellers) 1770 RPM bowl assembly or alternate with Arizona Water Company Engineering approval. Please provide alternative bowl assembly as a separate bid in addition to the specified bowl assembly. Please include pump curve and supporting information for alternative bowl assembly.
- Provide and install 560 ft. of 10 in x 20 ft. Schedule 40 steel seamless tapered thread column pipe and additional, if required. Use 8-round thread for settings greater than 800 ft.
- Provide and install 3 in. x 1-15/16-inch oil tube and line shaft, if required.
- Provide and install 560 ft. of ¾-inch Schedule 40 PVC sounding line.
- Provide and install 560 ft. of ¼-inch stainless steel air line.
- Video well with downward and side scan, log, and provide 2 DVD copies.
- Brush and bail well using cable tool rig, if required.
- Acid wash with corrosion inhibitor, swab well, passivate well casing, flush and neutralize discharge, if required.
- All miscellaneous bandits, buckles, tape, etc.
- All material subject to Arizona Water Company Standard Specifications (enclosed) except as noted.

Acid Wash Well Cleaning Specifications

- Approved well cleaning solutions: Well Klean hydrochloric acid mixture, Cody Chemicals Liquid Acid Descaler.
- Introduce the manufacture recommend amount of well cleaning solution through a double swab tool that allows the cleaning solution to be surged into the annulus.
- The double swab tool shall have two rubber swabs separated by no more than 20 feet of perforated pipe.
- Periodically reciprocate the double swap tool as it is moved to different injection depths.
- Apply the cleaning solution evenly throughout the screened intervals.
- Let the cleaning solution sit in place for 24 hours.
- Pump the entire volume of cleaning solution from the well into a temporary tank and neutralize the discharged chemicals with a sodium bicarbonate and water mixture. After several well volumes have been removed and neutralized, introduce additional sodium bicarbonate solution into the well to passivate the surface of the well casing to prevent rapid re-growth of scale.
- Develop the well by swab-and-air lift or pump and surge techniques.

Bowl Assembly Construction Materials

- Contractor's proposal shall include pump manufacturer's recommendations for quantity of bowls requiring alternative material for high pressure. Pump bowl materials shall be selected based on maximum operating pressure of pump at any point on performance curve.
- No invoice will be accepted for payment unless accompanied by a "complete" installed pump equipment data sheet (see attached copy)
- Alternate bowl assemblies may be considered subject to final approval by Arizona Water Company's Engineering department

Included with Each Bid should be a List Including:

- Maximum Bhp
- Operating Bhp
- Overall efficiency at design conditions
- Total down thrust at design conditions
- Maximum down thrust throughout total pump range
- Differential stretch at design condition
- Maximum differential stretch
- Allowable lateral for bowl assembly

Pump Data Sheet - SIMFLO PUMPS INC.

Company: awc
Name: james
Date: 7/15/2015

Pump:

Size: SP12C (11 stage)

Type: VERTTURBINE
Synch speed: 1800 rpm

Speed: 1770 rpm
Dia: 9.17 in

Curve:

Impeller:

Specific Speeds:

Ns: 2969
Nss: 9341

Dimensions:

Suction: 8 in
Discharge: 8 in

Vertical Turbine:

Bowl size: 12 in
Max lateral: 0.937 in
Thrust K factor: ---

Search Criteria:

Flow: 1200 US gpm

Head: 557 ft

Fluid:

Water
SG: 1
Viscosity: 1.105 cP

Temperature: 60 °F
Vapor pressure: 0.2563 psi a
Atm pressure: 14.7 psi a

NPSHa: ---

Motor:

Standard: US
Enclosure: TYPE_1

Size: 250 hp
Speed: 1800
Frame: ----

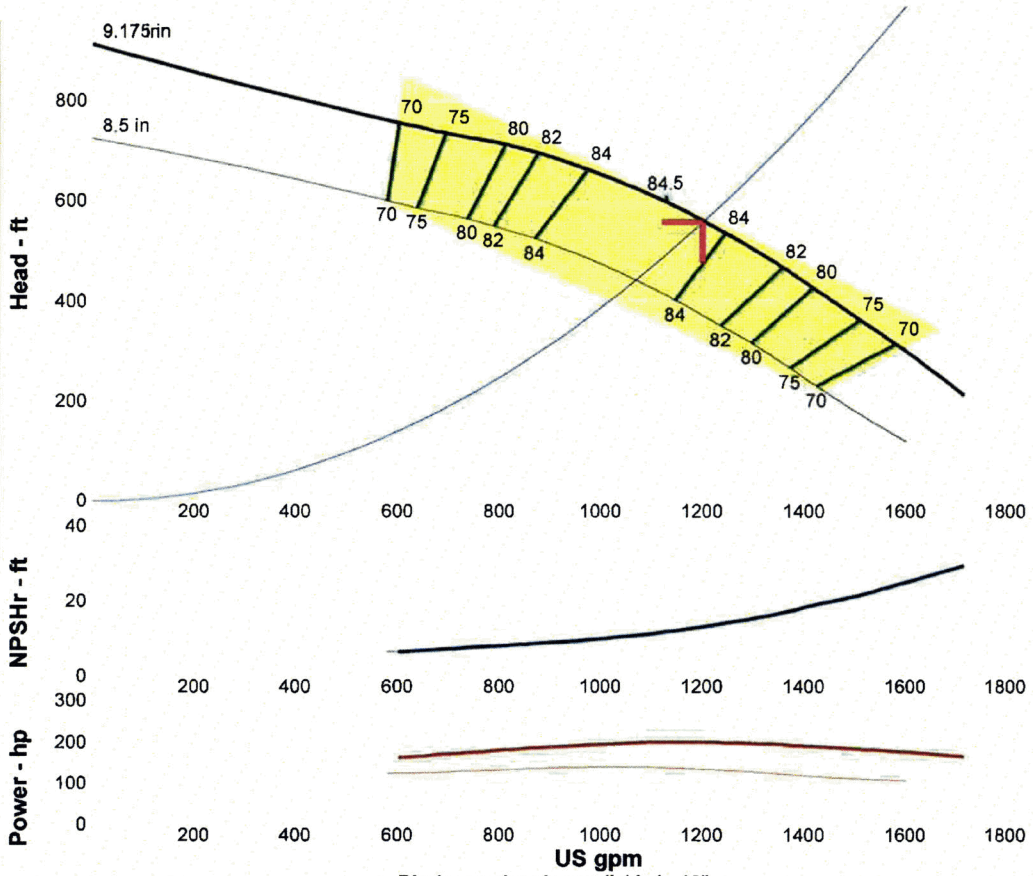
Sizing criteria: Max Power on Design Curve

Pump Limits:

Temperature: ---
Pressure: ---
Sphere size: 1.187 in

Power: ---
Eye area: 29.9 in²

---- Data Point ----	
Flow:	1200 US gpm
Head:	559 ft
Eff:	84.2%
Power:	201 hp
NPSHr:	13.3 ft
---- Design Curve ----	
Shutoff head:	912 ft
Shutoff dP:	395 psi
Min flow:	---
BEP:	84.5% @ 1128 US gpm
NOL power:	201 hp @ 1128 US gpm
-- Max Curve --	
Max power:	202 hp @ 1129 US gpm



Discharge size also available in 10".

Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
1440	1770	410	78.7	189	19.6
1200	1770	559	84.2	201	13.3
960	1770	667	83.7	193	9.56
720	1770	729	76.2	174	7.48
480	1770	---	---	---	---

Selected from catalog: Simflo Pumps.60 Vers: 2

ARIZONA WATER COMPANY

SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT: E-4-1

CONSTRUCTION SPECIFICATIONS: E-8-1

STANDARD SPECIFICATION DRAWINGS: E-9-1

2007 EDITION WITH **2010** REVISIONS;
2012 GENERAL CONDITIONS OF CONTRACT

gw 7/15/15

A copy of this entire Spec Book was sent out with Southwest Waterworks invitation to bid package for 1-5362 Pinal Valley Well No 3 pump on 7/15/15 gs

Western Group Rate Case

Exhibit FKS-1

5166 Coolidge Airport

ARIZONA WATER COMPANY
WORK AUTHORIZATION

W.A. NUMBER: 1-5166
P.E. NUMBER:
BUDGET ITEM NO.: B-1
SHEET NO.: 1 of 2

SYSTEM:	PINAL VALLEY	RETENTION REQUIRED:	☑ YES ☐ NO
DIVISION:	CASA GRANDE	WORK TO START BY:	UPON AUTHORIZATION
RESPONSIBLE PERSON:	JAMES WILSON	WORK TO BE FINISHED BY:	WITHIN 60 DAYS
TAX CODE:	2100		

DESCRIPTION OF WORK:

Design and construct an Arsenic Removal Facility (ARF) at the Coolidge Airport north well site to remove arsenic from Well Nos. 1 and 2. The ARF construction will be complete in 2015 prior to the Summer peak demands. Construct in accordance with attached drawings and/or Arizona Water Company specifications.

FACTORS JUSTIFYING WORK:

APPROVED 2014 BUDGET ITEM ($50,000)

The Coolidge Airport water system previously served fewer than 25 people and was classified as a transient non-community water system, exempt from Primary Drinking Water Regulation Maximum Contaminant Levels (MCL). Due to recent growth at the airport in accordance with Title 40 of the Code of Federal Regulations part 141, subpart c, the water system was re-classified as a non-transient non-community water system. This means the water supply and water system must comply with all regulations of the EPA Safe Drinking Water Act. Well Nos. 1 and 2 are required to maintain safe, reliable, and adequate water service to the Coolidge Airport water system. Well Nos. 1 and 2 produce water with an arsenic concentration of approximately 13 ppb which exceeds the arsenic MCL of 10 ppb and requires treatment.

COST ESTIMATE		AUTHORIZATION	DATE
COST OF WORK:		PREPARED BY: John Knobbe	3-5-2014
MATERIAL	0		
LABOR	1,560	REVIEWED FOR ESMT/ROW VERIFICATION: Charles Briggs	03-05-2014
CONTRACT PORTION	26,980		
OVERHEAD	3,139	REVIEWED BY: James Wilson	3/12/14
TOTAL AUTHORIZED EXPENDITURES CHARGEABLE TO THIS W.A.	$ 31,679		
FUNDS RECEIVED:		APPROVED BY ENGINEERING: Fredrick Schneider	3-13-14
CONTRIBUTIONS RECEIVED	0		
REFUNDABLE ADVANCES RECEIVED	0	APPROVED BY FINANCE: Joseph Harris	3/15/14
TOTAL CONTRIBUTIONS/ADVANCES	0		
NET COMPANY CASH REQUIRED	$ 31,679	AUTHORIZED BY PRESIDENT: William Garfield	3-19-2014

COMMENTS:

RELEASE TO DESIGN ONLY

CONSTRUCTION RELEASE:

RELEASE TO DESIGN
Authorized Sign
Date: 3/19/14

2014 BUDGET

AFH

ARIZONA WATER COMPANY

WORK AUTHORIZATION - DETAIL SHEET

W.A. NUMBER: 1-5166
P.E. NUMBER:
BUDGET ITEM NO.: B-1
SHEET NO.: 2 of 2

RETIREMENT PROPERTY UNITS	PLANT PROPERTY ACCOUNT	UNIT DESCRIPTION	QUANTITY	YEAR INSTALLED AND W.A. NUMBER

PROJECT DESCRIPTION:

Design and construct an Arsenic Removal Facility (ARF) at the Coolidge Airport north well site to remove arsenic from Well Nos. 1 and 2.

	DESCRIPTION	PLANT PROP ACCT	QUANTITY	UNIT COST	TOTAL
CONTRACT WORK	Arsenic Removal Technology and Media Alternatives Evaluation	332	1	$ 25,980.00	$ 25,980
	Evaluate reuse of existing pressure filters	332	1	1,000.00	1,000
	SERVICE CONNECTIONS COMPLETE: DOUBLE-LONG	345			
	SERVICE CONNECTIONS COMPLETE: DOUBLE-SHORT	345			
	SERVICE CONNECTIONS COMPLETE: SINGLE-LONG	345			
	SERVICE CONNECTIONS COMPLETE: SINGLE-SHORT	345			
TOTAL CONTRACT WORK					$ 26,980
MATERIALS					
	SERVICE CONNECTIONS: DOUBLE-LONG	345			
	SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	SERVICE CONNECTIONS: SINGLE-LONG	345			
	SERVICE CONNECTIONS: SINGLE-SHORT	345			
	METERS	346			
TOTAL MATERIALS					$ -
LABOR	Engineering Review	332	24	$ 65.00	$ 1,560
	TESTING FEE				
	PERMIT FEE				
	SURVEY FEE				
	FIELD INSPECTION				
	INSTALL SERVICE CONNECTIONS: DOUBLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-SHORT	345			
TOTAL LABOR					$ 1,560
SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR					$ 28,540
OVERHEAD					3,139
TOTAL	REFUNDABLE PORTION ☐	NON-REFUNDABLE PORTION ☐		COST ESTIMATE	$ 31,679

AFH

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, AZ 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6874 • TOLL FREE: (800) 533-6023 • www.azwater.com

May 14, 2015

Mr. Steven Nowaczyk, P. E.
Ninyo & Moore Consultants
3202 E. Harbour Drive
Phoenix, AZ 85034

Re: All Weather Access Road in Coolidge, AZ

Dear Mr. Nowaczyk:

Enclosed is your original of the Agreement for Consulting Services for the above referenced project, which has been accepted by Arizona Water Company.

If you have any questions, please call me at this office.

Very truly yours,

James T. Wilson, P. E.
Senior Engineer
jwilson@azwater.com

afh
Enclosure

E-MAIL: engineering@azwater.com

W:\PROJECTS\CGPV\INSIDE\SW GROUND-WATER EXECUTED CONSULT AGMT CVR LTR COOLIDGE ACCESS ROAD.DOCX
AJH:AFH 1:29 PM 5/14/15

AGREEMENT FOR CONSULTING SERVICES BETWEEN
ARIZONA WATER COMPANY AND
NINYO AND MOORE GEOTECHNICAL & ENVIRONMENTAL SCIENCES CONSULTANTS

THIS AGREEMENT is made and entered into on this 14th day of May, 2015, by and between Arizona Water Company, an Arizona corporation, hereinafter referred to as "Company," and Ninyo and Moore Geotechnical & Environmental Sciences Consultants, an Arizona corporation hereinafter referred to as "Consultant".

RECITALS

WHEREAS, Company is authorized to and desires to retain Consultant to provide engineering design, post design and construction administration services for geotechnical services for All-Weather AccessRoad in Coolidge, Arizona ("Project").

WHEREAS, Consultant is agreeable to providing personnel and facilities necessary to perform the desired services within Company's required time; and

WHEREAS, Company desires to retain Consultant to perform the services in the manner, at the time, and for the compensation set forth herein;

NOW, THEREFORE, Company and Consultant agree as follows:

1. Description of Project

Company and Consultant agree that Project is as described in Exhibit A, hereto, incorporated by reference herein and entitled "Scope of Work," dated April 30, 2015. If, during the course of Project, Company and Consultant agree to changes in Project, such changes shall be effective only after being incorporated in this Agreement by written amendment, signed by representative of Company and Consultant.

2. Scope of Consultant Services

Consultant agrees to perform those services described hereafter. Unless modified in writing by both parties, duties of Consultant shall not be construed to exceed those services specifically set forth herein.

a. Basic Services: Consultant agrees to perform those services described in the Scope of Work (the "Services"). Any tasks not specifically described in the Scope of Work will be Additional Services.

b. Additional Services: Company shall pay Consultant all fees and costs incurred in performing Additional Services provided the services were authorized by Company in writing. Unless otherwise agreed in writing, Additional Services shall be

compensated in accordance with Consultant's standard billing rates at the time the Additional Services are performed.

c. Litigation Assistance: Unless specifically stated therein, the Scope of Work does not include assistance to support, prepare, document, bring, defend or assist in litigation undertaken or defended by Company. All such services required or requested of the Consultant by Company or any third party (except claims between Company and Consultant) will be reimbursed at Consultant's applicable rates for such litigation services.

3. Responsibilities of Company

In addition to payment for the Services performed under this Agreement, Company shall:

a. Assist and cooperate with Consultant in any manner necessary and within its ability to facilitate Consultant's performance under this Agreement.

b. Designate in writing a person to act as Company's representative with respect to this Agreement. Such person shall have complete authority to transmit instructions, receive information, interpret and define Company's policies, make decisions and execute documents on Company's behalf.

c. Furnish Consultant with all technical data in Company's possession including, but not limited to, maps, surveys, drawings, soils or geotechnical reports and any other information required by or useful to Consultant in performance of the Services under this Agreement.

d. Notify Consultant of any known or potential health or safety hazards existing at or near the project site.

e. Provide access to and/or obtain permission for Consultant to enter upon project related property during normal business hours, whether or not owned by Company, as required to perform and complete the Services.

4. Americans with Disabilities Act

Any other provision of this Agreement to the contrary notwithstanding, unless otherwise specified in the Scope of Services, Company's contractors shall have sole responsibility as between Company and Consultant for compliance with the Americans With Disabilities Act ("ADA") 42 U.S.C. 12101 et. Seq. and the related regulations. Consultant shall provide Company with applicable ADA criteria, which may be required.

5. Authorization and Completion

In signing this Agreement Company grants Consultant specific authorization to proceed with work as described in Scope of Work and under the terms of this Agreement.

6. Compensation

a. Amount: For the Services described in Exhibit A, Company agrees to pay, and Consultant agrees to accept compensation in accordance with Exhibit B, attached hereto and incorporated herein. Where Consultant has provided Company with a breakdown of the total compensation into subtasks, such breakdowns are estimates only. Consultant may reallocate compensation between tasks, provided total compensation is not exceeded without the prior written approval of Company.

b. Payment: As long as Consultant has not defaulted under this Agreement, Company shall pay Consultant within thirty (30) days of the date of Consultant's invoices for services performed and reimbursable expenses incurred under this Agreement. If Company has reason to question or contest any portion of any such invoice, amounts questioned or contested shall be identified and notice given to Consultant within thirty (30) days of the date of the invoice. Any portion of any invoice not contested shall be deemed to be accepted and approved for payment and shall be paid to Consultant within thirty (30) days of the date of the invoice. Company agrees to cooperate with Consultant in a mutual effort to resolve promptly any contested portions of Consultant's invoices.

In the event any uncontested portions of any invoice are not paid within thirty (30) days of the date of Consultant's invoice, interest on the unpaid balance shall accrue beginning with the 31st day at the rate of 1.5% per month, and Consultant shall have the right to suspend work per Article XV, Suspension of Work.

7. Responsibility of Consultant

a. Standard of Care Professional Services: Subject to the limitations inherent in the agreed scope of work as to the degree of care, amount of time and expenses to be incurred, and subject to any other limitations contained in this Agreement, Consultant shall perform the Services and any Additional Services in accordance with generally accepted standards and practices customarily utilized by competent engineering firms in effect at the time Services and any Additional Services are rendered. Consultant does not expressly or impliedly warrant or guarantee its Services.

b. Reliance upon Information Provided by Others: If Consultant's performance of services hereunder requires Consultant to rely on information provided by other parties (excepting Consultant's subcontractors), Consultant shall not independently verify the validity, completeness, or accuracy of such information unless otherwise expressly engaged to do so in writing by Company.

c. Consultant's Opinion of Costs: Company acknowledges that construction cost estimates, financial analyses and feasibility projections are subject to many influences including, but not limited to, price of labor and materials, unknown or latent conditions of existing equipment or structures, and time or quality of performance by third parties. Company acknowledges that such influences may not be precisely forecasted and are beyond the control of Consultant and that actual costs incurred may vary substantially from the estimates prepared by Consultant. Consultant does not warrant or guarantee the accuracy of construction or development cost estimates, however, Consultant agrees to exercise its best Professional Judgment in rendering its opinions.

d. Construction Phase Services

i. Consultant's Activities at Construction Site: The presence of Consultant's personnel at a construction site, whether as on-site representative, resident engineer, construction manager, or otherwise, does not make Consultant responsible for those duties that belong to Company and/or construction contractors or others, and does not relieve construction contractors or others of their obligations, duties, and responsibilities, including, but not limited to, construction methods, means, techniques, sequences, and procedures necessary for completing all portions of the construction work in accordance with the contract documents, any health or safety programs and precautions required by such construction work, and any compliance with applicable laws and regulations. Any inspection or observation of the contractor's work is for the purpose of determining that the work is proceeding in conformance with the intent of the project specifications and contract documents. Consultant has no authority to exercise control over any construction contractor in connection with their work or health or safety programs and precautions. Except to protect Consultant's own personnel and except as may be expressly required elsewhere in the Scope of Work, Consultant has no duty to inspect, observe, correct, or report on health or safety deficiencies of the construction contractor.

ii. Shop Drawing and Submittal Review: If required by Consultant's Scope of Services, Consultant shall review shop drawings or other contractor submittals for general conformance with the intent of the contract documents. Except for services completed under direct contract to Consultant, Consultant shall not be required to verify dimensions, to engineer contractor's shop drawings or submittals, nor to coordinate shop drawings or other submittals with other shop drawings or submittals provided by contractor.

iii. Record Drawings: Record drawings, if required, will be prepared, in part, on the basis of information compiled and furnished by others, and may not always represent the exact location, type of various components, or exact manner in which the Project was finally constructed. Except for services completed under direct contract to Consultant, Consultant is not responsible for any errors or omissions in the information from others that are incorporated into the record drawings.

e. Scope of Work: Before preparing the scope of work, Consultant specifically acknowledges and agrees that it has inspected and familiarized itself with Company's site. The Consultant has received, or had the opportunity to inquire about and/or request all relevant information concerning the Scope of Work from Company or any other source Consultant deems necessary. The Scope of Work has been prepared by the Consultant and to the best of its knowledge includes all applicable work required to successfully complete geotechnical services for All-Weather AccessRoad in Coolidge, Arizona ("Project").

8. Asbestos/Hazardous Material

Consultant and Consultant's subcontractors shall have no responsibility for the discovery, handling, removal, or disposal of, or exposure of persons to asbestos or hazardous or toxic materials that are present in any form at the Project site. Professional services related to or in any way connected with the investigation, detection, abatement, replacement, use, specification, or removal of products, materials, or processes containing asbestos or hazardous or toxic materials are beyond the scope of this Agreement.

In the event Consultant encounters asbestos or hazardous materials at the jobsite, Consultant may, at its option and without liability for damages, suspend the performance of services on the Project until such time as Company and Consultant mutually agree on an amendment to this Agreement to address the issue, or Company retains another specialist consultant or contractor to identify, classify, abate and/or remove the asbestos and/or hazardous materials.

9. Consultant's Work Product

a. Scope: Consultant's work product which is prepared solely for the purposes of this Agreement, including, but not limited to, drawings, test results, recommendations and technical specifications, whether in hard copy or electronic form, shall become the property of Company when Consultant has been fully compensated as set forth herein. Consultant may keep copies of all work product(s) for its records.

Consultant and Company recognize that Consultant's work product submitted in performance of this Agreement is intended only for the project described in this Agreement. Company's alteration of Consultant's work product or its use by Company for any other purpose shall be at Company's sole risk.

b. Electronic Copies: If requested, solely as an aid and accommodation to Company, Consultant may provide copies of its work product documents in computer-readable media ("electronic copies", "CADD"). These documents will duplicate the documents provided as work product, but will not bear the signature and professional seals of the registered professionals responsible for the work. Company is cautioned that the accuracy of electronic copies and CADD documents may be compromised by electronic media degradation, errors in format translation, file corruption, printing errors

and incompatibilities, operator inexperience and file modification. Consultant will maintain the original copy, which shall serve as the official, archived record of the electronic and CADD documents.

10. Indemnification

a. The Consultant shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, loss, actions, causes of action, expense, penalties, fines, assessments, damages and costs of every kind and nature for injury to or death of any and all persons, including, without limitation, employees or representatives of the Company or of the Consultant or of any subcontractor, or any other person or persons, and for damage, destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, property of the Company or of the Consultant or of any subcontractor, or of any other person or persons, and the violation of any law, ordinance, rule, regulation, standard, or order resulting from, or in any manner arising out of, or in connection with, the performance of the work under the Contract, howsoever same may be caused, including, without limitation, the Company's active or passive negligence. The Consultant shall also, upon request by the Company, and at no expense to the Company, defend the Company in any and all suits, concerning such injury to or death of any and all persons, and concerning such damage, destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, suits by employees or representatives of the Company or of the Consultant or of any subcontractor, or any other person or persons, or concerning any court or administrative proceeding concerning the violation of any law, ordinance, rule, regulation, standard, or order. Excluded from this paragraph are only those injuries to or deaths of persons and damage, destruction or loss, to or of property arising from the sole negligence or willful misconduct of the Company.

b. Consultant shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, damages, costs, expenses and attorney's fees, suffered or incurred on account of any breach of any obligation, covenant or other provision of this contract, including without limitation, breach of the indemnity provisions of subsection A of this Section 10.

c. Consultant further agrees to defend, indemnify and hold harmless the Company, its directors, officers, employees, and agents, from and against any and all costs, damages, claims, expenses, violations, notices of violations, penalties, liens, assessments, and liabilities of every kind and nature, foreseeable or unforeseeable, directly or indirectly, arising from any release, removal, generation, use, storage or disposal on, under, around, or from the site of any material, substance, or waste, hazardous or nonhazardous, including, without limitation, drilling fluids, mud, cuttings and development and test water howsoever same may be caused, including, without limitation, the Company's active or passive negligence.

11. Consultant's Insurance

Consultant shall procure and maintain the following minimum insurance:

a. Commercial general liability insurance, including personal injury liability, blanket contractual liability and broad-form property damage liability coverage. The combined single limit for bodily injury and property damage shall be not less than $1,000,000.

b. Automobile bodily injury and property damage liability insurance covering owned, non-owned, rented, and hired cars. The combined single limit for bodily injury and property damage shall be not less than $1,000,000.

c. Statutory workers' compensation and employer's liability insurance as required by state law.

d. Professional liability insurance. The policy limit shall be not less than $1,000,000.

Consultant shall either require each of its subconsultants to procure and to maintain the insurance specified in this section or insure its subconsultants in the Consultants own policy, in like amounts.

Company shall be named as additional insured on policies a and b above. Upon execution of this Agreement, Consultant will provide a certificate of insurance to Company. Consultant will keep the certificate current at all times while this Agreement is in effect. The Consultant will provide a 30-day written notice in the event the above policies are cancelled.

12. Confidentiality

Consultant agrees it will maintain the confidentiality of all material it receives from Company and will not disclose, distribute, or publish to any third party such information without the prior permission of Company. Notwithstanding the foregoing, Consultant shall have no confidentiality obligation with respect to information that:

a. becomes generally available to the public other than as a result of disclosure by Consultant or its agents or employees;

b. was available to Consultant prior to its disclosure by Company;

c. becomes available to Consultant from a third party who is not, to the knowledge of Consultant, bound to retain such information in confidence.

In the event Consultant is compelled by subpoena, court order, or administrative order to disclose any confidential information, Consultant shall promptly notify Company

and shall cooperate with Company prior to disclosure so that Company may take necessary actions to protect such confidential information from disclosure.

13. Subcontracts

Consultant shall be entitled, to the extent determined appropriate by Consultant, to subcontract any portion of the services to be performed under this Agreement.

14. Suspension of Work

Work under this Agreement may be suspended as follows:

a. By Company: By written notice to Consultant, Company may suspend all or a portion of the Work under this Agreement if unforeseen circumstances beyond Company's control make normal progress of the Work impracticable.

b. By Consultant: By written notice to Company, Consultant may suspend the work if Consultant reasonably determines that working conditions at the Site (outside Consultant's control) are unsafe, or in violation of applicable laws, or in the event Company has not made timely payment in accordance with Article VI, compensation.

15. Termination of Work

a. This Agreement may be terminated by Company as follows: (1) for its convenience on thirty (30) days' notice to Consultant, or (2) for cause, if Consultant materially breaches this Agreement through no fault of Company and Consultant neither cures such material breach nor makes reasonable progress toward cure within fifteen (15) days after Company has given written notice of the alleged breach to Consultant.

b. This Agreement may be terminated by Consultant as follows: (1) for cause, if Company materially breaches this Agreement through no fault of Consultant and Company neither cures such material breach nor makes reasonable progress toward cure within thirty (30) days after Consultant has given written notice of the alleged breach to Company.

c. Payment upon Termination: In the event of termination, Consultant shall perform such additional work as is reasonably necessary for the orderly closing of the work. Consultant shall be compensated for all work performed prior to the effective date of termination, plus work required for the orderly closing of the work, including: (1) authorized work performed up to the termination date plus termination expenses, including all labor and expenses, at Consultant's standard billing rates, directly attributable to termination; (2) all efforts necessary to document the work completed or in progress; and (3) any termination reports requested by Company.

16. Assignment

This Agreement is binding on the heirs, successors, and assigns of the parties hereto. Except as otherwise set forth under Article VIII, Assignment of Tasks to Affiliates, this Agreement may not be assigned by Company or Consultant without prior, written consent of the other.

17. No Benefit for Third Parties

The services to be performed by Consultant are intended solely for the benefit of Company, and no benefit is conferred on, nor contractual relationship established with any person or entity not a party to this Agreement. No such person or entity shall be entitled to rely on Consultant's services, opinions, recommendations, plans, or specifications without the express written consent of Consultant. No right to assert a claim against the Consultant, its officers, employees, agents, or consultants shall accrue to the construction Contractor or to any subcontractor, supplier, manufacturer, lender, insurer, surety, or any other third party as a result of this Agreement or the performance or nonperformance of the Consultant's services hereunder.

18. Force Majeure

Consultant and Company shall not be responsible for delays caused by circumstances beyond their reasonable control, including, but not limited to: (1) strikes, lockouts, work slowdowns or stoppages, or accidents; (2) acts of God; (3) failure of Company to furnish timely information or to approve or disapprove Consultant's instruments of service promptly; and (4) faulty performance or nonperformance by Consultant or Company, Company's or Consultant independent consultants or contractors, or governmental agencies. Consultant and Company shall not be liable for damages arising out of any such delay, nor shall the Consultant or Company be deemed to be in breach of this Agreement as a result thereof.

19. Integration

This Agreement represents the entire understanding of Company and Consultant as to those matters contained herein. No prior oral or written understanding shall be of any force or effect with respect to those matters covered herein. This Agreement may not be modified or altered except in writing signed by both parties.

20. Severability

If any part of this Agreement is found unenforceable under applicable laws, such part shall be inoperative, null, and void insofar as it conflicts with said laws, but the remainder of this Agreement shall be in full force and effect.

21. Choice of Law/Jurisdiction

This Agreement shall be administered and interpreted under the laws of the State of Arizona Jurisdiction of litigation arising from the Agreement shall be in The State of Arizona.

22. Attorneys' Fees

In the event any claim, controversy, or legal action arises under this Agreement, the prevailing party shall be entitled to recover from the other party all attorneys' fees, costs, expenses and other fees incurred by the prevailing party.

23. Notice Provisions

Notices concerning this Agreement shall be in writing and sent by certified mail or by courier (such as Federal Express), or by hand-delivery addressed as follows:

To the Company:

Arizona Water Company
3805 North Black Canyon Highway
Phoenix, AZ 85015-5351
Attention: President

or

Arizona Water Company
Post Office Box 29006
Phoenix, AZ 85038-9006
Attention: President

To Consultant:

Ninyo & Moore
3202 E. Harbour Drive
Phoenix, AZ 85034
Attention: Steven Nowaczyk, P. E.

Either party may change its address for purposes of this Section by giving written notice of such change of address to the other party.

24. Authorization

The persons executing this Agreement on behalf of the parties hereto represent and warrant that the parties have all legal authority and authorization necessary to enter into this Agreement, and that such persons have been duly authorized to execute this Agreement on their behalf.

IN WITNESS WHEREOF, each of the parties hereto has caused this instrument to be executed by their respective duly authorized officers as of the date first written above.

NINYO AND MOORE
an Arizona corporation

By: Stan P. Nowozynski

Its: Principal Engineer

ARIZONA WATER COMPANY,
an Arizona corporation

By: [illegible]

Its: VP-Engineering

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EXHIBIT A

SCOPE OF WORK

The scopes of services we will perform for this project is outlined below:

- Arrange for the underground utilities to be located through Arizona Blue Stake.
- Perform a geotechnical exploration that will include the excavation of two borings using hand operated equipment. The borings will be located near the ends of the new access road and will be drilled up to 3 feet below the ground surface. Representative samples will be collected in the field and returned to our laboratory for further analysis. The borings will be backfilled with drilling spoils.
- Perform laboratory testing to evaluate the index characteristics of the on-site soils.
- Prepare a Geotechnical Evaluation Report that will contain the results of our evaluation. The report will include a cover letter sealed by a Professional Engineer licensed in the State of Arizona. The report will include the following:
    - Site vicinity and boring location figures;
    - Description of work scope, laboratory, and field procedures;
    - Encountered subsurface soil and groundwater conditions;
    - Earthwork recommendations, such as excavation characteristics of on-site soils, earthwork factors, potential for re-use of on-site soils, subgrade preparation measures, and recommendations for special soil conditions such as expansive, collapsible, or highly compressible soils; and
    - Aggregate base thickness.

EXHIBIT B

FEE ESTIMATE, ASSUMPTIONS, AND SCHEDULE

We propose to perform the work scope described above for a lump sum fee of $2,000 (Two Thousand Dollars).

ASSUMPTIONS

We have made the following assumptions in the preparation of this proposal:

- The sites are accessible to normal, two-wheel drive equipment and site access will be granted.
- Any other right of entry permits that may be needed for the project will be obtained by others.
- The field work can be conducted during normal daytime hours.
- Services of a private utility locator will not be required.
- Groundwater will not be encountered.
- If auger refusal is encountered, we will terminate the drilling and notify your office.
- Any environmental clearance needed as a part of this project will be obtained by others.
- The field work can be accomplished with a single mobilization effort.
- Some ground disturbance should be expected.

SCHEDULE

We are prepared to initiate this project immediately upon receiving your authorization to proceed. We anticipate issuing a report within 30 days from the execution of the Agreement for Consulting Services.

SCHEDULE OF FEES

HOURLY CHARGES FOR PERSONNEL

Principal Engineer/Geologist/Environmental Scientist	$ 136
Senior Engineer/Geologist/Environmental Scientist	$ 115
Senior Project Engineer/Geologist/Environmental Scientist	$ 102
Project Engineer/Geologist/Environmental Scientist	$ 96
Senior Staff Engineer/Geologist/Environmental Scientist	$ 90
GIS Analyst	$ 84
Staff Engineer/Geologist/Environmental Scientist	$ 80
Field Operations Manager	$ 74
Supervisory Technician	$ 68
Senior Field/Laboratory Technician	$ 54
Field/Laboratory Technician	$ 50
Technical Illustrator/CAD Operator	$ 48
Geotechnical/Environmental/Laboratory Assistant	$ 43
Information Specialist	$ 43
Data Processing, Technical Editing, or Reproduction	$ 38

OTHER CHARGES

Expert Witness Testimony	$ 400/hr
Coring Machine Usage (includes technician)	$ 120/hr
Vapor Emission Kits	$ 30/kit
Field Vehicle Usage	$ 10/hr
Nuclear Gage Usage	$ 8/hr
Direct Project Expenses	Cost plus 15%

Laboratory testing, geophysical equipment, and other special equipment provided upon request.

NOTES

For field and laboratory technicians and special inspectors, overtime rates at 1.5 times the regular rates will be charged for work performed in excess of 8 hours in one day Monday through Friday and all day on Saturday and Sunday. Rates at twice the regular rates will be charged for all work in excess of 12 hours in one day and all day on holidays. Lead time for any requested service is 24 hours. Special Inspector and Field Technician rates are based on a 4-hour minimum charge. Field personnel are charged portal to portal. The given rates do not apply to projects that are subject to Davis Bacon/prevailing wage provisions.

INVOICES

Invoices will be rendered monthly unless otherwise arranged, and are payable upon receipt. A service charge of 1.5 percent per month may be charged on accounts not paid within 30 days. Attorney fees or other costs incurred in collecting delinquent accounts will be paid by the client.

TERMS AND CONDITIONS

The terms and conditions of providing our consulting services include our limitation of liability and indemnities as presented in Ninyo & Moore's Work Authorization and Agreement.

SCHEDULE OF FEES FOR LABORATORY TESTING
Laboratory Test, Test Designation, and Price Per Test

Soils

Atterberg Limits, D 4318, T 89, T 90	$ 85
California Bearing Ratio (CBR), D 1883	$ 350
Chloride and Sulfate Content, ARIZ 733, 736	$ 100
Consolidation, (with time rate) D 2435, T 216	$ 250
Consolidation, Full Cycle (with out time rate) D 2435	$ 175
Consolidation, Hydro (response to wetting) D 2435	$ 80
Remolded Swell (swell potential) D 4546	$ 95
Direct Shear – Undisturbed (three points), D 3080, T 236	$ 250
Direct Shear – Remolded (three points), D 3080, T 236	$ 300
Expansion Index, D 4829, UBC 18-2	$ 120
Hydraulic Conductivity, D 5084	$ 300
Hydrometer Analysis, D 422, T 88	$ 140
Double Hydrometer Analysis, D 422, T 88	$ 270
Moisture, Ash, & Organic Matter of Peat/Organic Soils	$ 90
Moisture Only, D 2216, T 265	$ 20
Moisture and Density, D 2937	$ 35
Permeability, CH, D 2434, T 215	$ 220
pH and Resistivity, ARIZ 236 b	$ 100
Proctor Density, D 1557, D 698, T 99, T 180	$ 125
R-value, D 2844, T 190	$ 250
Sand Equivalent, D 2419, T 176	$ 85
Sieve Analysis, D 422, (includes 200 wash)	$ 100
200 Wash, D 1140	$ 75
Specific Gravity, D 854	$ 75
Thermal Resistivity (ASTM 5334, IEEE 442)	$ 800
Triaxial Shear, C.U., three points, D 4767, T 297	$ 325
Triaxial Shear, U.U., one point, D 2850, T 296	$ 125
Unconfined Compression, D 2166, T 208	$ 160

Masonry

Concrete Block Compression Test, 8x8x16, C 140	$ 50
Cores, Compression or Shear Bond	$ 34
Masonry Grout, 3x3x6 prism compression, UBC 21-18	$ 20
Masonry Mortar, 2x4 cylinder compression, UBC 21-16	$ 20
Masonry Prism, half size, compression, UBC 21-17	$ 100

Concrete

Compression Tests, 6 x 12, 4 x 8 Cylinder, C 39	$ 20
Concrete Mix Design Review, Job Spec	$ 125
Concrete Mix Design, per Trial Batch, 6 cylinder, ACI	$ 650
Concrete Cores, Compression (excludes sampling), C 42	$ 45
Drying Shrinkage, C 157	$ 300
Flexural Test, C 78	$ 80
Flexural Test, C 293	$ 85
Gunite/Shotcrete, Panels, 3 cut cores per panel and test, ACI	$ 190
Jobsite Testing Laboratory	Quote
Lightweight Concrete Fill, Compression, C 495	$ 40
Petrographic Analysis, C 856	Quote
Splitting Tensile Strength, C 496	$ 70

Reinforcing and Structural Steel

Fireproofing Density Test, UBC 7-6	$ 50
Hardness Test, Rockwell, A-370	$ 40
High Strength Bolt, Nut & Washer Conformance, set, A-325	$ 125
Mechanically Spliced Reinforcing Tensile Test, ACI	$ 80
Pre-Stress Strand (7 wire), A 416	$ 125
Chemical Analysis, A-36, A-615	$ 125
Reinforcing Tensile or Bend up to No. 11, A 615 & A 706	$ 50
Structural Steel Tensile Test: Up to 200,000 lbs. (machining extra), A 370	$ 60
Welded Reinforcing Tensile Test: Up to No. 11 bars, ACI	$ 60

Asphalt Concrete

Asphalt Mix Design Review, Job Spec	$ 150
Asphalt Content/Gradation (Ignition Oven), T308, D6307	$ 190
Marshall Stability, Flow and Unit Weight, T-245	$ 190
Marshall and Unit Weight T-245	$ 100
Maximum Theoretical Unit Weight (Rice), D 2041	$ 100
Bulk Specific Gravity per specimen (non-absorptive), D 2726	$ 20
Bulk Specific Gravity per specimen (coated), D 1188	$ 40

Aggregates

Absorption, Coarse, C 127	$ 50
Absorption, Fine, C 128	$ 75
Clay Lumps and Friable Particles, C 142	$ 95
Fractured Face ARIZ 212E	$ 120
Los Angeles Abrasion, C 131 or C 535	$ 165
Mortar making properties of fine aggregate, C 87	$ 300
Organic Impurities, C 40	$ 50
Potential Reactivity of Aggregate (Chemical Method), C 289	Quote
Sand Equivalent, T 176	$ 85
Sieve Analysis, Coarse Aggregate, C 136	$ 90
Sieve Analysis, Fine Aggregate (including wash), C 136	$ 90
Sodium Sulfate Soundness (per size fraction), C 88	$ 240
Specific Gravity, Coarse, C 127	$ 80
Specific Gravity, Fine, C 128	$ 80
Unit Weight C29, T19	$ 50

Special preparation of standard test specimens will be charged at the technician's hourly rate.

Ninyo & Moore is accredited to perform the AASHTO and ADOT equivalent of many ASTM test procedures.

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, AZ 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6874 • TOLL FREE: (800) 533-6023 • www.azwater.com

March 31, 2014

Mr. Mark Gross
Carollo Engineers
4600 E. Washington Street, Suite 500
Phoenix, AZ 85034

Re: Coolidge Airport Wells No. 1 and 2 ARF Technologies

Dear Mr. Gross:

Enclosed is your copy of the Consulting Agreement for the above referenced project, which has been accepted by Arizona Water Company (the "Company").

If you have any questions, please call me at this office.

Very truly yours,

John P. Knobbe
Lead Designer
engineering@azwater.com

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Enclosure

AGREEMENT FOR CONSULTING SERVICES BETWEEN
ARIZONA WATER COMPANY AND
CAROLLO ENGINEERS, INC

THIS AGREEMENT is made and entered into on this 28th day of March, 2014, by and between Arizona Water Company, an Arizona corporation, hereinafter referred to as "Company," and Carollo Engineers, an ~~Arizona~~ Delaware corporation hereinafter referred to as "Consultant".

RECITALS

WHEREAS, Company is authorized to and desires to retain Consultant to provide engineering services for Coolidge Airport Wells No. 1 and 2 arsenic removal technology and media alternatives evaluation.

WHEREAS, Consultant is agreeable to providing personnel and facilities necessary to perform the desired services within Company's required time; and

WHEREAS, Company desires to retain Consultant to perform the services in the manner, at the time, and for the compensation set forth herein;

NOW, THEREFORE, Company and Consultant agree as follows:

1. Description of Project

Company and Consultant agree that Project is as described in Exhibit A, hereto, incorporated by reference herein and entitled "Scope of Work," dated February 17, 2014. If, during the course of Project, Company and Consultant agree to changes in Project, such changes shall be effective only after being incorporated in this Agreement by written amendment, signed by representative of Company and Consultant.

2. Scope of Consultant Services

Consultant agrees to perform those services described hereafter. Unless modified in writing by both parties, duties of Consultant shall not be construed to exceed those services specifically set forth herein

a. Basic Services Consultant agrees to perform those services described in the Scope of Work (the "Services"). Any tasks not specifically described in the Scope of Work will be Additional Services.

b. Additional Services Company shall pay Consultant all fees and costs incurred in performing Additional Services provided the services were authorized by Company in writing. Unless otherwise agreed in writing, Additional Services shall be compensated in accordance with Consultant's standard billing rates at the time the Additional Services are performed.

c. Litigation Assistance Unless specifically stated therein, the Scope of Work does not include assistance to support, prepare, document, bring, defend or assist in litigation undertaken or defended by Company. All such services required or requested of the Consultant by Company or any third party (except claims between Company and Consultant) will be reimbursed at Consultant's applicable rates for such litigation services.

3. Responsibilities of Company

In addition to payment for the Services performed under this Agreement, Company shall:

a. Assist and cooperate with Consultant in any manner necessary and within its ability to facilitate Consultant's performance under this Agreement.

b. Designate in writing a person to act as Company's representative with respect to this Agreement. Such person shall have complete authority to transmit instructions, receive information, interpret and define Company's policies, make decisions and execute documents on Company's behalf.

c. Furnish Consultant with all technical data in Company's possession including, but not limited to, maps, surveys, drawings, soils or geotechnical reports and any other information required by or useful to Consultant in performance of the Services under this Agreement.

d. Notify Consultant of any known or potential health or safety hazards existing at or near the project site.

e. Provide access to and/or obtain permission for Consultant to enter upon project related property during normal business hours, whether or not owned by Company, as required to perform and complete the Services.

4. Americans with Disabilities Act

Any other provision of this Agreement to the contrary notwithstanding, unless otherwise specified in the Scope of Services, Company's contractors shall have sole responsibility as between Company and Consultant for compliance with the Americans With Disabilities Act ("ADA") 42 U.S.C. 12101 et. Seq. and the related regulations. Consultant shall provide Company with applicable ADA criteria, which may be required.

5. Authorization and Completion

In signing this Agreement Company grants Consultant specific authorization to proceed with work as described in Scope of Work and under the terms of this Agreement.

6. Compensation

a. Amount. For the Services described in Exhibit A, Company agrees to pay, and Consultant agrees to accept compensation in accordance with Exhibit B, attached hereto and incorporated herein. Where Consultant has provided Company with a breakdown of the total compensation into subtasks, such breakdowns are estimates only. Consultant may reallocate compensation between tasks, provided total compensation is not exceeded without the prior written approval of Company.

b. Payment As long as Consultant has not defaulted under this Agreement, Company shall pay Consultant within thirty (30) days of the date of Consultant's invoices for services performed and reimbursable expenses incurred under this Agreement. If Company has reason to question or contest any portion of any such invoice, amounts questioned or contested shall be identified and notice given to Consultant within thirty (30) days of the date of the invoice. Any portion of any invoice not contested shall be deemed to be accepted and approved for payment and shall be paid to Consultant within thirty (30) days of the date of the invoice. Company agrees to cooperate with Consultant in a mutual effort to resolve promptly any contested portions of Consultant's invoices.

In the event any uncontested portions of any invoice are not paid within thirty (30) days of the date of Consultant's invoice, interest on the unpaid balance shall accrue beginning with the 31st day at the rate of 1.5% per month, and Consultant shall have the right to suspend work per Article XV, Suspension of Work.

7. Responsibility of Consultant

a. Standard of Care Professional Services

Subject to the limitations inherent in the agreed scope of work as to the degree of care, amount of time and expenses to be incurred, and subject to any other limitations contained in this Agreement, Consultant shall perform the Services and any Additional Services in accordance with generally accepted standards and practices customarily utilized by competent engineering firms in effect at the time Services and any Additional Services are rendered. Consultant does not expressly or impliedly warrant or guarantee its Services.

b. Reliance upon Information Provided by Others

If Consultant's performance of services hereunder requires Consultant to rely on information provided by other parties (excepting Consultant's subcontractors), Consultant shall not independently verify the validity, completeness, or accuracy of such information unless otherwise expressly engaged to do so in writing by Company.

c. Consultant's Opinion of Costs

Company acknowledges that construction cost estimates, financial analyses and feasibility projections are subject to many influences including, but not limited to, price of labor and materials, unknown or latent conditions of existing equipment or structures, and time or quality of performance by third parties. Company acknowledges that such influences may not be precisely forecasted and are beyond the control of Consultant and that actual costs incurred may vary substantially from the estimates prepared by Consultant. Consultant does not warrant or guarantee the accuracy of construction or development cost estimates, however, Consultant agrees to exercise its best Professional Judgment in rendering its opinions.

d. Construction Phase Services

1. Consultant's Activities at Construction Site. The presence of Consultant's personnel at a construction site, whether as on-site representative, resident engineer, construction manager, or otherwise, does not make Consultant responsible for those duties that belong to Company and/or construction contractors or others, and does not relieve construction contractors or others of their obligations, duties, and responsibilities, including, but not limited to, construction methods, means, techniques, sequences, and procedures necessary for completing all portions of the construction work in accordance with the contract documents, any health or safety programs and precautions required by such construction work, and any compliance with applicable laws and regulations. Any inspection or observation of the contractor's work is for the purpose of determining that the work is proceeding in conformance with the intent of the project specifications and contract documents. Consultant has no authority to exercise control over any construction contractor in connection with their work or health or safety programs and precautions. Except to protect Consultant's own personnel and except as may be expressly required elsewhere in the Scope of Work, Consultant has no duty to inspect, observe, correct, or report on health or safety deficiencies of the construction contractor.

2. Shop Drawing and Submittal Review If required by Consultant's Scope of Services, Consultant shall review shop drawings or other contractor submittals for general conformance with the intent of the contract documents. Except for services completed under direct contract to Consultant, Consultant shall not be required to verify dimensions, to engineer contractor's shop drawings or submittals, nor to coordinate shop drawings or other submittals with other shop drawings or submittals provided by contractor.

3. Record Drawings Record drawings, if required, will be prepared, in part, on the basis of information compiled and furnished by others, and may not always represent the exact location, type of various components, or exact manner in which the Project was finally constructed. Except for services completed under direct contract to Consultant, Consultant is not responsible for any errors or omissions in the information from others that are incorporated into the record drawings.

e. Scope of Work

1. Before preparing the scope of work, Consultant specifically acknowledges and agrees that it has inspected and familiarized itself with Company's site The Consultant has received, or had the opportunity to inquire about and/or request all relevant information concerning the Scope of Work from Company or any other source Consultant deems necessary. The Scope of Work has been prepared by the Consultant and to the best of its knowledge includes all applicable work required to successfully complete Coolidge Airport Wells No. 1 and 2 arsenic removal technology and media alternatives evaluation.

8. Asbestos/Hazardous Material

Consultant and Consultant's subcontractors shall have no responsibility for the discovery, handling, removal, or disposal of, or exposure of persons to asbestos or hazardous or toxic materials that are present in any form at the Project site. Professional services related to or in any way connected with the investigation, detection, abatement, replacement, use, specification, or removal of products, materials, or processes containing asbestos or hazardous or toxic materials are beyond the scope of this Agreement.

In the event Consultant encounters asbestos or hazardous materials at the jobsite, Consultant may, at its option and without liability for damages, suspend the performance of services on the Project until such time as Company and Consultant mutually agree on an amendment to this Agreement to address the issue, or Company retains another specialist consultant or contractor to identify, classify, abate and/or remove the asbestos and/or hazardous materials.

9. Consultant's Work Product

a. Scope

Consultant's work product which is prepared solely for the purposes of this Agreement, including, but not limited to, drawings, test results, recommendations and technical specifications, whether in hard copy or electronic form, shall become the property of Company when Consultant has been fully compensated as set forth herein. Consultant may keep copies of all work product(s) for its records.

Consultant and Company recognize that Consultant's work product submitted in performance of this Agreement is intended only for the project described in this Agreement. Company's alteration of Consultant's work product or its use by Company for any other purpose shall be at Company's sole risk.

b. Electronic Copies

If requested, solely as an aid and accommodation to Company, Consultant may provide copies of its work product documents in computer-readable media ("electronic

copies", "CADD"). These documents will duplicate the documents provided as work product, but will not bear the signature and professional seals of the registered professionals responsible for the work. Company is cautioned that the accuracy of electronic copies and CADD documents may be compromised by electronic media degradation, errors in format translation, file corruption, printing errors and incompatibilities, operator inexperience and file modification. Consultant will maintain the original copy, which shall serve as the official, archived record of the electronic and CADD documents.

10. Indemnification

a. The Consultant shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, loss, actions, causes of action, expense, penalties, fines, assessments, damages and costs of every kind and nature for injury to or death of any and all persons, including, without limitation, employees or representatives of the Company or of the Consultant or of any subcontractor, or any other person or persons, and for damage, destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, property of the Company or of the Consultant or of any subcontractor, or of any other person or persons, and the violation of any law, ordinance, rule, regulation, standard, or order resulting from, or in any manner arising out of, or in connection with, the performance of the work under the Contract, howsoever same may be caused, including, without limitation, the Company's active or passive negligence. The Consultant shall also, upon request by the Company, and at no expense to the Company, defend the Company in any and all suits, concerning such injury to or death of any and all persons, and concerning such damage, destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, suits by employees or representatives of the Company or of the Consultant or of any subcontractor, or any other person or persons, or concerning any court or administrative proceeding concerning the violation of any law, ordinance, rule, regulation, standard, or order. Excluded from this paragraph are only those injuries to or deaths of persons and damage, destruction or loss, to or of property arising from the sole negligence or willful misconduct of the Company.

b. Consultant shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, damages, costs, expenses and attorney's fees, suffered or incurred on account of any breach of any obligation, covenant or other provision of this contract, including without limitation, breach of the indemnity provisions of subsection A of this Section 10.

c. Consultant further agrees to defend, indemnify and hold harmless the Company, its directors, officers, employees, and agents, from and against any and all costs, damages, claims, expenses, violations, notices of violations, penalties, liens, assessments, and liabilities of every kind and nature, foreseeable or unforeseeable, directly or indirectly, arising from any release, removal, generation, use, storage or disposal on, under, around, or from the site of any material, substance, or waste,

hazardous or nonhazardous, including, without limitation, drilling fluids, mud, cuttings and development and test water howsoever same may be caused, including, without limitation, the Company's active or passive negligence.

11. Consultant's Insurance

Consultant shall procure and maintain the following minimum insurance:

a. Commercial general liability insurance, including personal injury liability, blanket contractual liability and broad-form property damage liability coverage. The combined single limit for bodily injury and property damage shall be not less than $1,000,000.

b. Automobile bodily injury and property damage liability insurance covering owned, non-owned, rented, and hired cars. The combined single limit for bodily injury and property damage shall be not less than $1,000,000.

c. Statutory workers' compensation and employer's liability insurance as required by state law.

d. Professional liability insurance. The policy limit shall be not less than $1,000,000.

Consultant shall either require each of its subconsultants to procure and to maintain the insurance specified in this section or insure its subconsultants in the Consultants own policy, in like amounts.

Company shall be named as additional insured on policies a and b above. Upon execution of this Agreement, Consultant will provide a certificate of insurance to Company. Consultant will keep the certificate current at all times while this Agreement is in effect. The Consultant will provide a 30-day written notice in the event the above policies are cancelled.

12. Confidentiality

Consultant agrees it will maintain the confidentiality of all material it receives from Company and will not disclose, distribute, or publish to any third party such information without the prior permission of Company. Notwithstanding the foregoing, Consultant shall have no confidentiality obligation with respect to information that:

a. becomes generally available to the public other than as a result of disclosure by Consultant or its agents or employees;

b. was available to Consultant prior to its disclosure by Company;

c. becomes available to Consultant from a third party who is not, to the knowledge of Consultant, bound to retain such information in confidence.

In the event Consultant is compelled by subpoena, court order, or administrative order to disclose any confidential information, Consultant shall promptly notify Company and shall cooperate with Company prior to disclosure so that Company may take necessary actions to protect such confidential information from disclosure.

13. Subcontracts

Consultant shall be entitled, to the extent determined appropriate by Consultant, to subcontract any portion of the services to be performed under this Agreement.

14. Suspension of Work

Work under this Agreement may be suspended as follows:

a. By Company By written notice to Consultant, Company may suspend all or a portion of the Work under this Agreement if unforeseen circumstances beyond Company's control make normal progress of the Work impracticable.

b. By Consultant By written notice to Company, Consultant may suspend the work if Consultant reasonably determines that working conditions at the Site (outside Consultant's control) are unsafe, or in violation of applicable laws, or in the event Company has not made timely payment in accordance with Article VI, compensation.

15. Termination of Work

a. This Agreement may be terminated by Company as follows: (1) for its convenience on thirty (30) days' notice to Consultant, or (2) for cause, if Consultant materially breaches this Agreement through no fault of Company and Consultant neither cures such material breach nor makes reasonable progress toward cure within fifteen (15) days after Company has given written notice of the alleged breach to Consultant.

b. This Agreement may be terminated by Consultant as follows: (1) for cause, if Company materially breaches this Agreement through no fault of Consultant and Company neither cures such material breach nor makes reasonable progress toward cure within thirty (30) days after Consultant has given written notice of the alleged breach to Company.

c. Payment upon Termination In the event of termination, Consultant shall perform such additional work as is reasonably necessary for the orderly closing of the work. Consultant shall be compensated for all work performed prior to the effective date of termination, plus work required for the orderly closing of the work, including: (1) authorized work performed up to the termination date plus termination expenses, including all labor and expenses, at Consultant's standard billing rates, directly attributable to termination; (2) all efforts necessary to document the work completed or in progress; and (3) any termination reports requested by Company.

16. Assignment

This Agreement is binding on the heirs, successors, and assigns of the parties hereto. Except as otherwise set forth under Article VIII, Assignment of Tasks to Affiliates, this Agreement may not be assigned by Company or Consultant without prior, written consent of the other.

17. No Benefit for Third Parties

The services to be performed by Consultant are intended solely for the benefit of Company, and no benefit is conferred on, nor contractual relationship established with any person or entity not a party to this Agreement. No such person or entity shall be entitled to rely on Consultant's services, opinions, recommendations, plans, or specifications without the express written consent of Consultant. No right to assert a claim against the Consultant, its officers, employees, agents, or consultants shall accrue to the construction Contractor or to any subcontractor, supplier, manufacturer, lender, insurer, surety, or any other third party as a result of this Agreement or the performance or nonperformance of the Consultant's services hereunder.

18. Force Majeure

Consultant and Company shall not be responsible for delays caused by circumstances beyond their reasonable control, including, but not limited to: (1) strikes, lockouts, work slowdowns or stoppages, or accidents; (2) acts of God; (3) failure of Company to furnish timely information or to approve or disapprove Consultant's instruments of service promptly; and (4) faulty performance or nonperformance by Consultant or Company, Company's or Consultant independent consultants or contractors, or governmental agencies. Consultant and Company shall not be liable for damages arising out of any such delay, nor shall the Consultant or Company be deemed to be in breach of this Agreement as a result thereof.

19. Integration

This Agreement represents the entire understanding of Company and Consultant as to those matters contained herein. No prior oral or written understanding shall be of any force or effect with respect to those matters covered herein. This Agreement may not be modified or altered except in writing signed by both parties.

20. Severability

If any part of this Agreement is found unenforceable under applicable laws, such part shall be inoperative, null, and void insofar as it conflicts with said laws, but the remainder of this Agreement shall be in full force and effect.

21. Choice of Law/Jurisdiction

This Agreement shall be administered and interpreted under the laws of the State of Arizona Jurisdiction of litigation arising from the Agreement shall be in The State of Arizona.

22. Attorneys' Fees

In the event any claim, controversy, or legal action arises under this Agreement, the prevailing party shall be entitled to recover from the other party all attorneys' fees, costs, expenses and other fees incurred by the prevailing party.

23. Notice Provisions

Notices concerning this Agreement shall be in writing and sent by certified mail or by courier (such as Federal Express), or by hand-delivery addressed as follows:

To the Company:

Arizona Water Company
3805 North Black Canyon Highway
Phoenix, AZ 85015-5351
Attention: President

or

Arizona Water Company
Post Office Box 29006
Phoenix, AZ 85038-9006
Attention: President

To Consultant:

Carollo Engineers, Inc.
4600 E. Washington Street, Suite 500
Phoenix, AZ 85034
Attention: Mr. Mark Gross

Either party may change its address for purposes of this Section by giving written notice of such change of address to the other party.

24. Authorization

The persons executing this Agreement on behalf of the parties hereto represent and warrant that the parties have all legal authority and authorization necessary to enter into this Agreement, and that such persons have been duly authorized to execute this Agreement on their behalf.

IN WITNESS WHEREOF, each of the parties hereto has caused this instrument to be executed by their respective duly authorized officers as of the date first written above.

CAROLLO ENGINEERS, INC.
an ~~Arizona~~ Delaware corporation

By: M. J. [illegible]

Its: Vice President

ARIZONA WATER COMPANY,
an Arizona corporation

By: [illegible]

Its: VP - Engineering

Exhibit A

carollo

Engineers...Working Wonders With Water®

Arizona Water Company
Scope of Work and Fee
Coolidge Airport Wells No. 1 and 2 Arsenic Removal Facility
Arsenic Removal Technology and Media Alternatives Evaluation

February 17, 2014

INTRODUCTION

This proposed Scope of Work defines the engineering services which Carollo Engineers, Inc. (Carollo) will provide Arizona Water Company (AWC) for the Coolidge Airport Wells No. 1 and 2 Arsenic Removal Technology and Media Alternatives Evaluation Study (Study). The services to be provided include an evaluation of potential arsenic removal technology alternatives for the site, and an evaluation of arsenic removal media alternatives.

The Coolidge Airport water system previously served less than 25 people and was classified as a transient non-community water system, exempt from Primary Drinking Water Regulation Maximum Contaminant Levels (MCL). Due to recent growth at the airport, AWC re-classified the water system as a non-transient non-community water system subject to all regulations of the Safe Drinking Water Act. Wells No. 1 and No. 2 are required to maintain safe, reliable, and adequate water service to the Coolidge Airport water system. Wells No. 1 and No. 2 produce water with an arsenic concentration of approximately 13 micrograms per liter, which exceeds the arsenic MCL of 10 micrograms per liter. The wells together produce approximately 700 gallons per minute of groundwater, although AWC may add more wells in the future to accommodate growth in this area.

AWC intends to permit and construct an arsenic removal facility (ARF) at the Coolidge Municipal Airport Well No. 1 site (Site). The new ARF will be designed to reduce the arsenic concentrations in the groundwater to less than 7 micrograms per liter. The influent arsenic design parameter is estimated to range from 15 to 22 micrograms per liter based on recent samples from Wells No. 1 and No. 2. The near-term and long-term range of duty cycles for the wells will be estimated by AWC as part of the Study. The design and alternative evaluation will accommodate future expansion of the ARF for additional flows from future well(s), also to be defined by AWC during the Study.

The goal of this study is to evaluate arsenic removal technology alternatives for the Site, and then identify the most cost effective alternative for implementation that meets regulatory agency and AWC requirements.

Three arsenic removal technology options will be considered for this study:

- Coagulation/Filtration
- Ion Exchange
- Adsorption

Each technology will be evaluated with multiple process trains (i.e. partial flow vs. full flow, single vessel vs. multiple vessels, and series flow vs. parallel flow). The following constraints will be included in the evaluation process for each arsenic removal technology alternative:

- Site space restrictions, new and future equipment spacing and layouts
- Potential limitations on equipment heights
- Potential of blending groundwater for partial stream treatment to reduce treatment equipment footprints and costs
- Disposal costs for residuals streams from the treatment processes for each of the arsenic removal technology alternatives evaluated (disposal of treatment residuals via sewer connection is assumed not viable)
- Well production, AWC system production requirements, well water quality parameters and their impacts on the different removal technologies

In order to select the best available and most cost effective arsenic removal technology, the evaluation process for this study will include, but may not necessarily be limited to the following components:

- Capital construction costs for each alternative
- O&M costs, including waste disposal costs for each alternative
- 20-year life cycle costs for each alternative

Pros and cons of each alternative including, but not limited to:

- Removal technology effectiveness and reliability
- Ease of operations, and the ability of the ARF to be removed from service for weeks or months and then re-started (summertime/wintertime operation)
- Disposal of residuals, regulatory permitting, and potential issues and costs associated with generation and disposal of Resource Conservation and Recovery Act (RCRA) wastes
- Constructability
- Footprint

The Scope of Services for this Study is described below.

SCOPE OF SERVICES

Task Series 100 - Preliminary Evaluation of Alternatives and Results Workshop

Task 110 - Carollo will review water quality data and perform a preliminary evaluation of the arsenic removal technology alternatives noted above. Some additional sampling and analysis of key water quality data parameters may be requested during Task 110 to confirm suitability of treatment technologies and blending strategies, if Carollo determines additional water quality samples are required. In order to determine the best available arsenic removal technology, Carollo will provide AWC a list of the additional water quality samples required in writing prior to the completion of Task 110. Carollo will then perform a preliminary evaluation of the alternatives and present the results at a workshop for AWC's review and inputs. Prior to the workshop, Carollo will provide an agenda and a draft of the study evaluation results to date.

Assumptions: A project kick-off meeting will be held with AWC and the Carollo project manager and key staff. A project workshop will be held upon completion of the preliminary evaluations to present results.

AWC inputs: 1) Provide CAD file of Site Plan. 2) Provide historical water quality and operations data. 3) Provide inputs on preferred ARF technology.

Deliverables: Carollo will provide 1) Workshop handouts and 2) Preliminary evaluation results.

Task Series 200 - Evaluation of Media Systems

The goal of this task is to evaluate potential arsenic removal medias for the technology configurations selected as part of Task 100, and identify the cost effective medias.

Task 210 - As a new installation, it is likely that the media will be procured as part of a system. It is also likely that a supplier will provide the media, contactor vessels, internal piping, face piping, and valves. The controls and instrumentation (e.g., programmable logic controller, pressure transmitter, flow meter, rupture disc, etc.) could also be provided by the vessels and media supplier. Carollo will perform a preliminary evaluation of arsenic media systems currently available on the market. This preliminary list will then be reduced to three media systems based on go/no-go criteria using the site constraints and AWC's preferences (e.g., media systems that use off-site regeneration are not acceptable to AWC). Carollo will perform an evaluation of the three media systems and the evaluation will include the following criteria:

Coagulation/Filtration

Based on AWC's previous experience with coagulation/filtration technology, media selection may not be appropriate at this time and should be addressed during the detailed design process.

Ion Exchange

- Salt, brine, waste volume storage requirements
- Projected regeneration rate based on available water quality data
- Supplier's ability to provide equipment that meets the physical site constraints
- Approximate relative equipment cost, salt delivery and brine disposal cost
- Waste Quality / Disposal requirements
- Expected useful life of IX resin
- Resin cost and availability

Adsorption

- Projected bed volumes for media based on available water quality data
- Supplier's ability to provide equipment that meets the physical site constraints
- Standard treatment performance guarantee with reimbursements/credits when such performance quarantines are not met, i.e., when bed life is less than expected
- Approximate relative equipment cost, media replacement cost, and media disposal cost
- Supplier taking full responsibility for disposed media and indemnifying AWC. AWC currently also has third party contracts for media disposal. Both supplier disposal and AWC contract disposal alternatives, if feasible, will be included as part of the evaluation for this study

- Waste quality/disposal requirements
- Availability of media
- Media storage requirements
- Ease of installation, preparation, and disposal of media
- Chemical/backwash requirements
- Required backwash flow rate/storage volume and other requirements

Carollo will collect this information and then develop a recommendation based on a 20-year life cycle cost comparison. Important system specific features that are not quantified in the costs (e.g., delivery times, indemnification clauses, manufacturer's openness to modifying standard package, etc.) will be noted as separate evaluation factors. Carollo will present the results of this analysis at a workshop with AWC.

Assumptions: None.

AWC inputs: Attend review meeting.

Deliverables: Carollo will present the results of this analysis at a workshop with AWC.

Task Series 300 - Draft and Final Study Technical Memorandum

Task 310 - Upon completion of the preliminary results and the presentation of results at the workshop in Task 110, Carollo will prepare a draft technical memorandum that details the evaluation criteria, costs, and the recommended arsenic removal technology and media proposed for use at the site. The draft technical memorandum will also include conceptual schematic site plans for the recommended arsenic removal technology at the Site. The draft technical memorandum will also incorporate or address comments made by the AWC during the workshop(s). AWC will review and comment on the draft technical memorandum and Carollo will then finalize such memorandum incorporating or addressing the AWC's comments.

AWC inputs: Review and comment on the draft technical memorandum.

Deliverables: Carollo will provide electronic and four (4) hard copies of the draft and final technical memorandum.

Allowance – Review Suitability of Reusing Existing Pressure Vessels for Valley Farms Site

Task Allowance – If directed by AWC, Carollo will review the suitability of reusing AWC's existing pressure vessels from the former Montezuma and Rainbow arsenic removal facility systems, if applicable for the selected treatment technology at Valley Farms. The Montezuma and Rainbow Valley ARFs referenced were taken out of service. The evaluation will include a process evaluation to determine suitability of materials of construction, suitability for retrofitting with applicable inlet/outlet piping if needed, and for compatibility of necessary operating flows and pressures.

AWC inputs: AWC will provide photos and dimensioned cut sheets of the existing proposed filter pressure vessels.

Exhibit B
Coolidge Airport Wells No. 1 and 2
Arsenic Removal Technology and Media Alternatives Evaluation
Proposal from Carollo Engineers
February 17, 2014

Services

TASK DESCRIPTIONS		Tech. Adv.	Proj. Mgr.	Disc. Eng.	Proj. Eng.	Staff Eng.	Tech	Word Pro.	Total Labor	Total $
	Rate ($)	$225	$190	$165	$130	$95	$110	$80		
Task Series 100 - Preliminary Eval. Of Alts. And Results										
Task 110 - Kickoff Meeting and review water quality data			2	4	4				10	$1,560
Task 120 - Preliminary evaluation - arsenic removal tech. alts.		1	2	24	24				51	$7,685
Task 130 - Technical alternatives evaluation workshop		2	4	8	8				22	$3,570
Task Series 200 - Evaluation of Media Systems										
Task 210 - Evaluation of medias, review workshop		2	4	16	16				38	$5,930
Task Series 300 - Draft and Final Study Tech Memo										
Task 310 - Draft and Final Study Technical Memorandum		1	6	14	12			4	37	$5,555
	Total Hrs	6	18	66	64	0	0	4		
								Sub-Total	158	$24,300
Project Equipment & Computer Expenses (PECE) $10/hr										$1,580
Reproduction										$0
Mileage/Travel										$100
Subconsultants										$0
								Total		**$25,980**

Allowance

TASK DESCRIPTIONS		Tech. Adv.	Proj. Mgr.	Disc. Eng.	Proj. Eng.	Staff Eng.	Tech	Word Pro.	Total Labor	Total $
	Rate ($)	$225	$190	$165	$130	$95	$110	$80		
Allowance										
Evaluate reuse of existing pressure filter vessels			1	4					5	$850
	Total Hrs	0	1	4	0	0	0	0		
								Sub-Total	5	$850
Project Equipment & Computer Expenses (PECE) $10/hr										$50
Reproduction										$0
Mileage/Travel										$100
Subconsultants										$0
								Total		**$1,000**

Architects and Engineers

The following policy language is from Commercial General Liability Coverage Forms

The following are mandatory forms on the policy identified on the Certificate of Insurance:

421-0080 (01 03) COMMERCIAL GENERAL LIABILITY SPECIAL BROADENING ENDORSEMENT

- **Additional Insured by Contract, Agreement or Permit**

Under Section II-Who Is An insured, Paragraph 4.is added as follows:

4. a. Any person or organization with whom you agreed, because of a written contract, written agreement or permit to provide Insurance Is an insured, but only with respect to:

(1) "Your work" for the additional Insured(s) at the location designated in the contract, agreement or permit; or

(2) Premises you own, rent, lease or occupy.

This Insurance applies on a primary basis if that is required by the written contract, written agreement or permit.

b. This provision does not apply:

(1) Unless the written contract *or* written agreement has been executed or permit has been issued prior to the "bodily Injury", "property damage", "personal injury" or "advertising injury".

(2) To any person or organization Included as an Insured by an endorsement Issued by us and made part of this Coverage Part.

(3) To any person or organization included as an insured under item 2 of this endorsement

(4) To any lessor of equipment:

(a) After the equipment lease expires; or

(b) If the "bodily Injury", "property damage", "personal injury" or "advertising Injury" arises out of sole negligence of the lessor.

(5) To any:

(a) Owners or other Interests from whom land has been leased which takes place after the lease for the land expires; or

(b) Managers or lessors of premises if:

(i) The occurrence takes place after you cease to be a tenant in that premises; or

(ii) The "bodily injury", "property damage", "personal injury" or "advertising injury" arises out of structural alterations, new construction or demolition operations performed by or on behalf of the manager or lessor.

- **Aggregate Limit Per location**

(1) Under Section III - Limits of Insurance the General Aggregate Limit applies separately to each of your "locations Owned by or rented to you.

(2) Under Section V – Definitions, definition 23. is added as follows:

23. "Location" means premises involving the same or connecting lots or premises whose connection is interrupted only by a street, roadway, waterway or right-of-way of a railroad.

CG 2503(05 09) DESIGNATED CONSTRUCTION PROJECT(S) GENERAL AGGREGATE LIMIT

- **Aggregate Limit of Insurance (Per Project)**

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Designated Construction Projects:
Your projects away from premises owned by or rented to you

A. For all sums which the Insured becomes legally obligated to pay as damages caused by "occurrences" under Section I – Coverage A, and for all medical expanses caused by accidents under Section I – Coverage C, which can be attributed only to ongoing operations at a single designated construction project shown In the Schedule above:

1. A separate Designated Construction Project General Aggregate Limit applies to each designated construction project, and that Limit is equal to the amount of the General Aggregate Limit shown In the Declarations.
2. The Designated Construction Project General Aggregate Limit Is the most we will pay for the sum of all damages under Coverage A, except damages because of "bodily Injury" or "property damage" included In the "products-completed operations hazard", and for medical expenses under Coverage C regardless of the number of:

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a. Insured's;

b. Claims made or "suits" brought; or

c. Persons or organizations making claims or bringing "suits".

3. Any payments made under Coverage A for damages or under Coverage C for medical expenses shall reduce the Designated Construction Project General Aggregate limit for that designated construction project. Such payments shall not reduce the General Aggregate Limit shown in the Declarations nor shall they reduce any other Designated Construction Project General Aggregate Limit for any other designated construction project shown in the Schedule above.

4. The limits shown in the Declarations for Each Occurrence, Damage to Premises Rented to You and Medical Expense continue to apply. However, instead of being subject to the General Aggregate limit shown in the Declarations, such limits will be subject to the applicable Designated Construction Project General Aggregate Limit.

B. For all sums which the Insured becomes legally obligated to pay as damages caused by "occurrences" under Section 1 - Coverage A, and for all medical expenses caused by accidents under Section I – Coverage C, which cannot be attributed only to ongoing operations at a single designated construction project show in the Schedule above:

1. Any payments made under Coverage A for damages or under Coverage C for medical expenses shall reduce the amount available under the General Aggregate limit or the Products-completed Operations Aggregate Limit, whichever Is applicable; and

2. Such payments shall not reduce any Designated Construction Project General Aggregate Limit.

C. When coverage for liability arising out of the "products-completed operations hazard" Is provided, any payments for damages because of "bodily Injury" or "property damage" Included in the products-completed operations hazard" will reduce the Products-completed Operations Aggregate Limit, and not reduce the General Aggregate Limit nor the Designated Construction Project General Aggregate Limit.

D. If the applicable designated construction project has been abandoned, delayed, or abandoned and then restarted, or If the authorized contracting parties deviate from plans, blueprints, designs, specifications or time tables, the project will still be deemed to be the same construction project.

E. The provisions of Section III – Limits Of Insurance not otherwise modified by this endorsement shall continue to apply as stipulated.

421-0452 (06 07) OTHER INSURANCE-PRIMARY AND NON-CONTRIBUTORY (ADDITIONAL INSURED)

- **Additional Insured by Contract, Agreement or Permit Amended-Primary & Non-Contributory**

The following is added to Section IV – Commercial General Liability Conditions

4. Other Insurance

a. Additional Insured's

If you agree in a written contract, written agreement or permit that the insurance provided to any person or organization Included as an Additional Insured under Section II – Who is An Insured, is primary and non-contributory, the following applies:

If other valid and collectable Insurance is available to the Additional Insured for a loss we cover under Coverages A or B of this Coverage Part, our obligations are limited as follows:

1. Primary Insurance

This Insurance is primary to other Insurance that is available to the Additional Insured which covers the Additional Insured as a Named Insured. We will not seek contribution from any other Insurance available to the Additional Insured except:

I. For the sole negligence of the Additional insured;

II. When the Additional Insured Is an Additional Insured under another primary liability policy; or

III. When 2. below applies.

If this Insurance is primary, our obligations are not affected unless any of the other Insurance Is also primary. Then, we will share with all that other Insurance by the method described in 3. below.

2. Excess Insurance

This Insurance is excess over:

(1) Ally of the other Insurance, whether primary, excess, contingent or on any other basis:

(a) That is fire, Extended Coverage, Builder's Risk, Installation Risk or similar coverage for "your work";

(b) That is Fire insurance for premises rented to the Additional Insured or temporarily occupied by the Additional Insured with permission of the owner;

(c) That is Insurance purchased by the Additional Insured to cover the Additional Insured's liability as a tenant for "property damage" to premises rented to the Additional Insured or temporarily occupied by the Additional with permission of the owner; or

(d) If the loss arises out of the maintenance or use of aircraft, "autos" or watercraft to the extent not subject to Exclusion g. of Section I – Coverage A - Bodily Injury And Property Damage Liability.

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When this insurance is excess, we will have no duty under Coverages A or B to defend the insured against any "suit" if any other insurer has a duty to defend the insured against that "suit". If no other insurer defends, we will undertake to do so, but we will be entitled to the Insured's rights against all those other Insurers.

When this insurance is excess over other Insurance, we will pay only our share of the amount of the loss, if any, that exceeds the sum of:

1) The total amount that all such other insurance would pay for the loss in the absence of this Insurance; and

2) The total of all deductible and self-Insured amounts under all that other Insurance.

We will share the remaining loss, if any, with any other Insurance that is not described in this Excess Insurance provision and was not bought specifically to apply In excess of the Limits of Insurance shown in the Declarations of this Coverage Part.

3. Method Of Sharing

If all of the other Insurance permits contribution by equal shares, we will follow this method also under this approach each Insurer contributes equal amounts until it has paid Its applicable limit of Insurance or none of the loss remains, whichever comes first.

If any of the other Insurance does not permit contribution by equal shares, we will contribute by limits. Under this method, each Insurer's share is based on the ratio of Its applicable limit of Insurance to the total applicable limits of insurance of all insurers.

CG0001 (12 07) COMMERCIAL GENERAL LIABILITY COVERAGE FORM

- **Separation of Insured's**

Except with respect to the Limits of Insurance, and any rights or duties specifically assigned in this Coverage Part to the first Named Insured, this Insurance applies:

a. As if each Named Insured were the only Named Insured; and

b. Separately to each insured against whom claim is made or "suit' is brought.

CG 2404(05 09) WAIVER OF TRANSFER OF RIGHTS OF RECOVERY TO US

- **Waiver of Subrogation**

COMMERCIAL GENERAL LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERARTIONS LIABILITY COVERAGE PART

SCHEDULE

Name Of Person Or Organization:
Persons or organizations with whom you have a written contract executed prior to the "bodily Injury" or "property damage," that requires you to waive your rights of recovery

The following is added to Paragraph 8. Transfer Of Rights Of Recovery Against Others To Us of Section IV- Conditions:

We waive any right of recovery we may have against the person or organization shown In the Schedule above because of payments we make for injury or damage arising out of your ongoing operations or "your work" done under a contract with that person or organization and included in the "products-completed operations hazard". This waiver applies only to the person or organization shown in the Schedule above.

Authorized Representative

Name Insured: Carollo Engineers **Policy No.** ZHF8944892-03 **Effective:** 12/31/2013

Additional Insured: Any person or organization with whom the named insured agreed in a written contract to name as additional insured.

This Notice does not form a part of the insurance contract.

No coverage is provided by this Notice, nor can it be construed to replace any provisions of the policy (including its endorsements). If there is any conflict between this Notice and the policy (including its endorsements), the provisions of the policy (including its endorsements) shall prevail.

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ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Douglas A. Ducey
Governor

Henry R. Darwin
Director

RECEIVED
FEB 02 2015
ARIZONA WATER COMPANY
PHOENIX - OPERATIONS

January 27, 2015

Mr. Fred Schneider
Arizona Water Company
3805 N. Black Canyon Hwy
Phoenix, AZ 85015

Re: Coolidge Airport Water System Arsenic Conceptional Design Report

Dear Mr. Schneider:

On December 9, 2014 representatives of the Arizona Department of Environmental Quality (ADEQ) met with you and other representatives from Arizona Water Company (AWC) to discuss the above referenced report.

ADEQ has reviewed the report entitled *Coolidge Airport Water System PWSID No. 11-707 Arsenic Conceptional Design Report* and has determined that the proposed arsenic removal facility (ARF) with a bypass when demand exceeds the ARF will most likely meet the requirements of the Arsenic rule, including the running annual average. However, ADEQ does not believe utilizing the bypass meets the intent of the rule. When the ARF is bypassed during high demand events, customers could be provided water exceeding maximum contaminant level (MCL) of Arsenic during the event. While the running annual average will be within requirements of the rule, customers may subject to drinking water in exceedance of the MCL during these events.

ADEQ believes that point-of-use (POU) treatment technology is a better option than the proposed ARF to achieve compliance with the arsenic MCL as described in Arizona Administrative Code (A.A.C.) R18-4-218. POU is a cost effective solution and eliminates the need to bypass the treatment system.

During our discussions, AWC representatives raised concerns that AWC would be responsible for the installation, use, maintenance, inspections and compliance of the POUs attached to the Coolidge Airport Water System. Specifically, AWC representatives were concerned that they may not have access to the POUs. This concern is addressed in A.A.C. R18-4-218 (C)(4)(b) which states *persons served by public water systems must grant public water system employees reasonable access to POU treatment devices, so that the devices can be properly maintained. Public water systems may discontinue water service to a customer who refuses to allow public water system employees to enter the customer's home or business to inspect and maintain POU treatment devices.* The rule does provide AWC a mechanism to ensure compliance.

If I can be of further assistance please do not hesitate to contact me at (602) 771-4617.

Sincerely,

Daniel Czecholinski, CHMM
Manager,
Drinking Water Section

cc: PWS file 11-707

LEGEND
Technical Services, Inc.
www.legend-group.com

17631 North 25th Avenue • Phoenix, AZ 85023
P (602) 324-6100 • F (602) 324-6101

REVISED

Arizona Water Company - Coolidge Airport 11-707	Project: Drinking Water Analysis	
448 West Central Ave.	Project Number: 11707	Reported:
Coolidge, AZ 85288	Project Manager: Ray Murrieta	04/22/14 08:11

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Type	Date Sampled	Date Received
CLA 11707 (Well #2)	4031584-01	Drinking Water	Grab	03/19/14 10:15	03/20/14 08:00

Sample Condition Upon Receipt:

Temperature: 2.00 C
All samples were received in acceptable condition unless noted otherwise in the case narrative.

Case Narrative:

Holding Times: All holding times were met unless otherwise qualified.
QA/QC Criteria: All analyses met method requirements unless otherwise qualified.
Certifications: AZ(PHX)0004, AZ(TUC)OOO4, AIHA#102982, CDC ELITE Member.
Accreditation is applicable only to the test methods specified on each scope of accreditation held by LEGEND.
Comments: All reporting limits utilized in this report are from the approved method with the lowest possible levels of detection. All samples were analyzed on a "wet" basis unless designated as "dry weight".

For Total Phosphorous, Legend is not licensed for analysis in Drinking Water matrices by method 365.3. Samples analyzed for Total Phosphorous for this matrix shouldn't be used for compliance purposes. BF

Notified Regina of the MCL Violation on 03/25/14. BF

Regina Lynde with Arizona Water Company notified Project Manager, Barb Frank, on 04/22/14 to report Phosphorous, Total to MDL. BF

Revised report on 04/22/14. BF

CLA 11707 (Well #2) (4031584-01) Drinking Water (Grab) Sampled: 03/19/14 10:15 Received: 03/20/14 08:00

Analyte	Result	MDL	RL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Legend Technical Services of Arizona, Inc.										
Total Metals										
Antimony	<		0.0005	mg/L	1	B4C0574	03/21/14 09:52	03/21/14 16:28	EPA 200.8	
Arsenic III	<		0.0010	mg/L	1	B4C0575	03/21/14 10:00	03/21/14 11:21	EPA 200.8	
Arsenic V	**0.0149**			mg/L	1	[CALC]	03/21/14 10:00	03/21/14 16:28	Calculation	
Arsenic	**0.0149**		0.0010	mg/L	1	B4C0574	03/21/14 09:52	03/21/14 16:28	EPA 200.8	
Cadmium	<		0.0001	mg/L	1	B4C0574	03/21/14 09:52	03/21/14 16:28	EPA 200.8	
Calcium	**17**		1	mg/L	1	B4C0490	03/20/14 12:00	03/20/14 13:16	EPA 200.7	
Chromium	**0.014**		0.005	mg/L	1	B4C0490	03/20/14 12:00	03/20/14 13:16	EPA 200.7	
Iron	**0.10**		0.05	mg/L	1	B4C0490	03/20/14 12:00	03/20/14 13:16	EPA 200.7	
Lead	<		0.0010	mg/L	1	B4C0574	03/21/14 09:52	03/21/14 16:28	EPA 200.8	
Magnesium	**2**		1	mg/L	1	B4C0490	03/20/14 12:00	03/20/14 13:16	EPA 200.7	
Manganese	<		0.02	mg/L	1	B4C0490	03/20/14 12:00	03/20/14 13:16	EPA 200.7	
Molybdenum	<		0.02	mg/L	1	B4C0490	03/20/14 12:00	03/20/14 13:16	EPA 200.7	T6
Selenium	**0.0028**		0.0020	mg/L	1	B4C0574	03/21/14 09:52	03/21/14 16:28	EPA 200.8	
Silica, Total	**24.1**		0.2	mg/L	1	[CALC]	03/20/14 12:00	03/20/14 13:16	EPA 200.7	
Silicon	**11.3**		0.1	mg/L	1	B4C0490	03/20/14 12:00	03/20/14 13:16	EPA 200.7	
Calcium Hardness as CaCO3	**44**		2	mg/L	1	[CALC]	03/20/14 12:00	03/20/14 13:16	SM 2340B	
Magnesium Hardness as CaCO3	**10**		4	mg/L	1	[CALC]	03/20/14 12:00	03/20/14 13:16	SM 2340B	
Total Hardness as CaCO3	**53**		4	mg/L	1	[CALC]	03/20/14 12:00	03/20/14 13:16	SM 2340B	
Uranium	**6.45**		1.00	ug/L	1	B4C0574	03/21/14 09:52	03/21/14 16:28	EPA 200.8	
Vanadium	**0.026**		0.007	mg/L	1	B4C0490	03/20/14 12:00	03/20/14 13:16	EPA 200.7	T6
Inorganic Chemistry										
Total Alkalinity as CaCO3	**153**		10	mg/L	1	B4C0639	03/25/14 16:00	03/25/14 16:00	SM 2320 B	
Phosphate	<		0.15	mg/L	1	[CALC]	03/26/14 10:00	03/26/14 15:50	Calculation	
Total Phosphorous	<	0.009	0.05	mg/L	1	B4C0658	03/26/14 10:00	03/26/14 15:50	EPA 365.3	E8, T6
Sulfate	**50.0**		5.0	mg/L	1	B4C0616	03/24/14 09:24	03/24/14 09:24	EPA 300.0	
Sulfide, total	<		0.04	mg/L	1	B4C0492	03/20/14 13:00	03/20/14 13:00	HACH 8131	T6
Total Suspended Solids [TSS]	<		1	mg/L	1	B4C0517	03/21/14 09:00	03/21/14 09:00	SM 2540 D	T6
Turbidity	<		1.00	NTU	1	B4C0483	03/20/14 10:05	03/20/14 10:05	EPA 180.1	

Total Metals - Quality Control

Legend Technical Services of Arizona, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B4C0490 - EPA 200.7										
Blank (B4C0490-BLK1)				*Prepared & Analyzed: 03/20/14*						
Calcium	<1	1	mg/L							
Molybdenum	<0.02	0.02	mg/L							
Iron	<0.05	0.05	mg/L							
Vanadium	<0.007	0.007	mg/L							
Chromium	<0.005	0.005	mg/L							
Silicon	<0.1	0.1	mg/L							
Manganese	<0.02	0.02	mg/L							
Magnesium	<1	1	mg/L							
LCS (B4C0490-BS1)				*Prepared & Analyzed: 03/20/14*						
Manganese	0.96	0.02	mg/L	1.00		96	85-115			
Magnesium	20	1	mg/L	20.0		98	85-115			
Iron	0.94	0.05	mg/L	1.00		94	85-115			
Silicon	3.9	0.1	mg/L	4.00		99	85-115			
Chromium	0.473	0.005	mg/L	0.500		95	85-115			
Vanadium	0.692	0.007	mg/L	0.700		99	85-115			
Molybdenum	0.20	0.02	mg/L	0.200		98	85-115			
Calcium	20	1	mg/L	20.0		99	85-115			
LCS Dup (B4C0490-BSD1)				*Prepared & Analyzed: 03/20/14*						
Vanadium	0.669	0.007	mg/L	0.700		96	85-115	3	20	
Molybdenum	0.20	0.02	mg/L	0.200		100	85-115	2	20	
Magnesium	20	1	mg/L	20.0		99	85-115	1	20	
Manganese	0.95	0.02	mg/L	1.00		95	85-115	1	20	
Iron	0.93	0.05	mg/L	1.00		93	85-115	1	20	
Chromium	0.466	0.005	mg/L	0.500		93	85-115	2	20	
Calcium	20	1	mg/L	20.0		100	85-115	0.6	20	
Silicon	4.0	0.1	mg/L	4.00		101	85-115	2	20	

Total Metals - Quality Control

Legend Technical Services of Arizona, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B4C0490 - EPA 200.7										
Matrix Spike (B4C0490-MS1)		**Source: 4031533-01**		*Prepared & Analyzed: 03/20/14*						
Silicon	29.6	0.1	mg/L	4.00	25.5	102	70-130			
Molybdenum	0.20	0.02	mg/L	0.200	0.01	97	70-130			
Magnesium	124	1	mg/L	20.0	105	99	70-130			
Vanadium	0.738	0.007	mg/L	0.700	0.046	99	70-130			
Iron	0.92	0.05	mg/L	1.00	0.005	91	70-130			
Chromium	0.473	0.005	mg/L	0.500	0.004	94	70-130			
Manganese	0.95	0.02	mg/L	1.00	0.002	95	70-130			
Calcium	69	1	mg/L	20.0	51	91	70-130			
Matrix Spike (B4C0490-MS2)		**Source: 4031571-07**		*Prepared & Analyzed: 03/20/14*						
Silicon	9.3	0.1	mg/L	4.00	5.5	95	70-130			
Manganese	0.98	0.02	mg/L	1.00	0.002	98	70-130			
Vanadium	0.688	0.007	mg/L	0.700	<0.007	98	70-130			
Molybdenum	0.19	0.02	mg/L	0.200	<0.02	97	70-130			
Magnesium	62	1	mg/L	20.0	42	96	70-130			
Iron	1.01	0.05	mg/L	1.00	0.05	96	70-130			
Chromium	0.487	0.005	mg/L	0.500	<0.005	97	70-130			
Calcium	73	1	mg/L	20.0	55	89	70-130			
Matrix Spike Dup (B4C0490-MSD1)		**Source: 4031533-01**		*Prepared & Analyzed: 03/20/14*						
Silicon	29.7	0.1	mg/L	4.00	25.5	104	70-130	0.2	20	
Iron	0.92	0.05	mg/L	1.00	0.005	92	70-130	0.6	20	
Vanadium	0.737	0.007	mg/L	0.700	0.046	99	70-130	0.1	20	
Manganese	0.94	0.02	mg/L	1.00	0.002	94	70-130	0.5	20	
Molybdenum	0.20	0.02	mg/L	0.200	0.01	97	70-130	0.5	20	
Chromium	0.472	0.005	mg/L	0.500	0.004	94	70-130	0.2	20	
Calcium	69	1	mg/L	20.0	51	90	70-130	0.2	20	
Magnesium	125	1	mg/L	20.0	105	100	70-130	0.09	20	

Total Metals - Quality Control

Legend Technical Services of Arizona, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B4C0490 - EPA 200.7										
Matrix Spike Dup (B4C0490-MSD2)		**Source: 4031571-07**		*Prepared & Analyzed: 03/20/14*						
Manganese	1.01	0.02	mg/L	1.00	0.002	100	70-130	2	20	
Vanadium	0.702	0.007	mg/L	0.700	<0.007	100	70-130	2	20	
Molybdenum	0.20	0.02	mg/L	0.200	<0.02	99	70-130	2	20	
Silicon	9.5	0.1	mg/L	4.00	5.5	100	70-130	2	20	
Magnesium	63	1	mg/L	20.0	42	103	70-130	2	20	
Chromium	0.498	0.005	mg/L	0.500	<0.005	100	70-130	2	20	
Iron	1.03	0.05	mg/L	1.00	0.05	99	70-130	3	20	
Calcium	74	1	mg/L	20.0	55	97	70-130	2	20	
Batch B4C0574 - EPA 200.8										
Blank (B4C0574-BLK1)				*Prepared & Analyzed: 03/21/14*						
Lead	<0.0010	0.0010	mg/L							
Selenium	<0.0020	0.0020	mg/L							
Uranium	<1.00	1.00	ug/L							
Arsenic	<0.0010	0.0010	mg/L							
Cadmium	<0.0001	0.0001	mg/L							
Antimony	<0.0005	0.0005	mg/L							
LCS (B4C0574-BS1)				*Prepared & Analyzed: 03/21/14*						
Cadmium	0.0265	0.0001	mg/L	0.0250		106	85-115			
Arsenic	0.0271	0.0010	mg/L	0.0250		108	85-115			
Antimony	0.0250	0.0005	mg/L	0.0250		100	85-115			
Selenium	0.0269	0.0020	mg/L	0.0250		108	85-115			
Lead	0.0256	0.0010	mg/L	0.0250		102	85-115			
Uranium	25.8	1.00	ug/L	25.0		103	85-115			

Total Metals - Quality Control

Legend Technical Services of Arizona, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B4C0574 - EPA 200.8										
LCS Dup (B4C0574-BSD1)				*Prepared & Analyzed: 03/21/14*						
Lead	0.0269	0.0010	mg/L	0.0250		108	85-115	5	20	
Selenium	0.0275	0.0020	mg/L	0.0250		110	85-115	2	20	
Arsenic	0.0276	0.0010	mg/L	0.0250		110	85-115	2	20	
Uranium	26.9	1.00	ug/L	25.0		108	85-115	4	20	
Antimony	0.0248	0.0005	mg/L	0.0250		99	85-115	0.8	20	
Cadmium	0.0265	0.0001	mg/L	0.0250		106	85-115	0.3	20	
Matrix Spike (B4C0574-MS1)		**Source: 4031681-02**		*Prepared & Analyzed: 03/21/14*						
Selenium	0.0305	0.0020	mg/L	0.0250	0.0038	107	70-130			
Cadmium	0.0267	0.0001	mg/L	0.0250	<0.0001	107	70-130			
Uranium	35.2	1.00	ug/L	25.0	9.01	105	70-130			
Lead	0.0261	0.0010	mg/L	0.0250	0.00007	104	70-130			
Antimony	0.0279	0.0005	mg/L	0.0250	0.00005	112	70-130			
Arsenic	0.0367	0.0010	mg/L	0.0250	0.0088	112	70-130			
Matrix Spike (B4C0574-MS2)		**Source: 4031754-02**		*Prepared & Analyzed: 03/21/14*						
Uranium	26.6	1.00	ug/L	25.0	<1.00	107	70-130			
Selenium	0.0281	0.0020	mg/L	0.0250	0.0014	107	70-130			
Lead	0.0263	0.0010	mg/L	0.0250	0.00009	105	70-130			
Arsenic	0.0283	0.0010	mg/L	0.0250	<0.0010	113	70-130			
Antimony	0.0262	0.0005	mg/L	0.0250	0.00001	105	70-130			
Cadmium	0.0263	0.0001	mg/L	0.0250	<0.0001	105	70-130			
Matrix Spike Dup (B4C0574-MSD1)		**Source: 4031681-02**		*Prepared & Analyzed: 03/21/14*						
Antimony	0.0288	0.0005	mg/L	0.0250	0.00005	115	70-130	3	20	
Selenium	0.0304	0.0020	mg/L	0.0250	0.0038	107	70-130	0.1	20	
Uranium	36.4	1.00	ug/L	25.0	9.01	109	70-130	3	20	
Lead	0.0262	0.0010	mg/L	0.0250	0.00007	105	70-130	0.4	20	
Arsenic	0.0365	0.0010	mg/L	0.0250	0.0088	111	70-130	0.5	20	
Cadmium	0.0273	0.0001	mg/L	0.0250	<0.0001	109	70-130	2	20	

Total Metals - Quality Control

Legend Technical Services of Arizona, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B4C0574 - EPA 200.8										
Matrix Spike Dup (B4C0574-MSD2)		**Source: 4031754-02**		*Prepared & Analyzed: 03/21/14*						
Cadmium	0.0271	0.0001	mg/L	0.0250	<0.0001	108	70-130	3	20	
Lead	0.0264	0.0010	mg/L	0.0250	0.00009	105	70-130	0.4	20	
Uranium	26.9	1.00	ug/L	25.0	<1.00	108	70-130	1	20	
Selenium	0.0280	0.0020	mg/L	0.0250	0.0014	107	70-130	0.3	20	
Arsenic	0.0285	0.0010	mg/L	0.0250	<0.0010	114	70-130	0.7	20	
Antimony	0.0270	0.0005	mg/L	0.0250	0.00001	108	70-130	3	20	

Inorganic Chemistry - Quality Control

Legend Technical Services of Arizona, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B4C0483 - NO PREP										
Blank (B4C0483-BLK1)				*Prepared & Analyzed: 03/20/14*						
Turbidity	<1.00	1.00	NTU							
Duplicate (B4C0483-DUP1)		**Source: 4031584-01**		*Prepared & Analyzed: 03/20/14*						
Turbidity	0.537	1.00	NTU		0.541			0.7	5	
Batch B4C0492 - NO PREP										
Blank (B4C0492-BLK1)				*Prepared & Analyzed: 03/20/14*						
Sulfide, total	<0.04	0.04	mg/L							
LCS (B4C0492-BS1)				*Prepared & Analyzed: 03/20/14*						
Sulfide, total	0.12	0.04	mg/L	0.120		103	80-120			
LCS Dup (B4C0492-BSD1)				*Prepared & Analyzed: 03/20/14*						
Sulfide, total	0.12	0.04	mg/L	0.120		96	80-120	8	20	
Matrix Spike (B4C0492-MS1)		**Source: 4031125-01**		*Prepared & Analyzed: 03/20/14*						
Sulfide, total	0.12	0.04	mg/L	0.120	<0.04	96	80-120			
Matrix Spike Dup (B4C0492-MSD1)		**Source: 4031125-01**		*Prepared & Analyzed: 03/20/14*						
Sulfide, total	0.12	0.04	mg/L	0.120	<0.04	101	80-120	5	20	
Batch B4C0517 - NO PREP										
Blank (B4C0517-BLK1)				*Prepared & Analyzed: 03/21/14*						
Total Suspended Solids	<1	1	mg/L							

Inorganic Chemistry - Quality Control

Legend Technical Services of Arizona, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B4C0517 - NO PREP										
Duplicate (B4C0517-DUP1)		**Source: 4031348-02**		*Prepared & Analyzed: 03/21/14*						
Total Suspended Solids	<1	1	mg/L		0				5	
Duplicate (B4C0517-DUP2)		**Source: 4031359-01**		*Prepared & Analyzed: 03/21/14*						
Total Suspended Solids	6	1	mg/L		6			0	5	
Duplicate (B4C0517-DUP3)		**Source: 4031411-02**		*Prepared & Analyzed: 03/21/14*						
Total Suspended Solids	3	1	mg/L		3			0	5	
Duplicate (B4C0517-DUP4)		**Source: 4031520-02**		*Prepared & Analyzed: 03/21/14*						
Total Suspended Solids	<1	1	mg/L		0				5	
Duplicate (B4C0517-DUP5)		**Source: 4031585-01**		*Prepared & Analyzed: 03/21/14*						
Total Suspended Solids	<1	1	mg/L		0				5	
Duplicate (B4C0517-DUP6)		**Source: 4031652-02**		*Prepared & Analyzed: 03/21/14*						
Total Suspended Solids	<1	1	mg/L		0				5	
Duplicate (B4C0517-DUP7)		**Source: 4031680-02**		*Prepared & Analyzed: 03/21/14*						
Total Suspended Solids	2	1	mg/L		2			0	5	
Duplicate (B4C0517-DUP8)		**Source: 4031703-01**		*Prepared & Analyzed: 03/21/14*						
Total Suspended Solids	<1	1	mg/L		0				5	
Batch B4C0616 - NO PREP										
Blank (B4C0616-BLK1)				*Prepared & Analyzed: 03/24/14*						
Sulfate	<5.0	5.0	mg/L							

Inorganic Chemistry - Quality Control

Legend Technical Services of Arizona, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B4C0616 - NO PREP										
Blank (B4C0616-BLK2)				*Prepared & Analyzed: 03/24/14*						
Sulfate	<5.0	5.0	mg/L							
LCS (B4C0616-BS1)				*Prepared & Analyzed: 03/24/14*						
Sulfate	20.3	5.0	mg/L	20.0		102	90-110			
LCS Dup (B4C0616-BSD1)				*Prepared & Analyzed: 03/24/14*						
Sulfate	20.2	5.0	mg/L	20.0		101	90-110	0.5	20	
Matrix Spike (B4C0616-MS1)		**Source: 4031125-01**		*Prepared & Analyzed: 03/24/14*						
Sulfate	79.4	10.0	mg/L	40.0	40.2	98	90-110			
Matrix Spike (B4C0616-MS2)		**Source: 4031690-01**		*Prepared & Analyzed: 03/24/14*						
Sulfate	19.6	5.0	mg/L	20.0	<5.0	98	90-110			
Matrix Spike Dup (B4C0616-MSD1)		**Source: 4031125-01**		*Prepared & Analyzed: 03/24/14*						
Sulfate	80.0	10.0	mg/L	40.0	40.2	100	90-110	0.8	20	
Matrix Spike Dup (B4C0616-MSD2)		**Source: 4031690-01**		*Prepared & Analyzed: 03/24/14*						
Sulfate	20.3	5.0	mg/L	20.0	<5.0	102	90-110	4	20	
Batch B4C0639 - NO PREP										
Blank (B4C0639-BLK1)				*Prepared & Analyzed: 03/25/14*						
Total Alkalinity as CaCO3	<10	10	mg/L							
LCS (B4C0639-BS1)				*Prepared & Analyzed: 03/25/14*						
Total Alkalinity as CaCO3	206	10	mg/L	200		103	80-120			

Inorganic Chemistry - Quality Control

Legend Technical Services of Arizona, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B4C0639 - NO PREP										
LCS Dup (B4C0639-BSD1)				*Prepared & Analyzed: 03/25/14*						
Total Alkalinity as CaCO3	204	10	mg/L	200		102	80-120	0.7	20	
Matrix Spike (B4C0639-MS1)		**Source: 4031585-01**		*Prepared & Analyzed: 03/25/14*						
Total Alkalinity as CaCO3	310	10	mg/L	200	146	82	80-120			
Matrix Spike Dup (B4C0639-MSD1)		**Source: 4031585-01**		*Prepared & Analyzed: 03/25/14*						
Total Alkalinity as CaCO3	312	10	mg/L	200	146	83	80-120	0.6	20	
Batch B4C0658 - NO PREP										
Blank (B4C0658-BLK1)				*Prepared & Analyzed: 03/26/14*						
Total Phosphorous	<0.05	0.05	mg/L							
LCS (B4C0658-BS1)				*Prepared & Analyzed: 03/26/14*						
Total Phosphorous	0.10	0.05	mg/L	0.100		97	90-110			
LCS Dup (B4C0658-BSD1)				*Prepared & Analyzed: 03/26/14*						
Total Phosphorous	0.10	0.05	mg/L	0.100		96	90-110	0.4	20	
Matrix Spike (B4C0658-MS1)		**Source: 4031584-01**		*Prepared & Analyzed: 03/26/14*						
Total Phosphorous	0.10	0.05	mg/L	0.100	<0.05	96	90-110			
Matrix Spike Dup (B4C0658-MSD1)		**Source: 4031584-01**		*Prepared & Analyzed: 03/26/14*						
Total Phosphorous	0.10	0.05	mg/L	0.100	<0.05	97	90-110	0.6	20	

Notes and Definitions

T6	The reported result cannot be used for compliance purposes.
E8	Analyte reported to MDL per project specification. Target analyte was not detected in the sample.
BLK	Method Blank
LCS/Dup	Laboratory Control Sample/Laboratory Fortified Blank/Duplicate
MS/Dup	Matrix Spike/Duplicate
Dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

LEGEND
Technical Services of Arizona, Inc.

☒ 17631 N. 25th Ave. Phoenix, Az 85023
(602) 324-6100 Fax (602) 324-6101

☐ 4637 East Fifth Street, Suite 103, Tucson, AZ 8571
(520) 327-0518 Fax (520) 327-051

DRINKING WATER CHAIN OF CUSTODY RECORD

Laboratory Sample No. 4031584

Please Print Clearly

Page 1 of 1

CLIENT INFORMATION

Client Name	Address	City, State Zip	Phone	Fax
ARIZONA WATER CO.	448 W. Central Ave.	Coolidge, AZ 85128-	(520) 723-5346	(520) 723-3081

System Name	PWS #	Contact	P.O. No.	Fax results	QC Report
CLA	11707	Ray Murrieta		☐	☐

IOC OPTIONS

IOC'S I: Sb, As, Ba, Be, Cd, Cr, Hg, Ni, Se, Tl, Cn, F

IOC'S II: (New Source) [redacted] Ba, Be, C[redacted] Cu[redacted] Hg, Mg, Ni[redacted] Na, Tl, Ca Hardness, Total Hardn[redacted] Asbestos, Cn, F, Langelier, NO2, NO3, pH, SO4, [redacted]DS, Temp (in field)

REQUESTED ANALYSES

Clients' Sample Identification	Date	Time	POE #/ DWR #	Compliance	No. of Containers	[redacted]	Coliert	IOC'S I (see left)	IOC'S II (see left)	Lead/Copper	HAA5 - Met 552.	Nitrate (NO3)	Nitrite (NO2)	TTHMS - Met 5	Uranium	Gross Alpha	Radium 226	Radium 228	VOC's - 524	SOC Method 50	SOC Method 50	SOC Method 51	SOC Method 52	SOC Method 53	SOC Method 54	SOC Method 54	SOC Method 54	SOC -Dioxin 1613	[redacted]	LAB NO.
CLA 11707	10:15	3/19/14	Well #2		8	✓			☒						☒															01

TO ENSURE COMPLETION OF ANALYSIS, SAMPLES MUST BE RECEIVED AT LEAST 6 HOURS PRIOR TO THE HOLD TIME EXPIRATION.

Comments: PWSID 11707, Well #1 and 2: special monthly monitoring for: al, Sb, As, Ba, cd, cr, hardness, fe, pb, mb, mo, se, so4, phosphate, sulfide, al, fe, fl, ni & turbidity

March

128574FE1593185082

☐ Yes, I have followed the instructions provided by the laboratory for dechlorination of my samples.

TURN AROUND TIME
Standard 15-20 Day ☒
Other _____
Needs Lab authorization ☐

No. of Containers	8
Temperature	1.0°C
Custody Seals	Y N
Seals Intact	Y N
Preserved	Y N

WHITE - LAB YELLOW - LAB PINK - CLIENT

	Signature	Date	Signature	Date
1	Sampler Signature	3/19/14		
	Sampler Printed Name: Ralph A Felix	Time 13:30	Printed Name	Time
2	Signature	Date 3/20/14	Signature	Date 3/20/14
	Printed Name	Time 7:00	Printed Name	Time 7:00
3	Signature	Date	Signature	Date
	Printed Name	Time	Printed Name	Time

LEGEND
Technical Services, Inc.
www.legend-group.com

17631 North 25th Avenue • Phoenix, AZ 85023
P (602) 324-6100 • F (602) 324-6101

REVISED

Arizona Water Company - Coolidge Airport 11-707	Project: Drinking Water Analysis	
448 West Central Ave.	Project Number: 11707	Reported:
Coolidge, AZ 85288	Project Manager: Ray Murrieta	04/22/14 08:08

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Type	Date Sampled	Date Received
CLA 11707 (Well #1)	4031585-01	Drinking Water	Grab	03/19/14 10:40	03/20/14 08:00

Sample Condition Upon Receipt:

Temperature: 2.00 C
All samples were received in acceptable condition unless noted otherwise in the case narrative.

Case Narrative:

Holding Times: All holding times were met unless otherwise qualified.
QA/QC Criteria: All analyses met method requirements unless otherwise qualified.
Certifications: AZ(PHX)0004, AZ(TUC)OOO4, AIHA#102982, CDC ELITE Member.
Accreditation is applicable only to the test methods specified on each scope of accreditation held by LEGEND.
Comments: All reporting limits utilized in this report are from the approved method with the lowest possible levels of detection. All samples were analyzed on a "wet" basis unless designated as "dry weight".

For Total Phosphorous, Legend is not licensed for analysis in Drinking Water matrices by method 365.3. Samples analyzed for Total Phosphorous for this matrix shouldn't be used for compliance purposes. BF

Notified Regina of the MCL Violation on 03/25/14. BF

Regina Lynde with Arizona Water Company notified Project Manager, Barb Frank, on 04/22/14 to report Phosphorous, Total to MDL. BF

Revised report on 04/22/14. BF

Legend Technical Services of Arizona, Inc.

Laboratory Work Order No.: 4031585

Barbara Frank

Barbara Frank
Client Services Representative (602) 324-6100

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CLA 11707 (Well #1) (4031585-01) Drinking Water (Grab) Sampled: 03/19/14 10:40 Received: 03/20/14 08:00

Analyte	Result	MDL	RL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Legend Technical Services of Arizona, Inc.										
Total Metals										
Antimony	<		0.0005	mg/L	1	B4C0574	03/21/14 09:52	03/21/14 16:32	EPA 200.8	
Arsenic III	<		0.0010	mg/L	1	B4C0575	03/21/14 10:00	03/21/14 11:21	EPA 200.8	
Arsenic V	**0.0116**			mg/L	1	[CALC]	03/21/14 10:00	03/21/14 16:32	Calculation	
Arsenic	**0.0116**		0.0010	mg/L	1	B4C0574	03/21/14 09:52	03/21/14 16:32	EPA 200.8	
Cadmium	<		0.0001	mg/L	1	B4C0574	03/21/14 09:52	03/21/14 16:32	EPA 200.8	
Calcium	**24**		1	mg/L	1	B4C0490	03/20/14 12:00	03/20/14 13:34	EPA 200.7	
Chromium	**0.012**		0.005	mg/L	1	B4C0490	03/20/14 12:00	03/20/14 13:34	EPA 200.7	
Iron	**0.09**		0.05	mg/L	1	B4C0490	03/20/14 12:00	03/20/14 13:34	EPA 200.7	
Lead	<		0.0010	mg/L	1	B4C0574	03/21/14 09:52	03/21/14 16:32	EPA 200.8	
Magnesium	**4**		1	mg/L	1	B4C0490	03/20/14 12:00	03/20/14 13:34	EPA 200.7	
Manganese	<		0.02	mg/L	1	B4C0490	03/20/14 12:00	03/20/14 13:34	EPA 200.7	
Molybdenum	<		0.02	mg/L	1	B4C0490	03/20/14 12:00	03/20/14 13:34	EPA 200.7	T6
Selenium	**0.0040**		0.0020	mg/L	1	B4C0574	03/21/14 09:52	03/21/14 16:32	EPA 200.8	
Silica, Total	**24.0**		0.2	mg/L	1	[CALC]	03/20/14 12:00	03/20/14 13:34	EPA 200.7	
Silicon	**11.2**		0.1	mg/L	1	B4C0490	03/20/14 12:00	03/20/14 13:34	EPA 200.7	
Calcium Hardness as CaCO3	**59**		2	mg/L	1	[CALC]	03/20/14 12:00	03/20/14 13:34	SM 2340B	
Magnesium Hardness as CaCO3	**15**		4	mg/L	1	[CALC]	03/20/14 12:00	03/20/14 13:34	SM 2340B	
Total Hardness as CaCO3	**74**		4	mg/L	1	[CALC]	03/20/14 12:00	03/20/14 13:34	SM 2340B	
Uranium	**5.70**		1.00	ug/L	1	B4C0574	03/21/14 09:52	03/21/14 16:32	EPA 200.8	
Vanadium	**0.021**		0.007	mg/L	1	B4C0490	03/20/14 12:00	03/20/14 13:34	EPA 200.7	T6
Inorganic Chemistry										
Total Alkalinity as CaCO3	**146**		10	mg/L	1	B4C0639	03/25/14 16:00	03/25/14 16:00	SM 2320 B	
Phosphate	<		0.15	mg/L	1	[CALC]	03/26/14 10:00	03/26/14 15:50	Calculation	
Total Phosphorous	<	0.009	0.05	mg/L	1	B4C0658	03/26/14 10:00	03/26/14 15:50	EPA 365.3	E8, T6
Sulfate	**48.3**		5.0	mg/L	1	B4C0616	03/24/14 09:24	03/24/14 09:24	EPA 300.0	
Sulfide, total	<		0.04	mg/L	1	B4C0492	03/20/14 13:00	03/20/14 13:00	HACH 8131	T6
Total Suspended Solids [TSS]	<		1	mg/L	1	B4C0517	03/21/14 09:00	03/21/14 09:00	SM 2540 D	T6
Turbidity	**1.06**		1.00	NTU	1	B4C0483	03/20/14 10:05	03/20/14 10:05	EPA 180.1	

Total Metals - Quality Control

Legend Technical Services of Arizona, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B4C0490 - EPA 200.7										
Blank (B4C0490-BLK1)				*Prepared & Analyzed: 03/20/14*						
Calcium	<1	1	mg/L							
Molybdenum	<0.02	0.02	mg/L							
Iron	<0.05	0.05	mg/L							
Vanadium	<0.007	0.007	mg/L							
Chromium	<0.005	0.005	mg/L							
Silicon	<0.1	0.1	mg/L							
Manganese	<0.02	0.02	mg/L							
Magnesium	<1	1	mg/L							
LCS (B4C0490-BS1)				*Prepared & Analyzed: 03/20/14*						
Manganese	0.96	0.02	mg/L	1.00		96	85-115			
Magnesium	20	1	mg/L	20.0		98	85-115			
Iron	0.94	0.05	mg/L	1.00		94	85-115			
Silicon	3.9	0.1	mg/L	4.00		99	85-115			
Chromium	0.473	0.005	mg/L	0.500		95	85-115			
Vanadium	0.692	0.007	mg/L	0.700		99	85-115			
Molybdenum	0.20	0.02	mg/L	0.200		98	85-115			
Calcium	20	1	mg/L	20.0		99	85-115			
LCS Dup (B4C0490-BSD1)				*Prepared & Analyzed: 03/20/14*						
Vanadium	0.669	0.007	mg/L	0.700		96	85-115	3	20	
Molybdenum	0.20	0.02	mg/L	0.200		100	85-115	2	20	
Magnesium	20	1	mg/L	20.0		99	85-115	1	20	
Manganese	0.95	0.02	mg/L	1.00		95	85-115	1	20	
Iron	0.93	0.05	mg/L	1.00		93	85-115	1	20	
Chromium	0.466	0.005	mg/L	0.500		93	85-115	2	20	
Calcium	20	1	mg/L	20.0		100	85-115	0.6	20	
Silicon	4.0	0.1	mg/L	4.00		101	85-115	2	20	

Total Metals - Quality Control

Legend Technical Services of Arizona, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B4C0490 - EPA 200.7										
Matrix Spike (B4C0490-MS1)		**Source: 4031533-01**		*Prepared & Analyzed: 03/20/14*						
Silicon	29.6	0.1	mg/L	4.00	25.5	102	70-130			
Molybdenum	0.20	0.02	mg/L	0.200	0.01	97	70-130			
Magnesium	124	1	mg/L	20.0	105	99	70-130			
Vanadium	0.738	0.007	mg/L	0.700	0.046	99	70-130			
Iron	0.92	0.05	mg/L	1.00	0.005	91	70-130			
Chromium	0.473	0.005	mg/L	0.500	0.004	94	70-130			
Manganese	0.95	0.02	mg/L	1.00	0.002	95	70-130			
Calcium	69	1	mg/L	20.0	51	91	70-130			
Matrix Spike (B4C0490-MS2)		**Source: 4031571-07**		*Prepared & Analyzed: 03/20/14*						
Silicon	9.3	0.1	mg/L	4.00	5.5	95	70-130			
Manganese	0.98	0.02	mg/L	1.00	0.002	98	70-130			
Vanadium	0.688	0.007	mg/L	0.700	<0.007	98	70-130			
Molybdenum	0.19	0.02	mg/L	0.200	<0.02	97	70-130			
Magnesium	62	1	mg/L	20.0	42	96	70-130			
Iron	1.01	0.05	mg/L	1.00	0.05	96	70-130			
Chromium	0.487	0.005	mg/L	0.500	<0.005	97	70-130			
Calcium	73	1	mg/L	20.0	55	89	70-130			
Matrix Spike Dup (B4C0490-MSD1)		**Source: 4031533-01**		*Prepared & Analyzed: 03/20/14*						
Silicon	29.7	0.1	mg/L	4.00	25.5	104	70-130	0.2	20	
Iron	0.92	0.05	mg/L	1.00	0.005	92	70-130	0.6	20	
Vanadium	0.737	0.007	mg/L	0.700	0.046	99	70-130	0.1	20	
Manganese	0.94	0.02	mg/L	1.00	0.002	94	70-130	0.5	20	
Molybdenum	0.20	0.02	mg/L	0.200	0.01	97	70-130	0.5	20	
Chromium	0.472	0.005	mg/L	0.500	0.004	94	70-130	0.2	20	
Calcium	69	1	mg/L	20.0	51	90	70-130	0.2	20	
Magnesium	125	1	mg/L	20.0	105	100	70-130	0.09	20	

Total Metals - Quality Control

Legend Technical Services of Arizona, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B4C0490 - EPA 200.7										
Matrix Spike Dup (B4C0490-MSD2)		**Source: 4031571-07**		*Prepared & Analyzed: 03/20/14*						
Manganese	1.01	0.02	mg/L	1.00	0.002	100	70-130	2	20	
Vanadium	0.702	0.007	mg/L	0.700	<0.007	100	70-130	2	20	
Molybdenum	0.20	0.02	mg/L	0.200	<0.02	99	70-130	2	20	
Silicon	9.5	0.1	mg/L	4.00	5.5	100	70-130	2	20	
Magnesium	63	1	mg/L	20.0	42	103	70-130	2	20	
Chromium	0.498	0.005	mg/L	0.500	<0.005	100	70-130	2	20	
Iron	1.03	0.05	mg/L	1.00	0.05	99	70-130	3	20	
Calcium	74	1	mg/L	20.0	55	97	70-130	2	20	
Batch B4C0574 - EPA 200.8										
Blank (B4C0574-BLK1)				*Prepared & Analyzed: 03/21/14*						
Lead	<0.0010	0.0010	mg/L							
Selenium	<0.0020	0.0020	mg/L							
Uranium	<1.00	1.00	ug/L							
Arsenic	<0.0010	0.0010	mg/L							
Cadmium	<0.0001	0.0001	mg/L							
Antimony	<0.0005	0.0005	mg/L							
LCS (B4C0574-BS1)				*Prepared & Analyzed: 03/21/14*						
Cadmium	0.0265	0.0001	mg/L	0.0250		106	85-115			
Arsenic	0.0271	0.0010	mg/L	0.0250		108	85-115			
Antimony	0.0250	0.0005	mg/L	0.0250		100	85-115			
Selenium	0.0269	0.0020	mg/L	0.0250		108	85-115			
Lead	0.0256	0.0010	mg/L	0.0250		102	85-115			
Uranium	25.8	1.00	ug/L	25.0		103	85-115			

Total Metals - Quality Control

Legend Technical Services of Arizona, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B4C0574 - EPA 200.8										
LCS Dup (B4C0574-BSD1)				*Prepared & Analyzed: 03/21/14*						
Lead	0.0269	0.0010	mg/L	0.0250		108	85-115	5	20	
Selenium	0.0275	0.0020	mg/L	0.0250		110	85-115	2	20	
Arsenic	0.0276	0.0010	mg/L	0.0250		110	85-115	2	20	
Uranium	26.9	1.00	ug/L	25.0		108	85-115	4	20	
Antimony	0.0248	0.0005	mg/L	0.0250		99	85-115	0.8	20	
Cadmium	0.0265	0.0001	mg/L	0.0250		106	85-115	0.3	20	
Matrix Spike (B4C0574-MS1)		**Source: 4031681-02**		*Prepared & Analyzed: 03/21/14*						
Selenium	0.0305	0.0020	mg/L	0.0250	0.0038	107	70-130			
Cadmium	0.0267	0.0001	mg/L	0.0250	<0.0001	107	70-130			
Uranium	35.2	1.00	ug/L	25.0	9.01	105	70-130			
Lead	0.0261	0.0010	mg/L	0.0250	0.00007	104	70-130			
Antimony	0.0279	0.0005	mg/L	0.0250	0.00005	112	70-130			
Arsenic	0.0367	0.0010	mg/L	0.0250	0.0088	112	70-130			
Matrix Spike (B4C0574-MS2)		**Source: 4031754-02**		*Prepared & Analyzed: 03/21/14*						
Uranium	26.6	1.00	ug/L	25.0	<1.00	107	70-130			
Selenium	0.0281	0.0020	mg/L	0.0250	0.0014	107	70-130			
Lead	0.0263	0.0010	mg/L	0.0250	0.00009	105	70-130			
Arsenic	0.0283	0.0010	mg/L	0.0250	<0.0010	113	70-130			
Antimony	0.0262	0.0005	mg/L	0.0250	0.00001	105	70-130			
Cadmium	0.0263	0.0001	mg/L	0.0250	<0.0001	105	70-130			
Matrix Spike Dup (B4C0574-MSD1)		**Source: 4031681-02**		*Prepared & Analyzed: 03/21/14*						
Antimony	0.0288	0.0005	mg/L	0.0250	0.00005	115	70-130	3	20	
Selenium	0.0304	0.0020	mg/L	0.0250	0.0038	107	70-130	0.1	20	
Uranium	36.4	1.00	ug/L	25.0	9.01	109	70-130	3	20	
Lead	0.0262	0.0010	mg/L	0.0250	0.00007	105	70-130	0.4	20	
Arsenic	0.0365	0.0010	mg/L	0.0250	0.0088	111	70-130	0.5	20	
Cadmium	0.0273	0.0001	mg/L	0.0250	<0.0001	109	70-130	2	20	

Total Metals - Quality Control

Legend Technical Services of Arizona, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B4C0574 - EPA 200.8										
Matrix Spike Dup (B4C0574-MSD2)		**Source: 4031754-02**		*Prepared & Analyzed: 03/21/14*						
Cadmium	0.0271	0.0001	mg/L	0.0250	<0.0001	108	70-130	3	20	
Lead	0.0264	0.0010	mg/L	0.0250	0.00009	105	70-130	0.4	20	
Uranium	26.9	1.00	ug/L	25.0	<1.00	108	70-130	1	20	
Selenium	0.0280	0.0020	mg/L	0.0250	0.0014	107	70-130	0.3	20	
Arsenic	0.0285	0.0010	mg/L	0.0250	<0.0010	114	70-130	0.7	20	
Antimony	0.0270	0.0005	mg/L	0.0250	0.00001	108	70-130	3	20	

Inorganic Chemistry - Quality Control

Legend Technical Services of Arizona, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B4C0483 - NO PREP										
Blank (B4C0483-BLK1)				*Prepared & Analyzed: 03/20/14*						
Turbidity	<1.00	1.00	NTU							
Duplicate (B4C0483-DUP1)		**Source: 4031584-01**		*Prepared & Analyzed: 03/20/14*						
Turbidity	0.537	1.00	NTU		0.541			0.7	5	
Batch B4C0492 - NO PREP										
Blank (B4C0492-BLK1)				*Prepared & Analyzed: 03/20/14*						
Sulfide, total	<0.04	0.04	mg/L							
LCS (B4C0492-BS1)				*Prepared & Analyzed: 03/20/14*						
Sulfide, total	0.12	0.04	mg/L	0.120		103	80-120			
LCS Dup (B4C0492-BSD1)				*Prepared & Analyzed: 03/20/14*						
Sulfide, total	0.12	0.04	mg/L	0.120		96	80-120	8	20	
Matrix Spike (B4C0492-MS1)		**Source: 4031125-01**		*Prepared & Analyzed: 03/20/14*						
Sulfide, total	0.12	0.04	mg/L	0.120	<0.04	96	80-120			
Matrix Spike Dup (B4C0492-MSD1)		**Source: 4031125-01**		*Prepared & Analyzed: 03/20/14*						
Sulfide, total	0.12	0.04	mg/L	0.120	<0.04	101	80-120	5	20	
Batch B4C0517 - NO PREP										
Blank (B4C0517-BLK1)				*Prepared & Analyzed: 03/21/14*						
Total Suspended Solids	<1	1	mg/L							

Inorganic Chemistry - Quality Control

Legend Technical Services of Arizona, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B4C0517 - NO PREP										
Duplicate (B4C0517-DUP1)		**Source: 4031348-02**		*Prepared & Analyzed: 03/21/14*						
Total Suspended Solids	<1	1	mg/L		0				5	
Duplicate (B4C0517-DUP2)		**Source: 4031359-01**		*Prepared & Analyzed: 03/21/14*						
Total Suspended Solids	6	1	mg/L		6			0	5	
Duplicate (B4C0517-DUP3)		**Source: 4031411-02**		*Prepared & Analyzed: 03/21/14*						
Total Suspended Solids	3	1	mg/L		3			0	5	
Duplicate (B4C0517-DUP4)		**Source: 4031520-02**		*Prepared & Analyzed: 03/21/14*						
Total Suspended Solids	<1	1	mg/L		0				5	
Duplicate (B4C0517-DUP5)		**Source: 4031585-01**		*Prepared & Analyzed: 03/21/14*						
Total Suspended Solids	<1	1	mg/L		0				5	
Duplicate (B4C0517-DUP6)		**Source: 4031652-02**		*Prepared & Analyzed: 03/21/14*						
Total Suspended Solids	<1	1	mg/L		0				5	
Duplicate (B4C0517-DUP7)		**Source: 4031680-02**		*Prepared & Analyzed: 03/21/14*						
Total Suspended Solids	2	1	mg/L		2			0	5	
Duplicate (B4C0517-DUP8)		**Source: 4031703-01**		*Prepared & Analyzed: 03/21/14*						
Total Suspended Solids	<1	1	mg/L		0				5	
Batch B4C0616 - NO PREP										
Blank (B4C0616-BLK1)				*Prepared & Analyzed: 03/24/14*						
Sulfate	<5.0	5.0	mg/L							

Inorganic Chemistry - Quality Control

Legend Technical Services of Arizona, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B4C0616 - NO PREP										
Blank (B4C0616-BLK2)				*Prepared & Analyzed: 03/24/14*						
Sulfate	<5.0	5.0	mg/L							
LCS (B4C0616-BS1)				*Prepared & Analyzed: 03/24/14*						
Sulfate	20.3	5.0	mg/L	20.0		102	90-110			
LCS Dup (B4C0616-BSD1)				*Prepared & Analyzed: 03/24/14*						
Sulfate	20.2	5.0	mg/L	20.0		101	90-110	0.5	20	
Matrix Spike (B4C0616-MS1)		**Source: 4031125-01**		*Prepared & Analyzed: 03/24/14*						
Sulfate	79.4	10.0	mg/L	40.0	40.2	98	90-110			
Matrix Spike (B4C0616-MS2)		**Source: 4031690-01**		*Prepared & Analyzed: 03/24/14*						
Sulfate	19.6	5.0	mg/L	20.0	<5.0	98	90-110			
Matrix Spike Dup (B4C0616-MSD1)		**Source: 4031125-01**		*Prepared & Analyzed: 03/24/14*						
Sulfate	80.0	10.0	mg/L	40.0	40.2	100	90-110	0.8	20	
Matrix Spike Dup (B4C0616-MSD2)		**Source: 4031690-01**		*Prepared & Analyzed: 03/24/14*						
Sulfate	20.3	5.0	mg/L	20.0	<5.0	102	90-110	4	20	
Batch B4C0639 - NO PREP										
Blank (B4C0639-BLK1)				*Prepared & Analyzed: 03/25/14*						
Total Alkalinity as CaCO3	<10	10	mg/L							
LCS (B4C0639-BS1)				*Prepared & Analyzed: 03/25/14*						
Total Alkalinity as CaCO3	206	10	mg/L	200		103	80-120			

Inorganic Chemistry - Quality Control

Legend Technical Services of Arizona, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B4C0639 - NO PREP										
LCS Dup (B4C0639-BSD1)				*Prepared & Analyzed: 03/25/14*						
Total Alkalinity as CaCO3	204	10	mg/L	200		102	80-120	0.7	20	
Matrix Spike (B4C0639-MS1)		**Source: 4031585-01**		*Prepared & Analyzed: 03/25/14*						
Total Alkalinity as CaCO3	310	10	mg/L	200	146	82	80-120			
Matrix Spike Dup (B4C0639-MSD1)		**Source: 4031585-01**		*Prepared & Analyzed: 03/25/14*						
Total Alkalinity as CaCO3	312	10	mg/L	200	146	83	80-120	0.6	20	
Batch B4C0658 - NO PREP										
Blank (B4C0658-BLK1)				*Prepared & Analyzed: 03/26/14*						
Total Phosphorous	<0.05	0.05	mg/L							
LCS (B4C0658-BS1)				*Prepared & Analyzed: 03/26/14*						
Total Phosphorous	0.10	0.05	mg/L	0.100		97	90-110			
LCS Dup (B4C0658-BSD1)				*Prepared & Analyzed: 03/26/14*						
Total Phosphorous	0.10	0.05	mg/L	0.100		96	90-110	0.4	20	
Matrix Spike (B4C0658-MS1)		**Source: 4031584-01**		*Prepared & Analyzed: 03/26/14*						
Total Phosphorous	0.10	0.05	mg/L	0.100	<0.05	96	90-110			
Matrix Spike Dup (B4C0658-MSD1)		**Source: 4031584-01**		*Prepared & Analyzed: 03/26/14*						
Total Phosphorous	0.10	0.05	mg/L	0.100	<0.05	97	90-110	0.6	20	

Notes and Definitions

T6	The reported result cannot be used for compliance purposes.
E8	Analyte reported to MDL per project specification. Target analyte was not detected in the sample.
BLK	Method Blank
LCS/Dup	Laboratory Control Sample/Laboratory Fortified Blank/Duplicate
MS/Dup	Matrix Spike/Duplicate
Dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

L E G E N D

Technical Services of Arizona, Inc.

17631 N. 25th Ave. Phoenix, Az 85023
(602) 324-6100 Fax (602) 324-6101

4837 East Fifth Street, Suite 103, Tucson, AZ 8571
(520) 327-0518 Fax (520) 327-051

DRINKING WATER CHAIN OF CUSTODY RECORD

Please Print Clearly

Page 1 of 1

Laboratory Sample No. 4031585

CLIENT INFORMATION

Client Name	Address	City, State Zip	Phone	Fax
ARIZONA WATER CO.	448 W. Central Ave	Coolidge, AZ 85228-	(520) 723-5346	(520) 723-3081

System Name	PWS #	Contact	P.O. No.	Fax results	QC Report
CLA	11707	Ray Murrieta		☐	☐

IOC OPTIONS

IOC'S I: Sb, As, Ba, Be, Cd, Cr, Hg, Ni, Se, Tl, Cn, F

IOC'S II: (New Source) SO4, Ba, Be, Ca, Cd, Cr, Cu, Fe, Hg, Mg, Ni, Se, Na, Tl, Ca Hardness, Total Hardness, Alk, Asbestos, Cn, F, Langelier, NO2, NO3, pH, SO4, TDS, Temp (in field)

REQUESTED ANALYSES

Clients' Sample Identification	Date	Time	POE #/ DWR #	Compliance	No. of Containers	Coliert	IOC'S I (see left)	IOC'S II (see left)	Lead/Copper	HAA5 - Met 552.	Nitrate (NO3)	Nitrite (NO2)	TTHMS - Met 5	Uranium	Gross Alpha	Radium 226	Radium 228	VOC's - 524	SOC Method 50	SOC Method 50	SOC Method 51	SOC Method 52	SOC Method 53	SOC Method 54	SOC Method 54	SOC Method 54	SOC -Dioxin 1613	Alk, Hardness, sulfide, sulfate, silica, As3, Fe, Mn, TSS, VA, Turbidity	LAB NO.
CLA 11707	3/19/14	10:40	Well #1		8	✓		X						X															01

TO ENSURE COMPLETION OF ANALYSIS, SAMPLES MUST BE RECEIVED AT LEAST 6 HOURS PRIOR TO THE HOLD TIME EXPIRATION.

Comments: PWSID 11707, Well #1 and 2: special monthly monitoring for: alk, Sb, As, As3, cd, cr, hardness, fe, pb, mn, moly, se, so4, phosphate, sulfide, si, tss, ur, va & turbidity

March 128574FE1593185082

☐ Yes, I have followed the instructions provided by the laboratory for dechlorination of my samples.

TURN AROUND TIME

Standard 15-20 Day ✓
Other ____
Needs Lab authorization ☐

No. of Containers	8
Temperature	2.0 C
Custody Seals	Y N
Seals Intact	Y N
Preserved	Y N

WHITE - LAB YELLOW - LAB PINK - CLIENT

	Sampler Signature / Sampler Printed Name	Date / Time	Signature / Printed Name	Date / Time
1	Ralph A Ruiz	3/19/14 13:30	UPS	
2	UPS	3/20/14 8:01	H Ward	3/20/14 8:01
3				

ARIZONA POINT OF USE COMPLIANCE PROGRAM

GUIDANCE

ADEQ
Arizona Department of Environmental Quality

Janet Napolitano, Governor
Stephen A. Owens, ADEQ Director

July 2005

Publication # TM 05-02

This substantive policy statement is advisory only. A substantive policy statement does not include internal procedural documents that only affect the internal procedures of the agency and does not impose additional requirements or penalties on regulated parties or include confidential information or rules made in accordance with the Arizona administrative procedure act. If you believe that this substantive policy statement does impose additional requirements or penalties on regulated parties you may petition the agency under Arizona Revised Statutes section 41-1033 for a review of the statement.

INTRODUCTION

Arizona Department of Environmental Quality (ADEQ) safe drinking water rules allow public water systems to employ point-of-use (POU) treatment devices as a means for compliance with drinking water maximum contaminant levels (MCL). This guidance document is designed to assist water systems choosing POU as their means of compliance in structuring a program that will meet ADEQ's requirements. ADEQ recognizes that POU will be an attractive compliance option for many small water systems. ADEQ supports the use of POU where appropriate, provided the program established by a water system provides the level of public health protection required in the Safe Drinking Water Act (SDWA).

POU COMPLIANCE PROGRAM OVERVIEW

A POU compliance program differs fundamentally from a centralized treatment compliance program. Under the POU program the water system is required to install a POU device that will treat only the water intended for direct consumption, typically installed at a single tap such as the kitchen sink. Centralized treatment treats all of the water produced by the public water system. Since only a very small percentage of the total water use is for direct consumption, typically 1-3 percent, a POU compliance program can result in significant cost savings for smaller water systems.

Arizona Administrative Code (AAC) regulation R18-4-222 governs the use of POU devices in Arizona public drinking water systems. Additionally, federal law 42 U.S.C. 300g-1(b)(4)(E)(ii) contains requirements that must be met by water systems using POU devices as a means of compliance. Any water system choosing to use POU as their means to comply with an established drinking water maximum contaminant level (MCL) will be required to meet all of the requirements of the State regulation and federal law.

Federal law requires that the POU device be owned, controlled, and maintained by the public water system or by a person under contract with the public water system to ensure proper operation and maintenance and compliance with the MCL. Federal law also requires that the POU device be equipped with mechanical warnings to ensure that customers are automatically notified of operational problems and that the device be independently certified as conforming to an American National Standards Institute standard if one exists. Finally a POU device cannot be used to comply with a MCL or treatment technique requirement for a microbial contaminant.

A.A.C. R18-4-222 outlines additional requirements a water system must meet when using a POU compliance program. Specifically, Arizona regulations require the water system to develop and have approved a written monitoring plan, obtain ADEQ approval of the design of the POU device, install a sufficient number of devices to ensure every person served by the system is protected, and that the rights and responsibilities of persons served by the water system convey with title upon sale of property.

This guidance describes these requirements in greater detail and is designed to lead water systems through the analysis and decision making process for determining if a POU compliance program is right for you. Following this guidance will assist Arizona water systems in ensuring their POU compliance program meets all federal and State requirements and is therefore acceptable to ADEQ.

DETERMINING IF POU WILL WORK FOR YOUR SYSTEM

When considering POU as a compliance strategy, water systems must fully understand and weigh the obligations that come with implementing such a program. Factors to consider when determining the appropriateness of POU for your water system include:

- The number of service connections on your system
- The type of service connections on your system
    - Single family homes
    - Apartments
    - Restaurants
    - Office buildings
    - Medical offices
    - Commercial or Industrial
- The cost of central treatment versus POU
- The additional sampling you will be required to conduct and the associated expense of the sampling
- The ability to gain entrance into your customers' households and businesses
- The maintenance frequency and associated workload
- The record keeping requirements
- The willingness of your customers to accept a POU compliance program
- The ability of the water system to gain authority to make participation in the program a condition of service
- Any liability associated with such a program

A system must also consider that ADEQ will not authorize a system to implement a POU compliance program that does not have a minimum of 75% initial water customer participation at the inception of the program. The system must then reach 100% water customer participation using the tools outlined in this guidance document and/or as outlined in an order and schedule issued by ADEQ.

The establishment of a POU program raises challenging issues for a water system, including increased liability and private property access issues. A water system may be wise to seek legal counsel to determine its best course of action.

WATER WASTING CONCERNS FOR A POU PROGRAM

When considering POU technologies, many water systems and their customers face concerns about potential water losses related to typical POU devices. In a desert state these concerns are valid and need to be addressed. Different POU technologies have different treatment methods and characteristics, including water loss.

POU devices that use absorption technology use treatment media that chemically filter out contaminants by attracting them to the media. These units typically do not require backwashing and therefore do not result in water loss.

POU Reverse Osmosis (RO) units typically use two to four gallons of water to produce one gallon of drinking water. The fluctuation in efficiency is due to many factors that continually change within the RO system, including incoming water pressure, backpressure produced by the storage tank and age and condition of the RO membrane itself.

This can sound like a large amount of wasted water when proposing to install 100 or more units. It is important to educate your customers on the water use patterns within a service connection that comprise the total monthly usage. Industry data shows between 1% and 3% of the total volume of water used at a connection is for drinking and cooking purposes. This usage percentage holds true for "typical" households; households that have larger than normal water usage due to irrigation or other activities will have a lower percentage of the total water usage being used for drinking and cooking.

This can be compared with centralized treatment, which has a backwashing cycle associated with it. Central treatment facilities will regularly backwash to either regenerate treatment media or to redistribute the filter bed. Whatever the purpose for backwashing, the plant will be using water that is not then delivered to customers, thus a certain amount of water wasting will occur.

MANAGEMENT OF A POU COMPLIANCE PROGRAM

Management of a POU program will be significantly different than management of a central treatment plant. The majority of work will center on administrative activities and testing. In a central treatment plant the emphasis also includes a fair degree of technical and operational knowledge, elements not as onerous in POU compliance programs. Systems considering a POU compliance program should evaluate the management factors associated with the program including:

- Maintaining a log of installed units
- Tracking the useful life of the units
- Staggering unit or component change-out
- Executing unit or component change-out

- Maintaining testing records for each unit
- Coordinating with customers to schedule testing and maintenance
- Educating customers on the goals and functions of a POU program

POU SYSTEM REQUIREMENTS

A POU system is considered a complete water treatment device that includes all components needed to connect it to a public water system under a POU compliance program. Additionally, the POU system must be certified by an American National Standards Institute (ANSI) accredited body under one of the National Sanitation Foundation (NSF)/ANSI water treatment unit standards. Currently recognized ANSI accredited certification organizations are:

I. NSF
II. Water Quality Association (WQA)
III. Underwriters Laboratory (UL)

Currently recognized NSF/ANSI standards are:

I. NSF/ANSI Standard 44
II. NSF/ANSI Standard 53
III. NSF/ANSI Standard 55
IV. NSF/ANSI Standard 58

The water system must provide documentation from the treatment device manufacturer showing the treatment device is certified for the reduction of the specific contaminant(s) that the water system will be controlling. POU manufacturers are aware of this certification requirement and should be able to readily provide this documentation.

PERFORMANCE INDICATOR DEVICE REQUIREMENTS

Each POU device must have a performance indication device (PID) which alerts the user when the unit is no longer meeting treatment standards. The point of use device certification must include certification of the PID. The PID must provide an automatic and effective means to warn the customer when the system is no longer operating effectively. The PID cannot include an automatic shutoff function. Automatic shutoff can result in the customer by-passing the unit and receiving untreated water directly from the tap.

The PID must be capable of providing a visual or auditory alert and must be calibrated to signal the customer prior to the POU device reaching its exhaustion stage. This will allow the water system sufficient time to receive notification from customers of the PID alert and perform maintenance to return the device to effective operation prior to the dispensing of water not meeting a drinking water standard.

CUSTOMER PARTICIPATION REQUIREMENTS

Customer participation most likely represents the largest challenge to water systems selecting a POU compliance program. For a successful POU program it is necessary that the water system be permitted to enter the household or place of business of each customer to install, test, and maintain the POU device. Customer consent to allow the water system to install and regularly maintain the POU is the key to a successful POU program. ADEQ anticipates that some systems will encounter difficulties in obtaining access approval from every customer. A comprehensive education program will likely serve to assist water systems in obtaining acceptance from all customers.

In an effort to gain a better understanding of POU compliance strategies ADEQ participated in two pilot POU compliance programs. A component of these pilot studies was to survey the participating customers to determine their overall satisfaction with the device. Overwhelmingly customers supported the program and commented positively on benefits ancillary to the removal of the target contaminant. These comments included money savings in no longer purchasing bottled water, the convenience of not having to transport bottled water to their households, and the belief that treating only the portion of water used for drinking and cooking was wise.

In one of the communities tested there were a number of customers who were not willing to permit the water system entry into their households to carry-out the necessary installations. A well planned and comprehensive customer education program at the very beginning will assist you in gaining the largest number of willing participants at the outset of your program. In instances where one or more customers have indicated they are unwilling to allow access to the water system, the water system will have to pursue alternative means to gain access to be eligible for ADEQ approval of a POU compliance program.

The SDWA establishes water quality standards that must be met for all customers. If a customer refuses to allow POU installation, that customer will not be receiving the same protection as those who have. In these instances it will be necessary for the water system to demonstrate they are taking a variety of actions to address this issue. These actions may include one or more of the following:

- Obtaining legal authority to make installation of the POU device a condition of water service.
- Obtaining access authority to customers' households through a homeowners association or Covenants, Conditions and Restrictions (CC &Rs), ordinances, or other legal authorities specific to the individual water system.
- Obtaining legal authority to make installation of the POU device mandatory upon a transfer of ownership (real estate transactions).

- Monthly notification to the refusing customer(s) informing them the water they are drinking does not meet SDWA standards and is posing a health risk using the language provided in appendix 2 while the customer's consent is being obtained.

Different water systems may have different powers and authorities to regulate the delivery of water to customers depending on each system's legal authority and the regulating authorities governing the water system. For example, a water system regulated by the Arizona Corporation Commission (ACC) would seek authorization to require the acceptance of the POU as a condition of service. A municipality or town may be able to write an ordinance or rule to condition service on the acceptance of a POU device. A domestic water improvement district may also have the ability to condition service on the acceptance of a POU device. A water system's ability to require POU installation as a condition of receiving service is for the water system to determine.

LEGAL AUTHORITY TO MAKE INSTALLATION OF THE POU DEVICE A CONDITION OF WATER SERVICE

Because a water system must obtain 100% POU customer compliance, the water system must determine what authorities it has to achieve complete customer compliance. After a customer fails or refuses to allow the installation of a POU, despite the water system's best efforts to obtain the customer's voluntary compliance, the water system must determine whether it has the legal authority to "require" the customer to accept the POU.

A system may consider whether it has the authority to shut off a customer's water service due to a failure to accept a POU, similar to the authority to shut off a customer's water for non-payment. As stated, whether a water system has this authority is for the water system to determine. ADEQ cannot provide advice regarding a system's authority to require POU installation or to terminate service based upon a customer's failure to allow POU installation. ADEQ recommends a water system obtain legal advice to determine its authority in such matters. ADEQ cannot and is not making any representations that any water system has any such authority.

Water service shut-off to a customer who fails or refuses to authorize a POU, if this authority is available to a water system, would be sought after other methods of achieving compliance had been tried without success. Additionally, a water system would not terminate service until after the customer receives clear notice and opportunities to comply with the POU program prior to any termination of service. The Arizona Corporation Commission has an established procedure for providing notice of termination of service to a customer that may be useful as guidance for non-ACC regulated systems.

Another tool that may assist a water system to obtain 100% compliance is for the water system to seek homeowner compliance through petitioning to amend a housing development's Covenants, Conditions and Restrictions (CC&Rs) to require POU installation and maintenance by the water system.

OBTAINING LEGAL AUTHORITY TO MAKE INSTALLATION OF THE POU DEVICE AVAILABLE UPON A TRANSFER OF OWNERSHIP (REAL ESTATE TRANSACTIONS)

A water system may decide to seek to require POU installation and maintenance a mandatory requirement that binds new homeowners by making the requirement part of the sale of the home or commercial real estate. Such a requirement is a "restrictive covenant" which passes in the "chain-of-title" to the property and should be written to bind the current landowner and future landowners to allow POU installation and maintenance. Placing a restrictive covenant in the chain-of-title to a home or commercial real estate requires the written *consent* of the landowner. To be permanent and binding, a water system would need a restrictive covenant and also an easement to be able to enter the property to install and service the POU device. Although this would provide certainty, obtaining these on an individual basis from customers will likely be time-consuming and difficult to obtain.

MONTHLY NOTIFICATION TO THE REFUSING CUSTOMER(S) INFORMING THEM THE WATER THEY ARE DRINKING DOES NOT MEET SDWA STANDARDS AND IS POSING A HEALTH RISK USING THE LANGUAGE PROVIDED IN APPENDIX 2

While a water system is seeking to obtain the consent of a customer to install and maintain a POU, the water system should issue a monthly notification to that customer informing them the water they are drinking does not meet SDWA standards and is posing a health risk using the language provided in Appendix 2. It is important to remember that a customer's waiver does not excuse the requirement on the water system to provide water that meets the MCLs and all other drinking water requirements.

COMPLIANCE STATUS OF WATER SYSTEM USING POU PROGRAM

A water system implementing a POU program will be considered to be in compliance with ADEQ drinking water rules relating to compliance with the MCLs, which the POU program is designed to correct, only when a POU device has been installed at every connection. As stated, water systems wishing to implement a POU compliance program that have not gained 100% participation from their customers will need prior ADEQ approval before initiating the program. These water systems may be required to complete Appendix 3 and include it when submitting their application (Appendix 1) for ADEQ program approval. Appendix 3 is a standardized enforceable order/consent agreement and compliance schedule that includes required actions and milestones the water system must meet as well as required notification to non-participating customers during the period they do not have a POU treatment unit installed. Water systems not completing the required actions within the specified time frames will be in violation of their enforceable order/consent agreement and subject to penalty. If the water system is on a

compliance schedule and is meeting the required milestones, the system will be not be considered to be in violation with those drinking water requirements.

Any water system that does not have a POU device installed at every service connection and is not meeting milestones of a compliance schedule, or has not entered into an enforceable order/consent agreement with a compliance schedule with ADEQ, will be considered out of compliance and will be subject to enforcement.

It is imperative that a water system fully evaluate and plan for the course of action necessary to achieve 100% participation when considering a POU program. Because non-compliance would necessitate installation of centralized treatment, failure to install POU devices in all service connections within the designated time frame can result in a significantly more expensive financial investment.

POU PROGRAM MONITORING REQUIREMENTS

It will be necessary for the water system to test the water from each POU device over a specified period of time to ensure the device is working properly. Compliance monitoring will use a combination of methods. First, the water system must collect a water sample from the POU device for analysis at a certified laboratory. The water system must also perform on-site testing of the POU devices using test strips. The water system will be required to complete a sample plan and include it in their application for approval of the POU compliance program. The water system will then be required to follow the sample plan upon Department approval. The sample plan will include the following:

General Testing Requirements

Developing a community sample plan: On a map, the water system should divide its distribution system into three sections so that 1/3 of the service connections are located in each section. This map must be submitted with a POU compliance program application. The water system will be required to collect a sample from 1/3 of the system's total service connections every three years with 10% of those samples going to a licensed certified laboratory for analysis and 23% of those samples being conducted with a field testing kit. Analytical results obtained through the use of certified laboratories are required to be submitted, on approved reporting forms, to ADEQ pursuant to A.A.C. R18-4-104. All records for chemical analyses, including field tests, shall be maintained by the water system for a minimum of 10 years pursuant to A.A.C. R18-4-103. The water system will be required to repeat the testing of a 1/3 or the systems' total connections every three years for a nine year period. The following schematic illustrates this sampling procedure:

9 year Compliance Cycle		
3-year Compliance Period	3-year Compliance Period	3-year Compliance Period
Sample 10% to Laboratory Sample 23% field test kit	Sample 10% to Laboratory Sample 23% field test kit	Sample 10% to Laboratory Sample 23% field test kit

Identification of devices to sample

The water system will be required to develop a sampling plan that ensures not only that each device is tested over the nine year compliance cycle, but also ensures units are tested in various areas of the distribution system in order to provide assurance that units are working properly. When developing the sampling plan, develop a map of the system's distribution system that divides the distribution system into three sections with each having an equal number of connections. Then indicate which connections will be sampled and in which sampling round they will be tested. The water system must ensure an equal number from each section is included in each sampling round. For example, each section of the sampling map should contribute 11% of the total samples to be collected for each three year compliance period.

If test strips are used for testing the devices, the water system will need to ensure that the number of devices tested using the test strip does not exceed 23% of the total 33% to be tested every three years. Also, when using test strips for arsenic the water system must use the ITS *Arsenic Quick II Test Kit*, part number 481303. ITS can be contacted at (803) 329-9712 or www.sensafe.com.

APPLICATION FOR POU PROGRAM APPROVAL

Water systems considering a POU program must complete an application packet and submit it to ADEQ for approval. This packet must include all of the following information:

1. POU program application form (see Appendix 1)
2. Manufacturer certification of effectiveness
3. Description of PID and how it will warn users
4. Customer participation information with schedule for reaching 100% participation, if applicable
5. Installation schedule including parties responsible for installation and their qualifications
6. Preliminary maintenance schedule
7. Monitoring plan showing sections
8. Customer education and outreach plans

All POU Programs must be approved by ADEQ prior to installation.

POU PROGRAM INSTALLATION REQUIREMENTS

It will be necessary for the water system to obtain ADEQ approval prior to installing POU devices. Proper installation of the POU devices, in the correct location, is critical if the water system is to meet compliance requirements.

The water system will be responsible for the installation of the individual POU devices. The water system owner will need to ensure individuals installing POU devices are qualified to complete this work. Examples of qualified people include certified operators, licensed plumbers and manufacturer or vendor representatives. Only those qualified individuals identified in the application packet will be permitted to perform the work under the ADEQ approved program.

Generally, the water system will legally own the POU devices, and the water system always will be responsible for, the installation, operation and maintenance of the POU devices. The water system will need to ensure that, in the event of a transfer of ownership of the property, the POU device will stay with the property. The water system may enter in to a rental agreement with a POU vendor, however the water system shall maintain responsibility for the device including maintenance and recordkeeping requirements.

In the event a resident already has a water treatment device in their dwelling or business, the water system may offer to replace the existing POU device with the new one used by the water system's POU program. If the customer refuses, the water system should provide for the following:

- The customer's device should be certified by an accredited organization for the reduction of the contaminant of concern
- The customer's device should have, or be fitted with, a performance indication device that meets the requirements for the POU program
- The water system must obtain legal ownership of the device by obtaining the customer's consent to the transfer of ownership and pay compensation as necessary
- The water system will be responsible for the proper operation and maintenance of the POU device
- If the customer's device does not adequately treat the contaminants of concern, and cannot be retrofitted, the water system should inform the customer and obtain consent to install and maintain the new water treatment device.

Special installations (such as routing treated water to ice makers or additional faucets) must be performed by the water system. The water system must ensure individual homeowners and other users do not modify or alter the system after the installation.

POU PROGRAM OPERATION AND MAINTENANCE REQUIREMNTS

It is the responsibility of the water system to maintain and service the individual POU devices. In no instances may the water system allow individual homeowners to perform maintenance on the units unless that individual is identified as a qualified person in the program application or has been approved in writing by ADEQ.

POU device maintenance must be performed in accordance with the manufacturer's specifications. Failure to follow these specifications will be considered non-compliance.

POU RECORD KEEPING REQUIRMENTS

The water systems must maintain records related to the POU for a minimum of ten years according to A.A.C. R18-4-103. These records must be available for inspection at the water system:

- POU maintenance records and purchase orders
- Annual on-site test kit results
- Results from certified laboratory analysis
- Outreach efforts, including notifications to customers not participating in the program

POU DEVICES AND SYSTEM CLASSIFICATION

Systems adding a POU program are adding a treatment technology. If the system is currently graded as a "distribution system" (as outlined in A. A. C. R18-5-115), the addition of a POU program would change the system's classification to a "treatment system" as well. Systems installing POU treatment will require operators with the appropriate grade of Water Treatment Certification as outlined in A. A. C. R18-5-115.

However, POU technology is a stand alone technology and will be treated as such when ADEQ is determining system characteristics. That is, a POU device will not be assigned points based on the underlying technology used to treat the water (e.g. adsorption, RO), but will be graded as a separate technology. In addition, once the POU program has been established, the number of individual POU devices installed will not impact the overall grade of the system. Additional units would not result in additional points being assigned to the system's overall grade.

APPENDIX 1

Point-of-Use Water Treatment Application Checklist:

- ☐ POU Program Application (attached)
- ☐ Manufacturer Certification of Effectiveness
- ☐ Detailed Description of Performance Indication Device (PID)
- ☐ Customer Participation Information (e.g. schedule for reaching 100% participation)
- ☐ Installation Schedule (including parties responsible for installation and their qualifications)
- ☐ Preliminary Maintenance Schedule
- ☐ Monitoring Plan Showing Sections
- ☐ Customer Education and Outreach Plans

Application for Approval to Use Point-of-Use Water Treatment

(Pease submit to the ADEQ Water Quality Division at 1110 W. Washington St., Phoenix, AZ 85007)

System ID _____ System Name _____ System Location (city / area) _____ Number of Hook ups* _____

Type of POU device used _____

Manufacturer of Device _____

Model Number of Device _____

Contaminant	Action Level
☐ Arsenic	0.010 mg/L
☐ Copper	1.3 mg/L
☐ Fluoride	2.0 mg/L
☐ Lead	0.015 mg/L
☐ Radium	5 pCi/L
☐ Other	_____

Verified ANSI Certification on device?
- ☐ Yes
- ☐ No

What Type of performance indication device does the unit have?
- ☐ TDS Monitor (for RO units)
- ☐ Timer
- ☐ Total Flow

Who is installing the Units?
- ☐ System Operator
- ☐ Water System Employee
- ☐ Water corporation work group
- ☐ Local Water Dealer
- ☐ Other _____

For timer and flow meters, please provide details regarding how the performance indicator will warn the user when the system is not performing: _____

Provide overview of the maintenance requirements for the POU devices planed to be installed: _____

I hereby certify that the information provided in this application is accurate and correct top the best of my knowledge.

Authorizer Name: _____ Signature _____

Phone Number _____ Date _____

*Do not include transient dwellings. Refer to ADEQ POU guidelines for further information regarding transient dwellings.

Arizona Department of Environmental Quality – Water Quality Division

Maintenance Report for Point-of-Use water treatment device

(One maintenance report must be completed per dwelling)

Address

Primary Contact Name at Residence

Phone #

Number of devices installed at

Phone and primary contact

Location of potable water tap(s) installed at dwelling

Dwelling

Date	Maintenance activity performed	Initiated by		POU Effluent Water result	Comments	Performed by:
		Water System	Home Owner			

APPENDIX 2

The following is the mandatory notification and public health language that must be included in monthly billings to customers who have not agreed to the installation of a POU device.

The ***insert water company name*** has employed a Point-of-Use compliance program to meet the Safe Drinking Water maximum contaminant level (MCL) for arsenic. Because you have declined to allow a POU device to be installed, we are required to provide the following warning regarding the quality of water people in your household are receiving.

"The United States Environmental Protection Agency has determined that some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer. The current level of arsenic you are consuming in your drinking water is ***insert most recent arsenic result***. The ***insert water company name*** water company is actively pursuing alternatives to enable installation of a POU device at your household."

APPENDIX 3

Attached please find a standardized enforceable order/consent agreement and compliance schedule.

BEFORE THE DIRECTOR OF THE
ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

In the Matter of: Drinking Water System located at [Street Address of Facility] [City where Facility Located], Any Arizona County, Arizona [ADEQ Identification Number for Facility]	)))))))))	**CONSENT ORDER WITH CIVIL ADMINISTRATIVE PENALTY** **Docket No. _____**

To: Public Water System Owner/Operator in [his/her/its] capacity as [Owner and / or Operator] of Drinking Water System located at 123 Desert Row, Any Arizona Town, Any Arizona County, Arizona.

RECITALS

Public Water System Owner/Operator acknowledges that no promise of any kind or nature whatsoever, was made to induce [him/her/it] to enter into this Consent Order, and Public Water System Owner/Operator has done so voluntarily.

By entering into this Consent Order, Public Water System Owner/Operator does not admit to any civil or criminal liability, or waive any right including but not limited to the assertion of any defense available to Public Water System Owner/Operator under applicable law. Further, Public Water System Owner/Operator does not admit, and both the Arizona Department of Environmental Quality ("ADEQ") and Public Water System Owner/Operator retain the right to controvert in any subsequent proceeding except a proceeding to implement or enforce this Consent Order, the validity of any Findings of Fact or Conclusions of Law contained in this Consent Order.

The undersigned representative of Public Water System Owner/Operator certifies that [he/she] is fully authorized to execute this Consent Order on behalf of Public Water System Owner/Operator and to legally bind Public Water System Owner/Operator to this Consent Order.

Public Water System Owner/Operator admits to the jurisdiction of the Director of ADEQ.

Except as to the right to controvert the validity of any Findings of Fact or Conclusion of Law contained in this Consent Order in a proceeding other than to enforce this Consent Order, Public Water System Owner/Operator consents to the terms and entry of this Consent Order and agrees not to contest the validity or terms of this Consent Order in any subsequent proceeding.

THEREFORE, IT IS HEREBY ORDERED as follows:

I. JURISDICTION

The Director of ADEQ has jurisdiction over the subject matter of this action and is authorized to issue this Consent Order pursuant to the Arizona Revised Statutes ("A.R.S.") §§ 49-354 and 41-1092.07(F)(5).

II. FINDINGS

THE DIRECTOR HEREBY MAKES THE FOLLOWING FINDINGS OF FACT AND CONCLUSIONS OF LAW:

A. Findings of Fact

1. Public Water System Owner/Operator owns and/or operates Drinking Water System located at 123 Desert Row, Any Arizona Town, Any Arizona County, Arizona.

[List of facts that are the basis for the Consent Order]

B. Conclusions of Law

1. Drinking Water System is a public water system as defined in A.R.S. § 49-352(B) and A.A.C. R18-4-101.

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2. Drinking Water System is a [community/nontransient, noncommunity/transient, noncommunity] system as defined in A.A.C. R18-4-101.

3. Drinking Water System, as [Owner and / or Operator] of Drinking Water System, is a water supplier as defined in A.A.C. R18-4-101.

[List of violations, including the legal citations, related to the Findings of Fact]

III. COMPLIANCE SCHEDULE

THE DIRECTOR HEREBY ORDERS and Public Water System Owner/Operator agrees to comply with the provisions of this Consent Order as follows:

1. If the Public Water System is regulated by the Arizona Corporation Commission (ACC), the Public Water System will seek to obtain a tariff from the ACC making installation of the POU device a condition of service within 180 days of implementing the POU compliance program.
2. The Public Water System owner will seek authority to make installation of a Point-of-Use (POU) device a condition of service through the local government entity that establishes ordinances for the area within which the Public Water System is located within 180 days of entering into this consent order if the Public Water System is not regulated by the ACC, or, is regulated by the ACC but fails to obtain condition of service authority from the ACC.
3. If the Public Water System is unable to obtain the authority to make installation of the POU device a condition of service through its local government, and the water system service area is covered by a Homeowners Association, the water system will seek the authority to

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make installation of the POU device a condition of service through modification of the Covenants, Conditions, and Restrictions (CC&R) of the Homeowners Association within 180 days of failing to obtain condition of service authority through 1 & 2 above.

4. If the Public Water System is unable to obtain the authority to make installation of the POU device a condition of service through a local ordinance or modification to CC&Rs, the Public Water System will seek the authority to make installation of the POU device a condition of service upon transfer of ownership of the property through the establishment of a Restrictive Covenant within 180 days of failing to obtain condition of service authority through 1, 2 & 3 above.

5. If the Public Water System is unable to obtain the authority to make installation of the POU device a condition of service through 1, 2 , 3 or 4 above, the water system will submit an application for an Approval to Construct for a centralized arsenic treatment facility for each Point of Entry requiring arsenic treatment to ADEQ within 180 days of failing to obtain condition of service authority through 1, 2, 3, & 4 above.

IV. STATUS REPORTS

A. Public Water System Owner/Operator agrees to submit a written status report to ADEQ every thirty (30) calendar days beginning thirty (30) days from the effective date of this Consent Order, until termination of this Consent Order. Each written status report shall describe what measures have been taken under Section III, of this Consent Order, and shall certify when compliance with the requirements of Section III of this Order has been achieved. Each report shall be accompanied by evidence of compliance including, as appropriate, submittal of

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documents, photographs or copies of any other supporting information that Public Water System Owner/Operator deems necessary.

B. ADEQ will review the status reports and relay any disputes in writing to Public Water System Owner/Operator. Public Water System Owner/Operator shall incorporate all required modifications, changes or other alterations, as requested by ADEQ, within a reasonable time specified by ADEQ.

V. CIVIL ADMINISTRATIVE PENALTY

A. Public Water System Owner/Operator shall pay a civil administrative penalty to the State in the amount of [Narrative Amount] ($[Numeric Amount]) within [Number of Days] of the effective date of this Consent Order.

B. All payments made to the State under this Consent Order shall be by check made payable to "State of Arizona" and shall be delivered or mailed to:

[Chief Financial Officer], Chief Financial Officer
Arizona Department of Environmental Quality
1110 West Washington Street
Phoenix, Arizona 85007-2935
Attention: Accounts Receivable

together with a letter tendering the check. The letter shall identify this Consent Order by the parties and docket number. A copy of the check shall also be sent to ADEQ pursuant to Section IX.

C. Public Water System Owner/Operator shall pay interest and penalties on any amount not paid by the due date at the rate established pursuant to A.R.S. § 49-113. If [Public Water System Owner/Operator fails to pay the full amount of the civil administrative penalty as required by this Consent Order, ADEQ may terminate this Consent Order and take action to seek penalties for any and all violations covered by this Consent Order.

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VI. COMPLIANCE WITH OTHER LAWS

A. This Consent Order does not encompass issues regarding releases, contamination, sources, operations, facilities or processes not expressly covered by the terms of this Consent Order, and is without prejudice to the rights of the State of Arizona or Public Water System Owner/Operator, arising under any federal or Arizona environmental statutes and rules with regard to such issues.

B. Nothing in this Consent Order shall constitute a permit of any kind, or a modification of any permit of any kind, or an agreement to issue a permit of any kind under federal, state or local law, or relieve Public Water System Owner/Operator in any manner of [his/her/its] obligation to apply for, obtain, and comply with all applicable permits. Nothing in this Consent Order shall in any way alter, modify or revoke federal, state, or local law, or relieve Public Water System Owner/Operator in any manner of [his/her/its] obligation to comply with such laws. Compliance with the terms of this Consent Order shall not be a defense to any action to enforce any such permits or laws.

VII. FORCE MAJEURE

A. Public Water System Owner/Operator shall perform all the requirements of this Consent Order according to the time limits set forth herein, unless performance is prevented or delayed by events which constitute a *force majeure*. *Force majeure*, for the purposes of this Consent Order, is defined as any event, arising from causes beyond the control of Public Water System Owner/Operator or its authorized representatives which delays or prevents the performance of any obligation under this Consent Order and which could not have been overcome or prevented by Public Water System Owner/Operator. The financial inability of Public Water System Owner/Operator to comply with the terms of this Consent Order, shall not constitute a *force majeure*.

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B. In the event of a *force majeure*, the time for performance of the activity affected by the *force majeure* shall be determined by ADEQ and extended for a period no longer than the delay caused by the *force majeure*. The time for performance of any activity dependent on the delayed activity shall be similarly extended. In the event of a *force majeure*, Public Water System Owner/Operator shall notify ADEQ in writing within five (5) calendar days after Public Water System Owner/Operator or [his/her/its] agents become aware of the occurrence. The written notice provided to ADEQ shall describe in detail the event, the anticipated delay, the measures taken and to be taken byPublic Water System Owner/Operator to prevent or minimize delay, and a proposed timetable under which those measures will be implemented. Public Water System Owner/Operator shall take all reasonable measures to prevent or minimize any delay caused by the *force majeure*. Failure of Public Water System Owner/Operator to comply with any requirements of this paragraph for a particular event, shall preclude Public Water System Owner/Operator from asserting any claim of *force majeure* for that event.

VIII. SITE ACCESS

ADEQ may at any time, upon presentation of credentials to authorized personnel on duty, enter upon the premises at the Facility for the purpose of observing and monitoring compliance with the provisions of this Consent Order. This right of entry shall be in addition to, and not in limitation of or substitution for, ADEQ's rights under applicable law.

IX. CORRESPONDENCE

All documents, materials, plans, notices, or other items submitted as a result of this Consent Order shall be transmitted to the addresses specified below:

To ADEQ:

Arizona Department of Environmental Quality
Water Quality Division
Attention: [ADEQ Contact and Title]
1110 West Washington Street
Phoenix, Arizona 85007-2935

Initial _____

Telephone: [Telephone Number of ADEQ Contact]
Email: [Email]

To Public Water System Owner/Operator:

[Name of Responsible Party or Designee]
[Address of Responsible Party or Designee]
[Telephone Number of Responsible Party or Designee]

Submissions to ADEQ as a result of this Consent Order shall be deemed submitted upon receipt.

X. RESERVATION OF RIGHTS

A. This Consent Order is based solely upon currently available information. If additional information is discovered, which indicates that the actions taken under this Consent Order are or will be inadequate to protect human health, safety, or the environment, or to conform with applicable federal or state laws, ADEQ shall have the right to require further action.

B. ADEQ shall have the right: to disapprove of work performed by Public Water System Owner/Operator that fails to comply with this Consent Order; to take enforcement action for any and all violations of this Consent Order; and to take enforcement action for any and all violations of A.R.S. Title 49, or the rules promulgated thereunder, occurring after the entry of this Consent Order.

XI. SEVERABILITY

The provisions of this Consent Order are severable. If any provision of this Consent Order is declared by a court of law to be invalid or unenforceable, all other provisions of this Consent Order shall remain in full force and effect.

XII. RELEASE

Pursuant to A.R.S. § 49-354(G), upon payment of the full amount of the civil administrative penalty in Section V, Public Water System Owner/Operator and [his/her/its] past, present, and future directors, officers, members, employees, agents, and successors and assigns

Initial _____

are released from any and all civil penalty liability to the State, for the violations covered by this Consent Order.

XIII. MODIFICATIONS

Any modifications of this Consent Order shall be in writing and must be approved by both Public Water System Owner/Operator and ADEQ.

XIV. EFFECTIVE DATE

The effective date of this Consent Order shall be the date this Consent Order is signed by ADEQ and Public Water System Owner/Operator. If such signatures occur on different dates, the later date shall be the effective date of this Consent Order.

XV. PARTIES BOUND

No change in ownership, corporate status, or partnership status relating to the subject of this Consent Order will in any way alter the responsibilities of Public Water System Owner/Operator under this Consent Order. Public Water System Owner/Operator will be responsible, and will remain responsible, for carrying out all activities required under this Consent Order.

XVI. TERMINATION

The provisions of this Consent Order shall be deemed satisfied and this Consent Order shall be terminated upon receipt of written notification from ADEQ that Public Water System Owner/Operator has demonstrated, to the satisfaction of ADEQ, that all of the terms of this Consent Order have been completed. Any denial of a request for termination from Public Water System Owner/Operator will be in writing and describe which terms of the Consent Order have not been completed to the satisfaction of ADEQ. ADEQ reserves the right to terminate this Consent Order unilaterally at any time for any reason. Any termination will include a written explanation of the reason(s) for termination.

ISSUED this ___ day of _____ , 200_.

Initial _____

_____
[Name of Division Director], Director
Water Quality Division
Arizona Department of Environmental Quality

CONSENT TO ORDER

The undersigned, on behalf of[Name of Responsible Party/ Facility], hereby acknowledges that [he/she] has read the foregoing Consent Order in its entirety, agrees with the statements made therein, consents to its entry and issuance by the Arizona Department of Environmental Quality, agrees that Public Water System Owner/Operator will abide by the same and waive any right to appeal therefrom.

DATED this ___ day of _____ , 200_.

_____
[Signatory for Responsible Party]
[Title of Signatory]

Initial _____

ORIGINAL of the foregoing administrative decision was sent certified mail, return receipt requested, this ___ day of _____, 200_, to:

Public Water System Owner/Operator
[Address of Responsible Party]

COPY of the foregoing administrative decision was filed this ___ day of _____ , 200_, with:

COPIES of the foregoing administrative decision were sent by regular/interdepartmental mail, this ____ day of _____, 200_, to the following:

Arizona Department of Environmental Quality
Office of Special Counsel
Attention: [Hearing Administrator], Hearing Administrator
1110 West Washington Street
Phoenix, Arizona 85007-2935

[Chief Counsel, Environmental Enforcement Section, Office of the Attorney General]

[Program Manager(s), ADEQ]

[County Health Department]

COOLIDGE AIRPORT WATER SYSTEM
PWSID No. 11-707

ARSENIC CONCEPTIONAL DESIGN REPORT

SUBMITTED TO:
ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
ATTN: DONNA CALDERON
1110 W. WASHINGTON STREET
PHOENIX, AZ 85007

DATE: 12/04/14

SUBMITTED BY:
ARIZONA WATER COMPANY
3805 N. BLACK CANYON HIGHWAY
PHOENIX, ARIZONA 85038
602-240-6860

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1.0 INTRODUCTION

In August 2013 the Coolidge Airport Water System (CAWS) became a Non-transient Non-community water system ("NTNCWS") due to increased population and now must comply with Title 40 of the Code of Federal Register ("CFR") Part 141, Subpart A to V. CFR §141.62 states NTNCWS must comply with the arsenic maximum contaminant level ("MCL") of 10 parts per billion ("ppb").

The CAWS consists of two wells (Well No. 1 and Well No. 2). The arsenic concentrations of both wells are over the arsenic MCL of 10 ppb. The last measured arsenic concentrations in the wells were 11 ppb for Well No. 1 and 14 ppb for Well No. 2. This report details how the Company will comply with the arsenic MCL Running Annual Average ("RAA") by installing a 100 gallon per minute ("gpm") arsenic removal facility ("ARF") with a fire flow bypass.

1.1 Location

The Coolidge Municipal Airport ("Airport") is a city owned public airport located at 3546 S. Hangar Drive, Coolidge, Arizona, which is five miles southeast of Coolidge, in Pinal County, Arizona and approximately 66 miles southeast of Phoenix. The Airport covers 1,268 acres and has two asphalt runways. See the Vicinity Map (Figure 1.1) and Facility Map (Figure 1.2) at the end of the report.

1.2 Background

The City of Coolidge obtained ownership of the Airport in 1959. In November 2007, Arizona Water Company ("Company") entered into a lease and operation agreement with the City of Coolidge to manage the CAWS, PWSID No. 11-707. At that time, the CAWS was classified as a Transient Non-community water system. Over the years the CAWS has grown and now serves more than 25 of the same persons over six months a year. When this information came to light, the Company notified ADEQ by letter in April 2014 of the classification change to a NTNCWS (see Attachment A).

Currently, the CAWS has nine service connections which are all businesses. There is one permanent resident and 40 employees that work more than six months a year at the Airport. The current CAWS facilities consist of two wells, one storage tank and five booster pumps which are located within an easement on the east side of the Airport property. These facilities are described in more detail in Section 2.0 below.

1.3 Project Objectives

The primary objectives of this report are to:

1. Maintain full utilization of the two CAWS wells,

2. Comply with the arsenic MCL and ADEQ requirements using the best available treatment technology to treat water for drinking water purposes,
3. Maximize treatment efficiency, and
4. Provide a bypass for fire flow.

2.0 EXISTING CONDITIONS

The CAWS facilities consist of two 350 gpm water production wells, Well No. 1 (55-620899) and Well No. 2 (55-620900), a 15,000 gallon storage tank, a skid mounted booster pump station and a 9,000 gallon hydropneumatic tank. The facilities, with the exception of Well No. 2, are located within a fenced enclosure that is approximately 60 feet wide by 140 feet long (see Figure 2.1). Well No. 2 is located within a separate fenced enclosure, approximately 900 feet south. The booster pump station is a skid mounted Gould pump station comprised of two 3 HP variable frequency driven motors capable of pumping approximately 25 gpm each, one 10 HP constant speed motor capable of pumping approximately 150 gpm and two 40 HP constant speed motors capable of pumping approximately 700 gpm each. The booster pump station has space for one additional future pump. An existing 12-inch diameter water main serves the existing customers on the north end of the Airport which transitions to a 4-inch water main to serve the southern portion of the Airport.

2.1 Water Quality

Arsenic is the only contaminant in Wells No. 1 and No. 2 that exceeds the Primary Drinking Water Standards. Recent arsenic concentrations are summarized in Table 2.1 below.

Table 2.1 – CAWS Arsenic Concentrations (ppb)

Date	Well No. 1	Well No. 2
Sept. 5, 2012	18	13.5
Nov. 14, 2012	13.5	14.1
Feb. 25, 2013	10.7	13.7
May 06, 2013	11.5	15.6
Aug. 26, 2013	11.2	12
Oct. 29, 2013	12.4	14.7
Nov. 25, 2013	18.4	14
Dec. 19, 2013	12.7	15.3
Mar. 19, 2014	11.6	14.9
April 23, 2014	11.4	14.7
May 29, 2014	11.2	14
June 10, 2014	10.6	13.4
Aug. 14, 2014	10.9	14.8
Average	**13**	**14**

As shown, over the last two years the arsenic concentrations of both wells are above the 10 ppb MCL. Arsenic concentrations range from 10.6 to 18.4 ppb for Well No. 1 and from 12 to

15.6 ppb for Well No. 2. The average arsenic concentrations of both blended wells for the two year period are 13 ppb and 14 ppb, respectively.

2.2 System Demands

The CAWS system demands were calculated based on the Company's water use records of all nine customers over a one year period beginning in July 2013 and ending in June 2014 (see Attachment B). These demands are summarized in Table 2.2.

Table 2.2 – CAWS Demands

Criteria	Demand
Yearly Total (gallons)	3,107,600
Average Day Peak Month (gpd)	11,903
Average Day Peak Month (gpm)	8
Peak Hour Peak Month (gpm)[1]	33

[1] *Assumes a peaking factor 4.0 x Average Day Peak Month*

As shown, the average day demand for the peak month is 8 gpm and the peak hour demand for the peak month is 33 gpm. Therefore, an ARF with a capacity of approximately 100 gpm is sufficient to meet the typical daily demands of the CAWS system including some future reasonable increase in water demands.

3.0 PROJECT DESCRIPTION

The Company will construct an ARF with a treatment capacity of approximately 100 gpm within the CAWS facility enclosure. The proposed site layout is presented on Figure 3.1.

The CAWS system will operate as it is currently configured. Both wells will either pump one at a time or concurrently to the existing storage tank depending on tank level. The wells are controlled by the level sensor in the tank. The booster pump station is controlled by the system pressure sensor and pumps water to the distribution system at flow rates required to maintain system pressure. The hydropneumatic tank aids in maintaining system pressure and provides water to the system during low demand periods.

The Company will construct an ARF on the discharge side of the existing booster pump station and a control valve on the 12-inch discharge line between the inlet and outlet of the treatment system. This valve is normally closed under typical operating conditions and will direct flow through the treatment system. In the event that demand exceeds the ARF capacity such as during a fire, the control valve will open to allow untreated water to bypass the ARF and be pumped to the distribution system. An alarm will be sent to alert operations personnel by auto-dialer when this occurs.

4.0 COMPLIANCE STRATEGY

This report establishes a plan to produce water that complies with the arsenic MCL RAA using the best available treatment technology. This approach is simple to implement, uncomplicated for certified operators to manage, and maximizes well production, while minimizing the financial impact to customers. To that end, this plan establishes both physical and strategic measures that will ensure the water produced will meet this objective.

The Company's compliance strategy is as follows:

1. Water quality tests taken from the contributing wells and entry point to the distribution system ("EPDS") will be performed by a state-certified drinking water laboratory.
2. Special quarterly arsenic samples will be taken at both wells. If there are fluctuations or changes in the quality of the water, changes will be made to adjust the treatment process.
3. Compliance weekly arsenic samples taken at EPDS 001 for three months (one quarter) will be composited together for a "compliance quarterly composite" sample. This approach allows the Company to closely monitor the treatment process and make adjustments as necessary, capture arsenic changes going into the system if there is a large demand event instead of the one point in time approach by taking a single quarterly sample. This will ensure that the arsenic RAA does not exceed the 10 ppb MCL.
4. If the high capacity booster pumps is engaged, the auto-dialer will alert the on-call operator. As a back up to the auto-dialer alert system, the booster pump start counter hour meters are read daily by a certified operator and recorded in the daily log book kept on site. If there was a fire flow or other large demand event, the operator would log the event when the alarm is received or at the time the daily meter read is taken, then sample and flush as described below.

    a. Perform special arsenic field sampling at EPDS 001 and the two bacti sites listed on Figure 1.2 with a Sensafe/ITS Quick Ultra Low II Arsenic Test kit and record the results in the daily log book kept on site.

    b. If the field result(s) is over the MCL, the operator will flush the distribution system with treated water from the 3 HP pumps at an approximate flow rate of 25 gpm to eliminate the high arsenic water in the system.

    c. After flushing the operator will take special arsenic field samples at the two bacti sites until the results at these sites and the EPDS are less than the MCL.

5.0 CONCLUSIONS

In summary, the Company's proposed plan for the CAWS meets the requirements of the Safe Drinking Water Rules, more specifically the requirements of the Arizona Administrative Code, Title 18, Chapter 4, and provides water that meets the primary drinking water standards, namely the arsenic MCL RAA. Conclusions reached in this report are as follows:

1. Installation of the ARF will require minimal modifications to the CAWS facility site.
2. The monitoring plan will ensure that the arsenic RAA does not exceed the 10 ppb arsenic MCL.
3. In the event of a fire or larger than normal demand event, alarms will alert operations personnel, special field arsenic samples will be taken, flushing will be performed to ensure that the arsenic MCL RAA is not exceeded.

FIGURE 1.1: Coolidge - Casa Grande Vicinity Map

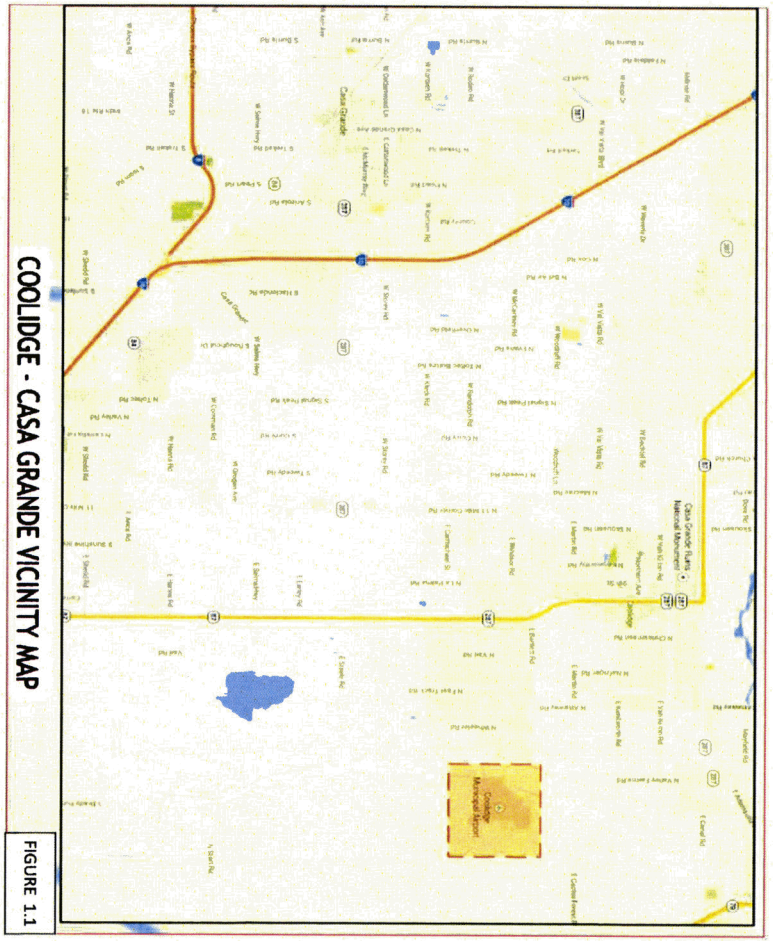


FIGURE 1.2: Coolidge Airport Water System Facilities Map

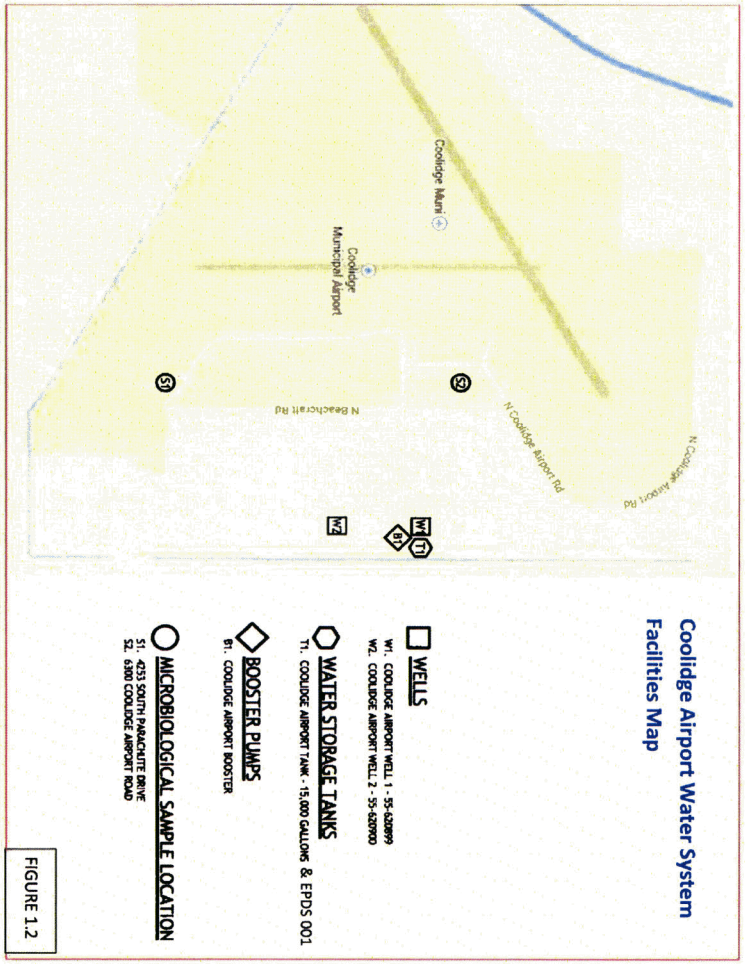


FIGURE 2.1: Existing Site Plan

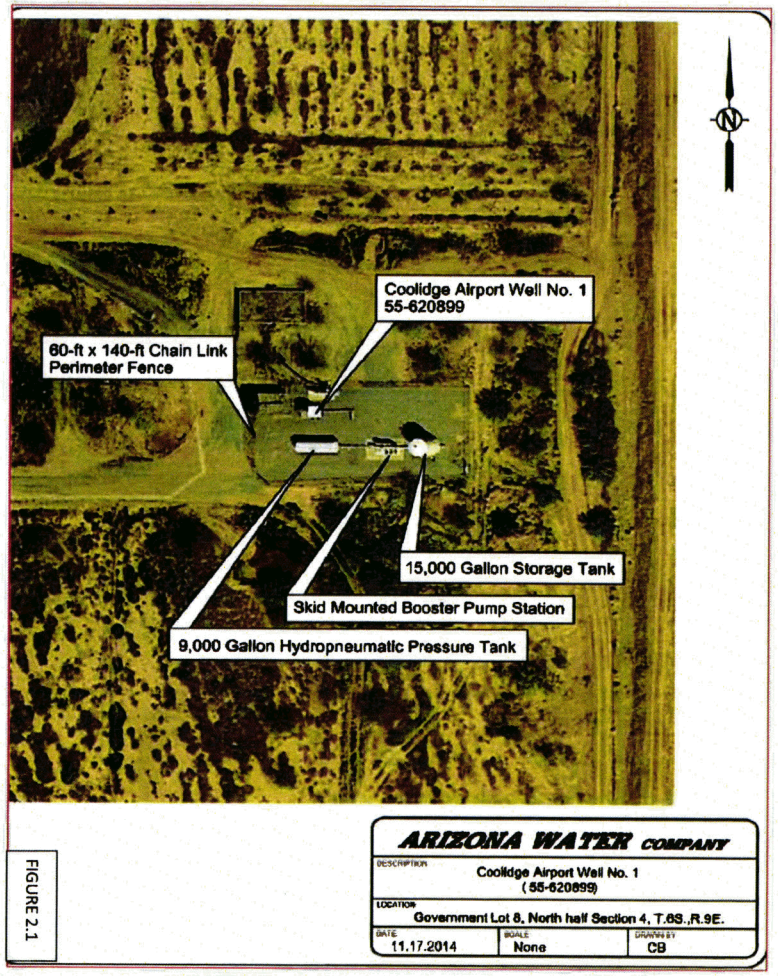
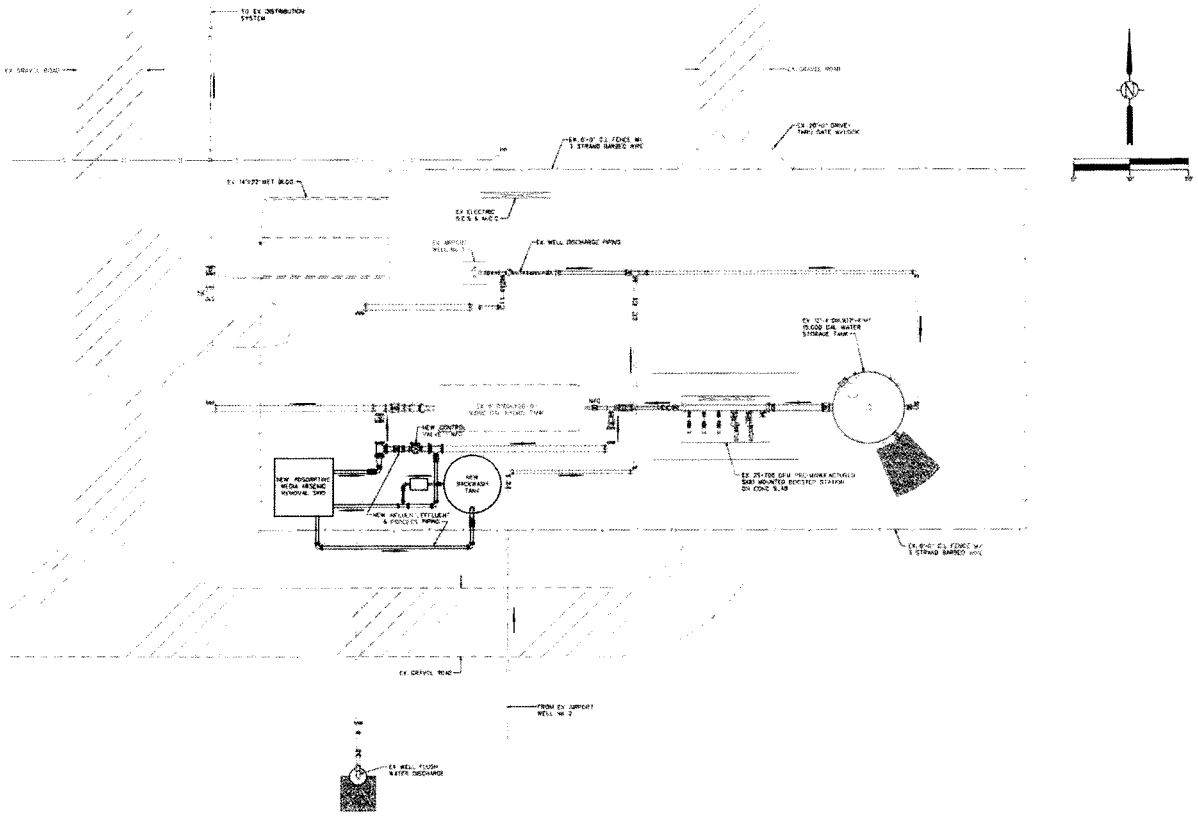


FIGURE 2.1

FIGURE 3.1: Proposed Site Plan



PROPOSED SITE PLAN

SCALE 1"=20'-0"

ARIZONA WATER COMPANY

PROPOSED ADDITION TO COOLIDGE AIRPORT WATER FACILITY

FIGURE 3.1

Attachment A

April 2014 Classification Change Letter

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, AZ 85038-9006
PHONE: (602) 240 6860 • FAX: (602) 240-6874 • TOLL FREE: (800) 533-6023 • www.azwater.com

April 16, 2014

Mr. John Calkins, Manager
Drinking Water Section
Arizona Department of Environmental Quality
1110 West Washington Street
Phoenix, Arizona 85007

Re: Coolidge Airport Water System, PWSID No. 11-707 Reclassification

Dear Mr. Calkins:

Arizona Water Company ("Company") has determined that the Coolidge Airport Water System, PWSID No. 11-707 ("Airport") now serves at least 25 of the same persons over six months per year which meets the definition of a Non-transient Non-community water system ("NTNCWS") in Title 40 of the Code of Federal Register, Part 141, Subpart A.

The Company requests the Arizona Department of Environmental Quality ("ADEQ") reclassify the Airport from its current classification as a Transient Non-community water system to a NTNCWS beginning in 2015. Once ADEQ reclassifies the Airport as a NTNCWS, the Company respectfully requests that ADEQ add the Airport to ADEQ's Monitoring Assistance Program and assign 2015 as the Airport's Initial Monitoring Year for all contaminants.

If you have any questions please call me.

Very truly yours,

Regina M. Lynde

Regina M. Lynde
Environmental Compliance Supervisor
rlynde@azwater.com

badr

VIA: CERTIFIED MAIL

E-MAIL: mail@azwater.com

Attachment B

Demand Calculations

Customer Water Use Records
Coolidge Airport #51

Meter Size (in)	1	1	2	1	2	2	2	3	2	Total
Account No.	33000	35000	37000	38000	39100	41000	51000	51500	61000	Demand
Month/Year	(gal)	(gal)	(gal)	(gal)	(gal)	(gal)	(gal)	(gal)	(gal)	(gal)
Jul-13	1,200	12,800	1,600	120,800	5,100	3,800	126,000	18,300	15,100	304,700
Aug-13	700	12,500	1,800	108,800	4,300	1,100	127,700	17,600	0	274,500
Sep-13	5,600	24,500	3,000	137,000	3,500	19,600	125,300	20,800	16,500	355,800
Oct-13	600	43,700	2,600	105,100	1,100	1,500	115,400	8,800	0	278,800
Nov-13	1,700	19,800	3,900	52,800	3,200	3,400	134,900	8,500	15,700	243,900
Dec-13	800	6,500	1,000	25,700	1,300	100	76,200	15,100	0	126,700
Jan-14	500	13,700	1,400	24,500	1,600	700	167,400	6,700	24,100	240,600
Feb-14	900	14,800	7,200	35,200	2,100	1,600	116,900	7,400	0	186,100
Mar-14	1,300	10,800	2,000	26,600	2,500	2,200	71,900	13,400	0	130,700
Apr-14	1,600	15,100	7,800	89,800	2,700	1,900	126,700	6,200	25,400	277,200
May-14	2,400	22,900	7,700	116,200	1,900	3,900	146,800	10,700	19,000	331,500
Jun-14	2,300	65,400	4,200	67,500	2,300	700	133,300	48,500	32,900	357,100
	19,600	262,500	44,200	910,000	31,600	40,500	1,468,500	182,000	148,700	3,107,600
ADD Peak Month (gpd)	187	1,410	257	4,567	165	653	4,497	1,617	1,097	11,903
ADD Peak Month (gpm)[1]	0.13	0.98	0.18	3.17	0.11	0.45	3.12	1.12	0.76	8.27
Peaking Factor	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
PHD (gpm)	1	4	1	13	0	2	12	4	3	33

ADD = Average Day Demand
PHD - Peak Hour Demand

RICKER • ATKINSON • McBEE • MORMAN & ASSOCIATES, INC.
Geotechnical Engineering • Construction Materials Testing

R·A·M·M

Arizona Water Company
3805 North Black Canyon Highway
Phoenix, Arizona 85015

June 12, 2008

Attention: Mike Loggins

Subject: Geotechnical Engineering Report
250,000 Gallon Water Storage Tank
Coolidge Airport Tank Site
Near 4th Street and "C" Street
Coolidge, Arizona

RAMM Project No. G15908

Attached to this letter is the Geotechnical Engineering Report for the proposed 250,000 Gallon Water Storage Tank, to be located in Coolidge, Arizona.

The proposed project will include construction of a 250,000 gallon water storage tank. The results of our field explorations; laboratory testing; and engineering analysis, evaluation and recommendations are presented in the report.

The attached report was prepared based on project and site data available at this time and was prepared in a manner and to the standards of local geotechnical engineering practice. Our services did not include evaluations for the presence of hazardous materials, area subsidence resulting from groundwater withdrawal or other geologic hazards.

If you have any questions, please do not hesitate to call.

Respectfully submitted,
RICKER, ATKINSON, MCBEE, MORMAN & ASSOCIATES, INC.

Registered Professional Engineer (Civil)
CERTIFICATE NO.
10971
KENNETH L.
RICKER
Date Signed 6-12-08
ARIZONA U.S.A.

Expires – 3/31/2010

By: Kenneth L. Ricker, P.E. AND Kip E. Reese, E.I.T.

/dcw
Copies to: Addressee (5) (mloggins@azwater.com)

2105 South Hardy Drive, Suite 13, Tempe, AZ 85282-1924 • Telephone (480) 921-8100 • Facsimile (480) 921-4081
www.rammeng.com

Geotechnical Engineering Report
250,000 Gallon Water Storage Tank
Coolidge Airport Tank Site
Near 4th Street and "C" Street
Coolidge, Arizona
RAMM Project No. G15908

For:
Arizona Water Company
3805 North Black Canyon Highway
Phoenix, Arizona 85015

◆◆◆

By:
Ricker-Atkinson-McBee-Morman & Associates, Inc.
2105 South Hardy Drive, Suite 13
Tempe, Arizona 85282

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Registered Professional Engineer (Civil) CERTIFICATE NO. 10971 KENNETH L. RICKER Date Signed 6-12-08 ARIZONA U.S.A.

Expires 3/31/2010

REPORT

RAMM

INTRODUCTION

This report presents the results of our geotechnical engineering services for the proposed 250,000 Gallon Water Storage Tank, to be located in Coolidge, Arizona. The scope of our services included performing a field exploration program, laboratory analysis and geotechnical engineering evaluation, analysis and recommendations. The geotechnical recommendations presented herein include those for anticipated excavation conditions, site development, and material use and requirements. We would be pleased to discuss with you any additional recommendations you may require. In addition, we are available to review project specifications and plans for conformance with our recommendations at no charge to you.

This firm should be notified for additional evaluation and recommendations if the project design parameters (location, depth, size, etc.) are changed, and/or where site use or conditions encountered during construction differ from those presented herein.

PROPOSED CONSTRUCTION

The proposed development will include construction of a 250,000 gallon water storage tank. The tank will be 18 feet high and 50 feet in diameter. The tank will have steel walls and floors. The walls will be supported by concrete reinforced ring footings and the floor supported on a sand layer and prepared subgrade. The proposed tank will have ring wall loads of 3 to 4 kips per linear foot, and product live plus dead loads on the steel bottoms of about 1500 psf.

SITE CONDITIONS

The Water Storage Tank site is located east of the Coolidge Airport near 4th Street and "C" Street, in Coolidge, Arizona. At the time of our investigation the site was a relatively flat undeveloped parcel adjacent to an existing well site. Vegetative cover consisted of sparse to moderate amounts of desert shrub and grasses.

FIELD EXPLORATIONS

Subsurface conditions were explored by drilling one test boring to a depth of 30 feet, at the location shown on the Site Plan in Appendix A. The test boring was drilled with a CME 75 drill rig using seven-inch diameter, hollow-stem augers. The drilling equipment and crew were

provided by D&S Drilling, Inc. The test boring location was determined in the field by our field technician. During the field explorations representative undisturbed and disturbed samples were obtained, the field explorations logged and soils field-classified by our field technician, who also directed the drill crew. The relatively undisturbed samples (ring samples) were obtained by driving a 3-inch diameter, ring-lined, open-end sampler into the soil with a 140-pound hammer dropping 30 inches. In addition to drilling and sampling, continuous penetration testing using a 2-inch diameter rod and the 140-pound hammer dropping 30 inches was performed and extended to a depth of 3.6 feet adjacent to the test boring location. The results of our field explorations are presented in the Test Boring Log in Appendix A.

LABORATORY ANALYSIS

Representative samples obtained during the field explorations were subjected to the following tests in our laboratory.

Type of Test	Type of Sample	Number of Samples Tested
Compression	Undisturbed	1
Swell Potential	Remolded	1
Percent Passing No. 200 Sieve & Plasticity Index	Representative	1
pH, Minimum Resistivity	Representative	1
Moisture Content/Dry Density *	Undisturbed Ring	5

* Reported in the Test Boring Logs.

The results of the laboratory analysis are presented in Appendix B.

SUBSURFACE CONDITIONS

The results of the test borings are presented in Appendix A in the Test Boring Log. In general, the surface and near-surface soils extending to the maximum depth of our exploration (30.0 feet) consisted of clayey sand to sandy clay. The soils were medium dense to dense, were stiff to very stiff, had medium to high plasticity, had intermittent light cementation and had zones of light to moderate cementation. Moisture contents were described as slightly damp to moist. No groundwater was encountered in the test boring at the time of drilling.

DISCUSSIONS OF TEST RESULTS

A remolded sample of the near surface soils from the site exhibited moderate swell potentials following wetting when tested in the laboratory. An undisturbed sample from anticipated foundation grades was found to undergo some compression during loading to approximate foundation loads. Upon wetting at approximate foundation loads, these soils underwent some additional compression.

FOUNDATION DESIGN RECOMMENDATIONS

Water Storage Tank:

The proposed water storage tank shell can be supported on concrete ring wall footings. The footings may be founded on undisturbed site soils, and/or compacted fill. The ring wall footing may be designed using an allowable bearing pressure of 2000 psf provided the bottom of the footing is at least 2.0 feet below the lowest adjacent finished grade within 5 feet of the perimeter of the tank. The ring wall footing should be at least 12 inches wide. The tank floor should be founded on a layer of sand supported on undisturbed and/or recompacted site soils and may be designed using an allowable bearing pressure of 2000 psf (for a full tank). Site soils may be used as fill, provided they are moisture conditioned and compacted at a moisture content at optimum to 3 percent above optimum, and material greater than 6 inches in size is removed.

Based on anticipated tank loads and site soil conditions, it is estimated that total tank settlement will be on average 0.50 inches. In order to control settlement once the product is placed in the tanks, we recommend that during water testing of the tank, the tank be filled in 25% volume increments with each increment held for 12 hours, except the final increment, which should be held for 72 hours. During the testing, the tank bottom elevation should be monitored at three equally spaced points based on an off-site bench mark. Should extensive movements occur, this firm should be notified so the data can be evaluated and supplemental recommendations developed.

The allowable bearing capacity should be applied to maximum, design dead plus live loads and may be increased by one-third when considering temporary loads such as transient wind or seismic loads. A one-third increase may also be used for toe pressures due to eccentric or lateral

loadings, assuming the entire footing bearing surface remains in compression. The weight of the footing concrete below grade may be neglected in dead load computations. A soil profile type S_C may be used in seismic design per UBC 1997 Edition. A Site Class designation of C should be used for the site per Table 1615.1.1 of the 2000, 2003 and 2006 International Building Code (IBC). The soil profile and site class designations are based on the geology of the area which includes the presence of dense material to depths over 100 feet in the immediate vicinity of the site.

The estimated total and differential footing settlements for the loading conditions described above are less than ½ inch if soils below footing level remain at or below the construction moisture content. Additional post-construction, differential settlement of equal magnitude could occur if bearing soils become wet after construction. Positive drainage away from the perimeter of the facilities is essential to minimize the potential for moisture infiltration into bearing soils.

Lateral Earth Pressures:

The following tabulation presents the recommended lateral earth pressures and base friction values which should be used in the lateral design of footings and retaining walls. The lateral pressures are equivalent fluid pressures for average anticipated conditions.

Backfill Pressures:	
Unrestrained walls	35 psf/ft
Restrained walls	55 psf/ft
Passive Pressures:	
Continuous	350 psf/ft
Coefficient of Base Friction:	
Concrete to soil	0.45
Steel to soil	0.25

The above equivalent fluid pressures are for vertical walls with horizontal backfills and do not include temporary loads imposed by compaction equipment or permanent loads resulting from backfill swell pressures, hydrostatic pressures or surcharge loads. All retaining walls should contain weep holes to reduce the potential for the buildup of hydrostatic pressures.

SITE DEVELOPMENT RECOMMENDATIONS

Surface Drainage:

Most soils will undergo some degree of volume change as the result of wetting. The degree of volume change will depend on the type of soil, swell potential, natural soils structure or degree of compaction (if a fill). These volume changes could result in movements in overlying facilities and non-structure elements including sidewalks, planters, screen walls, etc. Therefore, good site and surface drainage away from these elements is required. In addition, water should not be allowed to pond within 10 feet of the facilities or other elements which are sensitive to movements. The facilities excavation backfill must be well compacted to minimize the possibility of moisture infiltration through this zone.

Excavatability:

The excavatability of site materials is difficult to evaluate based only on the exploration equipment used during this design report. Therefore, we recommend that the contractor evaluate the excavatability of site materials by performing test excavations with the size and type of equipment the contractor plans on using at the site. For design purposes the following paragraph presents our best analysis as to the excavatability of site soils.

The near surface soils to a depth of at least 15 feet can probably be removed with conventional excavating equipment. Deeper excavations may be slower and more difficult to accomplish due to the presence of cementation. OSHA requires all excavations over five feet in depth, in which personnel are to enter, be either braced or sloped in accordance with OSHA regulations.

Workability:

Wetting site soils such that moisture contents are at or above optimum could result in some soil pumping under dynamic loadings such as heavy construction equipment driving over the area. In the new facility areas where pumping has occurred, the area should be allowed to dry until soils are workable without pumping or the wetted areas removed and replaced with drier site soils.

Corrosion Potential:

As part of this investigation, laboratory pH, and Minimum Resistivity testing of site soils was conducted. Based on these results, there appears to be a high potential for corrosion to buried metal structures and pipelines, in contact with site soils. The results of the laboratory testing are included in Appendix B, and should be made available to material suppliers and corrosion experts for review.

MATERIALS SUITABILITY AND REQUIREMENTS

Site Materials:

The near surface site soils may be used as fill and in backfill areas provided these soils are placed and compacted at a moisture content at optimum to 3 percent above optimum and are free of organic materials, debris, rubble and material greater than 6 inches in size.

Imported Soils:

Fill required beyond that available from site sources should be imported soils meeting the following requirements:

Minimum Passing No. 4 Sieve ----------30%
Maximum Particle Size ---------- 6 inches
Maximum Swell Potential ---------- 1.5%*

* Based on a sample which is remolded to 95% of the ASTM D698 maximum dry density at a moisture content of 2 percent below optimum, placed under a surcharge load of 100 psf and wetted.

SITE PREPARATION AND GRADING PROCEDURES

Water Storage Tank Area:

Recommendations presented in the previous sections of this report are based upon the following site preparation and grading procedures. Therefore, all earthwork should be accomplished with observation and testing by a qualified technician under the direction of a registered geotechnical/materials engineer. The following apply to the areas within and extending 5 feet beyond the storage tank areas.

1. Clear and grub the site by removing and disposing of all vegetation, any trash and debris, and any rubble and remnants of any former developments.

2. Prepare the ground surface in fill areas and in areas cut to grade by scarifying, moisture conditioning and compacting the exposed site soils to a depth of 8 inches.

3. Moisture condition and place all fill and backfill materials required to achieve specified grades. Fill materials should be moisture conditioned, placed and compacted in horizontal lifts of thicknesses compatible with the compaction equipment being used.

4. Compact subgrade, fill, backfill, subbase fill or base material to the following minimum percent compaction of the ASTM D698 maximum dry density in each lift:

Material	Minimum Percent Compaction
Soil	
Below foundations	95
Below tank bottom	100

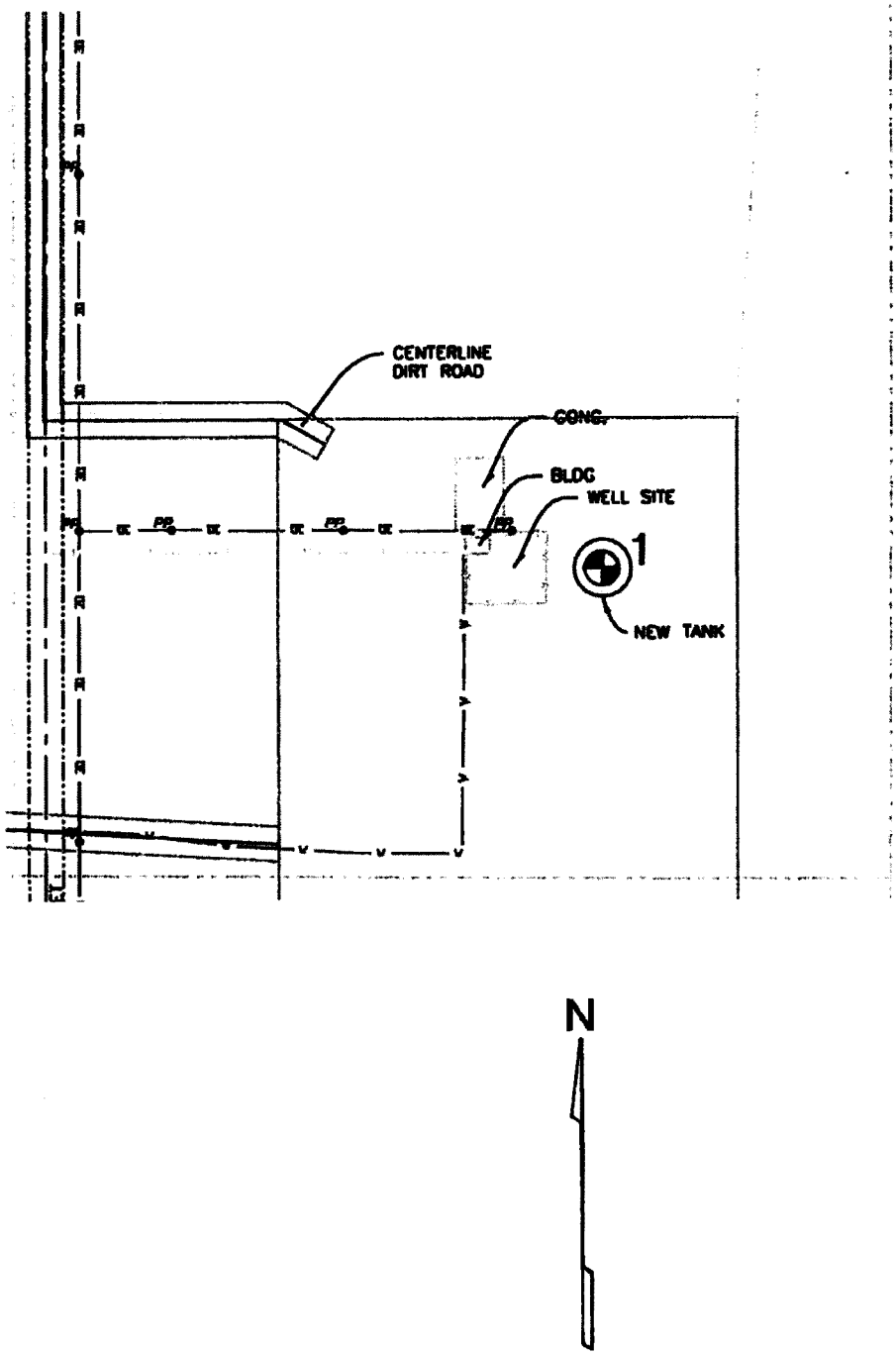
5. Moisture content of soil and base materials at the time of compaction should be:

Type	Area of Use	Moisture Content
On-Site	Tank Bottom	Optimum to optimum plus 3%
On-Site	Below Foundations	Optimum of optimum plus 3%
Import	Tank Bottom	Optimum plus or minus 3%
Import	Below Foundations	Optimum plus or minus 3%

6. Any soils which are disturbed or overexcavated by the contractor outside the limits of the plans or specifications should be replaced with materials compacted as specified above.

APPENDIX A
FIELD EXPLORATIONS

R·A·M·M



Test Boring Location

Not To Scale

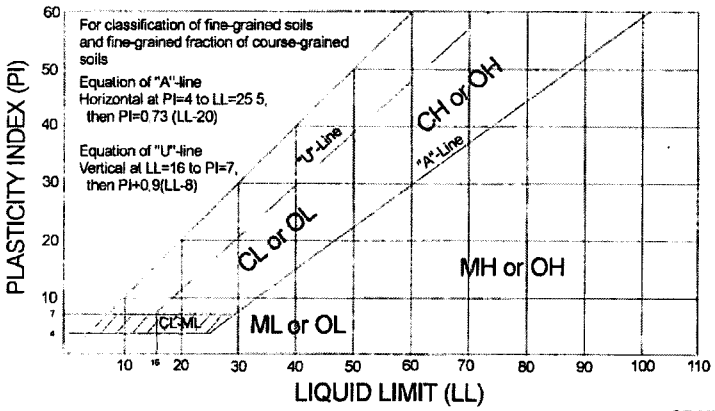
SITE PLAN

LEGEND

CLASSIFICATION OF SOILS

ASTM Designation: D2487-00
(Based on Unified Soil Classification System)

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests					Soil Classification: Group Symbol	Soil Classification: Name
COARSE-GRAINED SOILS More than 50% retained on No 200 Sieve	Gravels More than 50% coarse fraction retained on No. 4 Sieve	Clean Gravels Less than 5% fines	Cu >4 and 1 <Cc <3		GW	Well graded gravel
			Cu<4 and/or 1>Cc>3		GP	Poorly graded gravel
		Gravels with Fines More than 12% fines	Fines classify as ML or MH		GM	Silty gravel
			Fines classify as CL or CH		GC	Clayey gravel
	Sands 50% or more of coarse fraction passes No. 4 sieve	Clean Sands Less than 5% fines	Cu >6 and 1 <Cc <3		SW	Well-graded sand
			Cu<6 and/or 1>Cc>3		SP	Poorly graded sand
		Sands with Fines More than 12% fines	Fines classify as ML or MH		SM	Silty sand
			Fines classify as CL or CH		SC	Clayey sand
FINE-GRAINED SOILS 50% or more passes the No 200 Sieve	Silts and Clays Liquid limit less than 50	Inorganic	PI>7 and plots on or above "A" line		CL	Lean clay
			PI<4 or plots below "A" line		ML	Silt
		Organic	Liquid Limit - oven dried / Liquid limit - not dried	<0.75	OL	Organic clay / Organic silt
	Silts and Clays Liquid limit 50 or more	Inorganic	PI plots on or above "A" line		CH	Fat clay
			PI plots below "A" line		MH	Elastic silt
		Organic	Liquid limit - oven dried / Liquid limit - not dried	<0.75	OH	Organic clay / Organic silt
HIGHLY ORGANIC SOILS	Primarily organic matter, dark in color, and organic odor				PT	Peat



TEST BORING LOG DEFINITIONS

Blows per foot using 140 pound hammer with 30 inch free-fall.

Depth, feet	Blows/Foot: C	Blows/Foot: N/R	Sample Type	Dry Density pcf	Water Content, %	Unified Classification	Description

C = Continuous Penetration Resistance (2 inch diameter rod)
N = Standard Penetration Resistance (ASTM D1586)
R = Penetration Resistance (3 inch diameter ring line sampler)

GRAIN SIZES

U.S. STANDARD SERIES SIEVE: 200, 40, 10, 4 — CLEAR SQUARE SIEVE OPENINGS: 3/4", 3", 12"

SILTS & CLAYS DISTINGUISHED ON BASIS OF PLASTICITY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

MOISTURE CONDITION (INCREASING MOISTURE ⟶)

DRY — SLIGHTLY DAMP — DAMP — MOIST (Plastic Limit) — VERY MOIST — WET (SATURATED) (Liquid Limit)

CONSISTENCY CORRELATION: CLAYS & SILTS	BLOWS/FOOT*	RELATIVE DENSITY CORRELATION: SANDS & GRAVELS	BLOWS/FOOT*
VERY SOFT	0-2	VERY LOOSE	0-4
SOFT	2-4	LOOSE	4-10
FIRM	4-8	MEDIUM DENSE	10-30
STIFF	8-16	DENSE	30-50
VERY STIFF	16-32	VERY DENSE	OVER 50
HARD	OVER 32		

*Number of blows of 140 lb hammer falling 30" to drive a 2" O.D. (1-3/8" I.D.) split-spoon sampler (ASTM D1586).

TEST BORING LOG

Project: Coolidge Airport Tank Site – Coolidge, AZ TEST BORING: 1

Elevation: Not Determined Datum: --- Date: 5-9-08

Depth, feet	Blows/Foot C	Blows/Foot N/R	Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	19 37 58 50/7"	50/10"	R	107	5	SC/ CL	Clayey Sand to Sandy Clay; brown, slightly damp to moist, medium dense to dense, stiff to very stiff, medium to high plasticity, intermittent light cementation, zones of light to moderate cementation.
5		50/10"	R	105	12		
10		38	R	111	16		
15		50/11"	R	107	6		
20		50/10"	R	111	15		
25							

- Continued -

This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.

TEST BORING LOG

Project: Coolidge Airport Tank Site – Coolidge, AZ TEST BORING: 1-cont.

Elevation: Not Determined Datum: --- Date: 5-9-08

Depth, feet	Blows/Foot C	Blows/Foot N/R	Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Visual Description
						SC/ CL	Clayey Sand to Sandy Clay; - continued
30							
							Stopped test drilling at 30 feet. No groundwater encountered.
35							
40							
45							
50							

This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.

APPENDIX B
LABORATORY ANALYSIS

RASIM

LABORATORY TEST RESULTS

Date: 14-May-08

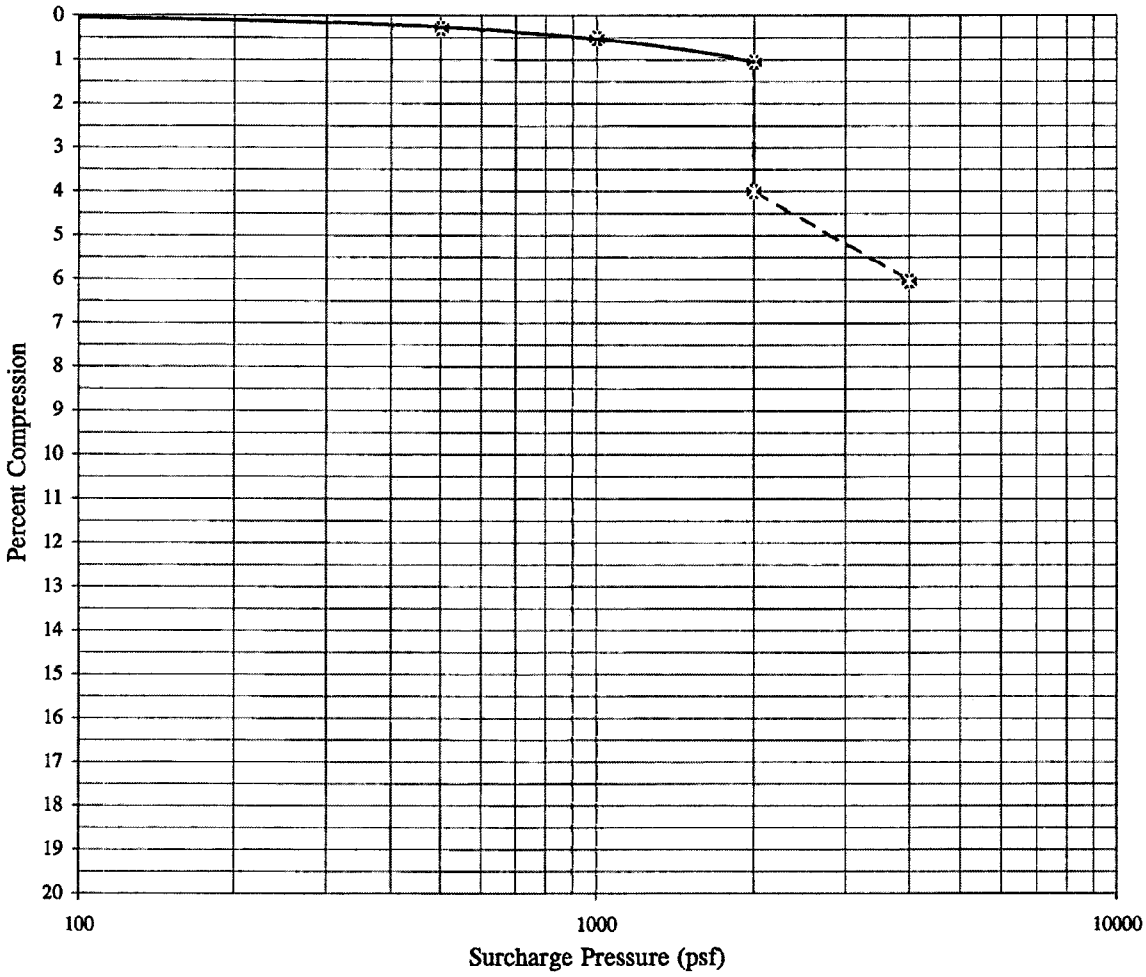
SAMPLE SOURCE: 1 @ 1.5'-2.5'

TESTING PERFORMED: Compression (ASTM D2435) - Driven Ring Sample

SAMPLED BY: RAMM/Miller

RESULTS:

Dry Density (pcf): 107 Moisture Content (%): 5



REMARKS: Sample submerged at 2000 psf.

LABORATORY TEST RESULTS

Date: 14-May-08

SAMPLE SOURCE: As noted below

TESTING PERFORMED: Percent Passing No. 200 Sieve, Atterberg Limits, Percent Expansion (ASTM D1140, D4318, D4546)

SAMPLED BY: RAMM/Miller

RESULTS:

Sample Source	Percent Retained No. 4 Sieve	Percent Passing No. 200 Sieve	Liquid Limit	Plasticity Index	Percent Expansion*	Remolded Dry Density (pcf)	Remolded Moisture Content (%)
1 @ 0'-3'	0	46	34	20	2.9	110	12

* Based upon sample remolded to 95% of the estimated maximum dry density at 2% below the estimated optimum moisture content, with a surcharge pressure of 100 psf.

LABORATORY TEST RESULTS

Date: 14-May-08

SAMPLE SOURCE: As noted below

TESTING PERFORMED: pH, Minimum Resistivity (ADOT 236a)

SAMPLED BY: RAMM/Miller

RESULTS:

Sample Source	pH	Minimum Resistivity (ohm-cm)
1 @ 0'-3'	7.7	338

CITY OF COOLIDGE FIRE DEPARTMENT

130 W. CENTRAL AVE. - MAILING
103 W. PINKLEY AVE. - STATION 1
COOLIDGE, ARIZONA 85128
PHONE 520-723-6015
FAX 520-723-6018
TDD 520-723-4653

DATE: 06/15/2010

NO. OF PAGES (INCLUDING COVER) 2

TO:	FROM:
JAMES WILSON	M. MCHUGH
CO./DEPT.	CO./DEPT.
AZ WATER CO.	COOLIDGE FD
PHONE #	PHONE #
602-240-6860	520-723-6015
FAX #	FAX #
602-240-6878	520-723-6018

COMMENTS:

XC:

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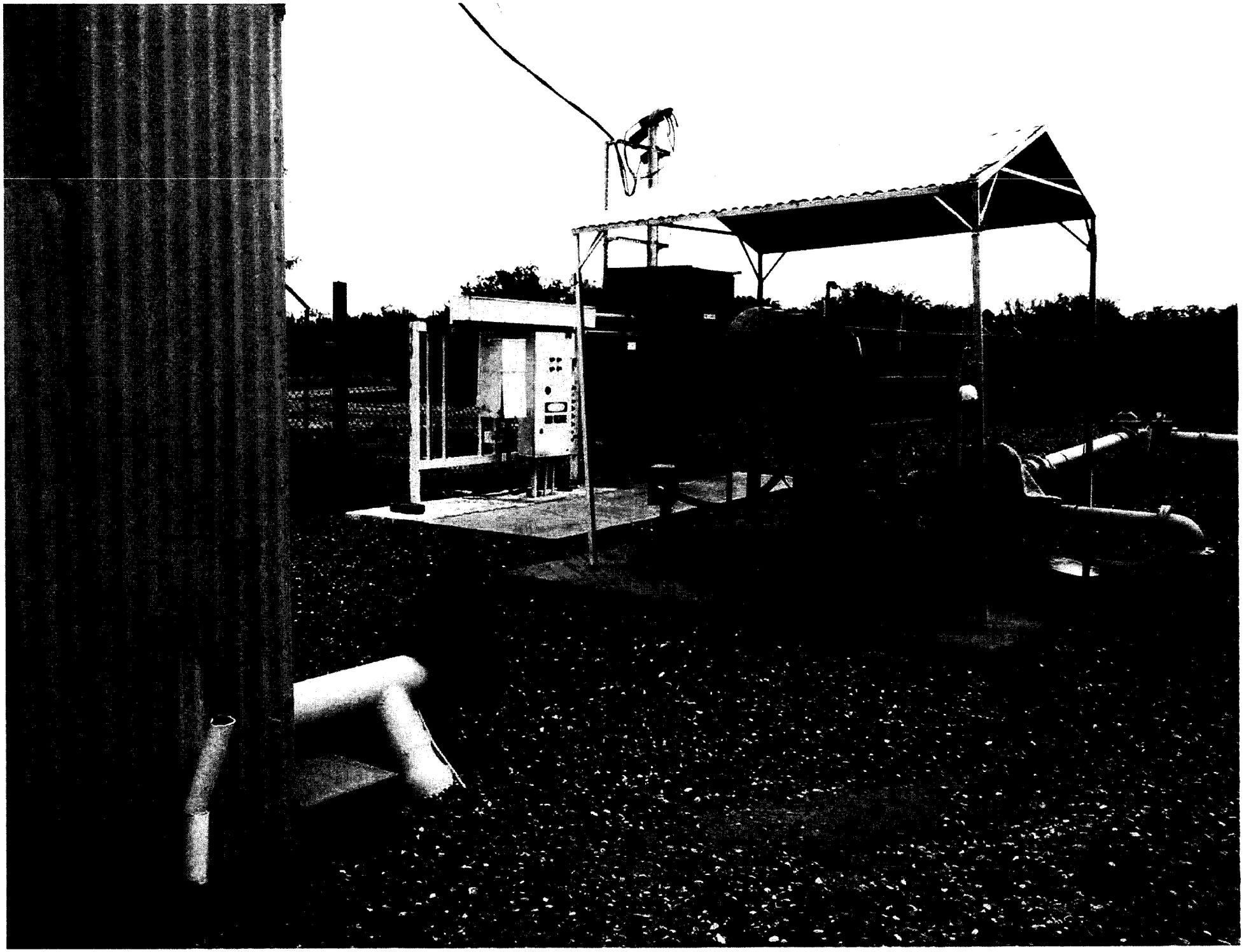
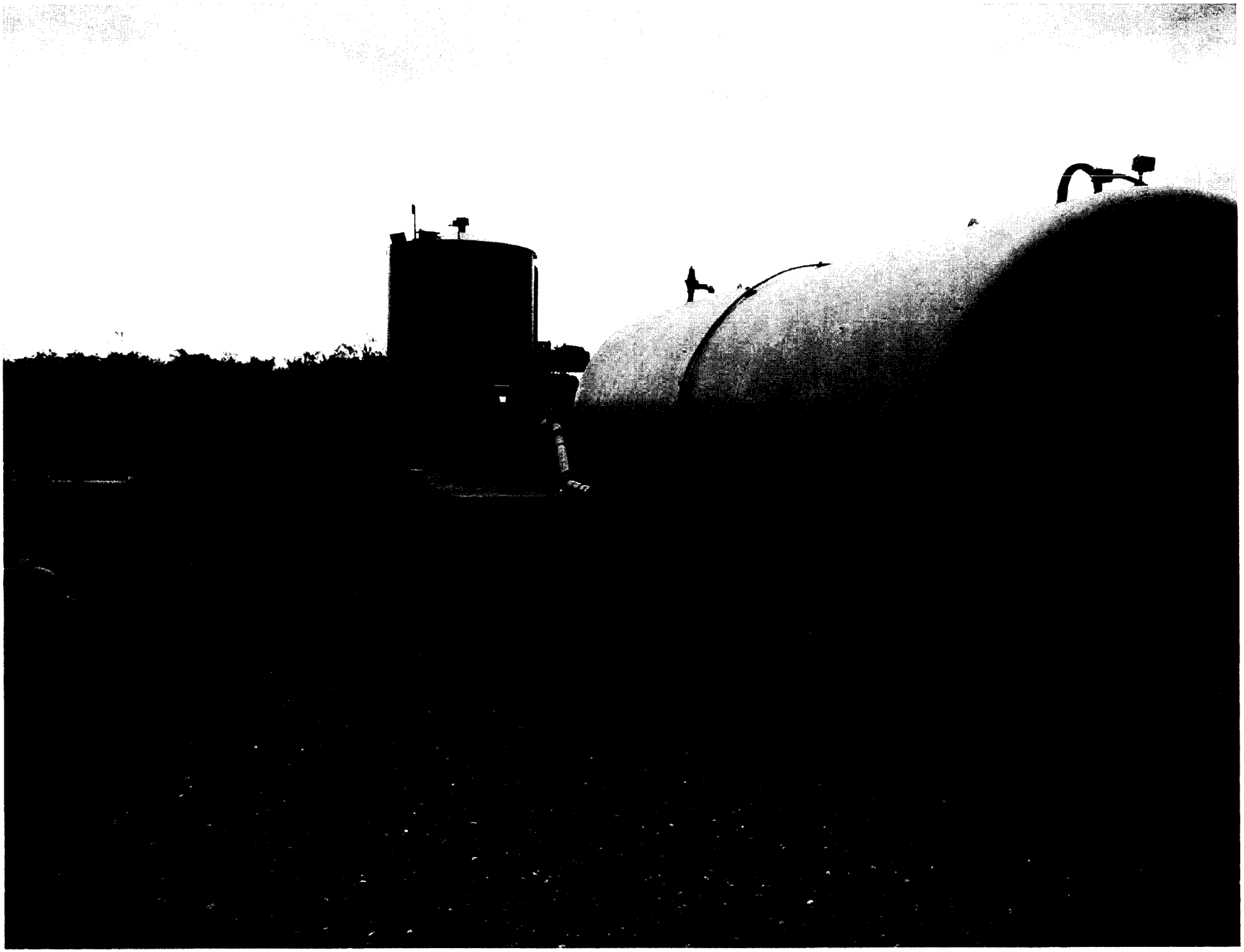
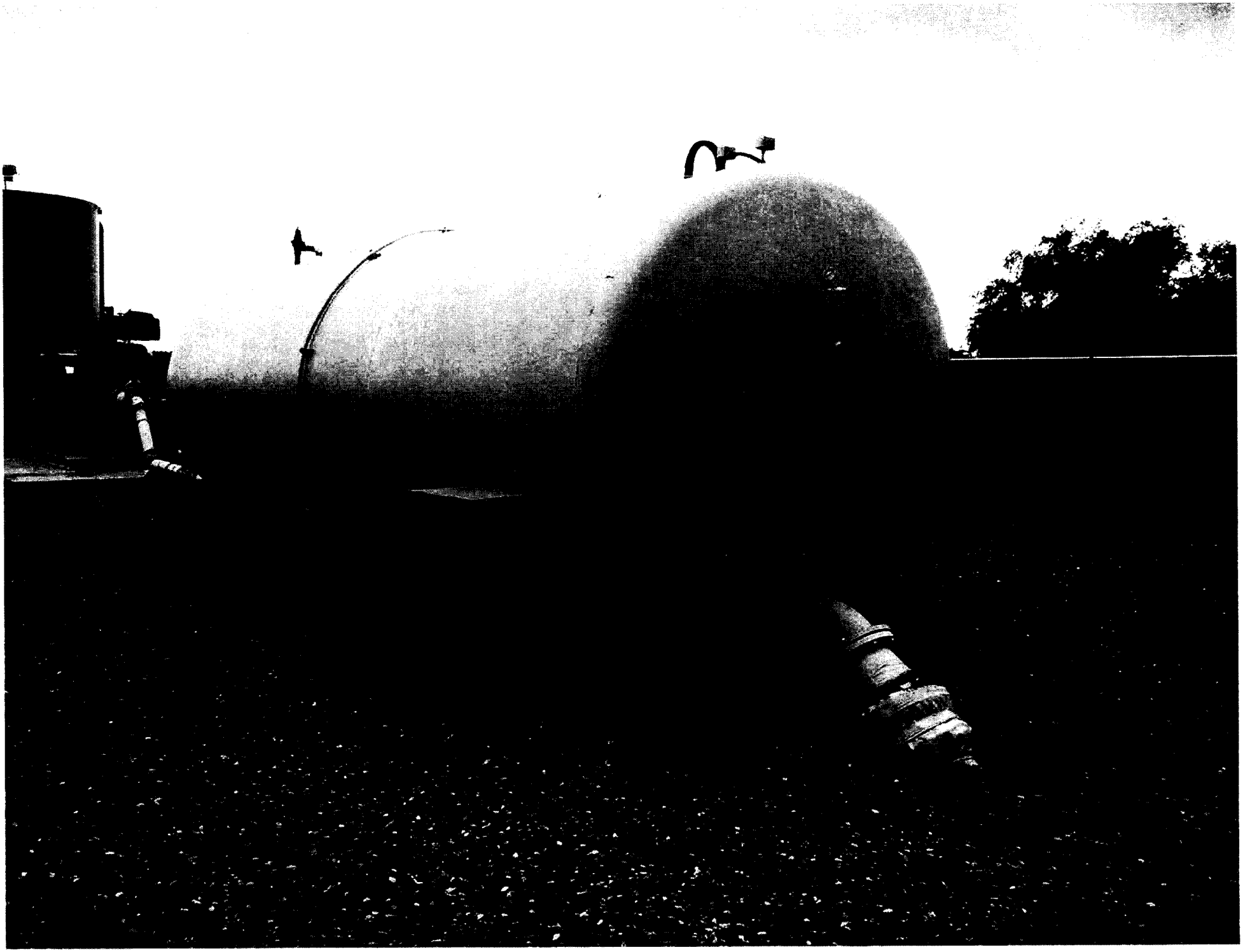
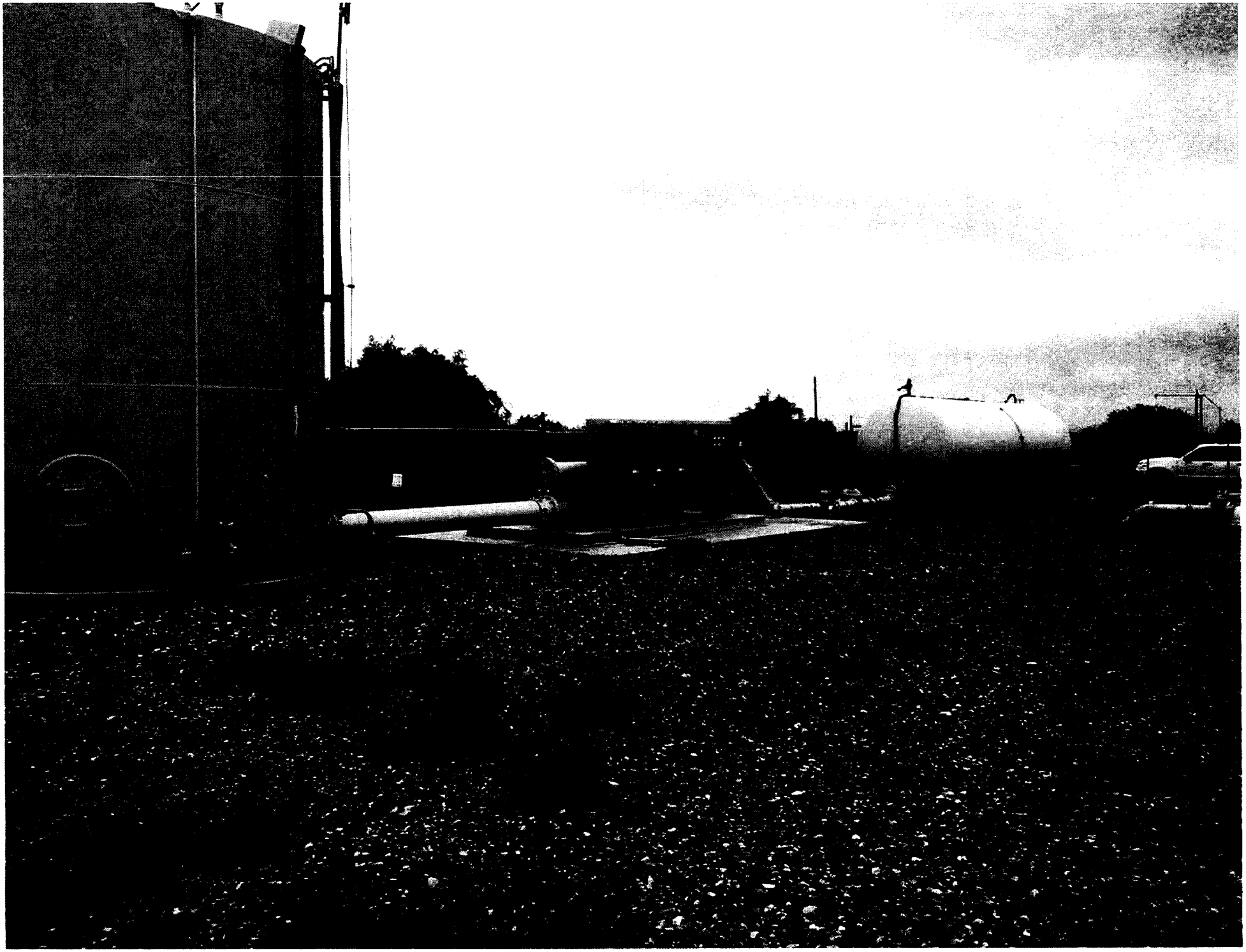
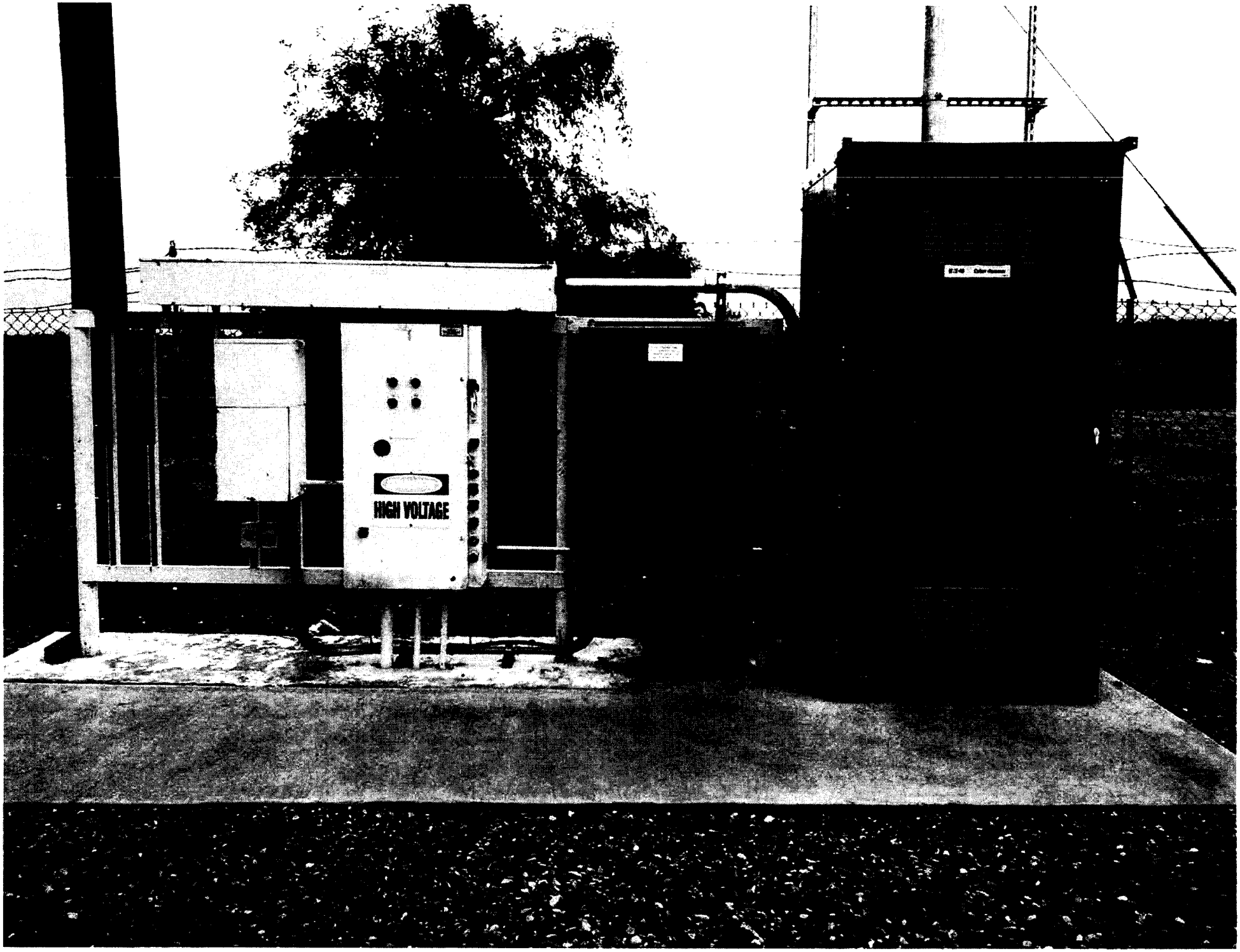
Coolidge Airport North







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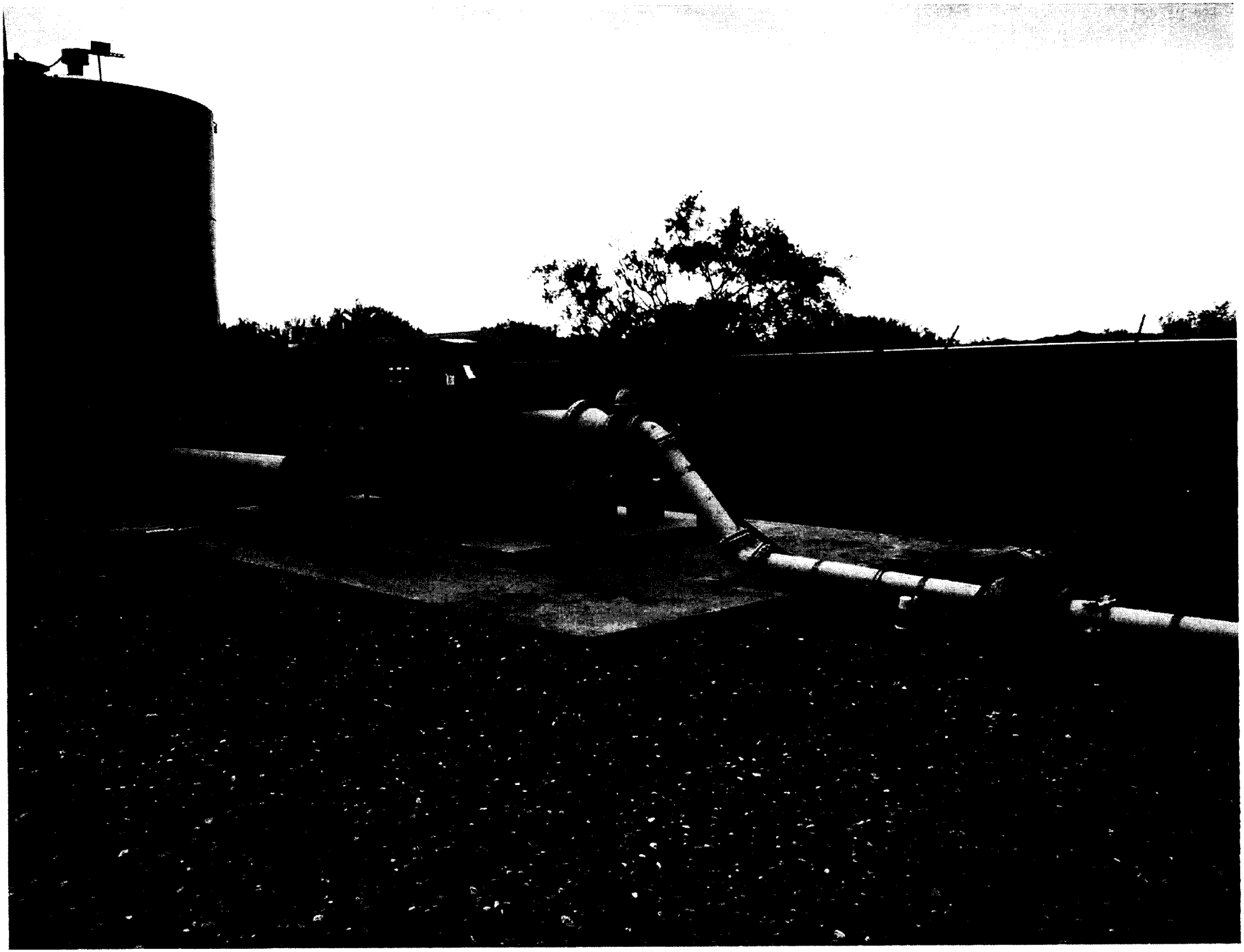
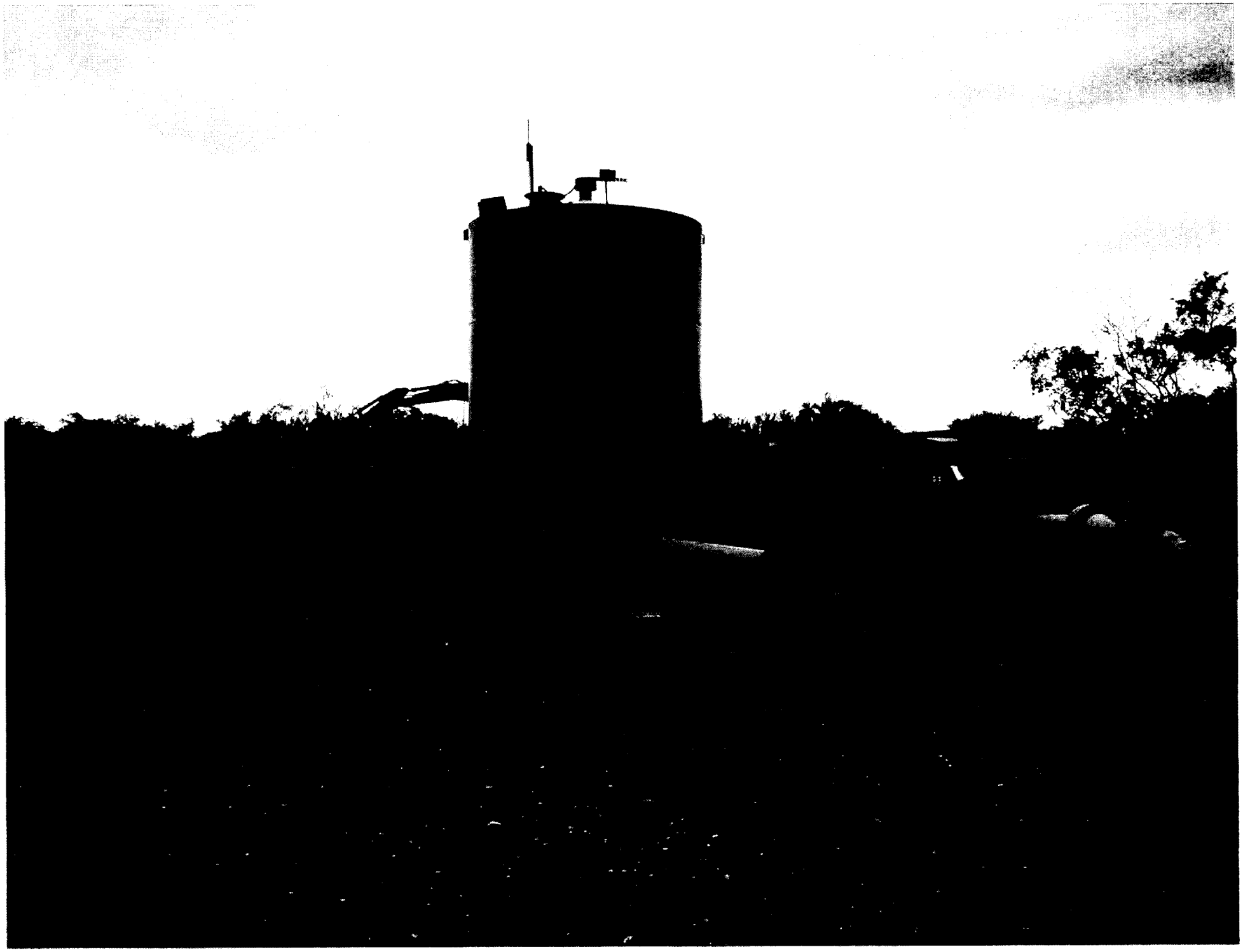
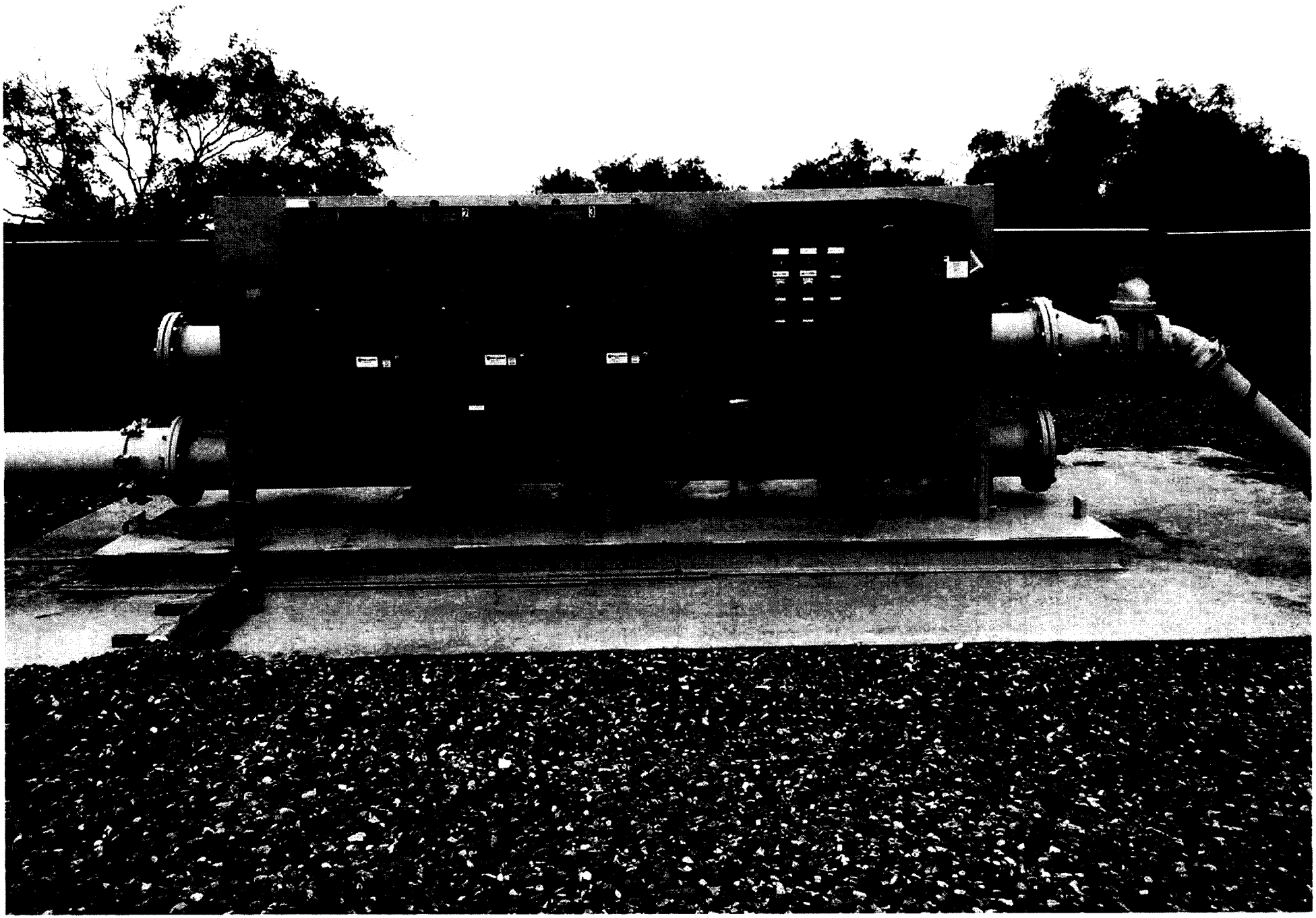
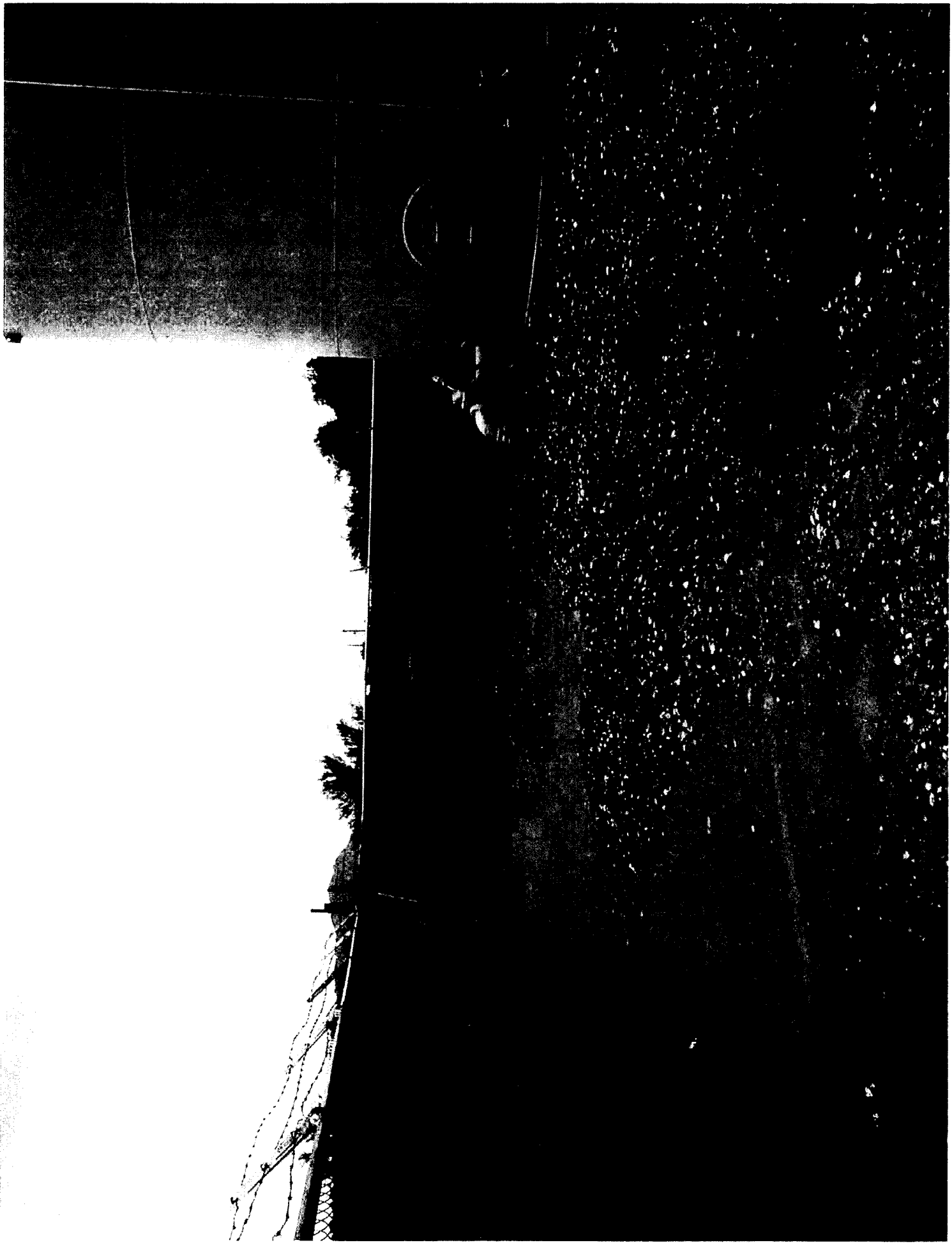
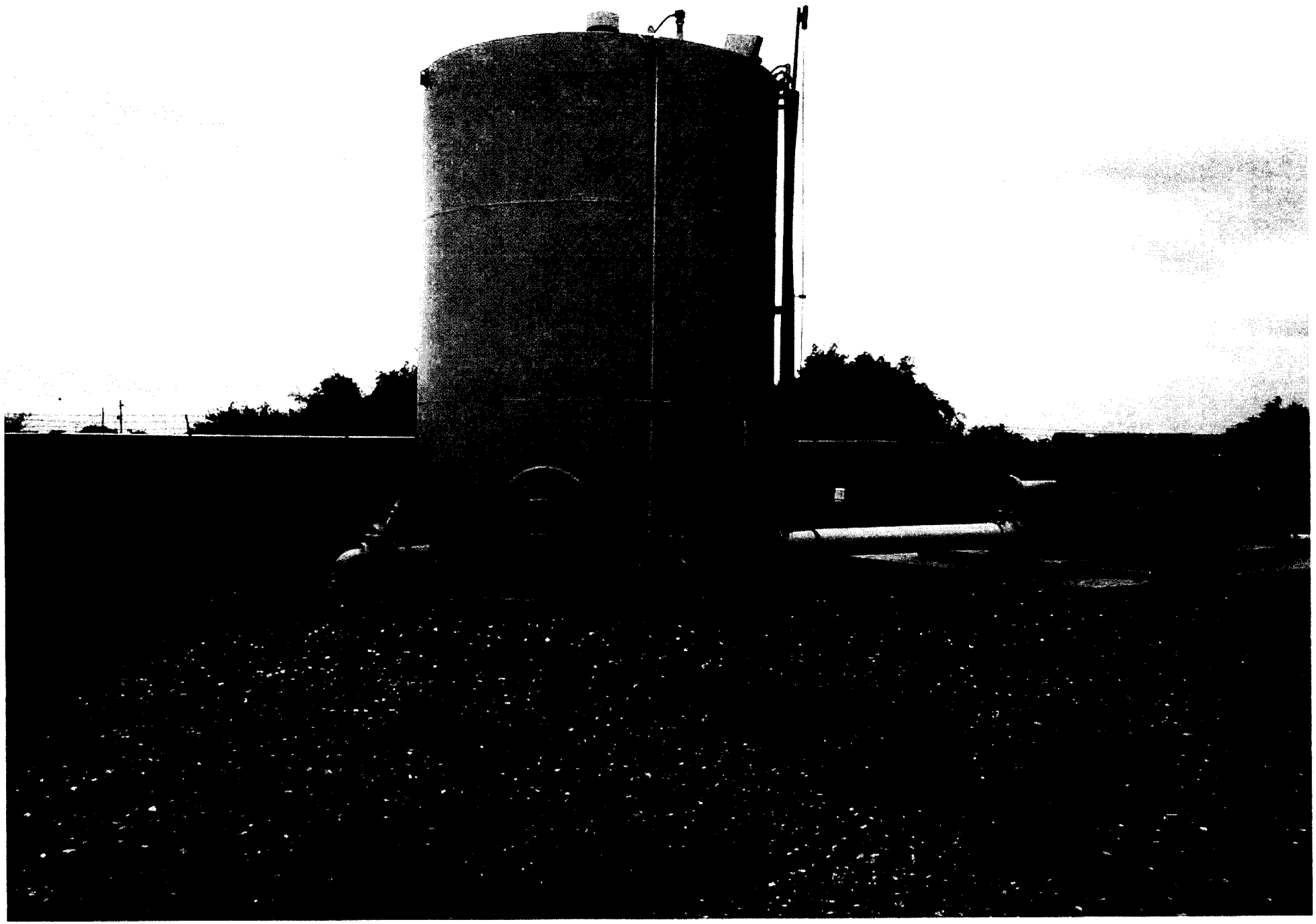
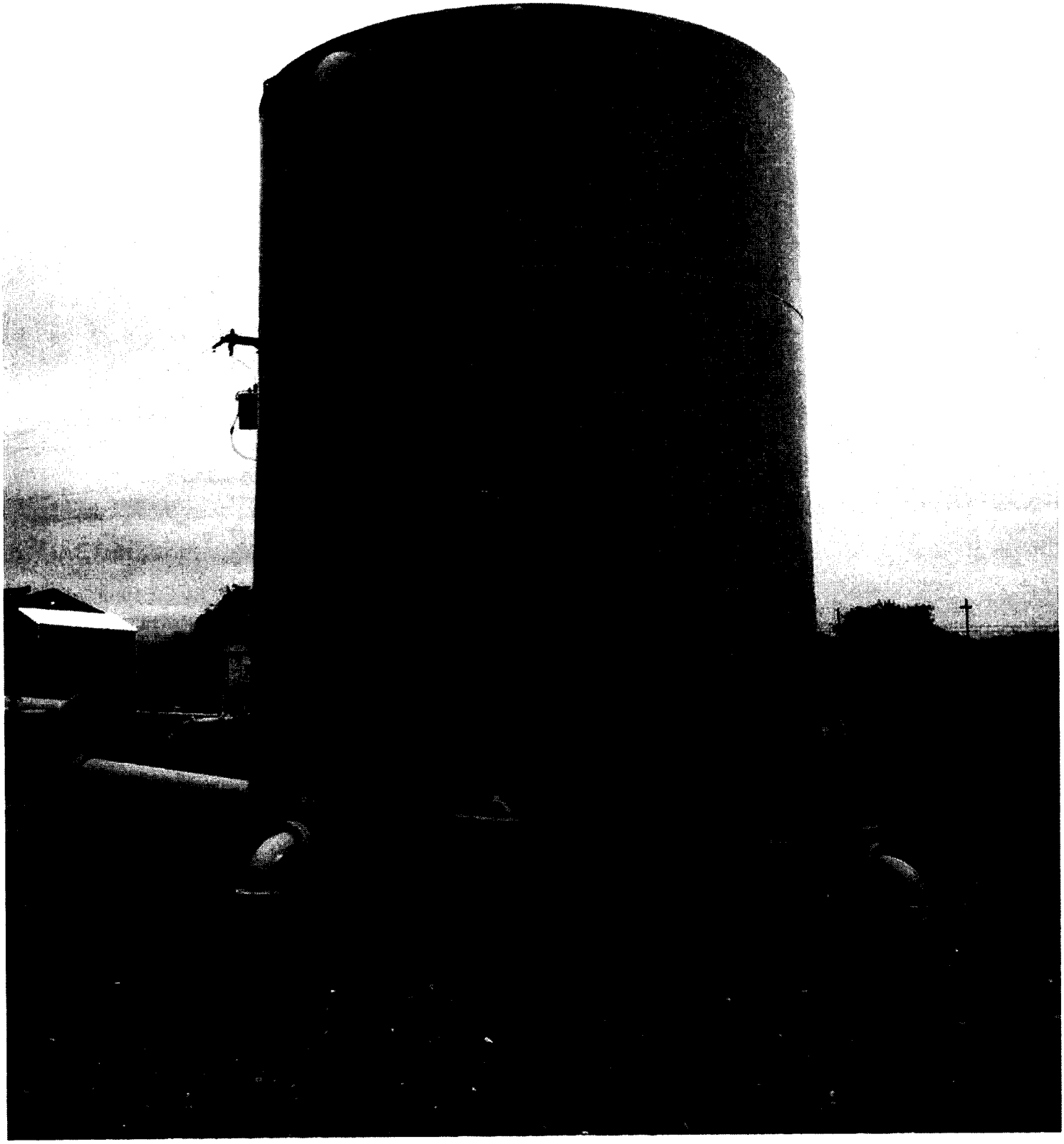


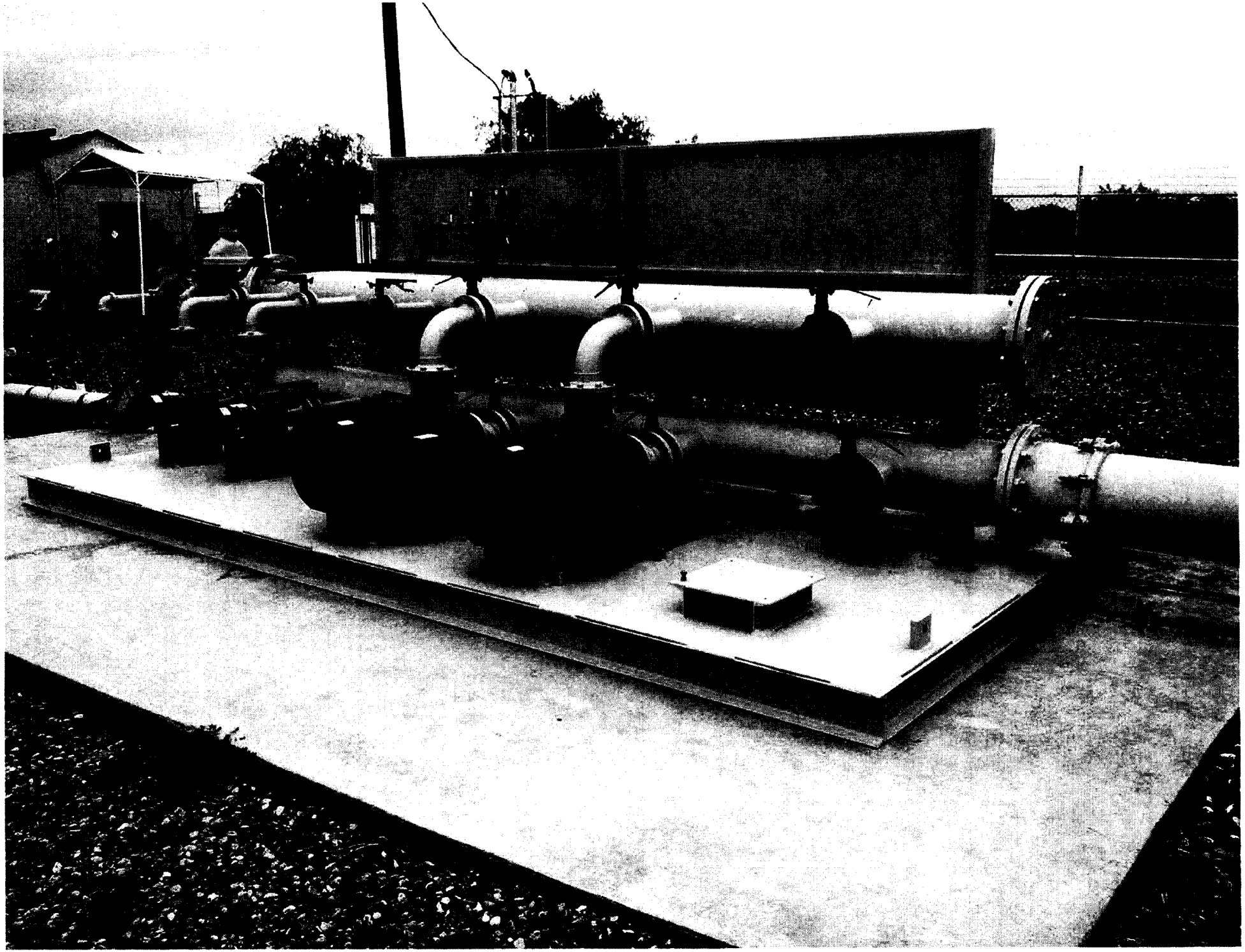


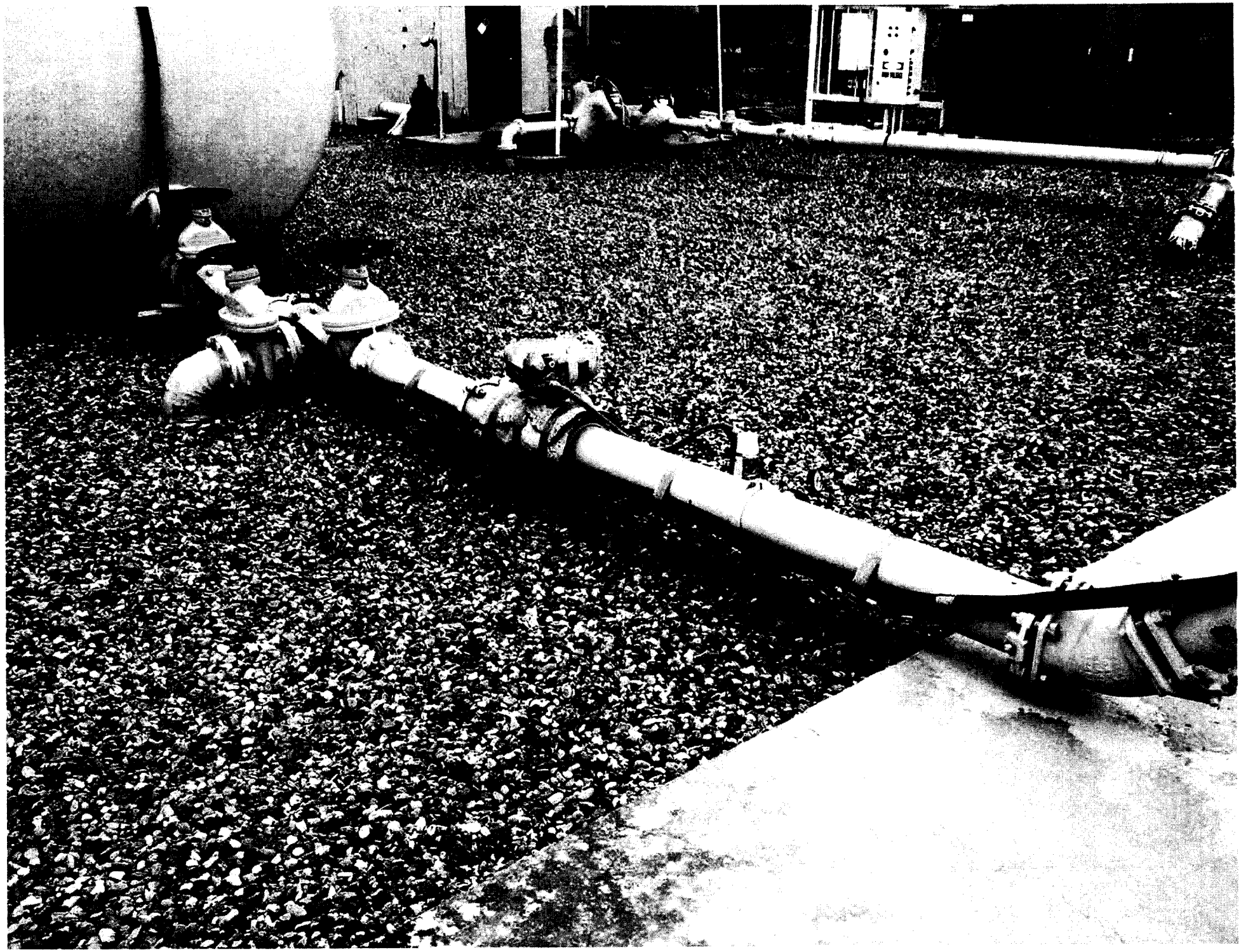


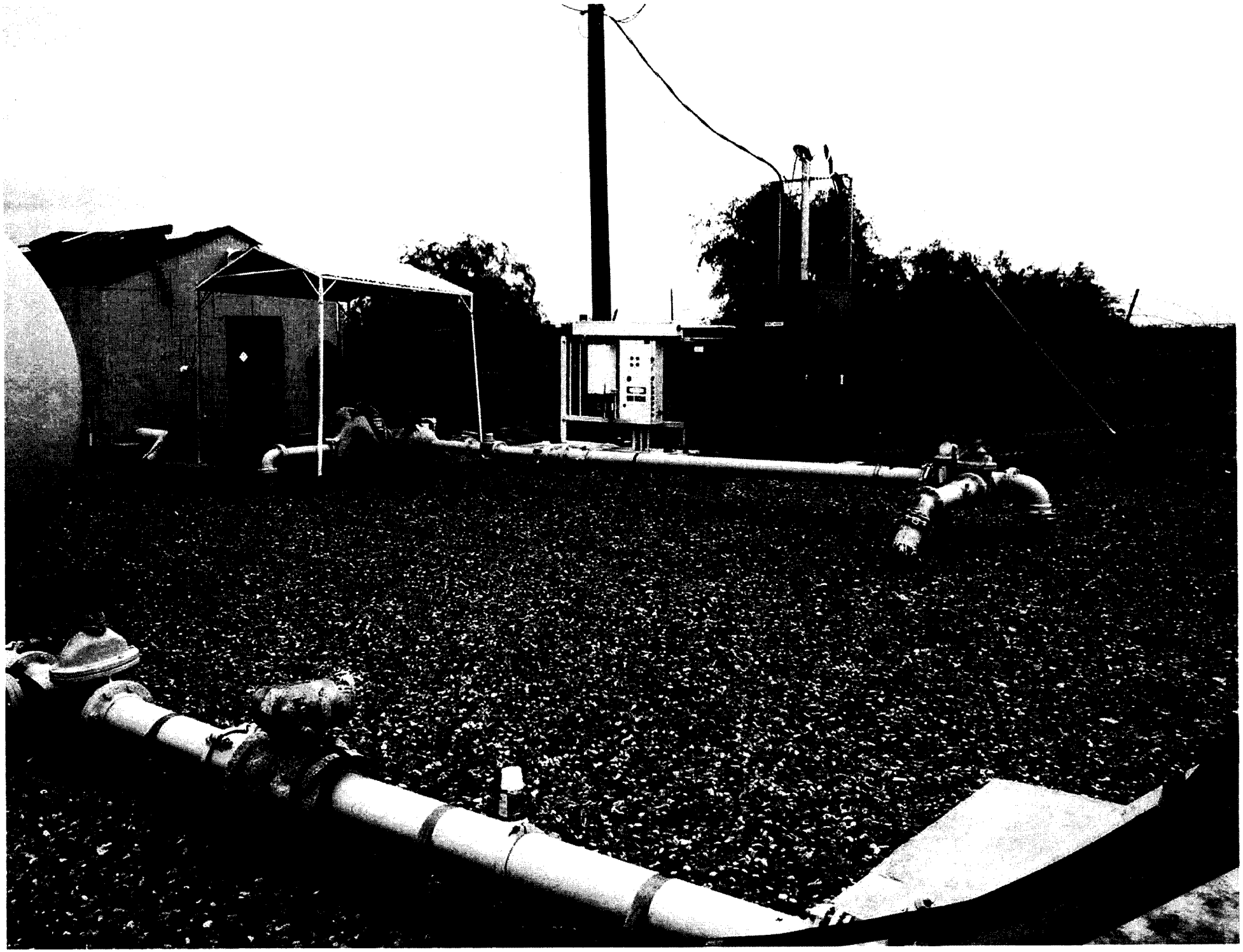










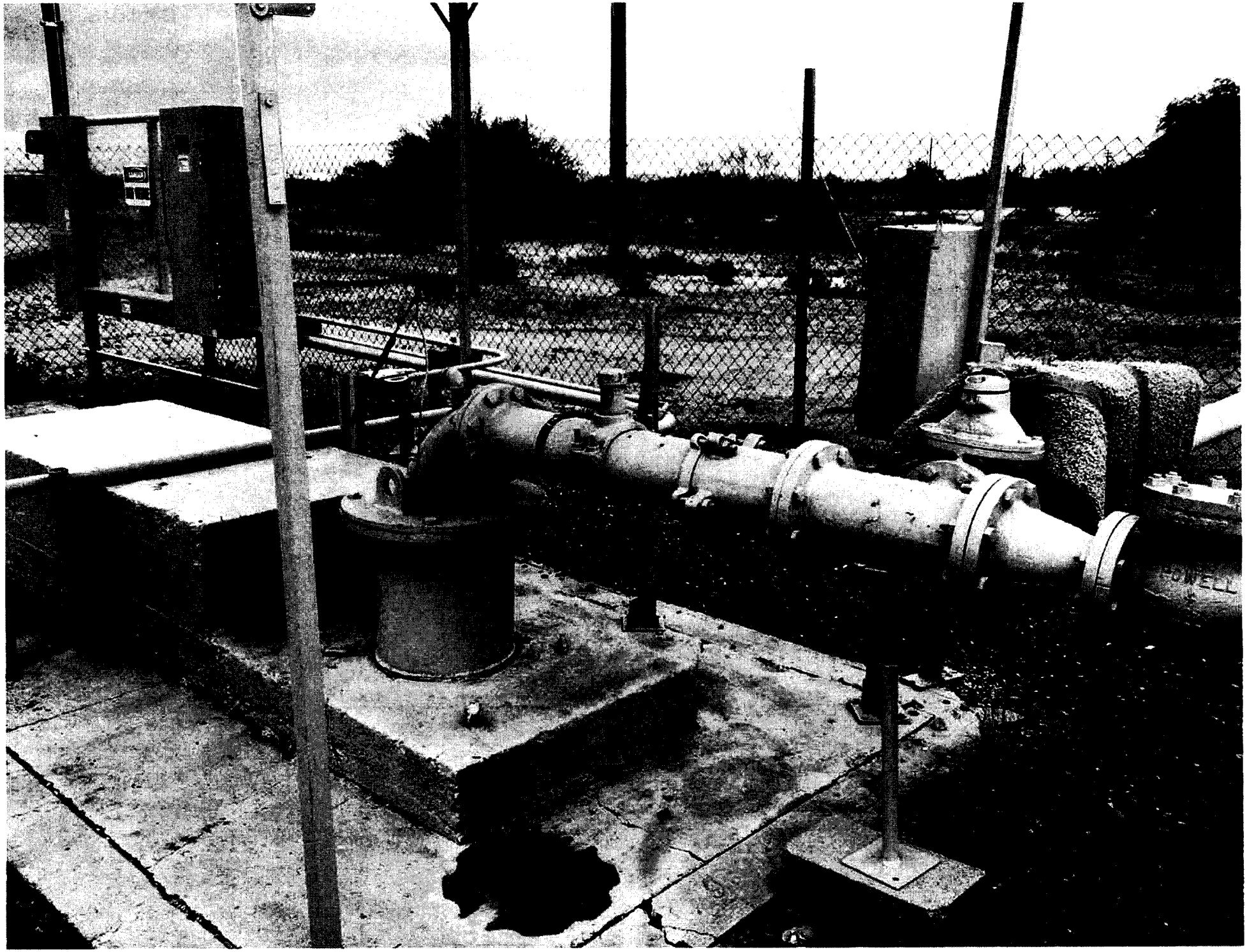


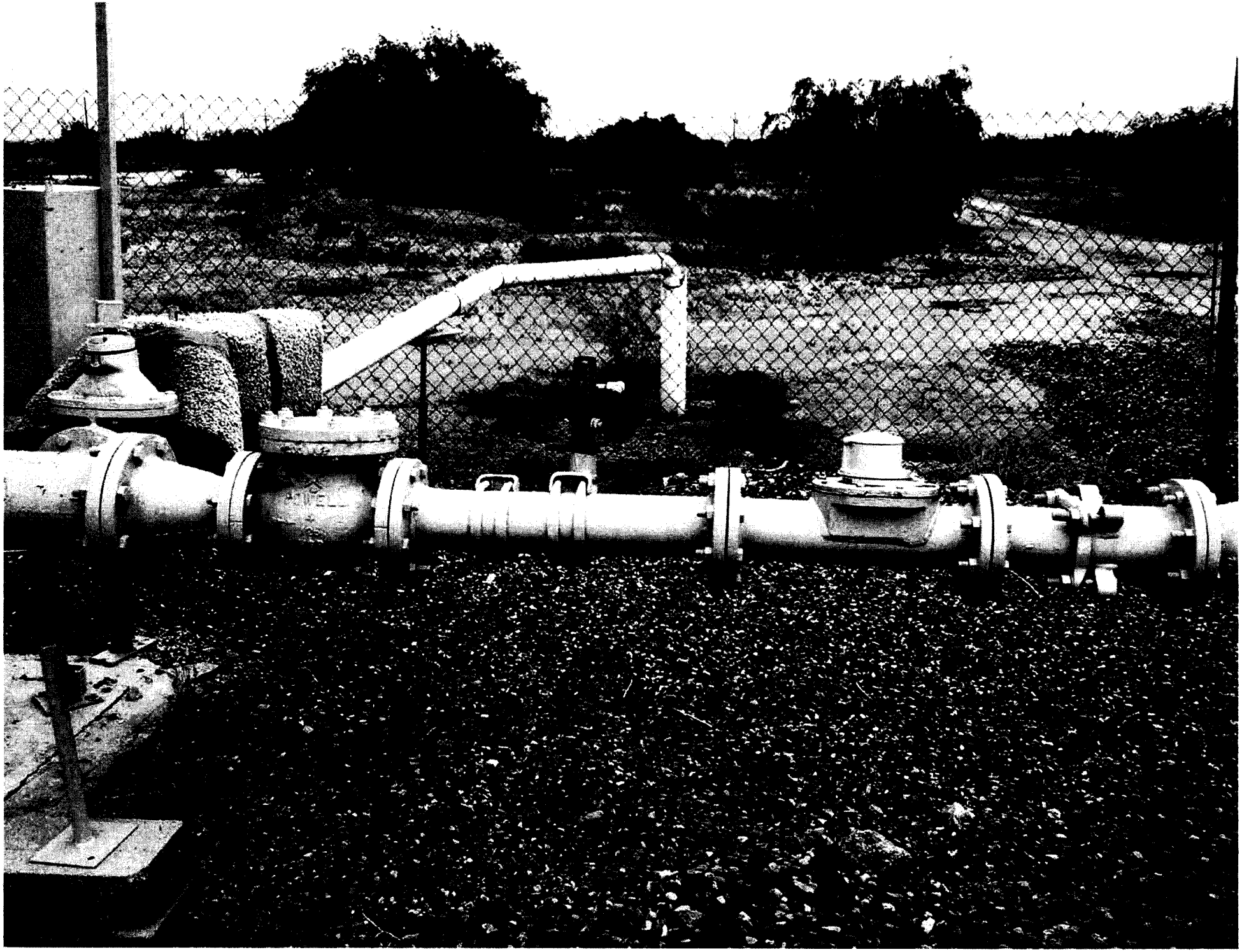
SODIU
HYPOCH
1791

Coolidge Airport South

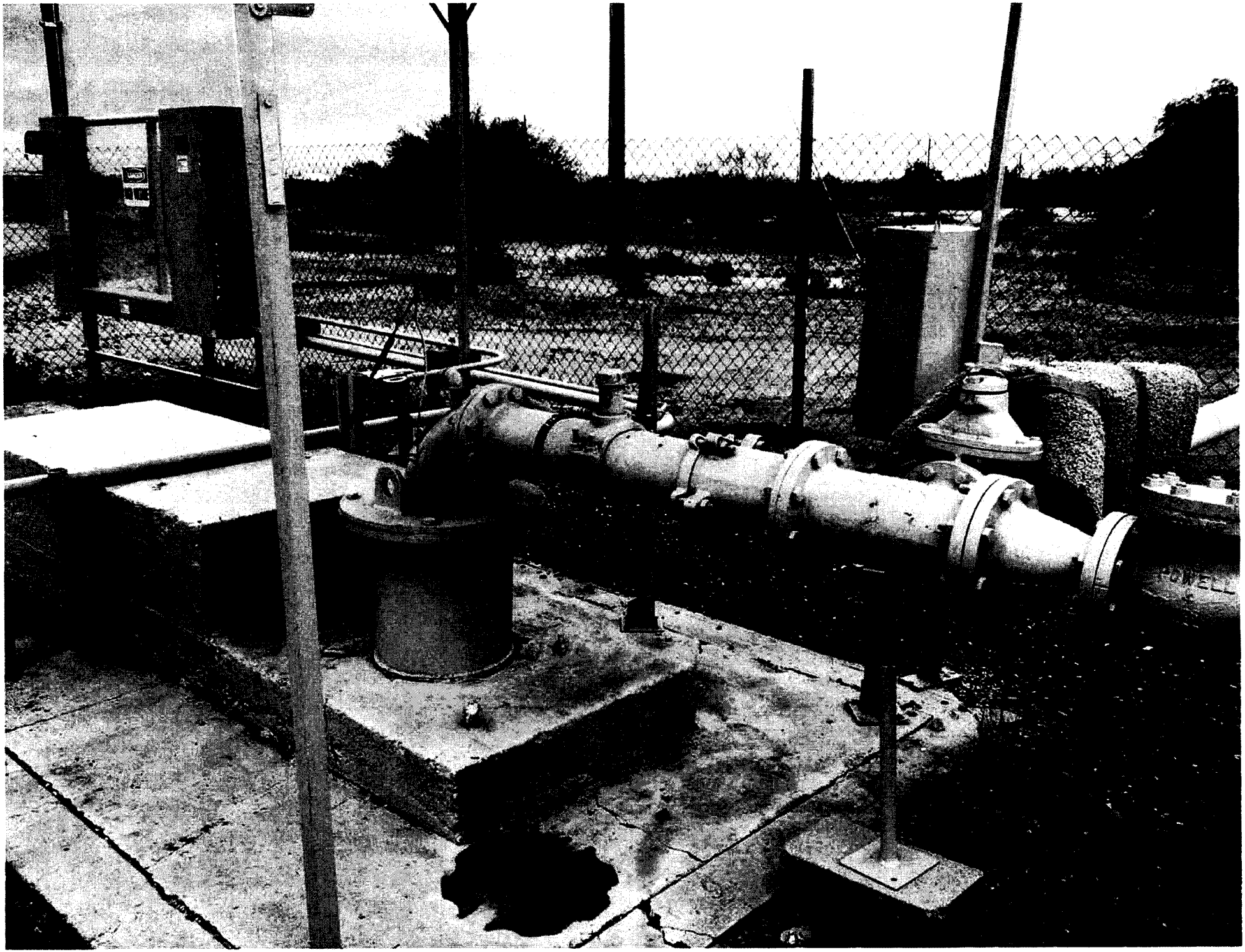
ARIZONA
WATER
COMPANY
ARIZONA WATER COMPANY
3651 S. COOLIDGE AIRPORT RD.
SOUTH WELL SITE
DANGER
UNAUTHORIZED
PERSONNEL
KEEP OUT

DANGER
HIGH VOLTAGE


HOWELL



Coolidge Airport South



Western Group Rate Case

Exhibit FKS-1

5306 Stanfield BPS

ARIZONA WATER COMPANY
WORK AUTHORIZATION

W.A. NUMBER: 1-5306
P.E. NUMBER:
BUDGET ITEM NO.: 1-5306
SHEET NO.: 1 of 2

SYSTEM:	STANFIELD	RETENTION REQUIRED:	☑ YES ☐ NO
DIVISION:	CASA GRANDE	WORK TO START BY:	UPON AUTHORIZATION
RESPONSIBLE PERSON:	JAMES WILSON	WORK TO BE FINISHED BY:	WITHIN 90 DAYS
TAX CODE:	2412		

DESCRIPTION OF WORK:

Construct a 30HP booster pump with starter and all related controls and replace the existing 50 KVA transformers with 112.5 KVA transformers at the Stanfield Booster Pump Station (BPS).

FACTORS JUSTIFYING WORK:

Approved 2015 Budget Item ($85,000)
The BPS supplies all of the water to the Stanfield water system. The BPS consists of one 10 HP 120 GPM pump and one 15 HP, 270 gpm pump. Both pumps must be operational to meet peak system demand and fire flow requirements. If a pump fails the BPS cannot meet peak system demand and fire flow requirements. Company policy requires at least one redundant pump at each BPS to maintain safe, reliable and adequate service in the event of a pump failure. The 30 HP pump will provide a redundant pump for the water system and increase the firm capacity of the BPS from 120 gpm to 390 gpm.

COST ESTIMATE		AUTHORIZATION	DATE
COST OF WORK:		PREPARED BY: James Wilson JW 4/27/15	4/20/15
MATERIAL	9,987	REVIEWED FOR ESMT/ROW VERIFICATION: Charles Briggs CB 04-27-2015	04-20-2015
LABOR	7,600	REVIEWED BY: Mario Mendez MM 4/28/15	4/20/15
CONTRACT PORTION	20,474	APPROVED BY ENGINEERING: Fredrick Schneider 4-30-15	4-21-2015
OVERHEAD	4,600	APPROVED BY FINANCE: Joseph Harris	4/23/15
TOTAL AUTHORIZED EXPENDITURES CHARGEABLE TO THIS W.A.	$ 42,661	AUTHORIZED BY PRESIDENT: William Garfield	4-24-2015
FUNDS RECEIVED:			
CONTRIBUTIONS RECEIVED	0		
REFUNDABLE ADVANCES RECEIVED	0		
TOTAL CONTRIBUTIONS/ADVANCES	0		
NET COMPANY CASH REQUIRED	$ 42,661		

COMMENTS:

CONSTRUCTION RELEASE:

RELEASED TO CONSTRUCTION
Authorized by FRED SCHNEIDER
Date 4/27/15

2015 BUDGET

AFH

ARIZONA WATER COMPANY

WORK AUTHORIZATION - DETAIL SHEET

W.A. NUMBER: 1-5306
P.E. NUMBER:
BUDGET ITEM NO.: 1-5306
SHEET NO.: 2 of 2

RETIREMENT PROPERTY UNITS	PLANT PROPERTY ACCOUNT	UNIT DESCRIPTION	QUANTITY	YEAR INSTALLED AND W.A. NUMBER
	325	50 KVA Transformer	3	

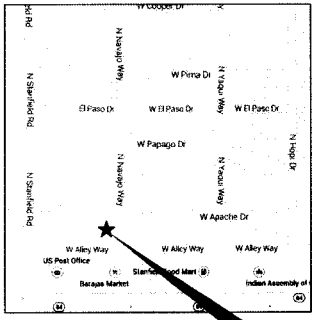
PROJECT DESCRIPTION:

Construct a 30HP booster pump with starter and all related controls and replace the existing 50 KVA transformers with 112.5 KVA transformers at the Stanfield Booster Pump Station (BPS).

	DESCRIPTION	PLANT PROP ACCT	QUANTITY	UNIT COST	TOTAL
CONTRACT WORK	Provide and install a NEMA size 3 starter complete with all related controls, conduit and wire	325	1	8,600.00	8,600
	Replace existing mercoid switch with a Mercoid EDQQA-N1E1-05T0 complete with all conduit and wire	325	2	1,000.00	2,000
	Contracting Tax	325	1	760.00	760
	Performance and Payment Bond	325	1	114.00	114
	Replace 50 KVA transformers with 112.5 KVA transformers	325	1	9,000.00	9,000
	SERVICE CONNECTIONS COMPLETE: DOUBLE-LONG	345			
	SERVICE CONNECTIONS COMPLETE: DOUBLE-SHORT	345			
	SERVICE CONNECTIONS COMPLETE: SINGLE-LONG	345			
	SERVICE CONNECTIONS COMPLETE: SINGLE-SHORT	345			
TOTAL CONTRACT WORK					$ 20,474
MATERIALS	Grundfos CR-90-2-1-A-G-A-E-KUBE pump	325	1	$ 7,187.26	$ 7,187
	Freight	325	1	300.00	300
	6x4 welded steel reducers	325	2	500.00	1,000
	Misc. Fittings	325	1	1,500.00	1,500
	SERVICE CONNECTIONS: DOUBLE-LONG	345			
	SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	SERVICE CONNECTIONS: SINGLE-LONG	345			
	SERVICE CONNECTIONS: SINGLE-SHORT	345			
	METERS	346			
TOTAL MATERIALS					$ 9,987
LABOR	Engineering design and project management	325	40	$ 55.00	$ 2,200
	TESTING FEE	325	1	$ 500.00	500
	PERMIT FEE	325	1	500.00	500
	SURVEY FEE	325			
	FIELD INSPECTION	325	80	55.00	4,400
	INSTALL SERVICE CONNECTIONS: DOUBLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-SHORT	345			
TOTAL LABOR					$ 7,600
SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR					$ 38,061
OVERHEAD					4,600
TOTAL	REFUNDABLE PORTION ☐	NON-REFUNDABLE PORTION ☐		COST ESTIMATE	$ 42,661

AFH

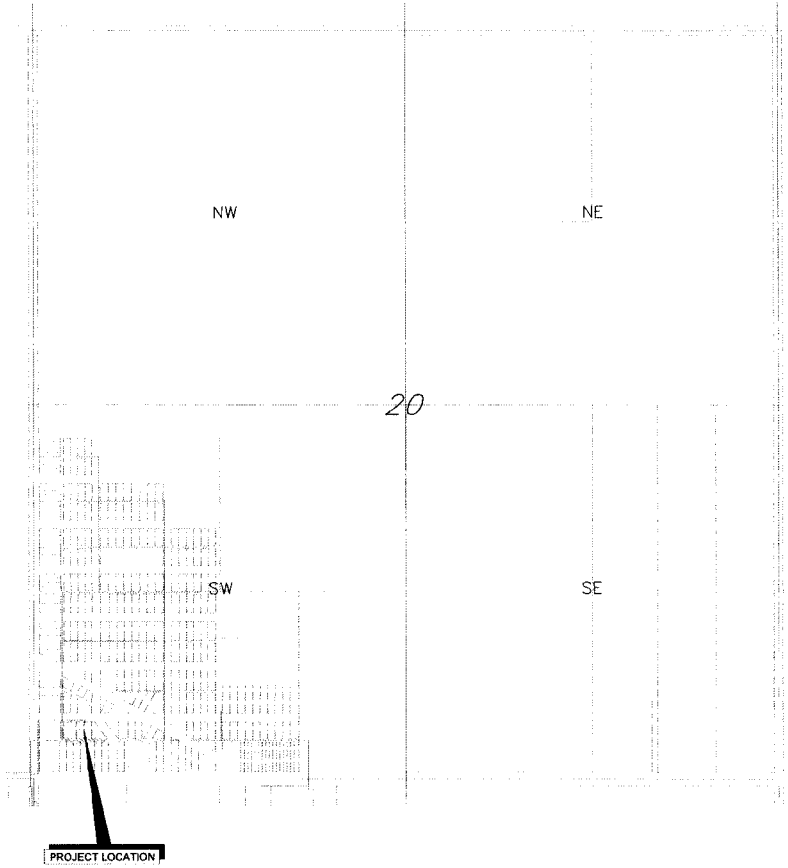
INSTALL 30 HP, 475 GPM BOOSTER PUMP FOR REDUNDANCY AT STANFIELD BOOSTER PUMP STATION IN STANFIELD, AZ.
SW1/4 SEC. 20, T. 6 S., R. 4 E. OF THE G. & S. R. B. & M.



PROJECT LOCATION

SITE ADDRESS: 36789 W. APACHE DRIVE
STANFIELD, AZ. 85172

VICINITY MAP



PROJECT LOCATION

PROJECT VICINITY

400' 200' 0' 400' 800'

OWNER/ENGINEER/DEVELOPER
ARIZONA WATER COMPANY
POST OFFICE BOX 29006
PHOENIX, AZ 85038-9006
VOICE: (602) 240-6860 FAX: (602) 294-7369
CONTACT: JAMES S. WILSON

SHEET INDEX

SHT. No.	DWG. No.	DESCRIPTION	PREPARED BY
1	PV-0088	PROJECT VICINITY	A.W.Co.
2	PV-0088	EXISTING SITE PLAN	A.W.Co.
3	PV-0088	BOOSTER PUMP STATION CONSTRUCTION PLAN	A.W.Co.

The installation shown is to be installed in accordance with the Arizona Water Company standards and specifications on file with the Arizona Department of Environmental Quality

263-1100
1-800-STAKE-IT
(Arizona Blue Stake, Inc.)

A.W. No. 1-5306
SYSTEM PINAL VALLEY
LOCATION SW 1/4 SEC. 20, T. 6 S., R. 4 E.
JOB NO. 2412
DATE 2/15/2015
SCALE AS SHOWN
DRAWN BY JAK
CHECKED BY
REVISED BY
REVISED DATE

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

INSTALL 30 HP, 475 GPM BOOSTER PUMP
FOR REDUNDANCY AT STANFIELD BPS IN STANFIELD, AZ

PROJECT VICINITY

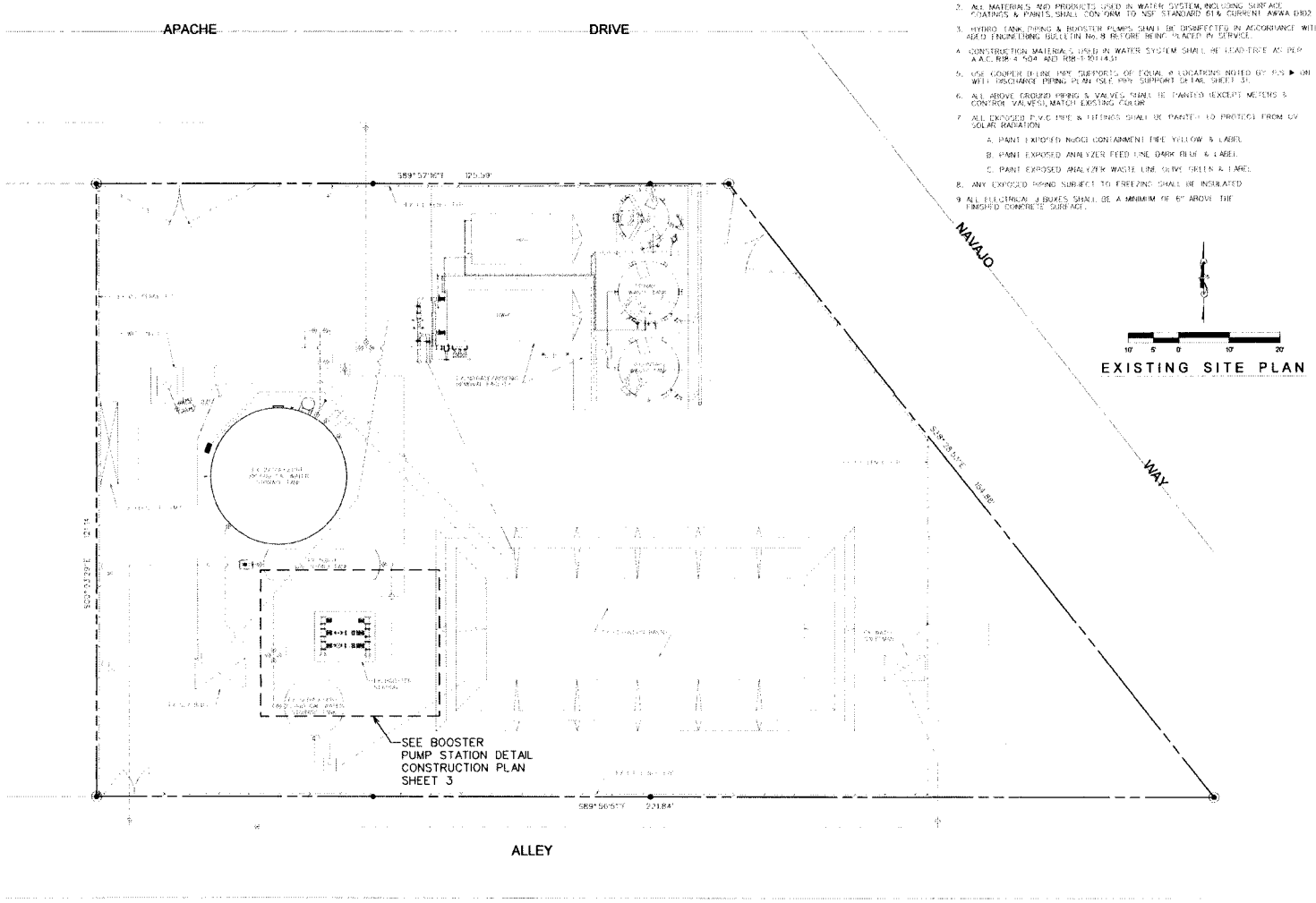
PROJECT SHEET DESC.

41048
JAMES T. WILSON
ARIZONA
Expires 6/30/16

DWG. No.
PV-0088
SHEET 1 OF 3

WELL DISCHARGE PIPING NOTES

1. NEW PIPING SHALL BE DISINFECTED IN ACCORDANCE WITH ADEQ ENGINEERING BULLETIN No. 8 BEFORE BEING PLACED INTO SERVICE.
2. ALL MATERIALS AND PRODUCTS USED IN WATER SYSTEM, INCLUDING SURFACE COATINGS & PAINTS, SHALL CONFORM TO NSF STANDARD 61 & CURRENT AWWA D102
3. HYDRO TANK PIPING & BOOSTER PUMPS SHALL BE DISINFECTED IN ACCORDANCE WITH ADEQ ENGINEERING BULLETIN No. 8 BEFORE BEING PLACED IN SERVICE.
4. CONSTRUCTION MATERIALS USED IN WATER SYSTEM SHALL BE LEAD-FREE AS PER A.A.C. R18-4-504 AND R18-4-701(14,5)
5. USE COOPER B-LINE HDG SUPPORTS OF EQUAL @ LOCATIONS NOTED BY PLS ▶ OR WITH DISCHARGE PIPING PLAN ISLE PIPE SUPPORT DETAIL SHEET 3).
6. ALL ABOVE GROUND PIPING & VALVES SHALL BE PAINTED (EXCEPT METERS & CONTROL VALVES), MATCH EXISTING COLOR
7. ALL EXPOSED P.V.C PIPE & FITTINGS SHALL BE PAINTED TO PROTECT FROM UV SOLAR RADIATION
   - A. PAINT EXPOSED NaOCl CONTAINMENT PIPE YELLOW & LABEL
   - B. PAINT EXPOSED ANALYZER FEED LINE DARK BLUE & LABEL
   - C. PAINT EXPOSED ANALYZER WASTE LINE OLIVE GREEN & LABEL
8. ANY EXPOSED PIPING SUBJECT TO FREEZING SHALL BE INSULATED
9. ALL ELECTRICAL J BOXES SHALL BE A MINIMUM OF 6" ABOVE THE FINISHED CONCRETE SURFACE.



EXISTING SITE PLAN

The installation shown is to be installed in accordance with the Arizona Water Company standard specifications on file with the Arizona Department of Environmental Quality

Call Before You Dig 263-1100 1-800-STAKE-IT

1-5306	PINAL VALLEY
SW 1/4 SEC. 20, T. 6 S., R. 4 E.	
2412	AS SHOWN
2/15/2015	JAK

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29036
PHOENIX, ARIZONA 85038-9036
(602) 240-6860

INSTALL 30 HP, 475 GPM BOOSTER PUMP
FOR REDUNDANCY, AT STANFIELD BPS IN STANFIELD, AZ.
EXISTING SITE PLAN

41046 JAMES T. WILSON
Expires 6/30/16

DWG. No. PV-0088

SHEET 2 OF 3

WELL DISCHARGE PIPING NOTES

1. NEW PIPING SHALL BE DISINFECTED IN ACCORDANCE WITH ADEQ ENGINEERING BULLETIN No. 8 BEFORE BEING PLACED INTO SERVICE.
2. ALL MATERIALS AND PRODUCTS USED IN WATER SYSTEM, INCLUDING SURFACE COATINGS & PAINTS, SHALL CONFORM TO NSF STANDARD 61 & CURRENT AWWA D102
3. HYDRO TANK, PIPING & BOOSTER PUMPS SHALL BE DISINFECTED IN ACCORDANCE WITH ADEQ ENGINEERING BULLETIN No. 8 BEFORE BEING PLACED IN SERVICE
4. CONSTRUCTION MATERIALS USED IN WATER SYSTEM SHALL BE LEAD FREE AS PER A.A.C. R18-4-504 AND R18-1-101 (4.3)
5. USE COOPER B-LINE PIPE SUPPORTS, OR EQUAL @ LOCATIONS NOTED BY P.S. ▶ ON WELL DISCHARGE PIPING PLAN (SEE PIPE SUPPORT DETAIL BELOW).
6. ALL ABOVE GROUND PIPING & VALVES, SHALL BE PAINTED (EXCEPT METERS & CONTROL VALVES), MATCH EXISTING COLOR.
7. ALL EXPOSED P.V.C. PIPE & FITTINGS SHALL BE PAINTED TO PROTECT FROM UV SOLAR RADIATION.
   - A. PAINT EXPOSED NaOCl CONTAINMENT PIPE YELLOW & LABEL
   - B. PAINT EXPOSED ANALYZER FEED LINE DARK BLUE & LABEL
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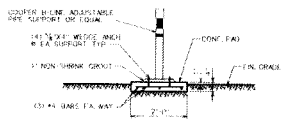
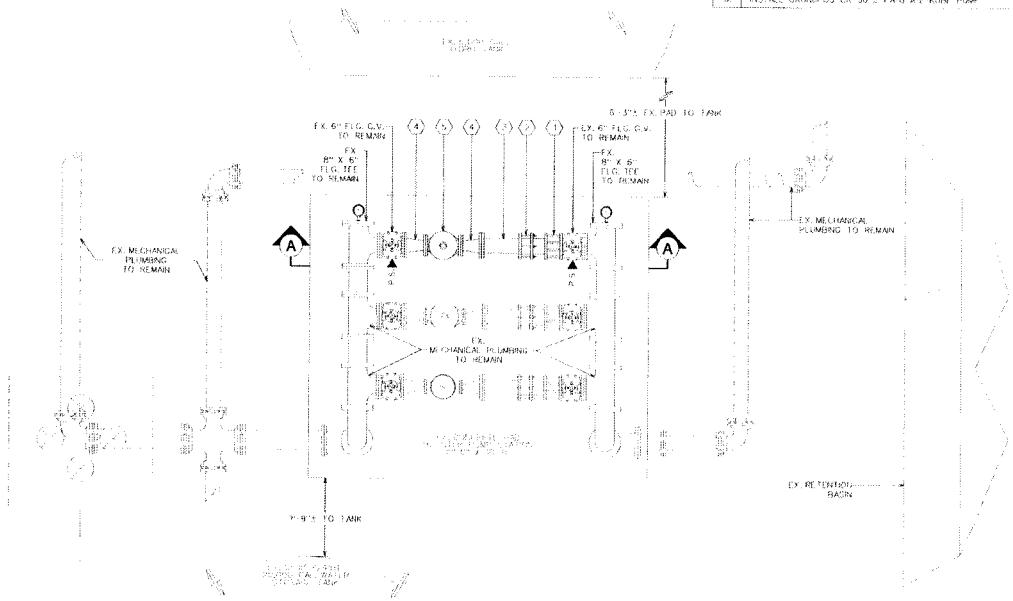
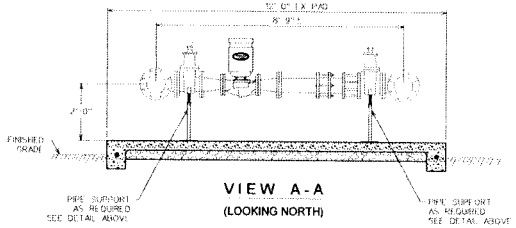


COOPER B-LINE PIPE SUPPORT SCHEDULE		
PIPE SIZE	PIPE SADDLE PART NO.	BASE STAND PART NO.
4"	B3093-4	B3088-3
6"	B3093-6	B3088-3

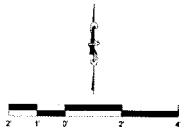
PIPE SUPPORT DETAIL
SCALE: 50=1'-0"

	FITTING SCHEDULE	QUANTITY	SUPPLIED BY	INSTALLED BY
1	INSTALL 6" WATER CHECK VALVE	1	CONTR.	CONTR.
2	INSTALL 6" SMITH BLAIR 913 F.C.A. W/ANCHOR STUDS	1	CONTR.	CONTR.
3	INSTALL 6" X 2'-0" D.I.P. F.L.G. X P.E. SPOOL (TRIM TO FIT)	1	CONTR.	CONTR.
4	INSTALL 6" X 4" F.L.G. REDUCER	2	CONTR.	CONTR.
5	INSTALL GRUNDFOS CR 90-2 1 A-G-A-E-HQBE PUMP	1	CONTR.	CONTR.





VIEW A-A
(LOOKING NORTH)



BOOSTER PUMP STATION CONSTRUCTION PLAN

The installation shown is to be installed in accordance with the Arizona Water Company standard specifications on file with the Arizona Department of Environmental Quality

263-1100
1-800-STAKE-IT

A.W.C. NO. 1-5306			
SYSTEM PINAL VALLEY			
SEC., TWP., RGE. SW 1/4 SEC. 20, T. 6 S., R. 4 E.			
W.O. NO. 2412	SCALE AS SHOWN		
DATE 2/15/2015	DRAWN BY JAK	REVIEWED BY JAK	APPROVED BY JAK

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

PROJECT DESC. INSTALL 30 HP, 475 GPM BOOSTER PUMP FOR REDUNDANCY AT STANFIELD DPS IN STANFIELD, AZ

PROJECT SHEET DESC. BOOSTER PUMP STATION CONSTRUCTION PLAN

41046 JAMES T. WILSON ARIZONA U.S.A.
Expires 6/30/15

DWG. NO. PV-0088

SHEET 3 OF 3

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, AZ 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6874 • TOLL FREE: (800) 533-6023 • www.azwater.com

May 6, 2015

Mr. Joseph Ludvik
Ludvik Electric
1020 E. University Drive
Phoenix, AZ 85034

Re: Stanfield Booster Pump Station

PROJECT: Stanfield BPS	
SYSTEM: Pinal Valley	
CONTRACT NO.:	
P.E. NO.:	W.A. NO.: 1-5306

Dear Mr. Ludvik:

Enclosed is your copy of the Proposal/Contract for the above-referenced project, which has been accepted by Arizona Water Company (the "Company"). The project shall be constructed in accordance with the Company's *General Conditions of Contract, the Specifications and the Drawings* which were included with the Company's previously provided Proposal/Contract, copies of which are being provided again and attached herewith.

Also enclosed are two copies of the Commencement Notice for the above-referenced project. Please sign one of the copies and return it to my attention retaining the other for your records.

As provided in paragraph 4 of the Company's Proposal/Contract executed by the Company on May 11, 2015, Ludvik Electric acknowledged that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work. In addition, as provided in paragraph 44 of the Company's General Conditions of Contract, the 100% Performance and Payment Bonds must be provided within ten (10) calendar days of the date of the Commencement Notice. Failure to provide an acceptable 100% Performance and Payment Bond does not limit the Company's ability to

terminate the Proposal/Contract or seek restitution for damages that the Company may have or will incur.

Prior to the start of construction, please call Ray Murrieta, Division Manager at 520-836-8785 to schedule a pre-construction meeting. In addition, please provide the required Performance and Payment Bonds to the Company promptly so that the contracted work can be completed within the contract's timeline.

If you have any questions, please call me at this office.

Very truly yours,

James T. Wilson, P. E.
Senior Engineer
jwilson@azwater.com

afh
Enclosure

ARIZONA WATER COMPANY

Pinal Valley - Stanfield
220 E. 2nd Street
Casa Grande, AZ 85122 PH: 520-836-8785

PROPOSAL/CONTRACT

CONTRACTOR: LUDVIK ELECTRIC	SYSTEM: PINAL VALLEY
ADDRESS: 1020 E. UNIVERSITY DRIVE	W.A. No(s): 1-5306
CITY ST ZIP: PHOENIX, AZ 85034	BID DUE DATE: April 9, 2015

CONTRACTOR SUBMITS this PROPOSAL/CONTRACT to ARIZONA WATER COMPANY, an Arizona corporation (the "Company"), to perform the work and complete the project described on Page 2 (the "Project"), as an independent prime contractor.

1. Contractor certifies that it has a complete copy of, and has read, understands and accepts, the Company's General Conditions of Contract, and the Company's Construction Specifications and Standard Specification Drawings, (the "Specifications"), all of which are attached hereto. Contractor has examined the specific plans and related construction drawings for the Project (the "Drawings"), copies of which are also attached hereto. The General Conditions of Contract, Specifications and Drawings are incorporated into this Proposal/Contract. Contractor affirms that all work and materials to be furnished or purchased for the Project will be in strict conformance with the General Conditions of Contract, Specifications and Drawings.
2. Contractor represents and warrants that it has satisfied and complied with the provisions of Section 6, Contractor Understands Work and Working Conditions, of the General Conditions of Contract prior to submitting this Proposal/Contract.
3. Contractor represents that this Proposal/Contract is fair and honest in all respects, is submitted in good faith and is not submitted in collusion with any other company, entity or person.
4. Contractor acknowledges that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work.
5. Prior to the commencement of work, Contractor will submit to the Company a list of all materials to be used in the Project. The materials list will include the manufacturer, part number, price and quantity included in this Proposal/Contract.
6. Contractor will furnish all labor, tools, equipment and materials required to complete the Project according to the General Conditions of Contract, Specifications and Drawings. No materials purchased by Contractor to be incorporated into the Project are subject to tax at the time of purchase and Contractor will not charge the Company for any such tax. Contractor will pay the applicable transaction privilege tax (the "Contracting Tax") on the Project after Contractor receives payment of the final Project invoice from the Company. The cost of materials incorporated into the Project which are exempt by Arizona Revised State Statues ("A.R.S.") from the Contracting Tax, for example, pipes or valves having a diameter of four (4) inches or larger, including equipment, fittings and any other related part that is used in operating the pipes or valves (A.R.S. §42-5061 B.5.), will not be included in the total cost of the labor and materials upon which the Contracting Tax is computed. Contractor retains full liability and obligation to pay the Contracting Tax and will defend and indemnify the Company against any demand or obligation to pay the Contracting Tax.
7. Contractor will maintain detailed accounting records of all materials purchased and incorporated into the Project. Such records will include all supporting original vendor invoices for all materials purchased. Following completion of the Project, Contractor will submit an itemized accounting to the Company which will include all supporting original vendor invoices and satisfactory evidence of payment thereof. The Company will not pay Contractor for materials not actually incorporated into the Project, and the disposition of such materials will remain Contractor's responsibility.
8. The Estimated Total Cost of the Project, shown on Page 2, is based on estimated labor and material quantities to be furnished. It includes an estimate of the Contracting Tax and the cost of the required Performance and Payment Bonds. Contractor will not cancel, modify or withdraw this Proposal/Contract during a ninety-day (90) period commencing on the Bid Due Date. The Company may accept this Proposal/Contract by signing and mailing, or otherwise delivering, a copy hereof to Contractor during such ninety-day (90) period. If the Company does not accept this Proposal/Contract during such ninety-day (90) period, Contractor may cancel this Proposal/Contract by giving written notice of cancellation to the Company.
9. Prior to the commencement of work, Contractor will provide the Company with a detailed construction schedule, in either Gantt or CPM form, identifying all tasks to be performed from the date of the written Commencement Notice through completion of the Project, including testing, training of Company Personnel and final Project invoicing. Contractor will provide the Company with a copy of such construction schedule documenting the progress of work on the Project at least monthly.
10. Contractor will not commence work on the Project until the Company gives Contractor a written Commencement Notice. Contractor will complete the Project within 45 calendar days after the Commencement Notice is issued.
11. Following the Company's written notice of satisfactory completion of the Project, and upon receipt of the final Project invoice from Contractor, the Company shall pay Contractor the actual total cost of the Project, which will be calculated as shown on Page 2, except that actual labor and material quantities installed/constructed will be substituted for the estimated labor and materials quantities and the Contracting Tax will be recalculated based on such actual labor and materials quantities.
12. The amount of applicable liquidated damages for Contractor's failure to deliver or perform within the time limit shown in Paragraph 10 may be deducted from the Company's payment of the final Project invoice. This provision shall not limit the Company's ability to terminate this Proposal/Contract for Contractor's unsatisfactory performance or failure to perform as provided in the General Conditions of Contract, Specifications or Drawings, or in this Proposal/Contract.

SPECIAL CONDITIONS:

CONTRACTOR	PROPOSAL/CONTRACT ACCEPTED:
LUDVIK ELECTRIC	*ARIZONA WATER COMPANY*
By: Joseph F. Miller	By: Fredrick K. Schneider
Print Name: JOSEPH F. MILLER	Print Name: Fredrick K. Schneider, PE
Title: V.P. OF PHOENIX OPERATIONS	Title: Vice President - Engineering
Date: 04/09/2015	Date: 5-11-2015

AFH

ARIZONA WATER COMPANY

Pinal Valley - Stanfield
220 E. 2nd Street
Casa Grande, AZ 85122 PH: 520-836-8785

PROPOSAL/CONTRACT

CONTRACTOR: LUDVIK ELECTRIC	SYSTEM: PINAL VALLEY
AZ CONTRACTOR LICENSE NO: CLASSIFICATION:	W.A. No(s): 1-5306
ADDRESS: 1020 E. UNIVERSITY DRIVE	BID DUE DATE: April 9, 2015
CITY ST ZIP PHOENIX, AZ 85034	BID BOND REQUIRED ☑ Yes ☐ No

DESCRIPTION OF PROJECT: Install a starter and controls for a 30 HP booster pump at the Stanfield BPS per A.W.C. Dwg. No. PV-0088 and A.W.C. Standard Details and Specifications, in Stanfield, AZ.

1-2. MATERIALS EXEMPT FROM CONTRACTING TAX (per Paragraph 6)	QUANTITY	UNIT PRICE LABOR	UNIT PRICE MATERIALS		TOTAL COST LABOR		TOTAL COST MATERIALS
				1		2	
3. Total Labor to Install Exempt Materials (add the amounts in column 1)				3			
4. Total Exempt Materials (add the amounts in column 2)						4	

5-6. NON-EXEMPT MATERIALS	QUANTITY	LABOR	MATERIALS		LABOR		MATERIALS
Provide and install a NEMA size 3 starter complete with Symcom 777-P2 motor saver, RM-1000 remote display, contactor, heater reset and all related controls, conduit and wire	1	$2,000.00	$6,600.00		$2,000.00		$6,600.00
Replace existing Mercoid pressure switch with a Mercoid EDAW-N1E1-05T0 electronic pressure switch complete with all related conduit and wire.	1	$500.00	$500.00		$500.00		$500.00
Provide and install Mercoid pressure switch with a Mercoid EDAW-N1E1-05T0 electronic pressure switch complete with all related conduit and wire.	1	$500.00	$500.00	5	$500.00	6	$500.00
7. Total Labor to Install Non-Exempt Materials (add the amounts in column 5)				7	$3,000.00		
8. Total Non-Exempt Materials (add the amounts in column 6)						8	$7,600.00
9. Subtotal A (add lines 3, 7 and 8)						9	$10,600.00
10. Contracting Tax Base (multiply the amount on line 9 by 0.65)				10			
11. Applicable Contracting Tax Rate	NOTE: TAX ON MATERIAL ONLY.			11	10%		
12. Contracting Tax (multiply the amount on line 10 by line 11)						12	$760.00
13. Subtotal B (add lines 4, 9 and 12)						13	$11,360.00
14. 100% Performance and Payment Bonds Cost						14	$114.00
15. Estimated Total Cost (add lines 13 and 14)						15	$11,474.00

NOTE: The Estimated Total Cost includes all labor and materials for backfill, pavement replacement, chip seal, and traffic control necessary for the Project.

ARIZONA WATER COMPANY

COMMENCEMENT NOTICE

CONTRACTOR:

Mr. Joseph Ludvik
Ludvik Electric
1020 E. Unviersity Drive
Phoenix, AZ 85034

DATE: 5/11/15
DIVISION: CASA GRANDE
SYSTEM: PINAL VALLEY
W.A.: 1-5306

THIS IS YOUR NOTICE TO PROCEED WITH THE FOLLOWING PROJECT(S):

DESCRIPTION OF WORK:

Install a starter and controls for a 30 HP booster pump at the Stanfield BPS per AWC DWG No. PV-0088 and AWC Standard Details and Specification, in Stanfield, AZ.

PERFORMANCE AND PAYMENT BONDS REQUIRED: [X] Yes [ ] No

TOTAL DAYS ALLOWED: 55

COMPLETION DATE: 7/2/15

Prior to the start of construction, please call Ray Murrieta, Division Manager at 520-836-8785 to schedule a pre-construction meeting.

ARIZONA WATER COMPANY
Company

LUDVIK ELECTRIC
Contractor *(type name)*

By [signature]
Title Vice President - Engineering

By
Title

AFH
W:\PROJECTS\CG\ST\INSIDE\WA\ACTIVE WA\1-5306 REDUNDANT PUMP AT STANFIELD BPS\AGREEMENTS\CONTRACTS\E-3-18-2 LUDVIK COMMENCEMENT NOTICE 1-5306 STANFIELD BPS.DOCX 1/15/09 | FKS:afh | E-3-18-2

ARIZONA WATER COMPANY

SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT: E-4-1

CONSTRUCTION SPECIFICATIONS: E-8-1

STANDARD SPECIFICATION DRAWINGS: E-9-1

gw 5/6/15

2007 EDITION WITH **2010** REVISIONS;
2012 GENERAL CONDITIONS OF CONTRACT

A copy of this entire Spec Book was sent out with Ludvik Electric Proposal package for 1-53006 Stanfield BPS on 5/11/15

ARIZONA WATER COMPANY

PRECONSTRUCTION CONFERENCE OUTLINE

DATE: 5/20/15 TIME: 11:00 CONTRACTOR: LUDVIG DIVISION: STANFIELD/CG

W.A. NUMBER 1-5306 JOB DESCRIPTION: STANFIELD GPS EXPANSION

NAME	COMPANY	TITLE	PHONE NUMBERS
JAMES WILSON	AWC	ENGINEER	6022406860
Jesse Madrid	AWC	Oper. Super.	(520)836-8785
Joe Miller	Ludvik Electric	V.P	602-448-5955
Robert m Robert	AWC	Production Foreman	602-206-3765

V:\SUPS\KEVIN\PRE CON OUT LINE
XXX | 4/1/15

ARIZONA WATER COMPANY

PRECONSTRUCTION CONFERENCE OUTLINE

1. Contractors Bid Proposal

   A. Proposal/Contract dated _____ Contractor has walked this project site and understands the nature, scope and requirements of the work to be performed.
   B. Prior to bidding as well as prior to construction
   C. Any changes required which the Contractor feels he should be reimbursed over and above the contract price, must be submitted in writing prior to installation.

2. Construction Schedule

   A. Agree that the project will be completed with in the days called for on the proposal.
   B. Definition of a day is a calendar day.
   C. A work day is 8 hours.
   D. Stress importance of finishing the job in a timely manner.
   E. It was agreed that construction will start on 6/15/15
   F. A commencement was signed and given to the contractor.

3. Inspection

   A. Contractor must request in writing for time extensions or any reason. All requests must be submitted to the Casa Grande Office.
   B. The Company's inspectors will be: WILL KIMBERLIN 520 840 4501
   C. Contractor will request inspections a **MINIMUM** of 24 hours in advance

Inspector **WILL NOT** aid in the construction nor offer advice as to how the work should be performed. Inspector will only indicate that the job does or does not meet Arizona Water Company's Specifications. Arizona Water Company personnel are the **ONLY** personnel authorized to turn off an existing valve.

4. Permits

NOT REQUIRED	RECEIVED	REQUIRED	WILL BE RPOVIDED BY ENG. DEPT	DOCUMENT / FORM
				Maricopa County/ADOT / Railroad Permit
				City of Casa Grande / Coolidge
				Pinal County
				Pima County

A. All construction will be subject to State, County, City and any other jurisdictions permits.
B. Permit will be obtained by N/A.
C. Contractor must have a copy of permit on the job site at **ALL** times.
D. Traffic control will be required as outlined on the permit and traffic control plan.
E. If compaction tests are required , cost will be paid by_____. If the test fails to meet the required compaction the contractor will correct the problem and pay for the retest.

F. Contractor is not to store materials in the right of way.
G. **CONTRACTOR IS NOT TO ENCROACH ON PRIVATE PROPERTY UNDER ANY CIRCUMSTANCES. WITH OUT WRITTEN APPROVAL (i.e.) EASMENT.**
H. Work performed in easements **MUST** remain within the boundaries of the easements.

5.Staking

Staking will be provided by_____

A. Contact person_____ and phone:_____

B. Surveyor will be paid by_____

6. Utility Conflicts "Blue Stake"

A. The location of utilities shall be the responsibility of the contractor.

B. Contractor shall be responsible for any damage to any utility including Arizona Water Company's.

C. Contractor must exercise extreme caution when digging around utilities.

7. Pressure Test

A. Make sure test is holding before calling inspector.

B. Pressure test shall be performed, after giving 24 hour notice prior to test, per Arizona Water Company's Construction Specifications

E-8-1.

Leakage test will be for a period of (2) two hours at 200 plus or minus 5 PSI at the point of lowest elevation ; leakage may not exceed 0.1 gallons per hour per (1) one thousand feet (1000') of pipe per inch of diameter.

C. Inspectors will only be available during Arizona Water Company business hours,

D. Arizona Water Company reserves the right to require a second pressure test after all other utilities are installed.

E. Chlorine solution will be required for disinfection. Only NSF approved containers will be used for disinfection.

8. Payments

F. All invoices **MUST** be itemized.

G. Arizona Water Company will only make payment for items installed based on the contract prices.

H. Counts of items billed for **MUST** be field verified with Arizona Water Company's Inspector and Contractors representative **PRIOR** to submitting an invoice for payment.

I. Change orders must be submitted on a separate invoice.

J. Contractor will require _____partial payments.____80% - 20%.

9. Construction Crew

A. Contractor will be using a ___2___man crew.

B. Superintendent for the project ___AARON CRISHOR___

1. Contact Number___602 316 7268___

C. Forman for Project _____

1. Contact Number_____

D. Construction crew is expected to behave in a professional manner.

E. Must have an English speaking person with authority on the job site.

10. General Construction

A. All work will be performed as per Arizona Water Company's General Conditions of Contract, Construction Specifications, and Construction Specification Drawings.
B. Water for compaction, dust control, will be purchased by the contractor.

C. Clean up is subject to approval of ADOT, County, City, Arizona Water Company and property owners.

D. All new mains will be filled, tested, and flushed through a jumper meter with an approved reduced pressure backflow preventer water will be provided by Arizona Water Company. 4" meter or larger will be Mandatory for subdivisions that will need fire protection due to construction of homes. Use of fire hydrants will only be allowed for fire protection.

E. Contractor **WILL** comply with all the requirements of his Permit for De Minimus Discharge and plan for Best Management Practices.

F. Will Contractor be screening or importing bedding and shade material?

11. Regulations

A. Contractor acknowledges that he has in his possession all the permits, licenses, and training necessary for the prosecution of the work, including, but not limited to :

1. Any National Pollution Discharge Elimination Systems (NPDES) Permits required by U.S. Environmental Protection Agency or Arizona Department of Environmental Quality.
2. Best Management Practices Plan for De Minimus Discharges
3. Competent Person for trench safety
4. Competent Person for confined space
5. Competent Person for asbestos abatement

ARIZONA WATER COMPANY

PRECONSTRUCTION CONFERENCE OUTLINE

12. Notes

AWC ~~STAFF~~ FIELD FOREMAN CONTACT RICHARD RUSSEL 602 206 3765

MORCOIDS WILL BE INSTALLED IN CABINET ADJACENT

TO J-BOX SIMILAR TO VALLEY FARMS

AWC WILL RUN NEW LINE TO MORCOIDS

DISCONNECT FOR AIR COMPRESSOR WILL ALSO

FEED B1

DISCONNECT FOR B1 WILL NOW FEED B3

Electrical District No. 3

NEW SERVICE PACKET

COMMERCIAL
(Other Than Residential)

Updated: 02/03/2015

The following forms are fillable; however, you will need to complete and <u>print out prior to exiting</u> as your changes will <u>not</u> be saved in the online forms.

Please read through the attached materials carefully and sign where indicated. Thank you.

ELECTRICAL DISTRICT NO. 3 OF PINAL COUNTY
41630 W. Louis Johnson Drive
Maricopa, AZ 85138-5402
Customer Service (520) 424-9021
www.ed3online.org

Dear Customer:

The following information and forms are included to assist you with ED3's process and submission of documents required in order to begin the design and construction on your new service. ED3 requires a Design Deposit and completed documents before preliminary design work can begin.

A New Service Checklist is enclosed to aid you in following all procedures required by ED3. Also enclosed is an Explanation of Easements that contains helpful information regarding the easement requirements and the process.

In order to begin preliminary design of your project, the following forms and payments must be submitted to the New Project Specialist:

- Design Deposit
- Design and Construction Agreement
- Project Description Form
- 60% Plans (if applicable).

After your design is complete, you will be provided with the following:

- Construction Drawings
- Construction Invoice estimate
- Trenching and Conduit Agreement (if applicable)
- Easement requirements (if applicable)

Please note that preliminary design or construction will not commence until your Design Deposit, forms, agreements, and easements have been completed and submitted to ED3. Construction Standards and requirements are available on the ED3 website at www.ed3online.org.

Prior to your Service Turn-On, you will be required to submit:

- Security Deposit
- New Service Application
- Service Agreement
- Recorded Easement (if applicable)

We look forward to providing electrical service to you in the near future. Please feel free to contact our office at (520) 424-0408 with any questions you may have.

Sincerely,

New Project Specialist

Enclosures

ELECTRICAL DISTRICT NO. 3
NEW SERVICE CHECKLIST
RETAINED BY CUSTOMER

All forms are available from the New Project Specialist at (520) 424-0408, on the ED3 website at www.ed3online.org, or at either ED3 location.

PLEASE NOTE: All forms, agreements, and deposits **must** be submitted before the design of your Project will begin.

STEP 1: Customer obtains a ***New Service Packet*** by mail, email, online or by picking it up at the ED3 office.

STEP 2: Customer must submit a ***Project Description Form***, ***Design and Construction Agreement***, ***Trenching and Conduit Agreement,*** and a ***Design Deposit***.

*The Project Description form **must** include the total electrical voltage, load, and / or type to be drawn from the Electrical Distribution System.*

If applicable, additional agreements and forms will be submitted at the time.

STEP 3: Customer should provide current AutoCAD files (if applicable) of said location(s) that identify Utility Easements, road Rights-of-Way, and any other existing / proposed utilities. ED3's Designer will review your information and set up a meeting.

STEP 4: Customer will be provided with a design sketch and construction cost estimate. Determination of continuation of Project will be verified and Customer will submit a Construction Deposit (estimated) if continuation of Project is agreed upon.

STEP 5: Customer proceeds with installation of conduit and Service Entrance Section (SES) and contacts ED3 to request Trenching and Conduit Inspection.

STEP 6: If applicable, all required Easements must be received and recorded by ED3 before construction can begin. Customer will provide survey exhibits, legal description, and initiate documentation for Grantor's signature based on ED3's Design.

STEP 7: ED3 will commence Project construction.

STEP 8: Customer must submit a ***New Service Application***, ***Service Agreement***, and a ***Security Deposit*** (if applicable) to the Customer Service Department.

STEP 9: City or County Clearance must be received by Customer Service Department. Once Clearances are confirmed, the meter will be set.

STEP 10: Once construction is complete, the Customer or Agreement Signee will receive a reconciled invoice for additional payment or refund.

ELECTRICAL DISTRICT NO. 3

PROJECT DESCRIPTION FORM

INDIVIDUAL (NON-MULTIPLE USE) / COMMERCIAL / TEMPORARY SERVICE

REVISION NO. 3 EFFECTIVE: 05/08/2014

WORK REQUEST# _____ *Internal Use Only* **JOB #** _____ *Internal Use Only*

RESIDENTIAL or ✓ COMMERCIAL or TEMPORARY SERVICE

Property Ownership – Legal Name	Property Owner Mailing Address	Property Owner Telephone Number
Arizona Water Company	3805 Black Canyon Hwy. Phoenix, AZ. 85015	602-240-6860
Builder / Developer Name:	**Location of Project:**	**Name of Project:**
Arizona Water Company	36781 W. Apache Dr. Stanfield, AZ. 85172	INSTALL 30 HP, 475 GPM BOOSTER PUMP FOR REDUNDANCY AT STANFIELD BOOSTER PUMP STATION
Site Rep. / Field Contact - Name:	**Site Rep. / Field Contact - Phone Number:**	**Site Rep. / Field Contact - Email:**
Ray Murrieta	520-723-5346	rmurrieta@azwater.com
Customer's Agent:	**Customer Agent's Mailing Address**	**Customer Agent's Telephone Number**
James Wilson	3805 Black Canyon Hwy. Phoenix, AZ. 85015	602-240-6860
Billing Contact - Name:	**Billing Contact - Phone Number:**	**Billing Contact - Email:**
Arizona Water Company	602-240-6860	jwilson@azwater.com
Builder / Developer Billing Address:		**ED3 Customer Service Rep.**
3805 Black Canyon Hwy. Phoenix, AZ. 85015		

Our goal is to continually explore ways to reduce Design turnaround time to meet your project schedule.

CONSTRUCTION SCHEDULES:

	Start	Finish		Start	Finish
Grading	N/A		**Dry Utilities**	JULY 10, 2015	JULY 30, 2015
Wet Utilities	N/A		**Curb & Pavement**	N/A	

RESIDENTIAL Meter Panel Sizes:

__ 200 AMP 200 AMP + 100 AMP Subpanel 320 AMP All-In-One

| 400 AMP | 600 AMP TOTAL #: _____

RESIDENTIAL Project Description:

IF COMMERCIAL:

Will this COMMERCIAL project be built in phases? ☐ Yes ☑ No

Any 3-Phase Commercial Required? ☑ Yes ☐ No

Voltage: 120 / 240 120 / 208 ☑ 277 / 480

(A full set of electrical plans, including load calculations and summaries is required).

COMMERCIAL Meter Panel Sizes: 400A / 480V **AMP / Voltage**

COMMERCIAL Project Description:

INSTALL 30 HP, 475 GPM BOOSTER PUMP FOR REDUNDANCY AT STANFIELD BOOSTER PUMP STATION

IF TEMPORARY:

TEMPORARY Meter Panel Sizes:

☐ 200 AMP ☐ 200 AMP + 100 AMP Subpanel ☐ 320 AMP All-In-One

☐ 400 AMP ☐ 600 AMP **TOTAL #:** _____

TEMPORARY Project Description:

Arizona Water Company	**ELECTRICAL DISTRICT NO. 3 OF PINAL COUNTY ARIZONA**
Customer / Customers Agent / Company Name (Print Above)	*Name (Print Above)*
Signature:	Signature:
Signed By: *Please Print:* Fredrick K. Schneider	Signed By: *Please Print:* **Larry Yates**
Title: *Please Print:* Vice President - Engineering	Title: *Please Print:* **Director of Engineering & Operations**
Date: 6-17-2015	Date:

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ELECTRICAL DISTRICT NO. 3
EXPLANATION OF EASEMENTS

PLEASE NOTE: IF REQUIRED, EASEMENTS MUST BE COMPLETED *BEFORE* ED3 CONSTRUCTION CAN BEGIN

PURPOSE:

The purpose of an Easement is to grant Electrical District No. 3 (ED3) the right to operate and maintain electrical facilities in a particular location, and to ensure safe working conditions for ED3's crews during maintenance and construction.

REQUIREMENTS:

ED3 requires the following Easements for electrical facilities that are **not** located within a Public Utility Easement (PUE) or a road Right-of-Way (ROW):

- Primary Distribution Lines – minimum of eight feet (8') wide
- Transformer Pads and J-boxes – minimum of ten by ten feet (10' X 10')
- High Voltage Sub-transmission Lines – minimum of thirty feet (30') wide

The exact size and location of the Easement will be determined by ED3's Designer.

PROCESS:

The Customer will submit the following information to ED3's New Project Specialist:

- A Legal Description and an Exhibit showing the location of the Easement (based on ED3's design) each on a separate 8.5 x 11 sheet of paper.
- The full legal name of the landowner (person or entity) who will be granting the Easement to ED3.
- A contact name and address where the Easement documents can be mailed.

ED3 will draft the Easement documents and mail them to the Customer to be signed and notarized.

The Customer will execute their portion of the Easement documents, have their signature notarized, and return the original Easement documents to ED3 for execution and notarization.

ED3 will have the Easement document recorded with Pinal County and will mail a copy of the recorded Easement document to the Customer.

ELECTRICAL DISTRICT NO. 3
TRENCHING AND CONDUIT AGREEMENT

REVISION NO: 8 **EFFECTIVE: 02/03/2015**

WORK REQUEST# _____ *Internal Use Only* **JOB#** _____ *Internal Use Only*

Date: June 15, 2015

CUSTOMER NAME: Arizona Water Company

PROPERTY OWNER (LEGAL NAME): Arizona Water Company

CUSTOMERS AGENT (IF APPLICABLE): James Wilson

REQUIREMENTS:

The parties to this Agreement are Electrical District No. 3 of Pinal County, a political subdivision of the State of Arizona, hereinafter called "ED3" and Arizona Water Company, hereinafter called "Customer". In consideration of the services to be performed by ED3 and Customer for construction of underground distribution facilities at: 36781 W. Apache Dr. Stanfield, AZ. 85172, it is agreed as follows:

1. Customer shall provide trench, conduit, backfill and 3-phase transformer pads. Customer shall install conduit, backfill, 3-phase transformer pads and ED3 provided equipment pads/box pads, pull boxes, j-boxes and vaults. These items shall be provided and installed according to this agreement, the Installation requirements, and the attached construction design drawings.

2. ED3 shall be responsible for inspecting all trench, conduit and equipment installations outlined in item 1 above. Customer shall provide easements for trench routes, equipment locations, and secure all necessary permits required by local municipalities and/or governing agencies.

3. Customer shall have property corners and other control points as requested, installed and flagged before ED3 will inspect the job. In addition, easements, alleys, streets and water retention areas adjacent to proposed trench route must be graded to within 6" of finished grade and grade stakes set before ED3 approves trench and begins construction. **Customer agrees to reimburse ED3 for any costs incurred in adjusting facilities due to changes in finished grade.**

4. Customer shall be responsible for having all existing underground facilities located and identified in the field before excavation begins.

5. ED3 approved and customer provided concrete caps shall be installed over conduit in trenches which cross or are located in drainage areas, washes, and other areas subject to erosion as shown on the attached drawings and as required by the ED3 inspector.

6. ED3 will not energize underground cables until the trench depth is verified, and backfill is compacted with a minimum of 36" cover for secondary / service and 60" cover for primary, unless otherwise shown on the attached drawings.

Customer Initials: _____

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7. Customer shall restore, at Customer's expense, any damaged landscaping or property to its original condition, due to Customer provided trenching, backfilling or equipment installations.

8. ED3 reserves the right to inspect all and every part of Customer's work during or after completion of trenching, conduit installation, shading, backfilling, or compaction. If all of any part of the work has not been done according to ED3 specifications, Customer shall take corrective action at Customer's expense. ED3, at Customer's request, may perform the corrective action at the Customer's expense. **Neither inspection of the work by ED3, nor lack of same, shall relieve Customer of the responsibility to provide and perform the work according to ED3 requirements. In all cases, the Customer is responsible for conduit system location, integrity and usefulness until ED3 conductors are energized.**

9. Where Customer provides the trenching and backfilling, Customer shall indemnify and save harmless ED3 and any other utility who is a joint trench occupant with ED3, from any and all claims, losses, costs, and damages incurred by the utilities, on account of injuries or damages to persons or property received or sustained by any persons, firms, or corporations by reason of any acts or omissions of Customer, its agents or employees, or of any defects in the methods, materials, equipment, or tools used in the trenching or backfilling or any contingencies arising therefrom.

10. Customer shall use a properly licensed contractor when excavating in the public right-of-way or utility easement. Licensing information is available through the State Registrar of Contractors.

11. **The following documents are attached to and made a part of this Agreement.**

- ☐ Construction Drawings
- ☐ Three Phase Transformer Pad and Conduit Requirements
- ☐ Customer Trenching Diagram
- ☐ ED3's Electric Service Requirements
- ☐ Construction Design Drawings
- ☐ Equipment Box Pad Details
- ☐ Other: _____

12. **Customer shall review this document and the installation drawings with their trenching contractor before work begins. The trenching contractor shall maintain a copy of these documents at the job site for review.**

13. **To schedule the inspection, call the Customer Service Office at (520) 424-9021 two (2) business days PRIOR to start of work.**

14. **Contact the Design Department at (520) 424-0411 for project scheduling and coordination.**

15. **Please see separate TRENCHING AND CONDUIT - INSTALLATION SPECIFICATIONS document.**

Customer Initials: _____

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THIS AGREEMENT HAS BEEN EXECUTED BY THE DULY AUTHORIZED REPRESENTATIVES OF THE PARTIES:

Arizona Water Company		**ELECTRICAL DISTRICT NO. 3 OF PINAL COUNTY ARIZONA**	
Customer / Customers Agent / Company Name (Print Above)		*Name (Print Above)*	
Signature:	DA 0000 I 003	Signature:	
Signed By: *Please Print:*	Fredrick K. Schneider	Signed By: *Please Print:*	**Larry Yates**
Title: *Please Print:*	Vice President - Engineering	Title: *Please Print:*	**Director of Engineering & Operations**
Mailing Address:	3805 Black Canyon Hwy. Phoenix, AZ. 85015	Mailing Address	41630 W. Louis Johnson Drive Maricopa, AZ 85138-5402
Phone:	602-240-6860	Phone:	(520) 424-9021
Property Owner (Legal Name):	Arizona Water Company		
Property Owner Mailing Address:	3805 Black Canyon Hwy. Phoenix, AZ. 85015		
Property Owner Telephone:	602-240-6860		
Date:		Date:	

ELECTRICAL DISTRICT NO. 3
TRENCHING AND CONDUIT INSTALLATION SPECIFICATIONS
RETAINED BY CUSTOMER

REVISION NO: 1 **EFFECTIVE: 02/03/2015**

INSTALLATION SPECIFICATIONS:

1. All primary, secondary, and service conductors shall be installed in SCH 40 PVC conduit.
2. Rigid conduit is defined as PVC. Sweeps shall have one belled end and one plain end. Both ends shall be internally chamfered.
3. Customer will provide conduit which meets the following specifications:

APPLICATION	ACCEPTABLE PRODUCT MATERIAL	CONDUIT MARKING REQUIREMENTS
Straight Conduit (See Notes 1 & 2)	PVC SCH 40	Mfg. Name, nom. size, PVC SCH 40 , 90° C UL Type
Bends, Sweeps and Elbows (See Note 3)	PVC SCH 40 (See Note 4)	Mfg. Name, nom. size, PVC SCH 40 , 90° C UL Type
Fittings	PVC SCH 40	Mfg. Name, nom. size, PVC SCH 40 , 90° C UL Type (marking may be on packing material)

NOTES:
1. 4" diameter & under-SCH 40 NEMA TC-2; 5" diameter & larger-SCH 80 NEMA TC-2, 50" radius.
2. Sweeps at meter socket panel end shall be 2.5" SCH 80.
3. All PVC shall be gray.

4. When installing PVC conduit apply purple primer/cleaner ASTM F656 to all PVC joints prior to applying a coating of gray PVC to PVC cement ASTM D2564.
5. Unless otherwise specified, sweeps/bends shall be 36" minimum radius for secondary/service and 36" minimum radius for primary Three inch. Five inch conduit requires a 60" minimum radius sweep.
6. The conduit sweeps at device locations shall extend a minimum of 1-1/2" and a maximum of 2" above the top of the pad. Trench depth shall be adjusted to obtain the correct extension (conduit sweeps shall not be cut). Service conduit stub out locations shall be identified by lot number using a permanent black ink marker.
7. Customer shall provide and install 3 phase transformer pads, as well as install ED3 provided equipment pads/box pads, pull boxes, j-boxes and manholes per the attached Work Order drawings at CUSTOMER cost. Conduit stubs shall be positioned in equipment as specified on the attached drawings or details. ED3 will provide ground rods or ground wire. The customer shall install the ground rod to within 6" of finished grade at time of conduit installation at each equipment location. Alternate 46 copper ground wire (where specified on the Work Order drawings) shall be buried a minimum of 18" deep. Working clearance shall be provided for all equipment per ED3 requirements.
8. Minimum 95 percent soil compaction is required at all equipment locations (compacted area to extend 1' out from equipment). All equipment locations shall be backfilled with select (1-1/2" maximum diameter rock) material compacted with mechanical tamping machine and leveled to finished grade. The use of a mechanical tamping machine is not required where 1/2-slack slurry (1/2 sack of cement per cubic yard of sand or ABC) is utilized for backfill. Equipment locations shall maintain the minimum clear working areas specified by ED3.
9. Concrete caps shall consist of 3000 psi concrete at 28 days, 4 inches thick and 2 inches minimum on all sides.

10. Shading over all ED3 conduits shall be a minimum of 12" regardless of soil conditions. The 6" immediately above the conduit shall contain no rocks larger than 1-1/2" in diameter. The next 6" lift shall contain no rocks larger than 3" in diameter. The remaining backfill may be trench spoils. Shading is not required when 1-sack slurry backfill (1-sack of cement per cubic yard of sand or ABC) is utilized.
11. ED3 will not energize underground cables until the trench depth is verified, and backfill is compacted with a minimum of 36" cover for secondary / service and 60" cover for primary, unless otherwise shown on the attached drawings.
12. The ED3 inspector shall approve trench depth changes due to obstructions encountered while digging.
13. See ED3 construction design cover sheet and trench details on the construction sketch, for minimum separations to other utilities.
14. Crossings require a minimum of 12" vertical separation between ED3 facilities and other utilities, including water and sewer taps. Exceptions: a) If crossing is with a gas service line, this separation may be reduced to 6" if the gas service line is sleeved in a rigid pipe. The sleeve shall extend 12" beyond ED3 conduits, measured perpendicular from the sidewall of the nearest electric conduit/cable. b) A 2" vertical crossing separation (above or below) is allowed between ED3 communications at equipment locations.
15. If ED3 facilities are joint trench with natural gas facilities, natural gas lines shall be installed with a minimum of 12" vertical separation, outside wall to outside wall, above all ED3 conduits. In addition, natural gas lines shall maintain a minimum 12" horizontal separation from the outside edge of all ED3 equipment pads to the outside wall of the gas lines.
16. The conduit system shall be proven after backfill is completed. An ED3 provided pull line shall be installed by the customer (except in service stubs). All empty conduit ends shall be plugged at equipment locations. ED3 shall provide and the customer shall install expandable plugs in switching cabinets, in other equipment use universal plugs. Future conduit stub outs shall be capped and a locate marker installed. Tape is not an acceptable substitute for caps or plugs.
17. Customer shall excavate by hand within two (2) feet of existing energized ED3 equipment. Contact the ED3 Inspector prior to digging within ten (10) feet of a pole or five (5) feet of a down guy rod unless the excavation is two (2) feet or less in depth or specified on the Work Order drawings. All trench spoils shall be placed a minimum of two (2) feet from the trench wall.
18. **Refer all questions to the ED3 Inspector.**

ELECTRICAL DISTRICT NO. 3
DESIGN & CONSTRUCTION AGREEMENT
COMMERCIAL
(Other Than Residential)

REVISION NO: 10 **EFFECTIVE: 02/03/2015**

WORK REQUEST# _____ **JOB#** _____
Internal Use Only *Internal Use Only*

Date: _____

ELECTRICAL DISTRICT NO. 3 OF PINAL COUNTY (ED3), organized and existing under the laws of the State of Arizona (ED3), and Arizona Water Company
(Insert Developer / Customer / Customer Agent / Company Name Above),
enter into this Agreement for the design and construction of main electrical backbone infrastructure facilities for the following Developer's Project:

Developer Name:	Arizona Water Company
Property Owner (Legal Name):	Arizona Water Company
Property Owner Mailing Address:	3805 Black Canyon Hwy. Phoenix, AZ. 85015
Property Owner Telephone Number:	602-240-6860
Customer Name:	Arizona Water Company
Customer Mailing Address:	3805 Black Canyon Hwy. Phoenix, AZ. 85015
Customer Telephone Number:	602-240-6860
Customer Agent Name:	James Wilson
Customer Agent Mailing Address:	3805 Black Canyon Hwy. Phoenix, AZ. 85015
Customer Agent Telephone Number:	602-240-6860
Project Name:	INSTALL 30 HP, 475 GPM BOOSTER PUMP FOR REDUNDANCY AT STANFIELD BOOSTER PUMP STATION
Project Location:	36781 W. Apache Dr. Stanfield, AZ. 85172
Project Type:	Service upgrade
Delivery Voltage:	480V
Number & Size of Service Entrance Section (SES):	(One) 400A SES

This Agreement includes the Terms and Conditions below, and describes the general obligation of ED3 and the Developer. Construction drawings will be created by ED3 at the time the Developer receives final plat approval from Pinal County or the City. Details of the Project will be provided on the construction drawings. ED3 has the right to terminate this Agreement if Developer fails to satisfy all of the conditions within 120 days after ED3 provides the design drawings to Developer.

1. **Design.** The Developer shall provide ED3 all drawings and data requested by ED3 that are pertinent to the design of the Project. ED3 shall review such drawings and data for compatibility with ED3 facilities and shall have sole discretion in determining whether the Developer facilities may be used with ED3's facilities. Per ED3 Electric Service Guidelines Design Deposits requirements, ED3 shall, design the electrical infrastructure facilities drawings. After acceptance of ED3 electrical infrastructure design by the Developer the cost of any revisions or changes made to the final design drawings shall be borne by Developer. ED3 will provide one (1) full size set and AutoCAD file on CD format of ED3 Electrical design for said development.

2. **Electrical Infrastructure.** The Developer shall be responsible for Line Extension Fees and Costs in accordance with the ED3 Electric Service Guidelines, which from time to time may be amended, for installation of underground, primary and secondary electric cables along with all necessary appurtenances, including above-ground junction boxes, switch cabinets, underground vaults, connectors, transformers, etc., as ED3 determines necessary to provide electric service. ED3 will furnish service junction boxes, and junction cabinets and vaults for installation by Development in accordance with ED3 specifications.

   ED3 shall construct all electric facilities up to the point(s) of delivery, including any connections to electric, in accordance with the ED3 Electric Service Guidelines and ED3 construction specifications and practices. Prior to ED3's installing any electric facility, the Developer shall install all water and sewer facilities and backfill. Developer shall not install any curb, sidewalk, paving, or any conflicting foundation within the development boundaries until ED3 completes the installation of the electric facilities.

3. **Trenching and Conduit.** The Developer shall furnish all trenching and installation of: UL Schedule 40 PVC 90° C conduit, backfill, compaction, 1-1/2 sack slurry 3/8" rock backfill over conduits as required by ED3's design, street light concrete bases, secondary service / junction boxes and underground vaults for the Development. Unless otherwise agreed in writing by ED3, Developer shall perform, at Developer's sole expense, all trenching, provision and installation of conduit, and backfilling material for ED3 Facilities ("Developer Work"). All Developer Work shall conform to National Electric Safety Code (NESC), OSHA regulations, and ED3 specifications per the Trenching and Conduit Requirements and Specifications Agreement.

4. **Surveying and Staking.** The Developer shall, at no cost to ED3, furnish all necessary surveying and staking of the Development's proposed features, including but not limited to the boundaries of the Public Utility Easement ("PUE"), all property corners and the location and grade elevation of the back of the curb, blue top elevation (final grade) surveying four (4) pins / corners location for ED3 Facilities. Developer shall forward all results of survey to ED3 for review and approval.

5. **Easements.** The Developer shall provide ED3 all requested easements, including any easements required from third parties, at no cost to ED3, for ED3 to access and maintain the electric facilities installed under this Agreement, using ED3's standard form(s) of easement. It is ED3's intent to place the greater part of the electrical facilities within the provided PUE. The parties recognize, however, that some facilities (including, but not limited to, switch cabinets and pulling vaults) likely cannot be accommodated within the PUE and will need to be placed within an easement outside the PUE. Developer will be responsible for all legal fees associated with the preparation and recording of the 8ft. PUE. Developer, at all times, shall permit ED3 to access and maintain any ED3 electric facility on Developer property. Developer understands and agrees that ED3 shall have no obligation to provide electric service to the Project unless and until Developer has provided all such easements.

6. **Relocation Costs.** Cost of relocation of facilities found to be installed at the wrong location or grade due to Developer requested changes in property lines, easement grade, and/or errors in staking, trenching, or survey, shall be borne by the Developer in the amount of the actual cost of relocation including administrative fees. The title to all facilities relocated by ED3, or relocated by Developer at ED3's request and accepted by ED3, shall remain with ED3 at all times. Developer, upon demand, shall reimburse ED3 for the costs of relocation of facilities.

7. **Contribution in Aid of Construction.** The Customer shall pay one hundred percent (100%) of Design and Construction Cost of the service. A Design Deposit will be due in advance of any design work. The estimated cost of construction will be due prior to starting construction. Un-used funds will be refunded to the Customer once the job is closed; should construction cost exceed the estimate, that amount will be billed to the Customer at the completion of the job.

Customer Initials: FV

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8. **Inspections.** Developer shall permit ED3 to inspect, at any time, any Developer provided facility. Any inspection by ED3 shall not be deemed an approval of any Developer provided facility or a waiver by ED3 of any right to enforce strict compliance with the terms and conditions of this Agreement. Developer shall meet with an ED3 inspector before construction begins. The meeting may be scheduled by calling (520) 424-9021 or the ED3 Project Leader.

9. **Indemnification and Governing Law.** ED3 shall not be responsible for, and Developer shall indemnify, defend and hold harmless ED3 and members of its governing bodies, its officers, agents and employees, for, from and against any and all claims, demands, suits, costs of defense, attorneys' fees, witness fees of any type, losses, damages, expenses and liabilities("Claims") arising out of or relating to Developer's performance of the Developer Work, including without limitation Claims arising out of the performance of Developer Work on property not owned by Developer.

   Developer shall indemnify, defend, and hold harmless ED3, the members of its governing bodies, and its directors, officers, employees, agents and contractors for, from and against any loss, damage, liability, cost, or expense incurred by ED3, members of its governing bodies, directors, officers, employees, agents or contractors arising out of any act or omission of Developer, or its directors, officers, employees, agents, contractors, or subcontractors. Developer's obligation under this section shall extend to defend ED3 when ED3 or members of its governing bodies, directors, officers, employees, agents or contractors are allegedly concurrently negligent with Developer, its directors, officers, employees, agents, contractors, or subcontractors, but shall not extend to any liability caused by the sole negligence of ED3.

   Developer shall release ED3 from any loss, damage, liability, cost, or expense incurred by Developer arising out of any delay by ED3 in performing, completing, or inspecting any work.

   This Agreement shall be interpreted, governed by and construed in accordance with the substantive and procedural laws of the State of Arizona, without regard to conflicts of law principles. ED3 and Developer agree that any action, suit, or proceeding arising out of or relating to this Agreement shall be initiated and prosecuted in a state or federal court of competent jurisdiction located in Pinal County, Arizona, and the parties irrevocably submit to the jurisdiction and venue of such court. To the fullest extent permitted by Law, ED3 and Developer hereby irrevocably waive any and all rights to a trial by jury and covenant and agree that neither will request a trial by jury, with respect to any legal proceeding arising out of or relating to this Agreement.

10. **Permits.** Developer shall secure all required State, County, and local permits and approvals to receive electric service.

11. **Compliance.** The existing applicable ED3 Electric Service Guidelines, as they may be amended or revised from time to time by ED3, and all terms and conditions thereof, are adopted and incorporated herein by reference as part of this Agreement except as specifically modified herein. The Electric Service Guidelines are on file at the principal offices of ED3.

    Developer shall require that any construction work performed by Developer or its contractor or subcontractor shall be in accordance with national and local building and safety codes, the ED3 Electric Service Specifications and construction drawings, and the Electric Utility Service Entrance Requirements Committee.

12. **Miscellaneous.** The title to all work performed by ED3, or performed by Developer at ED3's request and accepted by ED3, shall remain with ED3 at all times. Fees for electrical service also may be required. Please call (520) 424-9021 at least 60 days prior to the meter-set need date.

13. **Termination.** This Agreement shall automatically terminate after **two (2) years** if Developer has not performed all its obligations under **Paragraph 2**.

Customer Initials: _____

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Any subsequent Agreement between ED3 and Developer shall be subject to ED3's Electric Service Guidelines in effect at the time the subsequent Agreement is entered into by ED3 and the Developer or its successor.

AGREEMENT REGARDING ELECTRICAL INFRASTRUCTURE AND SERVICE BETWEEN:

Arizona Water Company		**ELECTRICAL DISTRICT NO. 3 OF PINAL COUNTY ARIZONA**	
Developer / Customer / Customer Agent / Company Name *(Print Above)*		Name *(Print Above)*	
Signature:		Signature:	
Signed By: *Please Print:*	Fredrick K. Schneider	Signed By: *Please Print:*	**Larry Yates**
Title: *Please Print:*	Vice President - Engineering	Title: *Please Print:*	**Director of Engineering & Operations**
Date:	6-17-2015	Date:	

DA000301

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, AZ 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6874 • TOLL FREE: (800) 533-6023 • www.azwater.com

August 3, 2015

Arizona Department of Environmental Quality
Drinking Water Engineering Review Unit
Attn: David Burchard
1110 W. Washington St., 5th Floor
Phoenix, AZ 850007

Re: Approval to Construct

Dear Engineering Review Desk:

We are requesting an exemption letter for the following job:

Project Name: Stanfield Booster Pump Station
Location: SW¼, Section 20, T.6S., R.4E.
Stanfield, Arizona

Pursuant to A.A.C. R18-5-505.B.4 this project did not require an Approval to Construct. Please consider this letter as formal Notice of Compliance for the above referenced project.

- Attached is a copy of a fair market value cost estimate for the project.
- James T. Wilson, P. E. No. 41046 was the design and review engineer for the project.
- The project was completed on July 24, 2015.

If you have any questions or need any further information, please contact me at this office

Very truly yours,

Andrew J. Haas, P. E.
Chief Engineer
ahaas@azwater.com

afh
Enclosures

PRELIMINARY ☐	**ARIZONA WATER COMPANY** COST ESTIMATE WORKSHEET		DATE PREPARED: 7/15/2015
ACTUAL ☒	PREPARED BY: James Wilson	SYSTEM: Stanfield	SHEET 1 OF 1
	PROJECT LOCATION: SW 1/4 Sec. 20. T. 6 S., R. 4 E.		DRAWING NO: PV-0088

PROJECT DESCRIPTION:

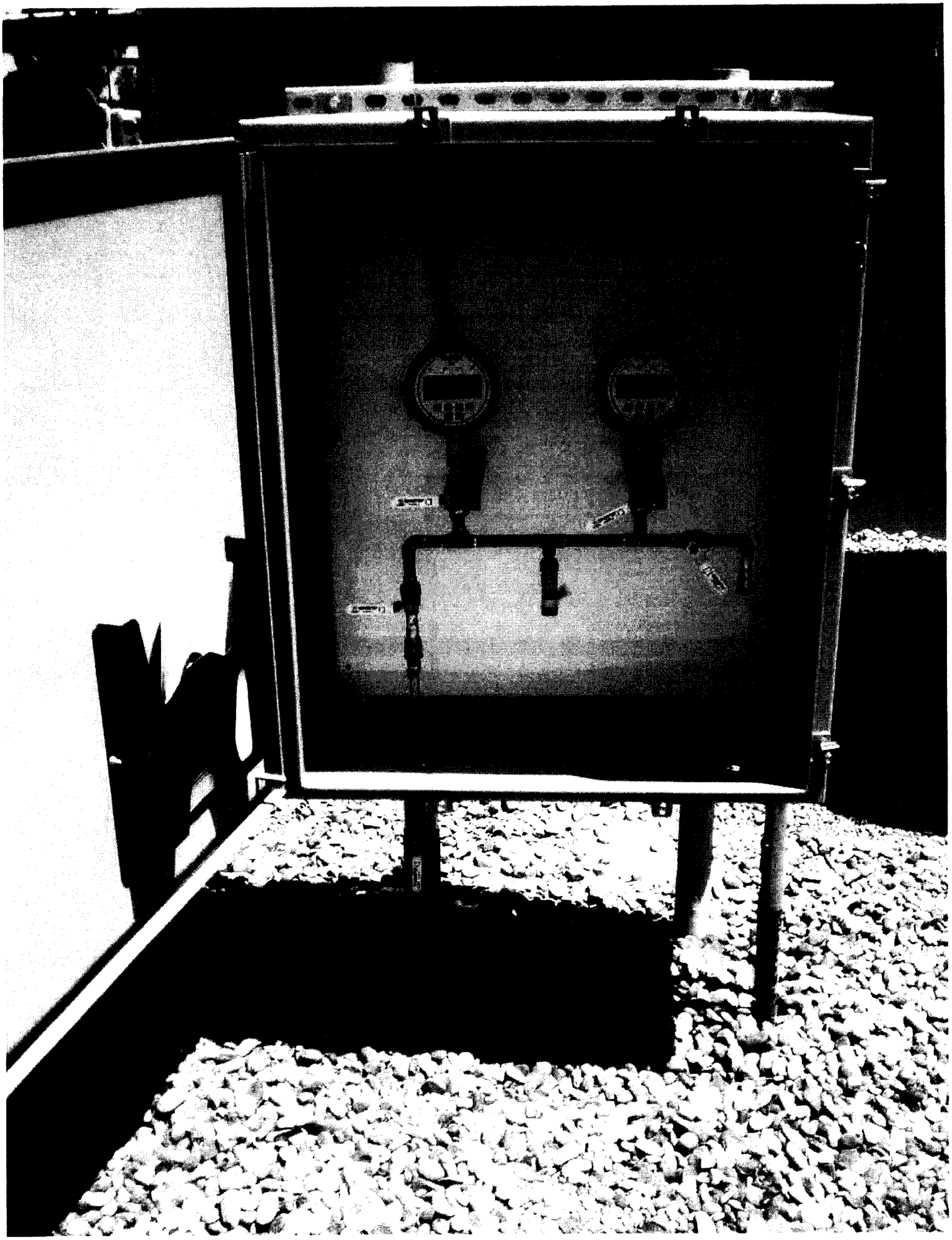
Install 30 HP, 475 GPM booster pump for redundancy at the Stanfield Booster Pump Station in Stanfiled, AZ.

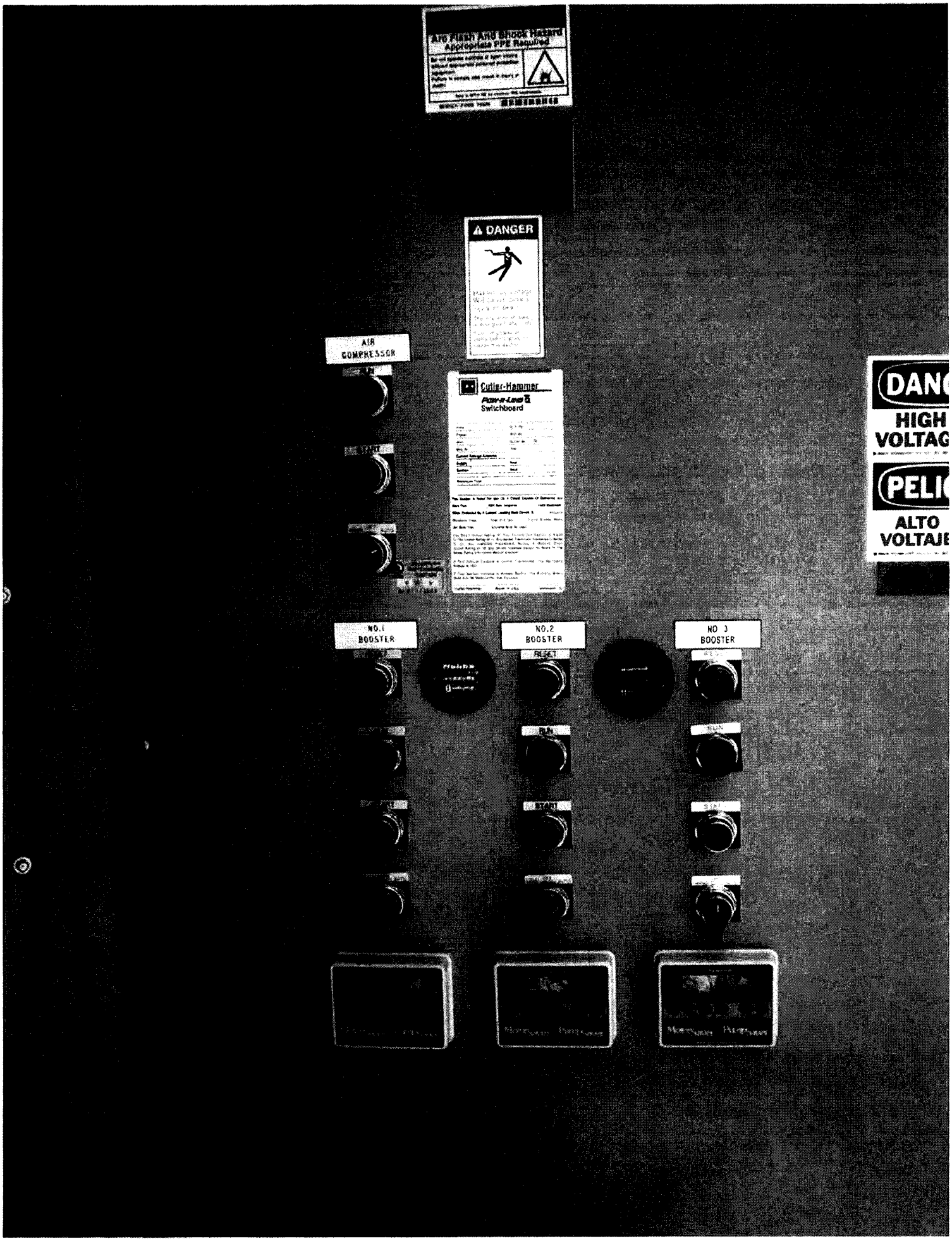
	DESCRIPTION	PLANT PROP ACCT	QUANTITY	UNIT COST	TOTAL
CONTRACT WORK	Provide and install a NEMA size 3 starter complete with all related controls, conduit and wire	325	1	8,600.00	8,600
	Replace existing mercoid switch with a Mercoid EDQQA-N1E1-05T0 complete with all conduit and wire	325	2	1,000.00	2,000
	Contracting Tax	325	1	760.00	760
	Performance and Payment Bond	325	1	114.00	114
	CO-1 Pressure Switch Cabinet	325	1	2,000.00	2,000
	Replace 50 KVA transformers with 112.5 KVA transformers	325	1	7,600.00	7,600
	SERVICE CONNECTIONS: DOUBLE-LONG	345			
	SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	TAXABLE SERVICE CONNECTIONS COMPLETE: SINGLE-LONG	345			
	TAXABLE SERVICE CONNECTIONS COMPLETE: SINGLE-SHORT	345			
					$ 21,074
MATERIALS	Grundfos CR 90-2-1 A-G-A-E-HQQE PUMP	325	1	$ 7,392.15	$ 7,392
	Misc materials	325	1	2,500.00	2,500
	SERVICE CONNECTIONS: DOUBLE-LONG	345			
	SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	TAXABLE SERVICE CONNECTIONS: SINGLE-LONG	345			
	TAXABLE SERVICE CONNECTIONS: SINGLE-SHORT	345			
	TAXABLE METERS	346			
	METERS	346			
TOTAL MATERIALS					$ 9,892
LABOR	Project Management and Engineering	325	40	$ 55.00	$ 2,200
	TESTING FEE				
	PERMIT FEE				
	SURVEY FEE				
	FIELD INSPECTION	325	40	55.00	2,200
	INSTALL SERVICE CONNECTIONS: DOUBLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	INSTALL TAXABLE SERVICE CONNECTIONS: SINGLE-LONG	345			
	INSTALL TAXABLE SERVICE CONNECTIONS: SINGLE-SHORT	345			
TOTAL LABOR					$ 4,400
SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR					$ 35,366
OVERHEAD					
TOTAL	REFUNDABLE PORTION ☐	NON-REFUNDABLE PORTION ☐		COST ESTIMATE	$ 35,366

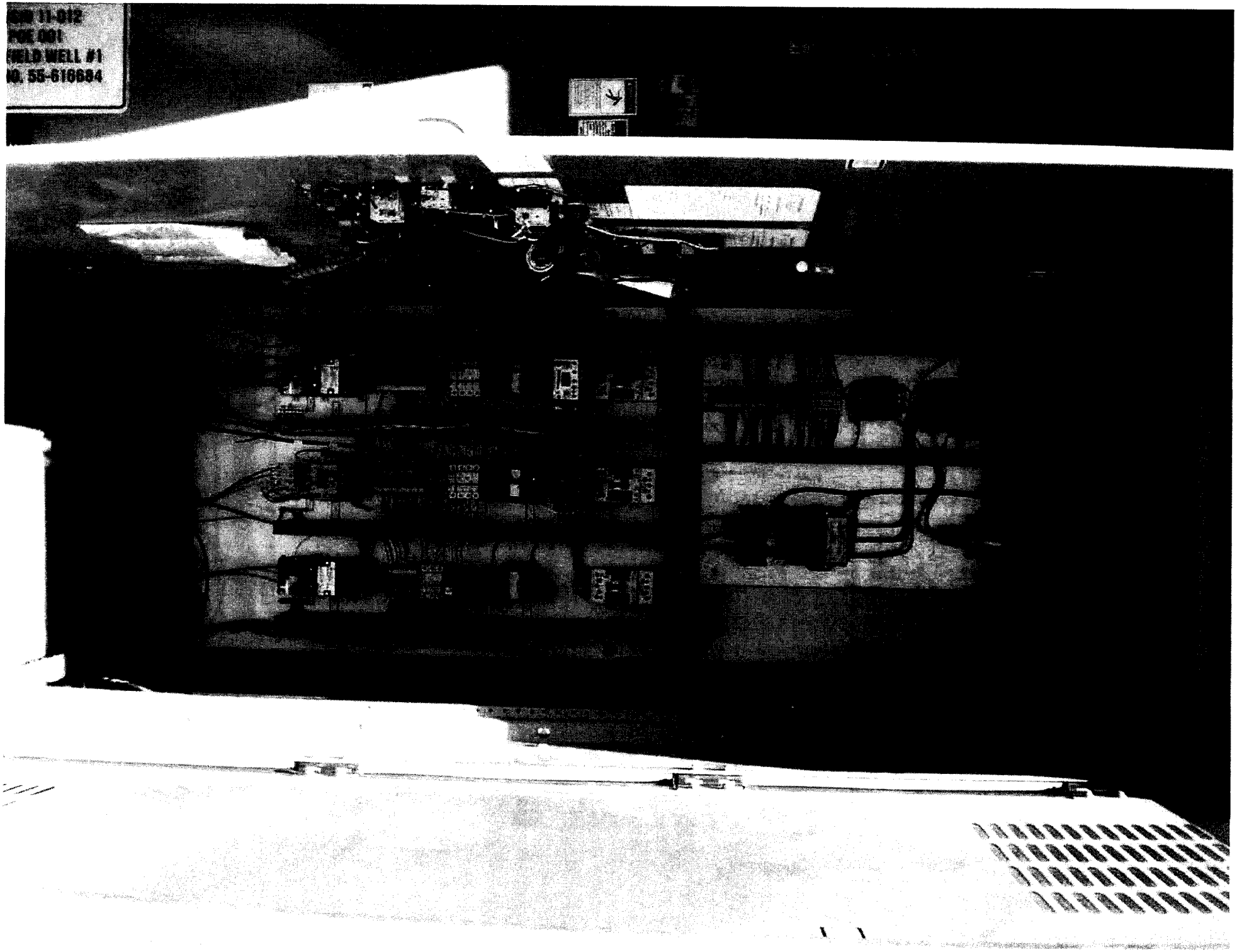
Registered Professional Engineer (Civil) CERTIFICATE NO. 41046 JAMES T. WILSON Date Signed 7/15/15 ARIZONA U.S.A.

EXPIRES 6/30/16

SuperE
2




Appropriate PPE Required
DANGER
AIR COMPRESSOR
Cutler-Hammer
Switchboard
HIGH
ALTO
NO.1 BOOSTER
NO.2 BOOSTER
NO 3 BOOSTER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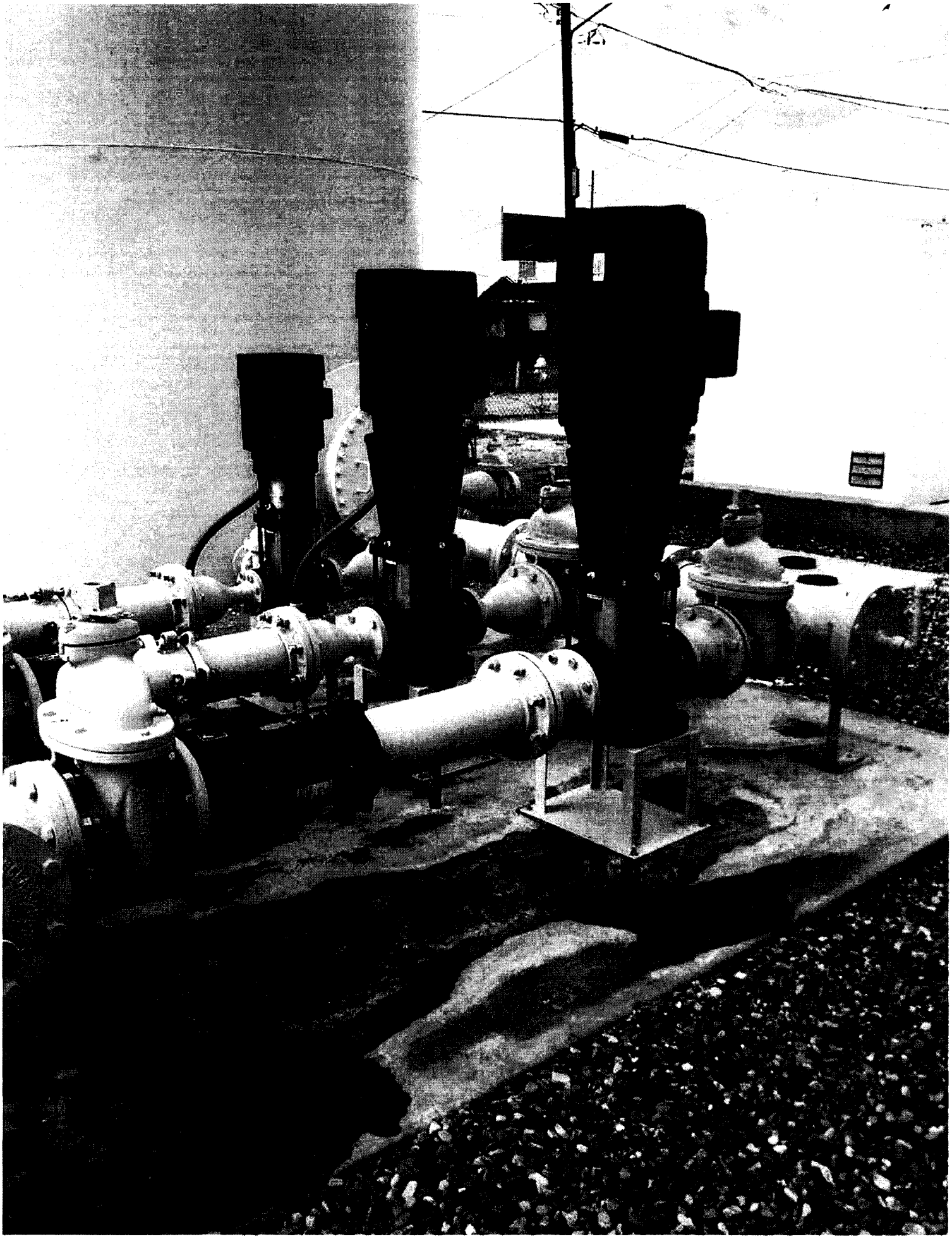
001
WELL #1
55-616684



ARIZONA WATER COMPANY

CONSTRUCTION PLACED IN SERVICE NOTICE

WORK AUTHORIZATION NO.: 1-5306

DIVISION: PV/CG

DATE PLACED IN SERVICE: 6 | 30 | 2015

CONTRACT NO:

FOR PURPOSES OF *MODIFIED ACCELERATED COST RECOVERY SYSTEM*, AN ASSET IS "PLACED IN SERVICE" WHEN IT IS IN A CONDITION OR STATE OF READINESS AND AVAILABILITY FOR A SPECIFICALLY ASSIGNED FUNCTION, WHETHER IT BE FOR USE IN A TRADE OR BUSINESS, OR FOR THE PRODUCTION OF INCOME.

I CERTIFY THAT THE ASSET(S) CONSTRUCTED PURSUANT TO THE PROVISIONS OF THE ABOVE-REFERENCED WORK AUTHORIZATION ARE READY FOR SERVICE AS OF THE DATE SHOWN ABOVE.

Division Manager or Operations Superintendent
(signature)

7-24-2015
Date

SUBMIT ORIGINAL TO ACCOUNTING DEPARTMENT

A-1-3-1
FKS 11/24/11

Western Group Rate Case

Exhibit FKS-1

5032 White Tank SCADA

ARIZONA WATER COMPANY
WORK AUTHORIZATION

W.A. NUMBER: 1-5032
P.E. NUMBER:
BUDGET ITEM NO.: 1-5032
SHEET NO.: 1 of 2

SYSTEM:	WHITE TANK	RETENTION REQUIRED:	☑ YES ☐ NO
DIVISION:	CASA GRANDE	WORK TO START BY:	UPON AUTHORIZATION
RESPONSIBLE PERSON:	MARIO MENDEZ	WORK TO BE FINISHED BY:	WITHIN 120 DAYS
TAX CODE:	2550		

DESCRIPTION OF WORK:

Construct Phase 1 of 4 of the White Tank Supervisory Control and Data Acquisition "SCADA" system. Construct and make operational SCADA monitoring and control equipment at Monte Vista Arsenic Removal Facility (ARF). Construct SCADA master computer, radio and antenna at Well No. 7.

FACTORS JUSTIFYING WORK:

APPROVED 2015 BUDGET ITEM ($165,000)
The White Tank water system consists of five wells that require arsenic removal and one that requires nitrate removal. The Monte Vista ARF removes arsenic from two onsite wells, Well Nos. 2 and 4 and one offsite well, Well No. 8. A Nitrate Removal Facility at Well No. 7 reduces the nitrate concentration to 18 mg/L before the water is pumped to Monte Vista for blending with effluent from Well Nos. 2, 4, and 8. The Monte Vista blend plan requires nitrate levels below 9 mg/L before water enters the distribution system. An online nitrate analyzer disables Well No 7 before the blended nitrate levels reach 9 mg/L. The Blue Horizon site has an arsenic removal facility, cooling towers, tank, and booster pump station. Well Nos. 9 and 10 are high in temperature and arsenic and are pumped to the Blue Horizon site for cooling and treatment. The Blue Horizons site has an existing localized SCADA system. The Company will integrate the Blue Horizons SCADA programming into the Company's new SCADA system. The White Tank water system has three employees and is managed from the Casa Grande office, which is approximately 90 minutes away. Currently, the water system has limited basic fault alarms and local controls. Operators will use the SCADA system everyday to trend tank levels, monitor well and blend plan status, and alarms when events occur which are outside the set points of the system. Constructing this phase will allow the management staff to monitor and control remotely.

COST ESTIMATE		AUTHORIZATION	DATE
COST OF WORK:		PREPARED BY: Mario Mendez MLM 2/20/15	2/10/15
MATERIAL	6,300		
LABOR	8,800	REVIEWED FOR ESMT/ROW VERIFICATION: Charles Briggs CB 02-20-2015	02-11-2015
CONTRACT PORTION	169,400		
OVERHEAD	22,100	REVIEWED BY: James Wilson JW 2/20/15	2/11/15
TOTAL AUTHORIZED EXPENDITURES CHARGEABLE TO THIS W.A.	$ 206,600		
FUNDS RECEIVED:		APPROVED BY ENGINEERING: Fredrick Schneider 2-20-15	2-17-2015
CONTRIBUTIONS RECEIVED	0		
REFUNDABLE ADVANCES RECEIVED	0	APPROVED BY FINANCE: Joseph Harris	2/18/15
TOTAL CONTRIBUTIONS/ADVANCES	0		
NET COMPANY CASH REQUIRED	$ 206,600	AUTHORIZED BY PRESIDENT: William Garfield	2-19-15

COMMENTS:

Transfer $41,600 from 1-5308: Construct 12-inch main along Camelback Road to fund the overages of this project.

CONSTRUCTION RELEASE:

RELEASED TO CONSTRUCTION
Authorized by FRED SCHNEIDER
Date 2/20/2015

2015 RE-RELEASE

AFH

AFH

ARIZONA WATER COMPANY

WORK AUTHORIZATION - DETAIL SHEET

W.A. NUMBER: 1-5032
P.E. NUMBER:
BUDGET ITEM NO.: 1-5032
SHEET NO.: 2 of 2

RETIREMENT PROPERTY UNITS	PLANT PROPERTY ACCOUNT	UNIT DESCRIPTION	QUANTITY	YEAR INSTALLED AND W.A. NUMBER

PROJECT DESCRIPTION:

Construct Phase 1 of 4 of the White Tank Supervisory Control and Data Acquisition "SCADA" system. Construct and make operational SCADA monitoring and control equipment at Monte Vista Arsenic Removal Facility (ARF). Construct SCADA master computer, radio and antenna at Well No. 7.

	DESCRIPTION	PLANT PROP ACCT	QUANTITY	UNIT COST	TOTAL
CONTRACT WORK	**Monte Vista ARF**				
	Programming and control strategy	397.2	1	25,000.00	25,000
	RTU equipment and panels	397.2	1	4,000.00	4,000
	Instrumentation equipment	397.2	1	35,000.00	35,000
	Factory acceptance test	397.2	1	4,000.00	4,000
	RTU panels, instrumentation, wiring install	397.2	1	49,000.00	49,000
	Startup and loop check	397.2	1	10,000.00	10,000
	Training	397.2	1	2,000.00	2,000
	O & M Manuals and As-Built Drawings	397.2	1	6,000.00	6,000
	Well No. 7				
	Provide and Install Radio, Antenna and UPS	397.2	1	24,400.00	24,400
	Construction Contingency	397.2	1	10,000.00	10,000
	SERVICE CONNECTIONS COMPLETE: DOUBLE-LONG	345			
	SERVICE CONNECTIONS COMPLETE: DOUBLE-SHORT	345			
	SERVICE CONNECTIONS COMPLETE: SINGLE-LONG	345			
	SERVICE CONNECTIONS COMPLETE: SINGLE-SHORT	345			
TOTAL CONTRACT WORK					$ 169,400
MATERIALS	Master Computer	397.2	1	$ 6,000.00	$ 6,000
	Ethernet Switch	397.2	1	300.00	300
	SERVICE CONNECTIONS: SINGLE-SHORT	345			
	METERS	346			
TOTAL MATERIALS					$ 6,300
LABOR	Engineering and Project Management	397.2	100	$ 55.00	$ 5,500
	TESTING FEE				
	PERMIT FEE				
	SURVEY FEE				
	FIELD INSPECTION	397.2	60	55.00	3,300
	INSTALL SERVICE CONNECTIONS: DOUBLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-SHORT	345			
TOTAL LABOR					$ 8,800
SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR					$ 184,500
OVERHEAD					22,100
TOTAL	REFUNDABLE PORTION ☐	NON-REFUNDABLE PORTION ☐		**COST ESTIMATE**	$ 206,600

AFH

ARIZONA WATER COMPANY
WORK AUTHORIZATION

W.A. NUMBER: 1-5032
P.E. NUMBER:
BUDGET ITEM NO.: B-1
SHEET NO.: 1 of 2

SYSTEM:	WHITE TANK	RETENTION REQUIRED:	☑ YES ☐ NO
DIVISION:	CASA GRANDE	WORK TO START BY:	UPON AUTHORIZATION
RESPONSIBLE PERSON:	JAMES WILSON	WORK TO BE FINISHED BY:	WITHIN 180 DAYS
TAX CODE:	2550		

DESCRIPTION OF WORK:

Design Supervisory Control and Data Acquisition "SCADA" system at Beautiful Arizona Estates booster station and storage tank site, Well No. 8, Well No. 7 Nitrate Removal Facility, and the Monte Vista Arsenic Removal Facility.

FACTORS JUSTIFYING WORK:

APPROVED 2014 BUDGET ITEM ($250,000)

The White Tank water system consists of five wells that require arsenic removal and one that requires nitrate removal. The Monte Vista ARF removes arsenic from two onsite wells, Well Nos. 2 and 4 and one remote well, Well No. 8. A Nitrate Removal Facility at Well No. 7 reduces the nitrate level to 18 mg/L before the water is pumped to Monte Vista for blending. The Monte Vista blend plan requires nitrate levels below 9 mg/L before water enters the distribution system. An online nitrate analyzer disables Well No 7 before the blended nitrate levels reach 9 mg/L. The Blue Horizon site has an arsenic removal facility, cooling towers, tank, and booster pump station. Well Nos. 9 and 10 are high in temperature and arsenic and are sent to the Blue Horizon site for treatment. The Blue Horizons site has an existing localized SCADA system that was constructed by the developer as part of the site design. The Company will integrate the Blue Horizons SCADA programming into the Company's new SCADA system. The White Tank water system has three employees and is managed from the Pinal Valley office, which is approximately 90 minutes away. Currently, the water system has limited basic fault alarms and local controls. Operators will use the SCADA system everyday to trend tank levels, monitor well and blend plan status, and alarms when events occur which are outside the set points of the system. The Pinal Valley Master SCADA computer allows the management staff to monitor and control remotely. The manager and superintendents use SCADA to assist the operators in trouble shooting the water distribution system. Preliminary design is complete.

COST ESTIMATE		AUTHORIZATION	DATE
COST OF WORK:		PREPARED BY: James Wilson JW 2/12/14	2/21/14
MATERIAL	0		
LABOR	4,100	REVIEWED FOR ESMT/ROW VERIFICATION: Charles Briggs CB 03-12-2014	02-24-2014
CONTRACT PORTION	48,411		
OVERHEAD	5,776	REVIEWED BY: Mario Mendez MM 3/12/14	2-25-14
TOTAL AUTHORIZED EXPENDITURES CHARGEABLE TO THIS W.A.	$ 58,287		
FUNDS RECEIVED:		APPROVED BY ENGINEERING: Fredrick Schneider FS 3-13-14	2-28-14
CONTRIBUTIONS RECEIVED	0		
REFUNDABLE ADVANCES RECEIVED	0	APPROVED BY FINANCE: Joseph Harris	2/28/14
TOTAL CONTRIBUTIONS/ADVANCES	0		
NET COMPANY CASH REQUIRED	$ 58,287	AUTHORIZED BY PRESIDENT: William M Garfield	2-28-2014

COMMENTS:

250,000
-230,000
20,000 + 38,287 = 58,287 ✓ on

$230,000 was transferred to WA 1-4918 (Perryville TI). Transfer additional required funds ($38,287) from WA 1-4913 Henness ARF Expansion.

CONSTRUCTION RELEASE:

RELEASED TO CONSTRUCTION

Authorized by FRED SCHNEIDER
Date 3/4/2014

ARIZONA WATER COMPANY

WORK AUTHORIZATION - DETAIL SHEET

W.A. NUMBER: 1-5032
P.E. NUMBER:
BUDGET ITEM NO.: B-1
SHEET NO.: 2 of 2

RETIREMENT PROPERTY UNITS	PLANT PROPERTY ACCOUNT	UNIT DESCRIPTION	QUANTITY	YEAR INSTALLED AND W.A. NUMBER

PROJECT DESCRIPTION:

Design and construct Supervisory Control and Data Acquisition "SCADA" system at Beautiful Arizona Estates booster station and storage tank site, Well No. 8, Well No. 7 Nitrate Removal Facility, and the Monte Vista Arsenic Removal Facility.

	DESCRIPTION	PLANT PROP ACCT	QUANTITY	UNIT COST	TOTAL
CONTRACT WORK	Revised design drawings	397	1	$ 36,100.00	$ 36,100
	Field radio path study	397	1	8,000.00	8,000
	Performance and Payment Bond	397	1	4,311.00	4,311
	SERVICE CONNECTIONS COMPLETE: DOUBLE-LONG	345			
	SERVICE CONNECTIONS COMPLETE: DOUBLE-SHORT	345			
	SERVICE CONNECTIONS COMPLETE: SINGLE-LONG	345			
	SERVICE CONNECTIONS COMPLETE: SINGLE-SHORT	345			
TOTAL CONTRACT WORK					$ 48,411
MATERIALS					
	SERVICE CONNECTIONS: SINGLE-SHORT	345			
	METERS	346			
TOTAL MATERIALS					$ -
LABOR	Project Management and Engineering Design	397	40	$ 75.00	$ 3,000
	TESTING FEE				
	PERMIT FEE				
	SURVEY FEE				
	FIELD INSPECTION	343	20	55.00	1,100
	INSTALL SERVICE CONNECTIONS: DOUBLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-SHORT	345			
TOTAL LABOR					$ 4,100
SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR					$ 52,511
OVERHEAD					5,776
TOTAL	REFUNDABLE PORTION ☐	NON-REFUNDABLE PORTION ☐		COST ESTIMATE	$ 58,287

AFH

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, AZ 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6874 • TOLL FREE: (800) 533-6023 • www.azwater.com

March 4, 2014

Mr. Joseph Miller
Ludvik Electric
1020 E. University Drive
Phoenix, AZ 85034

Re: 1-5032 White Tank SCADA

PROJECT: White Tank SCADA	
SYSTEM: White Tank	
CONTRACT NO.:	
P.E. NO.:	W.A. NO.: 1-5032

Dear Mr. Miller:

Enclosed is your copy of the Proposal/Contract for the above-referenced project, which has been accepted by Arizona Water Company (the "Company"). The project shall be constructed in accordance with the Company's *General Conditions of Contract, the Specifications and the Drawings* which were included with the Company's previously provided Proposal/Contract, copies of which are being provided again and attached herewith.

Also enclosed are two copies of the Commencement Notice for the above-referenced project. Please sign one of the copies and return it to my attention retaining the other for your records.

As provided in paragraph 4 of the Company's Proposal/Contract executed by the Company on March 13, 2014, Ludvik Electric acknowledged that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work. In addition, as provided in paragraph 44 of the Company's General Conditions of Contract, the 100% Performance and Payment Bonds must be provided within ten (10) calendar days of the date of the Commencement Notice. Failure to provide an acceptable 100% Performance and Payment Bond does not limit the Company's ability to

terminate the Proposal/Contract or seek restitution for damages that the Company may have or will incur.

Prior to the start of construction, please call Ray Murrieta, Division Manager at 520-836-8785 to schedule a pre-construction meeting. In addition, please provide the required Performance and Payment Bonds to the Company promptly so that the contracted work can be completed within the contract's timeline.

If you have any questions, please call me at this office.

Very truly yours,

James T. Wilson, P. E.
Senior Engineer
engineering@azwater.com

afh
Enclosure

ARIZONA WATER COMPANY

White Tank
1549 N. Perryville Road
Goodyear, AZ 85326 PH: 623-853-9302

PROPOSAL/CONTRACT

CONTRACTOR: LUDVIK ELECTRIC	SYSTEM: WHITE TANK
ADDRESS: 1020 E. UNIVERSITY DRIVE	W.A. No(s): 1-5032
CITY ST ZIP: PHOENIX, AZ 85034	BID DUE DATE: November 12, 2013

CONTRACTOR SUBMITS this PROPOSAL/CONTRACT to ARIZONA WATER COMPANY, an Arizona corporation (the "Company"), to perform the work and complete the project described on Page 2 (the "Project"), as an independent prime contractor.

1. Contractor certifies that it has a complete copy of, and has read, understands and accepts, the Company's General Conditions of Contract, and the Company's Construction Specifications and Standard Specification Drawings, (the "Specifications"), all of which are attached hereto. Contractor has examined the specific plans and related construction drawings for the Project (the "Drawings"), copies of which are also attached hereto. The General Conditions of Contract, Specifications and Drawings are incorporated into this Proposal/Contract. Contractor affirms that all work and materials to be furnished or purchased for the Project will be in strict conformance with the General Conditions of Contract, Specifications and Drawings.
2. Contractor represents and warrants that it has satisfied and complied with the provisions of Section 6, Contractor Understands Work and Working Conditions, of the General Conditions of Contract prior to submitting this Proposal/Contract.
3. Contractor represents that this Proposal/Contract is fair and honest in all respects, is submitted in good faith and is not submitted in collusion with any other company, entity or person.
4. Contractor acknowledges that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work.
5. Prior to the commencement of work, Contractor will submit to the Company a list of all materials to be used in the Project. The materials list will include the manufacturer, part number, price and quantity included in this Proposal/Contract.
6. Contractor will furnish all labor, tools, equipment and materials required to complete the Project according to the General Conditions of Contract, Specifications and Drawings. No materials purchased by Contractor to be incorporated into the Project are subject to tax at the time of purchase and Contractor will not charge the Company for any such tax. Contractor will pay the applicable transaction privilege tax (the "Contracting Tax") on the Project after Contractor receives payment of the final Project invoice from the Company. The cost of materials incorporated into the Project which are exempt by Arizona Revised State Statues ("A.R.S.") from the Contracting Tax, for example, pipes or valves having a diameter of four (4) inches or larger, including equipment, fittings and any other related part that is used in operating the pipes or valves (A.R.S. §42-5061 B.6.), will not be included in the total cost of the labor and materials upon which the Contracting Tax is computed. Contractor retains full liability and obligation to pay the Contracting Tax and will defend and indemnify the Company against any demand or obligation to pay the Contracting Tax.
7. Contractor will maintain detailed accounting records of all materials purchased and incorporated into the Project. Such records will include all supporting original vendor invoices for all materials purchased. Following completion of the Project, Contractor will submit an itemized accounting to the Company which will include all supporting original vendor invoices and satisfactory evidence of payment thereof. The Company will not pay Contractor for materials not actually incorporated into the Project, and the disposition of such materials will remain Contractor's responsibility.
8. The Estimated Total Cost of the Project, shown on Page 2, is based on estimated labor and material quantities to be furnished. It includes an estimate of the Contracting Tax and the cost of the required Performance and Payment Bonds. Contractor will not cancel, modify or withdraw this Proposal/Contract during a ninety-day (90) period commencing on the Bid Due Date. The Company may accept this Proposal/Contract by signing and mailing, or otherwise delivering, a copy hereof to Contractor during such ninety-day (90) period. If the Company does not accept this Proposal/Contract during such ninety-day (90) period, Contractor may cancel this Proposal/Contract by giving written notice of cancellation to the Company.
9. Prior to the commencement of work, Contractor will provide the Company with a detailed construction schedule, in either Gantt or CPM form, identifying all tasks to be performed from the date of the written Commencement Notice through completion of the Project, including testing, training of Company Personnel and final Project invoicing. Contractor will provide the Company with a copy of such construction schedule documenting the progress of work on the Project at least monthly.
10. Contractor will not commence work on the Project until the Company gives Contractor a written Commencement Notice. Contractor will complete the Project within 180 calendar days after the Commencement Notice is issued.
11. Following the Company's written notice of satisfactory completion of the Project, and upon receipt of the final Project invoice from Contractor, the Company shall pay Contractor the actual total cost of the Project, which will be calculated as shown on Page 2, except that actual labor and material quantities installed/constructed will be substituted for the estimated labor and materials quantities and the Contracting Tax will be recalculated based on such actual labor and materials quantities.
12. The amount of applicable liquidated damages for Contractor's failure to deliver or perform within the time limit shown in Paragraph 10 may be deducted from the Company's payment of the final Project invoice. This provision shall not limit the Company's ability to terminate this Proposal/Contract for Contractor's unsatisfactory performance or failure to perform as provided in the General Conditions of Contract, Specifications or Drawings, or in this Proposal/Contract.

SPECIAL CONDITIONS:

There will be six progress payments and one final payment based on project deliverables described in attached Special Conditions
See attached Special Conditions dated October 29, 2013 and attached drawings E001 through E013, Beautiful Arizona Estates, EC1 through EC15, Well No. 7, EC1 through EC15, Monte Vista, EC1 through EC15, Well No. 8, EC1 through EC15
See attached Ludvik Electric Clarifications dated November 12, 2013.

CONTRACTOR	PROPOSAL/CONTRACT ACCEPTED:
LUDVIK ELECTRIC	*ARIZONA WATER COMPANY*
By: Joseph F. Miller	By: Fredrick K. Schneider
Print Name: JOSEPH F. MILLER	Print Name: Fredrick K. Schneider, PE
Title: V.P. OF PHOENIX OPERATIONS	Title: Vice President - Engineering
Date: NOVEMBER 12, 2013	Date: 3-13-2014

AFH

AFK

ARIZONA WATER COMPANY

White Tank
1549 N. Perryville Road
Goodyear, AZ 85326 PH: 623-853-9302

PROPOSAL/CONTRACT

CONTRACTOR: LUDVIK ELECTRIC	SYSTEM: WHITE TANK
AZ CONTRACTOR LICENSE NO: 170920 / 088575 CLASSIFICATION: A / L-11	W.A. No(s): 1-5032
ADDRESS: 1020 E. UNIVERSITY DRIVE	BID DUE DATE: November 12, 2013
CITY ST ZIP PHOENIX, AZ 85034	BID BOND REQUIRED ☑ Yes ☐ No

DESCRIPTION OF PROJECT: White Tank SCADA Project - Design, update drawings, provide control strategy, programming and SCADA equipment to control operation of Beautiful Arizona Tank, Monte Vista Plant Site, Golightly Plant Site and Well No. 8.

1-2. MATERIALS EXEMPT FROM CONTRACTING TAX (per Paragraph 6)	QUANTITY	UNIT PRICE LABOR	UNIT PRICE MATERIALS		TOTAL COST LABOR		TOTAL COST MATERIALS
				1		2	
3. Total Labor to Install Exempt Materials (add the amounts in column 1)				3			
4. Total Exempt Materials (add the amounts in column 2)						4	

5-6. NON-EXEMPT MATERIALS	QUANTITY	LABOR	MATERIALS		LABOR		MATERIALS
Revised design drawings	1 LOT				$36,100		
Programming and control strategy	1 LOT				$63,700		
Field path radio study	1 LOT				$ 8,000		
RTU equipment and panels	1 LOT						$132,000
Instrumentation equipment	1 LOT						$ 16,100
Factory acceptance test	1 LOT				$ 4,000		
RTU panels, instrumentation, wiring install	1 LOT			5	$45,000	6	$53,000
Startup and loop check	1 LOT				$18,300		
Training	1 LOT				$ 5,900		
O & M Manuals and As-Built Drawings	1 LOT				$17,200		
7. Total Labor to Install Non-Exempt Materials (add the amounts in column 5)				7	$198,200		
8. Total Non-Exempt Materials (add the amounts in column 6)						8	$201,100
9. Subtotal A (add lines 3, 7 and 8)						9	$399,300
10. Contracting Tax Base (multiply the amount on line 9 by 0.65)				10	$259,545		
11. Applicable Contracting Tax Rate				11	9.3%		
12. Contracting Tax (multiply the amount on line 10 by line 11)						12	$24,138
13. Subtotal B (add lines 4, 9 and 12)						13	$423,438
14. 100% Performance and Payment Bonds Cost						14	$ 4,311
15. Estimated Total Cost (add lines 13 and 14)						15	$427,749

NOTE: The Estimated Total Cost includes all labor and materials for backfill, pavement replacement, chip seal, and traffic control necessary for the Project.

ARIZONA WATER COMPANY

COMMENCEMENT NOTICE

CONTRACTOR:

Mr. Joseph Miller
Ludvik Electric
1020 E. University Drive
Phoenix, AZ 85034

DATE: 3/13/14
DIVISION: CASA GRANDE
SYSTEM: WHITE TANK
W.A.: 1-5032

THIS IS YOUR NOTICE TO PROCEED WITH THE FOLLOWING PROJECT(S):

DESCRIPTION OF WORK:

White Tank SCADA Project - Provide Revised Design Drawings and perform Field Path Radio Study. No other work is authorized by this Commencement Notice.

PERFORMANCE AND PAYMENT BONDS REQUIRED: [X] Yes [ ] No

TOTAL DAYS ALLOWED: 190

COMPLETION DATE: 9/19/14

Prior to the start of construction, please call Ray Murrieta, Division Manager at 520-836-8785 to schedule a pre-construction meeting.

ARIZONA WATER COMPANY
Company

LUDVICK ELECTRIC
Contractor *(type name)*

By Andrew J. Hood
Title ~~Vice President - Engineering~~ Chief Engineer

By
Title

AFH

W:\PROJECTS\2013\WT\1-5032 INSTALL SCADA AT BEAUTIFUL ARIZONA ESTATES WELL NOS 7 &\AGREEMENTS\CONTRACTS\E-3-18-2 LUDVIK COMMENCEMENT NOTICE 1-5032 WT SCADA.DOCX 1/15/09 | FKS:afh | E-3-18-2

November 12, 2013

Reference: Arizona Water Co. – White Tanks SCADA Project 1-5032

Subject: **BID CLARIFICATIONS**

The following are Clarifications which we believe match the intent of the Bid:

1. We acknowledge Addendum 1.
2. Conduit is included as GRS exposed, tape wrapped GRS stub ups and PVC40 direct buried with native backfill. Concrete encasement per Detail 105 on Drawing E013 is included under vehicle areas.
3. Enclosures are included as NEMA-12, NEMA-3R or NEMA -4 as applicable.
4. Supports, anchors and hardware are included as galvanized.
5. The Flow Switches on the Drawings were advised to be deleted at the prebid meeting and are not listed in the Addendum 1 Scope of Work, so we have not included any of the work associated with them.
6. The intrusion switch signals are deleted in the Addendum 1 Scope of Work, so we have not included any of the work associated with them.
7. The project duration stated on the bid form is approximate and may vary depending on the time needed by Delta Systems for Design and Programming. We will be flexible to work with Delta and AZ Water for a timely completion.
8. NETA Testing does not appear applicable to this project, is not called for in the scope of work and is not included. Testing will be performed by Ludvik Electric and Vendors as applicable.
9. Power studies do not appear applicable to this project, are not called for in the scope of work and are not included.

We request that you contact the undersigned at 602-777-5000 for any questions.

Sincerely,
LUDVIK ELECTRIC CO.

Thomas E. Spackman
Chief Estimator

LUDVIK ELECTRIC

1020 E. University Drive, Phoenix, AZ 85034 • Telephone (602) 777-5000 • Fax (602) 258-0782
AZ Licenses: 088575 (L-11); 127121 (A-17)

ARIZONA WATER COMPANY

SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT: E-4-1

CONSTRUCTION SPECIFICATIONS: E-8-1

STANDARD SPECIFICATION DRAWINGS: E-9-1

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3/12/14

2007 EDITION WITH **2010** REVISIONS;
2012 GENERAL CONDITIONS OF CONTRACT

A copy of this entire Spec Book was sent out with Ludvik Electric Proposal package for 1-5032 WTSCADA on 3/13/14 @ 4

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, AZ 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6874 • TOLL FREE: (800) 533-6023 • www.azwater.com

October 30, 2013

Mr. Joseph Miller
Ludvik Electric
1020 E. University Drive
Phoenix, AZ 85034-6512

Re: Addendum No. 1 to Proposal/Contract for White Tank SCADA Project

Mr. Eslick:

This letter shall serve as Addendum No. 1 to Proposal/Contract for White Tank SCADA Project.

Request for Proposal

1. Bid due date change: "Proposals must be delivered to the Company's Phoenix office (address provided below) before 4:00 p.m., Mountain Standard Time, on November 12, 2012. Late proposals will not be accepted."

White Tank SCADA Special Conditions

1. Special Conditions, replace with revised Special Conditions and Appendix A, attached to this addendum.

This Addendum No. 1 shall become part of the Proposal/Contract for White Tank SCADA Project.

Bidders shall acknowledge receipt of all Addenda in their transmittal cover and proposal packages to Arizona Water Company.

Very truly yours,

Ed Radwanski, P. E.
Engineer
engineering@azwater.com

afh

ARIZONA WATER COMPANY

White Tank
1549 N. Perryville Road
Goodyear, AZ 85326 PH: 623-853-9302

PROPOSAL/CONTRACT

CONTRACTOR: LUDVIK ELECTRIC	SYSTEM: WHITE TANK
ADDRESS: 1020 E. UNIVERSITY DRIVE	W.A. No(s): 1-5032
CITY ST ZIP: PHOENIX, AZ 85034	BID DUE DATE: November 12, 2013

CONTRACTOR SUBMITS this PROPOSAL/CONTRACT to ARIZONA WATER COMPANY, an Arizona corporation (the "Company"), to perform the work and complete the project described on Page 2 (the "Project"), as an independent prime contractor.

1 Contractor certifies that it has a complete copy of, and has read, understands and accepts, the Company's General Conditions of Contract, and the Company's Construction Specifications and Standard Specification Drawings, (the "Specifications"), all of which are attached hereto. Contractor has examined the specific plans and related construction drawings for the Project (the "Drawings"), copies of which are also attached hereto. The General Conditions of Contract, Specifications and Drawings are incorporated into this Proposal/Contract. Contractor affirms that all work and materials to be furnished or purchased for the Project will be in strict conformance with the General Conditions of Contract, Specifications and Drawings.

2. Contractor represents and warrants that it has satisfied and complied with the provisions of Section 6, Contractor Understands Work and Working Conditions, of the General Conditions of Contract prior to submitting this Proposal/Contract.

3. Contractor represents that this Proposal/Contract is fair and honest in all respects, is submitted in good faith and is not submitted in collusion with any other company, entity or person.

4. Contractor acknowledges that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work.

5 Prior to the commencement of work, Contractor will submit to the Company a list of all materials to be used in the Project. The materials list will include the manufacturer, part number, price and quantity included in this Proposal/Contract.

6 Contractor will furnish all labor, tools, equipment and materials required to complete the Project according to the General Conditions of Contract, Specifications and Drawings. No materials purchased by Contractor to be incorporated into the Project are subject to tax at the time of purchase and Contractor will not charge the Company for any such tax. Contractor will pay the applicable transaction privilege tax (the "Contracting Tax") on the Project after Contractor receives payment of the final Project invoice from the Company. The cost of materials incorporated into the Project which are exempt by Arizona Revised State Statues ("A.R.S.") from the Contracting Tax, for example, pipes or valves having a diameter of four (4) inches or larger, including equipment, fittings and any other related part that is used in operating the pipes or valves (A.R.S. §42-5061 B.6.), will not be included in the total cost of the labor and materials upon which the Contracting Tax is computed. Contractor retains full liability and obligation to pay the Contracting Tax and will defend and indemnify the Company against any demand or obligation to pay the Contracting Tax.

7. Contractor will maintain detailed accounting records of all materials purchased and incorporated into the Project. Such records will include all supporting original vendor invoices for all materials purchased. Following completion of the Project, Contractor will submit an itemized accounting to the Company which will include all supporting original vendor invoices and satisfactory evidence of payment thereof. The Company will not pay Contractor for materials not actually incorporated into the Project, and the disposition of such materials will remain Contractor's responsibility.

8. The Estimated Total Cost of the Project, shown on Page 2, is based on estimated labor and material quantities to be furnished. It includes an estimate of the Contracting Tax and the cost of the required Performance and Payment Bonds. Contractor will not cancel, modify or withdraw this Proposal/Contract during a ninety-day (90) period commencing on the Bid Due Date. The Company may accept this Proposal/Contract by signing and mailing, or otherwise delivering, a copy hereof to Contractor during such ninety-day (90) period. If the Company does not accept this Proposal/Contract during such ninety-day (90) period, Contractor may cancel this Proposal/Contract by giving written notice of cancellation to the Company.

9. Prior to the commencement of work, Contractor will provide the Company with a detailed construction schedule, in either Gantt or CPM form, identifying all tasks to be performed from the date of the written Commencement Notice through completion of the Project, including testing, training of Company Personnel and final Project invoicing. Contractor will provide the Company with a copy of such construction schedule documenting the progress of work on the Project at least monthly.

10. Contractor will not commence work on the Project until the Company gives Contractor a written Commencement Notice. Contractor will complete the Project within _____ calendar days after the Commencement Notice is issued.

11. Following the Company's written notice of satisfactory completion of the Project, and upon receipt of the final Project invoice from Contractor, the Company shall pay Contractor the actual total cost of the Project, which will be calculated as shown on Page 2, except that actual labor and material quantities installed/constructed will be substituted for the estimated labor and materials quantities and the Contracting Tax will be recalculated based on such actual labor and materials quantities.

12. The amount of applicable liquidated damages for Contractor's failure to deliver or perform within the time limit shown in Paragraph 10 may be deducted from the Company's payment of the final Project invoice. This provision shall not limit the Company's ability to terminate this Proposal/Contract for Contractor's unsatisfactory performance or failure to perform as provided in the General Conditions of Contract, Specifications or Drawings, or in this Proposal/Contract.

SPECIAL CONDITIONS:

There will be six progress payments and one final payment based on project deliverables described in attached Special Conditions.
See attached Special Conditions dated October 29, 2013 and attached drawings E001 through E013, Beautiful Arizona Estates, EC1 through EC15, Well No. 7, EC1 through EC15, Monte Vista, EC1 through EC15, Well No. 8, EC1 through EC15

CONTRACTOR	PROPOSAL/CONTRACT ACCEPTED:
LUDVIK ELECTRIC	*ARIZONA WATER COMPANY*
By:	By:
Print Name:	Print Name: Fredrick K. Schneider, PE
Title:	Title: Vice President - Engineering
Date:	Date:

AFH

ARIZONA WATER COMPANY

White Tank
1549 N. Perryville Road
Goodyear, AZ 85326 PH: 623-853-9302

PROPOSAL/CONTRACT

CONTRACTOR: LUDVIK ELECTRIC		SYSTEM: WHITE TANK
AZ CONTRACTOR LICENSE NO:	CLASSIFICATION:	W.A. No(s): 1-5032
ADDRESS: 1020 E. UNIVERSITY DRIVE		BID DUE DATE: November 12, 2013
CITY ST ZIP PHOENIX, AZ 85034		BID BOND REQUIRED ☑ Yes ☐ No

DESCRIPTION OF PROJECT: White Tank SCADA Project - Design, update drawings, provide control strategy, programming and SCADA equipment to control operation of Beautiful Arizona Tank, Monte Vista Plant Site, Golightly Plant Site and Well No. 8.

1-2. MATERIALS EXEMPT FROM CONTRACTING TAX (per Paragraph 6)	QUANTITY	UNIT PRICE LABOR	UNIT PRICE MATERIALS		TOTAL COST LABOR		TOTAL COST MATERIALS
				1		2	
3. Total Labor to Install Exempt Materials (add the amounts in column 1)				3			
4. Total Exempt Materials (add the amounts in column 2)						4	

5-6. NON-EXEMPT MATERIALS	QUANTITY	LABOR	MATERIALS		LABOR		MATERIALS
Revised design drawings							
Programming and control strategy							
Field path radio study							
RTU equipment and panels							
Instrumentation equipment							
Factory acceptance test				5		6	
RTU panels, instrumentation, wiring install							
Startup and loop check							
Training							
O & M Manuals and As-Built Drawings							
7. Total Labor to Install Non-Exempt Materials (add the amounts in column 5)				7			
8. Total Non-Exempt Materials (add the amounts in column 6)						8	
9. Subtotal A (add lines 3, 7 and 8)						9	
10. Contracting Tax Base (multiply the amount on line 9 by 0.65)				10			
11. Applicable Contracting Tax Rate				11			
12. Contracting Tax (multiply the amount on line 10 by line 11)						12	
13. Subtotal B (add lines 4, 9 and 12)						13	
14. 100% Performance and Payment Bonds Cost						14	
15. Estimated Total Cost (add lines 13 and 14)						15	

NOTE: The Estimated Total Cost includes all labor and materials for backfill, pavement replacement, chip seal, and traffic control necessary for the Project.

ARIZONA WATER COMPANY

White Tank
1549 N. Perryville Road
Goodyear, AZ 85326 PH: 623-853-9302

PROPOSAL/CONTRACT

CONTRACTOR: LUDVIK ELECTRIC	SYSTEM: WHITE TANK
ADDRESS: 1020 E. UNIVERSITY DRIVE	W.A. No(s): 1-5032
CITY ST ZIP: PHOENIX, AZ 85034	BID DUE DATE: November 12, 2013

CONTRACTOR SUBMITS this PROPOSAL/CONTRACT to ARIZONA WATER COMPANY, an Arizona corporation (the "Company"), to perform the work and complete the project described on Page 2 (the "Project"), as an independent prime contractor.

1. Contractor certifies that it has a complete copy of, and has read, understands and accepts, the Company's General Conditions of Contract, and the Company's Construction Specifications and Standard Specification Drawings, (the "Specifications"), all of which are attached hereto. Contractor has examined the specific plans and related construction drawings for the Project (the "Drawings"), copies of which are also attached hereto. The General Conditions of Contract, Specifications and Drawings are incorporated into this Proposal/Contract. Contractor affirms that all work and materials to be furnished or purchased for the Project will be in strict conformance with the General Conditions of Contract, Specifications and Drawings.
2. Contractor represents and warrants that it has satisfied and complied with the provisions of Section 6, Contractor Understands Work and Working Conditions, of the General Conditions of Contract prior to submitting this Proposal/Contract.
3. Contractor represents that this Proposal/Contract is fair and honest in all respects, is submitted in good faith and is not submitted in collusion with any other company, entity or person.
4. Contractor acknowledges that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work.
5. Prior to the commencement of work, Contractor will submit to the Company a list of all materials to be used in the Project. The materials list will include the manufacturer, part number, price and quantity included in this Proposal/Contract.
6. Contractor will furnish all labor, tools, equipment and materials required to complete the Project according to the General Conditions of Contract, Specifications and Drawings. No materials purchased by Contractor to be incorporated into the Project are subject to tax at the time of purchase and Contractor will not charge the Company for any such tax. Contractor will pay the applicable transaction privilege tax (the "Contracting Tax") on the Project after Contractor receives payment of the final Project invoice from the Company. The cost of materials incorporated into the Project which are exempt by Arizona Revised State Statues ("A.R.S.") from the Contracting Tax, for example, pipes or valves having a diameter of four (4) inches or larger, including equipment, fittings and any other related part that is used in operating the pipes or valves (A.R.S. §42-5061 B.6.), will not be included in the total cost of the labor and materials upon which the Contracting Tax is computed. Contractor retains full liability and obligation to pay the Contracting Tax and will defend and indemnify the Company against any demand or obligation to pay the Contracting Tax.
7. Contractor will maintain detailed accounting records of all materials purchased and incorporated into the Project. Such records will include all supporting original vendor invoices for all materials purchased. Following completion of the Project, Contractor will submit an itemized accounting to the Company which will include all supporting original vendor invoices and satisfactory evidence of payment thereof. The Company will not pay Contractor for materials not actually incorporated into the Project, and the disposition of such materials will remain Contractor's responsibility.
8. The Estimated Total Cost of the Project, shown on Page 2, is based on estimated labor and material quantities to be furnished. It includes an estimate of the Contracting Tax and the cost of the required Performance and Payment Bonds. Contractor will not cancel, modify or withdraw this Proposal/Contract during a ninety-day (90) period commencing on the Bid Due Date. The Company may accept this Proposal/Contract by signing and mailing, or otherwise delivering, a copy hereof to Contractor during such ninety-day (90) period. If the Company does not accept this Proposal/Contract during such ninety-day (90) period, Contractor may cancel this Proposal/Contract by giving written notice of cancellation to the Company.
9. Prior to the commencement of work, Contractor will provide the Company with a detailed construction schedule, in either Gantt or CPM form, identifying all tasks to be performed from the date of the written Commencement Notice through completion of the Project, including testing, training of Company Personnel and final Project invoicing. Contractor will provide the Company with a copy of such construction schedule documenting the progress of work on the Project at least monthly.
10. Contractor will not commence work on the Project until the Company gives Contractor a written Commencement Notice. Contractor will complete the Project within _____ calendar days after the Commencement Notice is issued.
11. Following the Company's written notice of satisfactory completion of the Project, and upon receipt of the final Project invoice from Contractor, the Company shall pay Contractor the actual total cost of the Project, which will be calculated as shown on Page 2, except that actual labor and material quantities installed/constructed will be substituted for the estimated labor and materials quantities and the Contracting Tax will be recalculated based on such actual labor and materials quantities.
12. The amount of applicable liquidated damages for Contractor's failure to deliver or perform within the time limit shown in Paragraph 10 may be deducted from the Company's payment of the final Project invoice. This provision shall not limit the Company's ability to terminate this Proposal/Contract for Contractor's unsatisfactory performance or failure to perform as provided in the General Conditions of Contract, Specifications or Drawings, or in this Proposal/Contract.

SPECIAL CONDITIONS:

There will be six progress payments and one final payment based on project deliverables described in attached Special Conditions.
See attached Special Conditions dated October 29, 2013 and attached drawings E001 through E013, Beautiful Arizona Estates, EC1 through EC15, Well No. 7, EC1 through EC15, Monte Vista, EC1 through EC15, Well No. 8, EC1 through EC15

CONTRACTOR	PROPOSAL/CONTRACT ACCEPTED:
LUDVIK ELECTRIC	*ARIZONA WATER COMPANY*
By:	By:
Print Name:	Print Name: Fredrick K. Schneider, PE
Title:	Title: Vice President - Engineering
Date:	Date:

AFH

ARIZONA WATER COMPANY

White Tank
1549 N. Perryville Road
Goodyear, AZ 85326 PH: 623-853-9302

PROPOSAL/CONTRACT

CONTRACTOR: LUDVIK ELECTRIC		SYSTEM: WHITE TANK
AZ CONTRACTOR LICENSE NO:	CLASSIFICATION:	W.A. No(s): 1-5032
ADDRESS: 1020 E. UNIVERSITY DRIVE		BID DUE DATE: November 12, 2013
CITY ST ZIP PHOENIX, AZ 85034		BID BOND REQUIRED ☑ Yes ☐ No

DESCRIPTION OF PROJECT: White Tank SCADA Project - Design, update drawings, provide control strategy, programming and SCADA equipment to control operation of Beautiful Arizona Tank, Monte Vista Plant Site, Golightly Plant Site and Well No. 8.

1-2. MATERIALS EXEMPT FROM CONTRACTING TAX (per Paragraph 6)	QUANTITY	UNIT PRICE LABOR	UNIT PRICE MATERIALS		TOTAL COST LABOR		TOTAL COST MATERIALS
				1		2	
3. Total Labor to Install Exempt Materials (add the amounts in column 1)				3			
4. Total Exempt Materials (add the amounts in column 2)						4	

5-6. NON-EXEMPT MATERIALS	QUANTITY	LABOR	MATERIALS		LABOR		MATERIALS
Revised design drawings							
Programming and control strategy							
Field path radio study							
RTU equipment and panels							
Instrumentation equipment							
Factory acceptance test							
RTU panels, instrumentation, wiring install				5		6	
Startup and loop check							
Training							
O & M Manuals and As-Built Drawings							
7. Total Labor to Install Non-Exempt Materials (add the amounts in column 5)				7			
8. Total Non-Exempt Materials (add the amounts in column 6)						8	
9. Subtotal A (add lines 3, 7 and 8)						9	
10. Contracting Tax Base (multiply the amount on line 9 by 0.65)				10			
11. Applicable Contracting Tax Rate				11			
12. Contracting Tax (multiply the amount on line 10 by line 11)						12	
13. Subtotal B (add lines 4, 9 and 12)						13	
14. 100% Performance and Payment Bonds Cost						14	
15. Estimated Total Cost (add lines 13 and 14)						15	

NOTE: The Estimated Total Cost includes all labor and materials for backfill, pavement replacement, chip seal, and traffic control necessary for the Project.

Arizona Water Company

Pinal Valley – White Tanks

White Tanks SCADA Design-Build Project

~~**October 7, 2013**~~

Revised October 29, 2013

Special Conditions

1. **Mandatory Pre-Bid Meeting** will be held on **October 23, 2013 at 8:00** a.m. at Arizona Water Company's Go Lightly Warehouse, 1549 N. Perryville Road, Goodyear, Arizona 85326. All the other sites where work will take place will be visited after this site has been inspected and the scope has been reviewed.
2. Any requests for information must be received no later than November 1, 2013.
3. **Bids** are **due ~~November 6, 2013~~ November 12, 2013, at 2:00** p.m. at the following address:
   Arizona Water Company
   Attention: Ed Radwanski
   3805 North Black Canyon Highway
   Phoenix, AZ 85015
4. Although bid separately for accounting purposes, it is Arizona Water Company's intention to award the Ajo SCADA Design-Build Project with the White Tanks SCADA Design-Build Project.
5. See the attached White Tank-SCADA Scope Description with Appendices A, B and C.
6. See attached supplemental electrical specifications.
7. See attached drawings E001 through E013, Beautiful Arizona Estates Tank Drawings EC1 through EC15, Well #7 Drawings EC1 through EC15, Monte Vista Drawings EC1 through EC15 and Well #8 Drawings EC1 through EC15. (One 11 x 17 set and one CD ROM with sets in pdf format are included.)
8. Progress payments will be made on the following deliverables:
   a. Progress Payment #1 - After Company's receipt of Field Path Radio Study
   b. Progress Payment #2 – After Company's receipt of 90% Design Drawings
   c. Progress Payment #3 – After Company receipt of 90% Design Concept
   d. Progress Payment #4 – After successful completion of Factory Acceptance Test
   e. Progress Payment #5 – After installation of RTU Panels on all sites
   f. Progress Payment #6 - After completion of successful loop check and startup of all sites
   g. Final Payment – After completion of training, receipt of O&M Manuals, demolitionof old equipment and receipt of all release of liens.

~~7.~~

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Arizona Water Company
White Tanks –SCADA October 7, 2013
Design Build Project **Revised October 29, 2013**

A. Design
   1. Project Description
      a. The project will consist of developing programming associated with Appendix A, Design Build Project Scope Description for Beautiful Arizona Tank, Monte Vista, Go Lightly/Well 7, Pasqautte Well 8 and Blue Horizon Plant (Well #9 and #10) and Appendix B, Graphic Display Samples. The design will incorporate a PC based monitoring station at Go Lightly Warehouse; this PC will communicate with the Casa Grande Master Station via new DSL connection or T-1 phone line provided by Arizona water Company.
      b. The project scope will also consist of providing a Field Path Radio Survey to establish feasibility of communications among the sites. See attached Appendix C for Casa Grande Division SCADA Communications Schematic.
      c. Programming services will consist of PLC/RTU programming, operator interface terminal (OIT) programming, SCADA HMI programming and assisting the electrical contractor during startup testing of the control system for the project site.
      d. Prior to shipping the RTU Panels from the RTU Panel Supplier's site, a programmer will assist with the Factory acceptance test for the RTU Panel. Following the FAT tests, a report will be made available for the tested RTU. Non-acceptance of the FAT test will result in additional FAT tests until acceptance.
      e. Programming services will include attendance of the programmer of two meetings with Arizona Water Company and up to eighty (80) hours of assistance to the electrical contractor during loop checks and startup demonstration by Arizona Water Company.
      f. The programmer will provide up to 8 hours of PLC training based over a two non consecutive day period.
      g. The existing design drawings shall be revised to show the latest upgrades and revisions and shall be in conformance with the Company's current specifications.
      h. All the design drawings will be prepared on 11" x 17" bond paper, and will be scaled drawings with bill of materials and wire numbers, suitable for constructing the equipment at the site.
   2. Project Deliverables
      a. Upon completion of the programming, the programmer will provide three hardcopy sets of the programming print outs in electronic form on CD ROM, three copies of PLC programming files also on CD ROM and programming software with license in Company's name. A flash drive with the original program at each site.
      b. Three copies of documentation including the O&M will be provided.
      c. The designer will provide Arizona Water Company with one set of review documents in reproducible form for a 90% submittal. Upon review of comprehensive submittal comments from Arizona Water Company, the designer will produce a submittal comment review log and address each comment and revise the design accordingly.
      d. Upon completion of design and incorporating 90% design review comments, the electrical engineer will provide the Company with one set of final sealed documents bearing the signature of a registered electrical engineer. These documents shall include the plans, I/O List and Control Descriptions.
      e. Provide three copies of the plans in pdf format on CD ROM and two copies in electronic AutoCad on CD ROM.

B. Construction

1. Furnish and Install RTU Panels, instrumentation, radios, electrical equipment and install complete working system in conformance with Company's specifications.
2. Provide Factory Acceptance Test to check functionality of the RTU and to make minor changes in screen views at the Company's discretion.
3. Provide loop checks and startup services
4. Provide Training including training materials and three bound copies of O&M Manuals with identification of the equipment on the manufacturer's information and three copies in pdf format on CD ROM. Provide the preliminary O&M Manuals and training materials two weeks before startup and the final O&M Manuals two weeks after startup.
5. Provide three copies of record drawings in pdf format on CD ROM and two copies in electronic AutoCad on CD ROM.
6. Arizona Water Company will provide flow meter transmitters, DSL Modems, Ethernet switches, desktop computers, keyboards, mouse, 20-inch colored monitors and colored printer.

APPENDIX A

Arizona Water Company
White Tanks – SCADA
Design-Build Project Scope Description

October 7, 2013
Revised October 29, 2013

General Notes:

1. Alarms – All alarms will be annunciated through WIN 911, at the location where they are generated and at Go Lightly (Well #7) Warehouse. The Arizona Water Company will provide new regular telephone line for WIN 911 annunciation. Existing Sensaphones at Monte Vista, Beautiful Arizona and Go Lightly will remain in service and act as backup for WIN 911 alarms. In addition to those alarms listed below all PLC units shall have alarms for UPS Power failure, PLC High temperature, 120 volt power failure, 24 volt DC power failure and radio communication failure.
2. Trending – At Go Lightly Warehouse all new analog values will be capable of being trended. The historian at the Casa Grande Warehouse Control Room will be capable of storing up to one year's worth of data.
3. Go Lightly Warehouse – The Company will provide redundant desktop computers, monitors (20"), keyboard, mouse and one color printer.
4. Design and Programming – Design and Programming will be performed by Delta Engineering Services, except for that at the Blue Horizon PLC. Contractor will employee ZAK Controls to make all the programming changes to the PLC at Blue Horizon. AZ Water will provide Wonderware Software and WIN 911 Software (Municipal Level)
5. RTU Panel – All RTU panels with OIT shall be mounted on interior door of a double door panel. Provide air conditioning for each in conformance with Company's specifications. The panel shall include all finger safe electrical covers on all exposed electrical components. RTU processor platform shall be designed to allow 20% spare I/O space.
6. Provide a list of recommended spare parts that maybe required including access point radio and spare radios.
7. Set points for controls and alarms will be password protected.
8. Graphic displays – must conform to the conventions of the samples attached in Appendix B.
9. Materials of Construction – Equipment and materials are to match that shown on the White Tanks Water System Design Plans and in conformance with the Company's specifications.
10. Processor System – Processor and system platform shall be Modicon M340.
11. Controls – In all cases local control will override remote control.
12. ~~Motor Savers – Remote displays will be required to be mounted on the exterior panel with sunshade or on the interior door panel.~~

Control Strategy

A. **Beautiful Arizona Tank** – This location is controlled from an RTU at the site, from Casa Grande Warehouse Control Room Computer (CG), Monte Vista (MV) and the PC at Go Lightly Warehouse. Indications, set points and trending will be capable at all four locations. Alarms will be annunciated locally and Go Lightly Warehouse

   1. Controls

      Booster Pumps #1 and 2 – These pumps will be controlled from screen push buttons in either local/remote, auto/manual, manual-of/on and reset

      Booster Pumps #1 and 2 -There are two variable frequency drive booster pumps on site. (These pumps will work in a lead/lag fashion based on 24 –hour cycle. In the automatic

mode the active pump motor (operator selectable) will energize when it receives a signal indicating that the system pressure has dropped to an operator adjustable preset low pressure level. The pump will continue to discharge water to the system until after the motor receives a signal that an operator adjustable preset high pressure level has been obtained. If the pump fails to start a fail to run alarm will be generated and annunciated at CG, MV and laptop. The pump motor will also turn off if the water level in the tank drops to an operator adjustable set point in feet.

Tanks –Alarms will be generated from operator adjustable High-High, High, Low-Low and Low tank level adjustable set points. Indication

2. Indication

   Booster Pump #1 and 2 – Run Status – On/Off
   Booster Pump #1, and 2 – Reset Fail to Run (FTR)
   Booster Pump # 1and 2– Run Times Today in hours
   Booster Pump #1 and 2 – Run Times Yesterday in Hours
   Booster Pump #1 and 2 – Run Time Total in Hours
   Booster Pump #1 and 2 – Run Time Reset
   ~~Booster #1 and 2 – Speed in Hertz~~
   Booster Discharge Pressure – Pressure in psi – (one common for both)
   Booster Pump - Flow in gpm (one common for both)
   Reservoir Level

3. Alarms

   Booster Pump #1and 2 – fault
   Booster Pump - Low pressure
   Power Failure -120 volts
   Power Failure – 24 volt DC
   RTU High Temperature – (above 105F)
   UPS Failure
   Reservoir – High-high, High, Low and Low-low
   Radio Communications Failure

4. Setpoints

   ~~Lead pump start and stop pressure high and low set points - psi~~
   ~~Lag Pump start and stop pressure high and low set points - psi~~
   ~~Stop/start pressure dead band - psi~~
   ~~Pump Selection – Lead and Lag – Booster Pump #1 or #2~~
   Tank Level – High-High, High, Low and Low-Low - feet
   Booster #1 and 2 – Low tank Level Shut Down - feet

5. Communications -A new iNET2 radio will be installed to replace the existing MOSCAD light unit. Signals will be transmitted via a new antenna mounted to the largest of the two water reservoirs. Signals will pass from the new radio to new radio at MV.

6. Instrumentation – Contractor will provide and install an insertion type Flow Meter with associated piping on discharge. ~~(Size and type)~~

7. PLC/RTU - Modicon M340 with 12" OIT will be required at this site.

B. **Monte Vista** - This site is controlled from Casa Grande Warehouse Control Room Computer Monte Vista local RTUand the computer at Go Lightly Warehouse. Indications, alarms, set points and trending will be capable at all three locations.

1. Controls

Wells #2 and #4 – These pumps will be controlled from screen push buttons in either local/remote, auto/manual, manual-of/on and reset.

Wells #2 and #4 - In the automatic mode Well Pump #2 and Well Pump #4 will stop and start based on an operator adjustable site tank level. ~~They will also stop based on a stop command from the arsenic plant controls (this does not currently work.)~~ If Well #2 and #4 stop, a command will be required to be sent to Well #7 to stop it to prevent high nitrate laden water from filling Monte Vista Tank and an alarm will be annunciated.

Wells #7 and #8 - These pumps will be controlled from screen push buttons in manual-of/on and reset.

Tanks – Alarms will be generated for operator adjustable High-High, High, Low-Low and Low tank level adjustable set points.

Booster Pumps – For Booster Pump #1, #2 and #3 in the automatic mode the active pump motor will energize when it receives a signal indicating that the Beautiful Arizona tank level has dropped to an operator adjustable low level tank set points for three pumps. The pump will continue to discharge water to the system until after the motor receives a signal that a preset BA tank high level has been obtained. If the pump fails to start a fail to run an alarm will be generated and annunciated at CG and MV. The motor will also turn off if the water level in the MV tank drops to an operator adjustable set point in feet and a low tank alarm will be generated.

Arsenic Treatment – Using Ethernet transfer data to CG and Go Lightly (See attached screen shot in Appendix B for sample of items requested to be shown.)

Low Zone Control Valve –In automatic mode this valve will either be open or closed based on Monte Vista Tank Level that is operator adjustable.

2. Indication

Turbidity – NTU

pH Analyzer

Nitrate Analyzer

Booster Pump #1, 2 and 3 – Run Status – On/Off

Booster Pump #1, 2 and 3 – Reset FTR

Booster Pump #1, 2 and 3 – Run Times Today in hours

Booster Pump #1, 2 and 3 – Run Times Yesterday in Hours

Booster Pump #1, 2 and 3 – Run Time Total in Hours

Booster Pump #1, 2 and 3 – Run Time Reset

Booster Discharge Pressure – Pressure in psi – (common for all)

~~Booster Suction Pressure - Pressure in psi – (common for all)~~

Booster Pump - Totalized Flow in gpm (common for all)

MV Tank Level – Feet

APPENDIX A

Beautiful Arizona Tank Level - Feet
POE #1 Nitrate Analyzer – Level in ppm
Chlorine Analyzer – Level in ppm
~~Booster Station – Incoming Flow -gpm~~
Booster Station – Outgoing Flow -gpm
Low zone control Valve – ~~percent open~~ open/close.
Well #2 and 4 - Run Status – On/Off
Well #2 and 4 - Reset FTR
Well #2 and #4 – Flow – gpm (Arizona Water will provide and install heads for existing meters)

3. Alarms
   Booster Pump #1, 2 and 3 – Fault (Motor Saver)
   Well #2 and 4 – Fault (Motor Saver)
   Power Failure -120 volts
   Power Failure – 24 volt DC
   RTU High Temperature – (above 105F)
   UPS Failure
   Monte Vista and Beautiful Arizona Reservoirs – High-high, High, Low and Low-low
   Radio Communications Failure
   Arsenic Plant – General Fault and other Layne Alarms similar to other sites
   ~~Eyewash Station – On~~
4. Setpoints
   Low zone control valve – MV Tank Level – feet
   Booster Pump #1, 2 and 3 start/stop – Beautiful Arizona Tank Levels – low and high – feet
   Tank Level – High-High, High, Low and Low-Low - feet
   Well #2 and #4 – Stop/Start – MV Tank Levels – High/Low tank levels in feet
5. Communication - A new iNET2 radio will be installed to replace the existing MOSCAD light unit. Signals will be transmitted via a new omni antenna mounted to the tallest of the two water reservoirs. Signals will pass from the new radio to new radio at Well 7, Well 8 and Blue Horizon. Communication to CG will be via T1 telephone line or through Well 7 to CG.
6. Instrumentation/Electrical – Low zone control valve modifications are required to show it opened or closed. Configure Well #2 and #4 flow meter heads to provide automatic reads. Arizona Water Company will furnish and install flow meter on booster pump discharge header. Contractor to furnish and install high pressure switches on each well pump discharge.
7. PLC/RTU -A Modicon M340 PLC with 15" OIT will be required at this site. Provide 6" reinforced concrete pad for new RTU/PLC panel. Contractor will provide Prosoft Module that will be installed by others.

APPENDIX A

C. **Golightly Well No. 7** - This site is controlled from Casa Grande Warehouse Control Room Computer, Monte Vista local OIT and the computer at the Go Lightly Warehouse. Indications, alarms, set points and trending will be capable at all three locations.

1. Controls – Well #7 will be controlled from screen push buttons in either local/remote, ~~auto/manual, manual of/on~~ and reset.
   ~~In automatic mode (which is password protected) Well #7 will stop and start based on an operator adjustable Monte Vista tank level. Also in automatic mode, it cannot start unless Well #2, #4 and #8 are in operation and it will stop if Well #2, #4 and #8 are stopped. An operator can readjust the nitrate treatment for Well #7 which would allow Well #7 to run under certain circumstances. In these instances the operator would run Well #7 in manual mode. Well #7 will also stop in manual or automatic modes based on a stop command from the nitrate plant controls. On start command Well #7 will flush to waste for a time that is adjustable by the operator. After this time is attained, the flush valve will gradually close while the inline valve opens. If signals from the valves show that either the waste valve or the inlet valve do not open and close as required, a failed valve sequence alarm will be generated and Well #7 will be shut down. Upon a stop command, the valves will work in reverse.~~ Arizona Water Company will use existing hardware to control Well #7 operation with Well Nos. 2, 4 and 8.
   Nitrate Plant – Using Ethernet transfer data, shown on Nitrate Plant OIT.

2. Indication
   Bag pressure
   Well #7 Statuses – On/off/Running
   Well #7 – reset
   Plant flow – gpm
   Nitrate Plant – Data
   Nitrate analyzer – ppm
   Inline Valve – open/close
   Waste Valve – open/close
   Differential Pressure – Across nitrate plant inlet and out let.
   Blue Horizon – Show all information currently on Blue Horizon
3. Alarms
   Bag filter – differential high pressure alarm
   Well #7 – Failure to Run (and reason Wells, 2, 4 or 8 not running or MV Tank Level too high)
   Waste Valve – incomplete sequence
   Inline valve – incomplete sequence
   Nitrate analyzer – high level
   Nitrate Plant - Critical Alarm – Any individual alarm that is a critical alarm will be shown
   Nitrate Plant – General Alarm – Any individual alarm that is a general alarm will be shown.
   ~~Office door intrusion – open~~

~~Office Rollup Door open~~
~~Eye Wash – in use~~
120 volt power failure
UPS power failure
24 volt DC power failure –supply #1
24 volt DC power failure – supply #2
RTU – high temp alarm (105-F)
Radio Communications
Blue Horizon Alarms - ~~25 individual~~ all alarms

4. Setpoints
   Well #7 Stop/start – Monte Vista Tank Level high/low
   Bag Filter – High differential pressure - psi
   Nitrate analyzer – high level
5. Communications - A new iNET2 radio will be installed to replace the existing ~~MOSCAD light unit~~ telephone line. Signals will be transmitted via a new omni antenna mounted to the warehouse. Signals will pass from the new radio to new radio at MV.
6. Instrumentation – Well #7 Waste Valve and Inlet Valve open and closed indication required. Contractor to provide and install dual switches. Contractor will furnish and install differential pressure indication between and nitrate inlet and outlet piping including saddles and taps. Contractor will furnish and install high pressure switch on Well #7 discharge pipe.
7. PLC/RTU - RTU panel will be located in Go Lightly Office on north wall. Contractor will furnish Prosoft Module for communication between nitrate plant and new PLC. This will be installed by others.

D. **Pasqauetti Well No. 8** - This site is controlled from Casa Grande Warehouse Control Room Computer, Monte Vista local OIT and the ~~laptop~~ desktop computer at the Go Lightly office. Indications, alarms, set points and trending will be capable at all three locations.

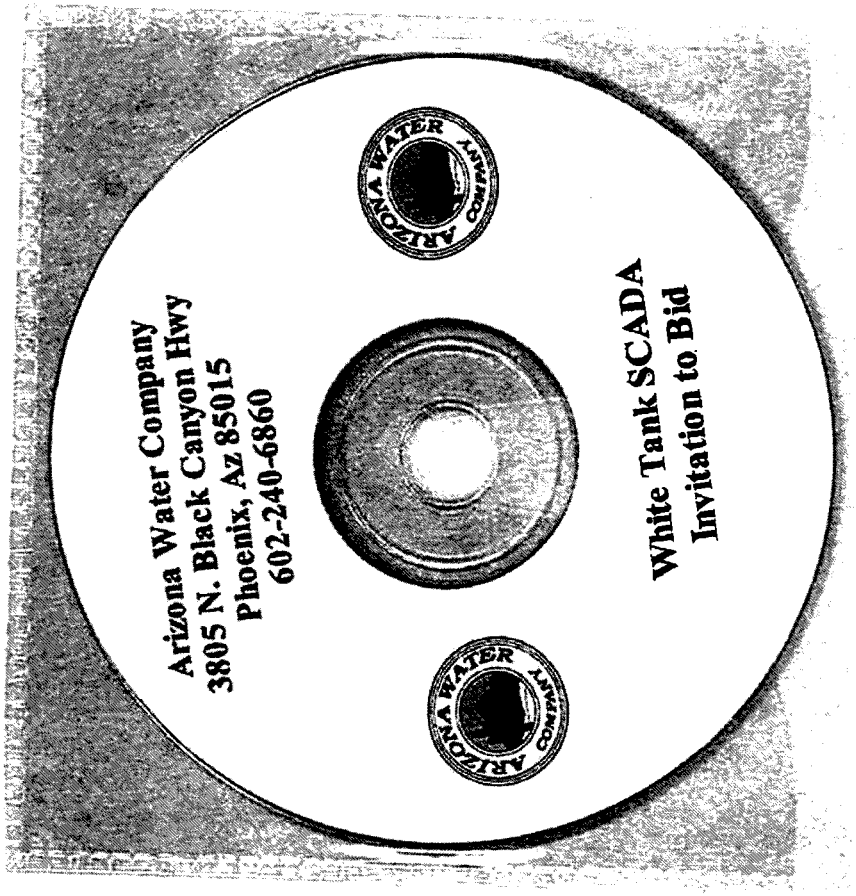
1. Controls - Well #8 will be controlled from screen push buttons in either local/remote, auto/manual, manual-of/on and reset. In automatic mode Well #8 will stop and start based on an operator adjustable Monte Vista tank level
2. Indication
   Bag differential pressure
   Monte Vista Tank Levels - feet
   Well #8 Statuses – On/off/Running
   Well #8 – reset
   Well #8 flow – gpm
   ~~Well #8 – pump pressure - psi~~
   ~~Inline Valve – open/close~~
   Waste Valve – open/close
   Well Run Time - hours
3. Alarms

Well #8 – Fault –from high pressure switch
Waste Valve - incomplete sequence
Inline Valve – incomplete sequence
120 volt power failure
UPS power failure
24 volt DC power failure –supply #1
24 volt DC power failure – supply #2
RTU – high temp alarm (105-F)
Radio Communications
Bag Filter – high DP pressure

4. Setpoints
   Well #8 – start/stop – Monte Vista Tank Level – feet
   Well #8 – pump pressure high
   Bag Filter – DP set point - psi
5. Communications - A new iNET2 radio will be installed to replace the existing MOSCAD light unit. Signals will be transmitted via a new omni antenna mounted to existing pole. Signals will pass from the new radio to new radio at MV. (~~Note: All sites verify antenna locations~~)
6. Instrumentation - ~~Pressure indicating transmitter~~ Pressure switch is required to be furnished and installed on Well discharge pipe to ~~measure discharge pressure~~ shut down pump on high pressure and to provide an alarm. Configure Well #8 flow meter head to provide automatic read. Contractor will funish and install dual switch on pump waste valve.
7. PLC/RTU – Provide Modicon M340 with 12" OIT Screen. The RTU panel will be located facing north adjacent to the existing panel.

E. Blue Horizon

1. Controls - none
2. Indication - At Blue Horizons show MV Reservoir Levels and status of Low Zone Control Valve (open and close) on PLC located in control building..
3. Alarms -none
4. Setpoints – none
5. Communications – Provide INET 2 radio for communications between Go Lightly and this site.
6. Instrumentation - None



EIC CD + Plans sent in package on 10/16/13 JR

ARIZONA WATER COMPANY

SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT: E-4-1

CONSTRUCTION SPECIFICATIONS: E-8-1

STANDARD SPECIFICATION DRAWINGS: E-9-1

2007 EDITION WITH **2010** REVISIONS;
2012 GENERAL CONDITIONS OF CONTRACT

A copy of this Spec Book was mailed out with the original invitation to bid

ARIZONA WATER COMPANY

CONTRACT CHANGE ORDER

CONTRACTOR: Ludvik Electric, 1020 E. University Drive, Phoenix, AZ 85034	DATE: June 19, 2014	CONTRACT DATE: March 13, 2014
	W.A. NO.: 1-5032	CHANGE ORDER NO.: 1
DESCRIPTION OF WORK: Four (4) additional radio path surveys for White Tank SCADA communication.	APPLICABLE C. O. COST: $2,416.00	
	ORIGINAL CONTRACT AMOUNT: $427,749.00	
	SUM OF ALL CHANGE ORDERS TO DATE: $2,416.00	
REASON FOR ADDITIONAL WORK: The additional radio path surveys are needed to incorporate the Arroyo Seco water storage reservoir site and well site into the White Tank SCADA system.	APPROVAL LEVEL REQ'D: (CIRCLE ALL THAT APPLY) (BASED ON COST) Mgr & Eng: Up to $10,000 or 10% whichever is less; VP Eng: Up to $100,000 or 20% whichever is less; VP Tres & Pres: greater than $100,000 or 20%	

BASIS OF PAYMENT:

- ☐ In accordance with rates contained in Contractor's Proposal/Contract dated:
- ☒ In accordance with material prices, labor and equipment rates shown on Proposal dated: June 19, 2014
- ☒ Lump Sum Price (including taxes) of: (Include supporting documentation) $ 2,416.00
- ☐ Other:

Contractor is hereby authorized to proceed with the work as described above. The Company will pay for the above-described work as indicated above.

Contractor agrees, as an independent contractor, to perform the above-described work in accordance with the Company's *General Conditions of Contract, and the Company's Construction Specifications and Standard Specification Drawings* ("General Conditions of Contract") and related construction drawings which, were provided with the original Proposal/Contract and supplemented herein, and agrees that all provisions of said General Conditions of Contract dated as of April 2004, including any subsequent amendments thereto, and related construction drawings, apply to work covered under this Contract Change Order.

Work Authorization/approval for additional funds required YES (NO) (circle one) If yes, attach applicable form & proof of payment for outside funded work.

Division Superintendent/Manager

Project Engineer/Capital Manager

AWC Vice President – Engineering

LUDVIK ELECTRIC
Contractor: (Name)

By: Joseph F. Miller
Contractor's Representative Signature

Name: Joseph F. Miller
(Printed)

Its: VP of Phoenix Operations
(Title or Position)

CHANGE ORDER AUTHORIZATION Over $100,000 OR 20% OF THE CONTRACT NOT VALID WITHOUT SIGNATURES BELOW

AWC Vice President and Treasurer

AWC President

Date Work Started

Date Work Completed

CONTRACTOR'S INVOICE APPROVED BY:

Company's Representative Overseeing the Work (signature)

DISTRIBUTION:
Original to Person Authorizing Work and, when completed, to Accounting Dept. with approved invoice for the work with supporting documentation.
Copy to Contractor. Copy to Project Engineer

Labor and Material Releases Required: ☒ Yes ☐ No
Releases Received and Approved By:

Company's Authorized Signature

June 19, 2014 Serial No. 4000.17-003

Mr. John Knobbe
Arizona Water Company
3805 N Black Canyon Hwy.
Phoenix, AZ 85015

Reference: LE Job #4000.17 – White Tanks SCADA

Subject: Ludvik Electric Co. Change Request #001 Rev 1
Additional Radio Path Survey

Dear Mr. Knobbe:

We hereby submit for your consideration our Change Request #001 in the amount of **$2,416.00** as an *add* to our subcontract agreement for the above referenced project. This change request covers the following revisions:

To perform additional radio path survey for the following paths:

1) *Arroyo Seco Well to Arroyo Seco Tank*
2) *Arroyo Seco Tank to Lolightly*
3) *Arroyo Seco Tank to Beautiful Arizona Estates Tank*
4) *Arroyo Seco Tank to Blue Horizon Booster/Tank*

Clarifications:

1. *Testing performed no higher than 30'.*
2. *If testing required for 31' to 40', an adder of $1,610.00 will apply after prior approval from Arizona Water Company.* ($1,610.00/4 = $402.50 each site) AWC Initials
LE Initials

This change order is based solely on the usual cost elements such as labor, material and normal markups and does not include any amount for additional changes in the sequence of work, delays, disruptions, re-scheduling, extended overhead, overtime, acceleration, and/or impact costs; and the right is expressly reserved to make claim for any and all of these related items prior to the final settlement of this contract.

This proposal is valid for 30 days and is subject to any labor and material modifications occurring after this time period.

If you have any questions, please feel free to contact the undersigned.

Sincerely,

LUDVIK ELECTRIC CO.

Joseph F. Miller
V.P. of Phoenix Operations
F11B/F22 attachments

LUDVIK ELECTRIC

1020 E. University Drive, Phoenix, AZ 85034 • Telephone (602) 777-5000 • Fax (602) 258-0752
AZ Licenses: 08R575 (L-11); 127121 (A-17)

ARIZONA WATER COMPANY

CONTRACT CHANGE ORDER

CONTRACTOR:
Ludvik Electric
1020 E. University Drive
Phoenix, AZ 85034

DATE: March 18, 2015
W.A. NO.: 1-5032

CONTRACT DATE: March 13, 2014
CHANGE ORDER NO.: 2

DESCRIPTION OF WORK:

Provide a larger boom truck to perform radio path survey. Provide additional design for the following: heat resistant RTU panels at Monte Vista and Pasquaiti Well No. 6 and ACT-PAK sensors on water meters.

APPLICABLE C. O. COST: $ 9,660.00
ORIGINAL CONTRACT AMOUNT: $ 427,749.00
SUM OF ALL CHANGE ORDERS TO DATE: $ 12,075.00

REASON FOR ADDITIONAL WORK:

A larger boom truck is required to perform radio path survey more than 30 feet above ground. Heat resistant RTU panels allow the option to remove shade canopies from scope of new construction. ACT-PAK sensors were not included in the Contract/Proposal but are required to communicate flow rate data to the SCADA system.

APPROVAL LEVEL REQ'D: (CIRCLE ALL THAT APPLY) (based on this)

- Mgr & Eng — Up to $10,000 or 10% whichever is less
- VP Eng — Up to $100,000 or 20% whichever is less
- VP Tres & Pres — greater than $100,000 or 20%

BASIS OF PAYMENT:

- [ ] In accordance with rates contained in Contractor's Proposal/Contract dated:
- [x] In accordance with material prices, labor and equipment rates shown on Proposal dated: January 28, 2015
- [ ] Lump Sum Price (including taxes) of: (Include supporting documentation) $
- [ ] Other:

Contractor is hereby authorized to proceed with the work as described above. The Company will pay for the above-described work as indicated above.

Contractor agrees, as an independent contractor, to perform the above-described work in accordance with the Company's *General Conditions of Contract, and the Company's Construction Specifications* and *Standard Specification Drawings* ("General Conditions of Contract") and related construction drawings which, were provided with the original Proposal/Contract and supplemented herein, and agrees that all provisions of said General Conditions of Contract dated as of April 2004, including any subsequent amendments thereto, and related construction drawings, apply to work covered under this Contract Change Order.

Work Authorization Approval for additional funds required — YES (NO) (circle one) If yes, attach applicable form & proof of payment for outside funded work.

Division Superintendent/Manager

Project Engineer/Project Manager

AWC Vice President – Engineering

LUDVIK ELECTRIC
Contractor (Name)

By: *Contractor's Representative Signature*

Name: Joseph F. Miller
(Printed)

Title: VP of Phoenix Operations
(Title or Position)

CHANGE ORDER AUTHORIZATION OVER $100,000 OR 20% OF THE CONTRACT NOT VALID WITHOUT SIGNATURES BELOW

AWC Vice President and Treasurer

AWC President

Date Work Started

Date Work Completed

CONTRACTOR'S INVOICE APPROVED BY:

Company's Representative Overseeing the Work (signature)

DISTRIBUTION:
Original to Person Authorizing Work and, when completed, to Accounting Dept. with approved invoice for the work with supporting documentation. Copy to Contractor. Copy to Project Engineer.

Labor and Material Releases Required: Yes No
Releases Received and Approved By:

Company's Authorized Signature

W:\PROJECTS\CONTRACTS\ACTIVE WWI-5032 INSTALL SCADA AT BEAUTIFUL ARIZONA ESTATES WELL NO 6 7 [illegible] CHANGE ORDER\AWA CO #2 WA 1-5032 DOCX [illegible] | PKB.pln | 8-3-22-3 MLM APR 2 00 PM 2015/10

ATH

Reference: AZ Water Co. – White Tanks SCADA

Subject: **FINAL DRAWINGS SCOPE/PROPOSAL CHANGES**

We submit our Proposal for the Changes to the Final Drawings dated December 2014, as further revised in the Meetings on 1-14-15 **and 1-22-15** as follows.

Summary of work previously agreed:

Original Bid/Contract Amount	$ 427,749.
Additional Radio Path Work	$ 2,415.
Lift Rental for Additional Radio Path Work	$ 1,610.
Total To Date	$ 431,774.

Breakdown per Site

Performance & Payment Bonds	$ 4,554.	NOW
Design	$ 35,830.	2014
Radio Path Study	$ 11,970.	
Monte Vista except for Booster Control Programming (Status Only for Boosters)	**$ 104,830.**	2015
Radio, Antenna and UPS at Well 7	**$ 21,220.**	
Balance of Well 7	**$ 74,380.**	LATER
Monte Vista Booster Control Programming	**$ 4,280.**	
Pasqauletti Well 8	$ 63,520.	
Beautiful Arizona Estates	$ 86,020.	
Blue Horizons	$ 25,170.	
Total To Date	$ 431,774.	

Summary of Changes Jan 2015:

Design	**Add**	**$ 8,050.**	NOW 2014
Monte Vista except for Booster Control Programming (Status Only for Boosters) and Shade Canopy	**Add**	**$ 29,900.**	2015
Radio, Antenna and UPS at Well 7	**Add**	**$ 3,180.**	
Option to Add Grounding for M.V. Arsenic	Add	$ 2,360.	- ?
Balance of Well 7		**$ 6,590.**	LATER
Monte Vista Booster Control Programming and Shade Canopy	**Add**	**$ 19,850.**	
Pasqauletti Well 8	Add	$ 12,600.	
Beautiful Arizona Estates	Add	$ 24,890.	
Blue Horizons	Add	$ 11,090.	
Total Add		**$ 118,510.**	

LUDVIK ELECTRIC

1020 E. University Drive, Phoenix, AZ 85034-6512 • Telephone (602) 777-5000 • Fax (602) 258-0782

AZ Licenses: 088575 (C-11); 127121 (A-17)

ARIZONA WATER COMPANY

CONTRACT CHANGE ORDER

CONTRACTOR:
Ludvik Electric
1920 E. University Drive
Phoenix, AZ 85034

DATE: March 18, 2016
CONTRACT DATE: March 13, 2014
W.A. NO.: 1-5032
CHANGE ORDER NO.: 3

DESCRIPTION OF WORK:

Reduce the scope of work to exclude constructing and making operational SCADA system at Beautiful Arizona Tank, Pasquaiatti Well No. 8 and Blue Horizon sites. In addition, modify scope of work at Golightly Well No. 7 site to only include constructing and making operational radio communication equipment and SCADA master computer. Construct heat resistant RTU panel at Monte Vista site in lieu of shade canopy. Extend construction completion date to 5/18/2016.

APPLICABLE C. O. COST: $ -216,286.00
ORIGINAL CONTRACT AMOUNT: $ 427,749.00
SUM OF ALL CHANGE ORDERS TO DATE: $ -204,100.00

REASON FOR ADDITIONAL WORK:

Company engineers split the construction of White Tank SCADA system into phases. Company engineers determined that constructing the master computer and radio equipment at the Golightly Well No. 7 site and constructing and making operational SCADA at the Monte Vista site, which is the central hub of the White Tank water system, is phase 1. Company engineers expect to construct future phases at a later date.

APPROVAL LEVEL REQ'D: (CIRCLE ALL THAT APPLY)
(BASED ON $ or %)

- Mgr & Eng Up to $10,000 or 10% whichever is less
- VP Eng Up to $100,000 or 20% whichever is less
- VP Tres & Pres greater than $100,000 or 20%

BASIS OF PAYMENT:

- [ ] In accordance with rates contained in Contractor's Proposal/Contract dated:
- [ ] In accordance with material prices, labor and equipment rates shown on Proposal dated:
- [x] Lump Sum Price (including taxes) of: (include supporting documentation) $ -216,286.00
- [ ] Other:

Contractor is hereby authorized to proceed with the work as described above. The Company will pay for the above-described work as indicated above.

Contractor agrees, as an independent contractor, to perform the above-described work in accordance with the Company's *General Conditions of Contract, and the Company's Construction Specifications and Standard Specification Drawings* ("General Conditions of Contract") and related construction drawings which, were provided with the original Proposal/Contract and supplemented herein, and agrees that all provisions of said General Conditions of Contract dated as of April 2004, including any subsequent amendments thereto, and related construction drawings, apply to work covered under this Contract Change Order.

Work Authorization Approval for additional funds required

YES (NO) (circle one) If yes, attach applicable form & proof of payment for outside funded work.

Division Superintendent/Manager

Project Engineer/Project Manager

AWC Vice President – Engineering

LUDVIK ELECTRIC
Contractor: (Name)

By: *Contractor's Representative Signature*

Name: Joseph F. Miller
(Printed)

Title: VP of Phoenix Operations
(Title or Position)

CHANGE ORDER AUTHORIZATION OVER $100,000 OR 20% OF THE CONTRACT NOT VALID WITHOUT SIGNATURES BELOW

AWC Vice President and Treasurer

AWC President

Date Work Started

Date Work Completed

CONTRACTOR'S INVOICE APPROVED BY:

Company's Representative Overseeing the Work (signature)

DISTRIBUTION:
Original to Person Authorizing Work and, when completed, to Accounting Dept. with approved invoice for the work with supporting documentation. Copy to Contractor. Copy to Project Engineer.

Labor and Material Releases Required: Yes No
Releases Received and Approved By:

Company's Authorized Signature

[illegible]

January 28, 2015

Reference: AZ Water Co. – White Tanks SCADA

Subject: **FINAL DRAWINGS SCOPE/PROPOSAL CHANGES**

We submit our Proposal for the Changes to the Final Drawings dated December 2014, as further revised in the Meetings on 1-14-15 **and 1-22-15** as follows.

Summary of work previously agreed:

Original Bid/Contract Amount	$ 427,749.
Additional Radio Path Work	$ 2,415.
Lift Rental for Additional Radio Path Work	$ 1,610.
Total To Date	$ 431,774.

Breakdown per Site

Performance & Payment Bonds	$ 4,554.
Design	$ 35,830.
Radio Path Study	$ 11,970.
Monte Vista except for Booster Control Programming (Status Only for Boosters)	**$ 104,830.**
Radio, Antenna and UPS at Well 7	**$ 21,220.**
Balance of Well 7	**$ 74,380.**
Monte Vista Booster Control Programming	**$ 4,280.**
Pasqauletti Well 8	$ 63,520.
Beautiful Arizona Estates	$ 86,020.
Blue Horizons	$ 25,170.
Total To Date	$ 431,774.

NOW 2014 2015 LATER

Summary of Changes Jan 2015:

Design	**Add**	**$ 8,050.**
Monte Vista except for Booster Control Programming (Status Only for Boosters) and Shade Canopy	**Add**	**$ 29,900.**
Radio, Antenna and UPS at Well 7	**Add**	**$ 3,180.**
Option to Add Grounding for M.V. Arsenic	Add	$ 2,360. – ?
Balance of Well 7		**$ 6,590.**
Monte Vista Booster Control Programming and Shade Canopy	**Add**	**$ 19,850.**
Pasqauletti Well 8	Add	$ 12,600.
Beautiful Arizona Estates	Add	$ 24,890.
Blue Horizons	Add	$ 11,090.
Total Add		**$ 118,510.**

NOW 2014 2015 LATER

LUDVIK ELECTRIC

1020 E. University Drive, Phoenix, AZ 85034-6512 • Telephone (602) 777-5000 • Fax (602) 258-0782

AZ Licenses: 088575 (C-11); 127121 (A-17)

ARIZONA WATER COMPANY

CONTRACT CHANGE ORDER

CONTRACTOR: Ludvik Electric 1020 E. University Drive Phoenix, AZ 85034	DATE: April 24, 2015 W.A. NO.: 1-5032	CONTRACT DATE: March 13, 2014 CHANGE ORDER NO.: 4
DESCRIPTION OF WORK: Delete concrete, excavation and underground conduit runs. Delete two (2) Act Paks and five (5) Symcon Ethernet Modules. Add five (5) Cutler Com Modules and one (1) Pressure Indicating Transmitter.	APPLICABLE C. O. COST: $ -9,745.00 ORIGINAL CONTRACT AMOUNT: $ 427,749.00 SUM OF ALL CHANGE ORDERS TO DATE: $ -213,935.00	
REASON FOR ADDITIONAL WORK: The Company completed the concrete, excavation and underground conduit required for SCADA wiring. The construction drawings specified Symcom Ethernet modules instead of Cutler Hammer Ethernet modules. The construction drawings did not specify the installation of a new pressure indicating transmitter.	APPROVAL LEVEL REQ'D: (CIRCLE ALL THAT APPLY) (BASED ON SUM) Mgr & Eng Up to $10,000 or 10% whichever is less VP Eng Up to $100,000 or 20% whichever is less VP Tres & Pres greater than $100,000 or 20%	

BASIS OF PAYMENT:

- [ ] In accordance with rates contained in Contractor's Proposal/Contract dated:
- [x] In accordance with material prices, labor and equipment rates shown on Proposal dated: April 16, 2015
- [ ] Lump Sum Price (including taxes) of: (include supporting documentation) $
- [ ] Other:

Contractor is hereby authorized to proceed with the work as described above. The Company will pay for the above-described work as indicated above.

Contractor agrees, as an independent contractor, to perform the above-described work in accordance with the Company's *General Conditions of Contract, and the Company's Construction Specifications* and *Standard Specification Drawings* ("General Conditions of Contract") and related construction drawings which, were provided with the original Proposal/Contract and supplemented herein, and agrees that all provisions of said General Conditions of Contract dated as of April 2004, including any subsequent amendments thereto, and related construction drawings, apply to work covered under this Contract Change Order.

Work Authorization Approval for additional funds required YES (NO) (circle one) If yes, attach applicable form & proof of payment for outside funded work.

Division Superintendent/Manager

Project Engineer/Project Manager

AWC Vice President – Engineering

LUDVIK ELECTRIC
Contractor: (Name)

By: *Contractor's Representative Signature*

Name: Joseph F. Miller
(Printed)

It's: Vice President of Phoenix Operations
(Title or Position)

CHANGE ORDER AUTHORIZATION OVER $100,000 OR 20% OF THE CONTRACT NOT VALID WITHOUT SIGNATURES BELOW

AWC Vice President and Treasurer

AWC President

Date Work Started

Date Work Completed

CONTRACTOR'S INVOICE APPROVED BY:

Company's Representative Overseeing the Work (signature)

DISTRIBUTION:
Original to Person Authorizing Work and, when completed, to Accounting Dept. with approved invoice for the work with supporting documentation. Copy to Contractor. Copy to Project Engineer.

Labor and Material Releases Required: Yes No
Releases Received and Approved By:

Company's Authorized Signature

ARIZONA WATER COMPANY
COST ESTIMATE WORKSHEET

PRELIMINARY ☐
ACTUAL ☒

PREPARED BY: MLM
SYSTEM: White Tank
DATE PREPARED: 5/11/2015
SHEET 1 OF 1
DRAWING NO:
PROJECT LOCATION: Monte Vista and Golightly Well Sites

PROJECT DESCRIPTION:

Delete concrete, excavation, and underground conduit runs. Delete (2) Act Paks, (5) Symcon Ethernet Modules. Add: five (5) Cutler Com Modules, one (1) Pressure Indicating Transmitter.

	DESCRIPTION	PLANT PROP ACCT	QUANTITY	UNIT COST	TOTAL
CONTRACT WORK	**Deductions:**				
	Concrete	325	(1)	1,600.00	(1,600)
	Excavation	325	(1)	900.00	(900)
	Underground conduit runs, material and labor	325	(1)	3,870.00	(3,870)
	Owner furnished Act-Paks	325	(1)	2,600.00	(2,600)
	Symcom Ethernet & Displays	325	(2)	730.00	(1,460)
	Ethernet Com Modules	325	(3)	340.00	(1,020)
	Deduct price for lift and radio path from change order 3	325	(1)	4,025.00	(4,025)
	Additions:				
	Cutler Com Modules	325	5	596.00	2,980
	Pressure Indicating Transmitter	325	1	1,600.00	1,600
	Nitrate/High Pressure Hardwire Shutdown		1	1,150.00	1,150
	SERVICE CONNECTIONS: DOUBLE-LONG	345			
	SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	TAXABLE SERVICE CONNECTIONS COMPLETE: SINGLE-LONG	345			
	TAXABLE SERVICE CONNECTIONS COMPLETE: SINGLE-SHORT	345			
					$ (9,745)
MATERIALS					
	SERVICE CONNECTIONS: DOUBLE-LONG	345			
	SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	TAXABLE SERVICE CONNECTIONS: SINGLE-LONG	345			
	TAXABLE SERVICE CONNECTIONS: SINGLE-SHORT	345			
	TAXABLE METERS	346			
	METERS	346			
TOTAL MATERIALS					$ -
LABOR					
	TESTING FEE				
	PERMIT FEE				
	SURVEY FEE				
	FIELD INSPECTION				
	INSTALL SERVICE CONNECTIONS: DOUBLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	INSTALL TAXABLE SERVICE CONNECTIONS: SINGLE-LONG	345			
	INSTALL TAXABLE SERVICE CONNECTIONS: SINGLE-SHORT	345			
TOTAL LABOR					$ -
SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR					$ (9,745)
OVERHEAD					
TOTAL	REFUNDABLE PORTION ☐	NON-REFUNDABLE PORTION ☐		COST ESTIMATE	$ (9,745)

SCHEMATIC DIAGRAM SYMBOLS

- (CR) CONTROL RELAY
- (TD) TIME DELAY RELAY
- (AR) ALARM RELAY
- (ETM) ELAPSED TIME METER
- (M) MOTOR STARTER OR CONTACTOR COIL
- (PC) PHOTO CELL
- (R) BEACON ALARM LIGHT LETTER INDICATES COLOR R=RED, A=AMBER, B=BLUE, G=GREEN
- (R) PILOT LIGHT LETTER INDICATES COLOR R=RED, A=AMBER, B=BLUE, G=GREEN
- OUTPUT DV/DT FILTER
- HEATING ELEMENT
- TRANSFORMER
- CT CURRENT TRANSFORMER
- GROUND CONNECTION
- GENERATOR
- HORN HORN
- 5 FULL VOLTAGE NON-REVERSING (FVNR) MOTOR STARTER OR CONTACTOR NUMBER DESIGNATES NEMA SIZE
- NORMALLY OPEN CONTACT
- NORMALLY CLOSED CONTACT
- DI or DO RTU OR PLC CONTACT
- HAND AUTO XO — 2 POSITION SELECTOR SWITCH POSITION LEGEND: X=CLOSED O=OPEN
- HAND OFF AUTO XOO — 3 POSITION SELECTOR SWITCH HAND – OFF – AUTO POSITION LEGEND: X=CLOSED O=OPEN
- NORMALLY CLOSED PUSH BUTTON
- LOCKOUT STOP PUSH BUTTON
- NORMALLY OPEN PUSH BUTTON
- EMERGENCY STOP PUSH BUTTON (MAINTAINED)
- AMPS — DISCONNECT SWITCH SHOWN WITH RATING AND NUMBER OF POLES
- LIMIT OR POSITION SWITCH
- PSH — PRESSURE SWITCH HIGH
- PSL — PRESSURE SWITCH LOW
- FLOW SWITCH
- LEVEL FLOAT SWITCH
- T ICTO — TIMER RELAY CONTACT INSTANTANEOUS CLOSE TIME DELAY OPEN
- T NOTC — TIMER RELAY CONTACT NORMALLY OPEN TIME DELAY CLOSE
- TEMPERATURE SWITCH
- FUSE
- AMPS — FUSEHOLDER OR FUSEBLOCK
- THERMAL OVERLOAD RELAY
- TERMINAL BLOCK
- DEVICE LOCATED AT REMOTE LOCATION
- CONDUIT SEALOFF

POWER SINGLE LINE DIAGRAM SYMBOLS

- JUNCTION BOX WITH POWER DISTRIBUTION BLOCK OR LUGS
- CONDUIT SEALOFF
- LTC CONNECTION
- MC CONNECTION
- BOND TO METALLIC WATER PIPE
- (UM) UTILITY METER
- (HP) MOTOR, NUMBER DESIGNATES NEMA HORSEPOWER SIZE
- FUSE
- AMPS — FUSEHOLDER OR FUSEBLOCK
- AMPS POLES — CIRCUIT BREAKER, SHOWN WITH TRIP RATING AND NUMBER OF POLES
- AMPS MCP POLES — MOTOR CIRCUIT PROTECTOR WITH TRIP RATING AND NUMBER OF POLES
- AMPS POLES — DISCONNECT SWITCH SHOWN WITH RATING AND NUMBER OF POLES
- MMR — MOTOR MANAGEMENT RELAY
- SSS — SOLID STATE STARTER
- VFD — VARIABLE FREQUENCY DRIVE
- HF — HARMONIC FILTER
- EOL — ELECTRONIC OVERLOAD RELAY
- GROUND CONNECTION

ELECTRICAL ABBREVIATIONS

A	AMPERE
AFD	ADJUSTABLE FREQUENCY DRIVE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AI	ANALOG INPUT
AIC	AMPS INTERRUPTING CAPACITY
AO	ANALOG OUTPUT
AS	AIR SUPPLY
ATS	AUTOMATIC TRANSFER SWITCH
BC	BYPASS CONTACTOR
C	CONDUIT
CB	CIRCUIT BREAKER
CCW	COUNTER CLOCKWISE
CL2	CHLORINE
CON	CONTACTOR
CPB	CONTROL PULLBOX
CU	COPPER, BARE
CV	CONTROL VALVE
CW	CLOCKWISE
DCS	DISTRIBUTED CONTROL SYSTEM
DI	DISCRETE INPUT
DO	DISCRETE OUTPUT
DP	DISTRIBUTION PANEL
DV/DT	DIFFERENTIAL VOLTAGE/TIME
DWG	DRAWING
ETM	ELAPSED TIME METER
EOL	ELECTRONIC OVERLOAD
EXIST	EXISTING
FA	FOUL AIR
FC	FAIL CLOSED
FE	FLOW ELEMENT
FLA	FULL LOAD AMPS
FS	FLOW SWITCH
FVNR	FULL VOLTAGE NON-REVERSING
FW	FINISHED WATER
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTION
GND	GROUND
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GRS	GALVANIZED RIGID STEEL
H, HI	HIGH
H2S	HYDROGEN SULFIDE
HMI	HUMAN MACHINE INTERFACE
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
I	CURRENT
IC	INSTRUMENTATION CABLE
ICR	INTERMITTENT CYCLE REACTOR
IO	INPUT/OUTPUT
ISC	SHORT CIRCUIT CURRENT
JB	JUNCTION BOX
L, LO	LOW
LAN	LOCAL AREA NETWORK
LC	LOOP CONTROLLER
LCL	LEVEL CONTROL, LOW
LCP	LOCAL CONTROL PANEL
LOS	LOCK OUT-STOP
LOR	LOCAL/OFF/REMOTE
LS	LEVEL (i.e. FLOAT) SWITCH
LTC	LIQUIDTIGHT FLEXIBLE METAL CONDUIT
M	MOTOR
MA	MANUAL/AUTO
mA	MILLIAMP
MAX	MAXIMUM
MC	MANUFACTURER'S CABLE
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MFR(S)	MANUFACTURER(S)
MGD	MILLION GALLONS PER DAY
MGL	MILLIGRAMS PER LITER
MH	MANHOLE
MIN	MINIMUM
MOV	MOTOR OPERATED VALVE
MMR	MOTOR MANAGEMENT RELAY
MTU	MASTER TELEMETRY UNIT
NEC	NATIONAL ELECTRICAL CODE
NECA	NATIONAL ELECTRICAL CONTRACTOR ASSOCIATION
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
NOTC	NORMALLY OPEN TIMED CLOSED
NPW	NON-POTABLE WATER
NS	NITROGEN SUPPLY
NTS	NOT TO SCALE
NTU	TURBIDITY
OF	OVERFLOW
OIT	OPERATOR INTERFACE TERMINAL
OL	OVERLOAD
OLR	OVERLOAD RELAY
OO	ON/OFF (MAINTAINED)
OR	OFF-REMOTE
OSC	OPEN/STOP/CLOSE
P	PHASE
PB	PULL BOX
PCP	PROCESS CONTROL PANEL
PCV	PRESSURE CONTROL VALVE
PFR	PHASE/POWER FAILURE RELAY
PI	PULSE INPUT
PLC	PROGRAMMABLE LOGIC CONTROLLER
PLI	PLANT INFLUENT
PMP	PUMP
PNL	PANEL
PO	PULSE OUTPUT
PPB	POWER PULLBOX
PPG	POUNDS PER GALLON
PPH	POUNDS PER HOUR
PPM	PARTS PER MILLION
PR	PAIR
PRES	PRESSURE
PS	PRESSURE SWITCH
PSH	PRESSURE SWITCH, HIGH
PSI	POUNDS PER SQUARE INCH
PV	PROCESS VARIABLE
RAS	RETURN ACTIVATED SLUDGE
RW	RAW WATER
RF	RADIO FREQUENCY
RIO	REMOTE INPUT OUTPUT
RS	RAW SEWAGE
RSP	RAW SEWAGE PUMP
RST	RESET
RTD	RESISTANCE TEMPERATURE DETECTOR
RTU	REMOTE TELEMETRY UNIT
RWT	REFLECTED WAVE TRAP
SCA	SHORT CIRCUIT AMPS
SEO	SERVICE ENTRANCE EQUIPMENT
SES	SERVICE ENTRANCE SECTION
SLC	SINGLE LOOP CONTROLLER
SLOS	START-LOCK-OUT-STOP
SMC	SUBMERSIBLE MANUFACTURER CABLE
SO2	SULFUR DIOXIDE
SP	SET POINT
SPC	SPARE CONDUIT
SPR	SPARE
SS	START/STOP
SSS	SOLID STATE STARTER (SOFT START)
ST	SHUNT TRIP
TC	TELEPHONE CABLE
TS	TEMPERATURE SWITCH
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
V	VOLT
VFD	VARIABLE FREQUENCY DRIVE
W	WATT, WIRE
WAS	WASTE ACTIVATED SLUDGE
WP	WEATHERPROOF
XFMR	TRANSFORMER
XMR	TRANSFORMER
XMTR	TRANSMITTER
ZS	POSITION (i.e. LIMIT) SWITCH

SITE PLAN SYMBOLS

- TELEPHONE OUTLET
- $ SINGLE POLE SWITCH
- $3 3 WAY SWITCH
- $4 4-WAY SWITCH
- $M MANUAL MOTOR STARTER
- SPECIAL PURPOSE OR WELDING OUTLET
- (S) SMOKE DETECTOR
- (T) THERMOSTAT
- FIELD DEVICE
- GROUND ROD
- DUPLEX RECEPTACLE
- ANTENNA MAST
- CONDUIT SEALOFF
- DISCONNECT SWITCH
- (M) MOTOR

CIRCUIT SCHEDULE LEGEND

AAA-BC

- SEQUENCE NUMBER
- TYPE C=CONTROL P=POWER
- DEVICE SERVED

ELECTRICAL LINETYPES

- EXPOSED CONDUIT
- EXISTING EXPOSED CONDUIT
- UNDERGROUND CONDUIT
- EXISTING UNDERGROUND CONDUIT
- BARE COPPER GROUND CONDUCTOR
- EXISTING OR FUTURE
- NEW ELECTRICAL EQUIPMENT
- DEMOLITION
- DETAIL VIEW OR MATCHING
- CAPPED CONDUIT STUB OUT
- PXXX / CXXX — GROUPED CONDUIT AND CIRCUIT IDENTIFICATION TAGS. REFER TO THE POWER SINGLE-LINE, SCHEMATIC CONNECTION DIAGRAMS AND CIRCUIT SCHEDULE FOR CONDUIT SIZES AND CONTENTS.

P=POWER
C=CONTROL

GENERAL NOTES

1. THE COMPLETED INSTALLATION SHALL COMPLY WITH LATEST REVISION OF APPLICABLE FEDERAL, STATE, AND LOCAL CODES, ORDINANCES, AND REGULATIONS. THE CONTRACTOR SHALL OBTAIN NECESSARY PERMITS AND INSPECTIONS REQUIRED BY THE AUTHORITIES HAVING JURISDICTION. ALL WORK SHALL BE COMPLETED IN A NEAT, WORKMANLIKE MANNER IN ACCORDANCE WITH THE LATEST NECA STANDARDS OF INSTALLATION UNDER COMPETENT SUPERVISION. INSTALL GROUNDING PER NEC.
2. VISIT THE SITE PRIOR TO BIDDING TO BECOME FAMILIAR WITH EXISTING CONDITIONS AND OTHER FACTORS, WHICH MAY AFFECT THE EXECUTION OF THE WORK. INCLUDE ALL RELATED COSTS IN THE INITIAL BID PROPOSAL.
3. THE CONTRACTOR SHALL COORDINATE WORK WITH THE UTILITIES PROVIDING SERVICES ON THIS PROJECT, AND SHALL COMPLY WITH ALL THEIR INSTALLATION REQUIREMENTS.
4. ALL MATERIALS SHALL BE NEW AND OF THE BEST QUALITY, MANUFACTURED IN ACCORDANCE WITH THE LATEST REVISION OF NEMA, ANSI, UL, OR OTHER APPLICABLE STANDARDS. THE USE OF MANUFACTURERS' NAMES, MODELS, AND NUMBERS IS INTENDED TO ESTABLISH STYLE, QUALITY, APPEARANCE, USEFULNESS, AND BID PRICE.
5. PROTECT ALL ELECTRICAL MATERIAL AND EQUIPMENT INSTALLED AGAINST DAMAGE BY OTHER TRADES, WEATHER CONDITIONS, OR ANY OTHER PREVENTABLE CAUSES. EQUIPMENT DAMAGED DURING SHIPPING OR CONSTRUCTION, PRIOR TO ACCEPTANCE BY THE ENGINEER OR THE OWNER, WILL BE REJECTED AS DEFECTIVE.
6. LEAVE THE SITE CLEAN, REMOVE ALL DEBRIS, EMPTY CARTONS, TOOLS, CONDUIT, WIRE SCRAPS AND ALL MISCELLANEOUS SPARE EQUIPMENT AND MATERIALS USED IN THE WORK DURING CONSTRUCTION. ALL COMPONENTS SHALL BE FREE OF DUST, GRIT AND FOREIGN MATERIALS, LEFT AS NEW BEFORE FINAL ACCEPTANCE OF WORK. DAMAGED PAINT AND FINISHES SHALL BE TOUCHED UP OR REPAINTED WITH MATCHING COLOR PAINT AND FINISH.
7. CIRCUIT CONDUCTORS #6 AWG OR SMALLER SHALL BE THWN STRANDED COPPER. #4 AWG THROUGH #2 AWG SHALL BE XHHW STRANDED COPPER. #1 AWG OR LARGER SHALL BE XHHW-2 STRANDED COPPER. MINIMUM POWER CONDUCTOR SIZE SHALL BE #12 AWG WITH #12 AWG GROUND.
8. UNDERGROUND CONDUITS SHALL BE SCHEDULE 40 PVC. MINIMUM CONDUIT DEPTH SHALL BE 24 INCHES. MINIMUM UNDERGROUND CONDUIT SIZE SHALL BE 1 INCH.
9. CONDUITS SHALL BE MARKED AT EACH END WITH MATCHING NUMBERED BRASS TAGS. SPARE CONDUITS SHALL HAVE A PULL STRING INSTALLED, SECURED, AND CAPPED.
10. EXPOSED CONDUITS SHALL BE GALVANIZED RIGID STEEL (GRS). MINIMUM SIZE 3/4 INCH, UNLESS OTHERWISE NOTED ON THE PLANS.
11. SAFETY SWITCHES, ELECTRICAL DISTRIBUTION EQUIPMENT, CONTROL PANELS, AND OTHER ELECTRICAL DEVICES SHALL BE UL LISTED, AND RATED FOR HEAVY DUTY SERVICE.
12. WIRING DEVICES SHALL BE SPECIFICATION GRADE.
13. THE CONTRACTOR IS RESPONSIBLE FOR MANAGING, SCHEDULING, DOCUMENTING, AND PERFORMING THE WORK SO THAT A COMPLETE ELECTRICAL, INSTRUMENTATION AND CONTROL SYSTEM FOR THE FACILITY IS PROVIDED. ACCURATE SHOP AND RECORD DRAWINGS, AND O&M MANUALS SHALL BE SUBMITTED PRIOR TO FINAL ACCEPTANCE OF THE WORK.
14. TYPICAL DETAILS SHALL APPLY IN ALL CASES, WHETHER SPECIFICALLY REFERRED TO OR NOT.

Rev'd	By	Date

Expires 3/31/11

DLT&V SYSTEMS ENGINEERING
2330 N. CENTRAL AVE, STE. 1000
PHOENIX, AZ 85012 (602) 285-4656

AZ WATER WHITE TANK SITES
SCADA DESIGN
ELECTRICAL NOTES, SYMBOLS AND LEGENDS

Scale	N.T.S., U.O.N.
Job No.	1400.00.100
CADD File No.	
Designed	SB
Drawn	TB
Checked	DN
Date	DECEMBER 2009
Sheet	E001

DWG FILE: 1400.0.100_E001.dwg 2:48pm PLOTTED: Dec 30, 2009 jahrens

XREF: 1219_BRDR

NOTES:

1. REFERENCE CONNECTION DIAGRAM DRAWINGS FOR EACH RESPECTIVE SITE FOR ANTENNA CABLE INFORMATION.

CONDUIT NO.	CONDUIT SIZE	CIRCUIT NO.'S	FROM	TO
C400	2"	ANT100-C1	RTU-400	ANT-400
C401	1"	FE400-C2	RTU-400	PB-400
C401A	3/4"	FE400-C1	FE400-C1	FE-400
C402	1"	RTU400-P1	EXISTING LIGHTING PANEL	RTU-400
C403	1"	CGNS-C1	EXISTING NITRATE PLC	RTU-400
C404	3/4"	ES-C1	ETHERNET SWITCH W/ SCADA COMPUTER	ES-C3
C405A	1"	WP7-C1, WP7-C3	WELL STARTER	RTU-400
C405B	1"	WP7-C2	WELL STARTER	RTU-400
C406	1"	PSH400-C1	PB-400	WELL PUMP STARTER
C406A	1"	PSH400-C1	PSH-400	PB-400
C407A	1"	ZS401-C1	ZS-401	RTU-400
C407B	1"	ZS402-C1	ZS-402	RTU-400
C408	1"	FSH401-C1	FSH-401	RTU-400
C410	2"	ANT410-C1	ANT-410	RTU-410
C411	1"	FE410-C2	PB-410	RTU-410
C411A	3/4"	FE410-C1	FE-410	PB-410
C412	1"	FE411-C2	PB-411	RTU-410
C412A	3/4"	FE411-C1	FE-411	PB-411
C413	1"	AIT413-C1, ZS413-C1, PT412-C1, PT413-C1, AIT414-C1	PB-412	RTU-410
C413A	1"	PT412-C1	PT-412	PB-412
C413B	1"	PT413-C1	PT-413	PB-412
C413C	1"	AIT413-C1	AIT-413	PB-412
C413D	1"	AIT414-C1	AIT-414	PB-412
C414	1"	FSH413-C1	FSH-413	RTU-410
C415A	1"	ZS413-C1	ZS-413	PB-412
C418	1"	MVATS-C1	EXISTING ARSENIC TREATMENT PLC	RTU-410
C417	2"	WP2-C2, WP4-C2, MVBP1-C2, MVBP2-C1	EXISTING ARSENIC TREATMENT PLC	RTU-410
C418	1"	PSH410-C1	PB-410	RTU-410
C418A	1"	PSH410-C1	PSH-410	PB-410
C419	1"	PSH411-C1	PB-411	RTU-410
C419A	1"	PSH411-C1	PSH-411	PB-411
C420	2"	ANT420-C1	ANT-420	RTU-420
C421A	3/4"	FE420-C1	FE-420	PB-420
C421	1"	FE420-C2	PB-420	RTU-420
C422	1"	PSH420-C1	PSH-420	RTU-420
C430	2"	ANT430-C1	ANT-430	RTU-430
C432	1"	FSH430-C1	FSH-430	RTU-430
C433	1"	FSH431-C1	FSH-431	RTU-430
C434	1"	RTU430-C1	EXISTING RTU PANEL	RTU-430
C435	1"	BAEBP1-C1, BAEBP1-C3, BAEBP2-C1, BAEBP2-C3	BOOSTER PUMP VFD STARTER CABINET	RTU-430
C436	1"	BAEBP1-C2, BAEBP2-C2	BOOSTER PUMP VFD STARTER CABINET	RTU-430
C437	1"	RTU430-P1, RTU430-P2	EXISTING LIGHTING PANEL	RTU-430
C440	2"	ANT440-C1	ANT-440	RTU-440

A MASTER CONDUIT SCHEDULE

CIRCUIT SCHEDULE	
CIRCUIT NO.	CONDUCTORS
ANT100-C1	NOTE 1
FE400-C1	1 - MC
FE400-C2	3 COND. CABLE W/ SHIELD
RTU400-P1	2 - #12, #12 GND
CGNS-C1	1 - CAT5E ETHERNET CABLE
WP7-C1	6 - #14, #14 GND
WP7-C2	3 - #14, #14 GND
WP7-C3	1 - RS-485 CABLE
ZS401-C1	2 - #14, #14 GND
ZS402-C1	2 - #14, #14 GND
FSH401-C1	2 - #14, #14 GND
ES-C1	1 - CAT5E ETHERNET CABLE
SC-C1	1 - CAT5E ETHERNET CABLE
DELC-C1	1 - CAT5E ETHERNET CABLE
PSH400-C1	2 - #14, #14 GND
ANT410-C1	NOTE 1
FE410-C1	1 - MC
FE410-C2	3 COND. CABLE W/ SHIELD
FE411-C1	1 - MC
FE411-C2	3 COND. CABLE W/ SHIELD
PT412-C1	1 - IC, #14 GND
PT413-C1	1 - IC, #14 GND
FSH413-C1	2 - #14, #14 GND
ZS413-C1	4 - #14, #14 GND
MVATS-C1	1 - CAT5E ETHERNET CABLE
AIT413-C1	1 - IC, #14 GND
RTU410-P1	2 - #12, #12 GND
RTU400-P2	2 - #12, #12 GND
AIT414-C1	1 - IC, #14 GND
WP2-C1	6 - #14, #14 GND
WP2-C2	2 - #14, #14 GND
WP2-C3	1 - RS-485 CABLE
WP4-C1	6 - #14, #14 GND
WP4-C2	2 - #14, #14 GND
WP4-C3	1 - RS-485 CABLE
MVBP1-C1	6 - #14, #14 GND
MVBP1-C2	2 - #14, #14 GND
MVBP1-C3	1 - RS-485 CABLE
MVBP2-C1	6 - #14, #14 GND
MVBP2-C2	2 - #14, #14 GND
MVBP2-C3	1 - RS-485 CABLE
AIT415-C1	1 - IC, #14 GND
PSH410-C1	2 - #14, #14 GND
PSH411-C1	2 - #14, #14 GND
ANT420-C1	NOTE 1
FE420-C1	1 - MC
FE420-C2	1 - IC, #14 GND
RTU420-P1	2 - #12, #12 GND
RTU430-P2	2 - #12, #12 GND
WP8-C1	6 - #14, #14 GND
WP8-C2	2 - #14, #14 GND
WP8-C3	1 - RS-485 CABLE
PSH420-C1	2 - #14, #14 GND
AIT421-C1	1 - IC, #14 GND
ANT430-C1	NOTE 1
RTU430-P1	2 - #12, #12 GND
RTU430-P2	2 - #12, #12 GND
BAEBP1-C1	6 - #14, #14 GND
BAEBP1-C2	2 - #14, #14 GND
BAEBP1-C3	1 - IC, #14 GND
BAEBP2-C1	6 - #14, #14 GND
BAEBP2-C2	2 - #14, #14 GND
BAEBP2-C3	1 - IC, #14 GND
FSH430-C1	2 - #14, #14 GND
FSH431-C1	2 - #14, #14 GND
ANT440-C1	NOTE 1

B MASTER CIRCUIT SCHEDULE

DESCRIPTION	SITE	MANUFACTURER	MODEL NO.
PRESSURE SWITCH	WELL 7	MERCOID	DAW-7033-163-7
FLOW SWITCH	WELL 7 EYEWASH	PER OWNER	-
FLOW SWITCH	WELL 2 EYEWASH	PER OWNER	-
PRESSURE SWITCH	WELL 2	MERCOID	DAW-7033-163-7
PRESSURE SWITCH	WELL 4	MERCOID	DAW-7033-163-7
PRESSURE SWITCH	WELL 8	MERCOID	DAW-7033-163-7
FLOW SWITCH	BAE BOOSTER PUMP 1	PER OWNER	-
FLOW SWITCH	BAE BOOSTER PUMP 2	PER OWNER	-

C INSTRUMENT INDEX

Rev'd By Date

Expires 3/31/11

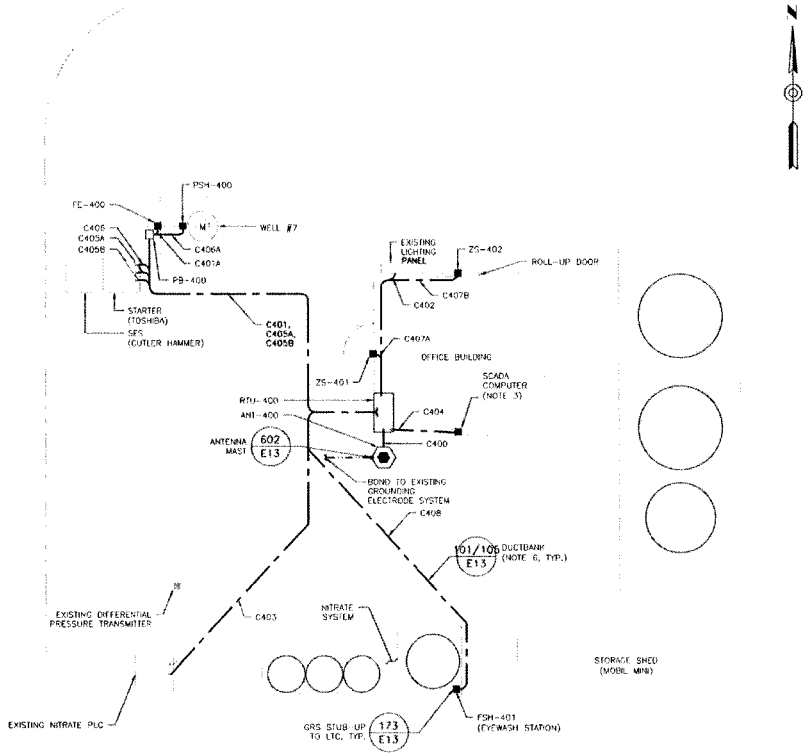
DL T&V SYSTEMS ENGINEERING

AZ WATER WHITE TANK SITES
SCADA DESIGN
CIRCUIT & CONDUIT
SCHEDULES

Scale N.T.S., U.O.N.
Job No. 1400.00.100
CADD File No.
Designed SB
Drawn TB
Checked DN
Date DECEMBER 2009
Sheet E002

REV: 12/19_BRDW

DWG FILE: 1400.0.100_E002.dwg 2:49pm PLOTTED: Dec 30, 2009 jshrens



NOTES:

1. INFORMATION REFLECTED ON THIS DRAWING PERTAINING TO: RELATIVE EQUIPMENT LOCATIONS, ROUTING AND CONNECTIONS OF PROCESS PIPING AND ROUTINGS OF EXISTING CONDUITS IS APPROXIMATE AND SCHEMATIC IN NATURE.

2. CONDUIT #'S AND EQUIPMENT IDENTIFIERS (E.G. FE-101) REFLECTED ON THIS DRAWING HAVE BEEN GENERATED FOR ASSOCIATION PURPOSES WITHIN THIS DESIGN PACKAGE. THEY DO NOT REFLECT ACTUAL #'S OR IDENTIFIERS THAT MAY EXIST IN THE FIELD.

3. LOCATIONS REFLECTED FOR NEW SCADA COMPUTER & RTU ARE APPROXIMATE. ACTUAL LOCATIONS ARE TO BE DETERMINED/CONFIRMED BY OWNER.

4. CONDUIT/DUCTBANK ROUTINGS SHOWN ARE APPROXIMATE, ACTUAL ROUTINGS ARE TO BE FIELD DETERMINED.

5. INSTRUMENT MOUNTING LOCATIONS SHOWN ARE APPROXIMATE, ACTUAL MOUNTING LOCATIONS ARE TO BE VERIFIED/CONFIRMED BY OWNER.

6. DIRECT-BURIED DUCTBANK DETAIL 101 SHALL BE USED IN NON-VEHICULAR TRAFFIC AREAS ONLY. CONCRETE ENCASED DUCTBANK DETAIL 106 SHALL BE USED FOR ALL VEHICULAR TRAFFIC AREAS. AREA CLASSIFICATION TO BE CONFIRMED/VERIFIED BY OWNER.

Issued for Bid

Expires 3/31/11

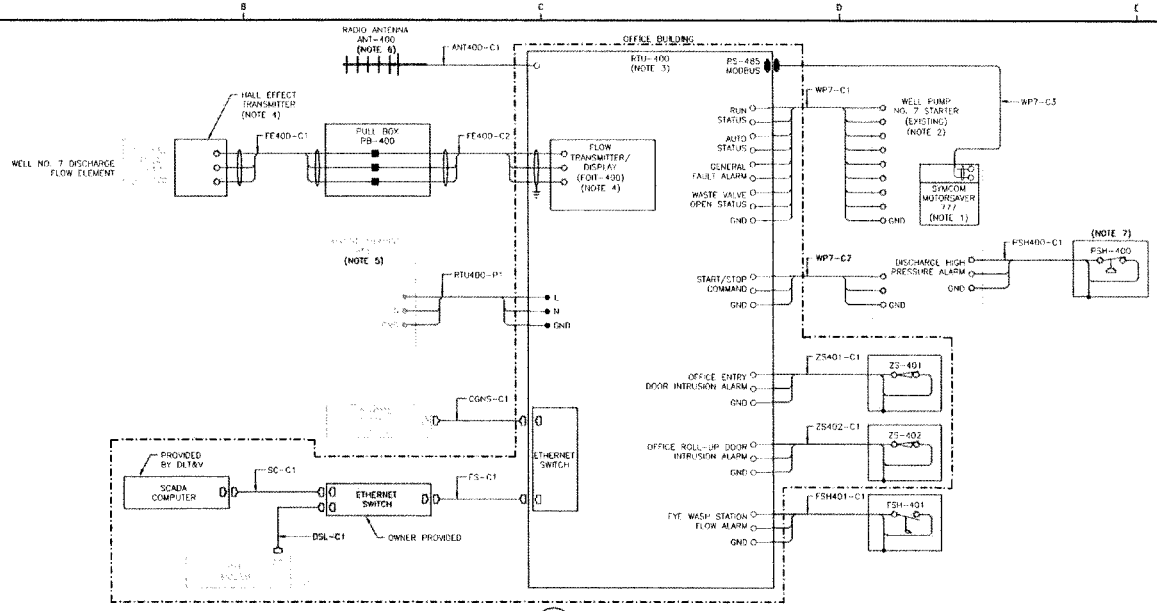
DLT&V SYSTEMS ENGINEERING

AZ WATER WHITE TANK SITES
SCADA DESIGN
SITE PLAN – WELL #7
(WAREHOUSE)

Scale: N.T.S., U.O.N.
Job No.: 1400.00.100
CADD File No.:
Designed: SB
Drawn: TB
Checked: DN
Date: DECEMBER 2009
Sheet: E003

XREF: 1219_BRDR

DWG FILE: 1400.0.100_E003.dwg 2:49pm PLOTTED: Dec 30, 2009 jchrens



A WAREHOUSE/WELL 7 - CONNECTION DIAGRAM

LOAD VA		LOAD DESCRIPTION										LOAD VA	
PHASE A	PHASE B											PHASE A	PHASE B
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
						201	1.25	#12	RTU-400				250
[illegible]	[illegible]	[illegible]											
[illegible]	[illegible]	[illegible]											
[illegible]	[illegible]	[illegible]											
[illegible]	[illegible]	[illegible]											

B WAREHOUSE/WELL 7 - LIGHTING PANEL

NOTES:

1. EXISTING SYMCOM 460 'MOTORSAVER' IS TO BE REPLACED WITH A SYMCOM 777 'MOTORSAVER', WHICH WILL BE UTILIZED TO MONITOR MOTOR CURRENT, VOLTAGE, AND KWH USAGE. PROVIDE & INSTALL RS-485 COMMUNICATION ADAPTER ON 777 (SYMCOM PART NO. RS485MS-2W).
2. PROVIDE MODIFICATIONS INSIDE EXISTING STARTER CABINET TO ALLOW RTU THE ABILITY TO MONITOR STATUSES AND ALARMS INDICATED ON CONNECTION DIAGRAM (E.G. RUN STATUS, AUTO STATUS, FAULT ALARM) VIA A SINGLE N.O. DRY CONTACT FOR EACH POINT BEING MONITORED. PROVIDE MODIFICATIONS INSIDE EXISTING STARTER THAT WILL ALLOW A N.O. DRY CONTACT FROM THE RTU THE ABILITY TO START AND STOP THE PUMP WHEN THE CORRESPONDING STARTER IS IN 'AUTO' MODE. GENERAL FAULT ALARM IS TO BE COMPRISED OF ALL FAULT CONDITIONS THAT WILL SHUT THE PUMP DOWN DURING NORMAL OPERATION.
3. REFERENCE ASSOCIATED DETAILED RTU DRAWINGS FOR INFORMATION PERTAINING TO WIRING AND TERMINATIONS INSIDE RTU CABINET.
4. HALL EFFECT TRANSMITTER IS TO BE INCORPORATED INTO EXISTING PROPELLER FLOWMETER AND BE PROVIDED & INSTALLED BY OWNER (TRANSMITTER COMES WITH A 25' PIGTAIL STYLE SIGNAL CABLE). ASSOCIATED TRANSMITTER/DISPLAY IS TO BE PROVIDED BY OWNER, INSTALLED BY CONTRACTOR.
5. UTILIZE A SPARE 20A, 1P BREAKER INSIDE EXISTING LIGHTING PANEL TO PROVIDE POWER TO RTU CABINET. REFERENCE LIGHTING PANEL SCHEDULE BELOW.
6. ANTENNA 'ANT-400' IS TO BE A 10dB GAIN YAGI STYLE ANTENNA AND MANUFACTURED BY SCALA, MODEL TY-900 OR EQUAL. ASSOCIATED ANTENNA CABLE IS TO HAVE A MAXIMUM 3.9dB LOSS VALUE (@900MHZ) PER 100' OF LENGTH AND BE MANUFACTURED BY TIMES MICROWAVE SYSTEMS, MODEL LMR-400 OR EQUAL.
7. REFERENCE INSTRUMENT INDEX ON SHEET E03 FOR MANUFACTURER/MODEL INFORMATION.

No.	Revision	By	Date

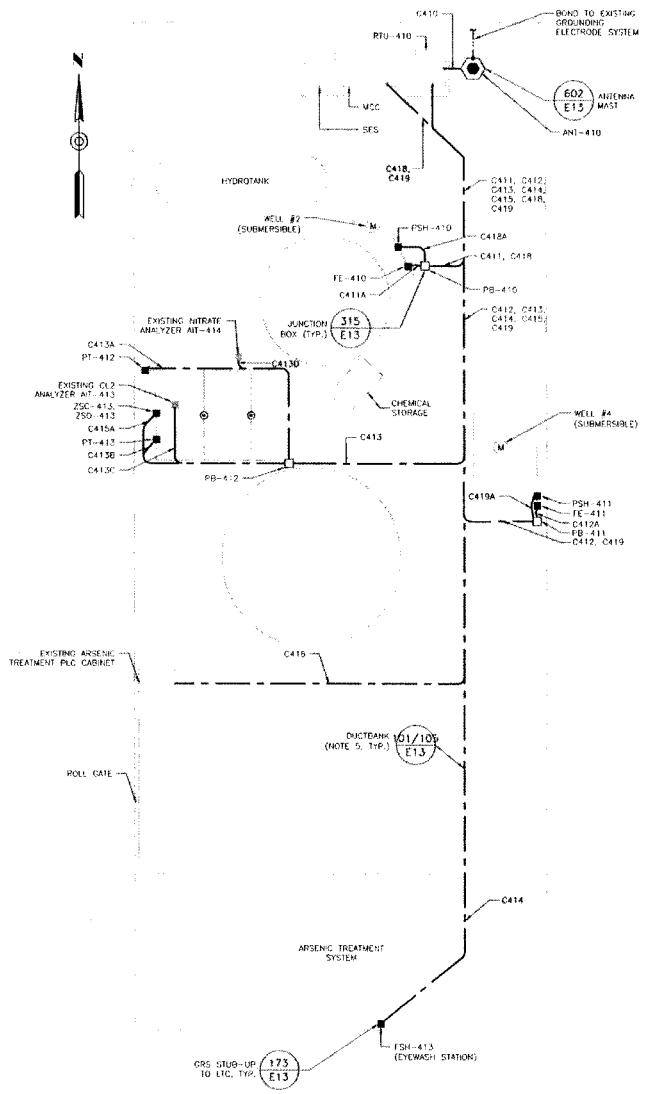
Expires 3/31/11

DLT&V
SYSTEMS ENGINEERING
PHOENIX, AZ 602.2.PROJECT

AZ WATER WHITE TANK SITES
SCADA DESIGN
SCHEM./CONN. DIAGRAM & PANEL
SCHEDULE-WAREHOUSE/WELL #7

Scale	N.T.S., U.O.N.
Job No.	1400.00.100
CADD File No.	
Designed	SB
Drawn	TB
Checked	DN
Date	DECEMBER 2009
Sheet	E004

DWG FILE: 1400.0.100_E004.dwg 2:49pm PLOTTED: Dec 30, 2009 johnsns



NOTES:

1. INFORMATION REFLECTED ON THIS DRAWING PERTAINING TO: RELATIVE EQUIPMENT LOCATIONS, ROUTING AND CONNECTIONS OF PROCESS PIPING AND ROUTINGS OF EXISTING CONDUITS IS APPROXIMATE AND SCHEMATIC IN NATURE.
2. CONDUIT #'S AND EQUIPMENT IDENTIFIERS (E.G. FE-101) REFLECTED ON THIS DRAWING HAVE BEEN GENERATED FOR ASSOCIATION PURPOSES WITHIN THIS DESIGN PACKAGE. THEY DO NOT REFLECT ACTUAL #'S OR IDENTIFIERS THAT MAY EXIST IN THE FIELD.
3. CONDUIT/DUCTBANK ROUTINGS SHOWN ARE APPROXIMATE. ACTUAL ROUTINGS ARE TO BE FIELD DETERMINED.
4. INSTRUMENT MOUNTING LOCATIONS SHOWN ARE APPROXIMATE. ACTUAL MOUNTING LOCATIONS ARE TO BE VERIFIED/CONFIRMED BY OWNER.
5. DIRECT-BURIED DUCTBANK DETAIL 101 SHALL BE USED IN NON-VEHICULAR TRAFFIC AREAS ONLY. CONCRETE ENCASED DUCTBANK DETAIL 105 SHALL BE USED FOR ALL VEHICULAR TRAFFIC AREAS. AREA CLASSIFICATION TO BE CONFIRMED/VERIFIED BY OWNER.

No.	Date	By	Description

Expires 3/31/11

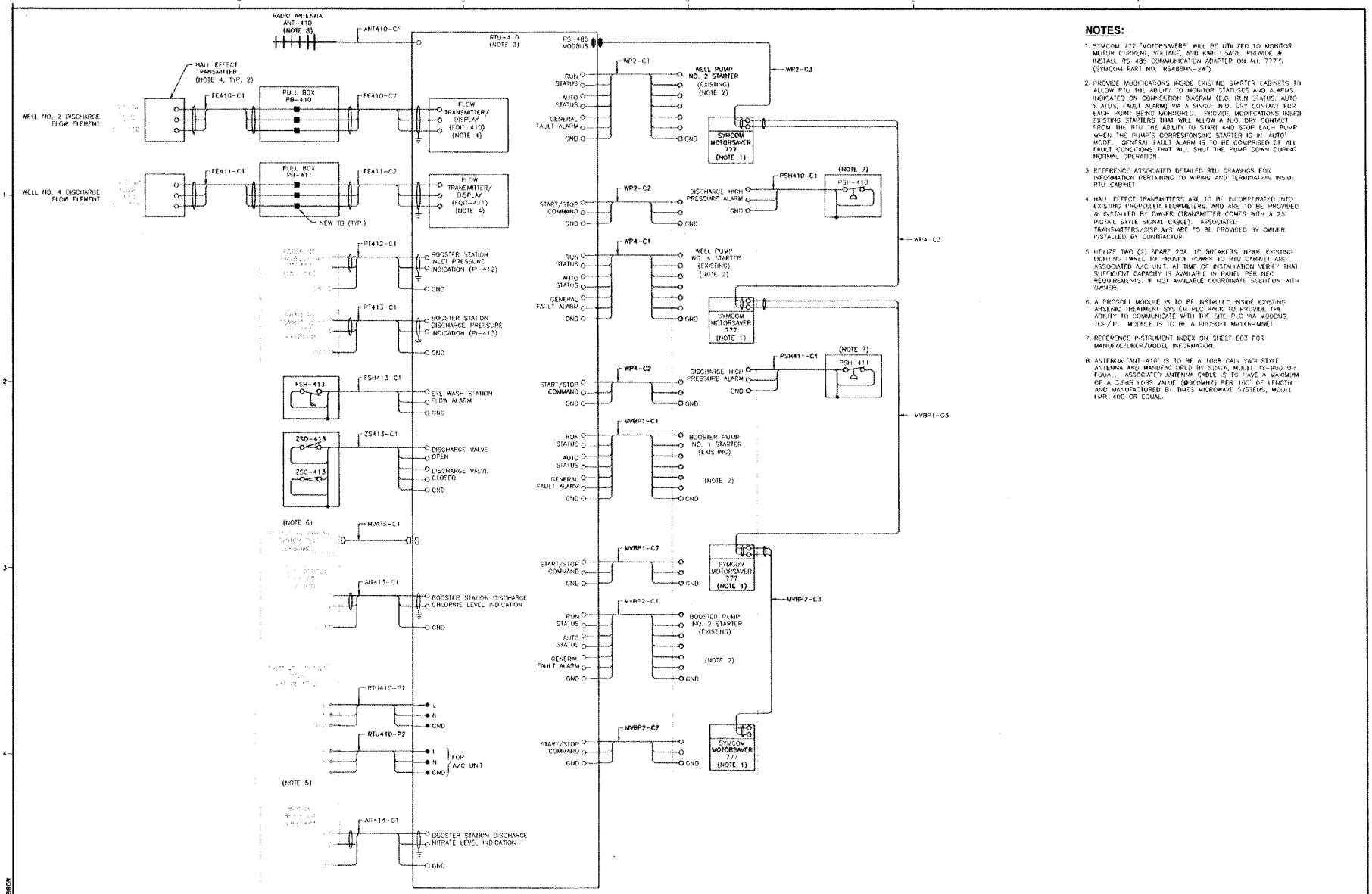
DLT&V SYSTEMS ENGINEERING

AZ WATER WHITE TANK SITES
SCADA DESIGN
SITE PLAN – WELLS 2 & 4
(MONTE VISTA)

Scale: N.T.S., U.O.N.
Job No: 1400.00.100
CADD File No:
Designed: SB
Drawn: TB
Checked: DN
Date: DECEMBER 2009
Sheet: E005

XREF: 1219_BRDR

DWG FILE: 1400.0.100_E005.dwg 2:49pm PLOTTED: Dec 30, 2009 jphrens



A MONTE VISTA WELLS 2 & 4 - CONNECTION DIAGRAM

NOTES:

1. SYMCOM 777 'MOTORSAVERS' WILL BE UTILIZED TO MONITOR MOTOR CURRENT, VOLTAGE, AND KWH USAGE. PROVIDE & INSTALL RS-485 COMMUNICATION ADAPTER ON ALL 777'S (SYMCOM PART NO. "RS485MS-2W").
2. PROVIDE MODIFICATIONS INSIDE EXISTING STARTER CABINETS TO ALLOW RTU THE ABILITY TO MONITOR STATUSES AND ALARMS INDICATED ON CONNECTION DIAGRAM (E.G. RUN STATUS, AUTO STATUS, FAULT ALARM) VIA A SINGLE N.O. DRY CONTACT FOR EACH POINT BEING MONITORED. PROVIDE MODIFICATIONS INSIDE EXISTING STARTERS THAT WILL ALLOW A N.O. DRY CONTACT FROM THE RTU THE ABILITY TO START AND STOP EACH PUMP WHEN THE PUMP'S CORRESPONDING STARTER IS IN 'AUTO' MODE. GENERAL FAULT ALARM IS TO BE COMPRISED OF ALL FAULT CONDITIONS THAT WILL SHUT THE PUMP DOWN DURING NORMAL OPERATION.
3. REFERENCE ASSOCIATED DETAILED RTU DRAWINGS FOR INFORMATION PERTAINING TO WIRING AND TERMINATION INSIDE RTU CABINET.
4. HALL EFFECT TRANSMITTERS ARE TO BE INCORPORATED INTO EXISTING PROPELLER FLOWMETERS, AND ARE TO BE PROVIDED & INSTALLED BY OWNER (TRANSMITTER COMES WITH A 25' PIGTAIL STYLE SIGNAL CABLE). ASSOCIATED TRANSMITTERS/DISPLAYS ARE TO BE PROVIDED BY OWNER, INSTALLED BY CONTRACTOR.
5. UTILIZE TWO (2) SPARE 20A 1P BREAKERS INSIDE EXISTING LIGHTING PANEL TO PROVIDE POWER TO RTU CABINET AND ASSOCIATED A/C UNIT. AT TIME OF INSTALLATION VERIFY THAT SUFFICIENT CAPACITY IS AVAILABLE IN PANEL PER NEC REQUIREMENTS. IF NOT AVAILABLE COORDINATE SOLUTION WITH OWNER.
6. A PROSOFT MODULE IS TO BE INSTALLED INSIDE EXISTING ARSENIC TREATMENT SYSTEM PLC RACK TO PROVIDE THE ABILITY TO COMMUNICATE WITH THE SITE PLC VIA MODBUS TCP/IP. MODULE IS TO BE A PROSOFT MVI46-MNET.
7. REFERENCE INSTRUMENT INDEX ON SHEET E03 FOR MANUFACTURER/MODEL INFORMATION.
8. ANTENNA 'ANT-410' IS TO BE A 10dB GAIN YAGI STYLE ANTENNA AND MANUFACTURED BY SCALA, MODEL TY-900 OR EQUAL. ASSOCIATED ANTENNA CABLE IS TO HAVE A MAXIMUM OF A 3.9dB LOSS VALUE (@900MHZ) PER 100' OF LENGTH AND MANUFACTURED BY TIMES MICROWAVE SYSTEMS, MODEL LMR-400 OR EQUAL.

Rev-J By Date

Expires 3/31/11

DLT&V SYSTEMS ENGINEERING

AZ WATER WHITE TANK SITES
SCADA DESIGN
SCHEM./CONN. DIAGRAM &
PANEL SCHEDULE-WELLS 2 & 4

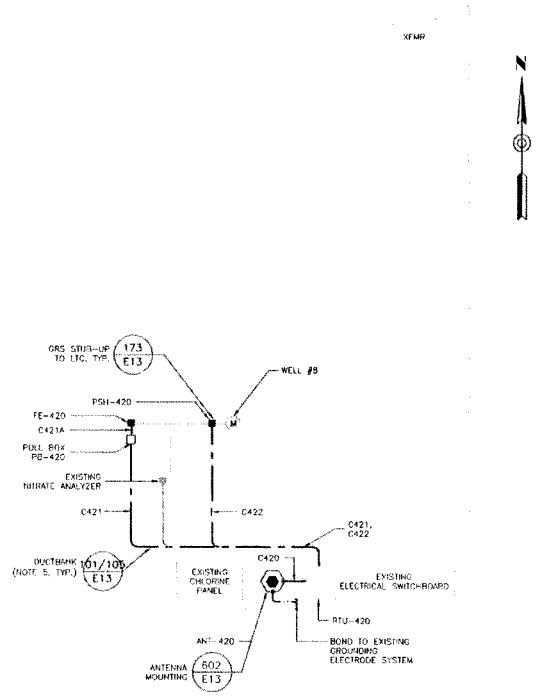
Scale	N.T.S., U.O.N.
Job No.	1400.00.100
CADD File No.	
Designed	SB
Drawn	TB
Checked	DN
Date	DECEMBER 2009
Sheet	E006

XREF: 1219_BRDR

DWG FILE: 1400.0.100_E006.dwg 2:50pm PLOTTED: Dec 30, 2009 johnsn

NOTES:

1. INFORMATION REFLECTED ON THIS DRAWING PERTAINING TO: RELATIVE EQUIPMENT LOCATIONS, ROUTING AND CONNECTIONS OF PROCESS PIPING AND ROUTINGS OF EXISTING CONDUITS IS APPROXIMATE AND SCHEMATIC IN NATURE.
2. CONDUIT #'S AND EQUIPMENT IDENTIFIERS (E.G. FE-101) REFLECTED ON THIS DRAWING HAVE BEEN GENERATED FOR ASSOCIATION PURPOSES WITHIN THIS DESIGN PACKAGE. THEY DO NOT REFLECT ACTUAL #'S OR IDENTIFIERS THAT MAY EXIST IN THE FIELD.
3. CONDUIT/DUCTBANK ROUTINGS SHOWN ARE APPROXIMATE. ACTUAL ROUTINGS ARE TO BE FIELD DETERMINED.
4. INSTRUMENT MOUNTING LOCATIONS SHOWN ARE APPROXIMATE. ACTUAL MOUNTING LOCATIONS ARE TO BE VERIFIED/CONFIRMED BY OWNER.
5. DIRECT-BURIED DUCTBANK DETAIL 101 SHALL BE USED IN NON-VEHICULAR TRAFFIC AREAS ONLY. CONCRETE ENCASED DUCTBANK DETAIL 105 SHALL BE USED FOR ALL VEHICULAR TRAFFIC AREAS. AREA CLASSIFICATION TO BE CONFIRMED/VERIFIED BY OWNER.



Rev #	By	Date

Expires 3/31/11

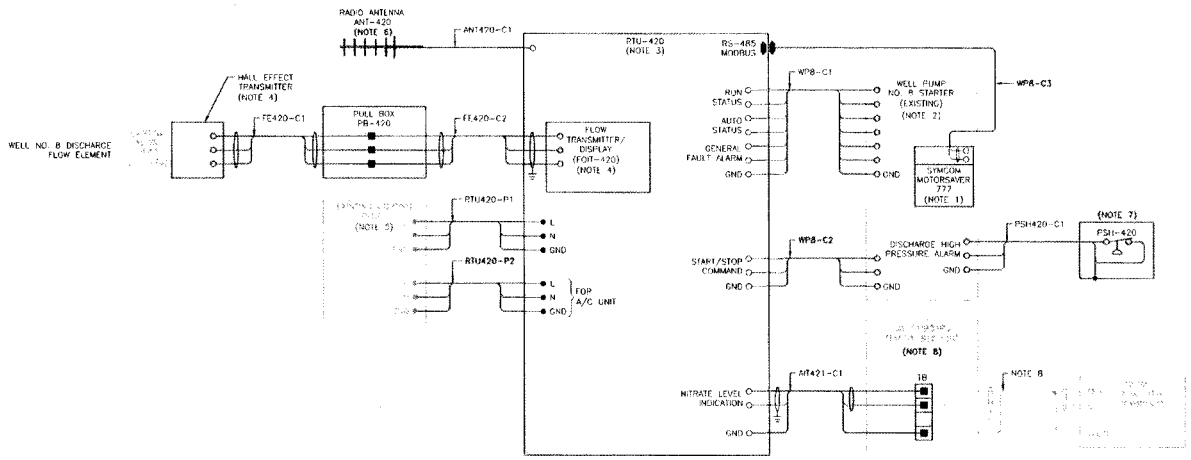
DLT&V SYSTEMS ENGINEERING

AZ WATER WHITE TANK SITES
SCADA DESIGN
SITE PLAN
WELL #8

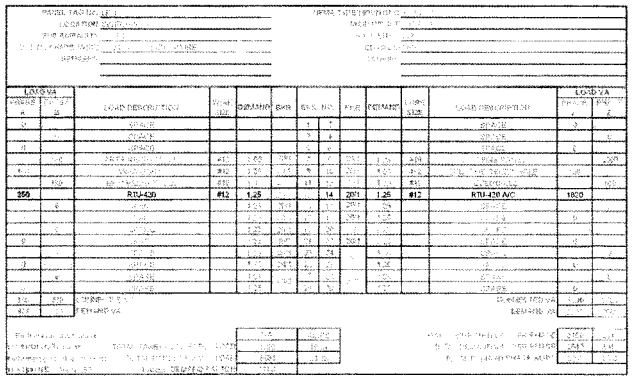
Scale	N.T.S., U.O.N.
Job No.	1400.00.100
CADD File No.	
Designed	SB
Drawn	TB
Checked	DN
Date	DECEMBER 2009
Sheet	E007

XREF: 1219_BRDR

DWG FILE: 1400.0.100_E007.dwg 2:50pm PLOTTED: Dec 30, 2009 johnsns



A WELL 8 – CONNECTION DIAGRAM



B WELL 8 – PANEL SCHEDULE

NOTES:

1. EXISTING SYMCOM 460 "MOTORSAVER" IS TO BE REPLACED WITH A SYMCOM 777 "MOTORSAVER", WHICH WILL BE UTILIZED TO MONITOR MOTOR CURRENT, VOLTAGE AND KWH USAGE. PROVIDE & INSTALL RS-485 COMMUNICATION ADAPTER ON 777 (SYMCOM PART NO. RS485MS-2W).
2. PROVIDE MODIFICATIONS INSIDE EXISTING STARTER CABINET TO ALLOW RTU THE ABILITY TO MONITOR STATUSES AND ALARMS INDICATED ON CONNECTION DIAGRAM (E.G. RUN STATUS, AUTO STATUS, FAULT ALARM) VIA A SINGLE N.O. DRY CONTACT FOR EACH POINT BEING MONITORED. PROVIDE MODIFICATIONS INSIDE EXISTING STARTER THAT WILL ALLOW A N.O. DRY CONTACT FROM THE RTU THE ABILITY TO START AND STOP THE PUMP WHEN THE CORRESPONSING STARTER IS IN "AUTO" MODE. GENERAL FAULT ALARM IS TO BE COMPRISED OF ALL FAULT CONDITIONS THAT WILL SHUT THE PUMP DOWN DURING NORMAL OPERATION.
3. REFERENCE ASSOCIATED DETAILED RTU DRAWINGS FOR INFORMATION PERTAINING TO WIRING AND TERMINATIONS INSIDE RTU CABINET.
4. HALL EFFECT TRANSMITTER IS TO BE INCORPORATED INTO EXISTING PROPELLER FLOWMETER, AND PROVIDED & INSTALLED BY OWNER (TRANSMITTER COMES WITH A 25' PIGTAIL STYLE SIGNAL CABLE). ASSOCIATED TRANSMITTER/DISPLAY IS TO BE PROVIDED BY OWNER, INSTALLED BY CONTRACTOR.
5. UTILIZE TWO (2) SPARE 20A, 1P BREAKERS INSIDE EXISTING LIGHTING PANEL TO PROVIDE POWER TO RTU CABINET AND ASSOCIATED A/C UNIT. REFERENCE LIGHTING PANEL SCHEDULE BELOW.
6. ANTENNA "ANT-420" IS TO BE A 10dB GAIN YAGI STYLE ANTENNA AND MANUFACTURED BY SCALA, MODEL TY-900 OR EQUAL. ASSOCIATED ANTENNA CABLE IS TO HAVE A MAXIMUM 3.9dB LOSS VALUE (@900MHZ) PER 100' OF LENGTH AND MANUFACTURED BY TIMES MICROWAVE SYSTEMS, MODEL LMR-400 OR EQUAL.
7. REFERENCE INSTRUMENT INDEX ON SHEET E03 FOR MANUFACTURER/MODEL INFORMATION.
8. ADD TERMINAL BLOCK STRIP TO EMPTY SECTION OF EXISTING SWITCHBOARD. TERMINATE EXISTING WIRING FROM NITRATE ANALYZER TO NEW TERMINAL BLOCK STRIP AND PULL NEW WIRING FROM NEW TERMINAL BLOCK STRIP TO RTU-420.

DLT&V SYSTEMS ENGINEERING

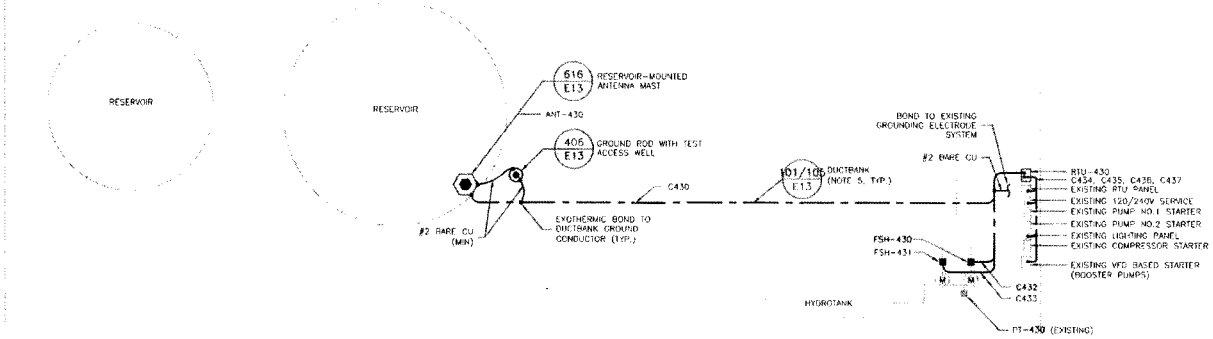
AZ WATER WHITE TANK SITES
SCADA DESIGN
SCHEM./CONN. DIAGRAM &
PANEL SCHEDULE-WELL#8

Scale: N.T.S., U.O.N.
Job No.: 1400.00.100
CADD File No.:
Designed: SB
Drawn: TB
Checked: DN
Date: DECEMBER 2009
Sheet: E008

DWG FILE: 1400.0.100_E008.dwg 2:50pm PLOTTED: Dec 30, 2009 johnsrs

NOTES:

1. INFORMATION REFLECTED ON THIS DRAWING PERTAINING TO: RELATIVE EQUIPMENT LOCATIONS, ROUTING AND CONNECTIONS OF PROCESS PIPING AND ROUTINGS OF EXISTING CONDUITS IS APPROXIMATE AND SCHEMATIC IN NATURE.
2. CONDUIT #'S AND EQUIPMENT IDENTIFIERS (E.G. EE-101) REFLECTED ON THIS DRAWING HAVE BEEN GENERATED FOR ASSOCIATION PURPOSES WITHIN THIS DESIGN PACKAGE. THEY DO NOT REFLECT ACTUAL #'S OR IDENTIFIERS THAT MAY EXIST IN THE FIELD.
3. CONDUIT/DUCTBANK ROUTINGS SHOWN ARE APPROXIMATE. ACTUAL ROUTINGS ARE TO BE FIELD DETERMINED.
4. INSTRUMENT MOUNTING LOCATIONS SHOWN ARE APPROXIMATE. ACTUAL MOUNTING LOCATIONS ARE TO BE VERIFIED/CONFIRMED BY OWNER.
5. DIRECT-BURIED DUCTBANK DETAIL 101 SHALL BE USED IN NON-VEHICULAR TRAFFIC AREAS ONLY. CONCRETE ENCASED DUCTBANK DETAIL 105 SHALL BE USED FOR ALL VEHICULAR TRAFFIC AREAS. AREA CLASSIFICATION TO BE CONFIRMED/VERIFIED BY OWNER.



Rev'd	By	Date

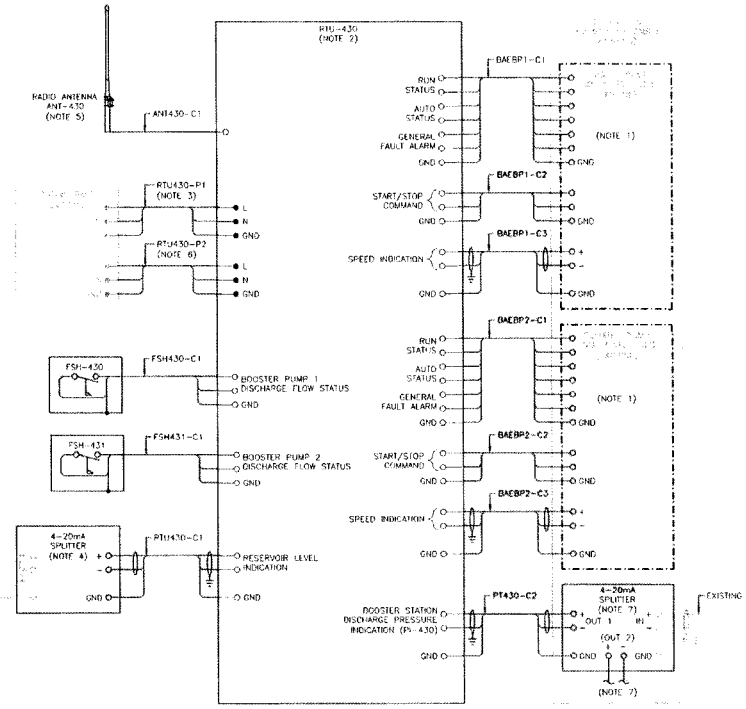
Expires 3/31/11

DLT&V SYSTEMS ENGINEERING

AZ WATER WHITE TANK SITES
SCADA DESIGN
SITE PLAN
BEAUTIFUL ARIZONA ESTATES

Scale: N.T.S., U.O.N.
Job No. 1400.00.100
CADD File No.
Designed SB
Drawn TB
Checked DN
Date DECEMBER 2009
Sheet E009

DWG FILE: 1400.0.100_E009.dwg 2:50pm PLOTTED: Dec 30, 2009 jahrens



A BEAUTIFUL ARIZONA ESTATES – CONNECTION DIAGRAM

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[illegible]	[illegible]	AIR CONDITIONING	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	SPACE	[illegible]		[illegible]	[illegible]	[illegible]	20/1	1.35	#12	RTU-430 A/C		1620
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[illegible]	[illegible]	[illegible]				[illegible]	[illegible]				SPACE		
[illegible]	[illegible]	SUBTOTAL										2455	[illegible]
[illegible]	[illegible]	DEMAND										[illegible]	[illegible]

B BEAUTIFUL ARIZONA ESTATES – LIGHTING PANEL

NOTES:

1. PROVIDE MODIFICATIONS INSIDE EXISTING VFD STARTER CABINET TO ALLOW RTU THE ABILITY TO MONITOR STATUSES AND ALARMS INDICATED ON CONNECTION DIAGRAM (E.G. RUN STATUS, AUTO STATUS, FAULT ALARM) VIA A SINGLE N.O. DRY CONTACT FOR EACH POINT BEING MONITORED. GENERAL FAULT ALARM IS TO BE COMPRISED OF ALL FAULT CONDITIONS THAT WILL SHUT THE PUMP DOWN DURING NORMAL OPERATION.
2. REFERENCE ASSOCIATED DETAILED RTU DRAWINGS FOR INFORMATION PERTAINING TO WIRING AND TERMINATIONS INSIDE NEW RTU CABINET.
3. ADD 20A, 1P BREAKER INSIDE EXISTING LIGHTING PANEL, CKT. 10 TO PROVIDE POWER TO RTU CABINET. REFERENCE LIGHTING PANEL SCHEDULE BELOW.
4. PROVIDE ANALOG SPLITTER WITHIN EXISTING RTU PANEL TO COMMUNICATE RESERVOIR LEVEL FROM EXISTING RESERVOIR LEVEL TRANSMITTER TO NEW RTU-430.
5. ANTENNA ANT-430 IS TO BE AN OMNI-DIRECTIONAL STYLE ANTENNA WITH 6dB GAIN AND MANUFACTURED BY SCALA MODEL OCB6-900 OR EQUAL. ASSOCIATED ANTENNA CABLE IS TO HAVE A MAXIMUM 2.5dB LOSS VALUE (@900MHZ) PER 100' OF LENGTH AND MANUFACTURED BY TIMES MICROWAVE SYSTEMS, MODEL LMR-600 OR EQUAL.
6. ADD 20A, 1P BREAKER INSIDE EXISTING LIGHTING PANEL, CKT. 8 TO PROVIDE POWER TO RTU CABINET A/C UNIT. REFERENCE LIGHTING PANEL SCHEDULE BELOW.
7. ADD 4-20mA SPLITTER TO EXISTING VFD STARTER CABINET. CONNECT EXISTING PRESSURE TRANSMITTER WIRING TO SPLITTER INPUT. CONNECT (1) OUTPUT OF SPLITTER TO TERMINALS IN WHICH ORIGINAL PT WIRING WAS REMOVED FROM. REMAINING OUTPUT IS TO BE WIRED TO NEW RTU (RTU-430) AS SHOWN.

Rev'd	By	Date

Expires 3/31/11

DLT&V SYSTEMS ENGINEERING

AZ WATER WHITE TANK SITES
SCADA DESIGN
SCHEM./CONN. DIA. & PANEL
SCHED-BEAUTIFUL AZ ESTATES

Scale: N.T.S., U.O.N.
Job No.: 1400.00.100
CADD File No.:
Designed: SB
Drawn: TR
Checked: DN
Date: DECEMBER 2009
Sheet: E010

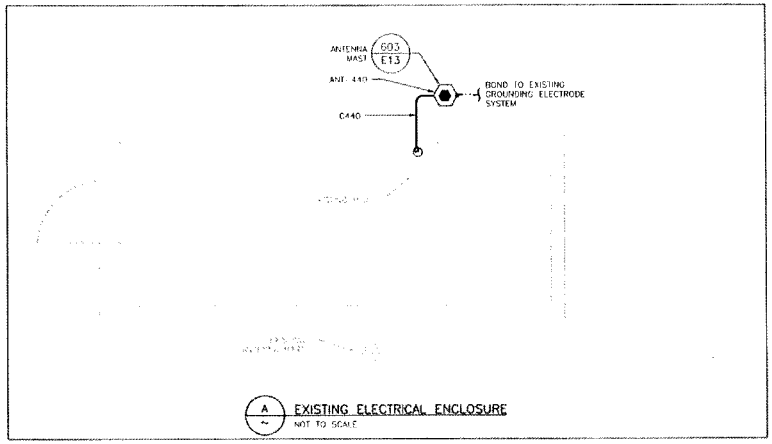
XREF: 1219_BRGR

DWG FILE: 1400.0.100_E010.dwg 2:50pm PLOTTED: Dec 30, 2009 jahreens

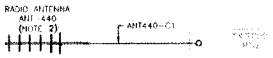
NOTES:

1. SUPPLY POWER TO NEW MDS INET II RADIO FROM EXISTING 24VDC POWER SUPPLY UTILIZING SPARE FUSE. INSTALL MDS INET II RADIO ACCORDING TO MANUFACTURER'S INSTRUCTIONS USING SURGE SUPPRESSOR. SURGE SUPPRESSOR MANUFACTURER AND MODEL NUMBER SHALL BE POLYPHASER IS-50NX-C2 BROADBAND COAXIAL SURGE PROTECTOR, FLANGE MOUNT, 125-1000MHZ OR EQUAL.

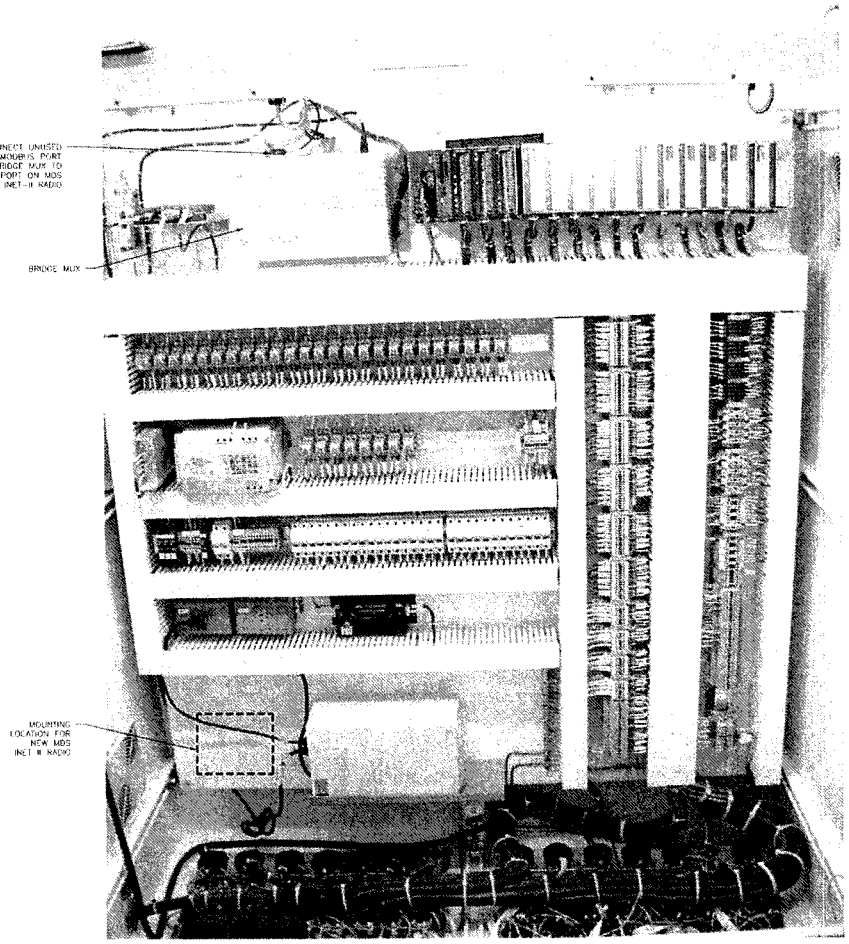
2. ANTENNA "ANT-440" IS TO BE A 10dB GAIN YAGI STYLE ANTENNA AND IS TO BE AS MANUFACTURED BY SCALA, MODEL TY-900 OR EQUAL. ASSOCIATED ANTENNA CABLE IS TO HAVE A MAXIMUM OF A 3.5dB LOSS VALUE (@900MHZ) PER 100' OF LENGTH AND IS TO BE AS MANUFACTURED BY TIMES MICROWAVE SYSTEMS, MODEL LMR-400 OR EQUAL.



A EXISTING ELECTRICAL ENCLOSURE
NOT TO SCALE



B BLUE HORIZONS - CONNECTION DIAGRAM



C EXISTING RTU CABINET - NEW ADDITIONS
NOT TO SCALE

No.	By	Date

Expires 3/31/11

DL T&V
SYSTEMS ENGINEERING
DLT&V, INC. 2141 E. BROADWAY, SUITE 100
PHOENIX, AZ 85040 T: 602.231.8000 F: 602.231.8020

AZ WATER WHITE TANK SITES
SCADA DESIGN
PANEL LAYOUT & SITE
MODIFICATIONS - BLUE HORIZONS

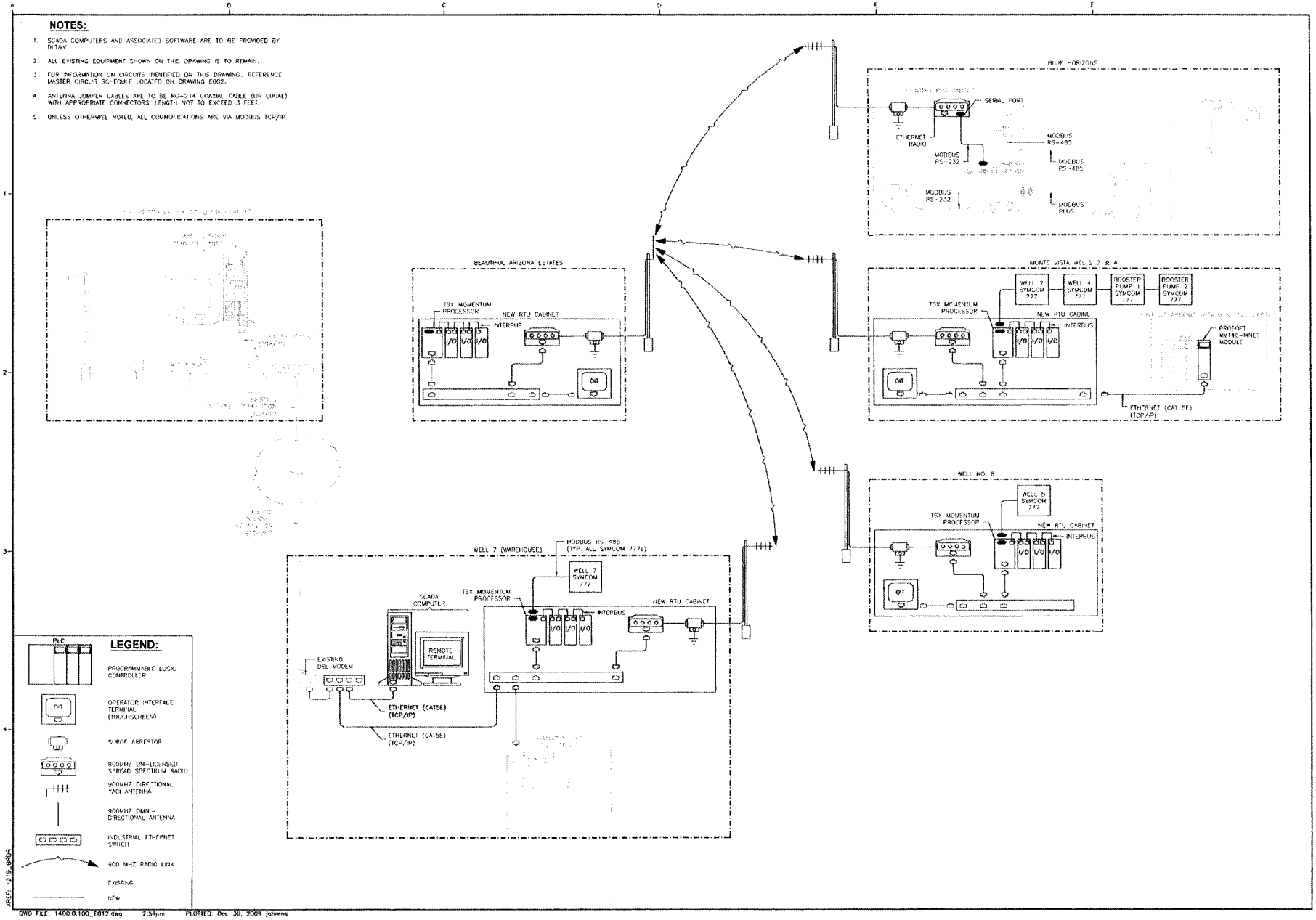
Scale: N.T.S., U.O.N.
Job No.: 1400.00.100
CADD File No.:
Designed: SB
Drawn: TB
Checked: DN
Date: DECEMBER 2009
Sheet: E011

DWG FILE: 1400.0.100_E011.dwg 2:51pm PLOTTED: Dec 30, 2009 johnns

XREF: 1219_BROR

NOTES:

1. SCADA COMPUTERS AND ASSOCIATED SOFTWARE ARE TO BE PROVIDED BY DLT&V.
2. ALL EXISTING EQUIPMENT SHOWN ON THIS DRAWING IS TO REMAIN.
3. FOR INFORMATION ON CIRCUITS IDENTIFIED ON THIS DRAWING., REFERENCE MASTER CIRCUIT SCHEDULE LOCATED ON DRAWING E002.
4. ANTENNA JUMPER CABLES ARE TO BE RG-214 COAXIAL CABLE (OR EQUAL) WITH APPROPRIATE CONNECTORS, LENGTH NOT TO EXCEED 3 FEET.
5. UNLESS OTHERWISE NOTED, ALL COMMUNICATIONS ARE VIA MODBUS TCP/IP.

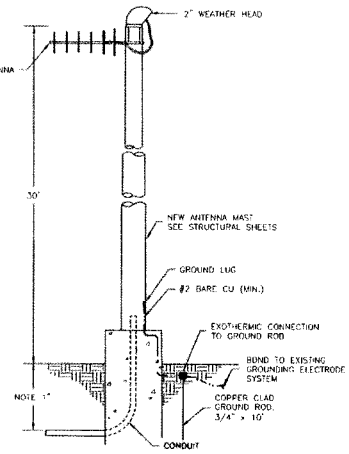


DLT&V SYSTEMS ENGINEERING

AZ WATER WHITE TANK SITES
SCADA DESIGN
SYSTEM COMMUNICATIONS DIAGRAM

Scale	N.T.S., U.O.N.
Job No.	1400.00.100
CADD File No.	
Designed	SB
Drawn	TB
Checked	DN
Date	DECEMBER 2009
Sheet	E012

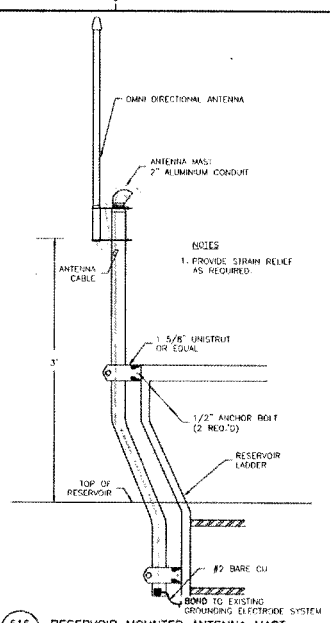
DWG FILE: 1400.0.100_E012.dwg 2:51pm PLOTTED: Dec 30, 2009 johnns



NOTES:

1. CONTRACTOR SHALL SUBMIT FINAL ANTENNA MAST AND CONCRETE BASE DRAWINGS SEALED BY STRUCTURAL ENGINEER.

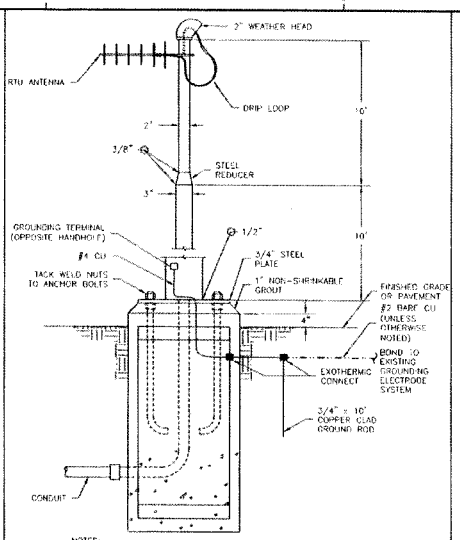
603 TYP — ANTENNA MAST ELEVATION
NOT TO SCALE



NOTES

1. PROVIDE STRAIN RELIEF AS REQUIRED.

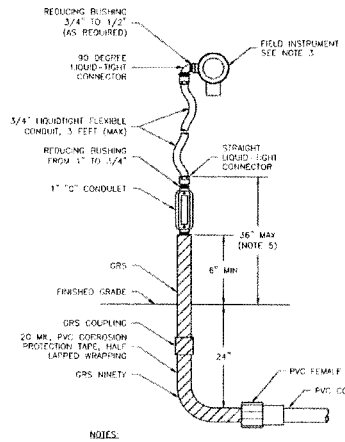
616 TYP — RESERVOIR MOUNTED ANTENNA MAST
NOT TO SCALE



NOTES:

1. CONTRACTOR SHALL SUBMIT FINAL ANTENNA MAST AND CONCRETE BASE DRAWINGS SEALED BY STRUCTURAL ENGINEER.
2. STEEL PIPE TO BE PRIMED AND PAINTED TO THE OWNERS SPECIFICATION
3. J-BOLTS, NUTS, AND WASHERS SHALL BE STAINLESS STEEL

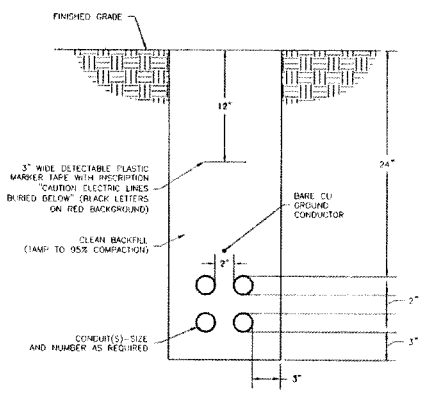
602 TYP — ANTENNA POLE MOUNTING SHORT BASE
NOT TO SCALE



NOTES:

1. WHERE CONDUITS ARE INSTALLED IN A CONCRETE SLAB, THE 24" DIMENSION DOES NOT APPLY. CONDUITS SHALL BE INSTALLED BETWEEN REBAR MATS OR UNDER A SINGLE REBAR MAT.
2. IN CORROSIVE AREAS, PVC COATED GRS SHALL BE USED.
3. MOUNT INSTRUMENT AS PER MANUFACTURERS' RECOMMENDATIONS.
4. INSULATE WATER LINES AND TRANSMITTER TO PREVENT FREEZING.
5. SUPPORT AS REQUIRED FOR DISTANCES GREATER THAN 36".

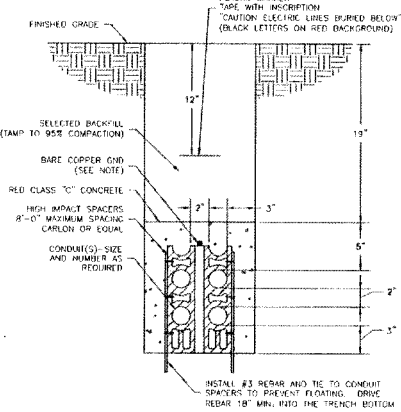
173 TYP — GRS STUB-UP TO LTC DETAIL
NOT TO SCALE



NOTES:

1. GROUND CONDUCTOR SHALL RUN CONTINUOUSLY THROUGH MANHOLES AND SHALL CONTINUE FROM DUCTBANK INTO SWITCHGEAR OR BUILDING GROUNDING SYSTEM AND SHALL BE BONDED TO EACH RIGID METAL CONDUIT. SIZE TO BE #4/0 UNLESS OTHERWISE INDICATED ON PLANS.
2. ALL DIMENSIONS ARE MINIMUM.

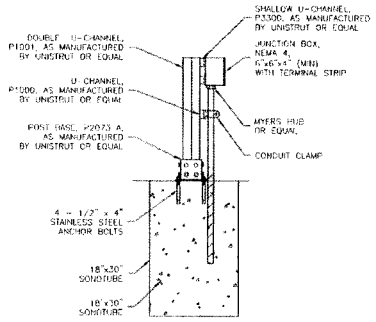
101 TYP — DUCTBANK - DIRECT BURIED
NOT TO SCALE
UTILIZE IN NON-VEHICULAR AREAS



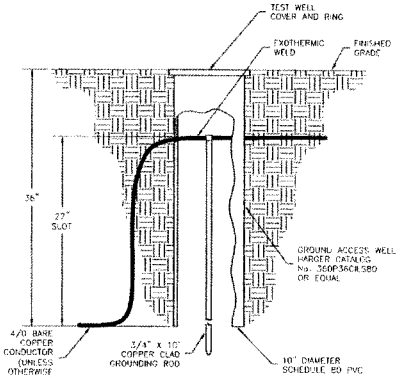
NOTES:

1. GROUND CONDUCTOR SHALL RUN CONTINUOUSLY THROUGH MANHOLES AND SHALL CONTINUE FROM DUCTBANK INTO SWITCHGEAR OR BUILDING GROUNDING SYSTEM AND SHALL BE BONDED TO EACH RIGID METAL CONDUIT. SIZE TO BE #4/0 UNLESS OTHERWISE INDICATED ON PLANS.
2. ALL DIMENSIONS ARE MINIMUM.

105 TYP — DUCTBANK - CONCRETE ENCASED
NOT TO SCALE
UTILIZE IN VEHICULAR AREAS



315 TYP — JUNCTION BOX MOUNTING DETAIL
NOT TO SCALE



406 TYP — GROUND ROD WITH TEST ACCESS WELL
NOT TO SCALE

Rev'd	By	Date

Expires 3/31/11

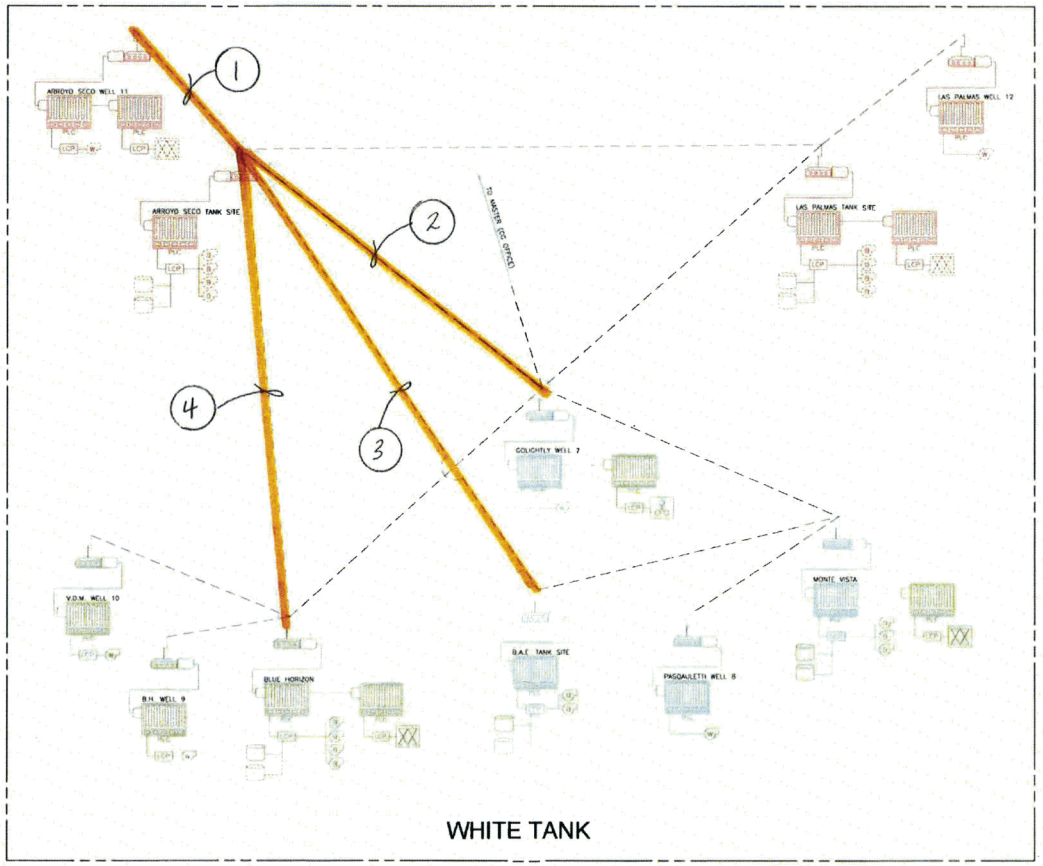
DLT&V SYSTEMS ENGINEERING
2555 N. CENTRAL AVE., STE. 1
PHOENIX, ARIZONA 85004-1103

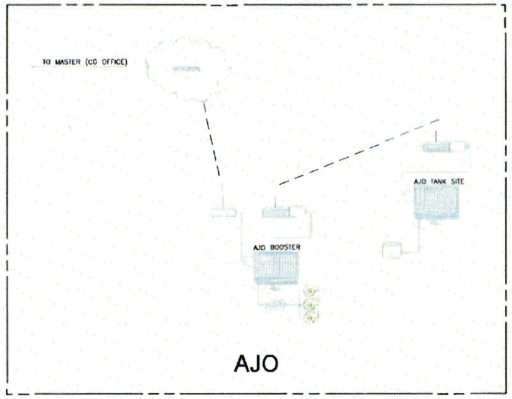
AZ WATER WHITE TANK SITES
SCADA DESIGN
INSTALLATION DETAILS

Scale: N.T.S., U.O.N.
Job No. 1400.00.100
CADD File No.
Designed SB
Drawn TB
Checked DN
Date DECEMBER 2009
Sheet E013

DWG FILE: 1400.0.100_E013.dwg 2:51pm PLOTTED: Dec 30, 2009 johnson

ARIZONA WATER COMPANY
CASA GRANDE DIVISION SCADA COMMUNICATIONS SCHEMATIC
SHEET 1 OF 1





LEGEND:

- RADIO COMMUNICATION PATH
- SCADA COMPUTER
- 900 MHz RADIO
- CELLULAR MODEM
- OMNI DIRECTIONAL ANTENNA
- YAGI DIRECTIONAL ANTENNA
- WELL PUMP
- BOOSTER PUMP
- WATER STORAGE TANK
- ARSENIC REMOVAL FACILITY
- ARSENIC/NITRATE REMOVAL FACILITY
- NITRATE REMOVAL FACILITY
- EX. SCADA COMMUNICATION
- NEW SCADA COMMUNICATION (2013)
- FUTURE SCADA COMMUNICATION
- FUTURE FACILITY

ABREVIATIONS:

PLC - PROGRAMMABLE LOGIC CONTROLLER
HMI - HUMAN MACHINE INTERFACE

REVISION: LATEST REVISION: 10-11-2013

The installation shown is to be installed in accordance with the Arizona Water Company Operations Manual on file with the Arizona Department of Environmental Quality

Dwg. No. (Prefix-Year-Seq.) 263-1100 (Prefix-Year-Seq.) 263-0-1100-1

P.E. No.:
STATUS:
USAC 208C: SEC. -T. R.
Dwg. 201:
DATE: 3-6-2013
SCALE: N.T.S.
Drawn BY: JPK
CHECKED BY:

ARIZONA WATER COMPANY
3905 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-5860

PROJECT TITLE: CASA GRANDE DIVISION SCADA SCHEMATIC
PROJECT SHEET TITLE: WHITE TANK, AJO

DWG. No.

SHEET 1 OF 1

ARIZONA WATER COMPANY

WHITE TANK SCADA

PROJECT NO. 1-5032

SUBMITTAL

FINAL RTU DRAWINGS

LECO JOB NO. 4000.17
JANUARY 2015

Submittal #001B

LUDVIK ELECTRIC

1020 E. University Drive, Phoenix, AZ 85034 • Telephone (602) 777-5000 • Fax (602) 602-258-0782
AZ Licenses: 088575 (L-11); 127121 (A-17)

ARIZONA WATER COMPANY
WHITE TANKS WATER SYSTEM SCADA DESIGN
BEAUTIFUL ARIZONA ESTATES

Registered Professional Engineer (Electrical)
CERTIFICATE NO.
49856
HEBER
TORRES
Date Signed 12/5/2014
ARIZONA U.S.A.
Expires 9/30/15

Rev'd	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
BEAUTIFUL ARIZONA ESTATES
COVER SHEET

Scale	NTS
Job No.	1834.00.101
CADD File No.	1834.00.101_BAE_EC01.dwg
Designed	DLN
Drawn	JHA
Checked	DLN
Date	DEC. 2014
Sheet	EC01

XREF: DLTV_BORDER_22X34

PLOTTED: 12/7/2014 1:05 PM 6:51 AM BY: johrens DWG FILE: X:\1800'S\1834.00 ARIZONA WATER CO. WHITE TANKS SCADA PROJECT (FOR PREVIOUS MODICON MOMENTUM DESIGN SEE PROJECT NO. 1400)\100\101 - RTU DESIGN\ACTIVE CAD FILES\BEAUTIFUL ARIZONA ESTATES\1834.00.101_BAE_EC01.DWG

DRAWING INDEX

Drawing No.	Drawing Title
EC01	COVER SHEET
EC02	DRAWING INDEX, STANDARD SYMBOLS, LEGENDS, AND ISA TABLE
EC03	BILL OF MATERIALS
EC04	PLC CABINET ENCLOSURE LAYOUT AND NAMEPLATE SCHEDULE
EC05	TERMINAL BLOCK AND DEVICE DETAILS
EC06	COMMUNICATION SYSTEM ARCHITECTURE DIAGRAM
EC07	POWER DISTRIBUTION SCHEMATIC
EC08	WIRING DIAGRAMS DI-1 AND DI-2
EC09	WIRING DIAGRAMS AI-1

SCHEMATIC/WIRING DIAGRAM SYMBOLS

- CIRCUIT BREAKER
- FUSE WITH PULLER *A – AMP RATING
- SWITCH NORMALLY OPEN
- SELECTOR SWITCH 2 POSITION, NORMALLY OPEN
- SELECTOR SWITCH 3 POSITION, NORMALLY OPEN
- TEMPERATURE SWITCH NORMALLY OPEN
- SINGLE LEVEL TERMINAL BLOCK * – TB IDENTIFICATION
- DOUBLE LEVEL TERMINAL BLOCK * – TB IDENTIFICATION
- TERMINAL BLOCK W/ FUSE PLUG AND FUSE * – TB IDENTIFICATION ** – FUSE AMPS
- TERMINAL BLOCK W/ DISCONNECT KNIFE * – TB IDENTIFICATION
- SURGE SUPPRESSOR FOR FLOATING SIGNAL CIRCUITS * – SS NUMBER IDENTIFICATION
- SURGE SUPPRESSOR FOR POWER SUPPLY * – SS NUMBER IDENTIFICATION
- CONTROL RELAY * – CR NUMBER IDENTIFICATION # – TERMINAL NUMBER
- EARTH GROUND
- DUPLEX RECEPTACLE
- SINGLE RECEPTACLE
- DC POWER SUPPLY * – DC VOLTAGE RATING

COLOR CODE CHART FOR 18 AWG BELDEN CABLES 12 COND. NO. 8466 AND 19 COND. NO. 8619

BLACK	BLK	1st
WHITE	WHT	2nd
RED	RED	3rd
GREEN	GRN	4th
ORANGE	ORN	5th
BLUE	BLU	6th
WHITE/BLACK	WHT/BLK	7th
RED/BLACK	RED/BLK	8th
GREEN/BLACK	GRN/BLK	9th
ORANGE/BLACK	ORN/BLK	10th
BLUE/BLACK	BLU/BLK	11th
BLACK/WHITE	BLK/WHT	12th
RED/WHITE	RED/WHT	13th
GREEN/WHITE	GRN/WHT	14th
BLUE/WHITE	BLU/WHT	15th
BLACK/RED	BLK/RED	16th
WHITE/RED	WHT/RED	17th
ORANGE/RED	ORN/RED	18th
BLUE/RED	BLU/RED	19th

WIRE SIZES

(CIRCUIT WIRING SHALL BE RATED IN ACCORDANCE WITH THE MAXIMUM PERMITTED AMPERE RATING/SETTING OF THE OVERCURRENT PROTECTION DEVICE. N.E.C. 210-3)

120VAC / 20A POWER CIRCUIT – MIN. #12 AWG.
120VAC / 15A AND BELOW – MIN. #14 AWG.

24VDC / 20A POWER CIRCUIT – MIN. #12 AWG.
24VDC / 15A AND BELOW – MIN. #16 AWG.
24VDC I/O & SIGNAL CIRCUIT – MIN. #18 AWG.

4-20mADC I/O SIGNAL CIRCUIT – MIN. #18 AWG.

ABBREVIATIONS

A/R	AS REQUIRED
AC COM	NEUTRAL
AFF	ABOVE FINISHED FLOOR
AI	ANALOG INPUT
ANL COM	ANALOG COMMON
AO	ANALOG OUTPUT
AWG	AMERICAN WIRE GAUGE
BLK	BLACK
BLU	BLUE
CAP	CENTRAL ARIZONA PROJECT
CLR	CLEAR
CR	CONTROL RELAY
DC COM	DC COMMON
DC+	DC POSITIVE POTENTIAL
DI	DISCRETE INPUT
DO	DISCRETE OUTPUT
DS	DOOR SWITCH
FOM	FIBER OPTIC MODEM
FOT	FIBER OPTIC TRANSCEIVER
GND	GROUND
GRN	GREEN
I/O	INPUT/OUTPUT
L	LINE
N	NEUTRAL
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NP	NAMEPLATE
OIT	OPERATOR INTERFACE TERMINAL
ORN	ORANGE
PDB	POWER DISTRIBUTION BLOCK
PLC	PROGRAMMABLE LOGIC CONTROLLER
PP	FIBER OPTIC PATCH PANEL
PS	POWER SUPPLY
REC	RECEPTACLE
RES	RESERVOIR
RIO	REMOTE INPUT/OUTPUT
RTU	REMOTE TELEMETRY UNIT
SLC	SMALL LOGIC CONTROLLER
SP	SPACE
SS	SURGE SUPPRESSOR
TB	TERMINAL BLOCK
UPS	UNINTERRUPTIBLE POWER SUPPLY
WHT	WHITE
WTR	WATER TREATMENT PLANT
WWTP	WASTE WATER TREATMENT PLANT

ISA INSTRUMENT IDENTIFICATION TABLE

FIRST LETTERS			SUCCEEDING LETTERS		
MEASURED OR INITIATING VARIABLE		MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYZER		ALARM		AUTO
B	BURNER, COMBUSTION				
C	CONDUCTIVITY			CONTROL	CLOSED
D	DENSITY	DIFFERENTIAL			
E	VOLTAGE		ELEMENT		
F	FLOW	RATIO			
G	GAUGE		GLASS, VIEWING DEVICE		
H	HAND				HIGH
I	CURRENT		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHED.	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	MOTION				MIDDLE
N	INTRUSION				NORMAL
O	TORQUE		ORIFICE, RESTRICTION		OPEN
P	PRESSURE		POINT CONNECTION		STOP
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD, OR PRINT		REMOTE
S	SPEED, FREQUENCY	SAFETY		SWITCH	START
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION			VALVE, LOUVER	
W	WEIGHT		WELL		
X	MOTOR	X-AXIS	UNCLASSIFIED	UNCLASSIFED	UNCLASSIFED
Y	EVENT, STATE, OR PRESENCE	Y-AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION	Z-AXIS		DRIVER, ACTUATOR, FINAL CONTROL ELEMENT	

COLOR CODE CHART FOR 22 AWG BELDEN PAIRED CABLE NO. 8761

BLACK	BLK	1st
CLEAR	CLR	2nd

DRAWING REFERENCES

####A – WIRE NUMBER
0321 – RUNG NUMBER

RUNG NUMBERING

0321
RUNG NUMBER
DRAWING NUMBER (E.G. EC##)

WIRE NUMBERING

0321A
WIRE LETTER
RUNG NUMBER

PANEL I/O WIRES TAG LEGEND

0:#.#.2
CHANNEL #
SLOT #
RACK #
0=OUTPUT 1=INPUT

LINETYPE LEGEND

- FIELD WIRING
- INTERNAL PANEL WIRING
- RADIO COMMUNICATION LINK
- FO — FIBER OPTIC CABLE
- FOP — FIBER OPTIC PATCH CABLE
- EN — ETHERNET CAT5 CABLE
- DH+ — DATA HIGHWAY PLUS
- RIO — REMOTE INPUT OUTPUT
- AREA DIVIDER
- EQUIPMENT
- PATCH PANEL

PANEL WIRING IDENTIFICATION

BLACK – 120VAC LINE
WHITE – 120VAC NEUTRAL
GREEN – GROUND
BLUE – DC POSITIVE
BLUE W/WHITE STRIPE – DC COMMON

Registered Professional Engineer (Electrical) CERTIFICATE NO. 49856 HEBER TORRES Date Signed 12/5/2014 ARIZONA U.S.A.
Expires 9/30/15

Rev'd	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
BEAUTIFUL ARIZONA ESTATES
DRAWING INDEX, STANDARD SYMBOLS, LEGENDS, AND ISA TABLE

Scale	NTS
Job No.	1834.00.101
CADD File No.	1834.00.101_BAE_EC02.dwg
Designed	DLN
Drawn	JHA
Checked	DLN
Date	DEC. 2014
Sheet	EC02

QTY	ITEMS	MFG	CATALOG	DESC
1	102	MODICON	BMX CPS 2000	M340 POWER SUPPLY MODULE - 20W
1	105	MODICON	BMX P34 1000	M340 STANDARD PROCESSOR MODULE
2	106	MODICON	BMX DDI 1602	M340 DISCRETE INPUT MODULE
1	108	MODICON	BMXAMI0810	M340 8 CHANNEL ISOLATED ANALOG INPUT
1	110	MODICON	BMXNOE0100	M340 ETHERNET MODULE - 1 x RJ45 10/100
1	115	MODICON	BMX XBP 0800	M340 RACK
3	116	MODICON	BMXXEM010	UNUSED SLOT CONNECTOR PROTECTIVE COVER
2	196	GE MDS	INETII-DGSN	INDUSTRIAL SPREAD SPECTRUM RADIO, DUAL GATEWAY, W/ ETHERNET AND RS-232 CONNECTIONS, 902 - 928 MHz
1	197	SQUARE D	HMIGTO5310	MAGELIS OPERATOR INTERFACE TERMINAL, 24VDC, 10.4" VGA-TFT
1	198	SQUARE D	HMIZSD4G	4GB MEMORY SG CARD
A/R	201	AB	199-DR1	ZINC/STEEL DIN RAIL EN 50022 (35mm x 7.5mm x 1m)
19	202	AB	1492-EA35	END ANCHOR
6	210	AB	1492-GM35	TERMINAL BLOCK, GROUP MARKING CARRIER
12	215	AB	1492-J4	SCREW CONNECTION TERMINAL BLOCK; SINGLE CIRCUIT, 600V, GRAY, FEED-THROUGH
3	216	AB	1492-EBJ3	END BARRIER; 1492-J
56	219	AB	1492-JD3P	SCREW CONNECTION TERMINAL BLOCK; DOUBLE LEVEL,W/ PLUGGABLE TOP LEVEL
4	220	AB	1492-EBJD3P	END BARRIER; 1492-J
8	221	AB	1492-JG4	SCREW CONNECTION TERMINAL BLOCK; GROUNDING
16	223	AB	1492-FPK224	FUSE PLUG INSERT W/ BFI, 10-36VAC/DC WORKING VOLTAGE, 10A MAX @ 250V.
40	225	AB	1492-DPL	DISCONNECT PLUG FOR 1492-JD3 P AND 1492-JD3
1	230	AB	1492-SP1C005	CIRCUIT BREAKER, MINIATURE, ONE POLE, 0.5A
2	231	AB	1492-SP1C010	CIRCUIT BREAKER, MINIATURE, ONE POLE, 1A
1	232	AB	1492-SP1C020	CIRCUIT BREAKER, MINIATURE, ONE POLE, 2A
2	233	AB	1492-SP1C050	CIRCUIT BREAKER, MINIATURE, ONE POLE, 5A
3	234	AB	1492-SP1C100	CIRCUIT BREAKER, MINIATURE, ONE POLE, 10A
1	235	AB	1489-M1C200	CIRCUIT BREAKER, ONE POLE, 20A, UL 489 COMPLIANT
1	236	AB	1489-M1C150	CIRCUIT BREAKER, ONE POLE, 15A, UL 489 COMPLIANT
8	282	BUSSMANN	GMA-125MA	250V, 125mA, 5mmX20mm, FAST ACTING GLASS FUSE
3	284	BUSSMANN	GMA-500MA	250V, 500mA, 5mmX20mm, FAST ACTING GLASS FUSE
1	285	BUSSMANN	GMA-1A	250V, 1A, 5mmX20mm, FAST ACTING GLASS FUSE
4	286	BUSSMANN	GMA-2A	250V, 2A, 5mmX20mm, FAST ACTING GLASS FUSE
1	301	HOFFMAN	A72H3724FSPT	FREE-STANDING TYPE 4 SINGLE-DOOR ENCLOSURES WITH 3-POINT LATCH
1	303	HOFFMAN	A72P36F1	SUB PANEL, 60" TALL, 32" WIDE
1	310	HOFFMAN	G280416G100	SPECTRACOOL AIR CONDITIONER, 115VAC, 4000 BTU/HR, OUTDOOR, NO HEAT
1	311	HOFFMAN	A72SP36F3	SWING-OUT PANEL, FULL PANEL, 60" X 30.81"
1	313	HOFFMAN	LF120V18	18" FLUORESCENT LIGHT PACKAGE, 115VAC
1	316	HOFFMAN	ATEMNO	TEMPERATURE CONTROL SWITCH (THERMOSTAT), N.O. CONTACTS
1	351	HOFFMAN	ALFSWD	DOOR SWITCH FOR LIGHT PACKAGE
1	352	ANY	F8T5	FLUORESCENT LIGHT
4	357	BELDEN	7929A	CABLE, ETHERNET, 4 PR, 24AWG, CAT 5E (LENGTH AS REQUIRED)
2	358	BELDEN	8267	CABLE, COAXIAL, RG-213 (OR EQUAL) WITH APPROPRIATE CONNECTORS, (LENGTH AS REQUIRED)
1	377	SQUARE D	PK15GTA	GROUNDING BAR, 24 CIRCUITS
A/R	380	PANDUIT	F2X4LG6 C2LG6	WIRE DUCT, 2"X4" TALL, LIGHT GRAY, SLOTTED WITH COVER
A/R	381	PANDUIT	F3X4LG6 C3LG6	WIRE DUCT, 3"X4" TALL, LIGHT GRAY, SLOTTED WITH COVER
1	390	PHOENIX CONTACT	5604775	DUAL OUTLET FOR 120VAC, 15A SERVICE, GFCI, DIN-RAIL MOUNTED
2	391	PHOENIX CONTACT	2963860	SINGLE OUTLET FOR 120VAC, 15A SERVICE, DIN-RAIL MOUNTED
1	400	PULS	YRM2.DIODE	DIODE REDUNDANCY MODULE, 10A PER INPUT, 24-48VDC
2	405	PULS	CS10.241	POWER SUPPLY, 10A, 24-28VDC OUTPUT, 100-120V/200-240V INPUT
1	414	PHOENIX CONTACT	2900310	TERMINAL BLOCK WITH PLUG IN MINIATURE RELAY, 1PDT, 120VAC
8	423	WEIDMULLER	8448920000	SURGE SUPPRESSOR, 24VDC, 2 WIRE LOOP PROTECTION (MCZ OVP)
1	424	WEIDMULLER	8389030000	END CAP FOR SURGE SUPPRESSOR (MCZ OVP)
1	425	WEIDMULLER	8829430000	INDUSTRIAL ETHERNET SWITCH, 8-PORT
1	450	COOPER BUSSMAN	BSPM1120S2GR	120VAC, 40kA MAX DISCHARGE CURRENT, SURGE PROTECTIVE DEVICE WITH REMOTE SIGNALING
1	703	APC	SMT750	750VA SMART UPS
1	704	APC	AP9613	DRY CONTACT I/O SMARTSLOT CARD
2	811	POLYPHASER	IS-50NX-C2	BROADBAND COAXIAL SURGE PROTECTOR, BULKHEAD MOUNT OPTION, 125-1000MHZ
4	853	TIMES MICROWAVE SYSTEMS	EZ-600-NMC	N-MALE CONNECTOR

A ~ BILL OF MATERIALS

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49856
HEBER TORRES
Date Signed 12/5/2014
ARIZONA U.S.A.
Expires 9/30/15

Rev'd	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
BEAUTIFUL ARIZONA ESTATES
BILL OF MATERIALS

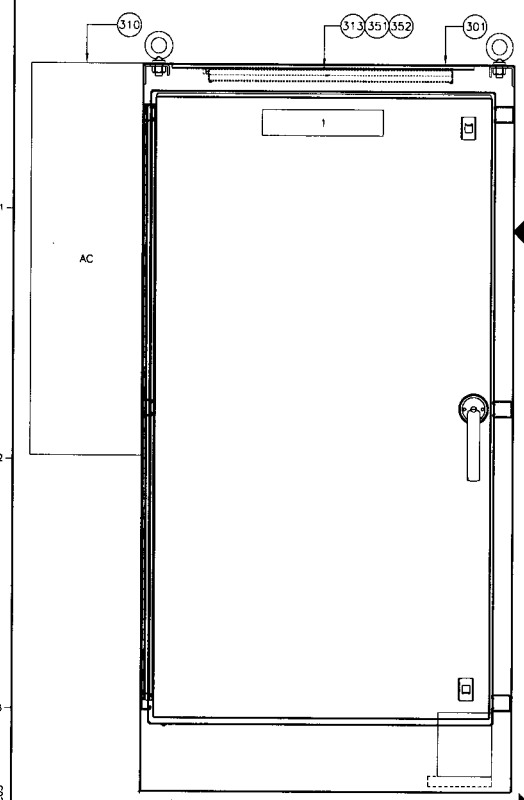
Scale NTS
Job No. 1834.00.101
CADD File No. 1834.00.101_BAE_EC03.dwg
Designed DLN
Drawn JHA
Checked DLN
Date DEC. 2014
Sheet EC03

XREF: DLTV_BORDER_22X34

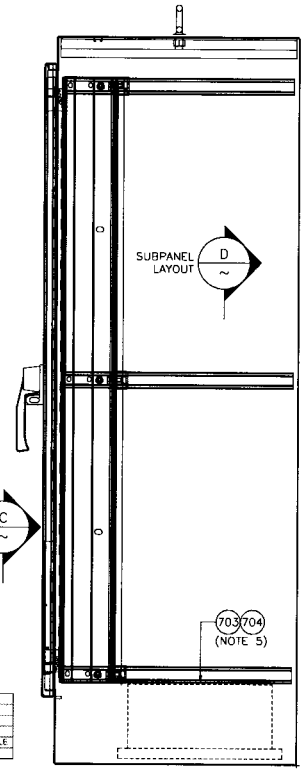
PLOTTED: 12/7/2014 1:05 PM 6:51 AM BY: johrens DWG FILE: X:\1800'S\1834.00 ARIZONA WATER CO. WHITE TANKS SCADA PROJECT (FOR PREVIOUS MODICON MOMENTUM DESIGN SEE PROJECT NO. 1400)\100\101 – RTU DESIGN\ACTIVE CAD FILES\BEAUTIFUL ARIZONA ESTATES\1834.00.101_BAE_EC03.DWG

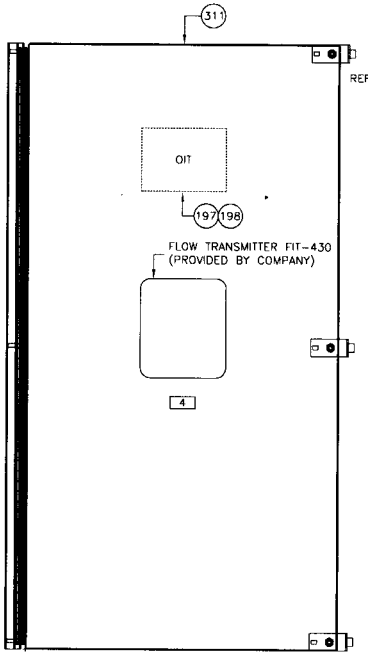
NOTES:

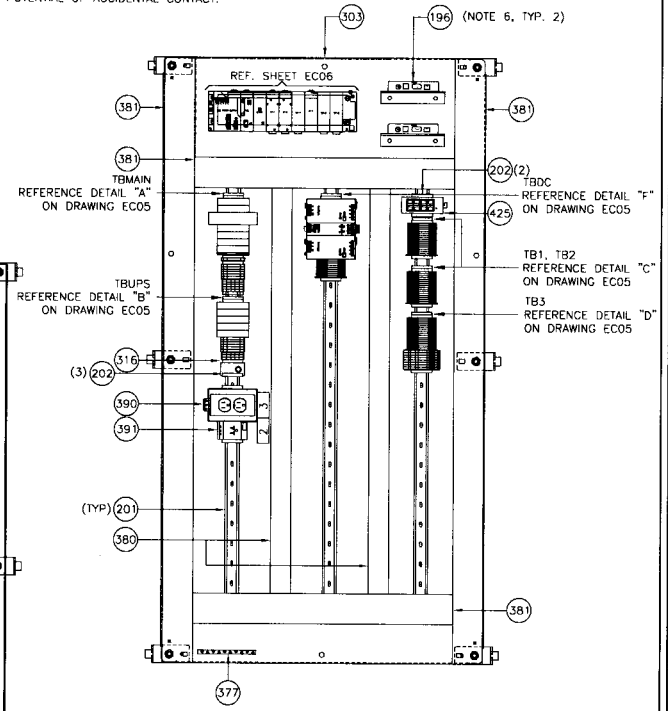
1. REFER TO BILL OF MATERIALS ON DRAWING EC03.
2. NAMEPLATES SHALL BE 3/32" THICK LAMINATED PHENOLIC TYPE WHITE WITH BLACK LETTERS. SEE NAMEPLATE SCHEDULE (DETAIL D) ON THIS SHEET FOR ADDITIONAL INFORMATION.
3. FURNISH ADDITIONAL NAMEPLATES AS REQUIRED BY UL OR BY OTHER APPLICABLE CODES.
4. REFER TO SHEET EC06 FOR COMMUNICATION SYSTEM ARCHITECTURE AND ADDITIONAL EQUIPMENT AND WIRING INFORMATION.
5. UPS IS TO BE MOUNTED ON A SHELF ATTACHED TO SIDE PANEL. SHELF IS TO BE PROVIDED AND INSTALLED BY PANEL FABRICATOR.
6. MOUNT RADIOS ON CUSTOM SHELVES. SHELVES TO BE PROVIDED AND INSTALLED BY PANEL FABRICATOR.
7. ALL 120VAC COMPONENTS MOUNTED ON SUBPANEL AND SWING-OUT PANEL SHALL BE FINGER SAFE. IF A COMPONENT IS NOT FINGER SAFE BY DESIGN, IT SHALL BE PROVIDED WITH A PROTECTIVE COVER SO AS TO MINIMIZE POTENTIAL OF ACCIDENTAL CONTACT.



A ENCLOSURE LAYOUT
SCALE: 1" = 1'-0"







D SUBPANEL LAYOUT
SCALE: 1" = 1'-0"

NAMEPLATE SCHEDULE				
NP	H'WxLTR	FIRST LINE	SECOND LINE	LOCATION
1	2" x 13" x 1/2"	BEAUTIFUL ARIZONA	RTU	CENTERED 3" FROM TOP OF ENCLOSURE DOOR
2	1" x 3" x 1/4"	UPS RECEPTACLE	ONLY	CENTERED TO THE RIGHT OF UPS RECEPTACLE
3	1" x 3" x 1/4"	SERVICE RECEPTACLE	ONLY	CENTERED TO THE RIGHT OF SERVICE RECEPTACLE
4	1" x 3" x 1/4"	BOOSTER STATION	DISCHARGE FLOW	CENTERED BELOW FLOW TRANSMITTER

D NAMEPLATE SCHEDULE
(NOTE 2)

B ENCLOSURE LAYOUT - SIDE VIEW
SCALE: 1" = 1'-0"

C SWING-OUT PANEL LAYOUT
SCALE: 1" = 1'-0"

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49856
HEBER TORRES
Date Signed 12/5/2014
ARIZONA U.S.A.
Expires 9/30/15

Rev'd	By	Date	Description

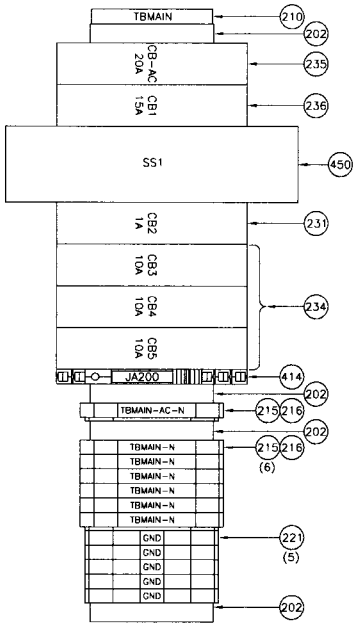
DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
BEAUTIFUL ARIZONA ESTATES
PLC CABINET ENCLOSURE LAYOUT
AND NAMEPLATE SCHEDULE

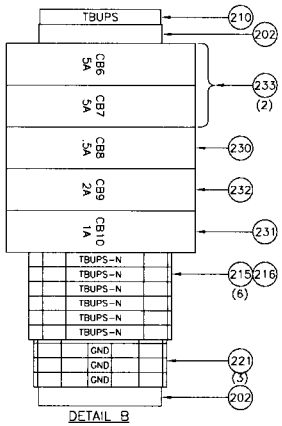
Scale: NTS
Job No. 1834.00.101
CADD File No. 1834.00.101_BAE_EC04.dwg
Designed: DLN
Drawn: JHA
Checked: DLN
Date: DEC. 2014
Sheet: EC04

XREF: DLTV_BORDER_22X34; 1823.00.101_EC05; 1823.00.101_EC04; 1834.00.101_BAE_EC05

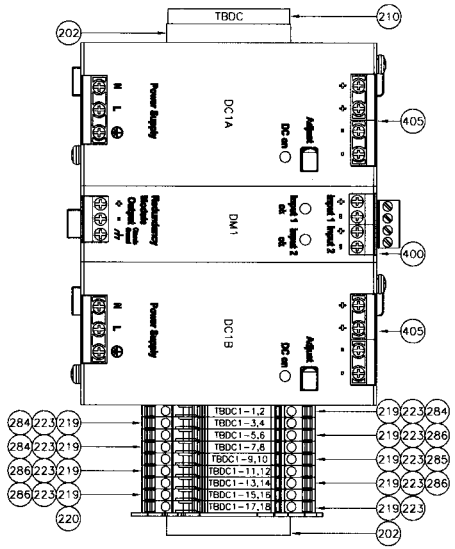
PLOTTED: 12/7/2014 1:05 PM 6:51 AM BY: johrens DWG FILE: X:\1800'S\1834.00 ARIZONA WATER CO. WHITE TANKS SCADA PROJECT (FOR PREVIOUS MODICON MOMENTUM DESIGN SEE PROJECT NO. 1400)\100\101 - RTU DESIGN\ACTIVE CAD FILES\BEAUTIFUL ARIZONA ESTATES\1834.00.101_BAE_EC04.DWG



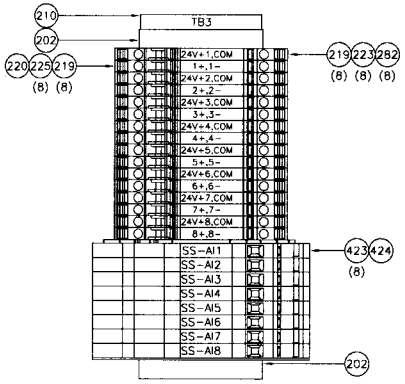
DETAIL A
120VAC POWER
DISTRIBUTION
TBMAIN



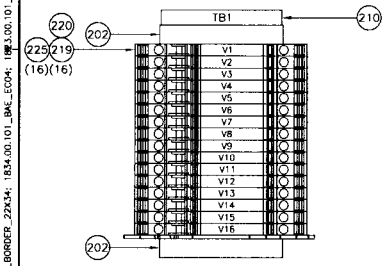
DETAIL B
120VAC POWER
DISTRIBUTION
TBUPS



DETAIL F
24VDC POWER DISTRIBUTION
TBDC



DETAIL D
ANALOG INPUT
TB3



DETAIL C
DISCRETE INPUTS
TB1, TB2

NOTES:

1. PROVIDE BUS BAR STYLE OR INSULATED COMB STYLE JUMPERS WHERE 2 OR MORE TERMINALS IN THE SAME TB ARE COMMONED TOGETHER. DO NOT USE DISCRETE WIRE JUMPERS.
2. BILL OF MATERIALS IS ON DRAWING EC03.
3. PANEL BUILDER TO SUPPLY AND INSTALL ALL NECESSARY AND APPROPRIATE ACCESSORIES INCLUDING TERMINAL NUMBERS, JUMPERS AND END BARRIERS.

0 .5" 1" 1.5" 2"
SCALE: 6" = 1'-0"

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49856
HEBER TORRES
Date Signed 12/5/2014
ARIZONA U.S.A.
Expires 9/30/15

Rev'd	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
BEAUTIFUL ARIZONA ESTATES
TERMINAL BLOCK
AND DEVICE DETAILS

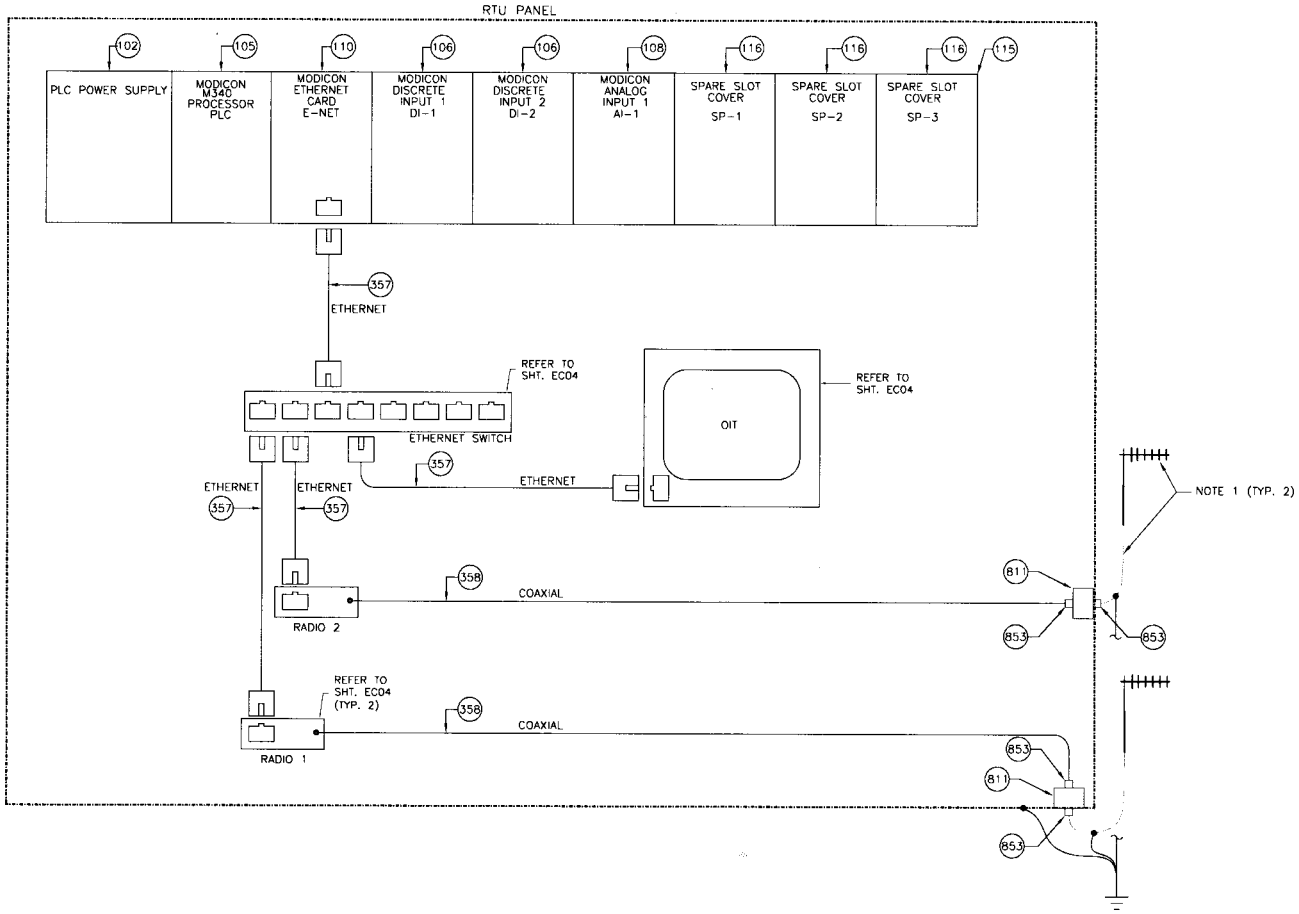
Scale	6" = 1'-0"
Job No.	1834.00.101
CADD File No.	1834.00.101_BAE_EC05.dwg
Designed	DLN
Drawn	JHA
Checked	DLN
Date	DEC. 2014
Sheet	EC05

XREF: DLTV_BORDER_22X34; 1834.00.101_BAE_EC04; 1834.00.101_EC05

PLOTTED: 12/7/2014 1:06 PM 6:51 AM BY: johrens DWG FILE: X:\1800'S\1834.00 ARIZONA WATER CO. WHITE TANKS SCADA PROJECT (FOR PREVIOUS MODICON MOMENTUM DESIGN SEE PROJECT NO. 1400)\100\101 - RTU DESIGN\ACTIVE CAD FILES\BEAUTIFUL ARIZONA ESTATES\1834.00.101_BAE_EC05.DWG

NOTES:

1. REFERENCE ASSOCIATED ELECTRICAL DESIGN PACKAGE FOR ANTENNAS AND ANTENNA CABLE REQUIREMENTS.



Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49856
HEBER TORRES
Date Signed 12/5/2014
ARIZONA U.S.A.
Expires 9/30/15

Rev'd	By	Date	Description

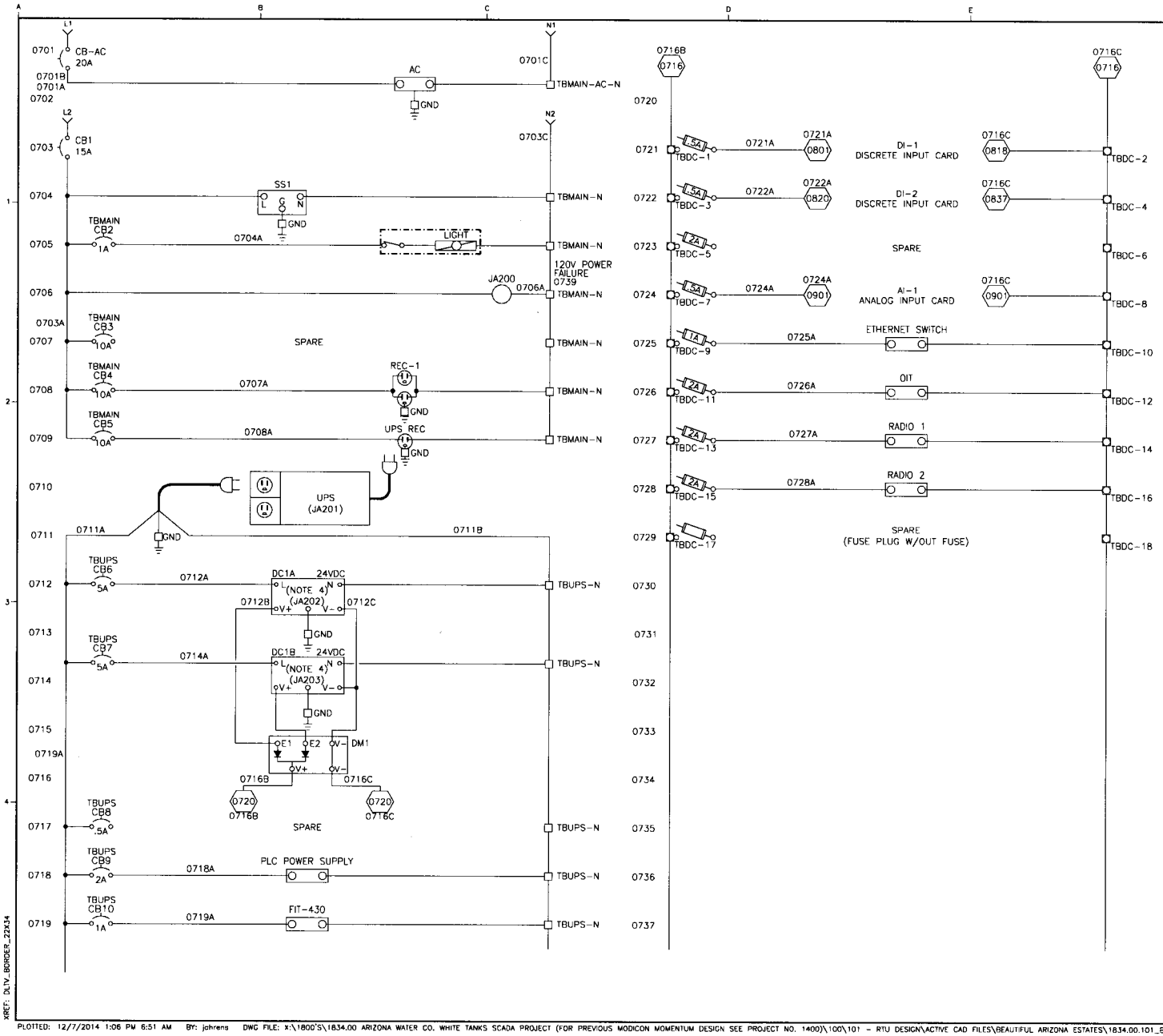
DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
BEAUTIFUL ARIZONA ESTATES
COMMUNICATION SYSTEM
ARCHITECTURE DIAGRAM

Scale	NTS
Job No.	1834.00.101
CADD File No.	1834.00.101_BAE_EC06.dwg
Designed	DLN
Drawn	JHA
Checked	DLN
Date	DEC. 2014
Sheet	EC06

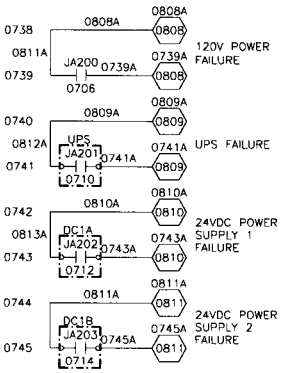
XREF: DLTV_BORDER_22X34

PLOTTED: 12/7/2014 1:06 PM 6:51 AM By: johrens DWG FILE: X:\1800'S\1834.00 ARIZONA WATER CO. WHITE TANKS SCADA PROJECT (FOR PREVIOUS MODICON MOMENTUM DESIGN SEE PROJECT NO. 1400)\100\101 - RTU DESIGN\ACTIVE CAD FILES\BEAUTIFUL ARIZONA ESTATES\1834.00.101_BAE_EC06.DWG



NOTES:

1. PROVIDE BUS BAR STYLE OR INSULATED COMB STYLE JUMPERS WHERE 2 OR MORE TERMINALS IN THE SAME TB ARE COMMONED TOGETHER. DO NOT USE DISCRETE WIRE JUMPERS.
2. BILL OF MATERIALS IS ON DRAWING EC03.
3. OVERCURRENT PROTECTIVE DEVICE SIZES ARE TO BE CONFIRMED SO AS TO ENSURE IN ALIGNMENT WITH ASSOCIATED EQUIPMENT MANUFACTURERS RECOMMENDATIONS.
4. POWER SUPPLY OUTPUTS ARE TO BE ADJUSTED TO WITHIN +/- 50 mV OF EACH OTHER.



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CERTIFICATE NO. 49856
HEBER TORRES
Date Signed 12/5/2014
ARIZONA U.S.A.
Expires 9/30/15

Rev'd	By	Date	Description

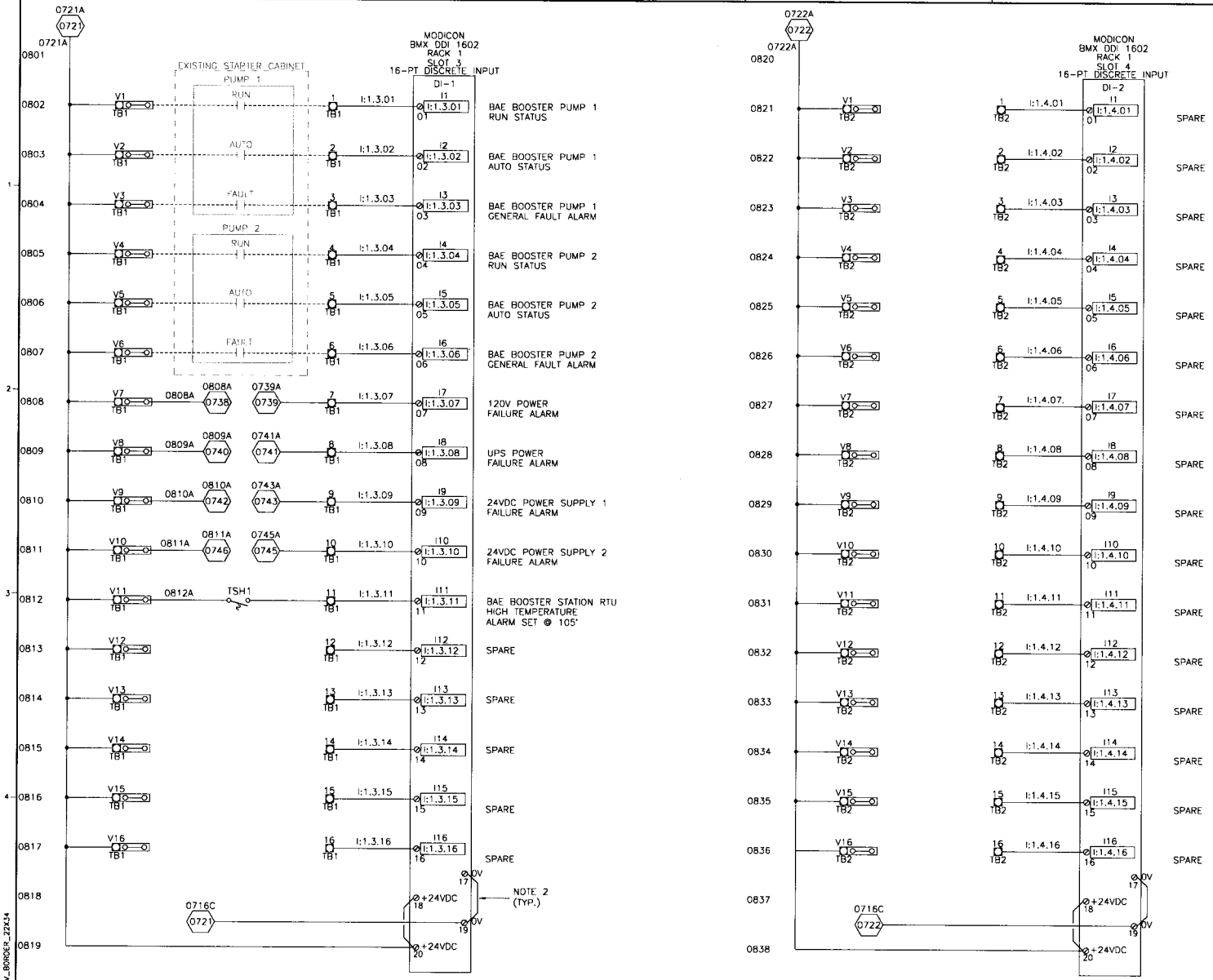
DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
BEAUTIFUL ARIZONA ESTATES
POWER DISTRIBUTION
SCHEMATIC

Scale	NTS
Job No.	1834.00.101
CADD File No.	1834.00.101_BAE_EC07.DWG
Designed	DLN
Drawn	JHA
Checked	DLN
Date	DEC. 2014
Sheet	EC07

XREF: DLTV_BORDER_22X34

PLOTTED: 12/7/2014 1:06 PM 6:51 AM BY: johrens DWG FILE: X:\1800'S\1834.00 ARIZONA WATER CO. WHITE TANKS SCADA PROJECT (FOR PREVIOUS MODICON MOMENTUM DESIGN SEE PROJECT NO. 1400)\100\101 - RTU DESIGN\ACTIVE CAD FILES\BEAUTIFUL ARIZONA ESTATES\1834.00.101_BAE_EC07.DWG



NOTES:

1. MODULES ARE TO BE WIRED PER MANUFACTURER'S RECOMMENDATIONS.
2. JUMPER WIRES TO BE PROVIDED AND INSTALLED BY PANEL FABRICATOR.

Registered Professional Engineer (Electrical) CERTIFICATE NO. 49856 HEBER TORRES Date Signed 12/5/2014 ARIZONA U.S.A.
Expires 9/30/15

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
BEAUTIFUL ARIZONA ESTATES
WIRING DIAGRAM
DI-1 AND DI-2

Scale	NTS
Job No.	1834.00.101
CADD File No.	1834.00.101_BAE_EC08.DWG
Designed	DLN
Drawn	JHA
Checked	DLN
Date	DEC. 2014
Sheet	EC08

Rev'd	By	Date	Description

XREF: DLTV_BORDER_22X34

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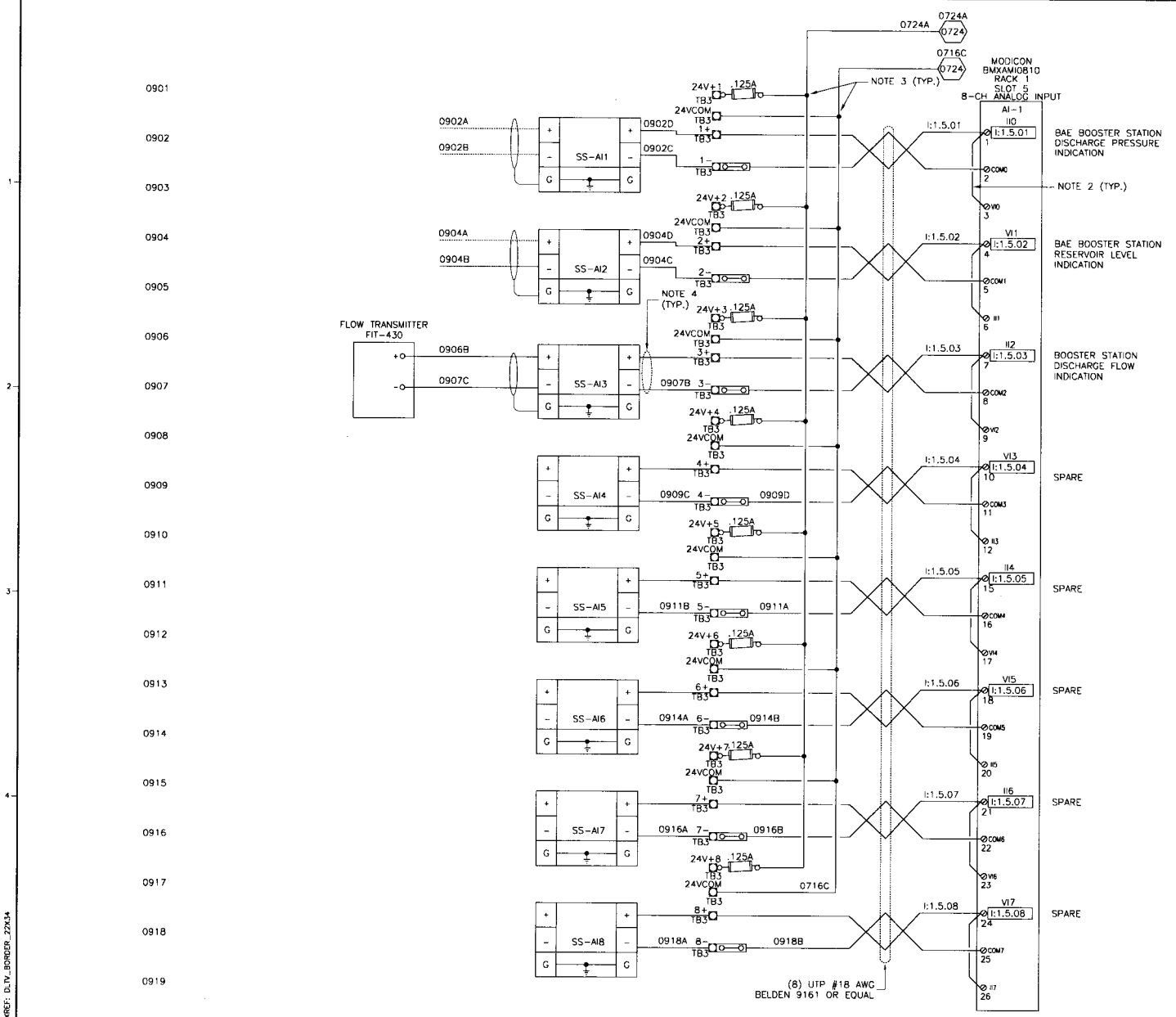

NOTES:

1. MODULES ARE TO BE WIRED PER MANUFACTURER'S RECOMMENDATIONS.
2. JUMPER WIRES TO BE PROVIDED AND INSTALLED BY PANEL FABRICATOR.
3. PROVIDE BUS BAR STYLE OR INSULATED COMB STYLE JUMPERS WHERE 2 OR MORE TERMINALS IN THE SAME TB ARE COMMONED TOGETHER. DO NOT USE DISCRETE WIRE JUMPERS.
4. CABLE BETWEEN TERMINAL BLOCK AND SURGE SUPPRESSOR SHALL BE (1) UTP, #18 AWG BELDEN #9740 OR EQUAL.

Rev'd	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
BEAUTIFUL ARIZONA ESTATES
WIRING DIAGRAM
AI-1

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49856
HEBER TORRES
Date Signed 12/5/2014
ARIZONA U.S.A.
Expires 9/30/15

Scale	NTS
Job No.	1834.00.101
CADD File No.	1834.00.101_BAE_EC09.DWG
Designed	DLN
Drawn	JHA
Checked	DLN
Date	DEC. 2014
Sheet	EC09

XREF: DLTV_BORDER_22X34

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ARIZONA WATER COMPANY
WHITE TANKS WATER SYSTEM SCADA DESIGN
MONTE VISTA

Registered Professional Engineer (Electrical)
CERTIFICATE NO.
49856
HEBER
TORRES
Date Signed 2/3/15
ARIZONA U.S.A.
Expires 9/30/15

Rev'd	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
MONTE VISTA
COVER SHEET

Scale	NTS
Job No.	1834.00.101
CAD File No.	1834.00.101_MONTE VISTA_EC01.dwg
Designed	DLN
Drawn	JHA
Checked	DLN
Date	JAN. 2015
Sheet	EC01

DRAWING INDEX

Drawing No.	Drawing Title
EC01	COVER SHEET
EC02	DRAWING INDEX, STANDARD SYMBOLS, LEGENDS, AND ISA TABLE
EC03	BILL OF MATERIALS
EC04	PLC CABINET ENCLOSURE LAYOUT AND NAMEPLATE SCHEDULE
EC05	TERMINAL BLOCK AND DEVICE DETAILS
EC06	COMMUNICATION SYSTEM ARCHITECTURE DIAGRAM
EC07	POWER DISTRIBUTION SCHEMATIC
EC08	WIRING DIAGRAMS DI-1 AND DI-2
EC09	WIRING DIAGRAMS DO-1
EC10	WIRING DIAGRAMS AI-1
EC11	WIRING DIAGRAMS AI-2

SCHEMATIC/WIRING DIAGRAM SYMBOLS

- CIRCUIT BREAKER (AMPS)
- FUSE WITH PULLER, *A – AMP RATING
- SWITCH NORMALLY OPEN (AMPS)
- SELECTOR SWITCH 2 POSITION, NORMALLY OPEN (XXX, OX)
- SELECTOR SWITCH 3 POSITION, NORMALLY OPEN (XXX, OOX)
- TEMPERATURE SWITCH NORMALLY OPEN
- SINGLE LEVEL TERMINAL BLOCK, * – TB IDENTIFICATION
- DOUBLE LEVEL TERMINAL BLOCK, * – TB IDENTIFICATION
- TERMINAL BLOCK W/ FUSE PLUG AND FUSE, * – TB IDENTIFICATION, ** – FUSE AMPS
- TERMINAL BLOCK W/ DISCONNECT KNIFE, * – TB IDENTIFICATION
- SURGE SUPPRESSOR FOR FLOATING SIGNAL CIRCUITS, * – SS NUMBER IDENTIFICATION
- SURGE SUPPRESSOR FOR POWER SUPPLY, * – SS NUMBER IDENTIFICATION
- CONTROL RELAY, * – CR NUMBER IDENTIFICATION, # – TERMINAL NUMBER
- EARTH GROUND
- DUPLEX RECEPTACLE
- SINGLE RECEPTACLE
- DC POWER SUPPLY, * – DC VOLTAGE RATING

COLOR CODE CHART FOR 18 AWG BELDEN CABLES 12 COND. NO. 8466 AND 19 COND. NO. 8619

BLACK	BLK	1st
WHITE	WHT	2nd
RED	RED	3rd
GREEN	GRN	4th
ORANGE	ORN	5th
BLUE	BLU	6th
WHITE/BLACK	WHT/BLK	7th
RED/BLACK	RED/BLK	8th
GREEN/BLACK	GRN/BLK	9th
ORANGE/BLACK	ORN/BLK	10th
BLUE/BLACK	BLU/BLK	11th
BLACK/WHITE	BLK/WHT	12th
RED/WHITE	RED/WHT	13th
GREEN/WHITE	GRN/WHT	14th
BLUE/WHITE	BLU/WHT	15th
BLACK/RED	BLK/RED	16th
WHITE/RED	WHT/RED	17th
ORANGE/RED	ORN/RED	18th
BLUE/RED	BLU/RED	19th

WIRE SIZES

(CIRCUIT WIRING SHALL BE RATED IN ACCORDANCE WITH THE MAXIMUM PERMITTED AMPERE RATING/SETTING OF THE OVERCURRENT PROTECTION DEVICE. N.E.C. 210-3)

120VAC / 20A POWER CIRCUIT – MIN. #12 AWG.
120VAC / 15A AND BELOW – MIN. #14 AWG.

24VDC / 20A POWER CIRCUIT – MIN. #12 AWG.
24VDC / 15A AND BELOW – MIN. #16 AWG.
24VDC I/O & SIGNAL CIRCUIT – MIN. #18 AWG.

4-20mADC I/O SIGNAL CIRCUIT – MIN. #18 AWG.

ABBREVIATIONS

A/R	AS REQUIRED
AC COM	NEUTRAL
AFF	ABOVE FINISHED FLOOR
AI	ANALOG INPUT
ANL COM	ANALOG COMMON
AO	ANALOG OUTPUT
AWG	AMERICAN WIRE GAUGE
BLK	BLACK
BLU	BLUE
CAP	CENTRAL ARIZONA PROJECT
CLR	CLEAR
CR	CONTROL RELAY
DC COM	DC COMMON
DC+	DC POSITIVE POTENTIAL
DI	DISCRETE INPUT
DO	DISCRETE OUTPUT
DS	DOOR SWITCH
FOM	FIBER OPTIC MODEM
FOT	FIBER OPTIC TRANSCEIVER
GND	GROUND
GRN	GREEN
I/O	INPUT/OUTPUT
L	LINE
N	NEUTRAL
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NP	NAMEPLATE
OIT	OPERATOR INTERFACE TERMINAL
ORN	ORANGE
PDB	POWER DISTRIBUTION BLOCK
PLC	PROGRAMMABLE LOGIC CONTROLLER
PP	FIBER OPTIC PATCH PANEL
PS	POWER SUPPLY
REC	RECEPTACLE
RES	RESERVOIR
RIO	REMOTE INPUT/OUTPUT
RTU	REMOTE TELEMETRY UNIT
SLC	SMALL LOGIC CONTROLLER
SP	SPACE
SS	SURGE SUPPRESSOR
TB	TERMINAL BLOCK
UPS	UNINTERRUPTIBLE POWER SUPPLY
WHT	WHITE
WTR	WATER TREATMENT PLANT
WWTP	WASTE WATER TREATMENT PLANT

ISA INSTRUMENT IDENTIFICATION TABLE

FIRST LETTERS			SUCCEEDING LETTERS		
MEASURED OR INITIATING VARIABLE		MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYZER		ALARM		AUTO
B	BURNER, COMBUSTION				
C	CONDUCTIVITY			CONTROL	CLOSED
D	DENSITY	DIFFERENTIAL			
E	VOLTAGE		ELEMENT		
F	FLOW	RATIO			
G	GAUGE		GLASS, VIEWING DEVICE		
H	HAND				HIGH
I	CURRENT		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHED.	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	MOTION				MIDDLE
N	INTRUSION				NORMAL
O	TORQUE		ORIFICE, RESTRICTION		OPEN
P	PRESSURE		POINT CONNECTION		STOP
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD, OR PRINT		REMOTE
S	SPEED, FREQUENCY	SAFETY		SWITCH	START
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION			VALVE, LOUVER	
W	WEIGHT		WELL		
X	MOTOR	X-AXIS	UNCLASSIFIED	UNCLASSIFED	UNCLASSIFED
Y	EVENT, STATE, OR PRESENCE	Y-AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION	Z-AXIS		DRIVER, ACTUATOR, FINAL CONTROL ELEMENT	

COLOR CODE CHART FOR 22 AWG BELDEN PAIRED CABLE NO. 8761

BLACK	BLK	1st
CLEAR	CLR	2nd

DRAWING REFERENCES

#####A – WIRE NUMBER
0321 – RUNG NUMBER

LINETYPE LEGEND

- FIELD WIRING
- INTERNAL PANEL WIRING
- RADIO COMMUNICATION LINK
- FO — FIBER OPTIC CABLE
- FOP — FIBER OPTIC PATCH CABLE
- EN — ETHERNET CAT5 CABLE
- DH+ — DATA HIGHWAY PLUS
- RIO — REMOTE INPUT OUTPUT
- AREA DIVIDER
- EQUIPMENT
- PATCH PANEL

RUNG NUMBERING

0321
- RUNG NUMBER
- DRAWING NUMBER (E.G. EC##)

WIRE NUMBERING

0321A
- WIRE LETTER
- RUNG NUMBER

PANEL WIRING IDENTIFICATION

BLACK – 120VAC LINE
WHITE – 120VAC NEUTRAL
GREEN – GROUND
BLUE – DC POSITIVE
BLUE W/WHITE STRIPE – DC COMMON

PANEL I/O WIRES TAG LEGEND

0:#.#.2
- CHANNEL #
- SLOT #
- RACK #
- 0=OUTPUT 1=INPUT

Registered Professional Engineer (Electrical) CERTIFICATE NO. 49856 HEBER TORRES Date Signed 2/3/15 ARIZONA U.S.A. Expires 9/30/15

Rev'd	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
MONTE VISTA
DRAWING INDEX, STANDARD SYMBOLS, LEGENDS, AND ISA TABLE

Scale	NTS
Job No.	1834.00.101
CAD File	1834.00.101_MONTE VISTA_EC02.dwg
Designed	DLN
Drawn	JHA
Checked	DLN
Date	JAN. 2015
Sheet	EC02

QTY	ITEMS	MFG	CATALOG	DESC
1	102	MODICON	BMX CPS 2000	M340 POWER SUPPLY MODULE - 20W
1	105	MODICON	BMX P34 1000	M340 STANDARD PROCESSOR MODULE
2	106	MODICON	BMX DDI 1602	M340 DISCRETE INPUT MODULE
1	107	MODICON	BMX DDO 1602	M340 DISCRETE OUTPUT MODULE
2	108	MODICON	BMXAMI0810	M340 8 CHANNEL ISOLATED ANALOG INPUT
1	110	MODICON	BMXNOE0100	M340 ETHERNET MODULE - 1 x RJ45 10/100
1	115	MODICON	BMX XBP 0800	M340 8-SLOT RACK
1	116	MODICON	BMXXEM010	UNUSED SLOT CONNECTOR PROTECTIVE COVER
1	196	GE MDS	INETII-DGSN	INDUSTRIAL SPREAD SPECTRUM RADIO, DUAL GATEWAY, W/ ETHERNET AND RS-232 CONNECTIONS, 902 - 928 MHz
1	197	SQUARE D	HMIGTO5310	MAGELIS OPERATOR INTERFACE TERMINAL, 24VDC, 10.4" VGA-TFT
1	198	SQUARE D	HMIZSD4G	4GB MEMORY SG CARD
1	199	RED LION	CSMSTRLE	MODULAR CONTROLLER MASTER WITH MULTIPLE PROTOCOL CONVERTER, ETHERNET, & EXPANSION SLOT
A/R	201	AB	199-DR1	ZINC/STEEL DIN RAIL EN 50022 (35mm x 7.5mm x 1m)
23	202	AB	1492-EA35	END ANCHOR
8	210	AB	1492-GM35	TERMINAL BLOCK, GROUP MARKING CARRIER
11	215	AB	1492-J4	SCREW CONNECTION TERMINAL BLOCK; SINGLE CIRCUIT, 600V, GRAY, FEED-THROUGH
3	216	AB	1492-EBJ3	END BARRIER; 1492-J
81	219	AB	1492-JD3P	SCREW CONNECTION TERMINAL BLOCK; DOUBLE LEVEL, W/ PLUGGABLE TOP LEVEL
6	220	AB	1492-EBJD3P	END BARRIER; 1492-J
8	221	AB	1492-JG4	SCREW CONNECTION TERMINAL BLOCK; GROUNDING
30	223	AB	1492-FPK224	FUSE PLUG INSERT W/ BFI, 10-36VAC/DC WORKING VOLTAGE, 10A MAX @ 250V.
2	224	AB	1492-FPK2120	FUSE PLUG INSERT W/ BFI, 60-150VAC/DC WORKING VOLTAGE
49	225	AB	1492-DPL	DISCONNECT PLUG FOR 1492-JD3 P AND 1492-JD3
1	231	AB	1492-SP1C010	CIRCUIT BREAKER, MINIATURE, ONE POLE, 1A
2	232	AB	1492-SP1C020	CIRCUIT BREAKER, MINIATURE, ONE POLE, 2A
2	233	AB	1492-SP1C050	CIRCUIT BREAKER, MINIATURE, ONE POLE, 5A
3	234	AB	1492-SP1C100	CIRCUIT BREAKER, MINIATURE, ONE POLE, 10A
1	235	AB	1489-M1C150	CIRCUIT BREAKER, ONE POLE, 15A, UL 489 COMPLIANT
1	236	AB	1489-M1C200	CIRCUIT BREAKER, ONE POLE, 20A, UL 489 COMPLIANT
16	282	BUSSMANN	GMA-125MA	250V, 125mA, 5mmX20mm, FAST ACTING GLASS FUSE
7	283	BUSSMANN	GMA-250MA	250V, 250mA, 5mmX20mm, FAST ACTING GLASS FUSE
5	284	BUSSMANN	GMA-500MA	250V, 500mA, 5mmX20mm, FAST ACTING GLASS FUSE
1	285	BUSSMANN	GMA-1A	250V, 1A, 5mmX20mm, FAST ACTING GLASS FUSE
3	286	BUSSMANN	GMA-2A	250V, 2A, 5mmX20mm, FAST ACTING GLASS FUSE
1	301	HOFFMAN	A72H3724FSPT	FREE-STANDING TYPE 4 SINGLE-DOOR ENCLOSURES WITH 3-POINT LATCH
1	303	HOFFMAN	A72P36F1	SUB PANEL, 60" TALL, 32" WIDE
1	311	HOFFMAN	A72SP36F3	SWING-OUT PANEL, FULL PANEL, 60" X 30.81"
1	313	HOFFMAN	LF120V18	18" FLUORESCENT LIGHT PACKAGE, 115VAC
1	316	HOFFMAN	ATEMNO	TEMPERATURE CONTROL SWITCH (THERMOSTAT), N.O. CONTACTS
1	351	HOFFMAN	ALFSWD	DOOR SWITCH FOR LIGHT PACKAGE
1	352	ANY	F8T5	FLUORESCENT LIGHT
4	357	BELDEN	7929A	CABLE, ETHERNET, 4 PR, 24AWG, CAT 5E (LENGTH AS REQUIRED)
1	358	BELDEN	8267	CABLE, COAXIAL, RG-213 (OR EQUAL) WITH APPROPRIATE CONNECTORS, (LENGTH AS REQUIRED)
1	359	ANY	ANY	CABLE, RS-485 WITH RJ-45 CONNECTORS (LENGTH AS REQUIRED)
1	377	SQUARE D	PK15GTA	GROUNDING BAR, 24 CIRCUITS
A/R	381	PANDUIT	F3X4LG6 C3LG6	WIRE DUCT, 3"X4" TALL, LIGHT GRAY, SLOTTED WITH COVER
1	390	PHOENIX CONTACT	5604775	DUAL OUTLET FOR 120VAC, 15A SERVICE, GFCI, DIN-RAIL MOUNTED
2	391	PHOENIX CONTACT	2963860	SINGLE OUTLET FOR 120VAC, 15A SERVICE, DIN-RAIL MOUNTED
1	400	PULS	YRM2.DIODE	DIODE REDUNDANCY MODULE, 10A PER INPUT, 24-48VDC
2	405	PULS	CS10.241	POWER SUPPLY, 10A, 24-28VDC OUTPUT, 100-120V/200-240V INPUT
16	412	PHOENIX CONTACT	2900299	TERMINAL BLOCK WITH PLUG-IN MINIATURE RELAY, 24VDC, 1PDT
1	414	PHOENIX CONTACT	2900310	TERMINAL BLOCK WITH PLUG IN MINIATURE RELAY, 1PDT, 120VAC
16	423	WEIDMULLER	8448920000	SURGE SUPPRESSOR, 24VDC, 2 WIRE LOOP PROTECTION (MCZ OVP)
2	424	WEIDMULLER	8389030000	END CAP FOR SURGE SUPPRESSOR (MCZ OVP)
1	426	WEIDMULLER	1241000000	INDUSTRIAL ETHERNET SWITCH, 16-PORT, UNMANAGED
1	450	COOPER BUSSMAN	BSPM1120S2GR	120VAC, 40kA MAX DISCHARGE CURRENT, SURGE PROTECTIVE DEVICE WITH REMOTE SIGNALING
1	475	AUTOMATION DIRECT	XTD-0200F-PT1	PROSENSE DIN-RAIL MOUNTED TEMPERATURE TRANSMITTER, 0 TO 200°F RATED, FOR RTD TYPE PT100 3-WIRE
1	476	ANY	ANY	3-WIRE RTD TYPE PT100, COMPATIBLE WITH AUTOMATION DIRECT XTD-0200F-PT1
1	703	FALCON	SSG1.5K-1T	1.5kVA SSG SERIES INDUSTRIAL UPS, RATED FOR 55°C
1	704	FALCON	UA88376-SS-HW	DRY RELAY SIGNAL INTERFACE
2	715	SENSUS	5390653700001	ACT-PAK 100D ELECTRONIC INSTRUMENT, PULSE INPUT, 4-20mA OUTPUT, NEMA 1 ENCLOSURE
2	716	SENSUS	5390633700142	ACT-PAK 100D PANEL MOUNTING OPTION
1	811	POLYPHASER	IS-50NX-C2	BROADBAND COAXIAL SURGE PROTECTOR, BULKHEAD MOUNT OPTION, 125-1000MHZ
2	853	TIMES MICROWAVE SYSTEMS	EZ-600-NMC	N-MALE CONNECTOR

A ~ BILL OF MATERIALS

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49856
HEBER TORRES
Date Signed 2/3/15
ARIZONA U.S.A.
Expires 9/30/15

Rev'd	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

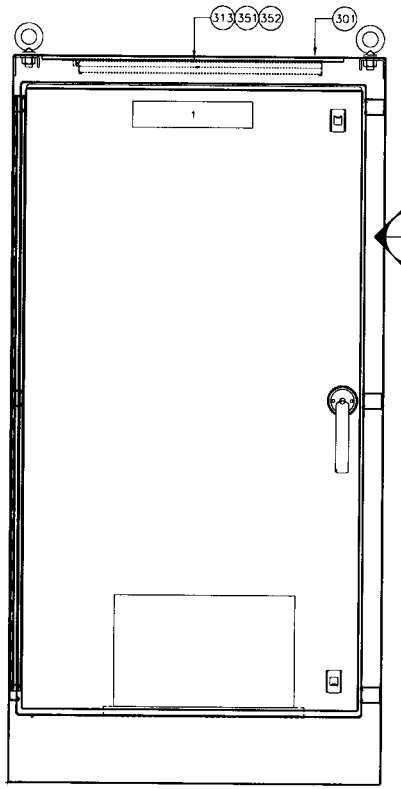
AWC WHITE TANKS SCADA PROJECT
MONTE VISTA
BILL OF MATERIALS

Scale NTS
Job No. 1834.00.101
CAD 1834.00.101_MONTE VISTA_EC03.dwg
Designed DLN
Drawn JHA
Checked DLN
Date JAN. 2015
Sheet EC03

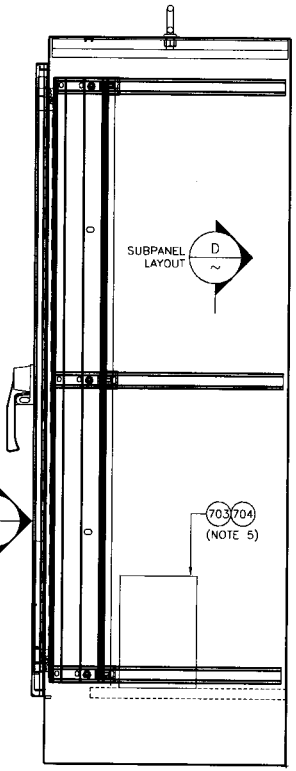
PLOTTED: 2/3/2015 3:58 PM 6:51 AM BY: jchrens DWG FILE: X:\1800'S\1834.00 ARIZONA WATER CO. WHITE TANKS SCADA PROJECT (FOR PREVIOUS MODICON MOMENTUM DESIGN SEE PROJECT NO. 1400)\100\101 - RTU DESIGN\ACTIVE CAD FILES\MONTE VISTA\1834.00.101_MONTE VISTA_EC03.DWG

NOTES:

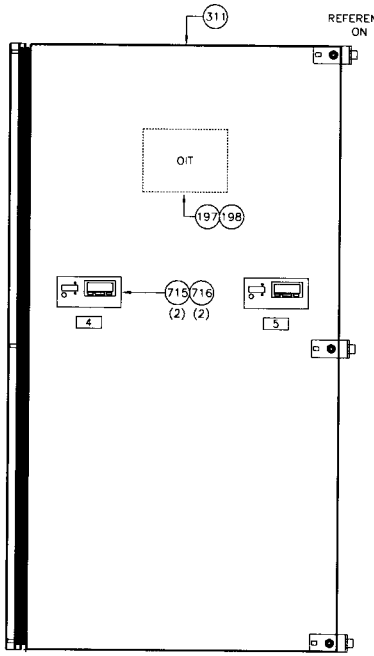
1. REFER TO BILL OF MATERIALS ON DRAWING EC03.
2. NAMEPLATES SHALL BE 3/32" THICK LAMINATED PHENOLIC TYPE WHITE WITH BLACK LETTERS. SEE NAMEPLATE SCHEDULE (DETAIL E) ON THIS SHEET FOR ADDITIONAL INFORMATION.
3. FURNISH ADDITIONAL NAMEPLATES AS REQUIRED BY UL OR BY OTHER APPLICABLE CODES.
4. REFER TO SHEET EC06 FOR COMMUNICATION SYSTEM ARCHITECTURE AND ADDITIONAL EQUIPMENT AND WIRING INFORMATION.
5. UPS IS TO BE MOUNTED ON A REMOVABLE SHELF ATTACHED TO BACK PANEL. SHELF IS TO BE PROVIDED AND INSTALLED BY PANEL FABRICATOR.
6. MOUNT RADIO ON CUSTOM SHELF. SHELF TO BE PROVIDED AND INSTALLED BY PANEL FABRICATOR.
7. ALL 120VAC COMPONENTS MOUNTED ON SUBPANEL AND SWING-OUT PANEL SHALL BE FINGER SAFE. IF A COMPONENT IS NOT FINGER SAFE BY DESIGN, IT SHALL BE PROVIDED WITH A PROTECTIVE COVER SO AS TO MINIMIZE POTENTIAL OF ACCIDENTAL CONTACT.



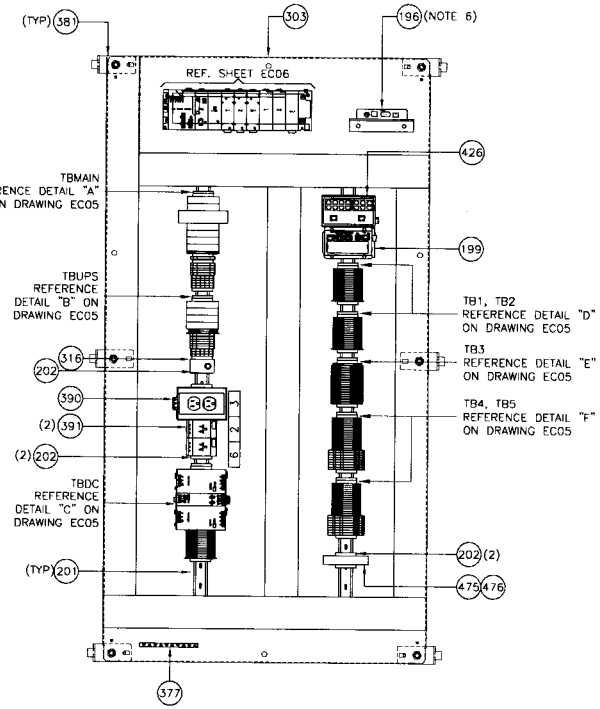
A ENCLOSURE LAYOUT
0 3" 6" 9" 1'
SCALE: 1" = 1'-0"



B ENCLOSURE LAYOUT - SIDE VIEW
0 3" 6" 9" 1'
SCALE: 1" = 1'-0"



C SWING-OUT PANEL LAYOUT
0 3" 6" 9" 1'
SCALE: 1" = 1'-0"



D SUBPANEL LAYOUT
0 3" 6" 9" 1'
SCALE: 1" = 1'-0"

NAMEPLATE SCHEDULE				
NP	HxWxLTR	FIRST LINE	SECOND LINE	LOCATION
1	2" x 13" x 1/2"	MONTE VISTA	RTU	CENTERED 3" FROM TOP OF ENCLOSURE DOOR
2	1" x 3" x 1/4"	UPS RECEPTACLE	ONLY	CENTERED TO THE RIGHT OF UPS RECEPTACLE
3	1" x 3" x 1/4"	SERVICE RECEPTACLE	ONLY	CENTERED TO THE RIGHT OF SERVICE RECEPTACLE
4	1" x 3" x 1/4"	WELL 2 DISCHARGE FLOW		CENTERED BELOW ACT-PAK
5	1" x 3" x 1/4"	WELL 4 DISCHARGE FLOW		CENTERED BELOW ACT-PAK
6	1" x 3" x 1/4"	A/C RECEPTACLE	ONLY	CENTERED TO THE RIGHT OF A/C RECEPTACLE

E NAMEPLATE SCHEDULE
(NOTE 2)

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49856
HEBER TORRES
Date Signed 2/3/15
ARIZONA U.S.A.
Expires 9/30/15

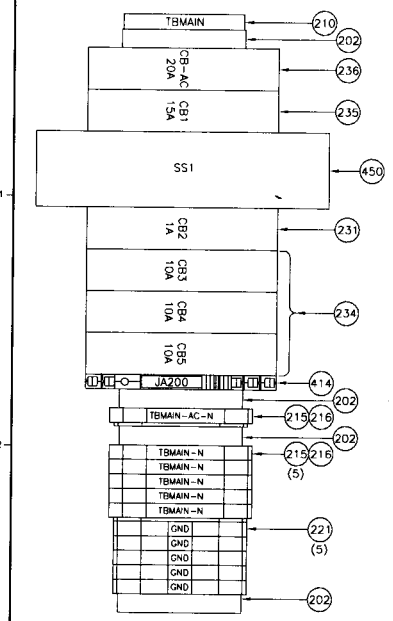
Rev'd	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

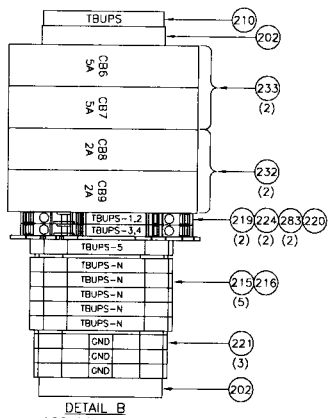
AWC WHITE TANKS SCADA PROJECT
MONTE VISTA
PLC CABINET ENCLOSURE LAYOUT
AND NAMEPLATE SCHEDULE

Scale	NTS
Job No.	1834.00.101
CADD No.	1834.00.101_MONTE VISTA_EC04.dwg
Designed	DLN
Drawn	JHA
Checked	DLN
Date	JAN. 2015
Sheet	EC04

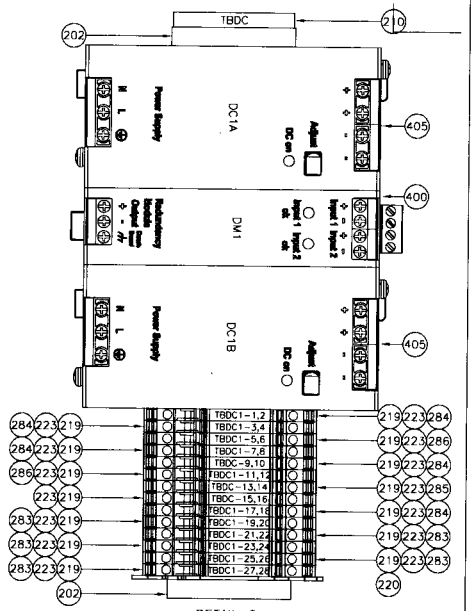
PLOTTED: 2/3/2015 3:58 PM 6:51 AM BY: johrens DWG FILE: X:\1800'S\1834.00 ARIZONA WATER CO. WHITE TANKS SCADA PROJECT (FOR PREVIOUS MODICON MOMENTUM DESIGN SEE PROJECT NO. 1400)\100\101 - RTU DESIGN\ACTIVE CAD FILES\MONTE VISTA\1834.00.101_MONTE VISTA_EC04.DWG



DETAIL A
120VAC POWER
DISTRIBUTION
TBMAIN



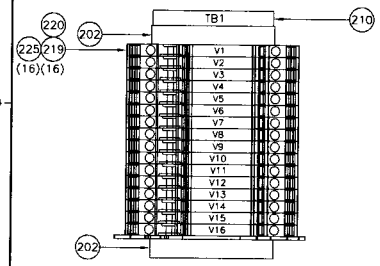
DETAIL B
120VAC POWER
DISTRIBUTION
TBUPS



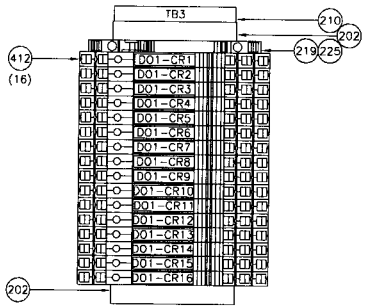
DETAIL C
24VDC POWER DISTRIBUTION
TBDC

NOTES:

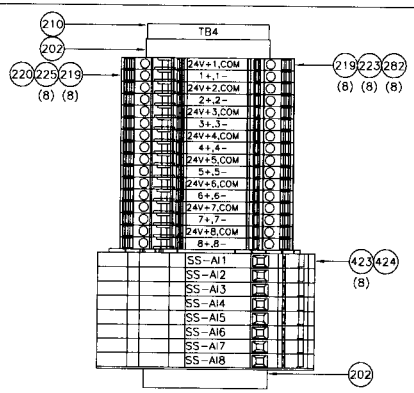
1. PROVIDE BUS BAR STYLE OR INSULATED COMB STYLE JUMPERS WHERE 2 OR MORE TERMINALS IN THE SAME TB ARE COMMONED TOGETHER. DO NOT USE DISCRETE WIRE JUMPERS.
2. BILL OF MATERIALS IS ON DRAWING EC03.
3. PANEL BUILDER TO SUPPLY AND INSTALL ALL NECESSARY AND APPROPRIATE ACCESSORIES INCLUDING TERMINAL NUMBERS, JUMPERS AND END BARRIERS.



DETAIL D
DISCRETE INPUTS
TB1, TB2



DETAIL E
DISCRETE OUTPUT
TB3



DETAIL F
ANALOG INPUT
TB4, TB5

0 .5" 1" 1.5" 2"
SCALE: 6" = 1'-0"

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49856
HEBER TORRES
Date Signed 4/3/15
ARIZONA U.S.A.
Expires 9/30/15

Rev'd	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

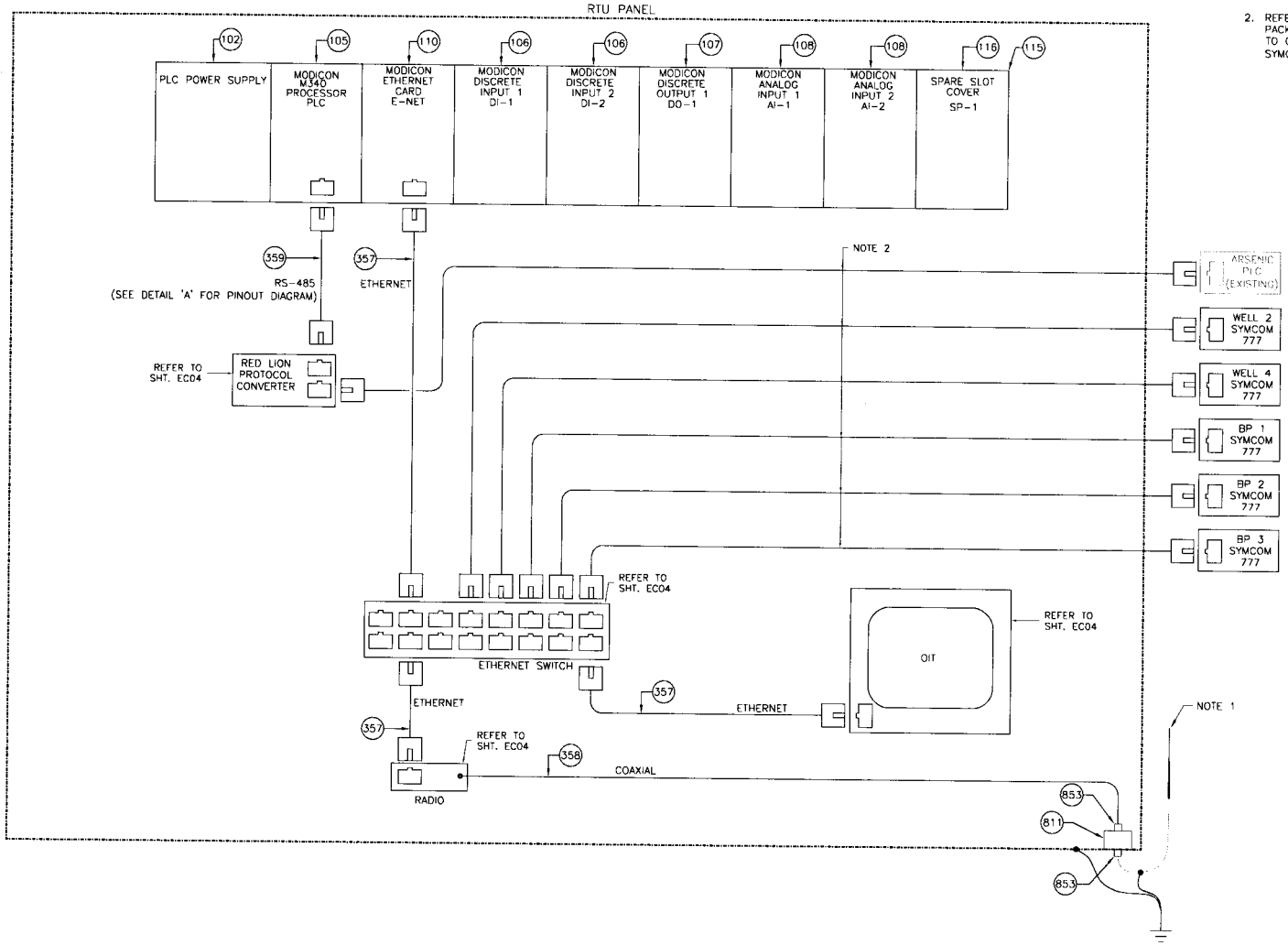
AWC WHITE TANKS SCADA PROJECT
MONTE VISTA
TERMINAL BLOCK
AND DEVICE DETAILS

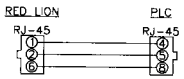
Scale	6" = 1'-0"
Job No.	1834.00.101
CADD File No.	1834.00.101_MONTE VISTA_EC05.dwg
Designed	DLN
Drawn	JHA
Checked	DLN
Date	JAN. 2015
Sheet	EC05

PLOTTED: 2/3/2015 3:58 PM 6:51 AM BY: johrens DWG FILE: X:\1800'S\1834.00 ARIZONA WATER CO. WHITE TANKS SCADA PROJECT (FOR PREVIOUS MODICON MOMENTUM DESIGN SEE PROJECT NO. 1400)\100\101 - RTU DESIGN\ACTIVE CAD FILES\MONTE VISTA\1834.00.101_MONTE VISTA_EC05.DWG

NOTES:

1. REFERENCE ASSOCIATED ELECTRICAL DESIGN PACKAGE FOR ANTENNAS AND ANTENNA CABLE REQUIREMENTS.
2. REFERENCE ASSOCIATED ELECTRICAL DESIGN PACKAGE FOR CIRCUIT INFORMATION PERTAINING TO CABLING TO EXISTING ARSENIC PLC AND SYMCOM 777'S.





DETAIL A
PIN-OUT DIAGRAM

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49856
HEBER TORRES
Date Signed 2/3/15
ARIZONA U.S.A.
Expires 9/30/15

Rev'd	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
MONTE VISTA
COMMUNICATION SYSTEM
ARCHITECTURE DIAGRAM

Scale	NTS
Job No.	1834.00.101
CAD File	1834.00.101_MONTE VISTA_EC06.dwg
Designed	DLN
Drawn	JHA
Checked	DLN
Date	JAN. 2015
Sheet	EC06

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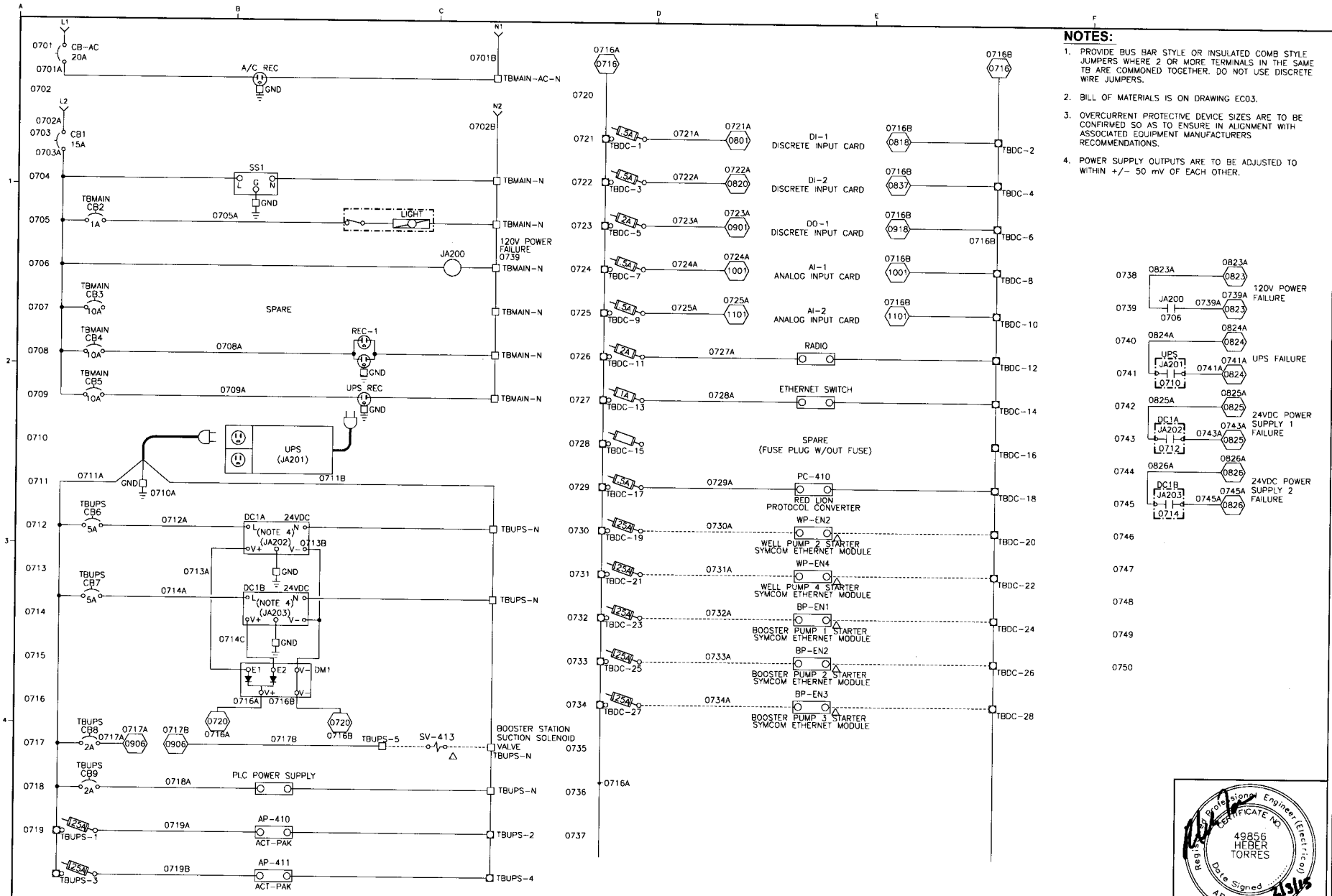


NOTES:

1. PROVIDE BUS BAR STYLE OR INSULATED COMB STYLE JUMPERS WHERE 2 OR MORE TERMINALS IN THE SAME TB ARE COMMONED TOGETHER. DO NOT USE DISCRETE WIRE JUMPERS.
2. BILL OF MATERIALS IS ON DRAWING EC03.
3. OVERCURRENT PROTECTIVE DEVICE SIZES ARE TO BE CONFIRMED SO AS TO ENSURE IN ALIGNMENT WITH ASSOCIATED EQUIPMENT MANUFACTURERS RECOMMENDATIONS.
4. POWER SUPPLY OUTPUTS ARE TO BE ADJUSTED TO WITHIN +/- 50 mV OF EACH OTHER.

Registered Professional Engineer (Electrical) CERTIFICATE NO. 49856 HEBER TORRES Date Signed 3/3/15 ARIZONA U.S.A.

Expires 9/30/15

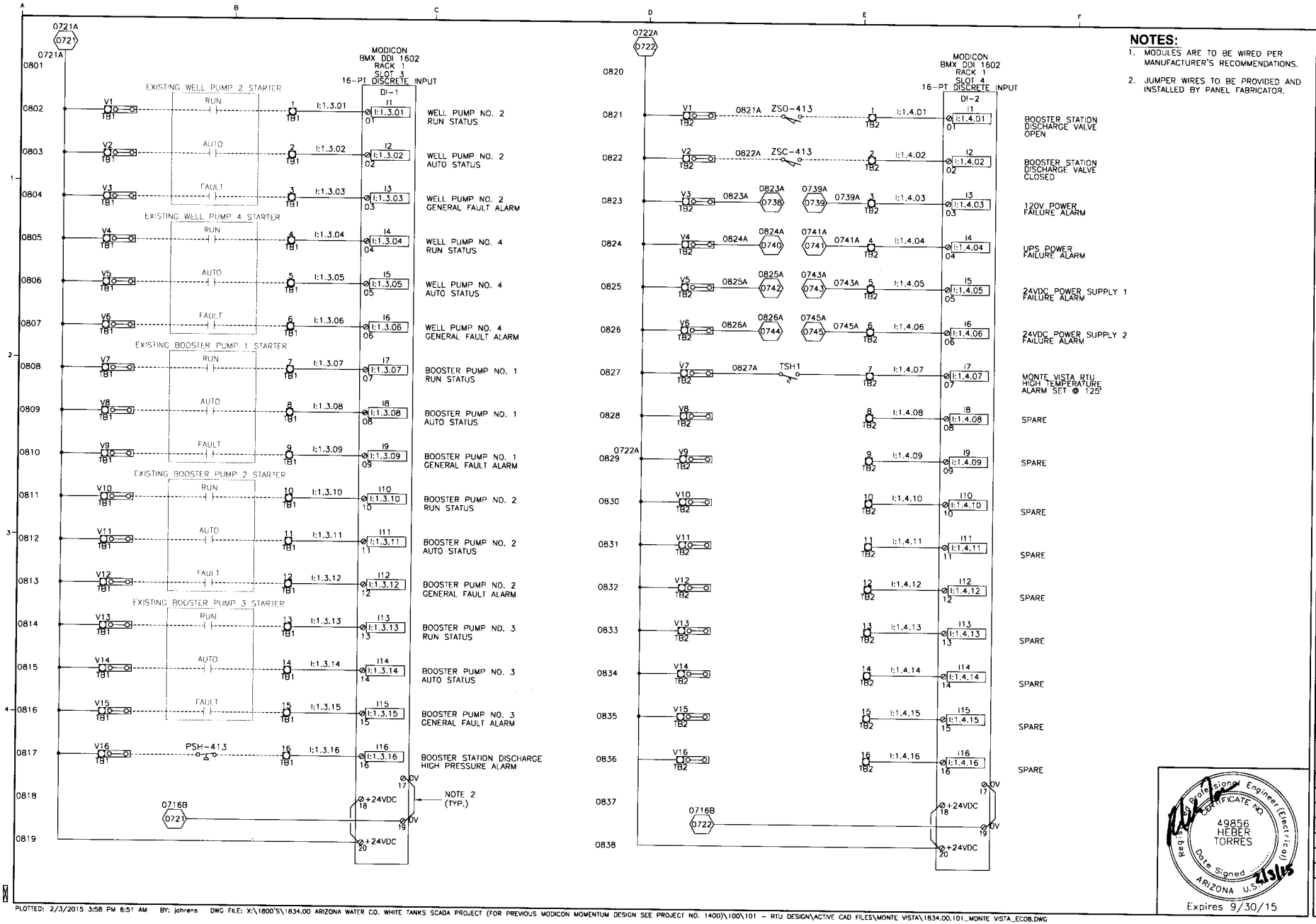
Rev	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
MONTE VISTA
POWER DISTRIBUTION
SCHEMATIC

Scale	NTS
Job No.	1834.00.101
CADD File No.	1834.00.101_MONTE VISTA_EC07.DWG
Designed	DLN
Drawn	JHA
Checked	DLN
Date	JAN. 2015
Sheet	EC07

PLOTTED: 2/3/2015 3:58 PM 6:51 AM BY: johrens DWG FILE: X:\1800'S\1834.00 ARIZONA WATER CO. WHITE TANKS SCADA PROJECT (FOR PREVIOUS MODICON MOMENTUM DESIGN SEE PROJECT NO. 1400)\100\101 - RTU DESIGN\ACTIVE CAD FILES\MONTE VISTA\1834.00.101_MONTE VISTA_EC07.DWG



NOTES:

1. MODULES ARE TO BE WIRED PER MANUFACTURER'S RECOMMENDATIONS.
2. JUMPER WIRES TO BE PROVIDED AND INSTALLED BY PANEL FABRICATOR.

Registered Professional Engineer (Electrical) CERTIFICATE NO. 49856 HEBER TORRES Date Signed 2/3/15 ARIZONA U.S.A.

Expires 9/30/15

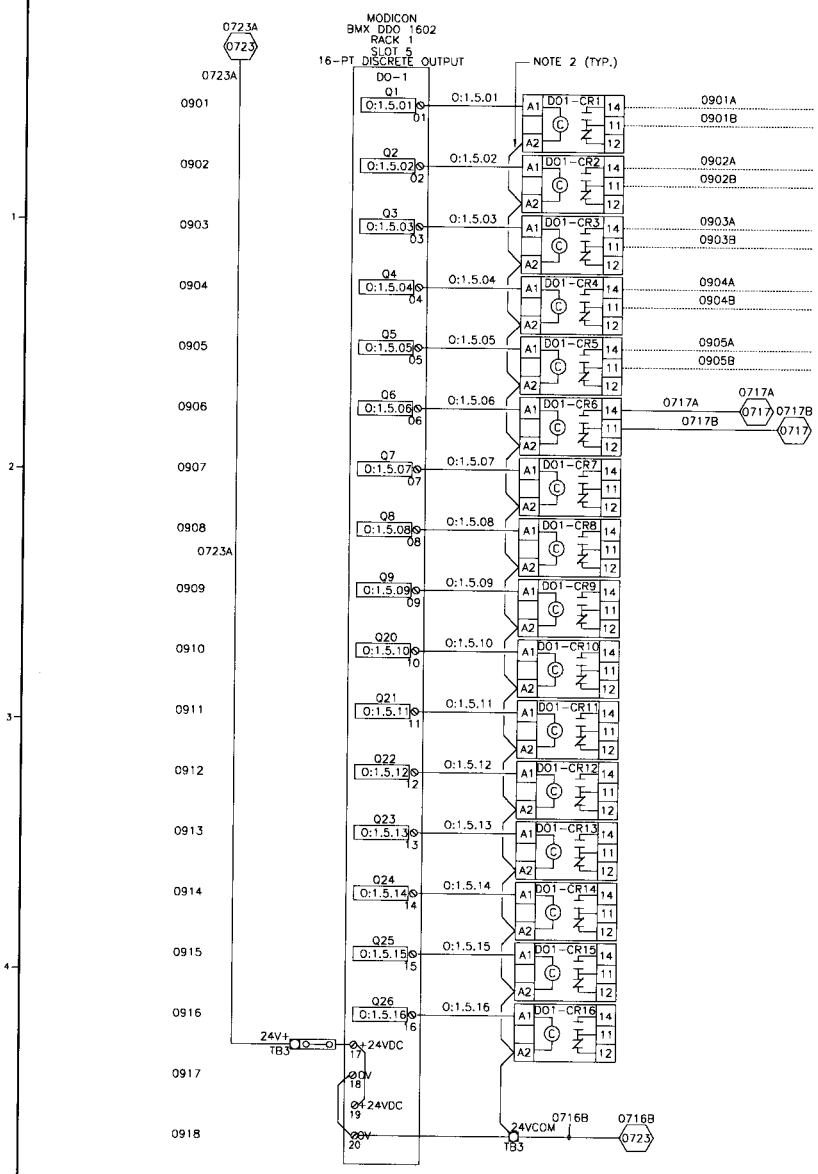
Rev'd	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
MONTE VISTA
WIRING DIAGRAM
DI-1 AND DI-2

Scale	NTS
Job No.	1834.00.101
CAD File No.	1834.00.101_MONTE VISTA_EC08.DWG
Designed	DLN
Drawn	JHA
Checked	DLN
Date	JAN. 2015
Sheet	EC08

PLOTTED: 2/3/2015 3:58 PM 6:51 AM BY: jchrens DWG FILE: X:\1800'S\1834.00 ARIZONA WATER CO. WHITE TANKS SCADA PROJECT (FOR PREVIOUS MODICON MOMENTUM DESIGN SEE PROJECT NO. 1400)\100\101 - RTU DESIGN\ACTIVE CAD FILES\MONTE VISTA\1834.00.101_MONTE VISTA_EC08.DWG



NOTES:

1. MODULES ARE TO BE WIRED PER MANUFACTURER'S RECOMMENDATIONS.
2. JUMPER WIRES TO BE PROVIDED AND INSTALLED BY PANEL FABRICATOR.

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49856
HEBER TORRES
Date Signed 2/3/15
ARIZONA U.S.A.
Expires 9/30/15

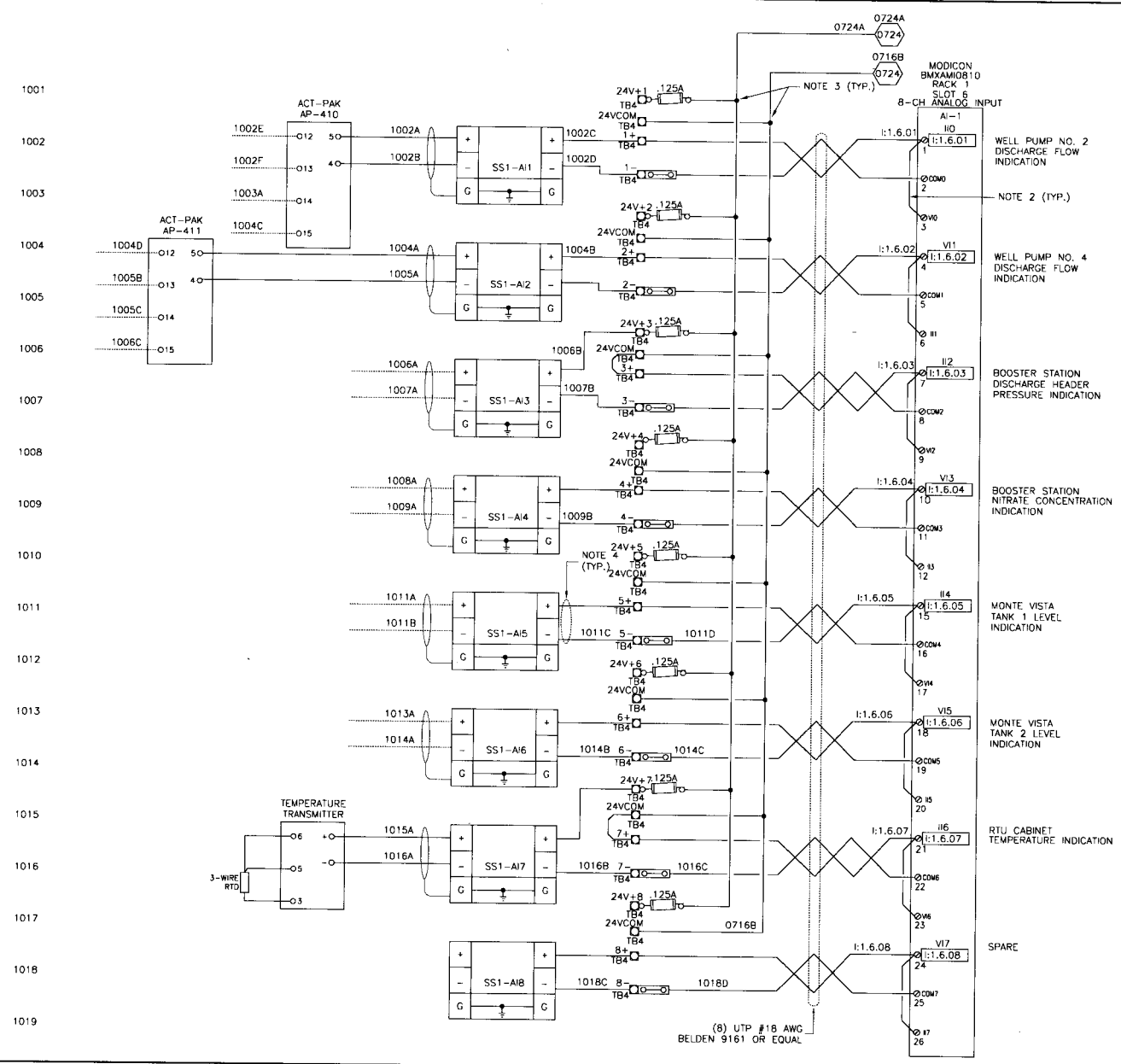
Rev'd	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 919
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
MONTE VISTA
WIRING DIAGRAM
DO-1

Scale	NTS
Job No.	1834.00.101
CADD File No.	1834.00.101_MONTE VISTA_EC09.DWG
Designed	DLN
Drawn	JHA
Checked	DLN
Date	JAN. 2015
Sheet	EC09

PLOTTED: 2/3/2015 3:59 PM 6:51 AM BY: johrens DWG FILE: X:\1800'S\1834.00 ARIZONA WATER CO. WHITE TANKS SCADA PROJECT (FOR PREVIOUS MODICON MOMENTUM DESIGN SEE PROJECT NO. 1400)\100\101 - RTU DESIGN\ACTIVE CAD FILES\MONTE VISTA\1834.00.101_MONTE VISTA_EC09.DWG



NOTES:

1. MODULES ARE TO BE WIRED PER MANUFACTURER'S RECOMMENDATIONS.
2. JUMPER WIRES TO BE PROVIDED AND INSTALLED BY PANEL FABRICATOR.
3. PROVIDE BUS BAR STYLE OR INSULATED COMB STYLE JUMPERS WHERE 2 OR MORE TERMINALS IN THE SAME TB ARE COMMONED TOGETHER. DO NOT USE DISCRETE WIRE JUMPERS.
4. CABLE BETWEEN TERMINAL BLOCK AND SURGE SUPPRESSOR SHALL BE (1) UTP, #18 AWG BELDEN #9740 OR EQUAL.

Registered Professional Engineer (Electrical) CERTIFICATE NO. 49856 HEBER TORRES Date Signed 2/3/15 ARIZONA U.S.A.
Expires 9/30/15

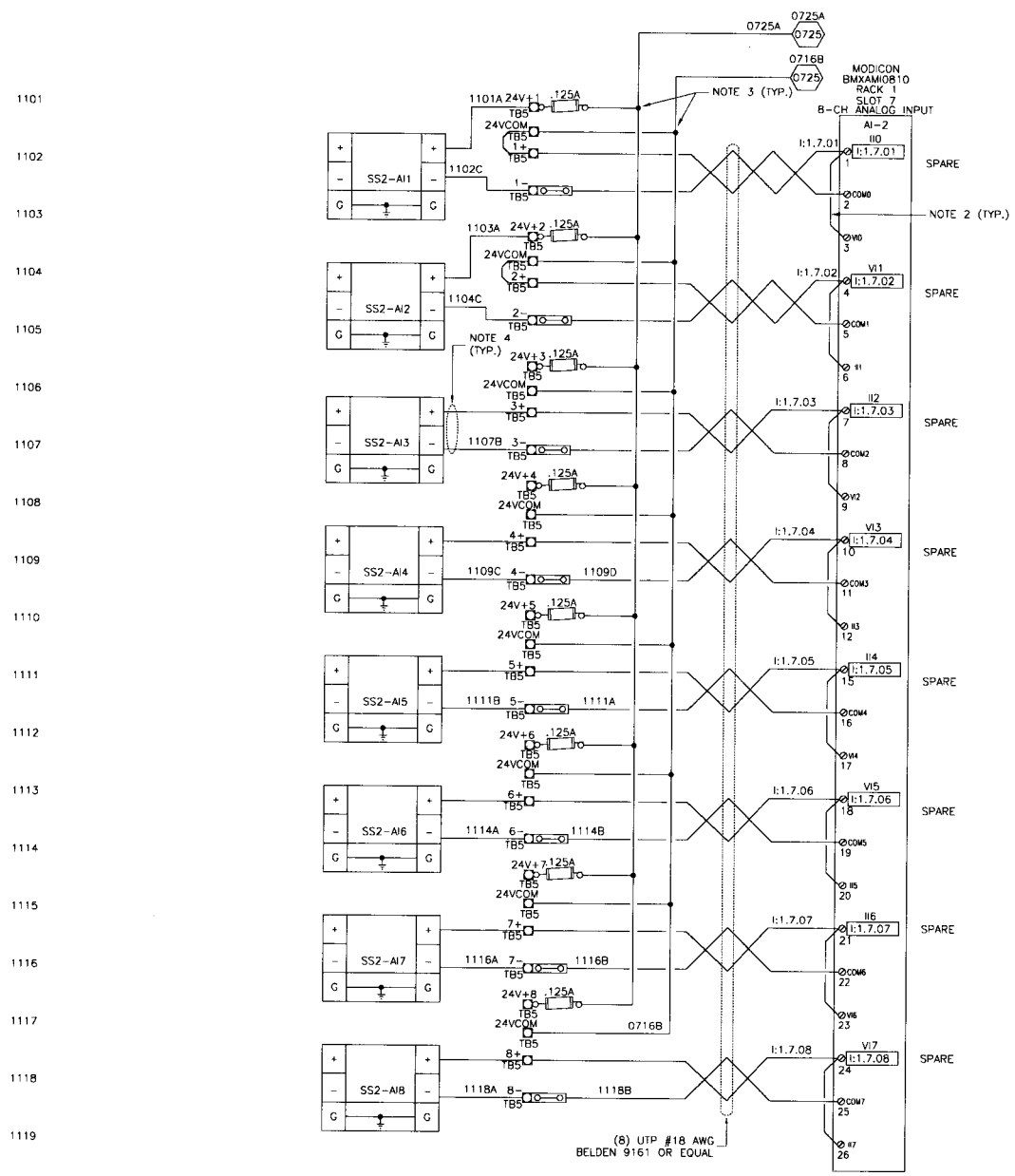
Rev #	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
MONTE VISTA
WIRING DIAGRAM
AI-1

Scale	NTS
Job No.	1834.00.101
CADD File No.	1834.00.101_MONTE VISTA_EC10.DWG
Designed	DLN
Drawn	JHA
Checked	DLN
Date	JAN. 2015
Sheet	EC10

PLOTTED: 2/3/2015 3:59 PM 6:51 AM BY: johrens DWG FILE: X:\1800'S\1834.00 ARIZONA WATER CO. WHITE TANKS SCADA PROJECT (FOR PREVIOUS MODICON MOMENTUM DESIGN SEE PROJECT NO. 1400)\100\101 - RTU DESIGN\ACTIVE CAD FILES\MONTE VISTA\1834.00.101_MONTE VISTA_EC10.DWG



NOTES:

1. MODULES ARE TO BE WIRED PER MANUFACTURER'S RECOMMENDATIONS.
2. JUMPER WIRES TO BE PROVIDED AND INSTALLED BY PANEL FABRICATOR.
3. PROVIDE BUS BAR STYLE OR INSULATED COMB STYLE JUMPERS WHERE 2 OR MORE TERMINALS IN THE SAME TB ARE COMMONED TOGETHER. DO NOT USE DISCRETE WIRE JUMPERS.
4. CABLE BETWEEN TERMINAL BLOCK AND SURGE SUPPRESSOR SHALL BE (1) UTP, #18 AWG BELDEN #9740 OR EQUAL.

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49856
HEBER TORRES
Date Signed 2/3/15
ARIZONA U.S.A.
Expires 9/30/15

Rev'd	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
MONTE VISTA
WIRING DIAGRAM
AI-2

Scale	NTS
Job No.	1834.00.101
CADD File	1834.00.101_MONTE VISTA_EC11.DWG
Designed	DLN
Drawn	JHA
Checked	DLN
Date	JAN. 2015
Sheet	EC11

PLOTTED: 2/3/2015 3:59 PM 6:51 AM BY: jahrens DWG FILE: X:\1800'S\1834.00 ARIZONA WATER CO. WHITE TANKS SCADA PROJECT (FOR PREVIOUS MODICON MOMENTUM DESIGN SEE PROJECT NO. 1400)\100\101 - RTU DESIGN\ACTIVE CAD FILES\MONTE VISTA\1834.00.101_MONTE VISTA_EC11.DWG

ARIZONA WATER COMPANY
WHITE TANKS WATER SYSTEM SCADA DESIGN
WELL NO. 7

Registered Professional Engineer (Electrical)
CERTIFICATE NO.
49856
HEBER
TORRES
Date Signed 12/5/2014
ARIZONA U.S.A.
Expires 9/30/15

Rev'd	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
WELL NO. 7
COVER SHEET

Scale	NTS
Job No.	1834.00.101
CADD File No.	1834.00.101_WELL 7_EC01.dwg
Designed	DLN
Drawn	JHA
Checked	DLN
Date	DEC. 2014
Sheet	EC01

XREF: DLTV_BORDER_22X34

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DRAWING INDEX

Drawing No.	Drawing Title
EC01	COVER SHEET
EC02	DRAWING INDEX, STANDARD SYMBOLS, LEGENDS, AND ISA TABLE
EC03	BILL OF MATERIALS
EC04	PLC CABINET ENCLOSURE LAYOUT AND NAMEPLATE SCHEDULE
EC05	TERMINAL BLOCK AND DEVICE DETAILS
EC06	COMMUNICATION SYSTEM ARCHITECTURE DIAGRAM
EC07	POWER DISTRIBUTION SCHEMATIC
EC08	WIRING DIAGRAM DI-1
EC09	WIRING DIAGRAM DO-1
EC10	WIRING DIAGRAM AI-1

SCHEMATIC/WIRING DIAGRAM SYMBOLS

- CIRCUIT BREAKER (AMPS)
- FUSE WITH PULLER, *A – AMP RATING
- SWITCH, NORMALLY OPEN (AMPS)
- SELECTOR SWITCH, 2 POSITION, NORMALLY OPEN (XXX, XXX, 0X)
- SELECTOR SWITCH, 3 POSITION, NORMALLY OPEN (XXX, XXX, XXX, 00X)
- TEMPERATURE SWITCH, NORMALLY OPEN
- SINGLE LEVEL TERMINAL BLOCK, * – TB IDENTIFICATION
- DOUBLE LEVEL TERMINAL BLOCK, * – TB IDENTIFICATION
- TERMINAL BLOCK W/ FUSE PLUG AND FUSE, * – TB IDENTIFICATION, ** – FUSE AMPS
- TERMINAL BLOCK W/ DISCONNECT KNIFE, * – TB IDENTIFICATION
- SURGE SUPPRESSOR FOR FLOATING SIGNAL CIRCUITS, * – SS NUMBER IDENTIFICATION
- SURGE SUPPRESSOR FOR POWER SUPPLY, * – SS NUMBER IDENTIFICATION
- CONTROL RELAY, * – CR NUMBER IDENTIFICATION, # – TERMINAL NUMBER
- EARTH GROUND
- DUPLEX RECEPTACLE
- SINGLE RECEPTACLE
- DC POWER SUPPLY, * – DC VOLTAGE RATING

COLOR CODE CHART FOR 18 AWG BELDEN CABLES 12 COND. NO. 8466 AND 19 COND. NO. 8619

BLACK	BLK	1st
WHITE	WHT	2nd
RED	RED	3rd
GREEN	GRN	4th
ORANGE	ORN	5th
BLUE	BLU	6th
WHITE/BLACK	WHT/BLK	7th
RED/BLACK	RED/BLK	8th
GREEN/BLACK	GRN/BLK	9th
ORANGE/BLACK	ORN/BLK	10th
BLUE/BLACK	BLU/BLK	11th
BLACK/WHITE	BLK/WHT	12th
RED/WHITE	RED/WHT	13th
GREEN/WHITE	GRN/WHT	14th
BLUE/WHITE	BLU/WHT	15th
BLACK/RED	BLK/RED	16th
WHITE/RED	WHT/RED	17th
ORANGE/RED	ORN/RED	18th
BLUE/RED	BLU/RED	19th

WIRE SIZES

(CIRCUIT WIRING SHALL BE RATED IN ACCORDANCE WITH THE MAXIMUM PERMITTED AMPERE RATING/SETTING OF THE OVERCURRENT PROTECTION DEVICE. N.E.C. 210-3)

120VAC / 20A POWER CIRCUIT – MIN. #12 AWG.
120VAC / 15A AND BELOW – MIN. #14 AWG.

24VDC / 20A POWER CIRCUIT – MIN. #12 AWG.
24VDC / 15A AND BELOW – MIN. #16 AWG.
24VDC I/O & SIGNAL CIRCUIT – MIN. #18 AWG.

4-20mADC I/O SIGNAL CIRCUIT – MIN. #18 AWG.

ABBREVIATIONS

A/R	AS REQUIRED
AC COM	NEUTRAL
AFF	ABOVE FINISHED FLOOR
AI	ANALOG INPUT
ANL COM	ANALOG COMMON
AO	ANALOG OUTPUT
AWG	AMERICAN WIRE GAUGE
BLK	BLACK
BLU	BLUE
CAP	CENTRAL ARIZONA PROJECT
CLR	CLEAR
CR	CONTROL RELAY
DC COM	DC COMMON
DC+	DC POSITIVE POTENTIAL
DI	DISCRETE INPUT
DO	DISCRETE OUTPUT
DS	DOOR SWITCH
FOM	FIBER OPTIC MODEM
FOT	FIBER OPTIC TRANSCEIVER
GND	GROUND
GRN	GREEN
I/O	INPUT/OUTPUT
L	LINE
N	NEUTRAL
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NP	NAMEPLATE
OIT	OPERATOR INTERFACE TERMINAL
ORN	ORANGE
PDB	POWER DISTRIBUTION BLOCK
PLC	PROGRAMMABLE LOGIC CONTROLLER
PP	FIBER OPTIC PATCH PANEL
PS	POWER SUPPLY
REC	RECEPTACLE
RES	RESERVOIR
RIO	REMOTE INPUT/OUTPUT
RTU	REMOTE TELEMETRY UNIT
SLC	SMALL LOGIC CONTROLLER
SP	SPACE
SS	SURGE SUPPRESSOR
TB	TERMINAL BLOCK
UPS	UNINTERRUPTIBLE POWER SUPPLY
WHT	WHITE
WTR	WATER TREATMENT PLANT
WWTP	WASTE WATER TREATMENT PLANT

ISA INSTRUMENT IDENTIFICATION TABLE

FIRST LETTERS			SUCCEEDING LETTERS		
MEASURED OR INITIATING VARIABLE		MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYZER		ALARM		AUTO
B	BURNER, COMBUSTION				
C	CONDUCTIVITY			CONTROL	CLOSED
D	DENSITY	DIFFERENTIAL			
E	VOLTAGE		ELEMENT		
F	FLOW	RATIO			
G	GAUGE		GLASS, VIEWING DEVICE		
H	HAND				HIGH
I	CURRENT		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHED.	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	MOTION				MIDDLE
N	INTRUSION				NORMAL
O	TORQUE		ORIFICE, RESTRICTION		OPEN
P	PRESSURE		POINT CONNECTION		STOP
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD, OR PRINT		REMOTE
S	SPEED, FREQUENCY	SAFETY		SWITCH	START
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION			VALVE, LOUVER	
W	WEIGHT		WELL		
X	MOTOR	X-AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFED
Y	EVENT, STATE, OR PRESENCE	Y-AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION	Z-AXIS		DRIVER, ACTUATOR, FINAL CONTROL ELEMENT	

COLOR CODE CHART FOR 22 AWG BELDEN PAIRED CABLE NO. 8761

BLACK	BLK	1st
CLEAR	CLR	2nd

DRAWING REFERENCES

A — WIRE NUMBER
0321 — RUNG NUMBER

LINETYPE LEGEND

- FIELD WIRING
- INTERNAL PANEL WIRING
- RADIO COMMUNICATION LINK
- FO — FIBER OPTIC CABLE
- FOP — FIBER OPTIC PATCH CABLE
- EN — ETHERNET CAT5 CABLE
- DH+ — DATA HIGHWAY PLUS
- RIO — REMOTE INPUT OUTPUT
- AREA DIVIDER
- EQUIPMENT
- PATCH PANEL

RUNG NUMBERING

0321
- RUNG NUMBER
- DRAWING NUMBER (E.G. EC##)

WIRE NUMBERING

0321A
- WIRE LETTER
- RUNG NUMBER

PANEL WIRING IDENTIFICATION

BLACK – 120VAC LINE
WHITE – 120VAC NEUTRAL
GREEN – GROUND
BLUE – DC POSITIVE
BLUE W/WHITE STRIPE – DC COMMON

PANEL I/O WIRES TAG LEGEND

0-#-#-2
- CHANNEL #
- SLOT #
- RACK #
- 0=OUTPUT 1=INPUT

Registered Professional Engineer (Electrical) CERTIFICATE NO. 49856 HEBER TORRES Date Signed 12/5/2014 ARIZONA U.S.A.
Expires 9/30/15

Rev-d	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
WELL NO. 7
DRAWING INDEX, STANDARD SYMBOLS, LEGENDS, AND ISA TABLE

Scale	NTS
Job No.	1834.00.101
CADD File	1834.00.101_WELL 7_EC02.dwg
Designed	DLN
Drawn	JHA
Checked	DLN
Date	DEC. 2014
Sheet	EC02

QTY	ITEMS	MFG	CATALOG	DESC
1	102	MODICON	BMX CPS 2000	M340 POWER SUPPLY MODULE - 20W
1	105	MODICON	BMX P34 1000	M340 STANDARD PROCESSOR MODULE
1	106	MODICON	BMX DDI 1602	M340 DISCRETE INPUT MODULE
1	107	MODICON	BMX DDO 1602	M340 DISCRETE OUTPUT MODULE
1	108	MODICON	BMXAMI0810	M340 8 CHANNEL ISOLATED ANALOG INPUT
1	110	MODICON	BMXNOE0100	M340 ETHERNET MODULE - 1 x RJ45 10/100
1	115	MODICON	BMX X8P 0800	M340 8-SLOT RACK
3	116	MODICON	BMXXEM010	UNUSED SLOT CONNECTOR PROTECTIVE COVER
1	196	GE MDS	INETII-DGSN	INDUSTRIAL SPREAD SPECTRUM RADIO, DUAL GATEWAY, W/ ETHERNET AND RS-232 CONNECTIONS, 902 - 928 MHz
1	197	SIXNET	SN-6601-VZ-AC	CELLULAR MODEM FOR VERIZON WITH AC ADAPTER & WHIP ANTENNA (PROVIDED BY 'COMPANY')
1	198	RED LION	CSMSTRLE	MODULAR CONTROLLER MASTER WITH MULTIPLE PROTOCOL CONVERTER, ETHERNET, & EXPANSION SLOT
A/R	201	AB	199-DR1	ZINC/STEEL DIN RAIL EN 50022 (35mm x 7.5mm x 1m)
19	202	AB	1492-EA35	END ANCHOR
6	210	AB	1492-GM35	TERMINAL BLOCK, GROUP MARKING CARRIER
11	215	AB	1492-J4	SCREW CONNECTION TERMINAL BLOCK; SINGLE CIRCUIT, 600V, GRAY, FEED-THROUGH
2	216	AB	1492-EBJ3	END BARRIER; 1492-J
44	219	AB	1492-JD3P	SCREW CONNECTION TERMINAL BLOCK; DOUBLE LEVEL,W/ PLUGGABLE TOP LEVEL
5	220	AB	1492-EBJD3P	END BARRIER; 1492-J
8	221	AB	1492-JG4	SCREW CONNECTION TERMINAL BLOCK; GROUNDING
18	223	AB	1492-FPK224	FUSE PLUG INSERT W/ BFI, 10-36VAC/DC WORKING VOLTAGE, 10A MAX @ 250V.
1	224	AB	1492-FPK2120	FUSE PLUG INSERT W/ BFI, 60-150VAC/DC WORKING VOLTAGE
25	225	AB	1492-DPL	DISCONNECT PLUG FOR 1492-JD3 P AND 1492-JD3
1	230	AB	1492-SP1C005	CIRCUIT BREAKER, MINIATURE, ONE POLE, 0.5A
2	231	AB	1492-SP1C010	CIRCUIT BREAKER, MINIATURE, ONE POLE, 1A
1	232	AB	1492-SP1C020	CIRCUIT BREAKER, MINIATURE, ONE POLE, 2A
2	233	AB	1492-SP1C050	CIRCUIT BREAKER, MINIATURE, ONE POLE, 5A
3	234	AB	1492-SP1C100	CIRCUIT BREAKER, MINIATURE, ONE POLE, 10A
1	235	AB	1489-M1C150	CIRCUIT BREAKER, ONE POLE, 15A, UL 489 COMPLIANT
8	282	BUSSMANN	GMA-125MA	250V, 125mA, 5mmX20mm, FAST ACTING GLASS FUSE
2	283	BUSSMANN	GMA-250MA	250V, 250mA, 5mmX20mm, FAST ACTING GLASS FUSE
4	284	BUSSMANN	GMA-500MA	250V, 500mA, 5mmX20mm, FAST ACTING GLASS FUSE
1	285	BUSSMANN	GMA-1A	250V, 1A, 5mmX20mm, FAST ACTING GLASS FUSE
3	286	BUSSMANN	GMA-2A	250V, 2A, 5mmX20mm, FAST ACTING GLASS FUSE
1	301	HOFFMAN	A60N3618FSLP	FREE-STANDING TYPE 1 SINGLE-DOOR ENCLOSURE
1	303	HOFFMAN	A49P32N	SUB PANEL, 49" TALL, 32" WIDE
1	313	HOFFMAN	LF120V18	18" FLUORESCENT LIGHT PACKAGE, 115VAC
1	316	HOFFMAN	ATEMNO	TEMPERATURE CONTROL SWITCH (THERMOSTAT), N.O. CONTACTS
1	351	HOFFMAN	ALFSWD	DOOR SWITCH FOR LIGHT PACKAGE
1	352	ANY	F8T5	FLUORESCENT LIGHT
4	357	BELDEN	7929A	CABLE, ETHERNET, 4 PR, 24AWG, CAT 5E (LENGTH AS REQUIRED)
1	358	BELDEN	8267	CABLE, COAXIAL, RG-213 (OR EQUAL) WITH APPROPRIATE CONNECTORS, (LENGTH AS REQUIRED)
1	377	SQUARE D	PK15GTA	GROUNDING BAR, 24 CIRCUITS
A/R	380	PANDUIT	F2X4LG6 C2LG6	WIRE DUCT, 2"X4" TALL, LIGHT GRAY, SLOTTED WITH COVER
A/R	381	PANDUIT	F3X4LG6 C3LG6	WIRE DUCT, 3"X4" TALL, LIGHT GRAY, SLOTTED WITH COVER
1	390	PHOENIX CONTACT	5604775	DUAL OUTLET FOR 120VAC, 15A SERVICE, GFCI, DIN-RAIL MOUNTED
2	391	PHOENIX CONTACT	2963860	SINGLE OUTLET FOR 120VAC, 15A SERVICE, DIN-RAIL MOUNTED
1	400	PULS	YRM2.DIODE	DIODE REDUNDANCY MODULE, 10A PER INPUT, 24-48VDC
2	405	PULS	CS10.241	POWER SUPPLY, 10A, 24-28VDC OUTPUT, 100-120V/200-240V INPUT
16	412	PHOENIX CONTACT	2900299	TERMINAL BLOCK WITH PLUG-IN MINIATURE RELAY, 24VDC, 1PDT
1	414	PHOENIX CONTACT	2900310	TERMINAL BLOCK WITH PLUG IN MINIATURE RELAY, 1PDT, 120VAC
8	423	WEIDMULLER	8448920000	SURGE SUPPRESSOR, 24VDC, 2 WIRE LOOP PROTECTION (MCZ OVP)
1	424	WEIDMULLER	8389030000	END CAP FOR SURGE SUPPRESSOR (MCZ OVP)
1	425	WEIDMULLER	8829430000	INDUSTRIAL ETHERNET SWITCH, 8-PORT
1	450	COOPER BUSSMAN	85PM1120S2GR	120VAC, 40kA MAX DISCHARGE CURRENT, SURGE PROTECTIVE DEVICE WITH REMOTE SIGNALING
1	703	APC	SMT750	750VA SMART UPS
1	704	APC	AP9613	DRY CONTACT I/O SMARTSLOT CARD
1	715	SENSUS	5390653700001	ACT-PAK 100D ELECTRONIC INSTRUMENT, PULSE INPUT, 4-20mA OUTPUT, NEMA 1 ENCLOSURE
1	716	SENSUS	5390633700142	ACT-PAK 100D PANEL MOUNTING OPTION
1	811	POLYPHASER	IS-50NX-C2	BROADBAND COAXIAL SURGE PROTECTOR, BULKHEAD MOUNT OPTION, 125-1000MHZ
2	853	TIMES MICROWAVE SYSTEMS	EZ-600-NMC	N-MALE CONNECTOR

A ~ BILL OF MATERIALS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 49856 HEBER TORRES Date Signed 12/5/2014 ARIZONA U.S.A.
Expires 9/30/15

Rev'd	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
WELL NO. 7
BILL OF MATERIALS

Scale: NTS
Job No.: 1834.00.101
CADD File: 1834.00.101_WELL 7_EC03.dwg
Designed: DLN
Drawn: JHA
Checked: DLN
Date: DEC. 2014
Sheet: EC03

XREF: D_TV_BORDER_22X34

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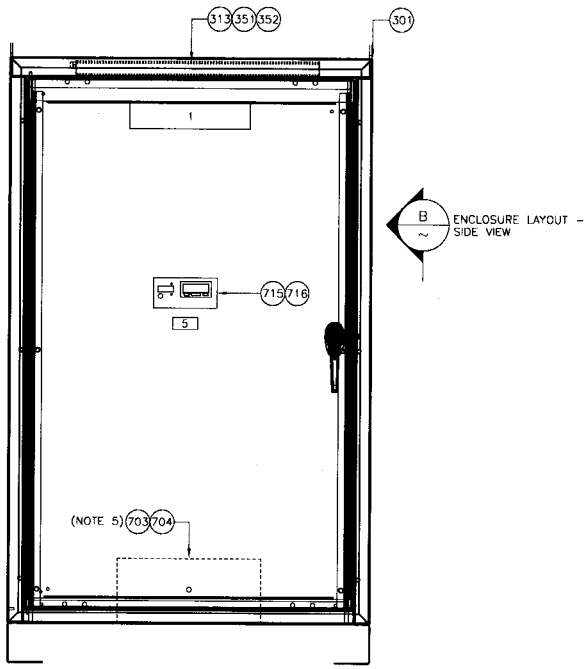
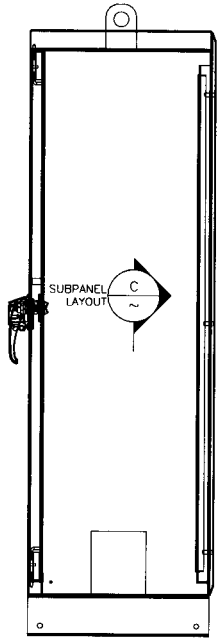
NOTES:

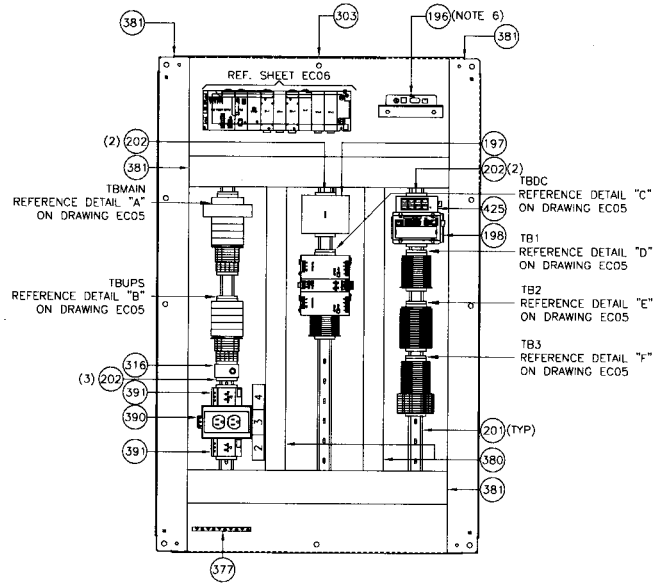
1. REFER TO BILL OF MATERIALS ON DRAWING EC03.
2. NAMEPLATES SHALL BE 3/32" THICK LAMINATED PHENOLIC TYPE WHITE WITH BLACK LETTERS. SEE NAMEPLATE SCHEDULE (DETAIL D) ON THIS SHEET FOR ADDITIONAL INFORMATION.
3. FURNISH ADDITIONAL NAMEPLATES AS REQUIRED BY UL OR BY OTHER APPLICABLE CODES.
4. REFER TO SHEET EC06 FOR COMMUNICATION SYSTEM ARCHITECTURE AND ADDITIONAL EQUIPMENT AND WIRING INFORMATION.
5. UPS IS TO BE SECURELY FASTENED TO BOTTOM OF CABINET.
6. MOUNT RADIO ON CUSTOM SHELF. SHELF TO BE PROVIDED AND INSTALLED BY PANEL FABRICATOR.
7. ALL 120VAC COMPONENTS MOUNTED ON SUBPANEL AND SWING-OUT PANEL SHALL BE FINGER SAFE. IF A COMPONENT IS NOT FINGER SAFE BY DESIGN, IT SHALL BE PROVIDED WITH A PROTECTIVE COVER SO AS TO MINIMIZE POTENTIAL OF ACCIDENTAL CONTACT.



A ENCLOSURE LAYOUT
SCALE: 1" = 1'-0"



B ENCLOSURE LAYOUT - SIDE VIEW
SCALE: 1" = 1'-0"



C SUBPANEL LAYOUT
SCALE: 1" = 1'-0"

NAMEPLATE SCHEDULE				
NP.	HxWxLTR	FIRST LINE	SECOND LINE	LOCATION
1	2" x 13" x 1/2"	WELL 7	RTU	CENTERED 3" FROM TOP OF ENCLOSURE DOOR
2	1" x 3" x 1/4"	UPS RECEPTACLE	ONLY	CENTERED TO THE RIGHT OF UPS RECEPTACLE
3	1" x 3" x 1/4"	SERVICE RECEPTACLE	ONLY	CENTERED TO THE RIGHT OF SERVICE RECEPTACLE
4	1" x 3" x 1/4"	MODEM RECEPTACLE	ONLY	CENTERED TO THE RIGHT OF MODEM RECEPTACLE
5	1" x 3" x 1/4"	WELL 7 DISCHARGE FLOW		CENTERED BELOW ACT-PAK

D NAMEPLATE SCHEDULE
(NOTE 2)

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49856
HEBER TORRES
Date Signed 12/15/2014
ARIZONA U.S.A.
Expires 9/30/15

Rev'd	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
WELL NO. 7
PLC CABINET ENCLOSURE LAYOUT
AND NAMEPLATE SCHEDULE

Scale: NTS
Job No.: 1834.00.101
CADD File No.: 1834.00.101_WELL 7_EC04.dwg
Designed: DLN
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Checked: DLN
Date: DEC. 2014
Sheet: EC04

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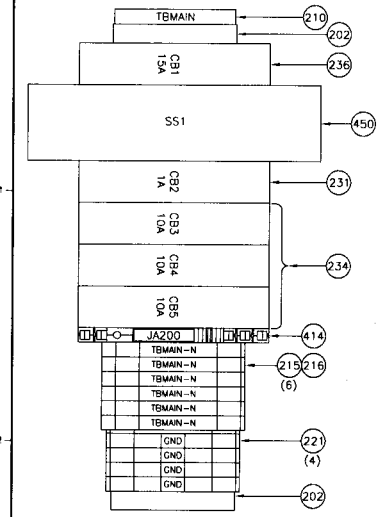
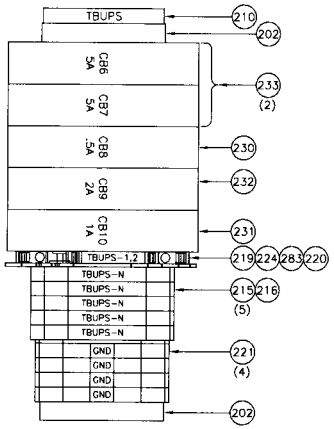
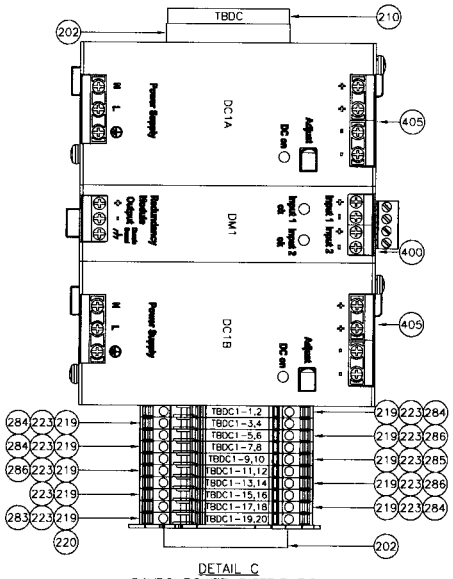


DETAIL A
120VAC POWER
DISTRIBUTION
TBMAIN



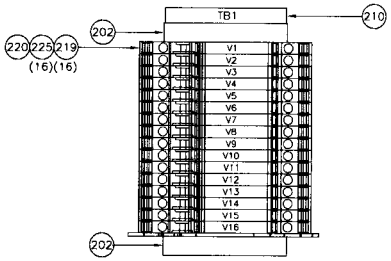
DETAIL B
120VAC POWER
DISTRIBUTION
TBUPS



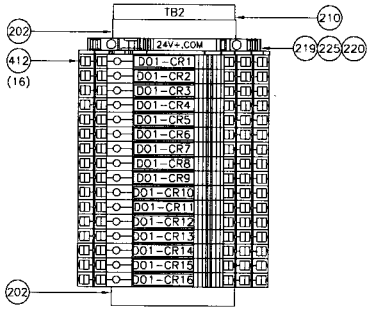
DETAIL C
24VDC POWER DISTRIBUTION
TBDC

NOTES:

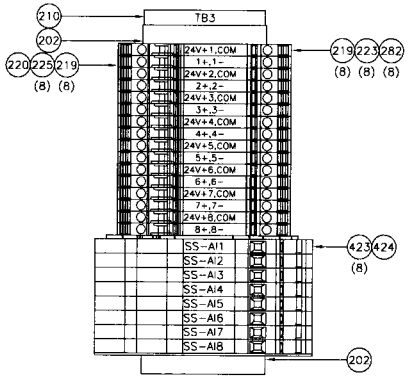
1. PROVIDE BUS BAR STYLE OR INSULATED COMB STYLE JUMPERS WHERE 2 OR MORE TERMINALS IN THE SAME TB ARE COMMONED TOGETHER. DO NOT USE DISCRETE WIRE JUMPERS.
2. BILL OF MATERIALS IS ON DRAWING EC03.
3. PANEL BUILDER TO SUPPLY AND INSTALL ALL NECESSARY AND APPROPRIATE ACCESSORIES INCLUDING TERMINAL NUMBERS, JUMPERS AND END BARRIERS.



DETAIL D
DISCRETE INPUTS
TB1



DETAIL E
DISCRETE OUTPUT
TB2



DETAIL F
ANALOG INPUT
TB3

0 .5" 1" 1.5" 2"
SCALE: 6" = 1'-0"

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49856
HEBER TORRES
Date Signed 12/5/2014
ARIZONA U.S.A.
Expires 9/30/15

Rev'd	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
WELL NO. 7
TERMINAL BLOCK
AND DEVICE DETAILS

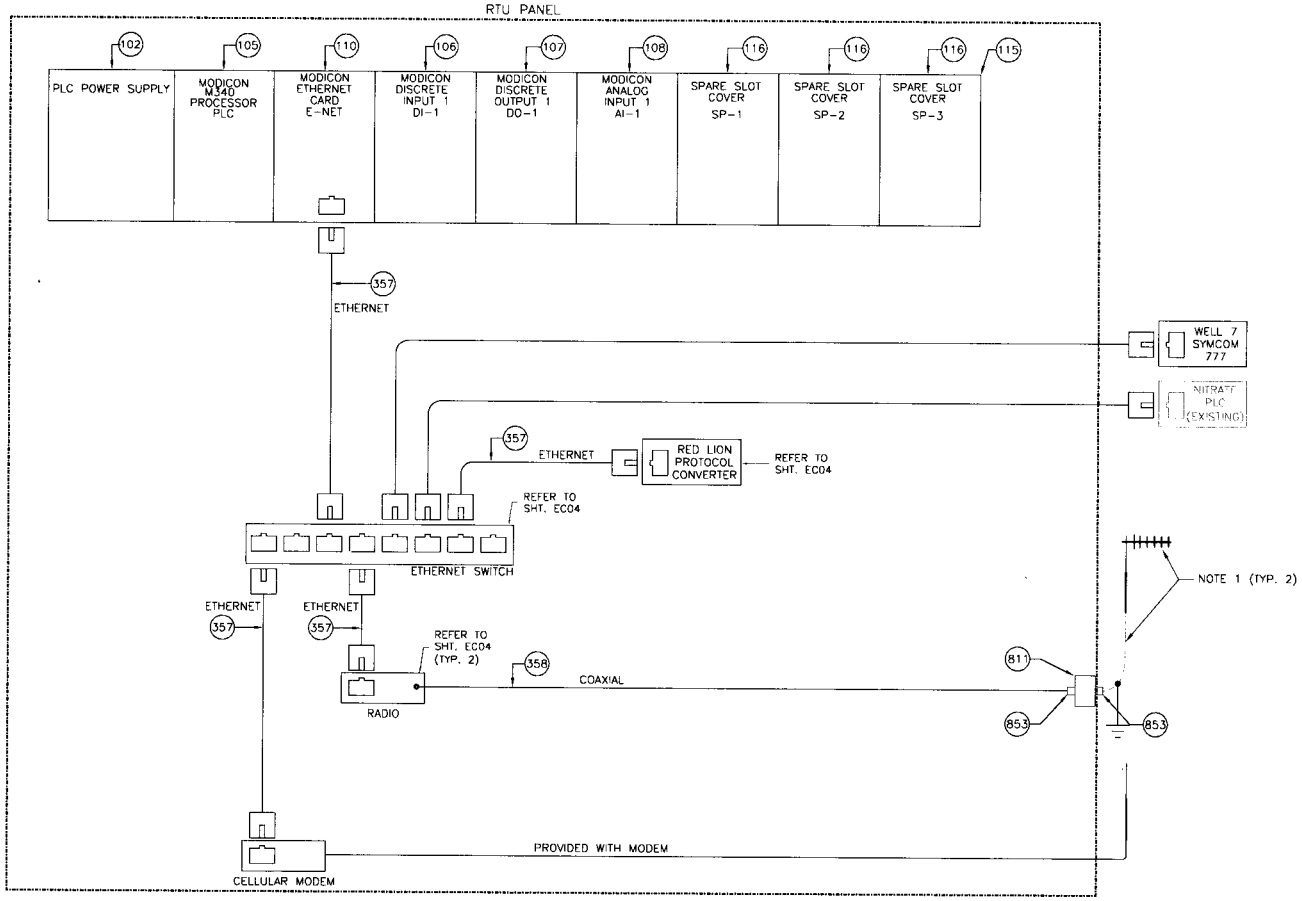
Scale	6" = 1'-0"
Job No.	1834.00.101
CADD File No.	1834.00.101_WELL 7_EC05.dwg
Designed	DLN
Drawn	JHA
Checked	DLN
Date	DEC. 2014
Sheet	EC05

XREF: DLTV_BORDER_22X34; 1834.00.101_WELL 7_EC04

PLOTTED: 12/7/2014 1:04 PM 6:51 AM BY: johrens DWG FILE: X:\1800'S\1834.00 ARIZONA WATER CO. WHITE TANKS SCADA PROJECT (FOR PREVIOUS MODICON MOMENTUM DESIGN SEE PROJECT NO. 1400)\100\101 - RTU DESIGN\ACTIVE CAD FILES\WELL 7\1834.00.101_WELL 7_EC05.DWG

NOTES:

1. REFERENCE ASSOCIATED ELECTRICAL DESIGN PACKAGE FOR ANTENNAS AND ANTENNA CABLE REQUIREMENTS.
2. REFERENCE ASSOCIATED ELECTRICAL DESIGN PACKAGE FOR CIRCUIT INFORMATION PERTAINING TO CAT5E CABLING TO EXISTING NITRATE PLC AND SYMCOM 777.



Rev'd	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.256.4518

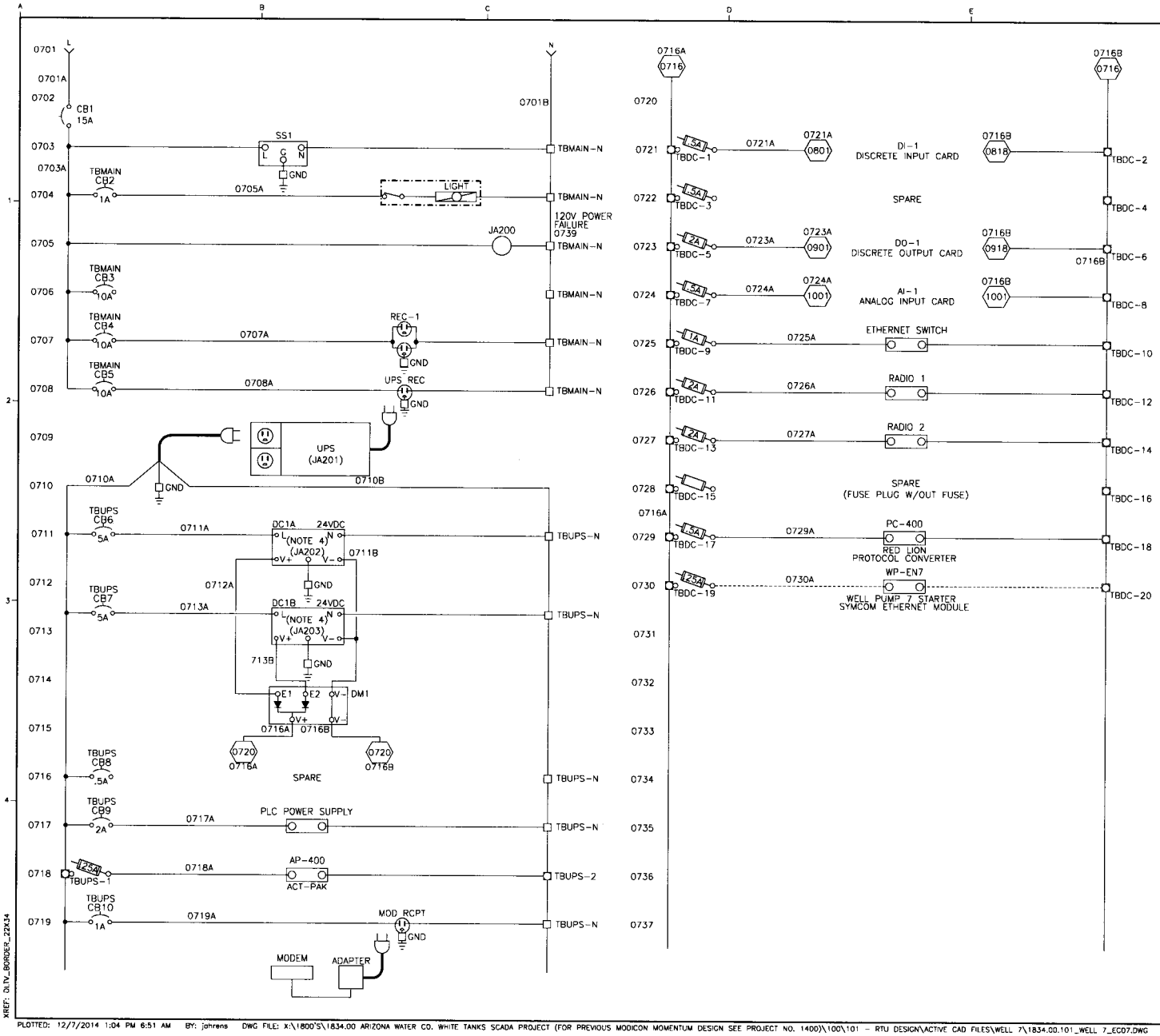
AWC WHITE TANKS SCADA PROJECT
WELL NO. 7
COMMUNICATION SYSTEM
ARCHITECTURE DIAGRAM

Scale	NTS
Job No.	1834.00.101
CADD File No.	1834.00.101_WELL 7_EC06.dwg
Designed	DLN
Drawn	JHA
Checked	DLN
Date	DEC. 2014
Sheet	EC06

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49856
HEBER TORRES
Date Signed 12/5/2014
ARIZONA U.S.A.
Expires 9/30/15

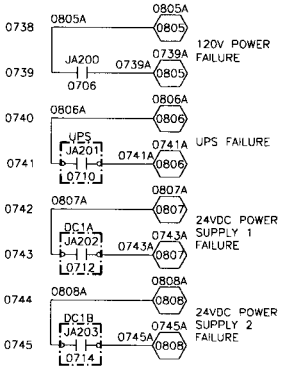
XREF: DLTV_BORDER_22X34

PLOTTED: 12/7/2014 1:04 PM 6:51 AM BY: jahrens DWG FILE: X:\1800'S\1834.00 ARIZONA WATER CO. WHITE TANKS SCADA PROJECT (FOR PREVIOUS MODICON MOMENTUM DESIGN SEE PROJECT NO. 1400)\100\101 - RTU DESIGN\ACTIVE CAD FILES\WELL 7\1834.00.101_WELL 7_EC06.DWG



NOTES:

1. PROVIDE BUS BAR STYLE OR INSULATED COMB STYLE JUMPERS WHERE 2 OR MORE TERMINALS IN THE SAME TB ARE COMMONED TOGETHER. DO NOT USE DISCRETE WIRE JUMPERS.
2. BILL OF MATERIALS IS ON DRAWING EC03.
3. OVERCURRENT PROTECTIVE DEVICE SIZES ARE TO BE CONFIRMED SO AS TO ENSURE IN ALIGNMENT WITH ASSOCIATED EQUIPMENT MANUFACTURERS RECOMMENDATIONS.
4. POWER SUPPLY OUTPUTS ARE TO BE ADJUSTED TO WITHIN +/- 50 mV OF EACH OTHER.



Rev'd	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

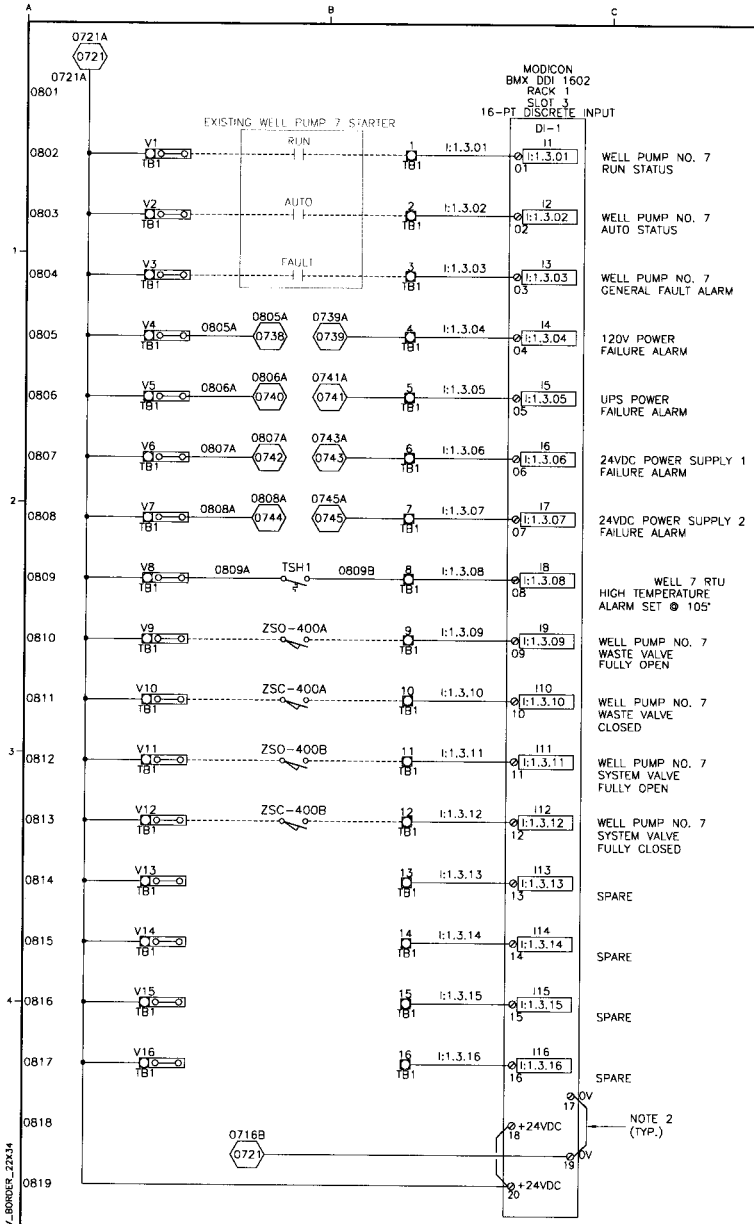
AWC WHITE TANKS SCADA PROJECT
WELL NO. 7
POWER DISTRIBUTION
SCHEMATIC

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49856
HEBER TORRES
Date Signed 12/13/2014
ARIZONA U.S.A.
Expires 9/30/15

Scale	NTS
Job No.	1834.00.101
CADD File No.	1834.00.101_WELL 7_EC07.DWG
Designed	DLN
Drawn	JHA
Checked	DLN
Date	DEC. 2014
Sheet	EC07

XREF: DLTV_BORDER_22X34

PLOTTED: 12/7/2014 1:04 PM 6:51 AM BY: jahrens DWG FILE: X:\1800'S\1834.00 ARIZONA WATER CO. WHITE TANKS SCADA PROJECT (FOR PREVIOUS MODICON MOMENTUM DESIGN SEE PROJECT NO. 1400)\100\101 - RTU DESIGN\ACTIVE CAD FILES\WELL 7\1834.00.101_WELL 7_EC07.DWG



NOTES:

1. MODULES ARE TO BE WIRED PER MANUFACTURER'S RECOMMENDATIONS.
2. JUMPER WIRES TO BE PROVIDED AND INSTALLED BY PANEL FABRICATOR.

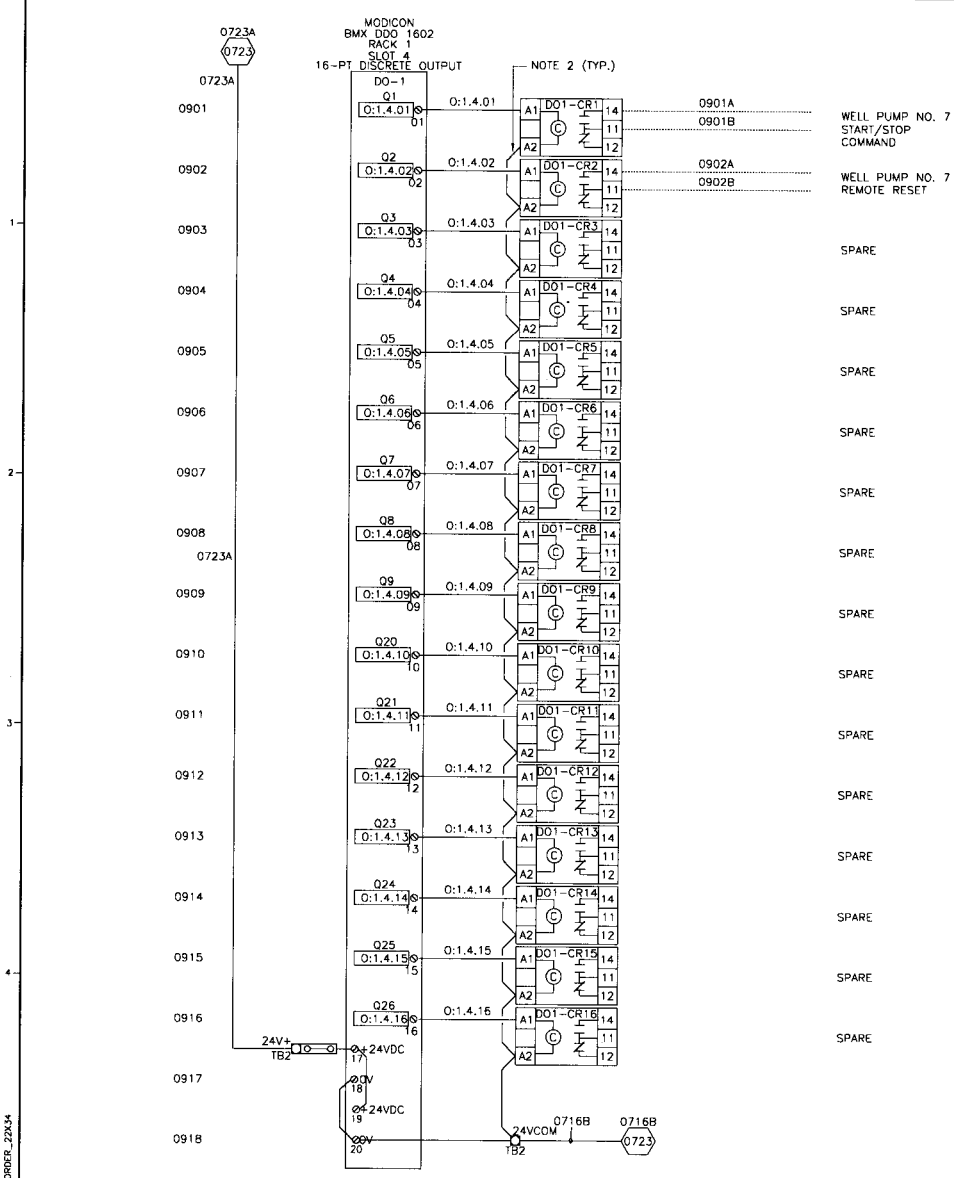
Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49856
HEBER TORRES
Date Signed 12/5/2014
ARIZONA U.S.A.
Expires 9/30/15

Rev's	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
WELL NO. 7
WIRING DIAGRAM
DI-1

Scale	NTS
Job No.	1834.00.101
CADD File No.	1834.00.101_WELL 7_EC08.DWG
Designed	DLN
Drawn	JHA
Checked	DLN
Date	DEC. 2014
Sheet	EC08



NOTES:

1. MODULES ARE TO BE WIRED PER MANUFACTURER'S RECOMMENDATIONS.
2. JUMPER WIRES TO BE PROVIDED AND INSTALLED BY PANEL FABRICATOR.

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49856
HEBER TORRES
Date Signed 12/5/2014
ARIZONA U.S.A.
Expires 9/30/15

Rev'd	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
WELL NO. 7
WIRING DIAGRAM
DO-1

Scale	NTS
Job No.	1834.00.101
CADD File No.	1834.00.101_WELL 7_EC09.DWG
Designed	DLN
Drawn	JHA
Checked	DLN
Date	DEC. 2014
Sheet	EC09

XREF: DLTV_BORDER_22X34

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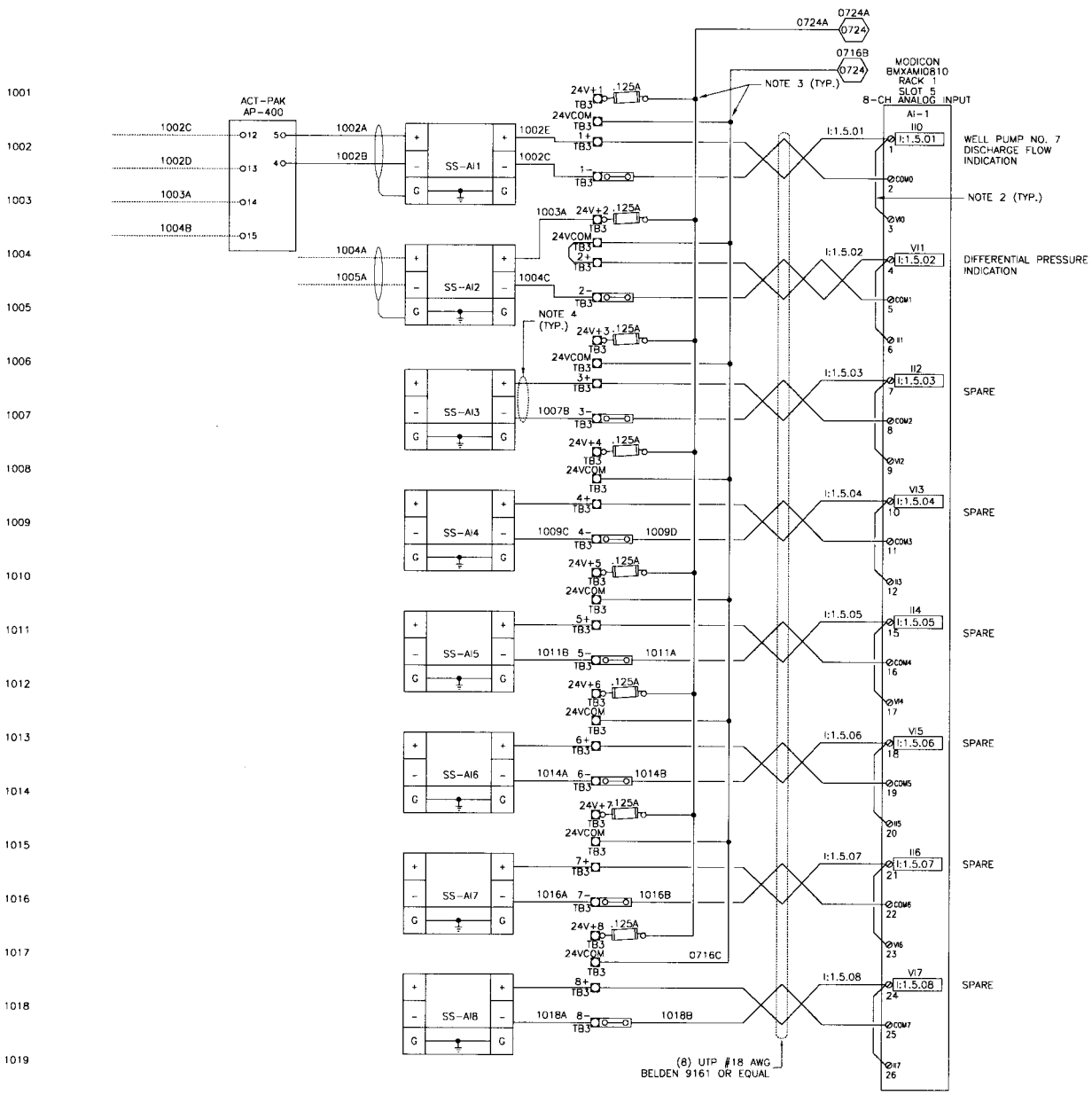

NOTES:

1. MODULES ARE TO BE WIRED PER MANUFACTURER'S RECOMMENDATIONS.
2. JUMPER WIRES TO BE PROVIDED AND INSTALLED BY PANEL FABRICATOR.
3. PROVIDE BUS BAR STYLE OR INSULATED COMB STYLE JUMPERS WHERE 2 OR MORE TERMINALS IN THE SAME TB ARE COMMONED TOGETHER. DO NOT USE DISCRETE WIRE JUMPERS.
4. CABLE BETWEEN TERMINAL BLOCK AND SURGE SUPPRESSOR SHALL BE (1) UTP, #18 AWG BELDEN #9740 OR EQUAL.

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49856
HEBER TORRES
Date Signed 12/5/2014
ARIZONA U.S.A.
Expires 9/30/15

Rev'd	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4659

AWC WHITE TANKS SCADA PROJECT
WELL NO. 7
WIRING DIAGRAM
AI-1

Scale	NTS
Job No.	1834.00.101
CADD File No.	1834.00.101_WELL 7_EC10.DWG
Designed	DLN
Drawn	JHA
Checked	DLN
Date	DEC. 2014
Sheet	EC10

XREF: DLTY_BORDER_22X34

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ARIZONA WATER COMPANY
WHITE TANKS WATER SYSTEM SCADA DESIGN
WELL NO. 8

Registered Professional Engineer (Electrical)
CERTIFICATE NO.
49856
HEBER
TORRES
Date Signed 2/3/15
ARIZONA U.S.A.
Expires 9/30/15

Rev'd	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
WELL NO. 8
COVER SHEET

Scale	NTS
Job No.	1834.00.101
CADD File No.	1834.00.101_WELL 8_EC01.dwg
Designed	DLN
Drawn	JHA
Checked	DLN
Date	JAN. 2015
Sheet	EC01

PLOTTED: 2/3/2015 4:09 PM 6:51 AM BY: johrens DWG FILE: X:\1800'S\1834.00 ARIZONA WATER CO. WHITE TANKS SCADA PROJECT (FOR PREVIOUS MODICON MOMENTUM DESIGN SEE PROJECT NO. 1400)\100\101 - RTU DESIGN\ACTIVE CAD FILES\WELL 8\1834.00.101_WELL 8_EC01.DWG

DRAWING INDEX

Drawing No.	Drawing Title
EC01	COVER SHEET
EC02	DRAWING INDEX, STANDARD SYMBOLS, LEGENDS, AND ISA TABLE
EC03	BILL OF MATERIALS
EC04	PLC CABINET ENCLOSURE LAYOUT AND NAMEPLATE SCHEDULE
EC05	TERMINAL BLOCK AND DEVICE DETAILS
EC06	COMMUNICATION SYSTEM ARCHITECTURE DIAGRAM
EC07	POWER DISTRIBUTION SCHEMATIC
EC08	WIRING DIAGRAM DI-1
EC09	WIRING DIAGRAM DO-1
EC10	WIRING DIAGRAM AI-1

SCHEMATIC/WIRING DIAGRAM SYMBOLS

- CIRCUIT BREAKER (AMPS)
- FUSE WITH PULLER, *A – AMP RATING
- SWITCH NORMALLY OPEN (AMPS)
- SELECTOR SWITCH 2 POSITION, NORMALLY OPEN (XXX XXX / OX)
- SELECTOR SWITCH 3 POSITION, NORMALLY OPEN (XXX XXX XXX / OOX)
- TEMPERATURE SWITCH NORMALLY OPEN
- SINGLE LEVEL TERMINAL BLOCK, * – TB IDENTIFICATION
- DOUBLE LEVEL TERMINAL BLOCK, * – TB IDENTIFICATION
- TERMINAL BLOCK W/ FUSE PLUG AND FUSE, * – TB IDENTIFICATION, ** – FUSE AMPS
- TERMINAL BLOCK W/ DISCONNECT KNIFE, * – TB IDENTIFICATION
- SURGE SUPPRESSOR FOR FLOATING SIGNAL CIRCUITS, * – SS NUMBER IDENTIFICATION
- SURGE SUPPRESSOR FOR POWER SUPPLY, * – SS NUMBER IDENTIFICATION
- CONTROL RELAY, * – CR NUMBER IDENTIFICATION, # – TERMINAL NUMBER
- EARTH GROUND
- DUPLEX RECEPTACLE
- SINGLE RECEPTACLE
- DC POWER SUPPLY, * – DC VOLTAGE RATING

COLOR CODE CHART FOR 18 AWG BELDEN CABLES 12 COND. NO. 8466 AND 19 COND. NO. 8619

BLACK	BLK	1st
WHITE	WHT	2nd
RED	RED	3rd
GREEN	GRN	4th
ORANGE	ORN	5th
BLUE	BLU	6th
WHITE/BLACK	WHT/BLK	7th
RED/BLACK	RED/BLK	8th
GREEN/BLACK	GRN/BLK	9th
ORANGE/BLACK	ORN/BLK	10th
BLUE/BLACK	BLU/BLK	11th
BLACK/WHITE	BLK/WHT	12th
RED/WHITE	RED/WHT	13th
GREEN/WHITE	GRN/WHT	14th
BLUE/WHITE	BLU/WHT	15th
BLACK/RED	BLK/RED	16th
WHITE/RED	WHT/RED	17th
ORANGE/RED	ORN/RED	18th
BLUE/RED	BLU/RED	19th

WIRE SIZES

(CIRCUIT WIRING SHALL BE RATED IN ACCORDANCE WITH THE MAXIMUM PERMITTED AMPERE RATING/SETTING OF THE OVERCURRENT PROTECTION DEVICE. N.EC. 210-3)

120VAC / 20A POWER CIRCUIT	– MIN. #12 AWG.
120VAC / 15A AND BELOW	– MIN. #14 AWG.
24VDC / 20A POWER CIRCUIT	– MIN. #12 AWG.
24VDC / 15A AND BELOW	– MIN. #16 AWG.
24VDC I/O & SIGNAL CIRCUIT	– MIN. #18 AWG.
4-20mADC I/O SIGNAL CIRCUIT	– MIN. #18 AWG.

ABBREVIATIONS

A/R	AS REQUIRED
AC COM	NEUTRAL
AFF	ABOVE FINISHED FLOOR
AI	ANALOG INPUT
ANL COM	ANALOG COMMON
AO	ANALOG OUTPUT
AWG	AMERICAN WIRE GAUGE
BLK	BLACK
BLU	BLUE
CAP	CENTRAL ARIZONA PROJECT
CLR	CLEAR
CR	CONTROL RELAY
DC COM	DC COMMON
DC+	DC POSITIVE POTENTIAL
DI	DISCRETE INPUT
DO	DISCRETE OUTPUT
DS	DOOR SWITCH
FOM	FIBER OPTIC MODEM
FOT	FIBER OPTIC TRANSCEIVER
GND	GROUND
GRN	GREEN
I/O	INPUT/OUTPUT
L	LINE
N	NEUTRAL
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NP	NAMEPLATE
OIT	OPERATOR INTERFACE TERMINAL
ORN	ORANGE
PDB	POWER DISTRIBUTION BLOCK
PLC	PROGRAMMABLE LOGIC CONTROLLER
PP	FIBER OPTIC PATCH PANEL
PS	POWER SUPPLY
REC	RECEPTACLE
RES	RESERVOIR
RIO	REMOTE INPUT/OUTPUT
RTU	REMOTE TELEMETRY UNIT
SLC	SMALL LOGIC CONTROLLER
SP	SPACE
SS	SURGE SUPPRESSOR
TB	TERMINAL BLOCK
UPS	UNINTERRUPTIBLE POWER SUPPLY
WHT	WHITE
WTR	WATER TREATMENT PLANT
WWTP	WASTE WATER TREATMENT PLANT

ISA INSTRUMENT IDENTIFICATION TABLE

FIRST LETTERS			SUCCEEDING LETTERS		
MEASURED OR INITIATING VARIABLE		MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYZER		ALARM		AUTO
B	BURNER, COMBUSTION				
C	CONDUCTIVITY			CONTROL	CLOSED
D	DENSITY	DIFFERENTIAL			
E	VOLTAGE		ELEMENT		
F	FLOW	RATIO			
G	GAUGE		GLASS, VIEWING DEVICE		
H	HAND				HIGH
I	CURRENT		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHED.	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	MOTION				MIDDLE
N	INTRUSION				NORMAL
O	TORQUE		ORIFICE, RESTRICTION		OPEN
P	PRESSURE		POINT CONNECTION		STOP
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD, OR PRINT		REMOTE
S	SPEED, FREQUENCY	SAFETY		SWITCH	START
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION			VALVE, LOUVER	
W	WEIGHT		WELL		
X	MOTOR	X-AXIS	UNCLASSIFIED	UNCLASSIFED	UNCLASSIFED
Y	EVENT, STATE, OR PRESENCE	Y-AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION	Z-AXIS		DRIVER, ACTUATOR, FINAL CONTROL ELEMENT	

COLOR CODE CHART FOR 22 AWG BELDEN PAIRED CABLE NO. 8761

BLACK	BLK	1st
CLEAR	CLR	2nd

DRAWING REFERENCES

#####A — WIRE NUMBER
0321
RUNG NUMBER

LINETYPE LEGEND

- FIELD WIRING
- INTERNAL PANEL WIRING
- RADIO COMMUNICATION LINK
- FO — FIBER OPTIC CABLE
- FOP — FIBER OPTIC PATCH CABLE
- EN — ETHERNET CAT5 CABLE
- DH+ — DATA HIGHWAY PLUS
- RIO — REMOTE INPUT OUTPUT
- AREA DIVIDER
- EQUIPMENT
- PATCH PANEL

RUNG NUMBERING

0321
RUNG NUMBER
DRAWING NUMBER (E.G. EC##)

WIRE NUMBERING

0321A
WIRE LETTER
RUNG NUMBER

PANEL WIRING IDENTIFICATION

BLACK – 120VAC LINE
WHITE – 120VAC NEUTRAL
GREEN – GROUND
BLUE – DC POSITIVE
BLUE W/WHITE STRIPE – DC COMMON

PANEL I/O WIRES TAG LEGEND

O:#.#.2
CHANNEL #
SLOT #
RACK #
O=OUTPUT I=INPUT

Registered Professional Engineer (Electrical) CERTIFICATE NO. 49856 HEBER TORRES Date Signed 4/3/15 ARIZONA U.S.A.
Expires 9/30/15

Rev'd	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
WELL NO. 8
DRAWING INDEX, STANDARD SYMBOLS, LEGENDS, AND ISA TABLE

Scale	NTS
Job No.	1834.00.101
CAD File	1834.00.101_WELL 8_EC02.dwg
Designed	DLN
Drawn	JHA
Checked	DLN
Date	JAN. 2015
Sheet	EC02

QTY	ITEMS	MFG	CATALOG	DESC
1	102	MODICON	BMX CPS 2000	M340 POWER SUPPLY MODULE - 20W
1	105	MODICON	BMX P34 1000	M340 STANDARD PROCESSOR MODULE
1	106	MODICON	BMX DDI 1602	M340 DISCRETE INPUT MODULE
1	107	MODICON	BMX DDO 1602	M340 DISCRETE OUTPUT MODULE
1	108	MODICON	BMXAMI0810	M340 8 CHANNEL ISOLATED ANALOG INPUT
1	110	MODICON	BMXNOE0100	M340 ETHERNET MODULE - 1 x RJ45 10/100
1	115	MODICON	BMX XBP 0800	M340 8-SLOT RACK
3	116	MODICON	BMXXEM010	UNUSED SLOT CONNECTOR PROTECTIVE COVER
1	196	GE MDS	INETII-DGSN	INDUSTRIAL SPREAD SPECTRUM RADIO, DUAL GATEWAY, W/ ETHERNET AND RS-232 CONNECTIONS, 902 - 928 MHz
1	197	SQUARE D	HMIGTO5310	MAGELIS OPERATOR INTERFACE TERMINAL, 24VDC, 10.4" VGA-TFT
1	198	SQUARE D	HMIZSD4G	4GB MEMORY SG CARD
A/R	201	AB	199-DR1	ZINC/STEEL DIN RAIL EN 50022 (35mm x 7.5mm x 1m)
19	202	AB	1492-EA35	END ANCHOR
6	210	AB	1492-GM35	TERMINAL BLOCK, GROUP MARKING CARRIER
11	215	AB	1492-J4	SCREW CONNECTION TERMINAL BLOCK; SINGLE CIRCUIT, 600V, GRAY, FEED-THROUGH
3	216	AB	1492-EBJ3	END BARRIER; 1492-J
43	219	AB	1492-JD3P	SCREW CONNECTION TERMINAL BLOCK; DOUBLE LEVEL,W/ PLUGGABLE TOP LEVEL
3	220	AB	1492-EBJD3P	END BARRIER; 1492-J
8	221	AB	1492-JG4	SCREW CONNECTION TERMINAL BLOCK; GROUNDING
17	223	AB	1492-FPK224	FUSE PLUG INSERT W/ BFI, 10-36VAC/DC WORKING VOLTAGE, 10A MAX @ 250V.
1	224	AB	1492-FPK2120	FUSE PLUG INSERT W/ BFI, 60-150VAC/DC WORKING VOLTAGE
25	225	AB	1492-DPL	DISCONNECT PLUG FOR 1492-JD3 P AND 1492-JD3
1	230	AB	1492-SP1C005	CIRCUIT BREAKER, MINIATURE, ONE POLE, 0.5A
1	231	AB	1492-SP1C010	CIRCUIT BREAKER, MINIATURE, ONE POLE, 1A
1	232	AB	1492-SP1C020	CIRCUIT BREAKER, MINIATURE, ONE POLE, 2A
2	233	AB	1492-SP1C050	CIRCUIT BREAKER, MINIATURE, ONE POLE, 5A
3	234	AB	1492-SP1C100	CIRCUIT BREAKER, MINIATURE, ONE POLE, 10A
1	235	AB	1492-M1C200	CIRCUIT BREAKER, ONE POLE, 20A, UL 489 COMPLIANT
1	236	AB	1489-M1C150	CIRCUIT BREAKER, ONE POLE, 15A, UL 489 COMPLIANT
8	282	BUSSMANN	GMA-125MA	250V, 125mA, 5mmX20mm, FAST ACTING GLASS FUSE
2	283	BUSSMANN	GMA-250MA	250V, 250mA, 5mmX20mm, FAST ACTING GLASS FUSE
3	284	BUSSMANN	GMA-500MA	250V, 500mA, 5mmX20mm, FAST ACTING GLASS FUSE
1	285	BUSSMANN	GMA-1A	250V, 1A, 5mmX20mm, FAST ACTING GLASS FUSE
3	286	BUSSMANN	GMA-2A	250V, 2A, 5mmX20mm, FAST ACTING GLASS FUSE
1	301	HOFFMAN	A72H3724FSPT	FREE-STANDING TYPE 4 SINGLE-DOOR ENCLOSURES WITH 3-POINT LATCH
1	303	HOFFMAN	A72P36F1	SUB PANEL, 60" TALL, 32" WIDE
1	311	HOFFMAN	A72SP36F3	SWING-OUT PANEL, FULL PANEL, 60" X 30.81"
1	313	HOFFMAN	LF120V18	18" FLUORESCENT LIGHT PACKAGE, 115VAC
1	316	HOFFMAN	ATEMNO	TEMPERATURE CONTROL SWITCH (THERMOSTAT), N.O. CONTACTS
1	351	HOFFMAN	ALF5WD	DOOR SWITCH FOR LIGHT PACKAGE
1	352	ANY	F8T5	FLUORESCENT LIGHT
3	357	BELDEN	7929A	CABLE, ETHERNET, 4 PR, 24AWG, CAT 5E (LENGTH AS REQUIRED)
1	358	BELDEN	8267	CABLE, COAXIAL, RG-213 (OR EQUAL) WITH APPROPRIATE CONNECTORS, (LENGTH AS REQUIRED)
1	377	SQUARE D	PK15GTA	GROUNDING BAR, 24 CIRCUITS
A/R	380	PANDUIT	F2X4LG6 C2LG6	WIRE DUCT, 2"X4" TALL, LIGHT GRAY, SLOTTED WITH COVER
A/R	381	PANDUIT	F3X4LG6 C3LG6	WIRE DUCT, 3"X4" TALL, LIGHT GRAY, SLOTTED WITH COVER
1	390	PHOENIX CONTACT	5604775	DUAL OUTLET FOR 120VAC, 15A SERVICE, GFCI, DIN-RAIL MOUNTED
1	391	PHOENIX CONTACT	2963860	SINGLE OUTLET FOR 120VAC, 15A SERVICE, DIN-RAIL MOUNTED
1	400	PULS	YRM2.DIODE	DIODE REDUNDANCY MODULE, 10A PER INPUT, 24-48VDC
2	405	PULS	CS10.241	POWER SUPPLY, 10A, 24-28VDC OUTPUT, 100-120V/200-240V INPUT
16	412	PHOENIX CONTACT	2900299	TERMINAL BLOCK WITH PLUG-IN MINIATURE RELAY, 24VDC, 1PDT
1	414	PHOENIX CONTACT	2900310	TERMINAL BLOCK WITH PLUG IN MINIATURE RELAY, 1PDT, 120VAC
8	423	WEIDMULLER	8448920000	SURGE SUPPRESSOR, 24VDC, 2 WIRE LOOP PROTECTION (MCZ OVP)
1	424	WEIDMULLER	8389030000	END CAP FOR SURGE SUPPRESSOR (MCZ OVP)
1	425	WEIDMULLER	8829430000	INDUSTRIAL ETHERNET SWITCH, 8-PORT
1	450	COOPER BUSSMAN	BSPM112052GR	120VAC, 40kA MAX DISCHARGE CURRENT, SURGE PROTECTIVE DEVICE WITH REMOTE SIGNALING
1	475	AUTOMATION DIRECT	XTD-0200F-PT1	PROSENSE DIN-RAIL MOUNTED TEMPERATURE TRANSMITTER, 0 TO 200°F RATED, FOR RTD TYPE PT100 3-WIRE
1	476	ANY	ANY	3-WIRE RTD TYPE PT100, COMPATIBLE WITH AUTOMATION DIRECT XTD-0200F-PT1
1	703	FALCON	SSG1.5K-1T	1.5kVA SSG SERIES INDUSTRIAL UPS, RATED FOR 55°C
1	704	FALCON	UA88376-SS-HW	DRY RELAY SIGNAL INTERFACE
1	715	SENSUS	5390653700001	ACT-PAK 100D ELECTRONIC INSTRUMENT, PULSE INPUT, 4-20mA OUTPUT, NEMA 1 ENCLOSURE
1	716	SENSUS	5390633700142	ACT-PAK 100D PANEL MOUNTING OPTION
1	811	POLYPHASER	IS-50NX-C2	BROADBAND COAXIAL SURGE PROTECTOR, BULKHEAD MOUNT OPTION, 125-1000MHZ
2	853	TIMES MICROWAVE SYSTEMS	EZ-600-NMC	N-MALE CONNECTOR

A ~ BILL OF MATERIALS

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49856
HEBER TORRES
Date Signed 2/3/15
ARIZONA U.S.A.
Expires 9/30/15

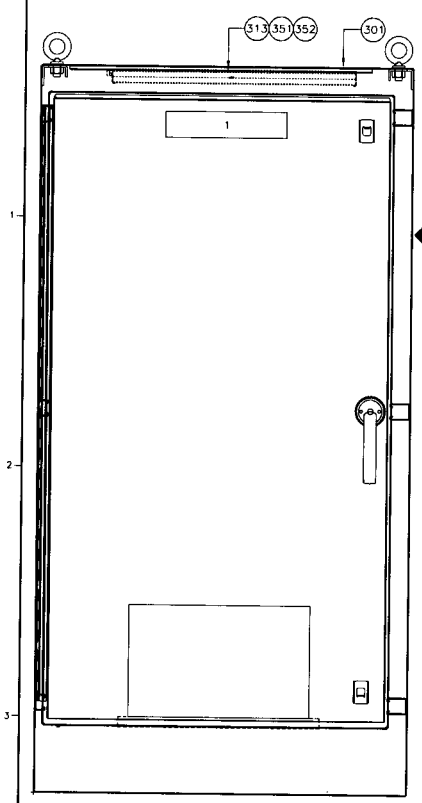
Rev-d	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3850 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
WELL NO. 8
BILL OF MATERIALS

Scale NTS
Job No. 1834.00.101
CADD File 1834.00.101_WELL 8_EC03.dwg
Designed DLN
Drawn JHA
Checked DLN
Date JAN. 2015
Sheet EC03

PLOTTED: 2/3/2015 4:09 PM 6:51 AM BY: johrens DWG FILE: X:\1800'S\1834.00 ARIZONA WATER CO. WHITE TANKS SCADA PROJECT (FOR PREVIOUS MODICON MOMENTUM DESIGN SEE PROJECT NO. 1400)\100\101 - RTU DESIGN\ACTIVE CAD FILES\WELL 8\1834.00.101_WELL 8_EC03.DWG

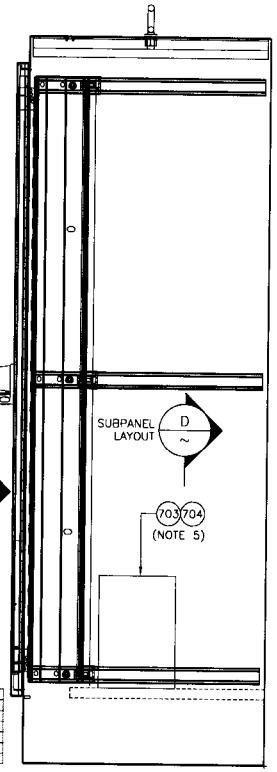


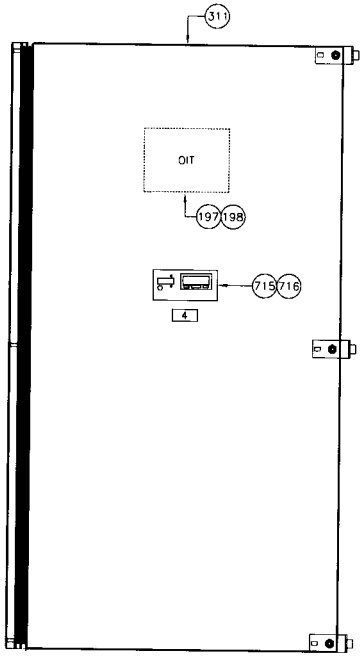
B ENCLOSURE LAYOUT – SIDE VIEW

A ENCLOSURE LAYOUT

0 3" 6" 9" 1'

SCALE: 1" = 1'-0"





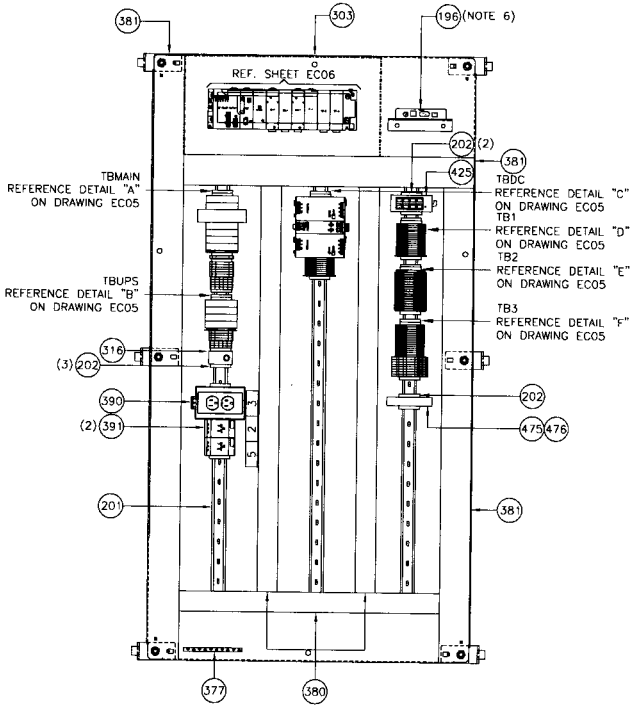
C SWING-OUT PANEL LAYOUT

0 3" 6" 9" 1'

SCALE: 1" = 1'-0"

NOTES:

1. REFER TO BILL OF MATERIALS ON DRAWING EC03.
2. NAMEPLATES SHALL BE 3/32" THICK LAMINATED PHENOLIC TYPE WHITE WITH BLACK LETTERS. SEE NAMEPLATE SCHEDULE (DETAIL D) ON THIS SHEET FOR ADDITIONAL INFORMATION.
3. FURNISH ADDITIONAL NAMEPLATES AS REQUIRED BY UL OR BY OTHER APPLICABLE CODES.
4. REFER TO SHEET EC06 FOR COMMUNICATION SYSTEM ARCHITECTURE AND ADDITIONAL EQUIPMENT AND WIRING INFORMATION.
5. UPS IS TO BE MOUNTED ON A REMOVABLE SHELF ATTACHED TO BACK PANEL. SHELF IS TO BE PROVIDED AND INSTALLED BY PANEL FABRICATOR.
6. MOUNT RADIO ON CUSTOM SHELF. SHELF TO BE PROVIDED AND INSTALLED BY PANEL FABRICATOR.
7. ALL 120VAC COMPONENTS MOUNTED ON SUBPANEL AND SWING-OUT PANEL SHALL BE FINGER SAFE. IF A COMPONENT IS NOT FINGER SAFE BY DESIGN, IT SHALL BE PROVIDED WITH A PROTECTIVE COVER SO AS TO MINIMIZE POTENTIAL OF ACCIDENTAL CONTACT.



D SUBPANEL LAYOUT

0 3" 6" 9" 1'

SCALE: 1" = 1'-0"

NAMEPLATE SCHEDULE				
NP	HxWxLTR	FIRST LINE	SECOND LINE	LOCATION
1	2" x 13" x 1/2"	WELL 8	RTU	CENTERED 3" FROM TOP OF ENCLOSURE DOOR
2	1" x 3" x 1/4"	UPS RECEPTACLE	ONLY	CENTERED TO THE RIGHT OF UPS RECEPTACLE
3	1" x 3" x 1/4"	SERVICE RECEPTACLE	ONLY	CENTERED TO THE RIGHT OF SERVICE RECEPTACLE
4	1" x 3" x 1/4"	WELL 8 DISCHARGE FLOW		CENTERED BELOW ACT-PAK
5	1" x 3" x 1/4"	A/C RECEPTACLE	ONLY	CENTERED TO THE RIGHT OF A/C RECEPTACLE

D NAMEPLATE SCHEDULE
(NOTE 2)

B ENCLOSURE LAYOUT – SIDE VIEW

0 3" 6" 9" 1'

SCALE: 1" = 1'-0"

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49856
HEBER TORRES
Date Signed 3/13/15
ARIZONA U.S.A.
Expires 9/30/15

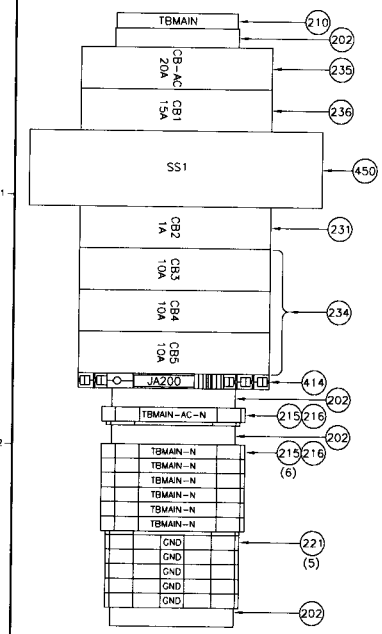
Rev #	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

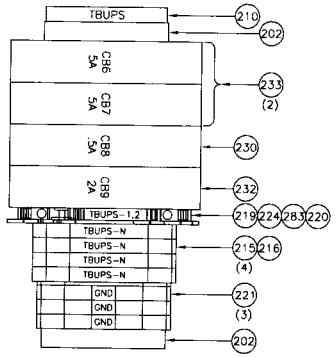
AWC WHITE TANKS SCADA PROJECT
WELL NO. 8
PLC CABINET ENCLOSURE LAYOUT
AND NAMEPLATE SCHEDULE

Scale	NTS
Job No.	1834.00.101
CADD File No.	1834.00.101_WELL 8_EC04.dwg
Designed	DLN
Drawn	JHA
Checked	DLN
Date	JAN. 2015
Sheet	EC04

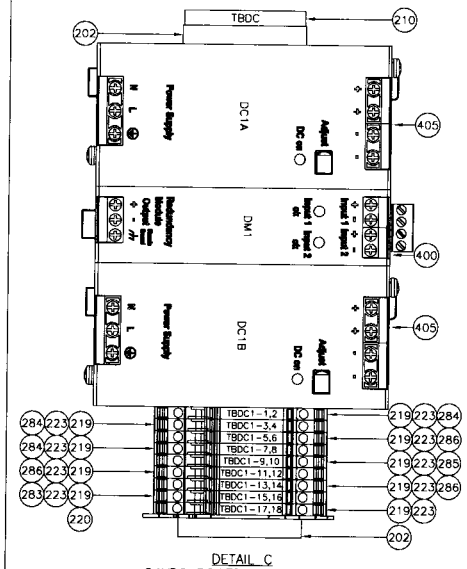
PLOTTED: 2/3/2015 4:09 PM 6:51 AM BY: johrens DWG FILE: X:\1800'S\1834.00 ARIZONA WATER CO. WHITE TANKS SCADA PROJECT (FOR PREVIOUS MODICON MOMENTUM DESIGN SEE PROJECT NO. 1400)\100\101 – RTU DESIGN\ACTIVE CAD FILES\WELL 8\1834.00.101_WELL 8_EC04.DWG



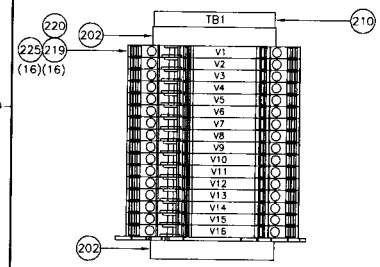
DETAIL A
120VAC POWER
DISTRIBUTION
TBMAIN



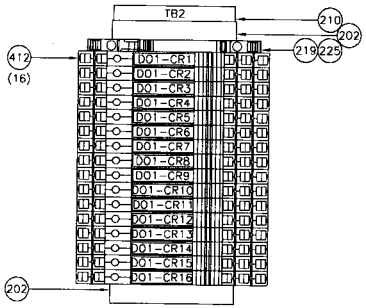
DETAIL B
120VAC POWER
DISTRIBUTION
TBUPS



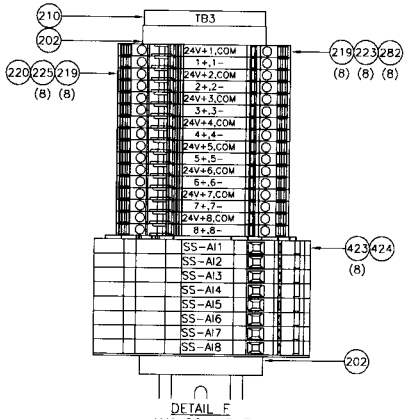
DETAIL C
24VDC POWER DISTRIBUTION
TBDC



DETAIL D
DISCRETE INPUTS
TB1



DETAIL E
DISCRETE OUTPUT
TB2



DETAIL F
ANALOG INPUT
TB3

NOTES:

1. PROVIDE BUS BAR STYLE OR INSULATED COMB STYLE JUMPERS WHERE 2 OR MORE TERMINALS IN THE SAME TB ARE COMMONED TOGETHER. DO NOT USE DISCRETE WIRE JUMPERS.
2. BILL OF MATERIALS IS ON DRAWING EC03.
3. PANEL BUILDER TO SUPPLY AND INSTALL ALL NECESSARY AND APPROPRIATE ACCESSORIES INCLUDING TERMINAL NUMBERS, JUMPERS AND END BARRIERS.

0 .5" 1" 1.5" 2"
SCALE: 6" = 1'-0"

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49856
HEBER TORRES
Date Signed 2/3/15
ARIZONA U.S.A.
Expires 9/30/15

Rev #	By	Date	Description

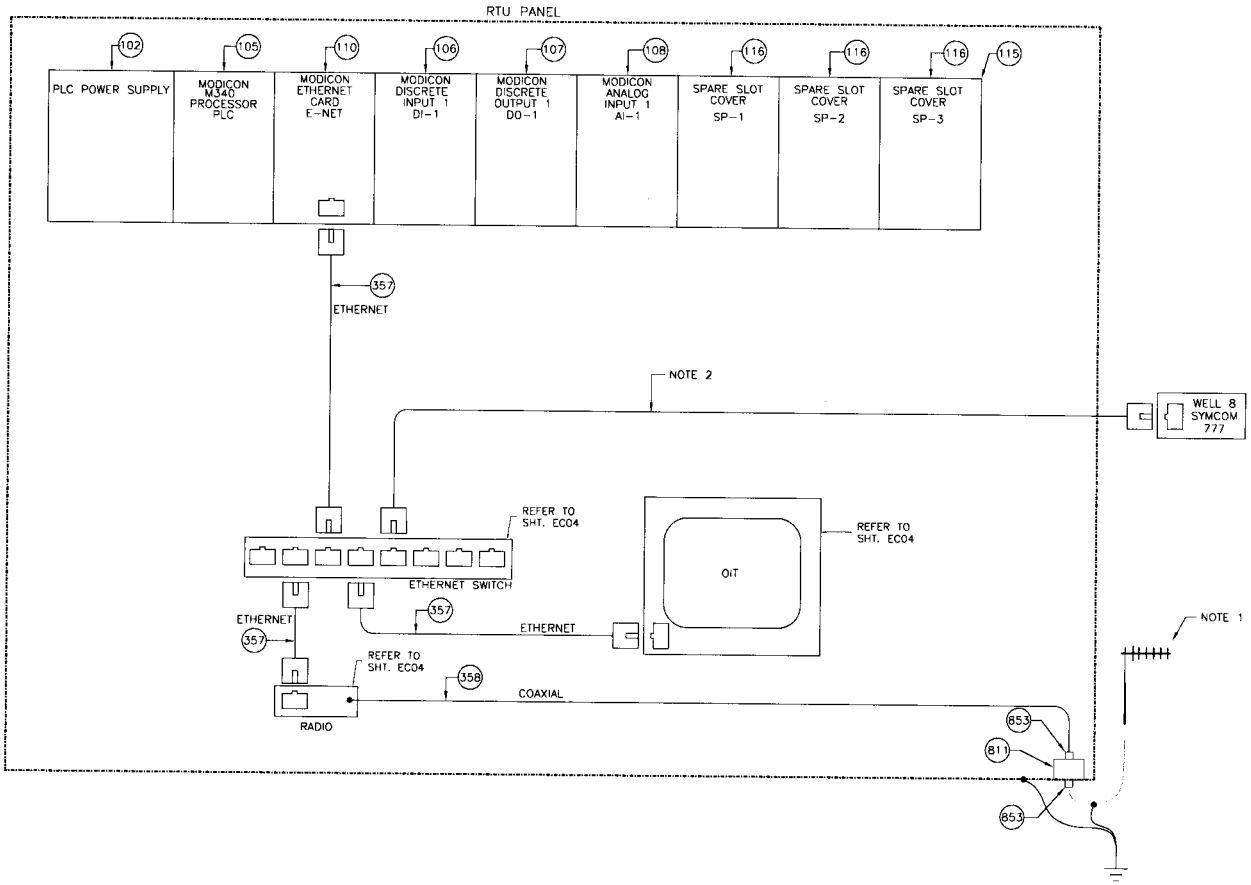
DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
WELL NO. 8
TERMINAL BLOCK
AND DEVICE DETAILS

Scale 6" = 1'-0"
Job No. 1834.00.101
CADD File No. 1834.00.101_WELL 8_EC05.dwg
Designed DLN
Drawn JHA
Checked DLN
Date JAN. 2015
Sheet EC05

NOTES:

1. REFERENCE ASSOCIATED ELECTRICAL DESIGN PACKAGE FOR ANTENNAS AND ANTENNA CABLE REQUIREMENTS.
2. REFERENCE ASSOCIATED ELECTRICAL DESIGN PACKAGE FOR CIRCUIT INFORMATION PERTAINING TO CAT5E CABLING TO AND SYMCOM 777.



Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49856
HEBER TORRES
Date Signed 2/3/15
ARIZONA U.S.A.
Expires 9/30/15

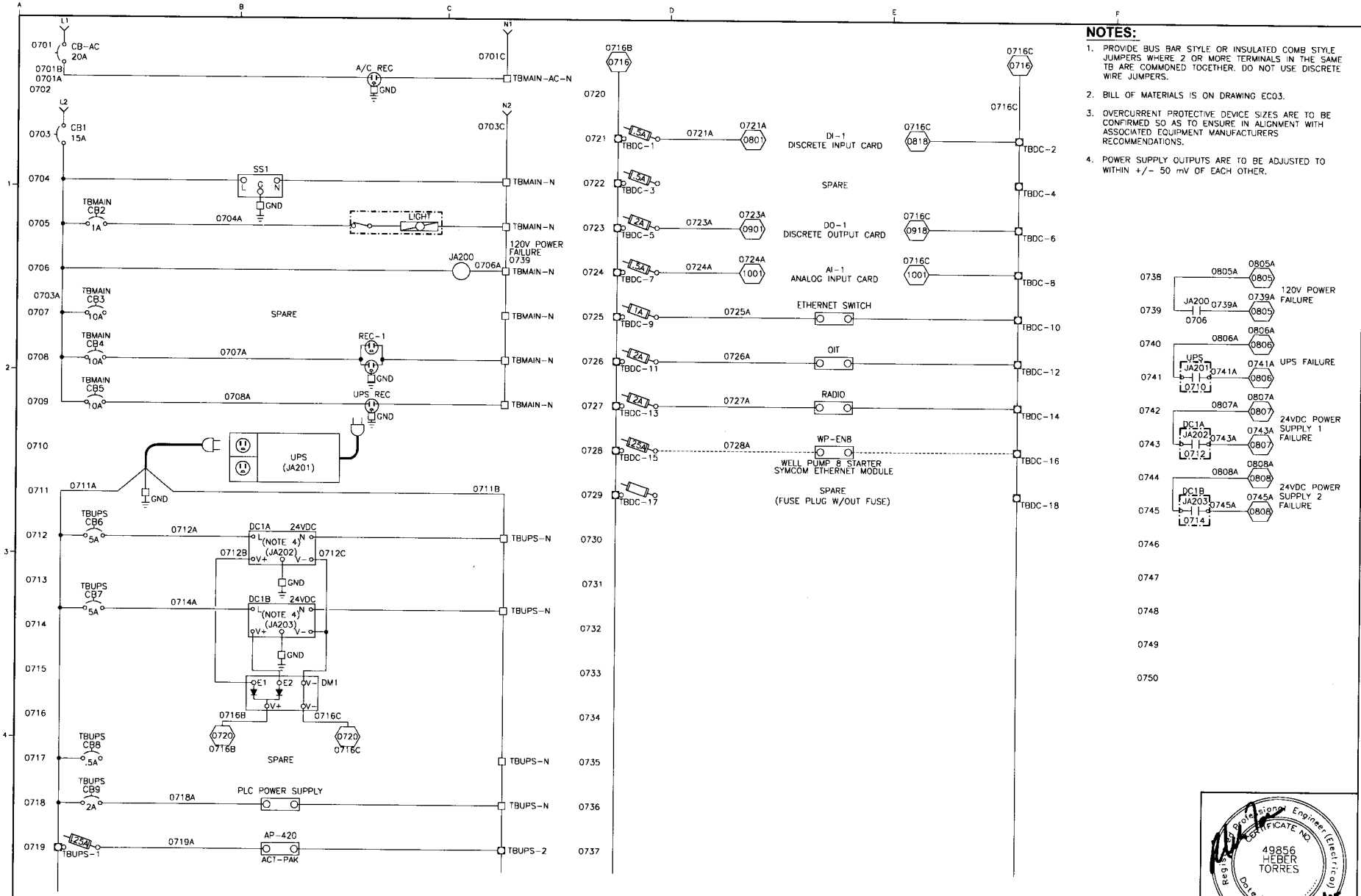
Rev'd	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE. SUITE 915
PHOENIX, AZ 85012 602.266.6658

AWC WHITE TANKS SCADA PROJECT
WELL NO. 8
COMMUNICATION SYSTEM
ARCHITECTURE DIAGRAM

Scale	NTS
Job No.	1834.00.101
CAD File No.	1834.00.101_WELL 8_EC06.dwg
Designed	DLN
Drawn	JHA
Checked	DLN
Date	JAN. 2015
Sheet	EC06

PLOTTED: 2/3/2015 4:09 PM 6:51 AM BY: johrens DWG FILE: X:\1800'S\1834.00 ARIZONA WATER CO. WHITE TANKS SCADA PROJECT (FOR PREVIOUS MODICON MOMENTUM DESIGN SEE PROJECT NO. 1400)\100\101 - RTU DESIGN\ACTIVE CAD FILES\WELL 8\1834.00.101_WELL 8_EC06.DWG



NOTES:

1. PROVIDE BUS BAR STYLE OR INSULATED COMB STYLE JUMPERS WHERE 2 OR MORE TERMINALS IN THE SAME TB ARE COMMONED TOGETHER. DO NOT USE DISCRETE WIRE JUMPERS.
2. BILL OF MATERIALS IS ON DRAWING EC03.
3. OVERCURRENT PROTECTIVE DEVICE SIZES ARE TO BE CONFIRMED SO AS TO ENSURE IN ALIGNMENT WITH ASSOCIATED EQUIPMENT MANUFACTURERS RECOMMENDATIONS.
4. POWER SUPPLY OUTPUTS ARE TO BE ADJUSTED TO WITHIN +/- 50 mV OF EACH OTHER.

Rev'd	By	Date	Description

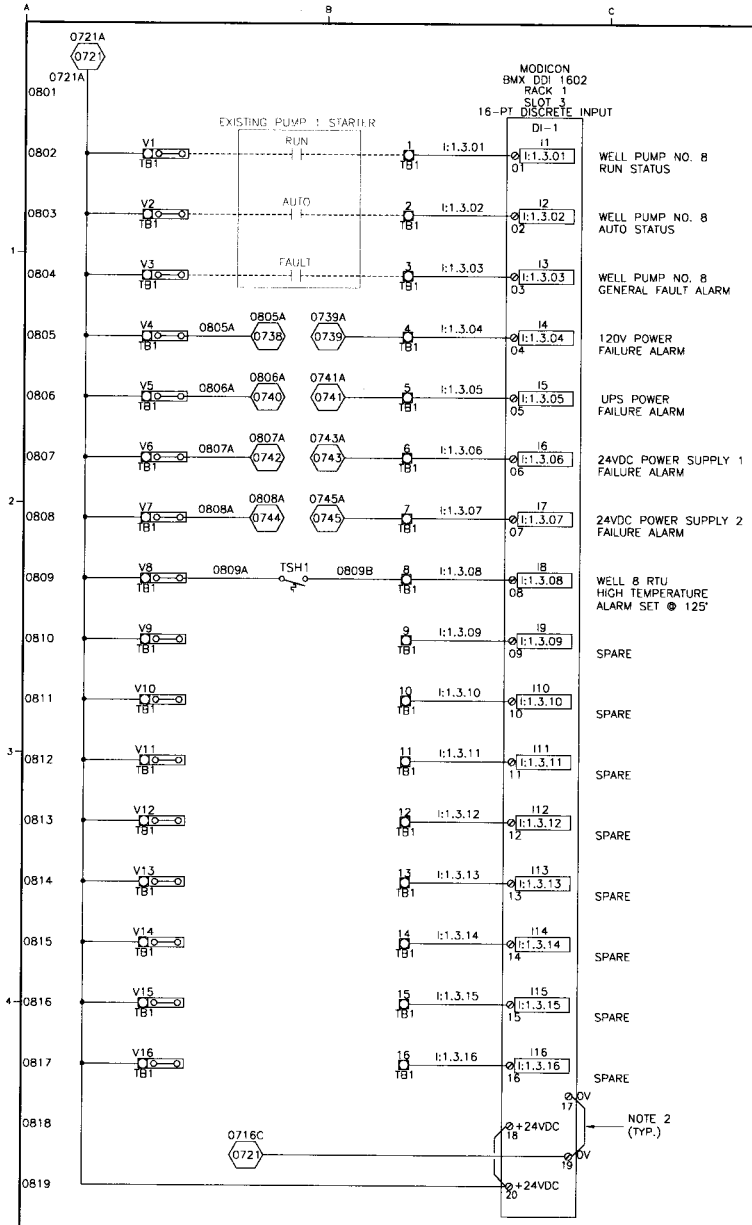
DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
WELL NO. 8
POWER DISTRIBUTION
SCHEMATIC

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49856
HEBER TORRES
Date Signed 2/3/15
ARIZONA U.S.A.
Expires 9/30/15

Scale	NTS
Job No.	1834.00.101
CADD File No.	1834.00.101_WELL 8_EC07.DWG
Designed	DLN
Drawn	JHA
Checked	DLN
Date	JAN. 2015
Sheet	EC07

PLOTTED: 2/3/2015 4:09 PM 6:51 AM BY: johrens DWG FILE: X:\1800'S\1834.00 ARIZONA WATER CO. WHITE TANKS SCADA PROJECT (FOR PREVIOUS MODICON MOMENTUM DESIGN SEE PROJECT NO. 1400)\100\101 - RTU DESIGN\ACTIVE CAD FILES\WELL 8\1834.00.101_WELL 8_EC07.DWG



NOTES:

1. MODULES ARE TO BE WIRED PER MANUFACTURER'S RECOMMENDATIONS.
2. JUMPER WIRES TO BE PROVIDED AND INSTALLED BY PANEL FABRICATOR.

Registered Professional Engineer (Electrical)
CERTIFICATE NO.
49856
HEBER
TORRES
Date Signed 2/3/15
ARIZONA U.S.A.
Expires 9/30/15

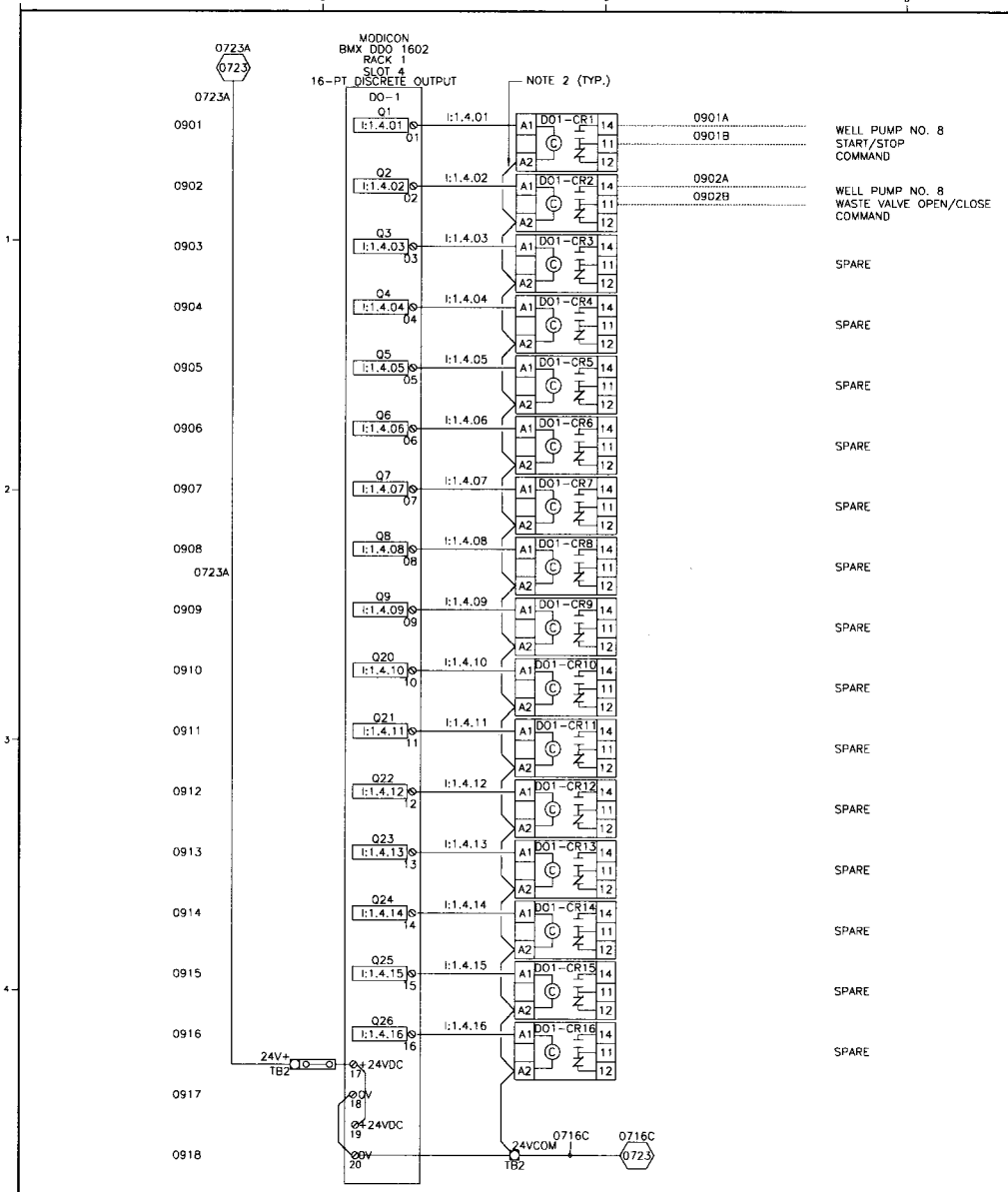
Rev's	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4658

AWC WHITE TANKS SCADA PROJECT
WELL NO. 8
WIRING DIAGRAM
DI-1

Scale	NTS
Job No.	1834.00.101
CADD File No.	1834.00.101_WELL 8_EC08.DWG
Designed	DLN
Drawn	JHA
Checked	DLN
Date	JAN. 2015
Sheet	EC08

PLOTTED: 2/3/2015 4:09 PM 6:51 AM BY: johrens DWG FILE: X:\1800'S\1834.00 ARIZONA WATER CO. WHITE TANKS SCADA PROJECT (FOR PREVIOUS MODICON MOMENTUM DESIGN SEE PROJECT NO. 1400)\100\101 - RTU DESIGN\ACTIVE CAD FILES\WELL 8\1834.00.101_WELL 8_EC08.DWG



NOTES:

1. MODULES ARE TO BE WIRED PER MANUFACTURER'S RECOMMENDATIONS.
2. JUMPER WIRES TO BE PROVIDED AND INSTALLED BY PANEL FABRICATOR.

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49856
HEBER TORRES
Date Signed 2/3/15
ARIZONA U.S.A.
Expires 9/30/15

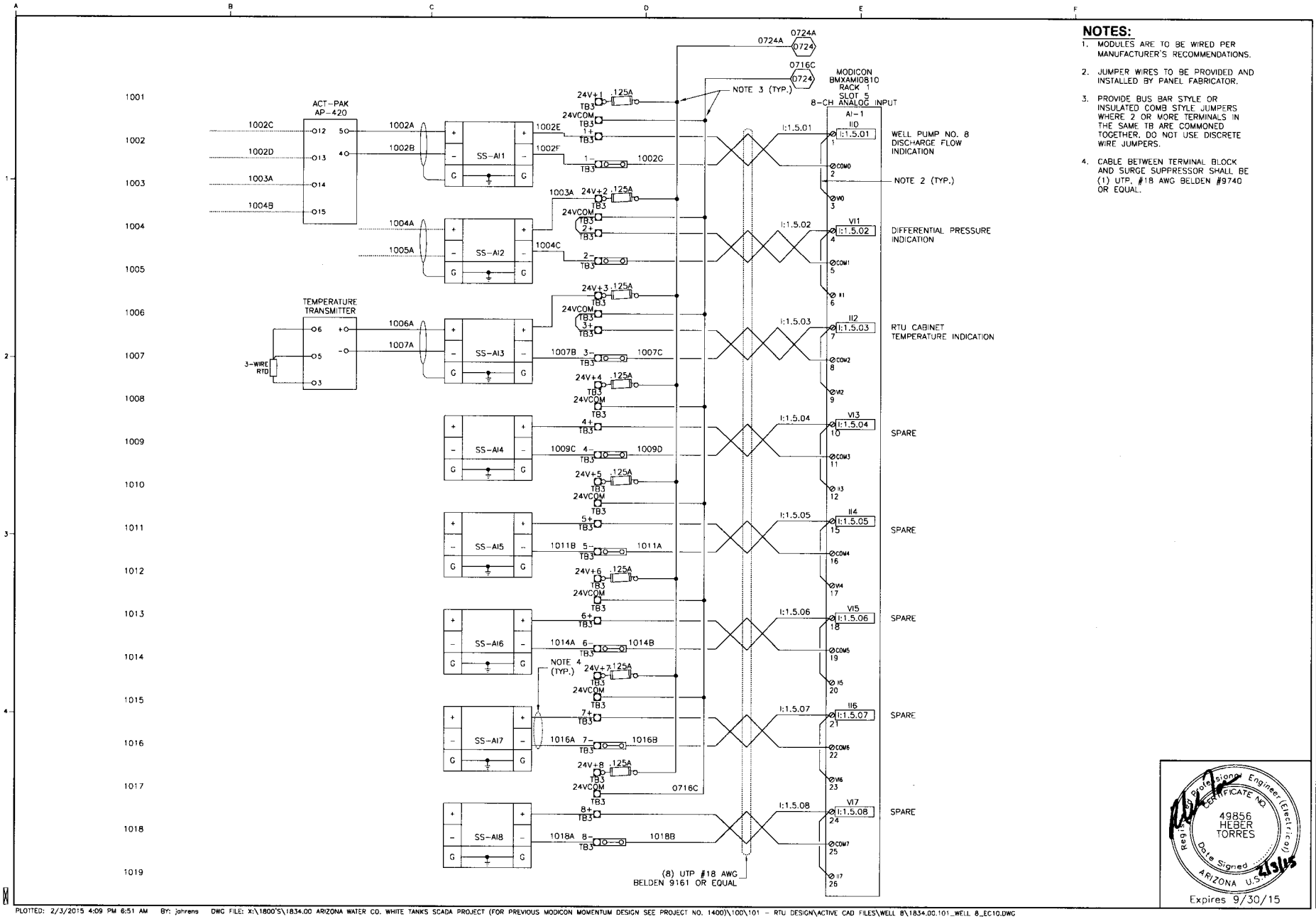
Rev'd	By	Date	Description

DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 915
PHOENIX, AZ 85012 602.266.4659

AWC WHITE TANKS SCADA PROJECT
WELL NO. 8
WIRING DIAGRAM
DO-1

Scale	NTS
Job No.	1834.00.101
CADD File No.	1834.00.101_WELL 8_EC09.DWG
Designed	DLN
Drawn	JHA
Checked	DLN
Date	JAN. 2015
Sheet	EC09

PLOTTED: 2/3/2015 4:09 PM 6:51 AM BY: johrens DWG FILE: X:\1800'S\1834.00 ARIZONA WATER CO. WHITE TANKS SCADA PROJECT (FOR PREVIOUS MODICON MOMENTUM DESIGN SEE PROJECT NO. 1400)\100\101 - RTU DESIGN\ACTIVE CAD FILES\WELL 8\1834.00.101_WELL 8_EC09.DWG



NOTES:

1. MODULES ARE TO BE WIRED PER MANUFACTURER'S RECOMMENDATIONS.
2. JUMPER WIRES TO BE PROVIDED AND INSTALLED BY PANEL FABRICATOR.
3. PROVIDE BUS BAR STYLE OR INSULATED COMB STYLE JUMPERS WHERE 2 OR MORE TERMINALS IN THE SAME TB ARE COMMONED TOGETHER. DO NOT USE DISCRETE WIRE JUMPERS.
4. CABLE BETWEEN TERMINAL BLOCK AND SURGE SUPPRESSOR SHALL BE (1) UTP, #18 AWG BELDEN #9740 OR EQUAL.

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49856
HEBER TORRES
Date Signed 2/3/15
ARIZONA U.S.A.
Expires 9/30/15

Rev'd	By	Date	Description

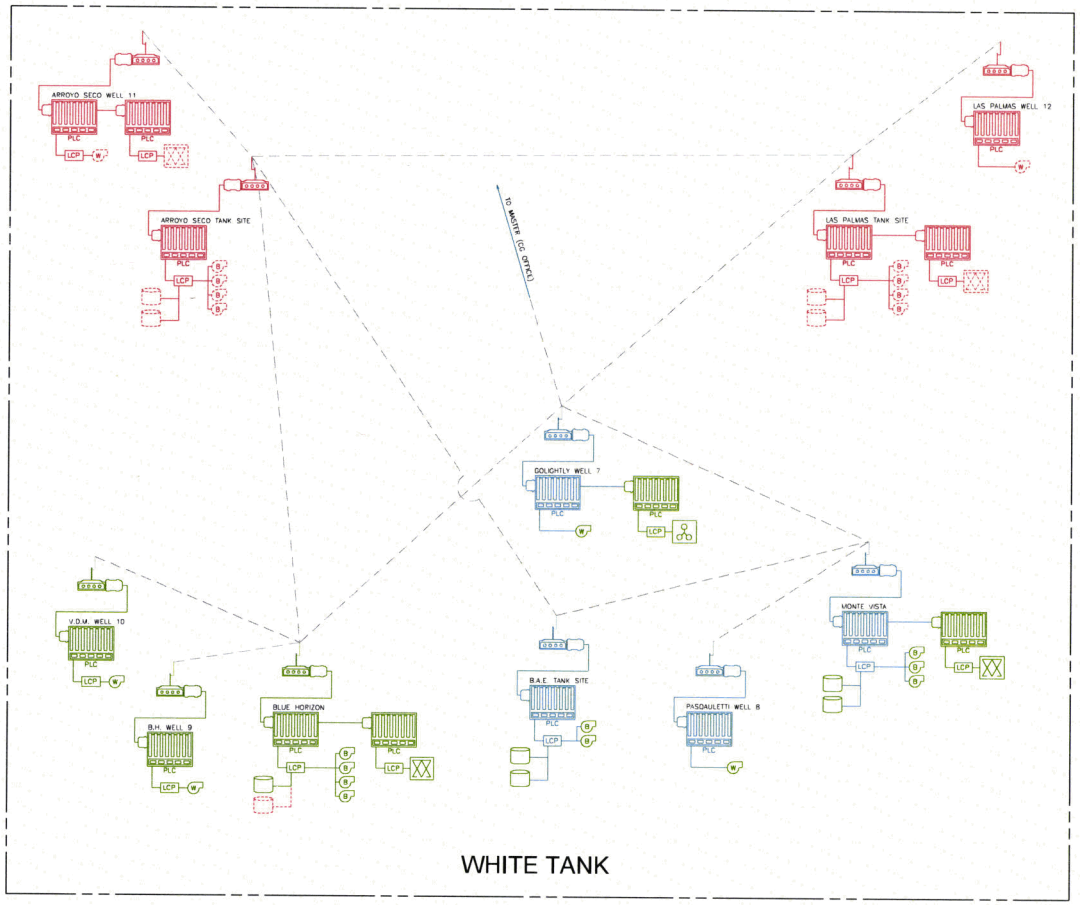
DELTA SYSTEMS ENGINEERING INC
3550 N. CENTRAL AVE., SUITE 515
PHOENIX, AZ 85012 602.266.4688

AWC WHITE TANKS SCADA PROJECT
WELL NO. 8
WIRING DIAGRAM
AI-1

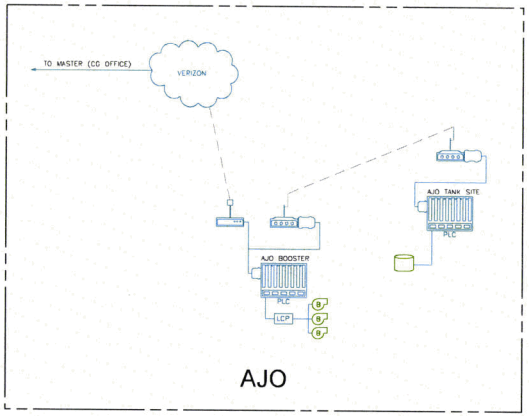
Scale	NTS
Job No.	1834.00.101
CADD File No.	1834.00.101_WELL 8_EC10.DWG
Designed	DLN
Drawn	JHA
Checked	DLN
Date	JAN. 2015
Sheet	EC10

PLOTTED: 2/3/2015 4:09 PM 6:51 AM BY: johrens DWG FILE: X:\1800'S\1834.00 ARIZONA WATER CO. WHITE TANKS SCADA PROJECT (FOR PREVIOUS MODICON MOMENTUM DESIGN SEE PROJECT NO. 1400)\100\101 - RTU DESIGN\ACTIVE CAD FILES\WELL 8\1834.00.101_WELL 8_EC10.DWG

ARIZONA WATER COMPANY
CASA GRANDE DIVISION SCADA COMMUNICATIONS SCHEMATIC
SHEET 1 OF 1



WHITE TANK



AJO

LEGEND:

- RADIO COMMUNICATION PATH
- SCADA COMPUTER
- 900 MHz RADIO
- CELLULAR MODEM
- OMNI DIRECTIONAL ANTENNA
- YAGI DIRECTIONAL ANTENNA
- WELL PUMP
- BOOSTER PUMP
- WATER STORAGE TANK
- ARSENIC REMOVAL FACILITY
- ARSENIC/NITRATE REMOVAL FACILITY
- NITRATE REMOVAL FACILITY
- EX. SCADA COMMUNICATION
- NEW SCADA COMMUNICATION (2013)
- FUTURE SCADA COMMUNICATION
- FUTURE FACILITY

ABREVIATIONS:

PLC – PROGRAMMABLE LOGIC CONTROLLER
HMI – HUMAN MACHINE INTERFACE

REVISIONS: LATEST REVISION: 10-11-2013

The installation shown is to be installed in accordance with the Arizona Water Company's Operations Manual and with the Arizona Department of Environmental Quality

263-1100
1-800-STAKE-IT
Call Two Working Days Before You Dig

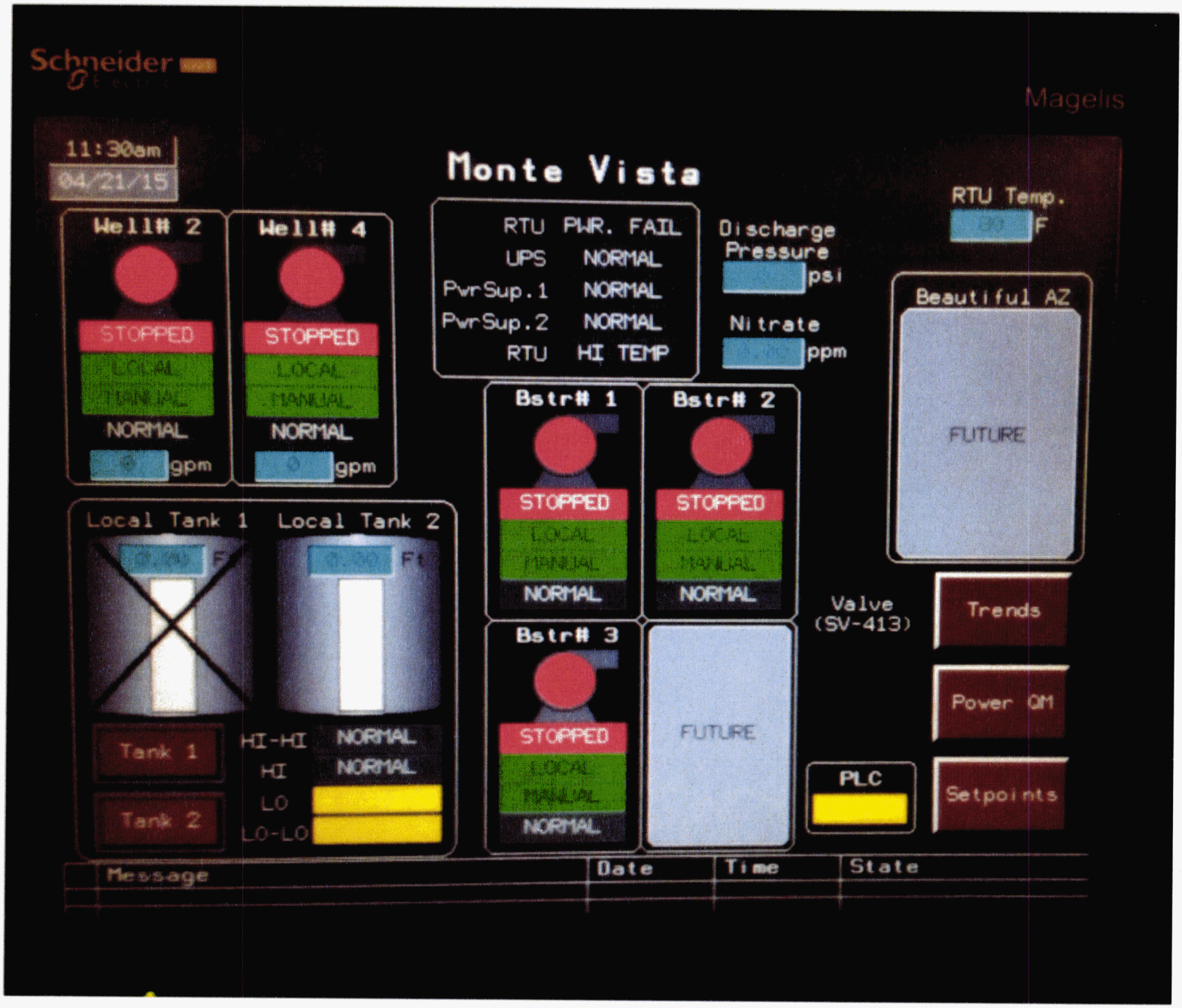
P.E. No.:
SYSTEM:
TOWN. SECT. SEC. -T.- R.
RAN. DIST.
DATE: 3-5-2013
SCALE: N.T.S.
DRAWN BY: JPK
CHECKED BY:

ARIZONA WATER COMPANY
3805 N BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-5860

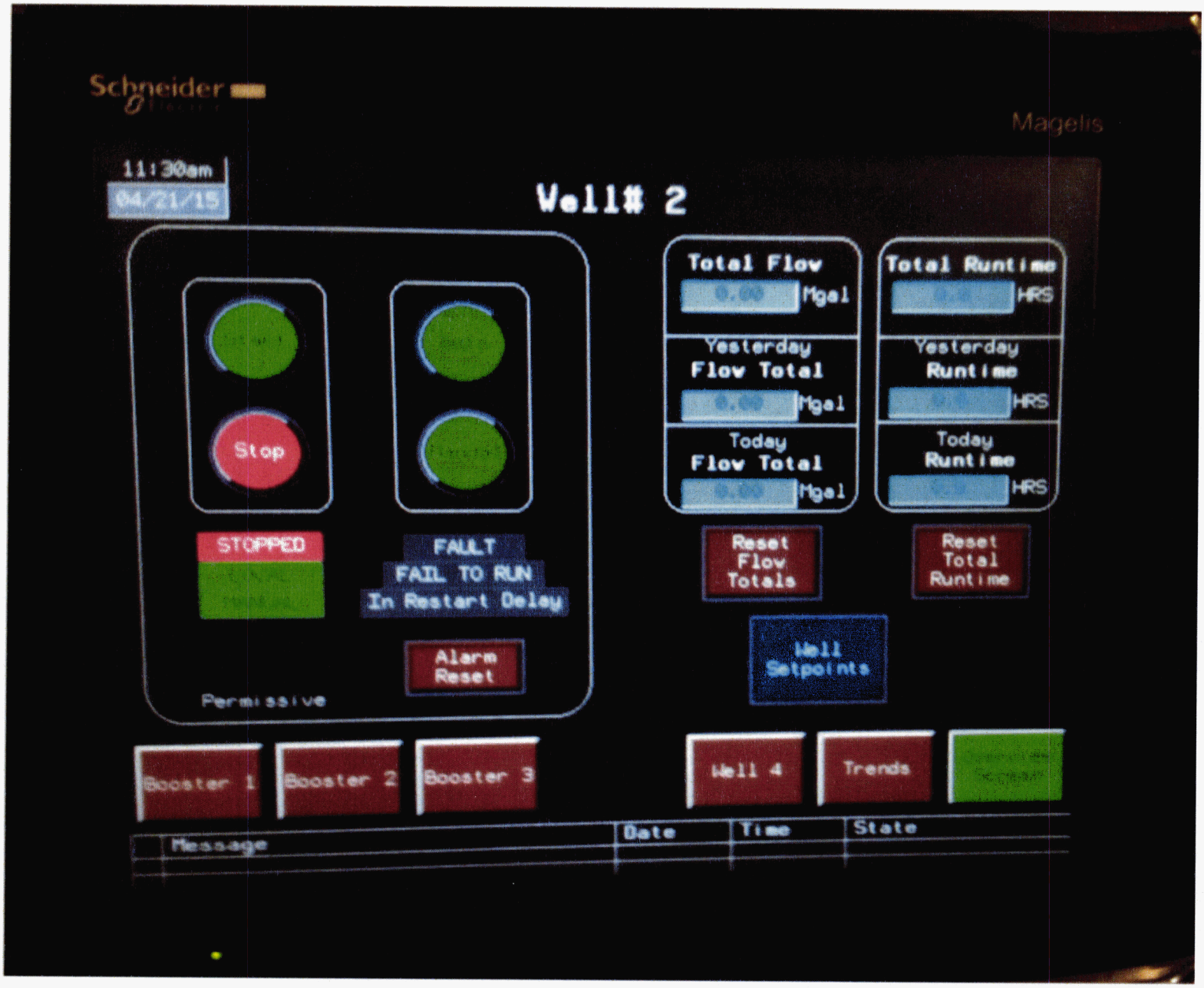
PROJECT DESC: CASA GRANDE DIVISION SCADA SCHEMATIC
PROJECT SHEET DESC: WHITE TANK, AJO

DWG. No.:

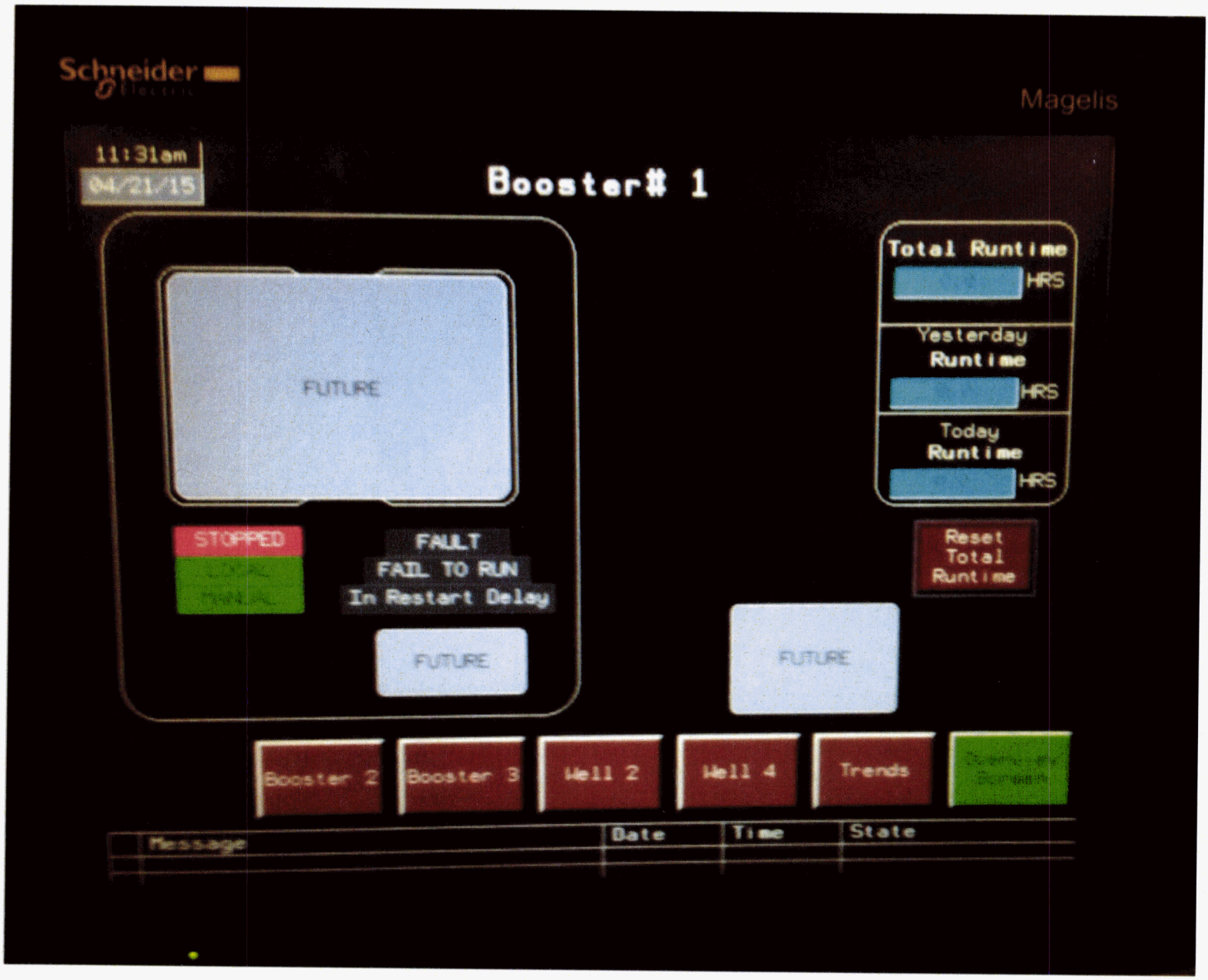
SHEET 1 OF 1



White Tanks SCADA FAT Test 4-21-15
HMI Home Screen



White Tanks SCADA FAT Test 4-21-15
HMI Typical Well Screen

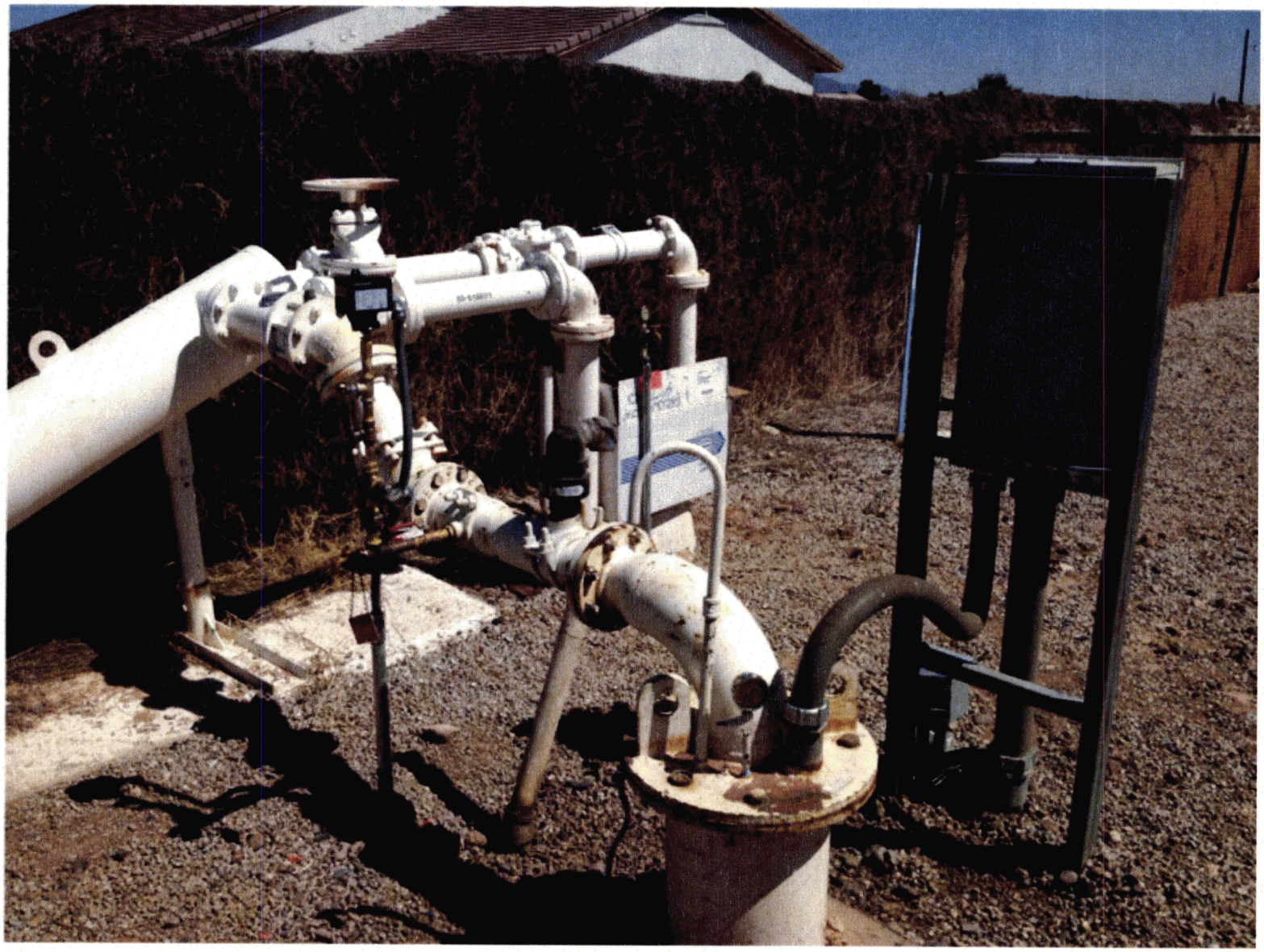


White Tanks SCADA FAT Test 4-21-15
HMI Typical Booster Pump Screen

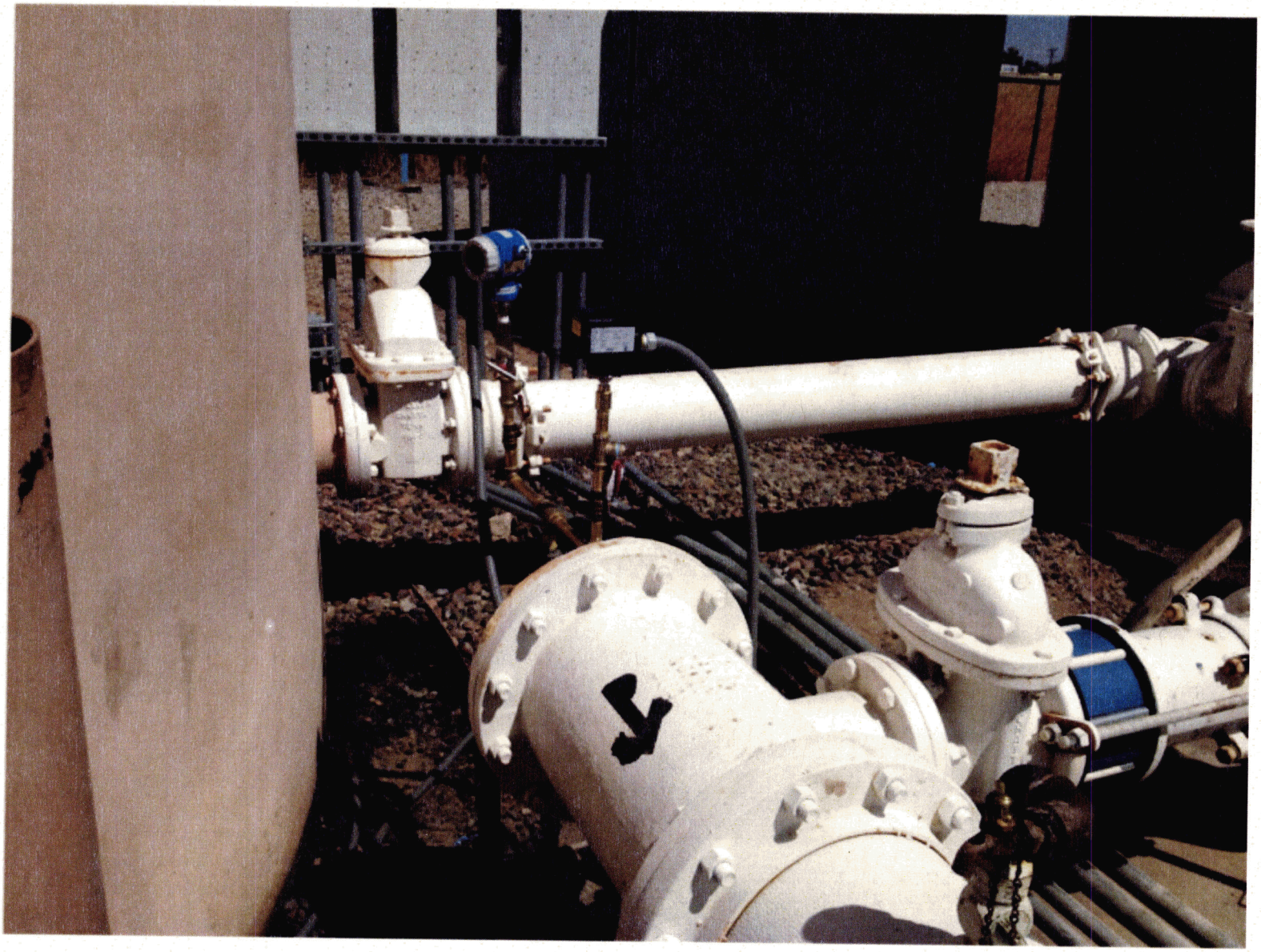
White Tanks SCADA FAT Test 4-21-15
HMI Setpoint Screen

White Tanks SCADA FAT Test 4-21-15
Monte Vista RTU Panel

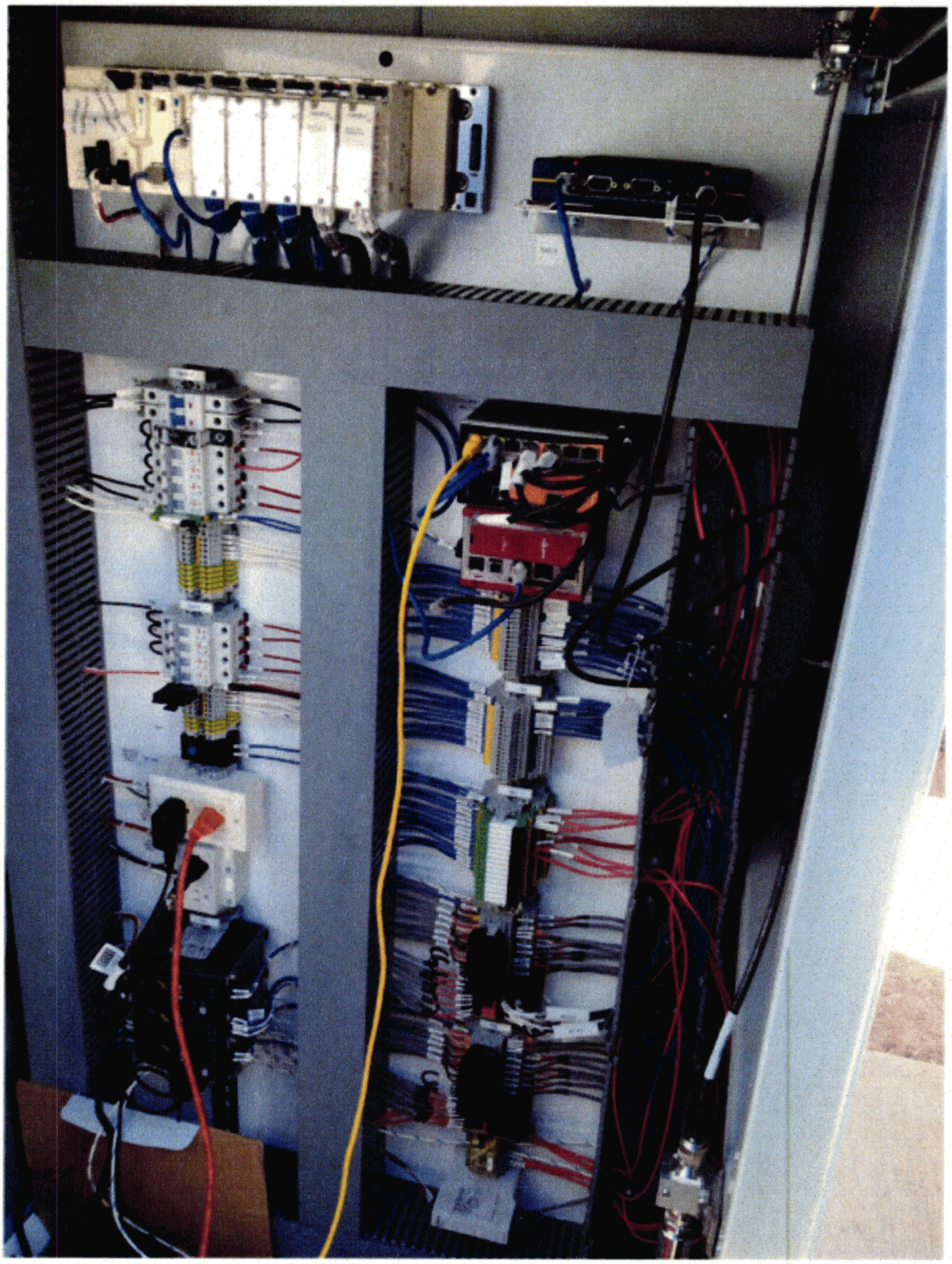
Monte Vista Well #2 on 4-29-15
New Flow Meter and Pressure Switch



Monte Vista 4-29-15
Well #4 New Pressure Switch

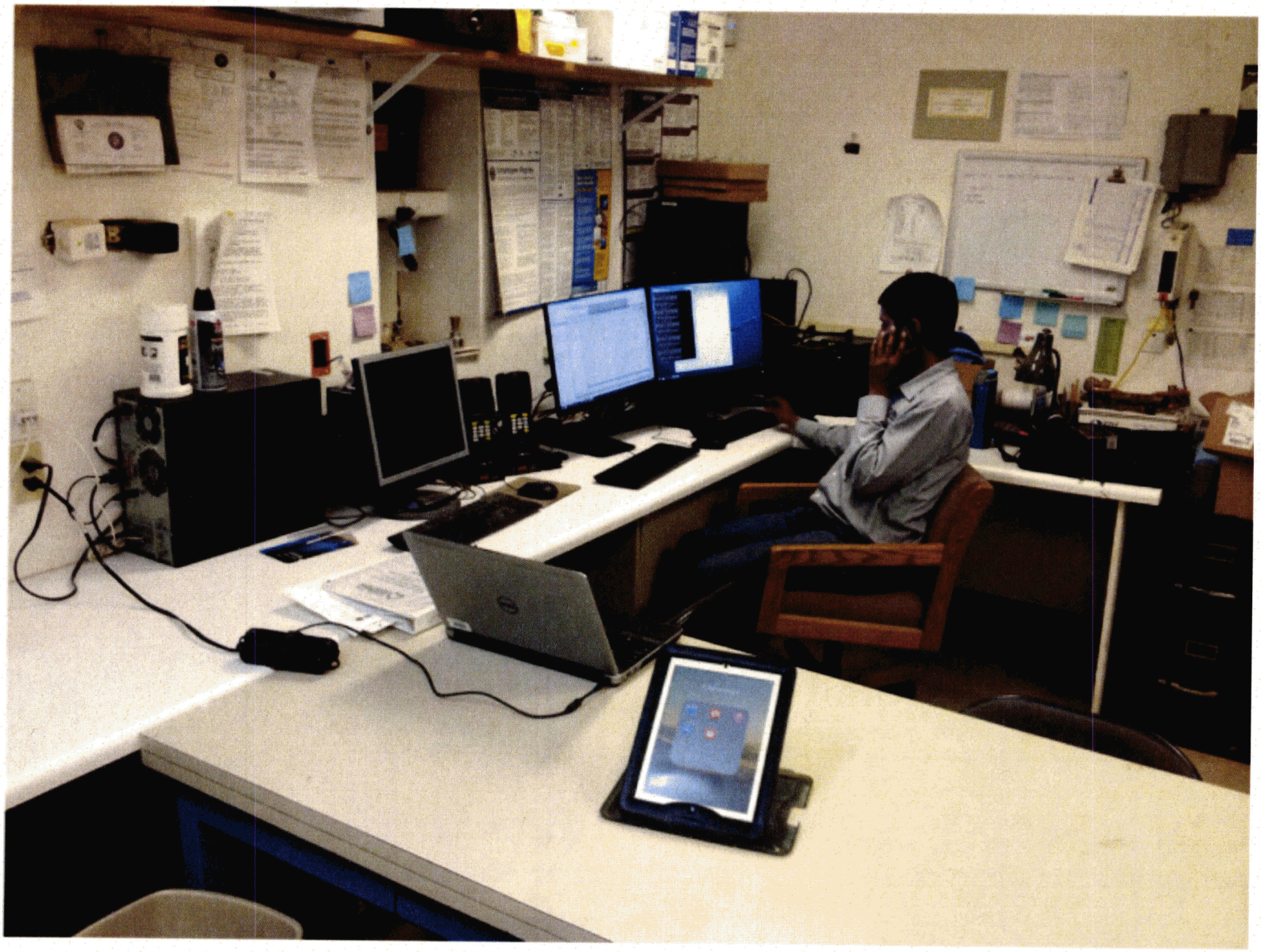


Monte Vista 4-29-15
Booster Pump Discharge Piping
New Pressure Switch and New Pressure Transmitter



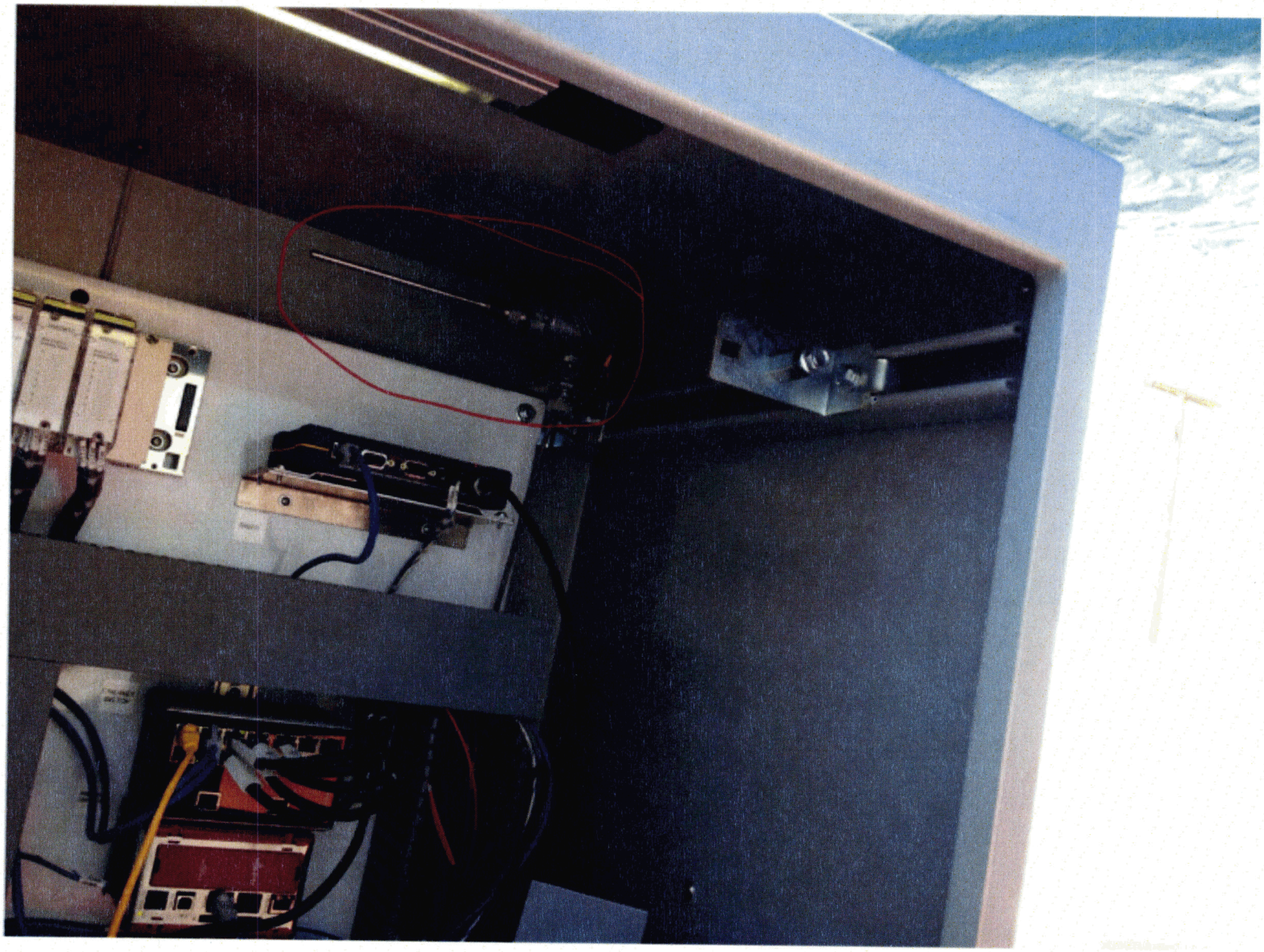
Monte Vista 4-29-15
Interior of RTU Panel

White Tanks SCADA 4-30-15
Go Lightly - new radio panel in storage room

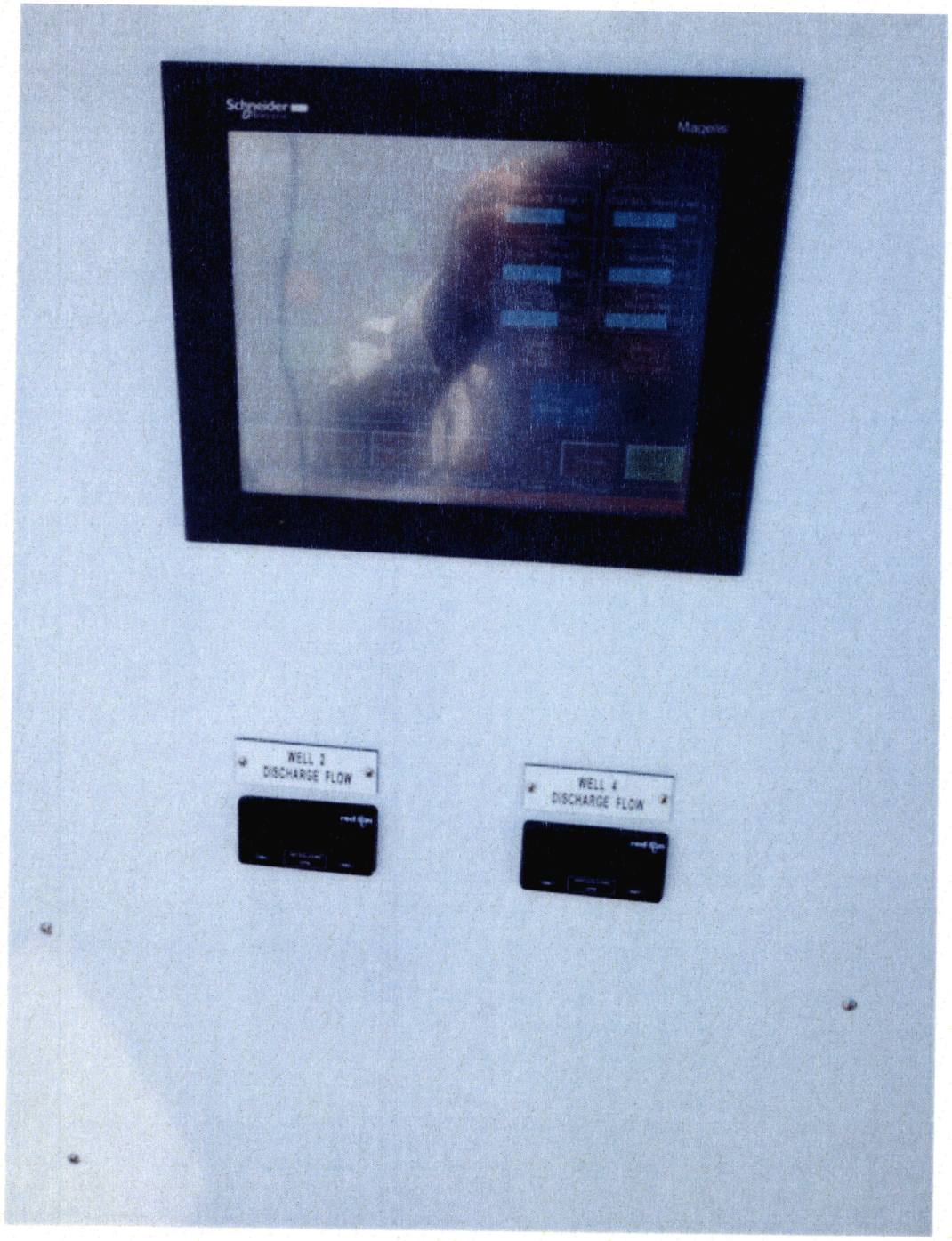


White Tanks SCADA 4-30-15
Go Lightly - new PLCs for SCADA

White Tanks SCADA 4-30-15
Monte Vista - well # 4 new pressure transmitter
And flow meter

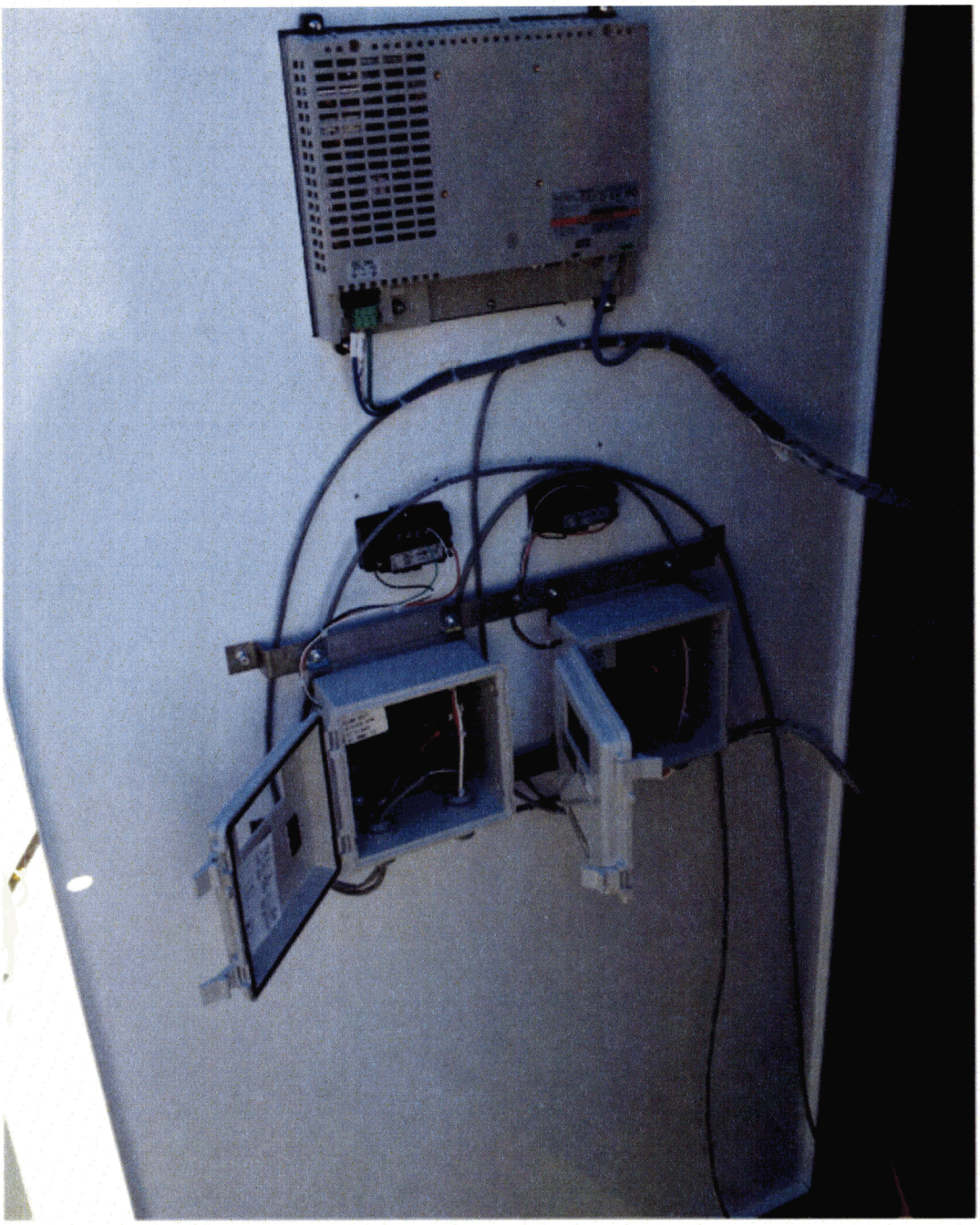


White Tanks SCADA 4-30-15
Monte Vista- temperature probe
In RTU panel

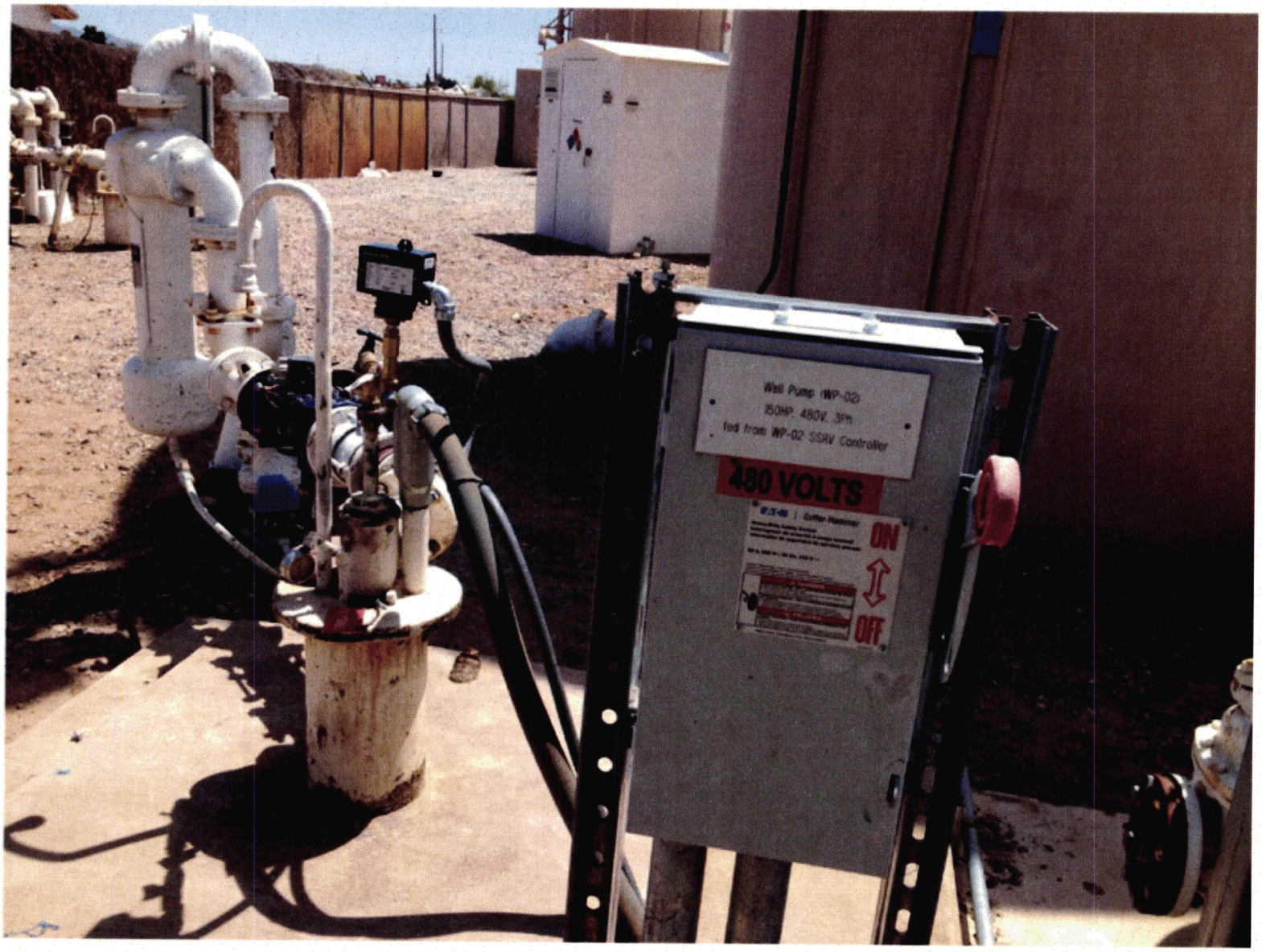


White Tanks SCADA 4-30-15
Monte Vista - RTU inner door panel
With HMI and Actpac well meter read outs

White Tanks SCADA 5-1-15
Monte Vista
New RTU Panel with
White Heat Shields

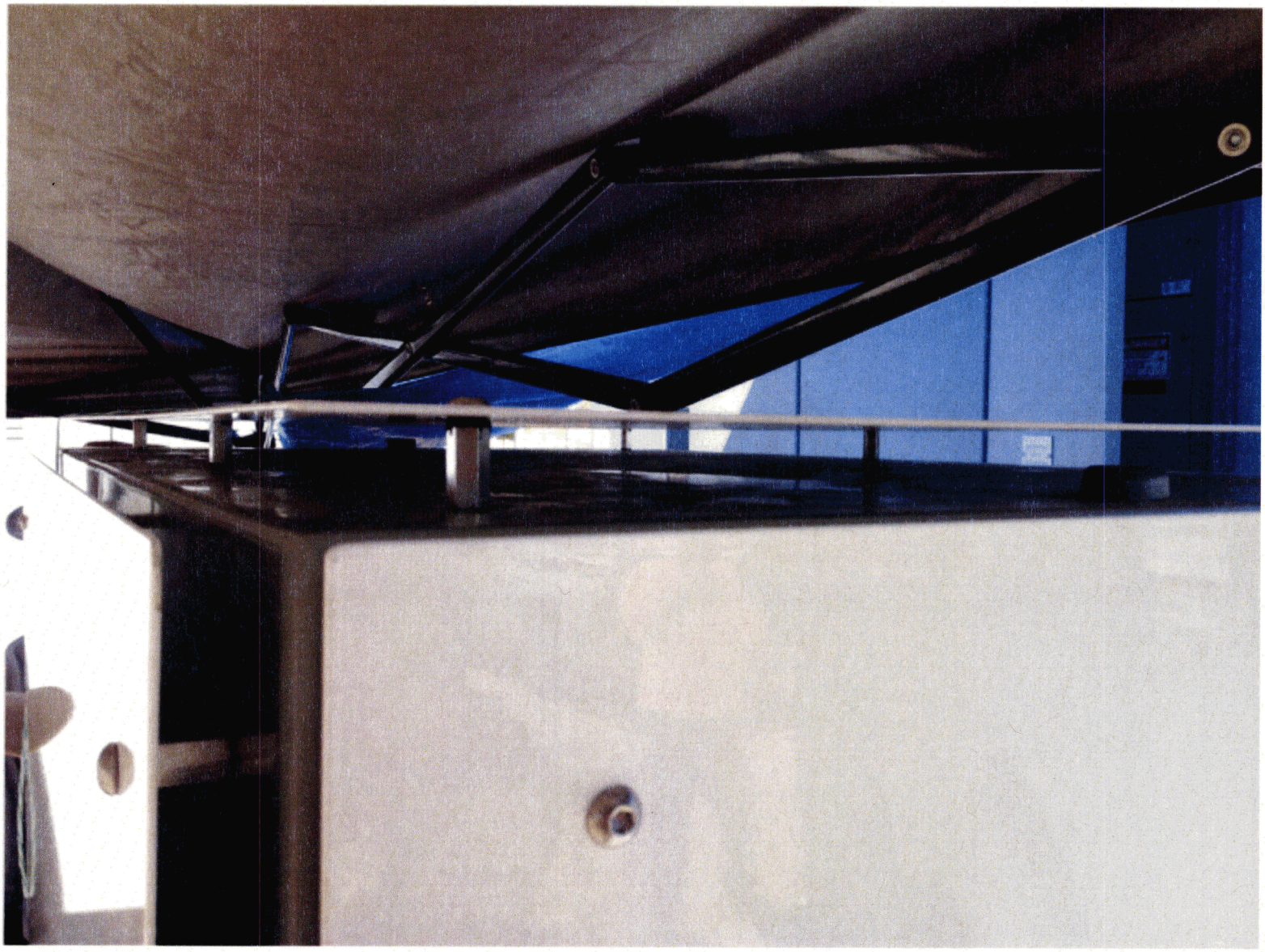


White Tanks SCADA 5-1-15
Monte Vista RTU
Inside view of interior door
Act-Pac read outs removed from small boxes
And mounted on inner panel door



White Tanks SCADA 5-1-15
Monte Vista Well #2
New pressure switch plumbing
Configuration

White Tanks SCADA 5-1-15
Monte Vista Well #4
New Flow meter and new pressure switch
Plumbing configuration



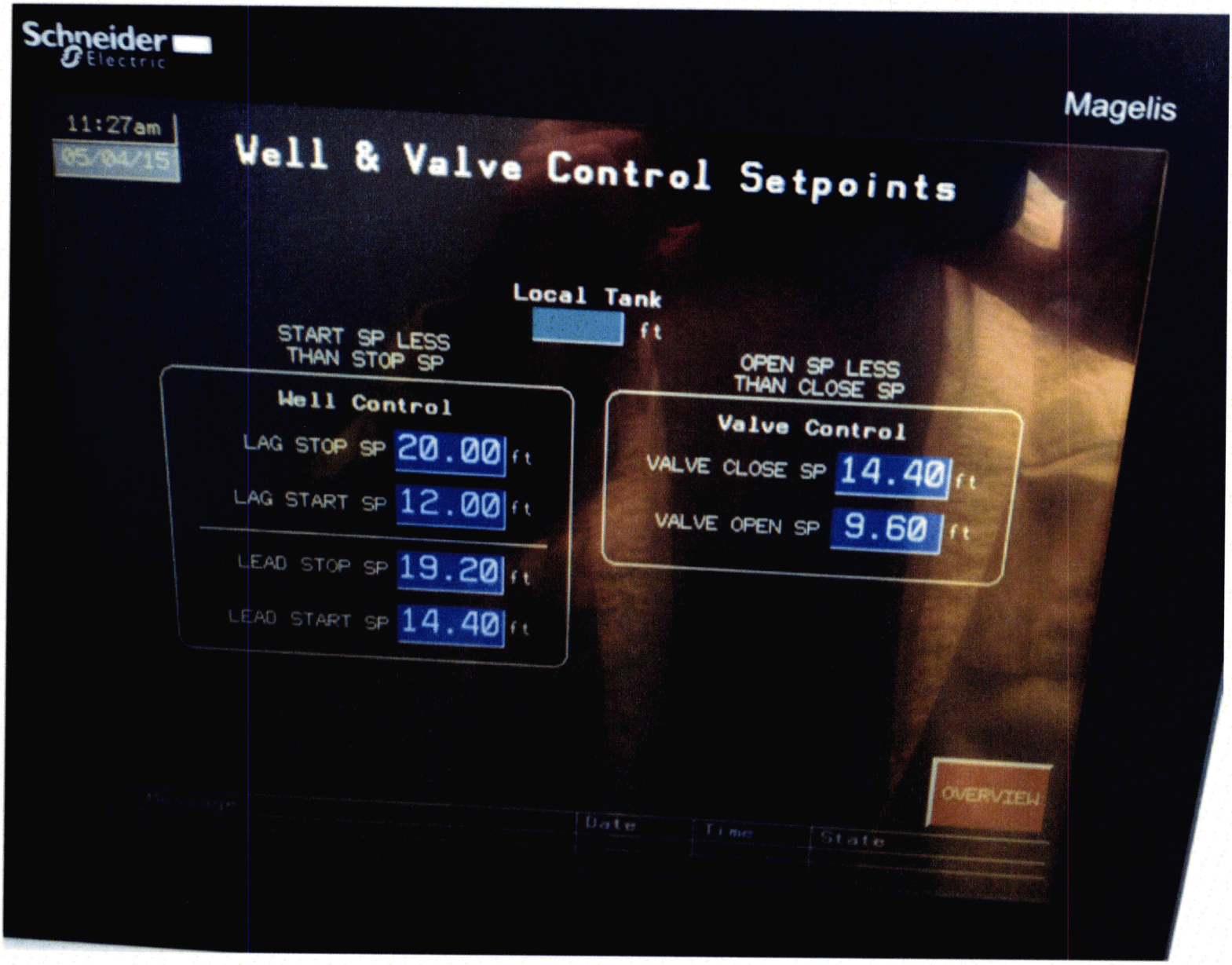
White Tanks SCADA 5-1-15
Monte Vista RTU Panel
Closeup of Heat Shields

White Tanks SCADA 5-4-15
Monte Vista Screen Shots

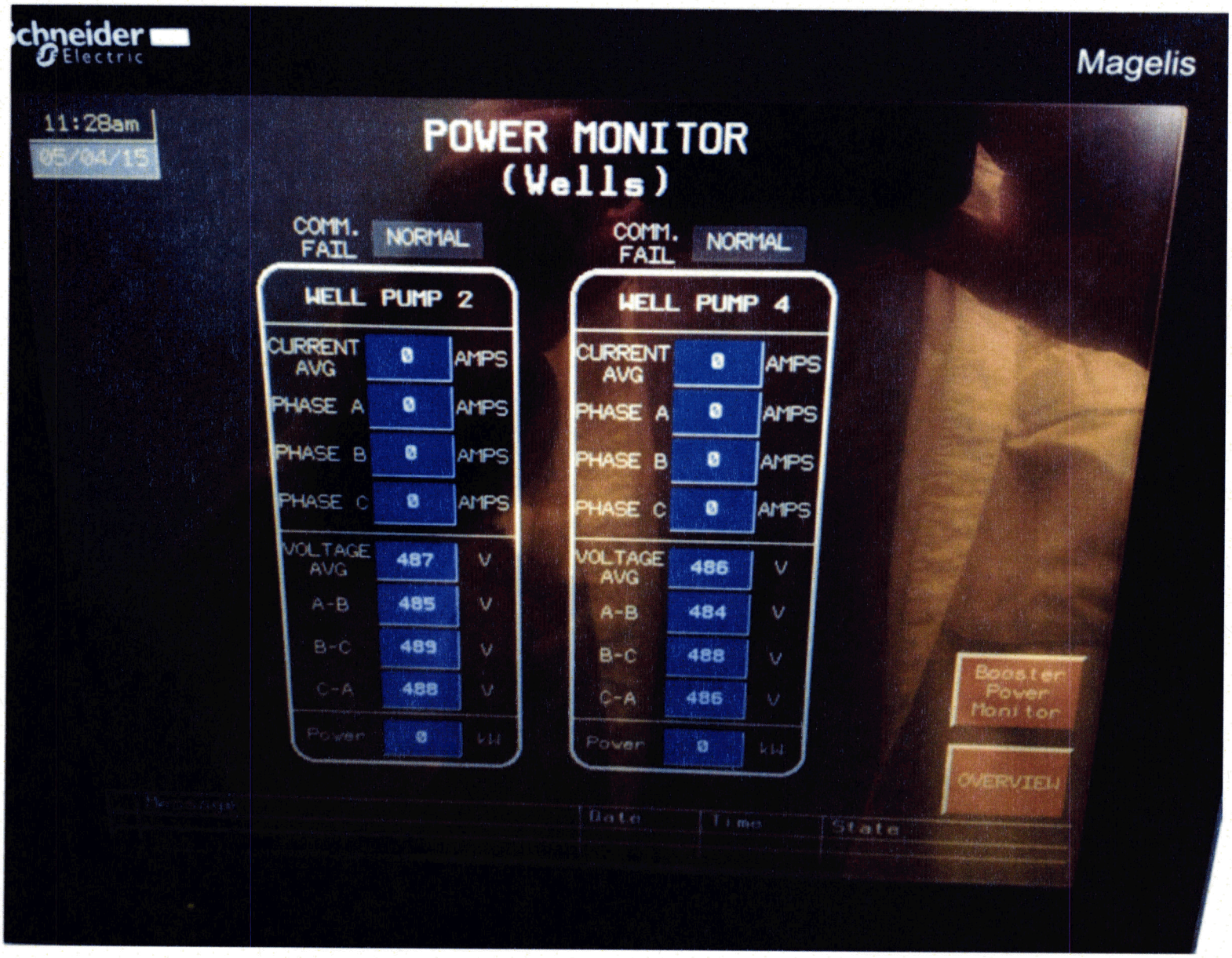
White Tanks SCADA 5-4-15
Monte Vista Screen Shots

White Tanks SCADA 5-4-15
Monte Vista Screen Shots

White Tanks 5-4-15
Monte Vista Screen Shots

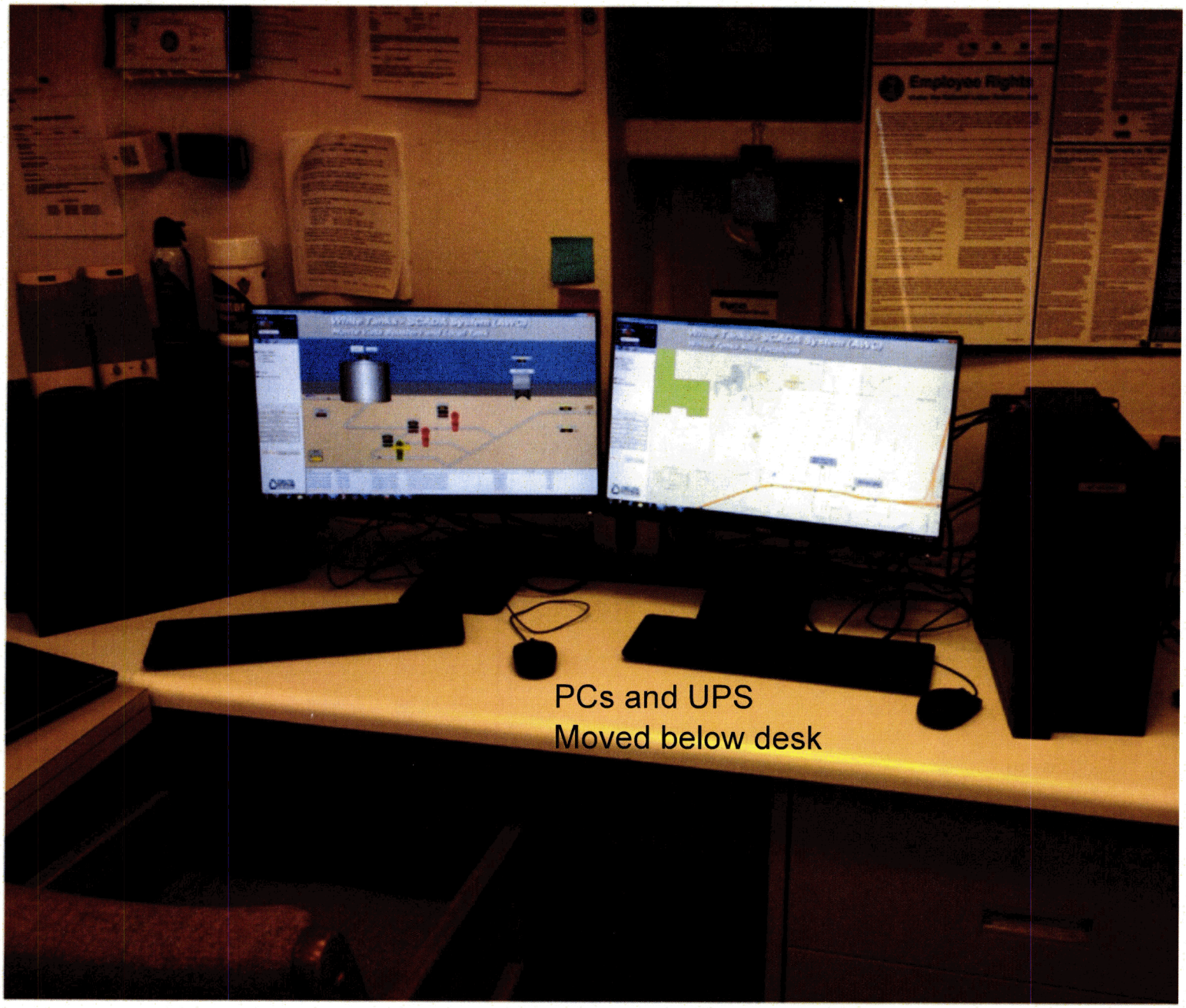


White Tanks 5-4-15
Screen Shots

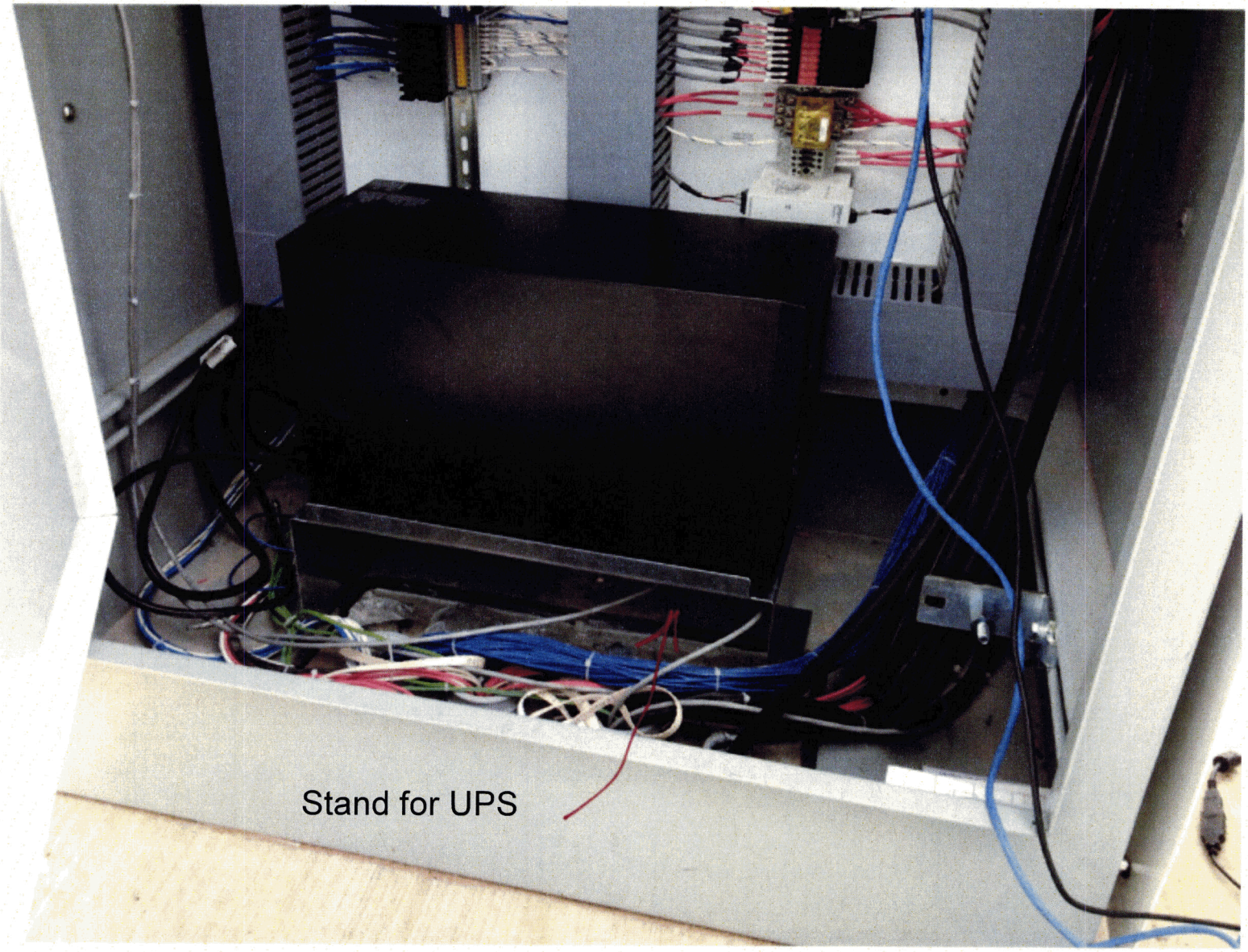


White Tanks SCADA 5-4-15
Monte Vista Screen Shots

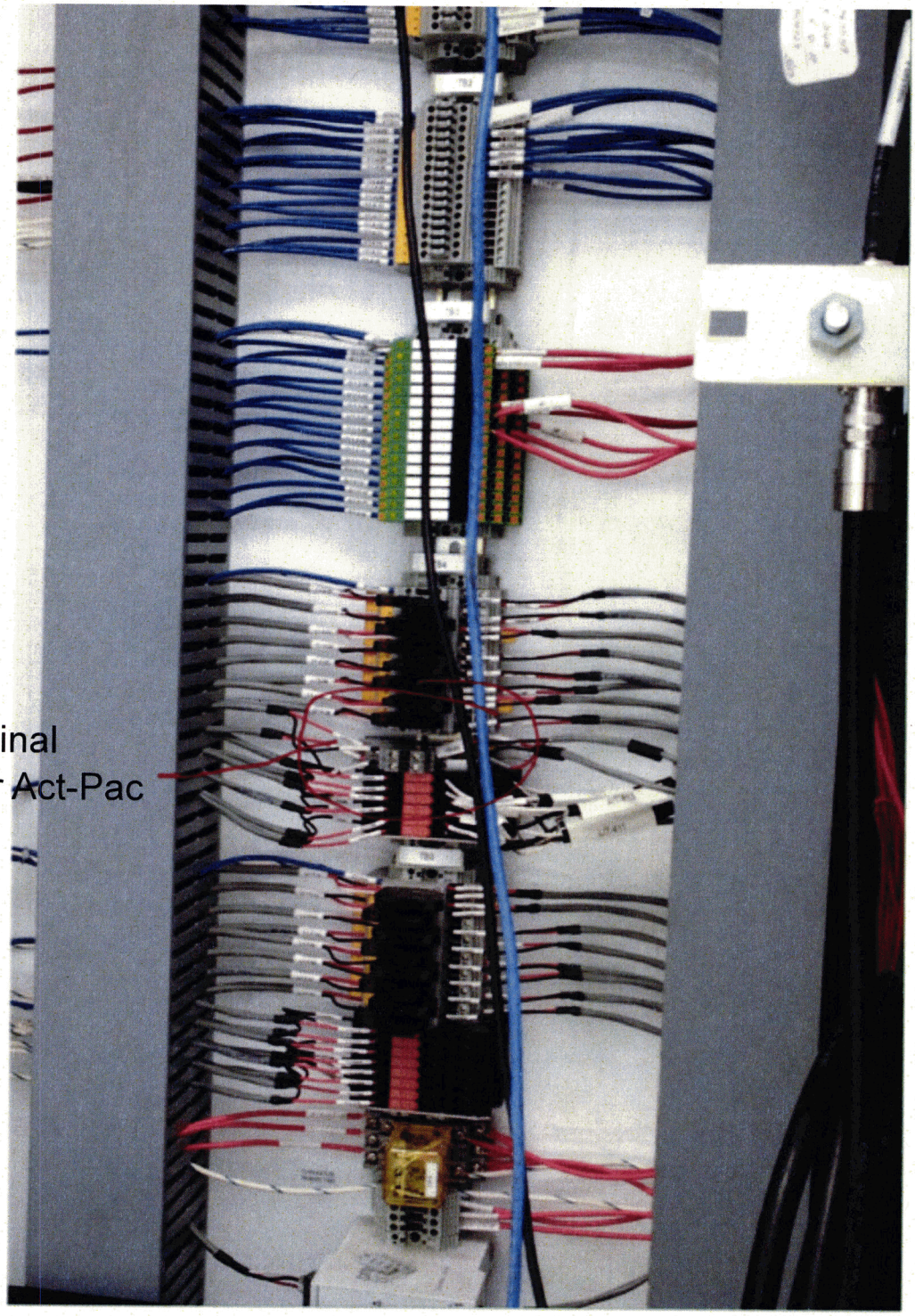
White Tank SCADA 5-4-15
Monte Vista Screen Shots



White Tanks SCADA 5-12-15
Go Lightly Office
New SCADA System

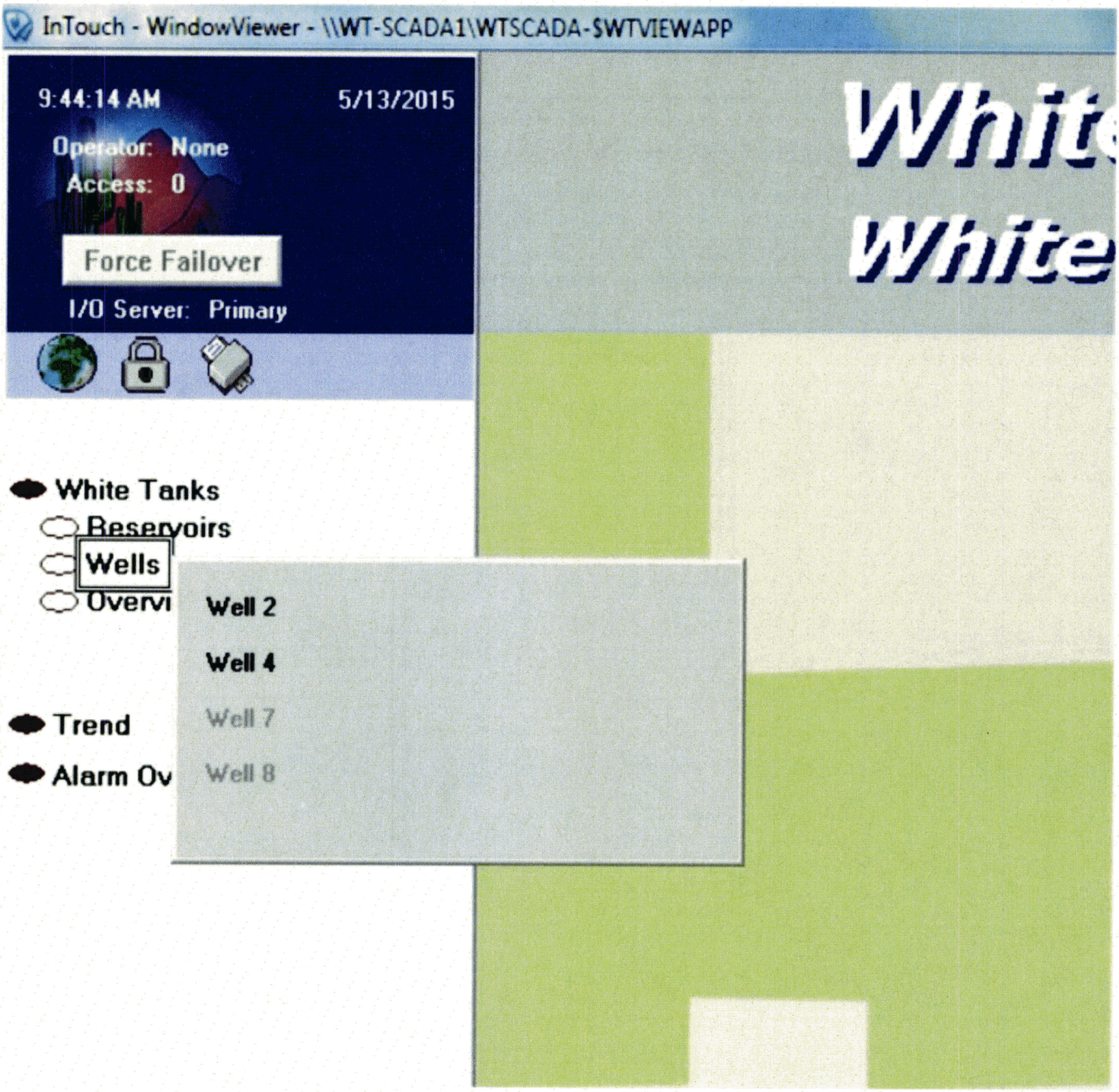


White Tanks SCADA 5-12-15
Monte Vista RTU

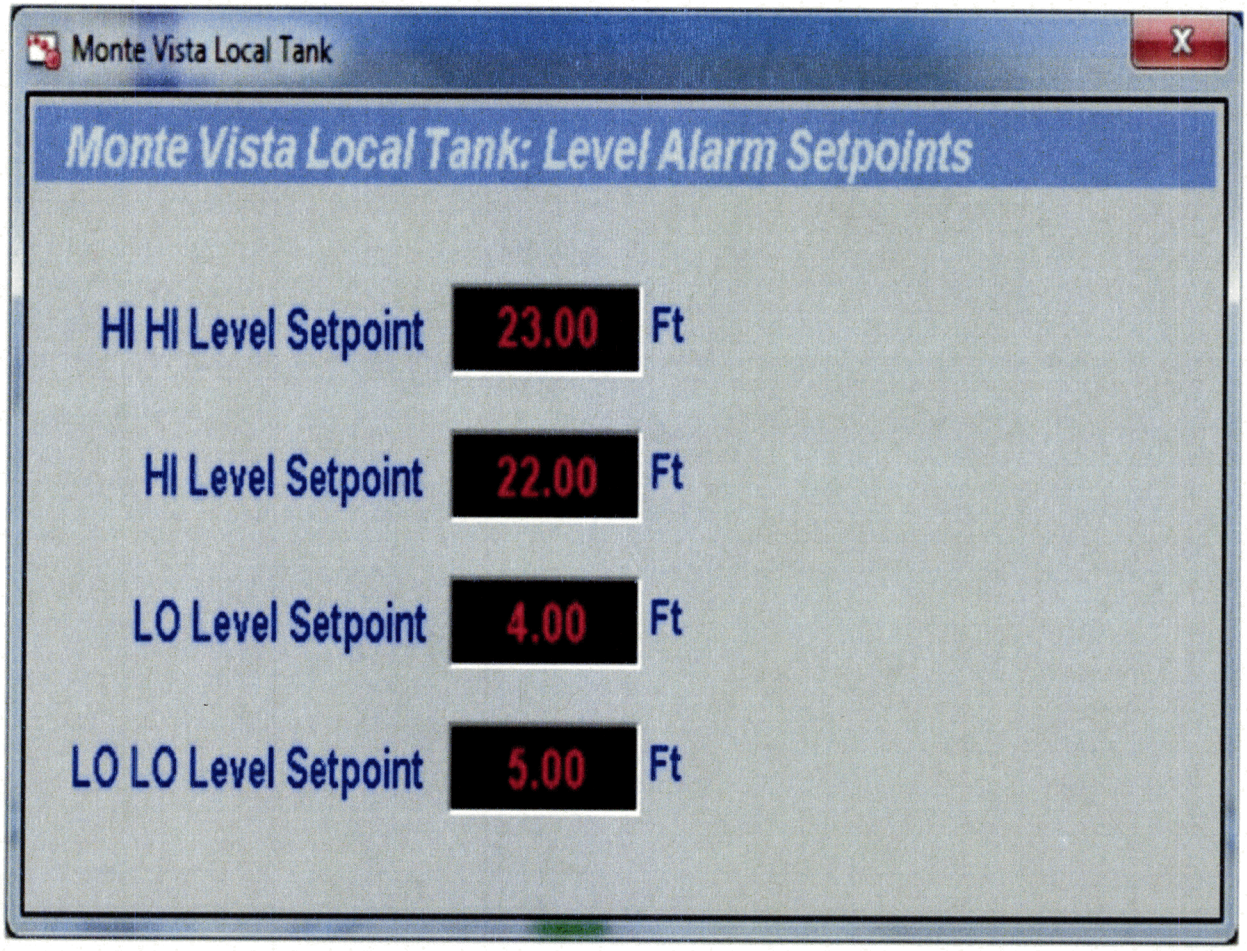


New terminal
Blocks for Act-Pac

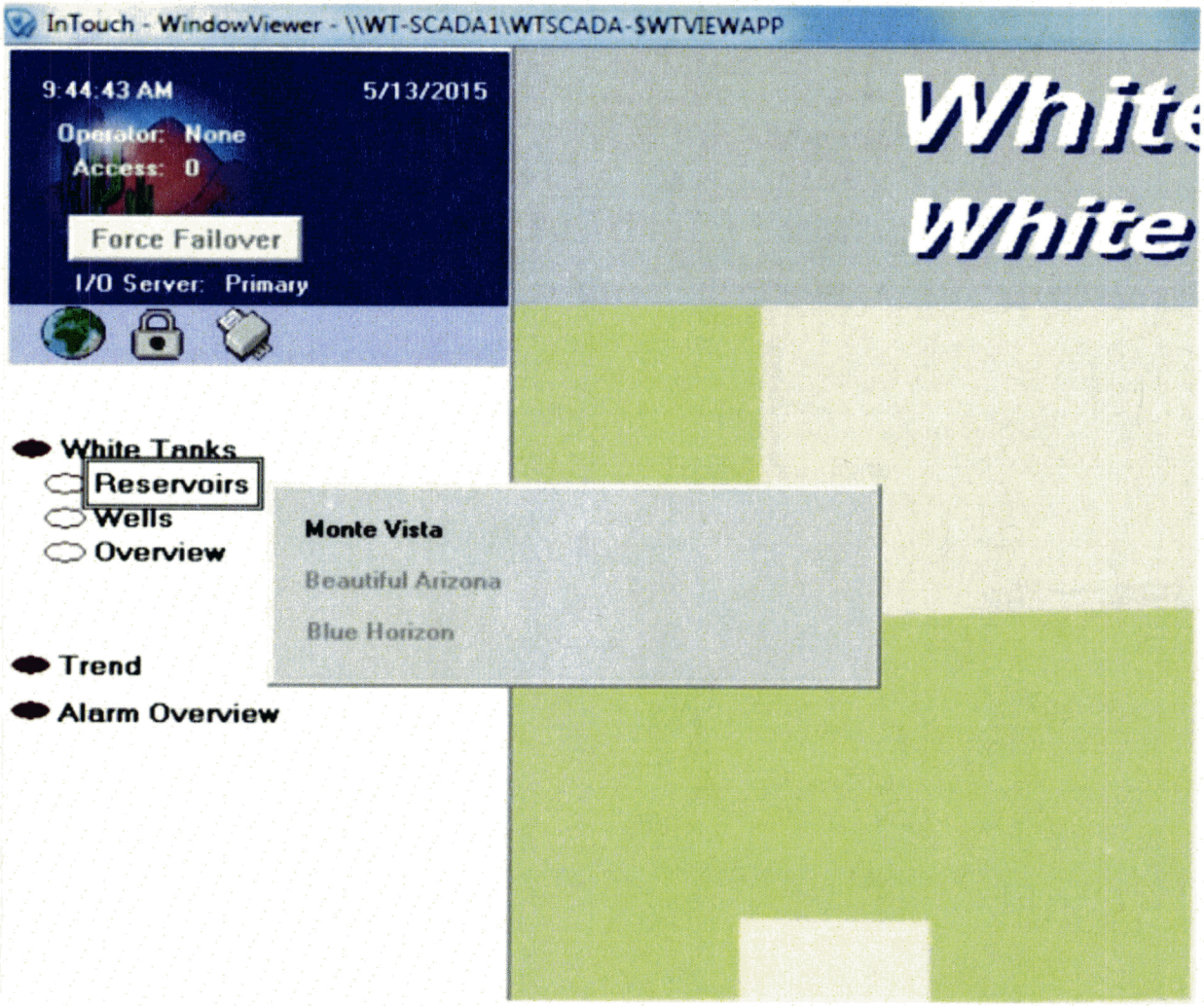
White Tanks SCADA 5-12-15
Monte Vista RTU Panel



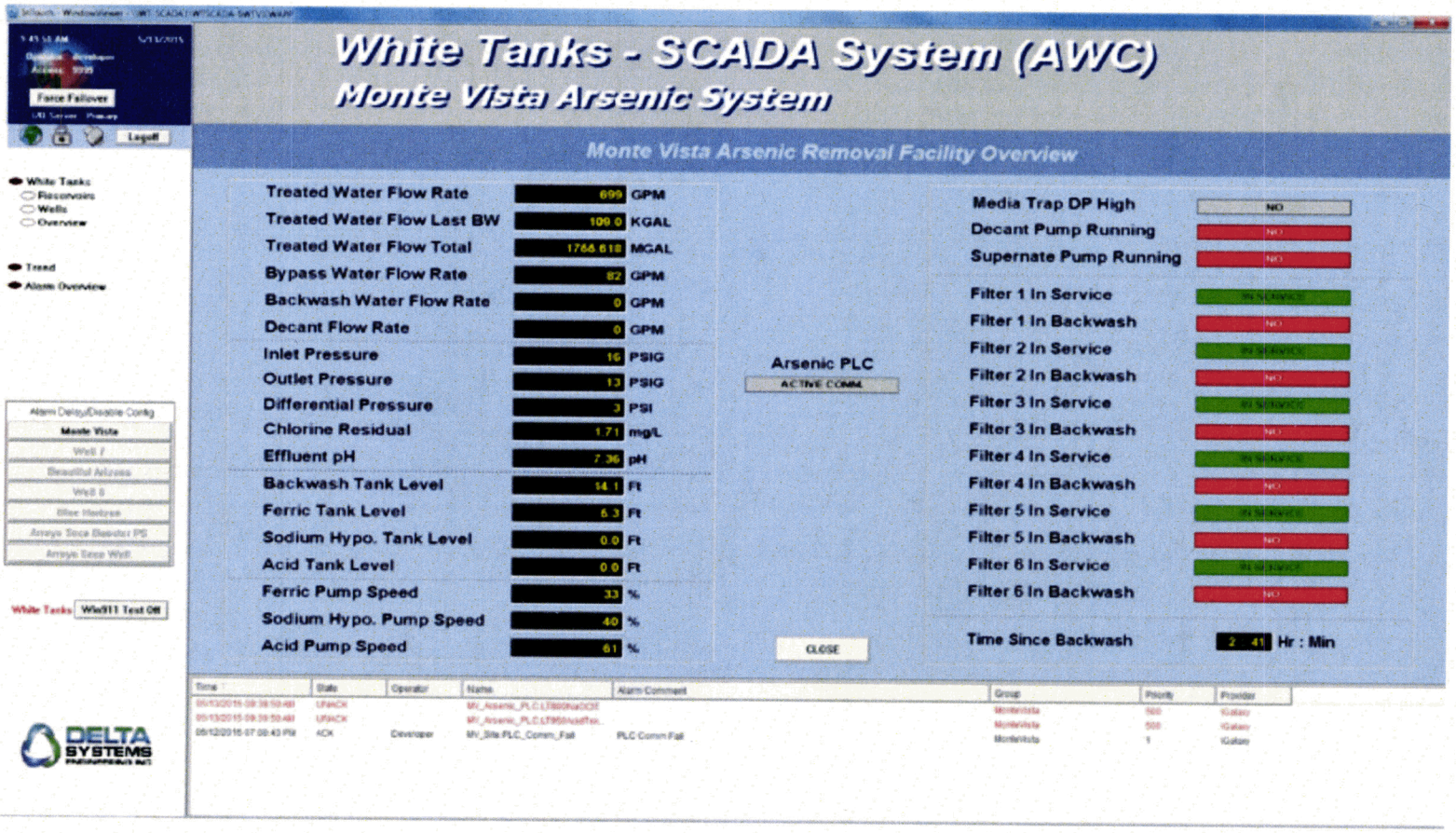
White Tanks SCADA 5-13-15
Screen Shot



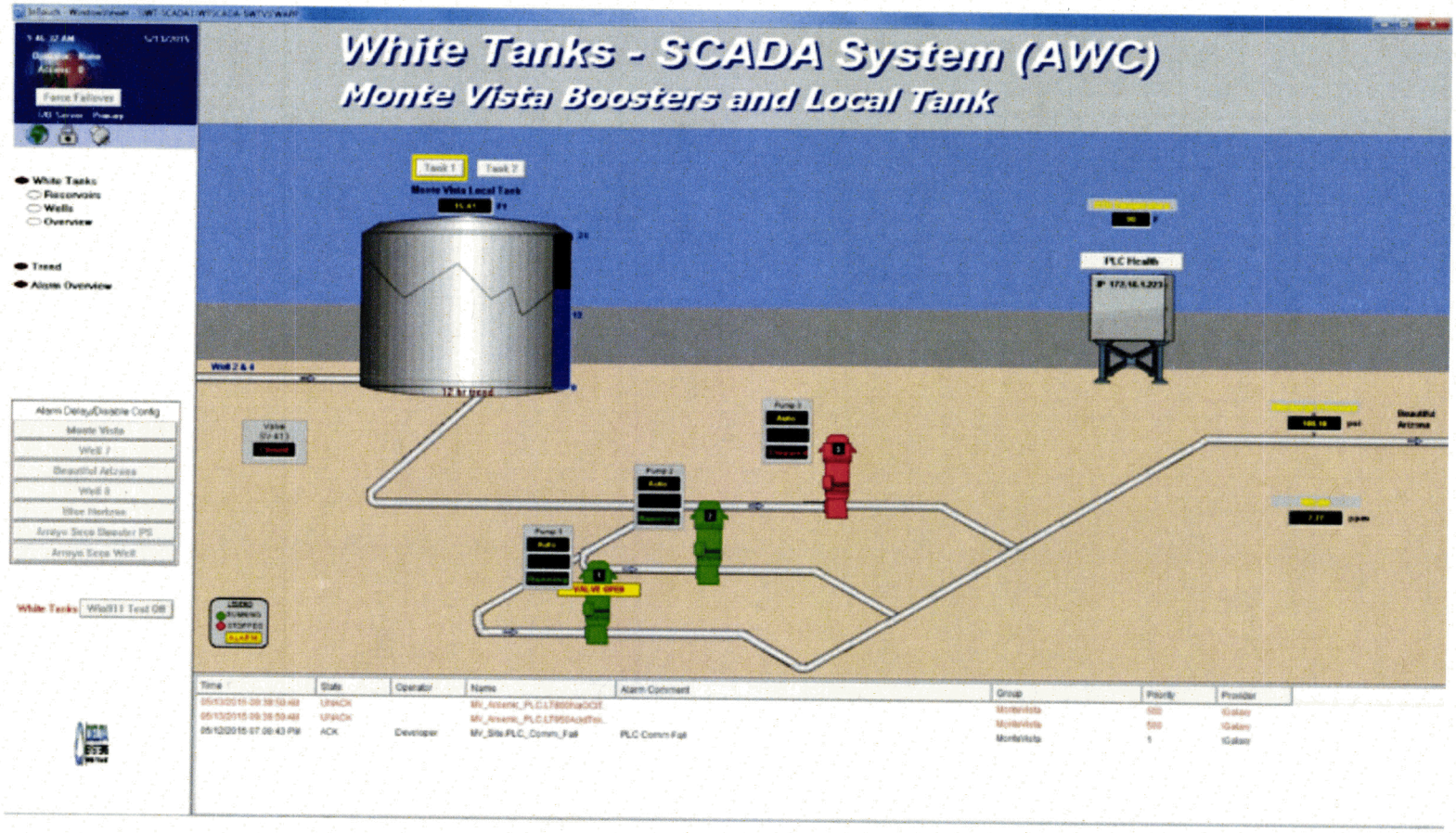
White Tanks SCADA 5-13-15
Screen Shot



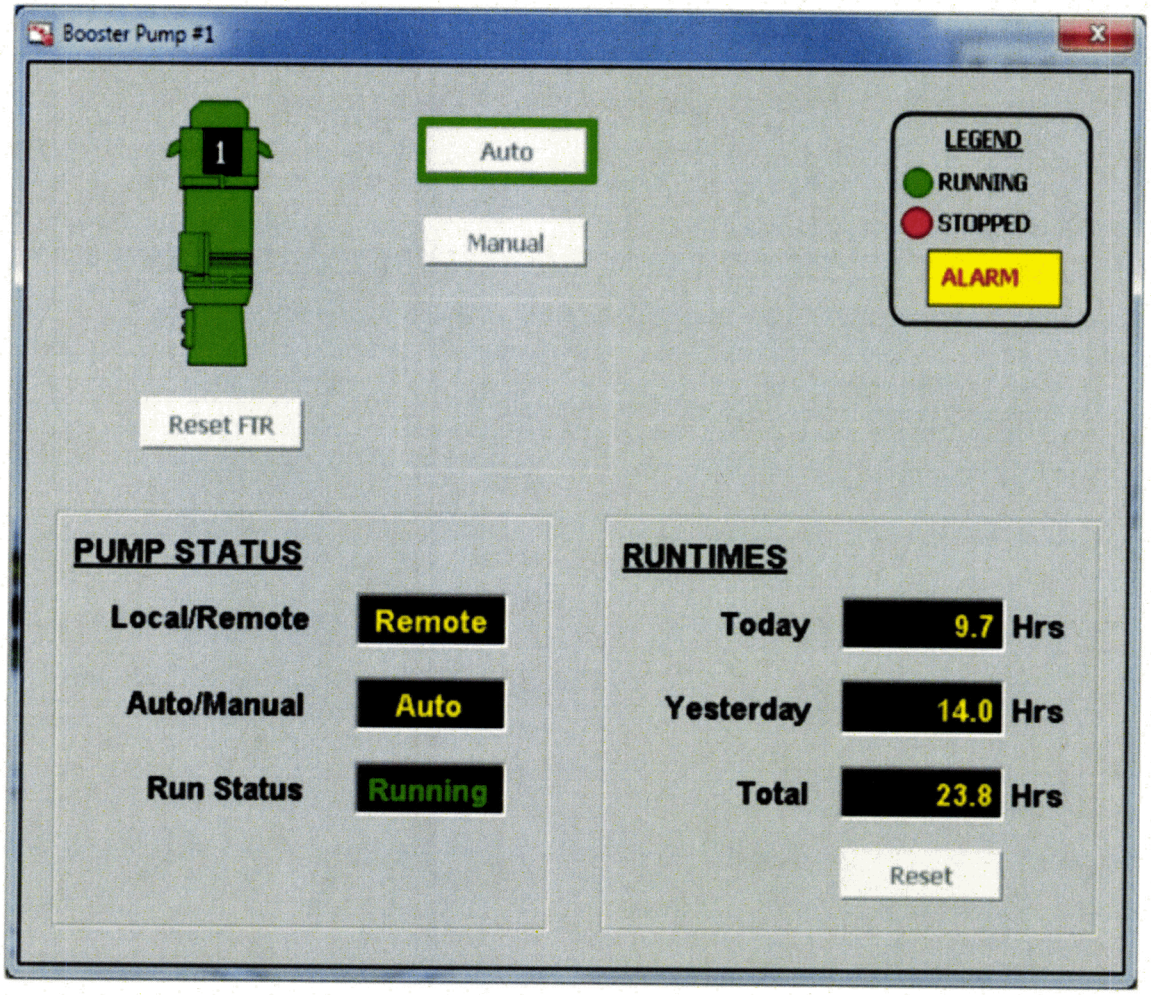
White Tanks SCADA 5-13-15
Screen Shot



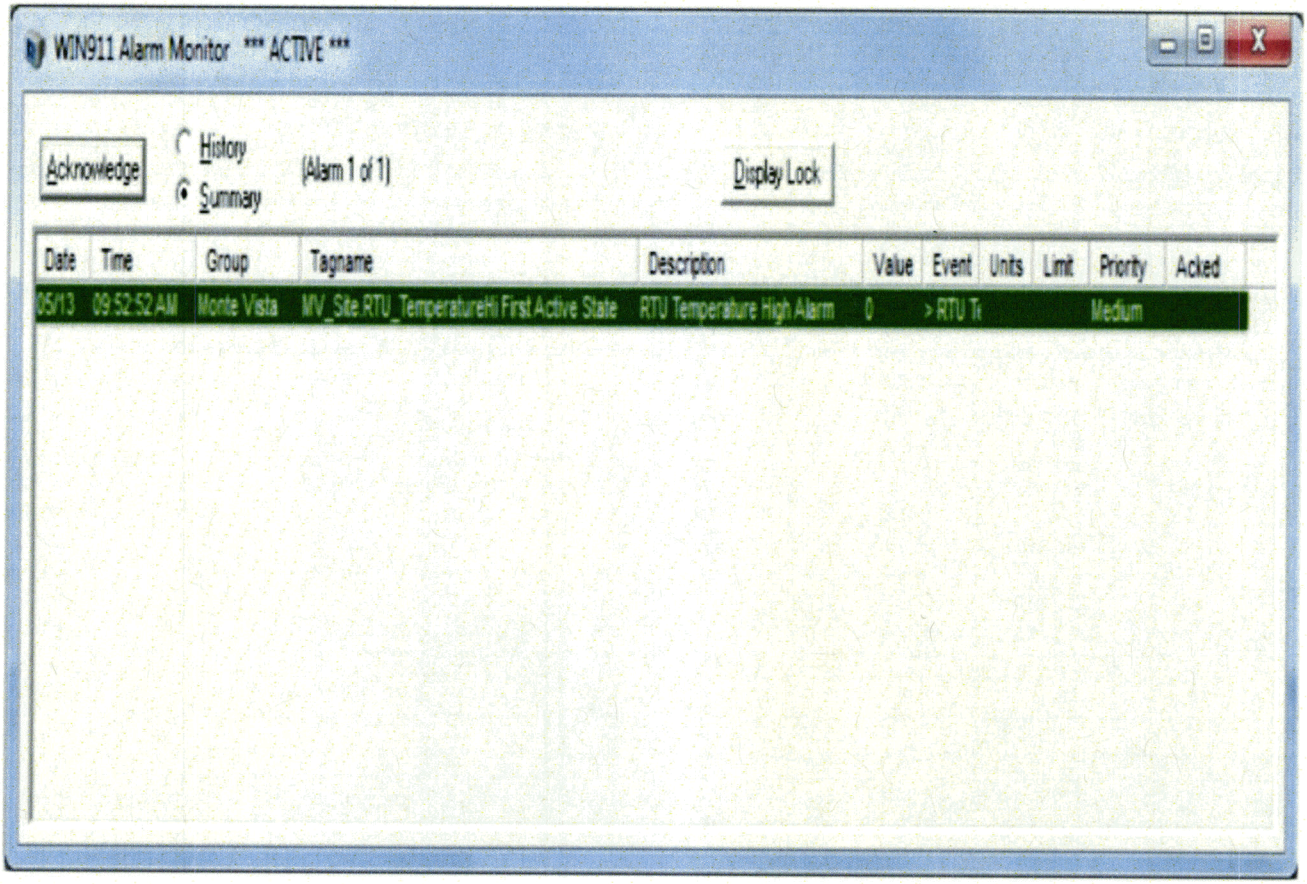
White Tanks SCADA 5-13-15
Screen Shot



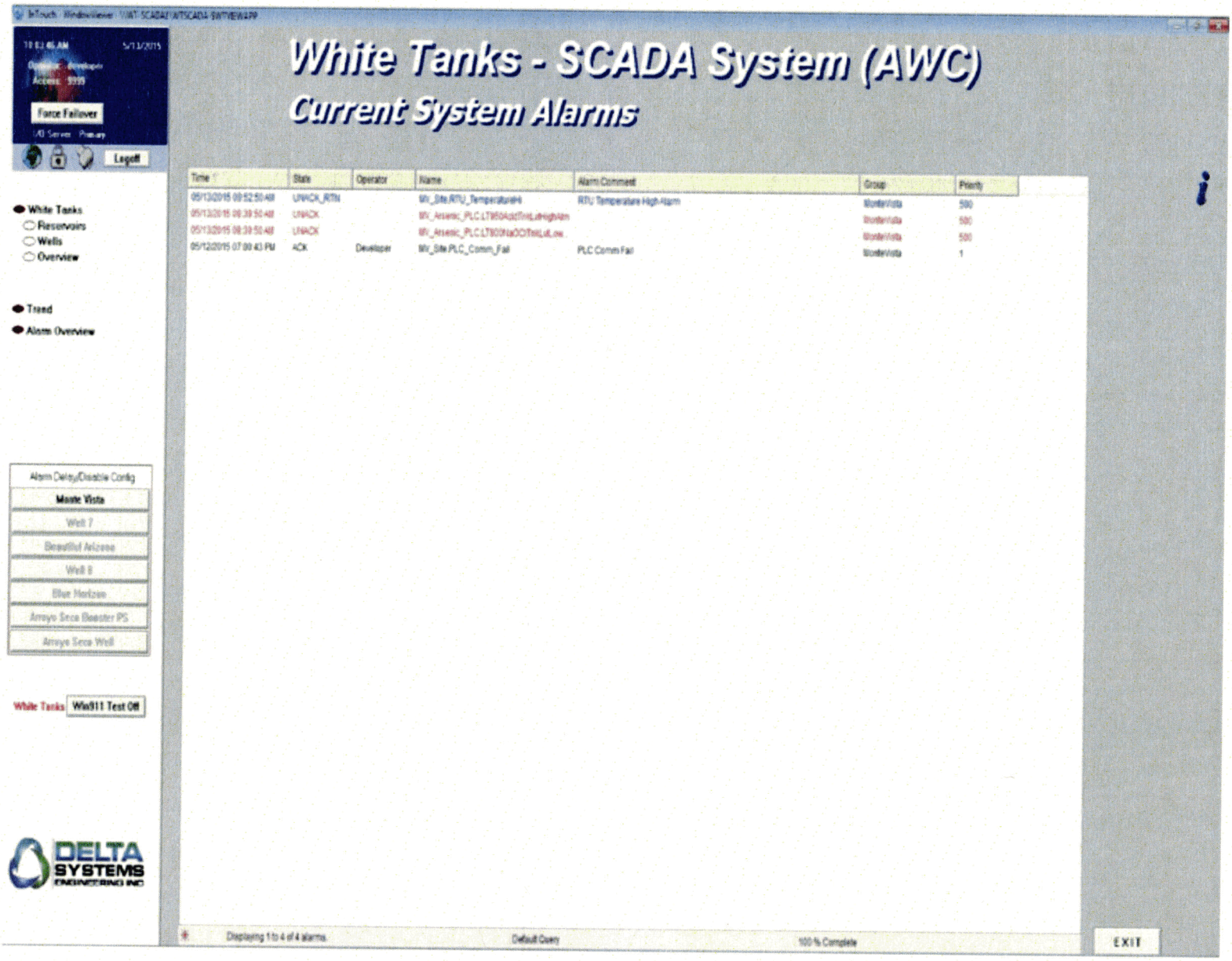
White Tanks 5-13-15
Screen Shot



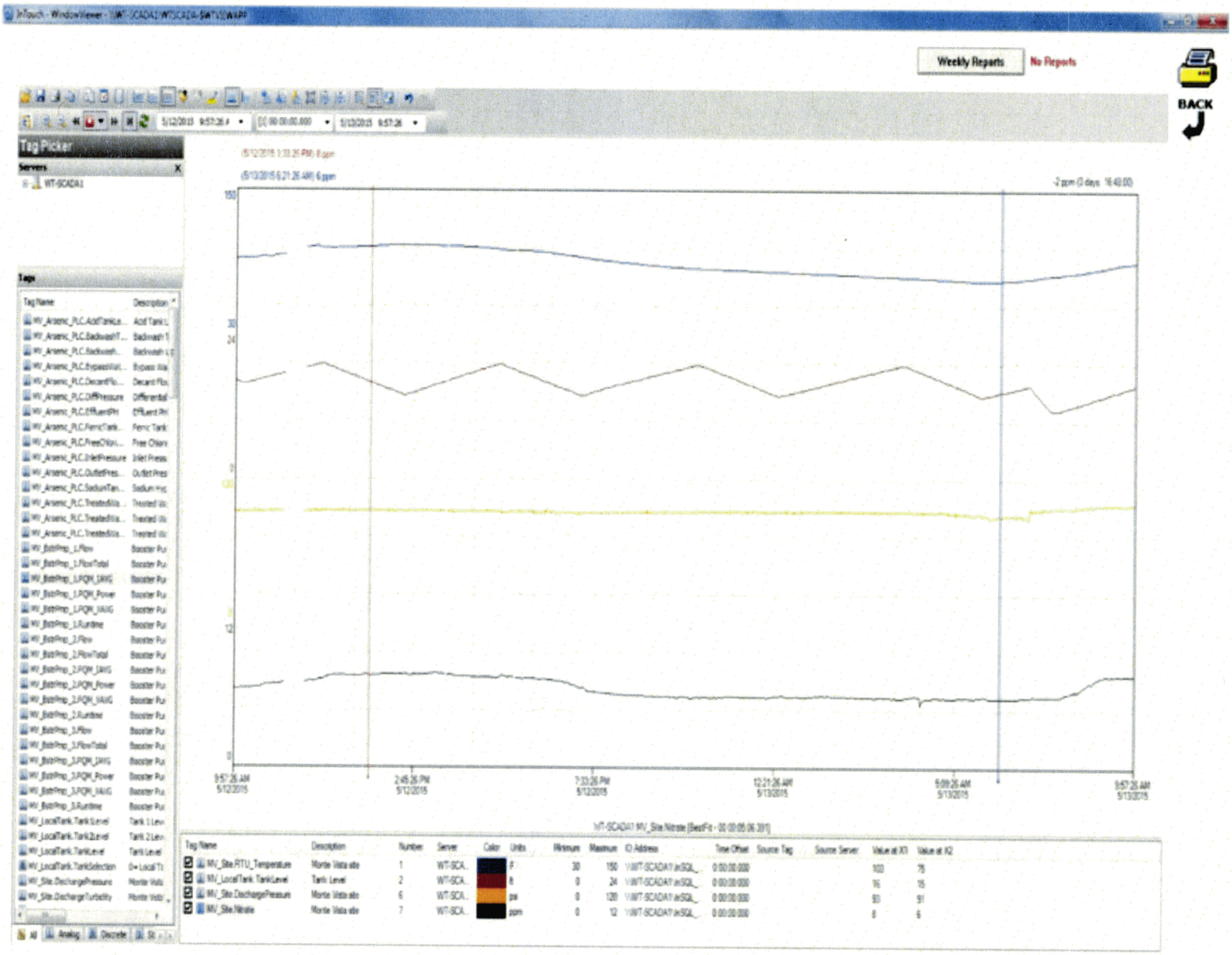
White Tanks SCADA 5-13-15
Screen Shot



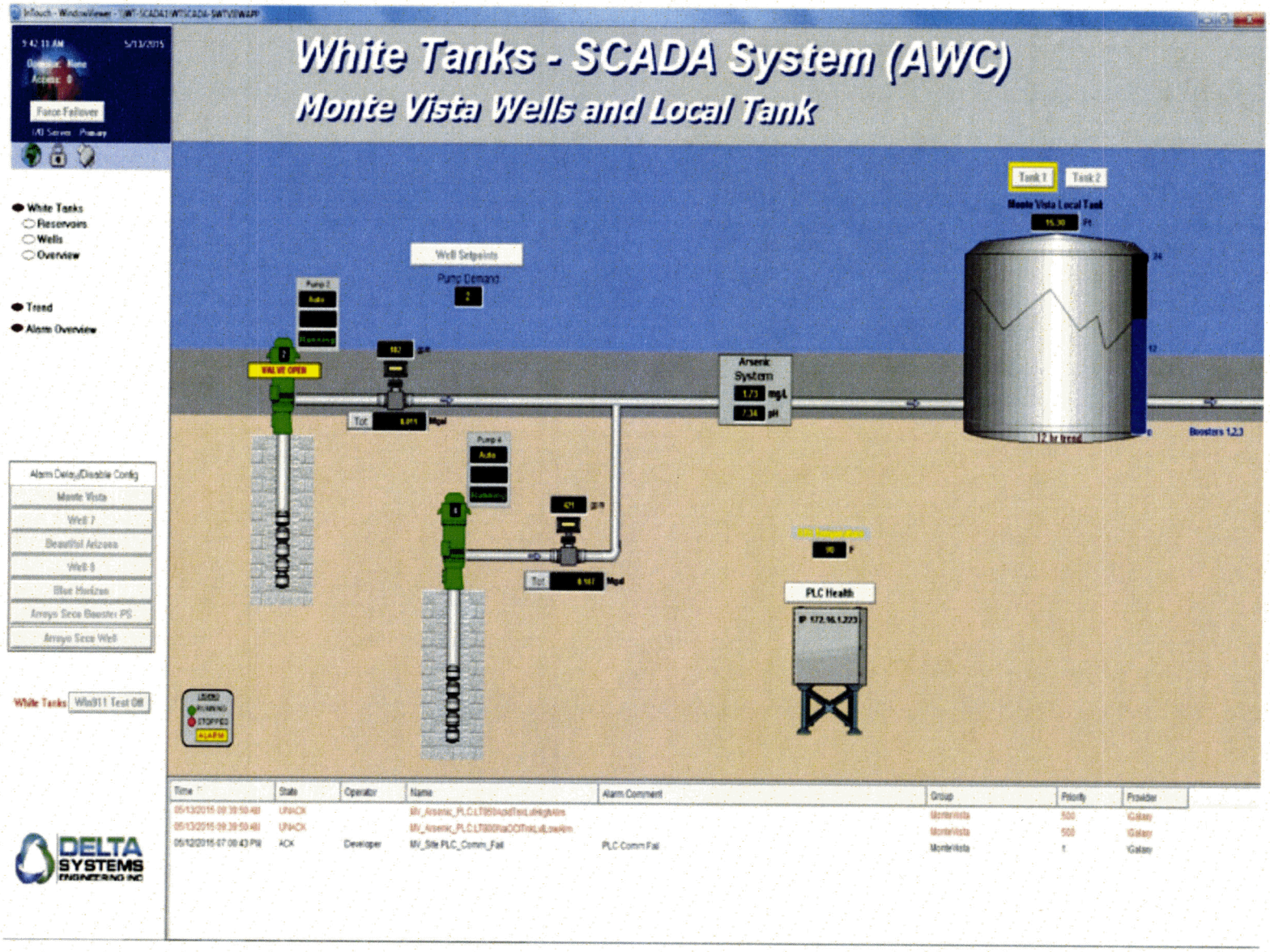
White Tanks SCADA 5-13-15
Screen Shot



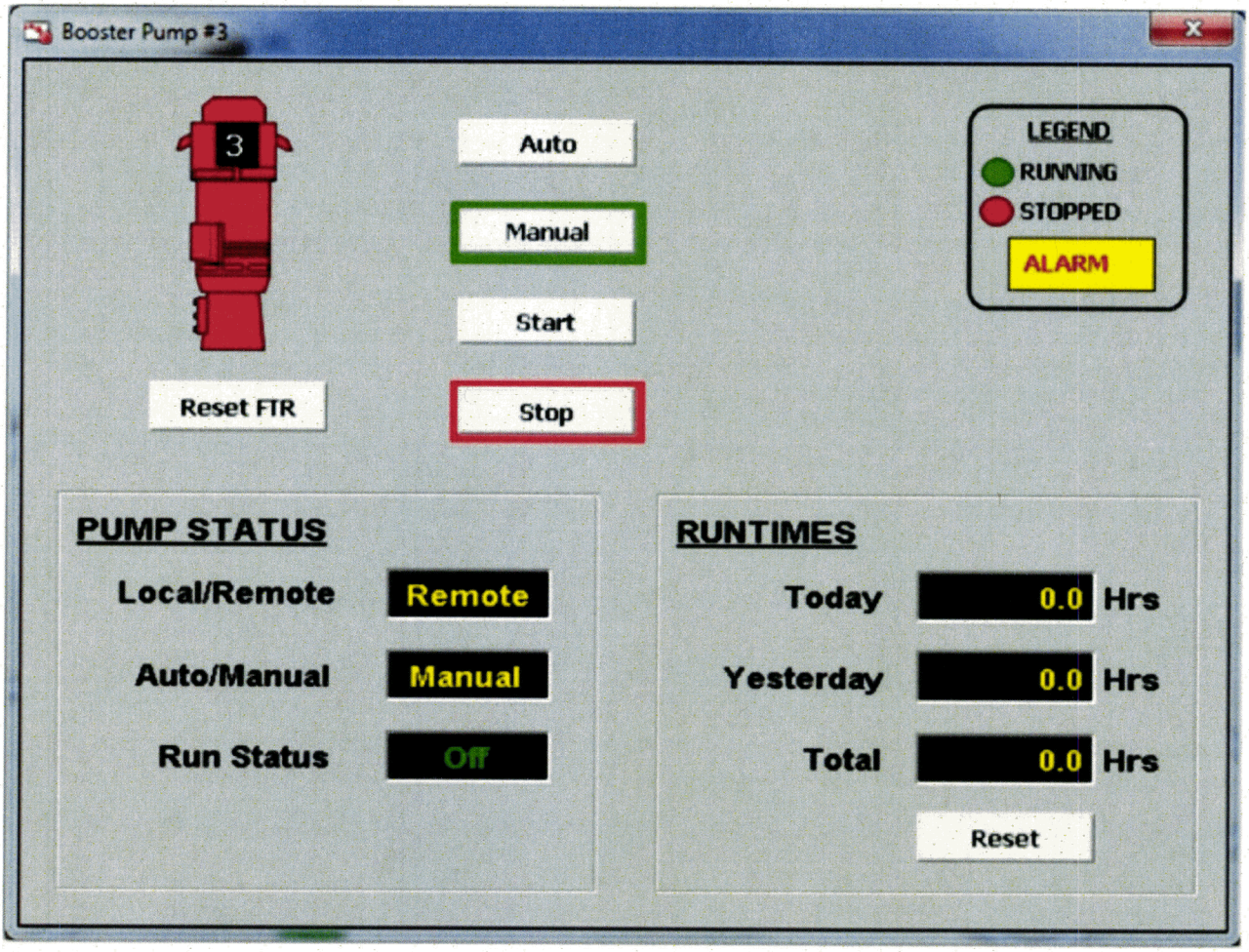
White Tanks SCADA 5-13-15
Screen Shot



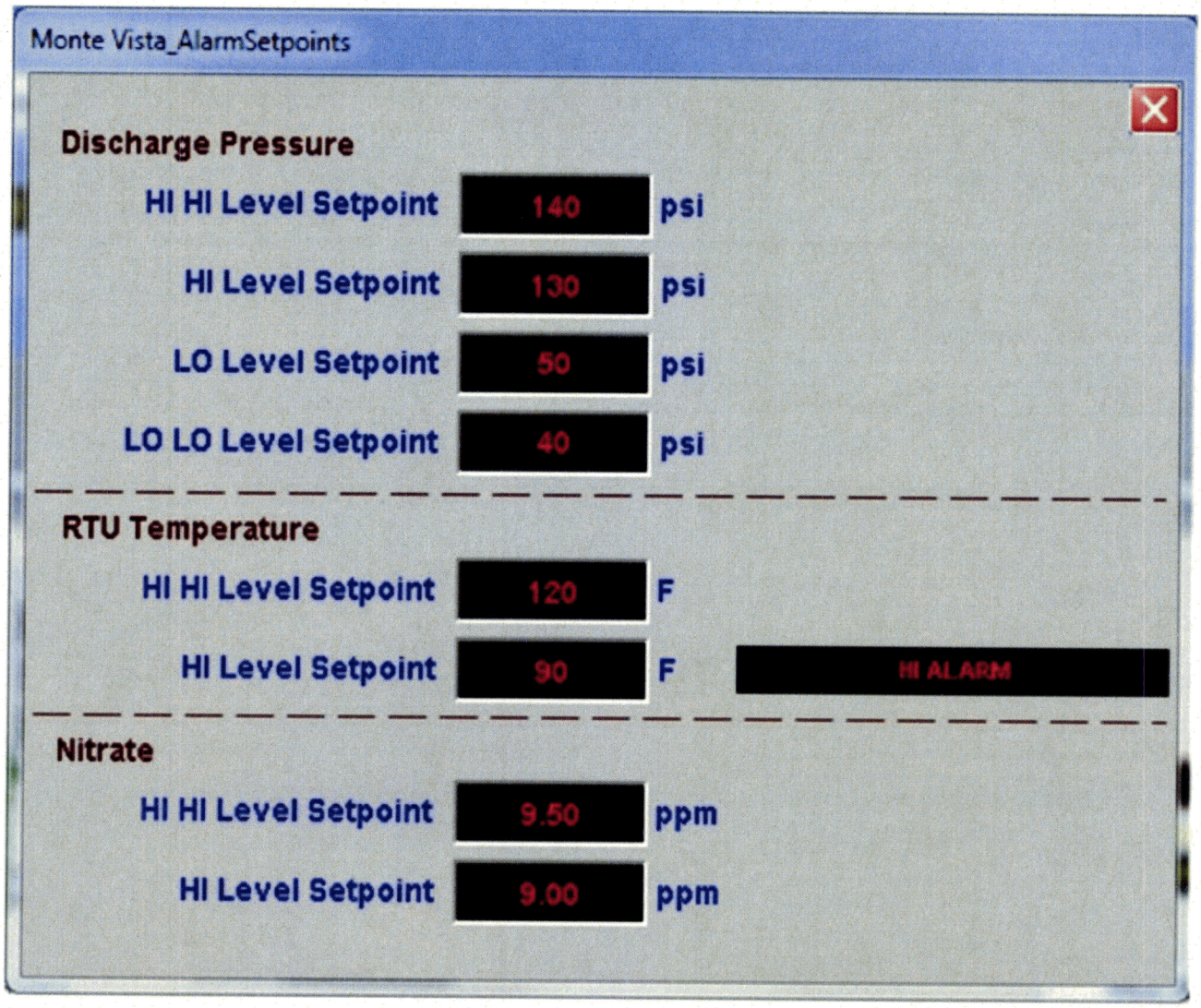
White Tanks SCADA 5-13-15
Screen Shot



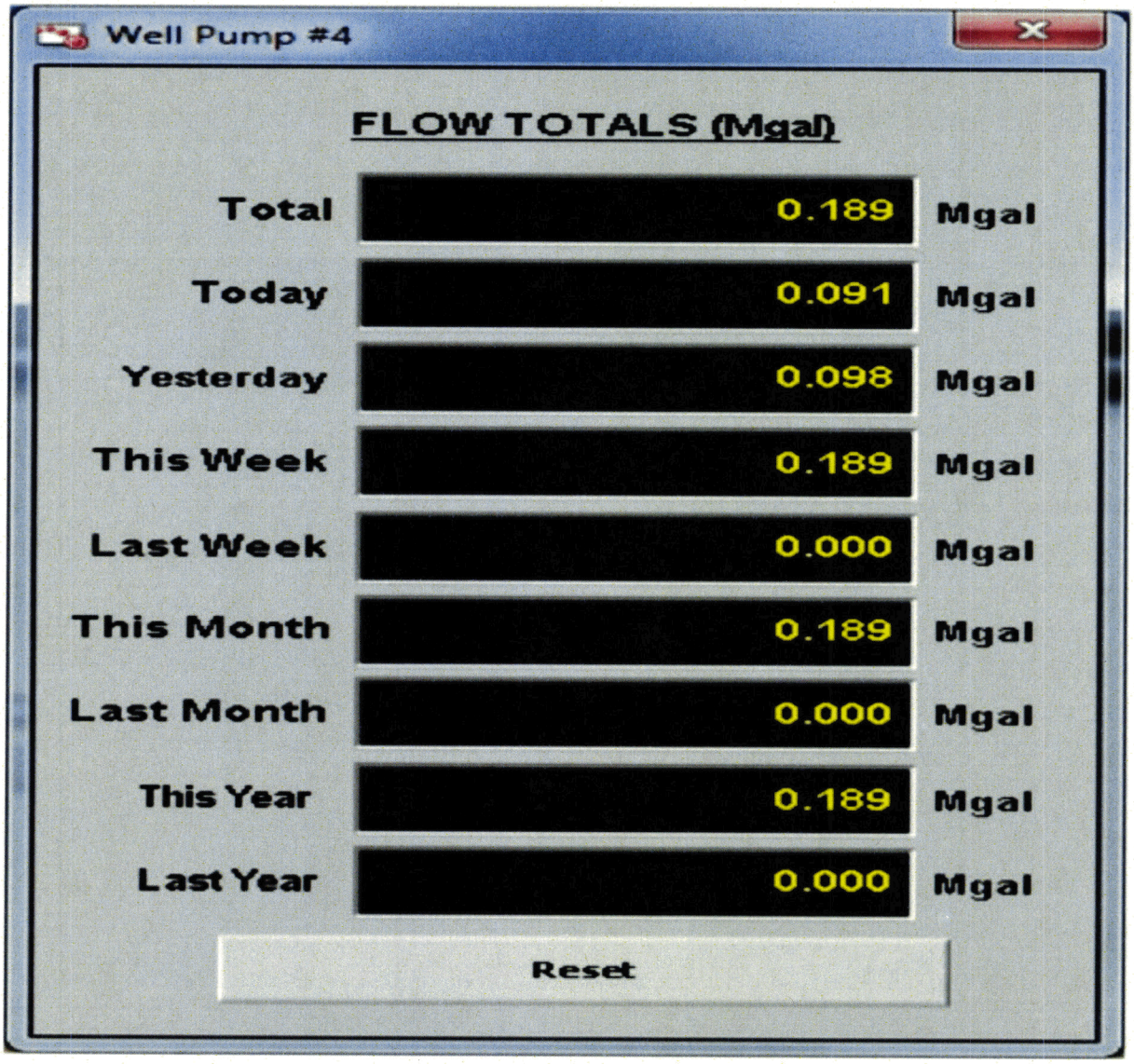
White Tanks SCADA 5-13-15
Screen Shot



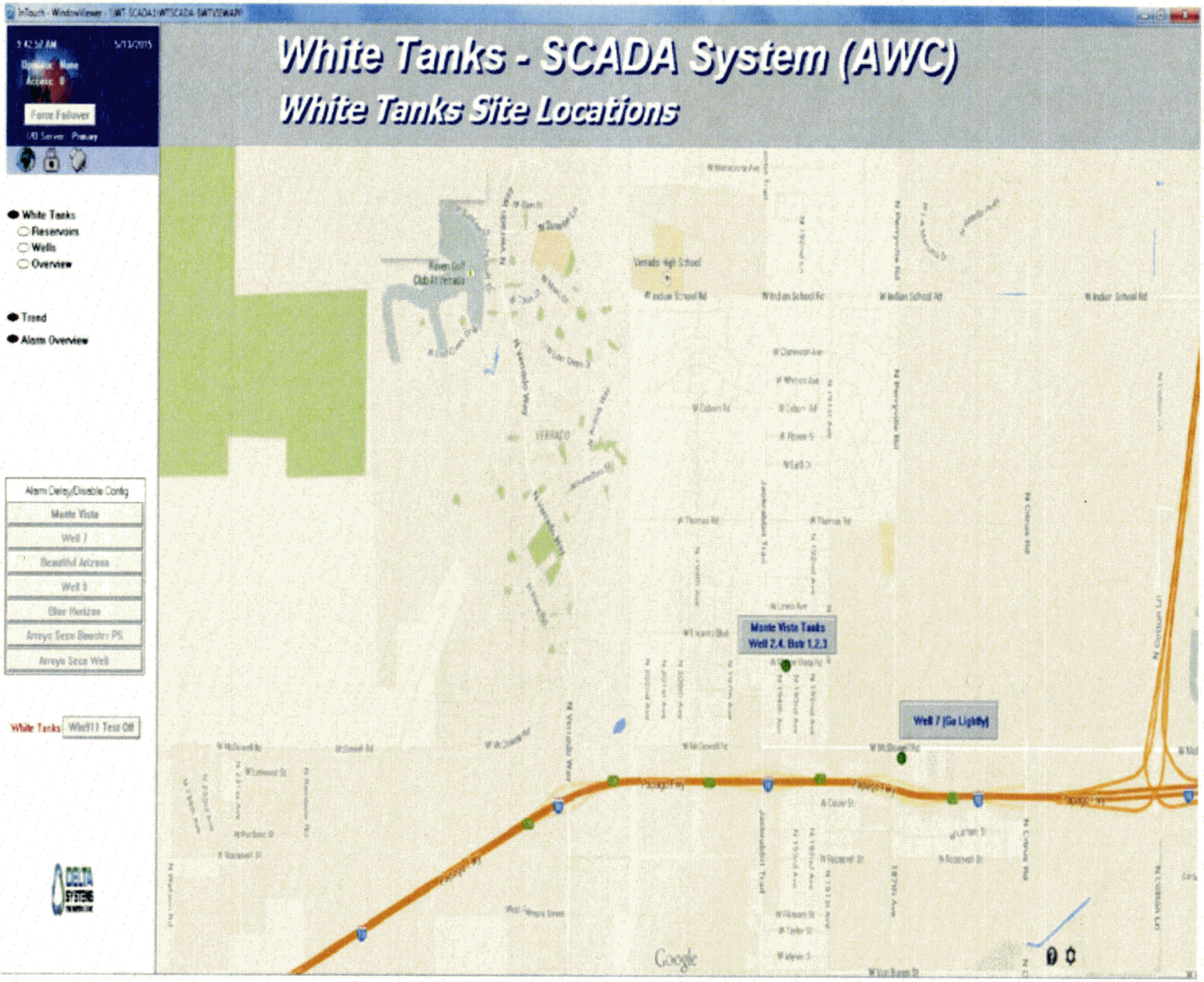
White Tanks SCADA 5-13-15
Screen Shots



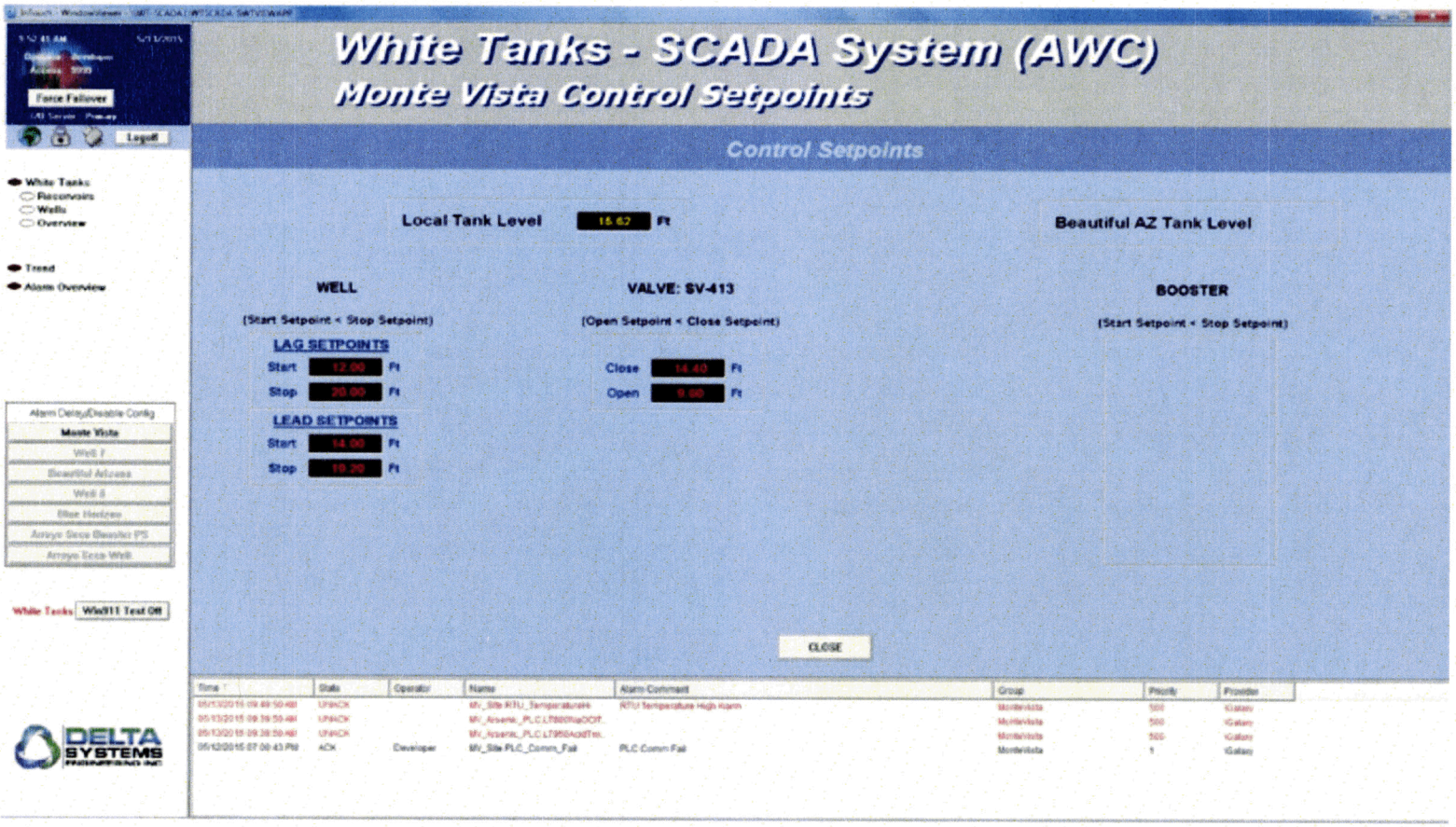
White Tanks SCADA 5-13-15
Screen Shot



White Tanks SCADA 5-13-15
Screen Shot



White Tanks SCADA 5-13-15
Screen Shot



White Tanks SCADA 5-13-15
Screen Shots

ARIZONA WATER COMPANY

CONSTRUCTION PLACED IN SERVICE NOTICE

WORK AUTHORIZATION NO.: 1-5032

DIVISION: PV / CG

DATE PLACED IN SERVICE: 6 | 1 | 2015

CONTRACT NO:

FOR PURPOSES OF *MODIFIED ACCELERATED COST RECOVERY SYSTEM*, AN ASSET IS "PLACED IN SERVICE" WHEN IT IS IN A CONDITION OR STATE OF READINESS AND AVAILABILITY FOR A SPECIFICALLY ASSIGNED FUNCTION, WHETHER IT BE FOR USE IN A TRADE OR BUSINESS, OR FOR THE PRODUCTION OF INCOME.

I CERTIFY THAT THE ASSET(S) CONSTRUCTED PURSUANT TO THE PROVISIONS OF THE ABOVE-REFERENCED WORK AUTHORIZATION ARE READY FOR SERVICE AS OF THE DATE SHOWN ABOVE.

Division Manager or Operations Superintendent
(signature)

6-9-15
Date

A-1-3-1
FKS 11/24/11

Document2
XXX:XXX 6:01 PM 6/9/15

ARIZONA WATER COMPANY

PROJECT CLOSE-OUT NOTICE

PROJECT CLOSE-OUT DATE:	6/30/15	DIVISION/ SYSTEM:	CG/WT
		WORK AUTHORIZATION NUMBER:	1-5032

THE FOLLOWING RECORD REQUIREMENTS ARE ATTACHED:

1. W.A. FINAL COMPLETION CHECKLIST ..... PREPARED BY
2. FINAL AUTHORIZATION TO BILL HAS BEEN SENT TO PHOENIX ON _____ ..... _____
   Date

WA FINAL COMPLETION CHECK LIST

FACILITIES RECORDS
- ☐ Valve Records – Main & Blow-off
- ☐ Fire Hydrant Records – Include Flow Test Data

ABANDONED FACILITIES
- ☐ Property Disposal Report (PDR)
- ☐ Voided Valve Records
- ☐ Voided Fire Hydrant Records

COMPLETION DOCUMENTS
- ☐ Public Fire Hydrants Installation Request (E-3-23)
- ☐ Notice of Fire Hydrant Installation (E-5-5)
- ☐ Permits Acquired By Division Office
- ☐ Bill Of Sale (E-3-36-3)
- ☐ Final Acceptance of Facilities Letter (E-3-36-5)

ON-SITE PHOTOGRAPHS
- ☐ To Show All New Installations At Completion Of W.A.

IF NO ATB IS REQUIRED

☐ ADEQ DATA REQUIRED WITH ECC APPLICATION
NOTE: "Footage Tested" to match total pipe installed ("343" ONLY)

AS-BUILT DRAWING
- ☐ Label Cover Sheet "AS BUILT"
- ☐ Pipe footage and size to be listed on AS-BUILT cover sheet ("343" ONLY)
- ☐ Printed name of AS-BUILT preparer
- ☐ ONLY Changes to original construction drawing to be marked in red on AS-BUILTs, NOTE: Include any additional Air Release Valves

FORMS
- ☐ Well Record (E-5-7)
- ☐ Storage Tank Record (E-5-8)
- ☐ Booster Pump Record (E-5-9)
- ☐ Hydropneumatic Tank Record (E-5-10)

OPERATIONS & MAINTENANCE MANUALS
- ☐ Electric S.E.S. & M.C.C.
- ☐ S.C.A.D.A./Controls
- ☐ Treatment Facilities

☐ AOC (Approval of Construction)
- ☒ Placed In Service Notice
- ☒ Daily Progress Reports

I certify that construction on the above Work Authorization is complete and for which all materials have been accounted. I further certify that I have inspected the work and determined it s satisfactory and in accordance with Company specifications.

Division Manager, Operations Superintendent, or Project Engineer *(signature)*

6-30-15
Date of Notice

ATTACH TO CONSTRUCTION & ENGINEERING FILE COPY OF WORK AUTHORIZATION

TO: ACCOUNTING DEPARTMENT (ACCOUNTANT II)
CC: ENGINEERING DEPARTMENT (ENG. SEC.)

DOCUMENTS | 6/30/15

12/3/2014 | FKS:sfh | E-5-4-2

Western Group Rate Case

Exhibit FKS-1

5263 Citrus & I-10

ARIZONA WATER COMPANY
WORK AUTHORIZATION

W.A. NUMBER: 1-5263
P.E. NUMBER: 1457
BUDGET ITEM NO.: Special No. 4
SHEET NO.: 1 of 2

SYSTEM:	WHITE TANK	RETENTION REQUIRED:	☑ YES ☐ NO
DIVISION:	CASA GRANDE	WORK TO START BY:	UPON AUTHORIZATION
RESPONSIBLE PERSON:	RAY MURRIETA	WORK TO BE FINISHED BY:	WITHIN 70 DAYS
TAX CODE:	2550		

DESCRIPTION OF WORK:

Install approximately 230 LF of 6-inch DIP with related fittings and 1 air relief valve in an existing company easement along the west side of Citrus Road and south of Interstate 10 in the company's White Tank system.

FACTORS JUSTIFYING WORK:

This installation will eliminate two dead end mains and provide more reliable water service and water pressure in this portion of the company's White Tank water system.

COST ESTIMATE		AUTHORIZATION	DATE
COST OF WORK:		PREPARED BY: Joseph Whelan	12-5-14 1-13-15
MATERIAL	0		
LABOR	7,100	REVIEWED FOR ESMT/ROW VERIFICATION: Charles Briggs CB 01-13-2015	12-09-2014
CONTRACT PORTION	39,100		
OVERHEAD	5,500	REVIEWED BY: Mario Mendez MM 1/14/15	12/11/14
TOTAL AUTHORIZED EXPENDITURES CHARGEABLE TO THIS W.A.	$ 51,700		
FUNDS RECEIVED:		APPROVED BY ENGINEERING: Fredrick Schneider 1-14-15	12-5-2014
CONTRIBUTIONS RECEIVED	0		
REFUNDABLE ADVANCES RECEIVED	0	APPROVED BY FINANCE: Joseph Harris	12/5/14
TOTAL CONTRIBUTIONS/ADVANCES	0		
NET COMPANY CASH REQUIRED	$ 51,700	SPECIAL ITEM EXCEEDING $10,000; AUTHORIZED BY PRESIDENT: William Garfield	12-5-2014
		SPECIAL ITEM EXCEEDING $10,000; AUTHORIZED BY CHAIRMAN: M. L. Whitehead	12-5-14

COMMENTS:

Transfer charges from PE 1457 to this WA

CONSTRUCTION RELEASE:

RELEASED TO CONSTRUCTION
Authorized by FRED SCHNEIDER
Date 1/13/15

ARIZONA WATER COMPANY

WORK AUTHORIZATION - DETAIL SHEET

W.A. NUMBER: 1-5263
P.E. NUMBER: 1457
BUDGET ITEM NO.: Special No. 4
SHEET NO.: 2 of 2

RETIREMENT PROPERTY UNITS	PLANT PROPERTY ACCOUNT	UNIT DESCRIPTION	QUANTITY	YEAR INSTALLED AND W.A. NUMBER
	THE REMOVAL ITEMS LISTED BELOW WERE PREVIOUSLY RETIRED AS NON-UTILITY PLANT			

PROJECT DESCRIPTION:

Install approximately 230 LF of 6-inch DIP with related fittings and 1 air relief valve in an existing company easement along the west side of Citrus Road and south of Interstate 10 in the company's White Tank system.

	DESCRIPTION	PLANT PROP ACCT	QUANTITY	UNIT COST	TOTAL
CONTRACT WORK					
	Install 6-inch DIP with polywrap and related fittings	343	230	130.00	29,900
	Install 6-inch gate valve	343	2	1,800.00	3,600
	Performance bond	343	1	400.00	400
	Contracting tax	343	1	2,100.00	2,100
	Install air relief valve	343	1	3,100.00	3,100
	SERVICE CONNECTIONS COMPLETE: DOUBLE-LONG	345			
	SERVICE CONNECTIONS COMPLETE: DOUBLE-SHORT	345			
	SERVICE CONNECTIONS COMPLETE: SINGLE-LONG	345			
	SERVICE CONNECTIONS COMPLETE: SINGLE-SHORT	345			
TOTAL CONTRACT WORK					$ 39,100
MATERIALS					
	SERVICE CONNECTIONS: DOUBLE-LONG	345			
	SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	SERVICE CONNECTIONS: SINGLE-LONG	345			
	METERS	346			
	METERS	346			
TOTAL MATERIALS					$ -
LABOR	COST OF DESIGN PE 1457	343	1	$ 1,500.00	$ 1,500
	TESTING FEE	343	1	$ 100.00	100
	PERMIT FEE	343	1	500.00	500
	SURVEY FEE	343	1	2,000.00	2,000
	FIELD INSPECTION	343	1	3,000.00	3,000
	INSTALL SERVICE CONNECTIONS: DOUBLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-SHORT	345			
TOTAL LABOR					$ 7,100
SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR					$ 46,200
OVERHEAD					5,500
TOTAL	REFUNDABLE PORTION ☐	NON-REFUNDABLE PORTION ☒		COST ESTIMATE	$ 51,700

AFH

Maricopa County

Environmental Services Department Water and Waste Management

Subdivision Infrastructure & Planning Program
1001 N. Central Avenue #150
Phoenix, Arizona 85004
Phone: (602) 506-1058
Fax: (602) 506-5813
TDD 602 506 6704

October 22, 2014

Scott Bushman, Project Manager
AMERCO Real Estate
2727 North Central Avenue, Suite 9-N
Phoenix, AZ 85004

RE: Request for Exemption of Plan Review Requirements for the Goodyear U-Haul Storage Facility (#721041) water line. MCESD Project No. DWR-14-00426.

Dear Mr. Bushman:

The Maricopa County Environmental Services Department (MCESD) has reviewed the submitted documents concerning the above referenced request for an exemption from the MCESD plan review requirements. These regulatory requirements are specified in Arizona Revised Statute 49-353.A.2.d and Arizona Department of Environmental Quality regulation R18-4-505 for water systems, and in R18-9-E301 for wastewater systems. Exemptions from the plan review/approval requirement are allowed in both sets of regulations.

The project consists of removing and replacing a water line at an existing U Haul Storage facility located at 1126 N. Citrus Road in Goodyear. Existing water piping and appurtenances will be removed and replaced with 233 LF of 6" DIP water line, new fire hydrants, valves and other appurtenances. Your cost estimates provided indicated the estimated cost of the water line is $49,496 which is below the $50,000 criterion specified in statute.

Based on our review of the submitted documentation, MCESD believes that this project meets the criteria for an Exemption. The water infrastructure has been designed by a registered professional engineer, and the estimated cost should be below $50,000, and is not for a new subdivision currently for a new subdivision requiring plat approval by a city, town or Maricopa County.

After completion of the work, a notice of compliance letter should be submitted to the Subdivision Infrastructure & Planning Program, MCESD in accordance with the requirements of A.A.C. R18-5-505.B.4. The notice of compliance should include the project cost, names of the design and review engineers, if any, project completion date, and the total construction time.

Please contact me at wshonerd@mail.maricopa.gov (602-506-0376) if you have any questions concerning this letter.

Sincerely,

Wesley A. Shonerd, P.E.
Senior Civil Engineer
Subdivision Infrastructure & Planning Program

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, AZ 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6874 • TOLL FREE: (800) 533-6023 • www.azwater.com

December 9, 2014

Mr. Mike Mills
Ellison-Mills Contracting, Inc.
3152 N. Lear Avenue, Suite 2
Casa Grande, AZ 85122

Re: U-Haul Center – I-10 and Citrus Road

PROJECT: U-Haul Center	
SYSTEM: White Tank	
CONTRACT NO.:	
P.E. NO.:	W.A. NO.: 1-5263

Dear Mr. Mills:

Enclosed is your copy of the Proposal/Contract for the above-referenced project, which has been accepted by Arizona Water Company (the "Company"). The project shall be constructed in accordance with the Company's *General Conditions of Contract, the Specifications and the Drawings* which were included with the Company's previously provided Proposal/Contract, copies of which are being provided again and attached herewith.

Also enclosed are two copies of the Change Order and Commencement Notice for the above-referenced project. Please sign one copy of each and return it to my attention retaining the other for your records.

As provided in paragraph 4 of the Company's Proposal/Contract executed by the Company on December 10, 2014, Ellison-Mills Contracting, Inc. acknowledged that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work. In addition, as provided in paragraph 44 of the Company's General Conditions of Contract, the 100% Performance and Payment Bonds must be provided within ten (10) calendar days of the date of the Commencement Notice. Failure to provide an acceptable 100% Performance and Payment Bond does not limit the Company's

ability to terminate the Proposal/Contract or seek restitution for damages that the Company may have or will incur.

Prior to the start of construction, please call Ray Murrieta, Division Manager at 520-836-8785 to schedule a pre-construction meeting. Prior to the pre-construction meeting, the Contractor must provide proof of insurance of no less than the minimum amounts provided in paragraph 5 of the Company's General Conditions of Contract. Failure to provide acceptable proof of insurance does not limit the Company's ability to terminate the Proposal/Contract or seek restitution for damages that the Company may have or will incur. In addition, please provide the required Performance and Payment Bonds to the Company promptly so that the contracted work can be completed within the contract's timeline.

If you have any questions, please call me at this office.

Very truly yours,

Joseph Whelan
Engineering Development Coordinator
engineering@azwater.com

afh
Enclosure

ARIZONA WATER COMPANY

220 E. 2nd Street
Casa Grande, AZ 85130
520-836-8786

PROPOSAL/CONTRACT

CONTRACTOR: Ellison-Mills Contracting LLC	SYSTEM: WT
ADDRESS: 3152 N Lear Ave Suite #2	W.A. No(s):
CITY ST ZIP: Casa Grande AZ 85122	BID DUE DATE: October 14, 2014

CONTRACTOR SUBMITS this PROPOSAL/CONTRACT to ARIZONA WATER COMPANY, an Arizona corporation (the "Company"), to perform the work and complete the project described on Page 2 (the "Project"), as an independent prime contractor.

1. Contractor certifies that it has a complete copy of, and has read, understands and accepts, the Company's General Conditions of Contract, and the Company's Construction Specifications and Standard Specification Drawings, (the "Specifications"), all of which are attached hereto. Contractor has examined the specific plans and related construction drawings for the Project (the "Drawings"), copies of which are also attached hereto. The General Conditions of Contract, Specifications and Drawings are incorporated into this Proposal/Contract. Contractor affirms that all work and materials to be furnished or purchased for the Project will be in strict conformance with the General Conditions of Contract, Specifications and Drawings.
2. Contractor represents and warrants that it has satisfied and complied with the provisions of Section 6, Contractor Understands Work and Working Conditions, of the General Conditions of Contract prior to submitting this Proposal/Contract.
3. Contractor represents that this Proposal/Contract is fair and honest in all respects, is submitted in good faith and is not submitted in collusion with any other company, entity or person.
4. Contractor acknowledges that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work.
5. Prior to the commencement of work, Contractor will submit to the Company a list of all materials to be used in the Project. The materials list will include the manufacturer, part number, price and quantity included in this Proposal/Contract.
6. Contractor will furnish all labor, tools, equipment and materials required to complete the Project according to the General Conditions of Contract, Specifications and Drawings. No materials purchased by Contractor to be incorporated into the Project are subject to tax at the time of purchase and Contractor will not charge the Company for any such tax. Contractor will pay the applicable transaction privilege tax (the "Contracting Tax") on the Project after Contractor receives payment of the final Project invoice from the Company. The cost of materials incorporated into the Project which are exempt by Arizona Revised State Statues ("A.R.S.") from the Contracting Tax, for example, pipes or valves having a diameter of four (4) inches or larger, including equipment, fittings and any other related part that is used in operating the pipes or valves (A.R.S. §42-5061 B.6.), will not be included in the total cost of the labor and materials upon which the Contracting Tax is computed. Contractor retains full liability and obligation to pay the Contracting Tax and will defend and indemnify the Company against any demand or obligation to pay the Contracting Tax.
7. Contractor will maintain detailed accounting records of all materials purchased and incorporated into the Project. Such records will include all supporting original vendor invoices for all materials purchased. Following completion of the Project, Contractor will submit an itemized accounting to the Company which will include all supporting original vendor invoices and satisfactory evidence of payment thereof. The Company will not pay Contractor for materials not actually incorporated into the Project, and the disposition of such materials will remain Contractor's responsibility.
8. The Estimated Total Cost of the Project, shown on Page 2, is based on estimated labor and material quantities to be furnished. It includes an estimate of the Contracting Tax and the cost of the required Performance and Payment Bonds. Contractor will not cancel, modify or withdraw this Proposal/Contract during a ninety-day (90) period commencing on the Bid Due Date. The Company may accept this Proposal/Contract by signing and mailing, or otherwise delivering, a copy hereof to Contractor during such ninety-day (90) period. If the Company does not accept this Proposal/Contract during such ninety-day (90) period, Contractor may cancel this Proposal/Contract by giving written notice of cancellation to the Company.
9. Prior to the commencement of work, Contractor will provide the Company with a detailed construction schedule. In either Gantt or CPM form, identifying all tasks to be performed from the date of the written Commencement Notice through completion of the Project, including testing, training of Company Personnel and final Project invoicing. Contractor will provide the Company with a copy of such construction schedule documenting the progress of work on the Project at least monthly.
10. Contractor will not commence work on the Project until the Company gives Contractor a written Commencement Notice. Contractor will complete the Project within 60 calendar days after the Commencement Notice is issued.
11. Following the Company's written notice of satisfactory completion of the Project, and upon receipt of the final Project invoice from Contractor, the Company shall pay Contractor the actual total cost of the Project, which will be calculated as shown on Page 2, except that actual labor and material quantities installed/constructed will be substituted for the estimated labor and materials quantities and the Contracting Tax will be recalculated based on such actual labor and materials quantities.
12. The amount of applicable liquidated damages for Contractor's failure to deliver or perform within the time limit shown in Paragraph 10 may be deducted from the Company's payment of the final Project invoice. This provision shall not limit the Company's ability to terminate this Proposal/Contract for Contractor's unsatisfactory performance or failure to perform as provided in the General Conditions of Contract, Specifications or Drawings, or in this Proposal/Contract.

SPECIAL CONDITIONS:

Contractor to obtain traffic control permit if required and SWPPP permit if required; remove and dispose of existing cement asbestos water main in accordance with the EPA Title 40 Part 61 NESHAPS.

CONTRACTOR	PROPOSAL/CONTRACT ACCEPTED:
Ellison-Mills Contracting LLC	ARIZONA WATER COMPANY
By: [signature]	By: [signature]
Print Name: Mike Mills	Print Name: Fredrick K. Schneider, PE
Title: Owner	Title: Vice President - Engineering
Date: 10/9/14	Date: 12-10-2014

JJW

AJH

ARIZONA WATER COMPANY

220 E. 2nd Street
Casa Grande, AZ 85130
520-836-8785

PROPOSAL/CONTRACT

CONTRACTOR: Ellison-Mills Contracting LLC	SYSTEM: WT
AZ CONTRACTOR LICENSE NO: 241166 CLASSIFICATION: A	W.A No(s):
ADDRESS: 3152 N Pear Ave Suite #2	BID DUE DATE: October 14, 2014
CITY ST ZIP Casa Grande AZ 85122	BID BOND REQUIRED: √ Yes ☐ No

DESCRIPTION OF PROJECT: Remove and dispose of approximately 205 of 6-inch cement asbestos pipe and approximately 25 LF of 6-inch ductile iron pipe, remove one existing fire hydrant, two existing service connections and one air relief valve. Replace with approximately 230 LF of 6-inch ducitile iron pipe, one air relief valve, one 1-inch single service and one 2-inch copper service to serve two 1-inch double meters all in an existing 8-wide easment located south of I-10 west of Citrus Rd to serve U-Haul.

1-2. MATERIALS EXEMPT FROM CONTRACTING TAX (per Paragraph 6)	QUANTITY	UNIT PRICE LABOR	UNIT PRICE MATERIALS	TOTAL COST LABOR	TOTAL COST MATERIALS
Remove and dispose of existing 6-inch CA water main	205	29.12		5969.60	
Remove and dispose of existing 6-inch DIP water main	25	14.72		368.00	
Remove existing air releif valve	1	920.04		920.04	
Remove existing fire hydrant	1	920.04		920.04	
Install 6-inch DIP with polywrap and related fittings	230	74.03	27.65	17026.90	6359.50
Install 6-inch gate valve	2	460.02	846.98	920.04	1693.96
	1				
	1				
3. Total Labor to Install Exempt Materials (add the amounts in column 1)				3 26124.60	
4. Total Exempt Materials (add the amounts in column 2)					4 8053.46

5-6. NON-EXEMPT MATERIALS	QUANTITY	LABOR	MATERIALS	LABOR	MATERIALS
Install 1-inch copper service line per AWC Dtl E-9-9-1	1	755.04	741.57	755.04	741.57
Install 2-inch copper service line per AWC Dtl E-9-10-2	1	920.04	1661.31	920.04	1661.31
Install air relief valve	1	755.04	1430.60	755.04	1430.60
7. Total Labor to Install Non-Exempt Materials (add the amounts in column 5)				7 2430.12	
8. Total Non-Exempt Materials (add the amounts in column 6)					8 3833.48
9. Subtotal A (add lines 3, 7 and 8)					9 32388.28
10. Contracting Tax Base (multiply the amount on line 9 by 0.65)				10 21052.38	
11. Applicable Contracting Tax Rate				11 9.87%	
12. Contracting Tax (multiply the amount on line 10 by line 11)					12 2063.13
13. Subtotal B (add lines 4, 9 and 12)					13 42504.88
14. 100% Performance and Payment Bonds Cost					14 400.00
15. Estimated Total Cost (add lines 13 and 14)					15 42904.88

NOTE: The Estimated Total Cost includes all labor and materials for backfill, pavement replacement, chip seal, and traffic control necessary for the Project.

ARIZONA WATER COMPANY

COMMENCEMENT NOTICE

CONTRACTOR:

Mr. Mike Mills
Ellison-Mills Contracting, Inc.
3152 N. Lear Avenue, Suite 2
Casa Grande, AZ 85122

DATE: 12/11/14
DIVISION: CASA GRANDE
SYSTEM: WHITE TANK
W.A.: 1-5263

THIS IS YOUR NOTICE TO PROCEED WITH THE FOLLOWING PROJECT(S):

DESCRIPTION OF WORK:

Install approximately 230 LF of 6-inch DIP, and one air relief valve in an existing 8 foot wide easement located south of I-10 west of Citrus to serve U-Haul.

PERFORMANCE AND PAYMENT BONDS REQUIRED: [X] Yes [ ] No

TOTAL DAYS ALLOWED: 70

COMPLETION DATE: 2/19/2015

Prior to the start of construction, please call Ray Murrieta, Division Manager at 520-836-8785 to schedule a pre-construction meeting.

Prior to the pre-construction meeting, the Contractor must provide proof of insurance of no less than the minimum amounts provided in paragraph 5 of the Company's General Conditions of Contract. Failure to provide acceptable proof of insurance does not limit the Company's ability to terminate the Proposal/Contract or seek restitution for damages that the Company may have or will incur

ARIZONA WATER COMPANY
Company

By
Title Vice President - Engineering

ELLISON-MILLS CONTRACTING, INC
Contractor *(type name)*

By
Title

AFH

ASH

W:\PROJECTS\2014\WT\1-5263 SPECIAL NO. 60 U-HAUL CENTER\AGREEMENT FOR SERVICE CONNECTIONS\E-3-18-2 ELLISON MILLS COMMENCEMENT NOTICE 1-5263 U-HAUL CENTER.DOCX 1/15/09 | FKS:afh | E-3-18-2

ARIZONA WATER COMPANY

SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT: E-4-1

CONSTRUCTION SPECIFICATIONS: E-8-1

STANDARD SPECIFICATION DRAWINGS: E-9-1

2007 EDITION WITH **2010** REVISIONS;
2012 GENERAL CONDITIONS OF CONTRACT

12-9-14

A copy of this entire Spec Book was sent out with Ellison Mills Proposal package for 1-5263 U-Haul Center on 12/11/14

ARIZONA WATER COMPANY

CONTRACT CHANGE ORDER

CONTRACTOR: Ellison Mills Contracting LLC 3152 N. Lear Ave. Ste 2 Casa Grande, AZ 85122	DATE: December 9, 2014	CONTRACT DATE: December 9, 2014
	W.A. NO.: 1-5263	CHANGE ORDER NO.: 1
DESCRIPTION OF WORK: The 2-inch service and 1-inch service are removed from the contract.	APPLICABLE C. O. COST: $ -4,077.96	
	ORIGINAL CONTRACT AMOUNT: $ 42,904.81	
	SUM OF ALL CHANGE ORDERS TO DATE: $ -4,077.96	
REASON FOR ADDITIONAL WORK: The 2-inch service and 1-inch service are not necessary at this time.	APPROVAL LEVEL REQ'D: (CIRCLE ALL THAT APPLY) (BASED ON SUM) Mgr & Eng: Up to $10,000 or 10% whichever is less VP Eng: Up to $100,000 or 20% whichever is less VP Tres & Pres: greater than $100,000 or 20%	

BASIS OF PAYMENT:

- [X] In accordance with rates contained in Contractor's Proposal/Contract dated: December 9, 2014
- [ ] In accordance with material prices, labor and equipment rates shown on Proposal dated:
- [ ] Lump Sum Price (including taxes) of: (Include supporting documentation) $
- [ ] Other:

Contractor is hereby authorized to proceed with the work as described above. The Company will pay for the above-described work as indicated above.

Contractor agrees, as an independent contractor, to perform the above-described work in accordance with the Company's *General Conditions of Contract, and the Company's Construction Specifications* and *Standard Specification Drawings* ("General Conditions of Contract") and related construction drawings which, were provided with the original Proposal/Contract and supplemented herein, and agrees that all provisions of said General Conditions of Contract dated as of April 2004, including any subsequent amendments thereto, and related construction drawings, apply to work covered under this Contract Change Order.

Work Authorization Approval for additional funds required YES (NO) (circle one) If yes, attach applicable form & proof of payment for outside funded work.

Division Superintendent/Manager

Project Engineer/Project Manager

AWC Vice President – Engineering

CHANGE ORDER AUTHORIZATION OVER $100,000 OR 20% OF THE CONTRACT NOT VALID WITHOUT SIGNATURES BELOW

AWC Vice President and Treasurer

AWC President

ELLISON MILLS CONTRACTING LLC
Contractor: (Name)

By: _____
Contractor's Representative Signature

Name: Mik Mills
(Printed)

It's: Owner
(Title or Position)

Date Work Started

Date Work Completed

CONTRACTOR'S INVOICE APPROVED BY:

Company's Representative Overseeing the Work (signature)

DISTRIBUTION:
Original to Person Authorizing Work and, when completed, to Accounting Dept. with approved invoice for the work with supporting documentation. Copy to Contractor. Copy to Project Engineer.

Labor and Material Releases Required: ☐ Yes ☐ No
Releases Received and Approved By:

Company's Authorized Signature

CITY OF GOODYEAR, ARIZONA
14455 W VAN BUREN ST. STE D101
GOODYEAR, ARIZONA 85338

ALL PERMITS AND APPROVED PLANS MUST BE KEPT ON SITE

Permit Number . . . . . 13- 960 Date 1/08/15
Application pin number . . . 003840
Property Address . . . . . 1 CITY OF GOODYEAR ROW
Parcel Number: ROW-00-001 /
Tenant nbr, name . . . . . U HAUL
Application type description ENG: COMMERICAL PROJECTS

Application desc
CITY INSPECTOR: ROB GODWIN 623-693-2457

Owner
AMERCO
2727 NORTH CENTRAL AVE
PHOENIX AZ 85004

Contractor 266946 B1
SEA CON LLC
165 NE JUNIPER ST #100
ISSAQUAH WA 98027
(602) 263-6502

Permit . . . . . WATER-PRIVATELY MAINTAINED
Additional desc . . 2013-0960-C4
Phone Access Code . 1014901
Permit Fee 230.00
Issue Date 1/08/15
Expiration Date . . 7/07/15
Plan Check Fee . . .00
Valuation 0

Qty	Unit Charge	Per		Extension
			BASE FEE	193.10
30.00	1.2000	LF	C:WATERLINES	36.00
30.00	.0300	LF	C:WTR LN LK DTCTN(ACP,DIP,CIP)	.90

Special Notes and Comments
*PERMIT & APPROVED PLANS to be onsite at all times. CALL LISTED INSPECTOR 24 HOURS BEFORE CONSTRUCTION BEGINS TO SCHEDULE A PRE-CONSTRUCTION MEETING AND IS REQUIRED TO BE ARRANGED BY THE PERMITEE WITH THE CONTRACTOR TO PERFORM THE WORK IN ATTENDANCE AND THE CITY INSPECTOR, ALONG WITH VALID AND COMPLETE BLUE STAKE MARKINGS DOWN PRIOR TO ANY LAND DISTURBANCE ACTIVITIES.
**ALL PERMITS SHALL BE RENEWED AS NECESSARY AND ARE TO REMAIN ACTIVE UNTIL SITE CONSTRUCTION IS ACCEPTED BY THE CITY OF GOODYEAR.
==========
PLAN AMENDED AND APPROVED
*NO DRIVING OR STAGING WORK ON SIDEWALKS without prior authorization by city inspector. A barricade permit is required to close any sidewalk for any length of time.

PLEASE SEE CONSTRUCTION INSPECTOR CONTACT INFORMATION LISTED ABOVE

CITY OF GOODYEAR, ARIZONA
14455 W VAN BUREN ST. STE D101
GOODYEAR, ARIZONA 85338

ALL PERMITS AND APPROVED PLANS MUST BE KEPT ON SITE

Permit Number . . . . . 13- 960 Date 1/08/15
Application pin number . . . 003840

Special Notes and Comments
*All damaged property within and adjacent to the limits of work shall be agreed upon in the pre-construction meeting and marked by the city inspector prior to any land disturbance. Any damage caused by the contractor will be removed and replaced at the request of the city within 72 hours by the contractor at the contractor's expense. The permit holder will be required to provide the city inspector a construction schedule for completion of repairs.
*ANY change to the approved plan REQUIRES a re-submittal with the approved plan for reference.
*ALL ABOVE GROUND electrical transformers, pedestals and utility boxes shall not encroach into city right-of-way and/or city sidewalk area. All concrete pads for the above shall have a designed elevation not to exceed the curb grade on plans. Developers and utility companies will be responsible for any relocation out of right-of-way and or city sidewalk area if there are conflicts with city improvements.
**ALL conduit stub UPS will be terminated in a box with a lid, 1-inch above curb.
* RESTORE landscaping to original state.
*CALL for final inspection when job is complete to close out permit.
*TRAFFIC CONTROL permit required. A uniformed City of Goodyear police officer will be required for any work completed within 300 feet of a signalized intersection.
* A PRE-CONSTRUCTION MEETING SHALL BE HELD PRIOR TO SET-UP.
PLEASE CONTACT(INSPECTOR NAME & #)

ASSOCIATED PERMIT NO. 13-960

DURATION: 9-17-14 THRU 9-22-14

DESCRIPTION OF WORK: NORTHBOUND N. CITRUS RD. CURB LANE CURB LAND WILL BE CLOSED NORTH AND SOUTH OF W. ROOSEVELT ST., FLAGGERS WILL MANAGE TRAFFIC.

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1. All set ups shall be maintained daily.
2. For long and intermediate term set-ups, all pavement marking no longer applicable shall be removed or obliterated as soon as practical.
3. When not in use, all traffic control devices shall be removed and stored in a safe manner and not to obstruct motorist or pedestrians.
4. When not in use, all traffic control devices shall be

PLEASE SEE CONSTRUCTION INSPECTOR CONTACT
INFORMATION LISTED ABOVE

CITY OF GOODYEAR, ARIZONA
14455 W VAN BUREN ST. STE D101
GOODYEAR, ARIZONA 85338

ALL PERMITS AND APPROVED PLANS MUST BE KEPT ON SITE

Permit Number . . . . . 13- 960 Date 1/08/15
Application pin number . . . 003840

Special Notes and Comments
placed behind sidewalk or behind edge of pavement.
5. Any damaged devices shall be replaced in within a timely manner.
6. Any device moved from its approved location must be immediately reset to its approved location depicted on the traffic control plan.
7. Upon takedown;all devices shall be picked up within 24 hours.
8. Failure to comply with ANY requirements specified on this permit may result in fines and or work suspension as deemed necessary by the inspector.
==========
**CONTACT CITY OF GOODYEAR CONSTRUCTION INSPECTOR@ THE NUMBER LISTED ABOVE AT LEAST 48 HOURS IN ADVANCE OF BARRICADE
PLACEMENT AND 24 HOURS PRIOR TO BARRICADE REMOVAL**
==========
A uniformed City of Goodyear police officer will be required for any work completed within 300 feet of a signalized intersection. Contact Santiago Rodriguez at 623-693-0086 or Tizok Duque, Police Officer at 623-670-1771.
==========
*TRAFFIC CONTROL permit required. When within 300' of a signalized intersection, an off duty City of Goodyear uniformed police officer will be required on site.

Other Fees . . . . . ENG-ENGINEERING PLAN CHCK 5580.00

Fee summary	Charged	Paid	Credited	Due
Permit Fee Total	230.00	230.00	.00	.00
Plan Check Total	.00	.00	.00	.00
Other Fee Total	5580.00	5580.00	.00	.00
Grand Total	5810.00	5810.00	.00	.00

PLEASE SEE CONSTRUCTION INSPECTOR CONTACT
INFORMATION LISTED ABOVE

Recording Requested By:
ARIZONA WATER COMPANY

When Recorded, Mail To:
Arizona Water Company
P.O. Box 29006
Phoenix, Arizona 85038-9006

OFFICIAL RECORDS OF
MARICOPA COUNTY RECORDER
HELEN PURCELL
2014-0847250 12/24/14 09:38 AM
PAPER RECORDING

0981275-3-1-1
henrya

WT-2524

ABOVE SPACE RESERVED FOR COUNTY RECORDER

GRANT OF EASEMENT

AMERCO REAL ESTATE COMPANY, a Nevada corporation (hereinafter referred to as "GRANTOR"), for valuable consideration, receipt of which is hereby acknowledged, grants to ARIZONA WATER COMPANY, an Arizona corporation, its successors and assigns (hereinafter referred to as "GRANTEE"), a perpetual easement, which runs with the land on that certain real property in the County of Maricopa, State of Arizona, said easement being more particularly described as follows (the "Easement"):

The East Eight (8) feet of Lots 32 and 33, MARWEST ESTATES (151-26), a subdivision in the Northeast quarter (NE¼) of Section 3, Township 1 North, Range 2 West, G&SRB&M, Maricopa County, Arizona.

GRANTEE, its agents, and its employees shall have the right and privilege forever to use the Easement for all public water utility purposes, including but not limited to: the right to excavate for, install, operate, maintain, replace, and remove any facilities, equipment, and appurtenances related to GRANTEE'S public water utility business; conveying water for domestic use, fire protection, and irrigation; ingress and egress at any time without prior notice; and discharge of water.

GRANTOR shall clear and keep clear the Easement of any structures, plants, or trees which directly or indirectly interfere with GRANTEE'S rights and privileges, facilities, equipment, and appurtenances. GRANTOR may not construct or place any structure, plant, or tree on or over the Easement; or enclosing the Easement; or which directly or indirectly interferes with GRANTEE'S rights and privileges without obtaining GRANTEE'S prior written consent; paying to GRANTEE all costs of relocating GRANTEE'S facilities, equipment, and appurtenances; and providing at GRANTOR'S cost an alternative easement satisfactory to GRANTEE.

GRANTEE shall have the right to remove and keep removed at the expense of GRANTOR all or parts of any structure, plant, or tree on or over or enclosing this Easement or any of GRANTEE'S facilities, equipment, and appurtenances; all or parts of any structure, plant, or tree which, while not on or over or enclosing this Easement, in any way endangers or interferes with or may endanger or interfere with GRANTEE'S rights and privileges, GRANTEE'S public water utility service, and GRANTEE'S facilities, equipment, and appurtenances; or which violates local, state, or federal laws and regulations, Arizona Corporation Commission rules, or GRANTEE'S tariffs.

Notwithstanding the foregoing, GRANTOR may install a paved driveway over the easement to allow access from 179th Avenue to the real property identified herein; provided however, if GRANTEE installs, maintains, repairs, replaces, or removes any facilities, equipment, and appurtenances in the easement after GRANTOR installs a paved driveway over the easement, GRANTOR will at its own expense remove, repair, and replace as needed those portions of the driveway that conflict with GRANTEE's installation, maintenance, repair, replacement, or removal of facilities, equipment, and appurtenances in the easement. GRANTOR will also at all times maintain at least 36 inches of cover in place over GRANTEE's facilities, equipment, and appurtenances located in the easement, not including the depth of any paved driveway GRANTOR installs over the easement.

GRANTOR and GRANTEE further agree that this easement does not merge with, extinguish, cause GRANTEE to abandon, or affect in any way those certain easements dated May 1, 1973 and May 4, 1973, both recorded on the books of the Maricopa County Recorder in Docket 10209, Page 924 and Docket 10209, Page 928.

GRANTEE will use reasonable care in the exercise of this easement to avoid damage to GRANTOR'S property.

The individual signing this Grant of Easement warrant that he/she has read this Grant of Easement, has the authority to execute this Grant of Easement, and will furnish such evidence reasonably necessary to validate such authority upon request.

W:\PROJECTS\2014\WT\1-5263 SPECIAL NO. 60 U-HAUL CENTER\EASEMENT VALUE\140708 PIPELINE EASEMENT UHAUL.DOCX
CB:ERS:HAC:JRC | 12/1/14

EXECUTED this 10 day of December, year of 2014.

Amerco Real Estate Company, a Nevada corporation

By: Carlos Vizcarra

Its: Carlos Vizcarra, President

STATE OF Arizona)
) ss
COUNTY OF Maricopa)

This foregoing instrument was acknowledged before me this 10 day of December in the year 2014 by Carlos Vizcarra its President of the Amerco Real Estate Company, a Nevada corporation, on behalf of the corporation.

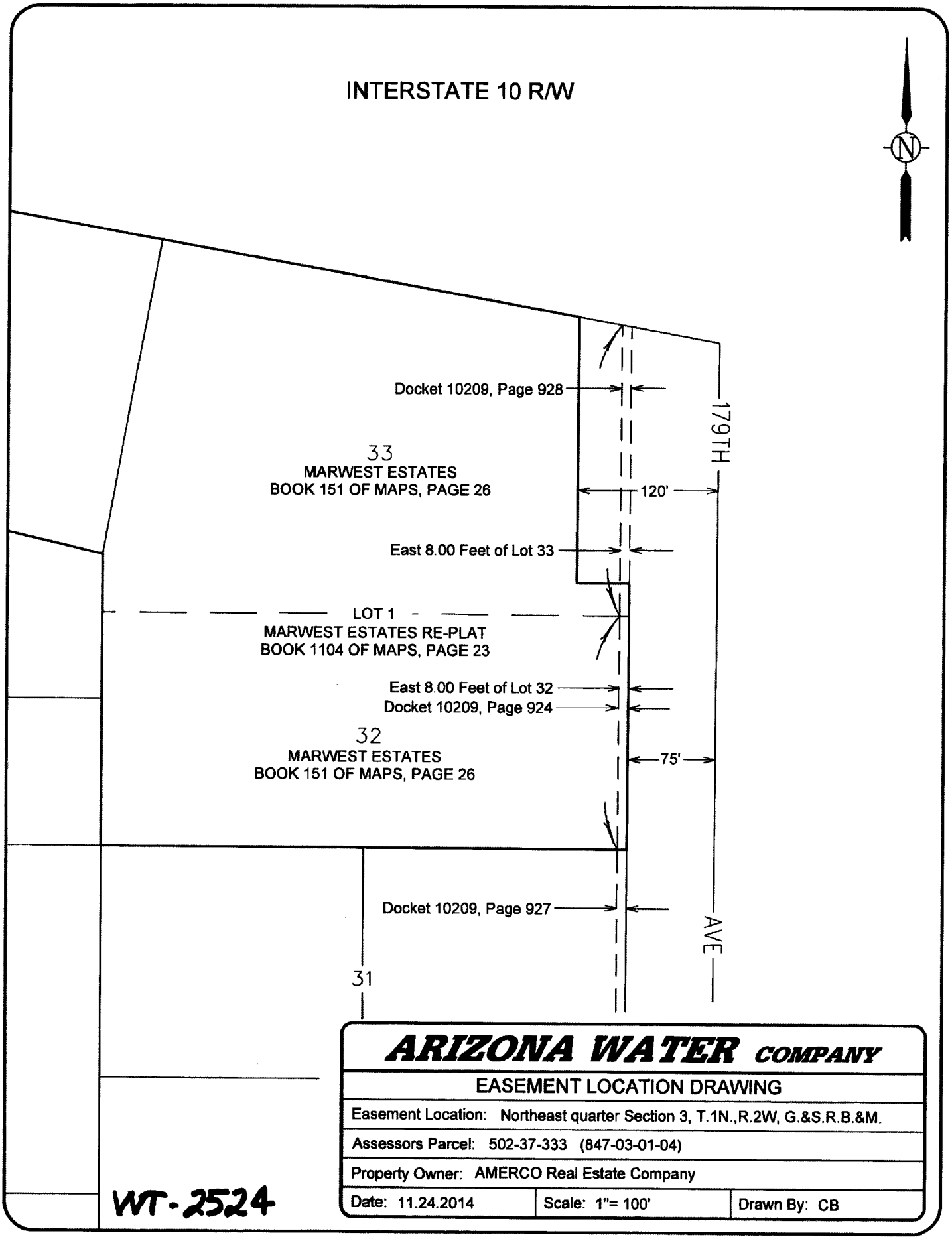
My Commission Expires: 6/23/15

Misty Farrow
Misty Dorman Notary Public

Notary Public State of Arizona
Maricopa County
Misty Dorman
My Commission Expires 06/23/2015

WT-2524

W:\PROJECTS\2014\WT\1-5263 SPECIAL NO. 60 U-HAUL CENTER\EASEMENT VALUE\140708 PIPELINE EASEMENT UHAUL.DOCX
CB:ERS:HAC:JRC | 12/1/14



ARIZONA WATER COMPANY

EASEMENT LOCATION DRAWING

Easement Location: Northeast quarter Section 3, T.1N.,R.2W, G.&S.R.B.&M.		
Assessors Parcel: 502-37-333 (847-03-01-04)		
Property Owner: AMERCO Real Estate Company		
Date: 11.24.2014	Scale: 1"= 100'	Drawn By: CB

WT-2524

AGREEMENT FOR GENERAL ENGINEERING SERVICES BETWEEN ARIZONA WATER COMPANY AND BLACK MOUNTAIN SURVEYING

TASK ORDER AUTHORIZATION

Black Mountain Surveying Project Number 15009

AWC Project Number Surveying Services for U-Haul Site on Citrus Road in Goodyear, AZ.

Arizona Water Company
P.O. Box 29006
Phoenix, Arizona 85038-9006

Effective Date of Authorization January 15, 2015

Upon execution of this Task Order, and effective as of the date shown above, the parties agree that Black Mountain Surveying shall perform the following services:

SCOPE OF SERVICES

As per the attached "Scope of Services" per the attached "Exhibit A". **NOTE: Authorization to commence will be given verbally by Division Manager (Ray Murrieta or in his absence, Roy Freeman, Operations Superintendant).**

COMPENSATION

As per the attached "Land Survey Proposal" Exhibits "A" and "B" dated January 15, 2015

GENERAL TERMS AND CONDITIONS

Surveying's services shall be governed by the Master Agreement dated January 25, 2011 together with this Task Order and any Exhibits attached hereto.

The services performed within this Task Order shall commence on or about January 16, 2015, and shall be complete on or before January 31, 2015

Black Mountain Surveying's Representative in charge of the services is Dale Mattingly, who may be contacted at 623-266-0402 and dale@blackmountainsurveying.com. Client's Representative in charge of the services is Charles Briggs, who may be contacted at 602-240-6860 and cbriggs@azwater.com.

ARIZONA WATER COMPANY 1-5263	**BLACK MOUNTAIN SURVEYING**
By	By
Title REAL PROPERTY SPECIALIST	Title Owner/Operator
Date JANUARY 15, 2015	Date 1/19/15

W:\01-Agreements, Drafts, Ltrs & Docs\Master Agreements\Black Mountain\Task Order 1-5263 U-Haul on Citrus.docx
CB:AFH 11:33 AM 1/15/15

17308 West Woodrow Lane. Surprise Az. 85388-7784 Phone: 623-266-0402 Fax: 623-266-0402
E-mail: dale@blackmountainsurveying.com www.blackmountainsurveying.com

Land Survey Proposal

January 15, 2015

Charles Briggs
Real property Specialist
Arizona Water Company
PO Box 29006
Phoenix, Az. 85038

Dear Charles,

Black Mountain Surveying is pleased to present you with this proposal for land surveying services requested on the following Project:

"U-Haul Site on Citrus Road" located near Goodyear, AZ.

It is understood that the client listed above wishes to have certain land surveying construction staking services performed on the above referenced project. It is also understood that cost is of concern with this project. All the efforts listed on the attached "Exhibit A" may not be required therefor items which are required as listed will be billed based on the hourly amounts shown on the attached "Exhibit B" fee schedule. Black Mountain Surveying total hourly amount to be billed for surveying and drafting services on this project as outlined on the attached "Exhibit A" shall not exceed $2,000.00

Sincerely,

Dale A. Mattingly R.L.S.
Senior in charge

CB
01-15-2015

"Exhibit A"

Scope of Services

Staking services for UHaul Site on Citrus Road Water Main Replacement, located in Goodyear, AZ.

The purpose of this scope is to outline the survey staking services requested on the above referenced project;

- (1st trip) Provide staking services to locate the following new water main features, tees, watervalves, tie-in locations, tap for water service location, dip location and elevation and air releaf valves. These items will be staked on a 10' offset toward the street per the contractors request.
- (2nd trip) Perform horizontal and vertical as-built measurement for the new water main and dip prior to back fill. **The contractor must notifiy the surveyor prior to back filling so the appropriate measurements can be obtained. The city is going to want to see an as-built elevation of the main everywhere the engineer has provided a grade.**
- (3rd trip) Perform final as-built measurement for the surface features of the new water main replacement.
- Provide the office effort required to produce a 24x36 inch copy of the final "watermain" as-builts for city submital. As-built information will include, stationing, offsets and elevation.
- Provide office effort to adress 2 rounds of city comments. (It is presummed that Arizona Water Company will be providing the city submittal effort.)

A 48 hours notice is required for all staking request. All staking is one time.

CB
01-15-2015

17308 West Woodrow Lane. Surprise Az. 85388-7784 Phone: 623-266-0402 Fax: 623-266-0402

E-mail: dale@blackmountainsurveying.com www.blackmountainsurveying.com

"EXHIBIT B"

2015 RATE SCHEDULE
EFFECTIVE January 1st, 2015 – December 31st, 2015

	HOURLY RATE
• **PRINCIPLE**	$125.00
• **REGISTERED LAND SURVEYOR**	$110.00
• **1 MAN GPS FIELD CREW**	$80.00
• **2 MAN CONVENTIONAL SURVEY FIELD CREW**	$100.00
• **DRAFT TECHNICIAN**	$80.00

REIMBURSABLES FOR PRINTING AND DELIVERIES WILL BE BILLED AT COST.

CB
01-15-2015

ADEQ Arizona Department of Environmental Quality

ENGINEERING REVIEW SECTION
DATA REQUIRED WITH ECC

Please complete the test data and submit this form with the Engineers Certificate of Completion. An Approval of Construction cannot be issued without the data identified below in accordance with Arizona Administrative Code (A.A.C.) R18-5-508(C). Please attach all supplemental information and calculations to this form.

DATA REQUIRED

1.

PRESSURE TEST DATA				
Indicate Segment Tested	Rec Hall			
Pressure and Leakage Test Results (Pass/Fail)	PASS			
Date Tested	1-27-15			
Time Started	12:00 pm			
Time Finished	2:00 pm			
Pipe Diameter	6"			
Footage Tested	233'			
Allowable Leakage	.3			
Leakage Observed	.1			
Pressure at Test Point	195			
Employee Observing the Test (Please Print Legibly)	Robert Reason			
Signature of Employee Observing the Test	[signature]			

2.

DISINFECTION DATA					
Initial Sampling (Minimum 50 ppm available chlorine)	Date	1-27-15			
	Time	10:30am			
	ppm Cl_2	100			
After 24 Hours Detention Time (Minimum 10 ppm free chlorine)	Date	1-28-15			
	Time	10:30am			
	ppm Cl_2	50			
After Sufficient Flushing (Water is clear and system Cl_2 residual is measured)	Date	1-28-15			
	Time	11am			
	ppm Cl_2	1.55			
Bacteriological Sampling(s):	Date	1-28-15			
	Time	11am			
	Attached (Y/N)	Yes			
		Yes/No	Yes/No	Yes/No	Yes/No

3.

CERTIFICATION

I, Robert Reason, certify that I have inspected the work performed and have found it to be satisfactory and in accordance with Arizona Administrative Code, Arizona Engineering Bulletins, and the approved specifications.

[signature] 1-30-15

Authorized Persons Signature — Date

Professional Seal
As per A.A.C. R18-5-507(B)(1)

LEGEND
Technical Services, Inc.
www.legend-group.com

17631 N. 25th Avenue • Phoenix, AZ 85023
P (602) 324-6100 • F (602) 324-6101

Ray Murrieta
Arizona Water Company - White Tanks 07-128
220 E. 2nd Street
Casa Grande, AZ85222

Project: As, Fe, Mn Rush Rush Rush
Project Number: 07128

Reported:
01/30/15 10:05

Analyte

DRAFT: U-Haul (5012229-01) Drinking Water (Grab) Sampled: 01/28/15 11:00 Received: 01/28/15 12:24

Analyte	Result	PQL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
			Legend Technical Services of Arizona, Inc.						
DRAFT: Microbiology									
E. coli	Absent		P/A	1	B5A0755	01/28/15 17:00	01/28/15 17:00	SM 9223B	
Total Coliforms	Absent		P/A	1	B5A0755	01/28/15 17:00	01/28/15 17:00	SM 9223B	

Sample Condition Upon Receipt:

Temperature: 2.20 C
All samples were received in acceptable condition unless noted otherwise in the case narrative.

Case Narrative:

Holding Times: All holding times were met unless otherwise qualified.
QA/QC Criteria: All analyses met method requirements unless otherwise qualified.
Accreditations: AZ(PHX)0004, AZ(TUC)OOO4, AIHA#102982, CDC ELITE Member.
Accreditation is applicable only to the test methods specified on each scope of accreditation held by LEGEND.
Comments: There were no problems encountered during the processing of the samples, unless otherwise noted.
All samples were analyzed on a "wet" basis unless designated as "dry weight".

Notified Regina of the absent results for Total Coliform on 01/29/15. BF
Emailed prelim results for Total Coliform to Regina and Kevin on 01/30/15. BF

Notes and Definitions

Ray Murrieta
Arizona Water Company - White Tanks 07-128
220 E. 2nd Street
Casa Grande, AZ85222

Project: As, Fe, Mn Rush Rush Rush
Project Number: 07128

Reported:
01/30/15 10:05

5012229

CHAIN OF CUSTODY RECORD

LEGEND Technical Services, Inc.
www.legend-group.com

☐ 17631 N. 25th Avenue • Phoenix, AZ 85023 • (602) 324-6100 • Fax (602) 324-6101
☐ 4585 S. Palo Verde Rd, Ste 423 • Tucson, AZ 85714 • (520) 327-1234 • Fax (520) 327-0618

Page 1 of 1

Please Print Clearly

CLIENT INFORMATION

Client Name	Address	City	State	Zip	Phone	Fax or Email
Arizona Water Co	PO Box 11030	Casa Grande	AZ	85021	520 836 8785	520 836 2380

System Name	PWS#	Contact	P.O. No.	
OKH white tanks	07-128	Ray Murrieta		Fax Results ☒ QC Report ☐ EDD ☐ Email Results ☐ Special Detection Limits ☐

IOC OPTIONS

IOC's I: Sb, As, Be, Ba, Cd, Cr, Hg, Ni, Se, Tl, CN, F
IOC's II (New Source): Sb, As, Ba, Be, Ca, Cd, Cr, Cu, Pb, Hg, Mg, Ni, Se, Na, Tl, Ca Hardness, Total Hardness, Alk, Asbestos, CN, F, Langelier, NO_3, NO_2, pH, SO_4, TDS, Temp (in field)

REQUESTED ANALYSES

Client's Sample Identification	Date	Time	POE # / DWR #	Compliance	No. of Containers	pH ✓ (Legend Use)	Gen Chem	IOCs (see left)	IOCs II (see left)	Lead & Copper	Nitrate, Nitrite	Radiochemicals	524 (TTHM)	552 (HAA)	524 (VOCs)	504	505	515	525	SOCs 531	547	548	549	1613 (Dioxin)	Perchlorate	Bromate	Chlorite	As		LAB NO
U-HAUL	1-28	11am			1	✓	X																							01
2,4 + 8	1-27	9:10	Intact		1	✓																						X		02
2,4 + 8	1-27	9:15	Effluent		1	✓																						X		03

RUSH
AS 2/2/15

TO ENSURE COMPLETION OF ANALYSIS, SAMPLES MUST BE RECEIVED AT LEAST 6 HOURS PRIOR TO THE HOLD TIME EXPIRATION

Comments: Special Samples Not for Reporting to ADEQ

☐ Yes, I have followed the instructions provided by the laboratory for dechlorination of my samples.

TURN AROUND TIME
☐ Standard 14 - 20 day
☐ Other RUSH
Laboratory Authorization Required for Rush

SAMPLE CONDITION UPON RECEIPT

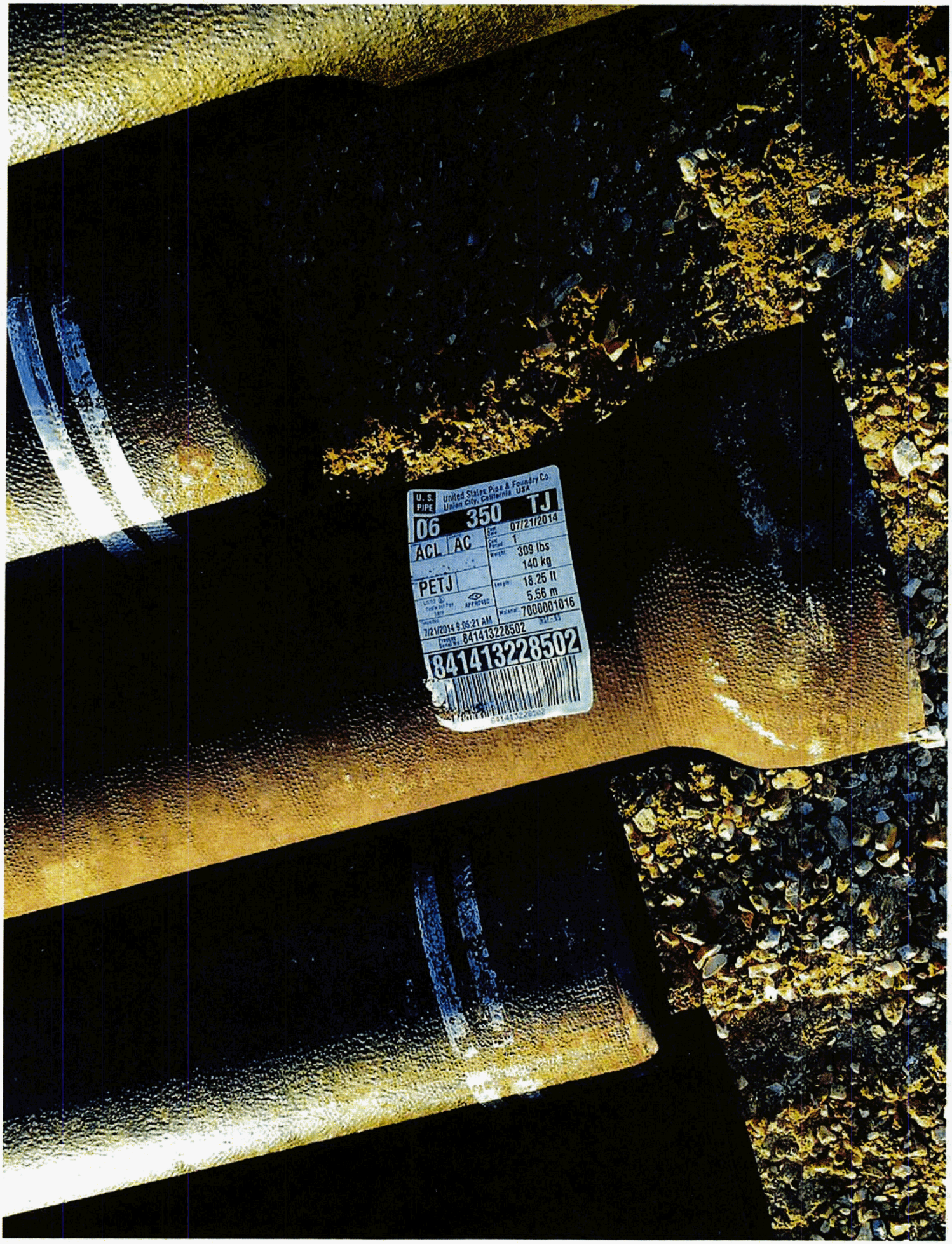
No. of Containers	3	
Temperature	2.2°C	
Custody Seals	Y	(N)
Seals Intact	Y	N
Preserved	(Y)	N

White- Lab Yellow- Client
FORM GEN-173 (3/06)

	RELINQUISHED BY			SAMPLES RECEIVED BY		
1	Sampler Signature: [signature]	Date: 1-28-15	Signature: [signature]	Date: 1/28/15		
	Sampler Printed Name: R. Perez	Time: 1224	Printed Name: Edward Howard	Time: 1224		
2	Sampler Signature	Date	Signature	Date		
	Sampler Printed Name	Time	Printed Name	Time		
3	Sampler Signature	Date	Signature	Date		
	Sampler Printed Name	Time	Printed Name	Time		

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

RETENTION
DRAINAGE


U. S. PIPE
United States Pipe & Foundry Co.
Union City, California USA
06 350 TJ
ACL AC
07/21/2014
1
309 lbs
140 kg
PETJ
18.25 ft
5.56 m
APPROVED
7000001016
7/21/2014 9:05:21 AM
841413228502
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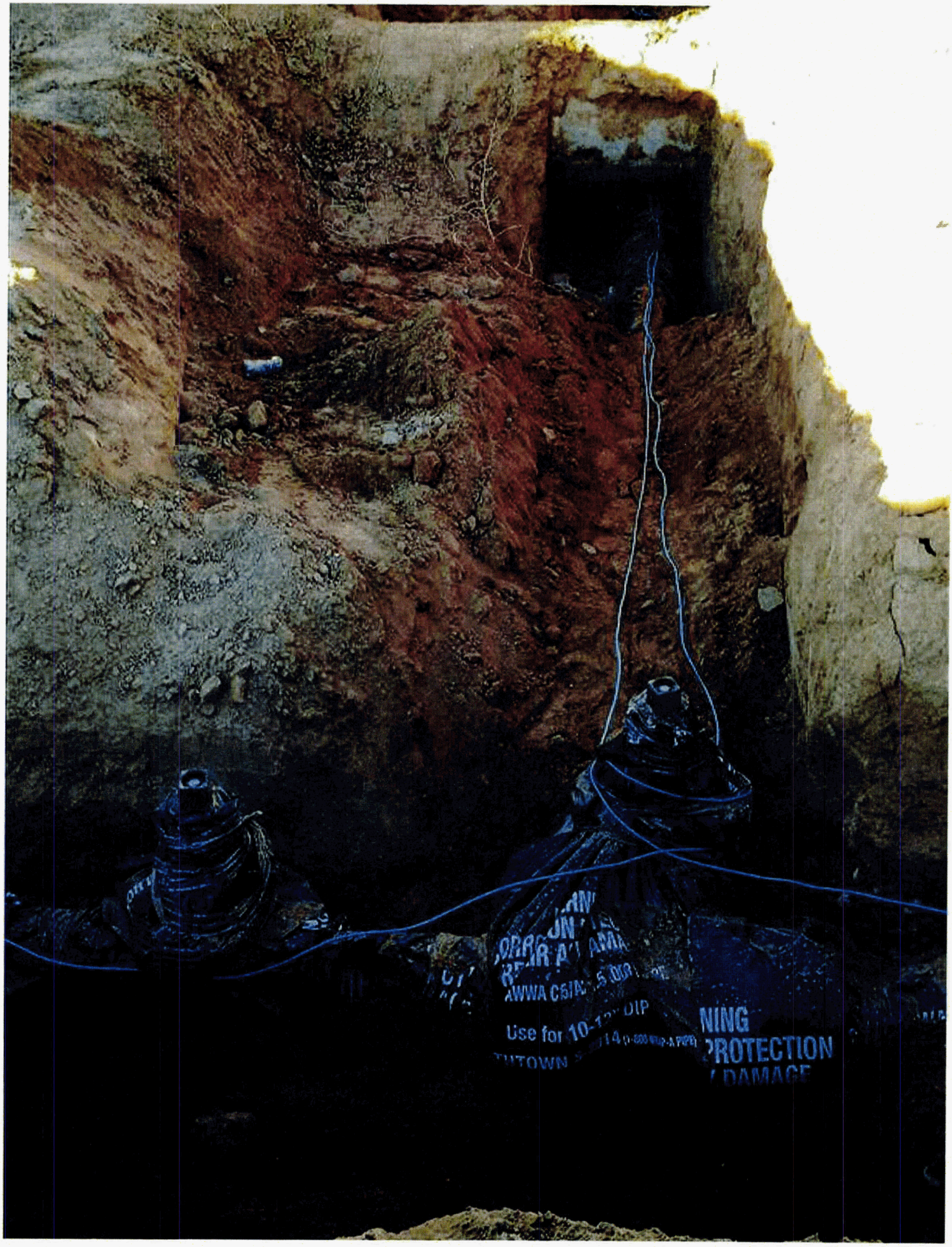
AWWA C
Use for 10-
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PROTECTION
DAMAGE

Western Group Rate Case

Exhibit FKS-1

5309 Blue Horizon Chem Injec

ARIZONA WATER COMPANY
WORK AUTHORIZATION

W.A. NUMBER: 1-5309
P.E. NUMBER:
BUDGET ITEM NO.: 1-5309
SHEET NO.: 1 of 2

SYSTEM:	WHITE TANK	RETENTION REQUIRED:	☑ YES ☐ NO
DIVISION:	CASA GRANDE	WORK TO START BY:	UPON AUTHORIZATION
RESPONSIBLE PERSON:	JOHN KNOBBE	WORK TO BE FINISHED BY:	WITHIN 90 DAYS
TAX CODE:	2590		

DESCRIPTION OF WORK:

Replace 16-inch ductile iron fittings and butterfly valves at the chemical injection point of the Blue Horizon Arsenic Removal Facility (ARF). Company engineers will inspect the condition of the fittings and valves and replace as necessary.

FACTORS JUSTIFYING WORK:

APPROVED 2015 BUDGET ITEM ($35,000)
The chemical injection equipment at the Blue Horizon ARF is corroded due to the injected chemicals. These chemicals caused damage to the interior coating of the piping on the chemical injection portion of the ARF. This piping is critical to the ARF operation and requires replacement. To mitigate future damage to the chemical injection equipment, Company Engineers determined the concrete lined fittings must be replaced with ceramic epoxy lined fittings and the standard epoxy lined valves must be replaced with modified polyamine epoxy lined valves. This site produces 50% of the water supply for the White Tank water system and is critical for the Company to provide safe and reliable water supply to the White Tank water system.

COST ESTIMATE		AUTHORIZATION	DATE
COST OF WORK:		PREPARED BY: John Knobbe JK 3-20-15	3-13-2015
MATERIAL	19,500		
LABOR	6,580	REVIEWED FOR ESMT/ROW VERIFICATION: Charles Briggs CB 03-24-2015	03-13-2015
CONTRACT PORTION	19,376		
OVERHEAD	5,500	REVIEWED BY: Mario Mendez MM 3/24/15	3/16/15
TOTAL AUTHORIZED EXPENDITURES CHARGEABLE TO THIS W.A.	$ 50,956		
FUNDS RECEIVED:		APPROVED BY ENGINEERING: Fredrick Schneider 3-25-15	3-18-2015
CONTRIBUTIONS RECEIVED	0		
REFUNDABLE ADVANCES RECEIVED	0	APPROVED BY FINANCE: Joseph Harris	3/20/15
TOTAL CONTRIBUTIONS/ADVANCES	0		
NET COMPANY CASH REQUIRED	$ 50,956	AUTHORIZED BY PRESIDENT: William Garfield	3-20-2015

COMMENTS:

Transfer additional funds required ($15,956) from WA 1-5308 (Camelback Rd. water main).

CONSTRUCTION RELEASE:

RELEASED TO CONSTRUCTION
Authorized by FRED SCHNEIDER
Date 3/24/15

2015 BUDGET

AFH

ARIZONA WATER COMPANY

WORK AUTHORIZATION - DETAIL SHEET

W.A. NUMBER: 1-5309
P.E. NUMBER:
BUDGET ITEM NO.: 1-5309
SHEET NO.: 2 of 2

RETIREMENT PROPERTY UNITS	PLANT PROPERTY ACCOUNT	UNIT DESCRIPTION	QUANTITY	YEAR INSTALLED AND W.A. NUMBER
	332	16-inch DI fitting	8	2006
	332	16-inch butterfly valve	3	2006
	332	16x1 service saddle	2	2006

PROJECT DESCRIPTION:

Replace 16-inch ductile iron fittings and butterfly valves at the chemical injection point of the Blue Horizon Arsenic Removal Facility (ARF). Company engineers will inspect the condition of the fittings and valves and replace as necessary.

	DESCRIPTION	PLANT PROP ACCT	QUANTITY	UNIT COST	TOTAL
CONTRACT WORK	Dismantle and inspect 16-inch ductile iron fittings and valves	332	1	7,276.00	7,276
	Labor to replace 16-inch ductile iron fittings and valves	332	1	7,500.00	7,500
	Provide and coat exterior of 16-inch ductile iron fittings and valves	332	1	2,500.00	2,500
	Provide and install chemical injector support system	332	1	1,000.00	1,000
	Contracting Tax	332	1	800.00	800
	100% Performance and Payment Bonds	332	1	300.00	300
	SERVICE CONNECTIONS COMPLETE: DOUBLE-LONG	345			
	SERVICE CONNECTIONS COMPLETE: DOUBLE-SHORT	345			
	SERVICE CONNECTIONS COMPLETE: SINGLE-LONG	345			
	SERVICE CONNECTIONS COMPLETE: SINGLE-SHORT	345			
TOTAL CONTRACT WORK					$ 19,376
MATERIALS	16-inch butterfly valve	332	3	$ 2,500.00	$ 7,500
	16-inch ductile iron fittings	332	1	12,000.00	12,000
	SERVICE CONNECTIONS: DOUBLE-LONG	345			
	SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	SERVICE CONNECTIONS: SINGLE-LONG	345			
	SERVICE CONNECTIONS: SINGLE-SHORT	345			
	METERS	346			
TOTAL MATERIALS					$ 19,500
LABOR	Engineering design and project management	332	80	$ 65.00	$ 5,200
	TESTING FEE	332	1	$ 500.00	500
	PERMIT FEE				
	SURVEY FEE				
	FIELD INSPECTION	332	16	55.00	880
	INSTALL SERVICE CONNECTIONS: DOUBLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-SHORT	345			
TOTAL LABOR					$ 6,580
SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR					$ 45,456
OVERHEAD					5,500
TOTAL	REFUNDABLE PORTION ☐	NON-REFUNDABLE PORTION ☐		COST ESTIMATE	$ 50,956

AFH

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, AZ 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6874 • TOLL FREE: (800) 533-6023 • www.azwater.com

April 1, 2015

Mr. Michael Young
Fann Environmental, LLC
6708 Corsair Avenue, Suite A
Prescott, AZ 86301

Re: Blue Horizon Chemical Injection Header

PROJECT: Chemical Injection Header	
SYSTEM: White Tank	
CONTRACT NO.:	
P.E. NO.:	W.A. NO.: 1-5309

Dear Mr. Young:

Enclosed is your copy of the Proposal/Contract for the above-referenced project, which has been accepted by Arizona Water Company (the "Company"). The project shall be constructed in accordance with the Company's *General Conditions of Contract, the Specifications and the Drawings* which were included with the Company's previously provided Proposal/Contract, copies of which are being provided again and attached herewith.

Also enclosed are two copies of the Commencement Notice for the above-referenced project. Please sign one of the copies and return it to my attention retaining the other for your records.

As provided in paragraph 4 of the Company's Proposal/Contract executed by the Company on April 6, 2015, Fann Environmental, LLC acknowledged that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work. In addition, as provided in paragraph 44 of the Company's General Conditions of Contract, the 100% Performance and Payment Bonds must be provided within ten (10) calendar days of the date of the Commencement Notice. Failure to provide an acceptable 100% Performance and Payment Bond does not limit the Company's

ability to terminate the Proposal/Contract or seek restitution for damages that the Company may have or will incur.

Prior to the start of construction, please call Ray Murrieta, Division Manager at 520-836-8785 to schedule a pre-construction meeting. In addition, please provide the required Performance and Payment Bonds to the Company promptly so that the contracted work can be completed within the contract's timeline.

If you have any questions, please call me at this office.

Very truly yours,

John P. Knobbe
Lead Designer
engineering@azwater.com

afh
Enclosure

ARIZONA WATER COMPANY

Casa Grande - Pinal Valley
220 E. 2nd Street
Casa Grande, AZ 85122 PH: 520-836-8785

PROPOSAL/CONTRACT

CONTRACTOR:	FANN ENVIRONMENTAL LLC	SYSTEM:	White Tank
ADDRESS:	6708 CORSAIR AVENUE, SUITE A	W.A. No(s):	1-5309
CITY ST ZIP:	PRESCOTT, AZ 86301	BID DUE DATE:	March 24, 2015

CONTRACTOR SUBMITS this PROPOSAL/CONTRACT to ARIZONA WATER COMPANY, an Arizona corporation (the "Company"), to perform the work and complete the project described on Page 2 (the "Project"), as an independent prime contractor.

1. Contractor certifies that it has a complete copy of, and has read, understands and accepts, the Company's General Conditions of Contract, and the Company's Construction Specifications and Standard Specification Drawings, (the "Specifications"), all of which are attached hereto. Contractor has examined the specific plans and related construction drawings for the Project (the "Drawings"), copies of which are also attached hereto. The General Conditions of Contract, Specifications and Drawings are incorporated into this Proposal/Contract. Contractor affirms that all work and materials to be furnished or purchased for the Project will be in strict conformance with the General Conditions of Contract, Specifications and Drawings.
2. Contractor represents and warrants that it has satisfied and complied with the provisions of Section 6, Contractor Understands Work and Working Conditions, of the General Conditions of Contract prior to submitting this Proposal/Contract.
3. Contractor represents that this Proposal/Contract is fair and honest in all respects, is submitted in good faith and is not submitted in collusion with any other company, entity or person.
4. Contractor acknowledges that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work.
5. Prior to the commencement of work, Contractor will submit to the Company a list of all materials to be used in the Project. The materials list will include the manufacturer, part number, price and quantity included in this Proposal/Contract.
6. Contractor will furnish all labor, tools, equipment and materials required to complete the Project according to the General Conditions of Contract, Specifications and Drawings. No materials purchased by Contractor to be incorporated into the Project are subject to tax at the time of purchase and Contractor will not charge the Company for any such tax. Contractor will pay the applicable transaction privilege tax (the "Contracting Tax") on the Project after Contractor receives payment of the final Project invoice from the Company. The cost of materials incorporated into the Project which are exempt by Arizona Revised State Statues ("A.R.S.") from the Contracting Tax, for example, pipes or valves having a diameter of four (4) inches or larger, including equipment, fittings and any other related part that is used in operating the pipes or valves (A.R.S. §42-5061 B.8.), will not be included in the total cost of the labor and materials upon which the Contracting Tax is computed. Contractor retains full liability and obligation to pay the Contracting Tax and will defend and indemnify the Company against any demand or obligation to pay the Contracting Tax.
7. Contractor will maintain detailed accounting records of all materials purchased and incorporated into the Project. Such records will include all supporting original vendor invoices for all materials purchased. Following completion of the Project, Contractor will submit an itemized accounting to the Company which will include all supporting original vendor invoices and satisfactory evidence of payment thereof. The Company will not pay Contractor for materials not actually incorporated into the Project, and the disposition of such materials will remain Contractor's responsibility.
8. The Estimated Total Cost of the Project, shown on Page 2, is based on estimated labor and material quantities to be furnished. It includes an estimate of the Contracting Tax and the cost of the required Performance and Payment Bonds. Contractor will not cancel, modify or withdraw this Proposal/Contract during a ninety-day (90) period commencing on the Bid Due Date. The Company may accept this Proposal/Contract by signing and mailing, or otherwise delivering, a copy hereof to Contractor during such ninety-day (90) period. If the Company does not accept this Proposal/Contract during such ninety-day (90) period, Contractor may cancel this Proposal/Contract by giving written notice of cancellation to the Company.
9. Prior to the commencement of work, Contractor will provide the Company with a detailed construction schedule, in either Gantt or CPM form, identifying all tasks to be performed from the date of the written Commencement Notice through completion of the Project, including testing, training of Company Personnel and final Project invoicing. Contractor will provide the Company with a copy of such construction schedule documenting the progress of work on the Project at least monthly.
10. Contractor will not commence work on the Project until the Company gives Contractor a written Commencement Notice. Contractor will complete the Project within 30 calendar days after the Commencement Notice is issued.
11. Following the Company's written notice of satisfactory completion of the Project, and upon receipt of the final Project invoice from Contractor, the Company shall pay Contractor the actual total cost of the Project, which will be calculated as shown on Page 2, except that actual labor and material quantities installed/constructed will be substituted for the estimated labor and materials quantities and the Contracting Tax will be recalculated based on such actual labor and materials quantities.
12. The amount of applicable liquidated damages for Contractor's failure to deliver or perform within the time limit shown in Paragraph 10 may be deducted from the Company's payment of the final Project invoice. This provision shall not limit the Company's ability to terminate this Proposal/Contract for Contractor's unsatisfactory performance or failure to perform as provided in the General Conditions of Contract, Specifications or Drawings, or in this Proposal/Contract.

SPECIAL CONDITIONS:

Company will make one progress payment and a final payment.

CONTRACTOR	PROPOSAL/CONTRACT ACCEPTED:
FANN ENVIRONMENTAL LLC	ARIZONA WATER COMPANY
By: [signature]	By: [signature]
Print Name: Michael S. Young	Print Name: Fredrick K. Schneider, PE
Title: President / Member	Title: Vice President - Engineering
Date: 3-24-15	Date: 4-6-2015

AFH

ARIZONA WATER COMPANY
Casa Grande - Pinal Valley
220 E. 2nd Street
Casa Grande, AZ 85122 PH: 520-836-8785

PROPOSAL/CONTRACT

CONTRACTOR: FANN ENVIRONMENTAL LLC	SYSTEM: White Tank
AZ CONTRACTOR LICENSE NO: CLASSIFICATION:	W.A. No(s): 1-5309
ADDRESS: 6708 CORSAIR AVENUE, SUITE A	BID DUE DATE: March 24, 2015
CITY ST ZIP PRESCOTT, AZ 86301	BID BOND REQUIRED: √ Yes ☐ No

DESCRIPTION OF PROJECT: Replace existing 16-inch ductile Iron fittings and valves on the chemical injection header at the Blue Horizons arsenic removal facility in Buckeye, Arizona. Construct in accordance with Arizona Water Company standard specifications and/or Drawing No. WT-0320.

1-2. MATERIALS EXEMPT FROM CONTRACTING TAX (per Paragraph 6)	QUANTITY	UNIT PRICE LABOR	UNIT PRICE MATERIALS		TOTAL COST LABOR		TOTAL COST MATERIALS
Install Company provided16-inch ductile iron fittings and valves (Labor Only)	Lot	8252.10	0	1	8252.10	2	0
3. Total Labor to Install Exempt Materials (add the amounts in column 1)				3	8252.10		
4. Total Exempt Materials (add the amounts in column 2)						4	0

5-6. NON-EXEMPT MATERIALS	QUANTITY	LABOR	MATERIALS		LABOR		MATERIALS
Provide and coat exterior of new 16-inch ductile iron fittings and valves	Lot	2600.-	450.-		2600.-		450.-
Provide and install new chemical injector support system	Lot	2400.-	667.-	5	2400.-	6	667.-
7. Total Labor to Install Non-Exempt Materials (add the amounts in column 5)				7	5000.-		
8. Total Non-Exempt Materials (add the amounts in column 6)						8	1117.-
9. Subtotal A (add lines 3, 7 and 8)						9	14369.10
10. Contracting Tax Base (multiply the amount on line 9 by 0.65)				10	0		
11. Applicable Contracting Tax Rate				11	0		
12. Contracting Tax (multiply the amount on line 10 by line 11)						12	0
13. Subtotal B (add lines 4, 9 and 12)						13	14369.10
14. 100% Performance and Payment Bonds Cost						14	138.-
15. Estimated Total Cost (add lines 13 and 14)						15	14507.10

NOTE: The Estimated Total Cost includes all labor and materials for backfill, pavement replacement, chip seal, and traffic control necessary for the Project.

ARIZONA WATER COMPANY

COMMENCEMENT NOTICE

CONTRACTOR:

Mr. Michael Yound
Fann Environmental, LLC
6708 Corsair Avenue, Suite A
Prescott, AZ 86301

DATE: 4/7/15
DIVISION: CASA GRANDE
SYSTEM: WHITE TANK
W.A.: 1-5309

THIS IS YOUR NOTICE TO PROCEED WITH THE FOLLOWING PROJECT(S):

DESCRIPTION OF WORK:

Replace existing 16-inch ductile Iron fittings and valves on the chemical injection header at the Blue Horizons arsenic removal facility in Buckeye, Arizona. Construct in accordance with Arizona Water Company standard specifications and/or Drawing No. WT-0320.

PERFORMANCE AND PAYMENT BONDS REQUIRED: [X] Yes [ ] No

TOTAL DAYS ALLOWED: 40

COMPLETION DATE: 5/12/15

Prior to the start of construction, please call Ray Murrieta, Division Manager at 520-836-8785 to schedule a pre-construction meeting.

ARIZONA WATER COMPANY
Company

By [signature]
Title Vice President - Engineering

FANN ENVIRONMENTAL, LLC
Contractor *(type name)*

By
Title

AJH

AFH
W:\PROJECTS\CGWT\INSIDE\WA\ACTIVE WA\1-5309 MODIFY BLUE HORIZON ARF CHEMICAL INJECTION QUILL AND HEADER JPK\AGREEMENTS\CONTRACTS\E-3-18-2 FANN COMM NOTICE 1-5309 BH CHEM FEED.DOCX 1/15/09

ARIZONA WATER COMPANY

SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT: E-4-1

CONSTRUCTION SPECIFICATIONS: E-8-1

STANDARD SPECIFICATION DRAWINGS: E-9-1

4-1-2015

2007 EDITION WITH **2010** REVISIONS;
2012 GENERAL CONDITIONS OF CONTRACT

A copy of this entire Spec Book was sent out with Fann Environmental proposal package for WA 1-5309 Blue Horizon Chemical Injection on 4/7/15 ATW

LEGEND
Technical Services, Inc.
www.legend-group.com

17631 N. 25th Avenue • Phoenix, AZ 85023
P (602) 324-6100 • F (602) 324-6101

Ray Murrieta
Arizona Water Company - White Tanks 07-128
220 E. 2nd Street
Casa Grande, AZ85222

Project: Colilerts
Project Number: WT 07-128 4/27/15

Reported:
04/29/15 12:26

Analyte

DRAFT: 044-32501-5309 (5042369-01) Drinking Water (Grab) Sampled: 04/27/15 21:00 Received: 04/28/15 09:11

Analyte	Result	PQL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
			Legend Technical Services of Arizona, Inc.						
DRAFT: Microbiology									
E. coli	Absent		P/A	1	B5D0831	04/28/15 15:35	04/28/15 15:35	SM 9223B	
Total Coliforms	Absent		P/A	1	B5D0831	04/28/15 15:35	04/28/15 15:35	SM 9223B	

Sample Condition Upon Receipt:

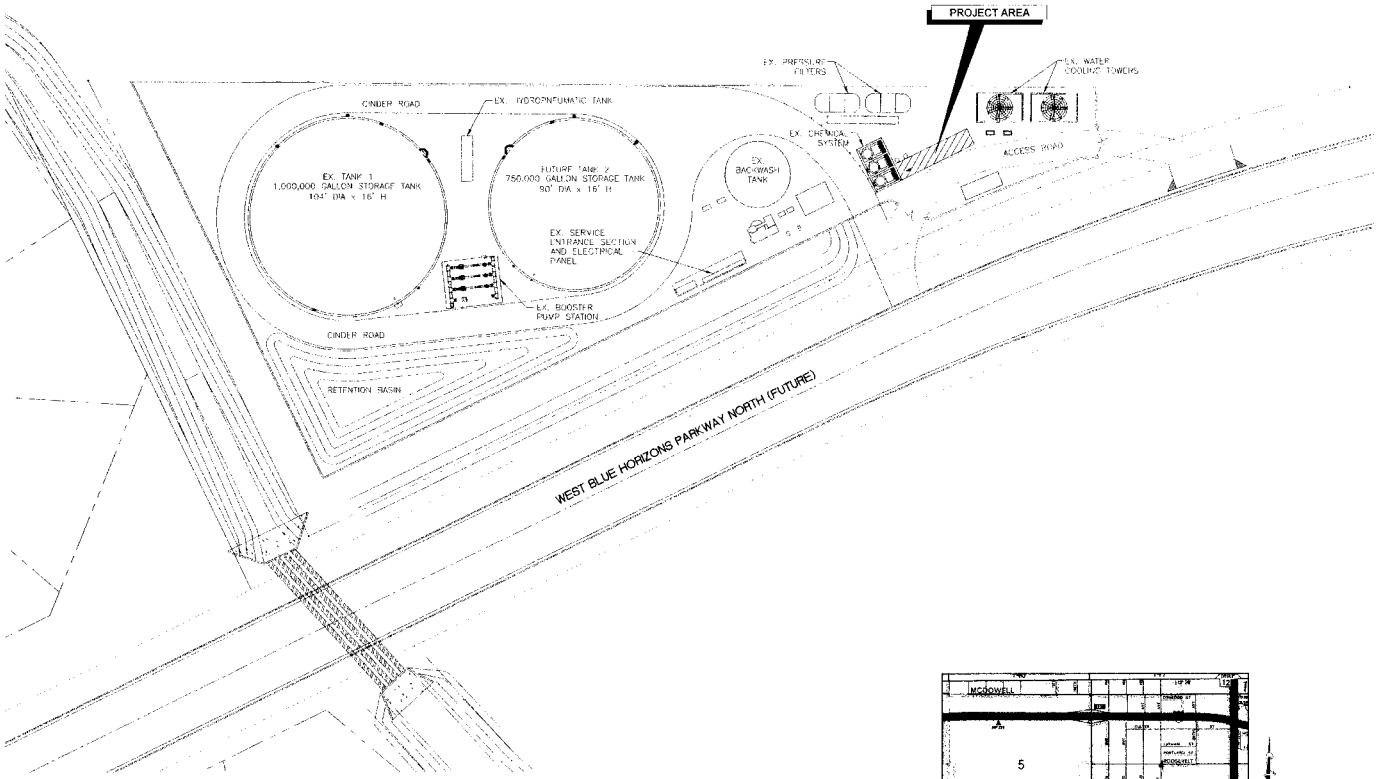
Temperature: 9.80 C
All samples were received in acceptable condition unless noted otherwise in the case narrative.

Case Narrative:

Holding Times: All holding times were met unless otherwise qualified.
QA/QC Criteria: All analyses met method requirements unless otherwise qualified.
Accreditations: AZ(PHX)0004, AZ(TUC)OOO4, AIHA#102982, CDC ELITE Member.
Accreditation is applicable only to the test methods specified on each scope of accreditation held by LEGEND.
Comments: There were no problems encountered during the processing of the samples, unless otherwise noted.
All samples were analyzed on a "wet" basis unless designated as "dry weight".

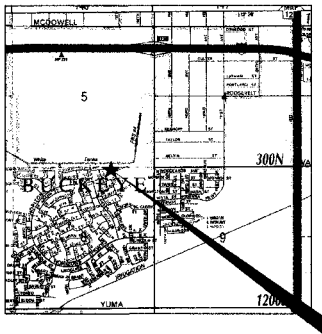
Verbal results via voicemail on 4/29/15 LT

Notes and Definitions



SITE PLAN

30' 15' 0' 30' 60'



VICINITY MAP

PROJECT LOCATION

The installation shown is to be installed in accordance with the Arizona Water Company standard specifications on file with the Arizona Department of Environmental Quality

Call Before You Dig
263-1100
1-800-STAKE-IT
(Outside Maricopa County)

P.A. No. 1-5309	F.C. No.
SYSTEM WHITE TANK	
LOCATION NE 1/4 SEC. 8, T. 1 N., R. 2 W.	
CAD FILE 2590	SCALE AS SHOWN
DATE 2/6/2015	DRAWN BY BWP

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

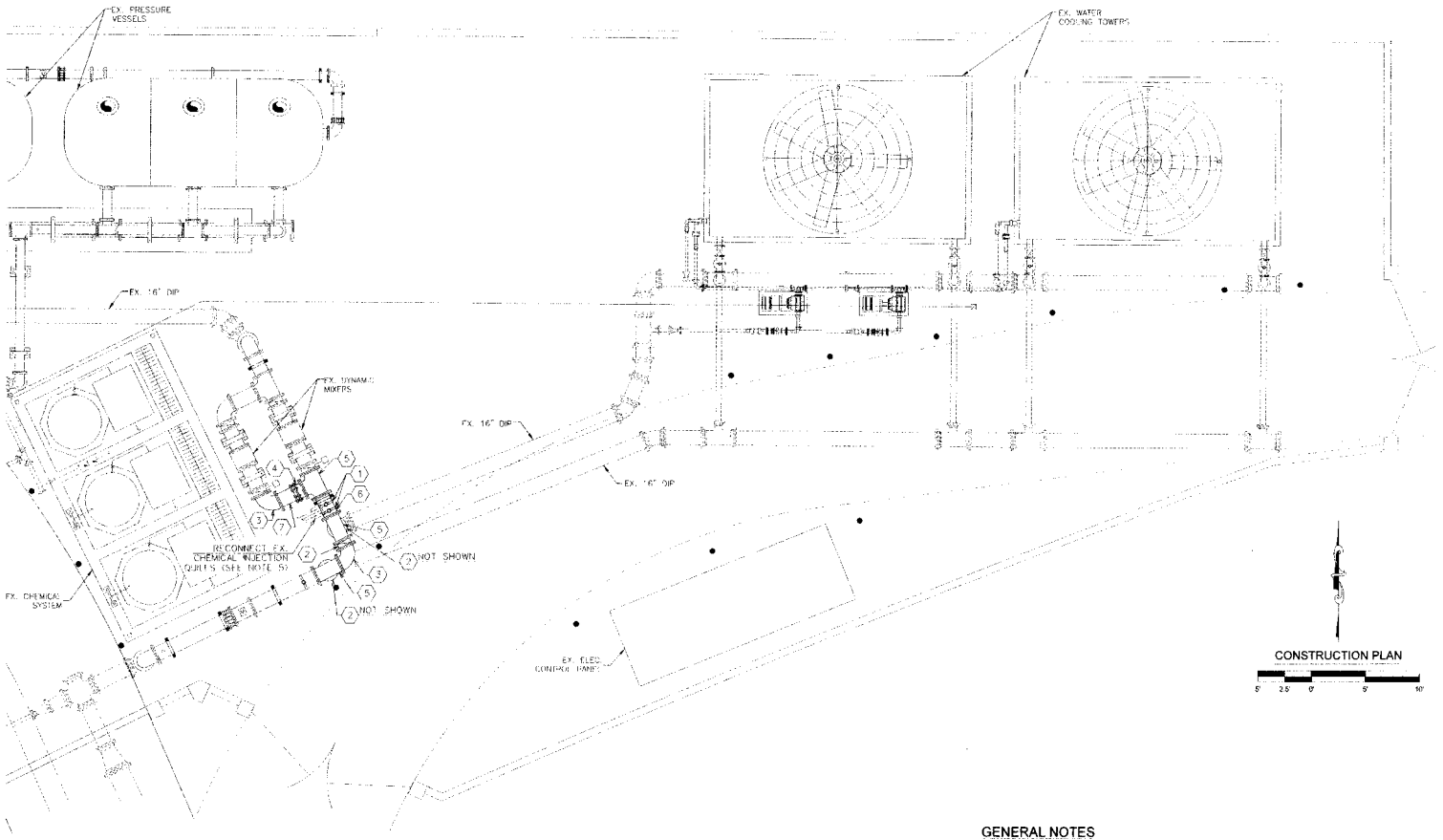
PROJECT DESC. REPLACE EX. 16" DUCTILE IRON FITTINGS AND VALVES W/ NEW 16" DUCTILE IRON FITTINGS AND VALVES ON THE CHEMICAL INJECTION HEADER AT THE BLUE HORIZON ARF.

PROJECT SHEET DESC. SITE PLAN

41046
JAMES T. WILSON
Expires 6/30/16

DWG. No.
WT-0320

SHEET 1 OF 3



	FITTINGS SCHEDULE	QUANTITY	SUPPLIED BY	INSTALLED BY
1	16"X10" DOUBLE STRAP SERVICE SADDLE AWWA I.P. THREAD	2	A.W.Co.	CONTR.
2	16" BUTTERFLY VALVE FLG.	3	A.W.Co.	CONTR.
3	16" 90° ELL FLG.	2	A.W.Co.	CONTR.
4	16" PUMAC IND. R.F.C.A.	1	A.W.Co.	CONTR.
5	16" TEE FLG.	3	A.W.Co.	CONTR.
6	16"X2'-0" D.I.P. SPOOL FLG.	1	A.W.Co.	CONTR.
7	16"X2'-4" D.I.P. SPOOL FLG.X.P.E.	1	A.W.Co.	CONTR.

GENERAL NOTES

1. NEW PIPING SHALL BE DISINFECTED IN ACCORDANCE WITH ADEQ ENGINEERING BULLETIN No. 8 BEFORE BEING PLACED INTO SERVICE.
2. ALL MATERIALS AND PRODUCTS USED IN WATER SYSTEM, INCLUDING SURFACE COATINGS & PAINTS, SHALL CONFORM TO NSF STANDARD 61 & CURRENT AWWA D102.
3. CONSTRUCTION MATERIALS USED IN WATER SYSTEM SHALL BE LEAD FREE AS PER A.A.C.R18-4-524 AND PBS 1-901143.
4. COAT EXTERIOR OF ALL NEW FITTINGS AND VALVES.

   PRE-COATING PREPARATION SSPC-SP6
   PRIME COAT TNEMEC SERIES 135 CHEMQUILD
   FINISH COAT: TNEMEC SERIES 73 ENDURASHIELD (COLOR: 04BR DESERT SAND)
   REFER TO TNEMEC PRODUCT DATA SHEETS FOR COATING APPLICATION INFORMATION.
5. REPLACE THE EXISTING UNISTRUT CHEMICAL INJECTOR SUPPORT SYSTEM WITH NEW FIBERGLASS UNISTRUT, UNISTRUT POST BASES AND STAINLESS STEEL HARDWARE ON 7'-0"X4'X2'-0" (WIDE) CONCRETE PAD.

The installation shown is to be installed in accordance with the Arizona Water Company Water Quality Standards and with the Arizona Department of Environmental Quality

Dial Before You Dig 263-1100 1-800-STAKE-IT

PROJECT NO.	1-5309
SYSTEM	WHITE TANK
LOCATION	NE 1/4 SEC. 8, T. 1 N., R. 2 W.
W.O.	2580
DATE	2/6/2015
SCALE	AS SHOWN
DRAWN BY	BWP
REVIEWED BY	

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

PROJECT WORK: REPLACE EX. 16" DUCTILE IRON FITTINGS AND VALVES W/ NEW 16" DUCTILE IRON FITTINGS AND VALVES ON THE CHEMICAL INJECTION HEADER AT THE BLUE HORIZON ARF.

PROJECT: PART 5300

CONSTRUCTION PLAN

Registered Professional Engineer (Civil) CERTIFICATE NO. 41046 JAMES T. WILSON Date Signed 2/6/15 ARIZONA, U.S.A.

Expires 6/30/16

DWG. NO.
WT-0320

SHEET 2 OF 3

E-8-1
CONSTRUCTION SPECIFICATIONS
FOR THE INSTALLATION OF WATER DISTRIBUTION SYSTEMS
DUCTILE IRON

DEFINITIONS

A. Company. The words "Company" or "Arizona Water Company" mean Arizona Water Company, and where applicable, any division of Arizona Water Company, whose principal place of business is located at 3805 North Black Canyon Highway, Phoenix, Arizona 85015-5351 (Post Office Box 29006, Phoenix, Arizona 85038-9006).

B. Company's Authorized Representative. The words "Company's Authorized Representative" mean any officer of the Company, and any of the Company's Engineers, any Division Manager or Superintendent of the Company and/or such other person(s) designated in writing as the "Company's Authorized Representative" by the President or any Vice President of the Company.

C. Contractor. The word "Contractor" means either an individual or other entity employed to do the work as shown on the Construction Drawings and as specified herein.

D. Construction Drawings. The words "Construction Drawings" mean plans prepared by or on behalf of Arizona Water Company.

E. Contract. The word "Contract" means the written document titled "Proposal/Contract" when such document has been signed by an officer or other authorized representative of both the Contractor and the Company.

(1.) GENERAL

All work is to be completed in a safe, workmanlike manner and in accordance with these Construction Specifications; any deviation therefrom must be approved in writing by the Company.

Installations must conform with the requirements of all governmental regulating agencies and the cost of conforming to such regulations must be included in the unit bid prices. Examples of such regulations, without attempting to be inclusive, are:

a. Special compaction and paving for street crossing.
b. Shoring when required because of the trench depth.
c. Closing a trench in those areas where no open trench is allowed overnight.
d. Barricading and traffic controls required.

(2.) LOCATION MARKING

Alignment stakes as required in the opinion of the Company shall be furnished by the Company to the Contractor and shall be set by the Company at agreed upon intervals and offsets. Under normal circumstances these will reference the pipeline location five feet (5') into the right-of-way measured from property pins. Grade stakes will be provided only when the Construction Drawings show a pipeline depth other than covered in these Specifications. It is the responsibility of the Contractor to preserve all survey work.

(3.) TRENCH EXCAVATION

The trench location is to be determined by the Construction Drawings.

FOR 8-INCH OR SMALLER PIPE: The depth of the trench prior to pipe laying shall be such that the finished pipeline shall have between thirty six inches (36") and forty two inches (42") of cover unless otherwise specified on the Construction Drawings.

FOR 12 INCH AND LARGER PIPE: The depth of the trench prior to pipe laying shall be such that the finished pipeline shall have between forty-eight inches (48") and sixty inches (60") of cover unless otherwise specified on the Construction Drawings.

The width of the trench at and below the level at the top of the pipe shall be a minimum of twelve inches (12") plus the outside diameter of the pipe barrel and a maximum of twenty-four inches (24") plus the outside diameter of the pipe barrel.

The bottom of the trench shall be accurately graded to provide a uniform bearing for each length of pipe for the full length of the pipe. If the native material on the trench bottom can be reasonably dug by hand, bell holes shall be dug for the joints so that the joints in no way support the pipe. When native materials such as rock are encountered during trenching that will not provide a uniform support for the pipe, the trench will be over-excavated an additional six inches (6") and suitable bedding material will be placed in the trench.

Bedding material will be placed by hand in four inch (4") lifts and compacted to ensure uniform compaction and to eliminate any voids under the pipe. When the space between the pipe and trench bottom varies, this must be backfilled and compacted in four-inch (4") lifts to the mid-section of the pipe.

Whenever the trench is over-excavated for whatever reason, the trench bottom will be brought up to the correct depth at the Contractor's expense using either method (a) or (b) as follows:

a. A.B.C. material shall be used and compacted to a uniform density of not less than 85% of the maximum density as determined by AASHTO T-99 method A and T-191.

b. Native material 100% of which will pass through a one and one-half inch (1-1/2") screen and at least 20% of which will pass through a number-8 screen shall be used and compacted to a uniform density of not less than 85% of the maximum density as determined by AASHTO T-99 method A and T-191.

(4.) MATERIALS TO BE PROVIDED BY CONTRACTOR

Unless otherwise specified on the Construction Drawings or in the Contract, the Contractor will supply all of the necessary materials which will become a permanent and integral part of the water distribution system, including concrete blocking, anchors, backfill material, paving material and supplies used during the prosecution of the work. All materials provided by the Contractor to construct the water distribution system must be NSF Standard 61 approved. All potable water pipes and fittings shall have NSF-PW seal. Construction materials used in the water system shall be lead free as defined in AAC R18-4-504 and R18-1-101. The Contractor will provide the following materials:

a. FIRE HYDRANTS: Mueller Super Centurion 250 Fire Hydrant, meets ANSI/AWWA C502 Standard, Model No. A-423, 5-1/4" main valve opening, three way, 6" Mechanical Joint Shoe, 1-1/2" pentagon operating nut, color - yellow, drain open, open direction - left, 4' or 4'-6" bury depending on application. For pumper and hose nozzle information see below.

(1) One - 4" Pumper Nozzle, NST and Two - 2-1/2" Hose Nozzles, NST. (These locations only: Ajo, Casa Grande, Coolidge and San Manuel.)

(2) One - 4-1/2" Pumper Nozzle, NST and Two - 2-1/2" Hose Nozzles, NST. (These locations only: Apache Junction, Arizona City, Lakeside, Oracle, Overgaard, Pinewood, Pinnacle, Sedona, Sierra Vista, White Tank, and Winkelman.)

(3) One - 4-1/2" Pumper Nozzle, NST and Two - 2-1/2" Hose Nozzles, NPT. (Bisbee only.)

(4) One - 3" Pumper Nozzle GA 6-350 (6 threads per inch, 3.50 pitch diameter) and Two - 2-1/2" Hose Nozzles, NPT (Miami only.)

(5) One - 3-1/2" Pumper Nozzle GA 6-41 (6 threads per inch, 4.11 pitch diameter) and Two - 2-1/2" Hose Nozzle, NST (Superior only.)

b. FITTINGS: Manufactured by Tyler or Union Crosses, Elbows, Tees, Cap, Reducer, Adapter, Plug, Ring Flange and Tapped Flange; Ductile Iron, Class 350, SSB, Cast Iron Cement Lined.

(1) Foster Adaptors for MJ, made by Infact Corporation. Available in size 4" to 16". Part No. 4" - 4FA-BC, 6" - 6FA-BC, 8" - 8FA-BC, 10" - 10FA-BC, 12" - 12FA-BC, 16" - 16FA-BC.

c. DETECTOR CHECK VALVE: Mueller/ Hersey EDC II, iron body, including 5/8" x 3/4" Trim Kit. Trim Kit Part No.: 4" - 282080, 6" - 282082, 8" - 282085, 10" - 282496.

d. GATE VALVES: Mueller Resilient Wedge Gate Valves, meets AWWA C509 specification, 250 psig. Non-rising stem, Part No. A 2360 sizes 4" through 12", Part No. A 2361 sizes 14" through 36", low zinc stems, epoxy coated inside and outside to meet the NSF 61 rating. The bonnet and stuffing box shall have 304 stainless steel bolts/nuts

e. TRACER WIRE and WARNING TAPE:

(1) TRACER WIRE: Shall be direct bury AWG #14 solid copper wire, Color: Blue.

(2) WARNING TAPE: Reef Industries, Standard Terra Tape in 3" widths. Color: Blue and imprinted 'Arizona Water Company'

f. AIR RELEASE VALVE: Crispin Model AR10 with 1" NPT inlet and 1/2" NPT outlet, cast iron body and top flange; with a 5/64" orifice with stainless steel valve sealing faces and BUNA-N rubber.

g. PRESSURE RELIEF VALVE: Watts 174A, Model M, 2" inlet, 2" outlet, Bronze Body, 30lb to 150lb. pressure range

h. MEGALUG: Mechanical Joint restraint made of ductile iron conforming to ASTM 536-80, 250 psi made by EBAA Iron, Inc., series 1100 or equal

i. METER BOXES:

(1) Concrete Box with a steel regular lid, Number 1 Tucson specification.

(2) Concrete Box with a steel regular lid, Number 2, 3, and 4 Phoenix specification.

j. PIPE, COPPER: Type K soft copper in 60 or 100-foot coils, per ASTM 988.

k. PIPE, DUCTILE IRON: Ductile Iron Pipe, Cement Lined, Push-on, conform to current ANSI/AWWA Specification A21.51/C151, Pressure Class 350 (sizes 4" through 12"), Pressure Class 250 (sizes 14" through 20"), or Pressure Class 200 for 24" through 36" pipe. Vendors:

(1) Pacific States Cast Iron Pipe Company
(2) Griffin Pipe
(3) United States Pipe and Foundry Company
(4) American Ductile Iron Pipe
(5) Clow Pipe (McWane, Inc.)

l. PIPE, PLASTIC: Plastic pipe, C-900 PVC per ANSI/AWWA C900, Class 150, sizes 6" through 12". NSF61 approved. Furnished in laying lengths of 20'. The barrel shall conform to the outside dimensions of steel pipe (IPS) or cast iron (CI) pipe equivalent and the wall thickness of dimension ratio (DR) 18.

m. POLYETHYLENE ENCASEMENT (Polywrap): For all pipeline and related fittings installed, EXCEPT for the Coolidge Division. Minimum 8 Mil and installed per AWWA C105/A21.5-93 and ASTM A-674-89. Manufactured by the Pacific States Cast Iron Pipe Company. The wrapping tape shall be minimum 10 mil vinyl tape. No duct tape shall be used.

n. COUPLING: Mueller, straight three part union, tested to meet ANSI/AWWA C800, H15403, conductive compression.

Mueller, H15428, straight coupling, conductive compression by male iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 2".

Mueller, H15451, straight coupling, conductive compression by female iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 2".

Viking Johnson brand, sold by Mueller: Maxifit Straight (2"-24"), MaxifitXtra Straight (4"-8") or MaxiStep Transition, tested to meet AWWA/ANSI C 219-91 specifications - certified to ISO 9001:1994 / Smith - Blair Quantum.

o. STOP, ANGLE METER, BALL: Mueller, valve, B24258, conductive compression by meter swivel nut, tested to meet ANSI/AWWA C800, size 5/8" x 3/4" x 3/4" for a 3/4" service or size 1" for a 1" service.

Mueller, valve, B24265, female pipe thread by meter swivel nut, tested to meet ANSI/AWWA C800, size 5/8" x 3/4" x 3/4" for a 3/4" service or size 1" for a 1" service

p. STOP, CORP: Mueller, ball valve, B25008, taper thread by conductive compression, tested to meet ANSI/AWWA C800 specification, sizes: 3/4", 1" and 2".

Mueller, ball valve, B25028, iron pipe thread by conductive compression, tested to meet ANSI/AWWA C800 specification. Sizes: 3/4", 1", and 2".

Mueller, 300 Ball Curb Valve, B-25122, taper thread by conductive compression, tested to meet ANSI/AWWA C800 specifications, size: 2". (2" service)

q. STOP, CURB: Orisealvalve, H10291, iron pipe thread by iron pipe thread, quarter turn check, brass, tested to 300 psi working pressure, tested to meet ANSI/AWWA C800 specification size: 2".

Mueller, B20283, Mueller 300 ball curb valve, female iron pipe by female iron pipe, quarter turn check, tested to meet ANSI/AWWA C800 specification. Size: 2". (Blow off E 9.8.1).

r. TAPPING SADDLE: Smith Blair, Cast Bronze ASTM B584 85-5-5-5, double strap iron pipe threads. Models 321 and 323. Washers are silicon bronze, ASTM-B36. Gaskets are grade 60 Buna N, or Mueller bronze double strap service saddle, BR 2 B series, cast bronze, ASTM-B585, 85-5-5-5, or H16084, 200 psig, meets ANSI/AWWA C800.

s. TAPPING SLEEVE: Mueller H304 Stainless Steel Tapping Sleeve, JCM 432 18-8 type 304 Stainless Steel Tapping Sleeve, Romac "SST" Type 304 Stainless Steel Tapping Sleeve or CASCADE-style CST-EX stainless steel pressure-rated tapping sleeve

t. TAPPING VALVE: Mueller Resilient Wedge Tapping valve, Catalog Number T-2360-16, Class 125, sizes 4" through 12"; T-2361-16, Class 125, sizes 14" to 36" all with Type 304 stainless steel fasteners; bypass valves are required on 18" - 36" valves flange by mechanical joint per ANSI/AWWA C111, iron wedge, non-rising stem. Epoxy coated interior/exterior per ANSI/AWWA C550 for NSF 61 compliance 250 PSI range for valves 4" to 12" 150 PSI range for valves 14" to 36"

u. U BRANCH: Mueller, H15364, 1" male iron pipe by 3/4" male iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 1" x 3/4" x 13-1/2" straight line.

v. VALVE BOXES: Valve Box with Cover, adjustable, Tyler 562-A or equal, made of cast iron.

w. VAULTS: Utility Vault Company, Chandler, AZ

(1) 4484-WA concrete vault with a 3660 aluminum double torsion door with a recessed padlock hasp, two - 18" x 24" center knockouts.

(2) 575-WA concrete vault with a 4874 aluminum double torsion door with a recessed padlock hasp, two - 18" x 24" center knock outs and adjustable frame.

(3) 612-5X-WA concrete vault with a 4874 aluminum double torsion door with a recessed padlock hasp, two - 18" x 24" center knockouts.

x. VALVE, METER: Mueller, B24265-3, Mueller 300 ball angle meter valve, female iron pipe by meter nut, quarter turn check, lock wing, tested to meet ANSI/AWWA C800 specification. Size: 1".

Mueller, B25170, Mueller 300 ball straight valve, conductive compression by female iron pipe, quarter turn check, lock wing, tested to meet ANSI/AWWA C800 specification. Size: 1"

y. YOKES, METER: Relocator type copper meter yoke with horizontal inlet and outlet and meter thread ends, B-4118, with lock wing Mueller 300 angle ball valve, full port, sizes: 1" x 12", 5/8" x 3/4" x 7", 5/8" x 3/4" x 9"

Mueller, 2" copper meter yoke with horizontal inlet and outlet and female iron pipe threads, B2423-99000, with lock wing Mueller 300 ball angle meter valves on inlet and outlet risers. Raised 1" by-pass with lock wing Mueller 300 ball valve.

The Contractor also will be required to provide the following materials, the cost of which will be included in its unit bid price:

All material and concrete for thrust blocks, other anchors, reinforcing steel; all gravel, crushed stone, A.B.C., earth, sand, or screened material which may be required; all material for bracing and shoring trenches and for construction of forms; all barricades and traffic control equipment; all material for paving replacement and any water used for compaction of backfill.

(5.) INSTALLATION OF MATERIALS

All materials are to be installed in accordance with manufacturers recommendations unless otherwise directed by these Specifications.

All pipe, fittings and valves shall be laid true to the lines, grades and locations established by the Specifications and the Construction Drawings.

The ends and inside of the pipe shall be thoroughly cleaned and inspected for damage. No damaged materials shall be installed in the water distribution system.

Whenever the work ceases for any reason, all open pipeline ends shall be tightly plugged by the Contractor. Plugs shall be watertight and approved by the Company.

Concrete thrust blocks of the sizes required by the plans and specifications are to be provided at all valves, changes in direction or size, or at any other point where an unbalanced thrust due to water pressure would exist. Thrust blocks are to be formed to prevent any concrete from spilling over or into a joint.

Trench curves as shown on the Construction Drawings may be made without fittings when using push on joint pipe up to twelve inches (12") in diameter, if the deflection of the pipe does not exceed five degrees (5°) or nineteen inches (19") per eighteen-foot (18') length of pipe. The minimum radius of such curves will be two hundred five feet (205').

Prior to construction, the appropriate agency(ies) will be notified as required by the permit(s).

It shall be the Contractor's responsibility to uncover all existing water lines being connected to, and to verify the location, depth and size of pipe before any construction begins.

Any construction performed without the knowledge of the duly authorized representative is liable for removal and replacement at the Contractor's expense.

All fire hydrants, frames, covers and valve boxes, etc. shall be adjusted to finished grade prior to the placing of the asphalt concrete surface course by the Contractor (where applicable).

Air release valves shall be installed at water system high points per Standard Detail E-9-8-2/E-9-8-3.

All water services shall be set a minimum of two feet (2') on the customer's property, preferably within the P.U.E. and not within right-of-way.

Unless otherwise specified on the construction drawings, all water mains shall be installed five feet (5') from the property line inside the right-of-way or easement.

Water valves shall be spaced not more than five hundred feet (500') in commercial districts and not more than eight hundred feet (800') in other districts. Variations may be required for transmission mains or special applications.

Installation of water line casing shall be per Standard Specification E-9-24-1.

Tracer Wire and Warning Tape are to be installed on all mains, tees, crosses, ells and fire hydrant laterals. They will not be installed on service lines. The tracer wire will be installed on the water main 45 degrees from the vertical centerline of the pipe and shall be taped to the fittings directly and on the main every 10 feet using a minimum 10 mil vinyl tape. The tracer wire shall be placed between the valve riser and box with a minimum of 12" of wire inside. The warning tape shall be installed a minimum of two feet below the surface, being measured from finish grade, directly over the center of the pipe. Any splices in the tracer wire shall be joined using waterproof connectors. Any splices in the warning tape shall be joined using minimum 10 mil vinyl tape. The tracer wire shall be tested for continuity after backfill and compaction, but before paving. Any detected damages to the wire shall be repaired before paving will be allowed.

(6.) BACKFILL OF WATER MAIN TRENCHES

Backfill of any excavation shall conform to the requirements of any of the governmental agencies having jurisdiction over the location. If no governmental agency having such jurisdiction specifies backfill or compaction requirements, and no special requirements are shown on the Construction Drawings, the procedure set forth in this section will apply for water line trenches.

The bedding material above the pipe and backfill material shall be compacted to a minimum of 70% compaction within a utility easement and 80% compaction within a right-of-way as determined by AASHTO T-99, method 4 and T-191. If water settling is used for compaction, it is the responsibility of the Contractor to prevent the pipe from floating.

The bedding material shall be either native material, 100% of which will pass through a one and one-half inch (1-1/2") screen and at least 20% of which will pass through a number-8 screen, or imported material which conforms to M.A.G. specifications for A.B.C. or type-B select materials. Bedding material shall be used below and around the pipe and a minimum of twelve inches (12") above the pipe. Shade and bedding materials to be mechanically compacted prior to remainder of trench backfill.

The remainder of the trench shall be backfilled with native or imported material which shall be of sound earthen material free from broken concrete, wood, broken pavement, or other unsuitable substances. Except as otherwise specified, backfill may be material containing no pieces larger than six inches (6") in greatest dimension.

Where settlement occurs, additional backfill material shall be placed and compacted and the trench shall be brought to final grade.

(7.) HYDROSTATIC TESTING OF COMPLETED PIPELINES

Hydrostatic testing of water pipelines will be completed before the new system is connected into the existing water system so that all testing can be done against all new materials.

The completed section of water pipeline to be tested shall be slowly filled with water with care being taken to expel air from the pipe. If necessary, the pipe will be tapped at high points to vent air.

The Contractor shall provide all equipment and labor necessary to accomplish this testing and the price shall be included in the unit prices. The Contractor shall notify the Company in advance of the testing so that the Company can schedule a duly authorized representative to be at the site during testing. The Contractor at its own expense, shall make any necessary repairs to the system being tested in order to cause the section being tested to meet the test limits set below. The Contractor may request authorization of the Company to connect the new pipelines to the existing system prior to completion of pressure testing when, in the Company's sole opinion and judgment, conditions warrant such connection.

The Contractor shall assume all responsibility to complete pressure testing to Company's specifications after such connections, including, but not limited to, isolation of the new pipelines from the existing system, if necessary.

Connections prior to completion of pressure testing shall not be made unless prior Company authorization has been obtained, and any extra expenses resulting from such connections shall be the sole responsibility of the Contractor.

Leakage tests will be for a period of two hours at 200 psi at the point of lowest elevation. Leakage may not exceed 0.1 gallons per hour per one thousand feet (1,000') of pipe per inch of diameter. If any utilities are not installed, a second pressure test is required.

(8.) STERILIZATION AND FLUSHING OF COMPLETED WATER PIPELINES

Sterilization and flushing will conform to recommendations of Arizona State Department of Health Services Engineering Bulletin Number 8, latest edition, or any future Arizona Department of Environmental Quality bulletins. Contractor to follow all conditions of any discharge permit.

(9.) NO OTHER UTILITIES ALLOWED IN OR NEAR WATER PIPELINE TRENCHES

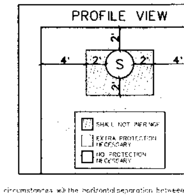
No other utility installations will be permitted in the water pipeline trench or within five feet (5') of the Company's water pipeline when running parallel to the water pipelines.

(10.) PROTECTION OF WATER MAINS NEAR SEWERS

In order to protect water mains from contamination by sewers, the installation of the water mains must conform to the following requirements:

a. Horizontal - When water lines and sewers are laid parallel with each other, the horizontal distance between them shall not be less than six feet (6'). Each line shall be laid on undisturbed or bedded material in a separate trench. Where conditions prevent the minimum horizontal separation set forth above, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip joint ductile iron pipe if joint restraint is provided, or encasing both water and sewer main in concrete. See AWC Standard Detail E-9-30-1 and E-9-30-2.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department. Refer to the diagram below for clarification.



Under no circumstances will the horizontal separation between sewer mains and water mains be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main.

b. Vertical - When a water main is parallel with or crosses a sewer main within two feet (2') above the sewer or greater than two feet (2') below the sewer, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip joint ductile iron pipe if joint restraint is provided, or encasing both water and sewer main in concrete. See AWC Standard Detail E-9-30-1 and E-9-30-2.

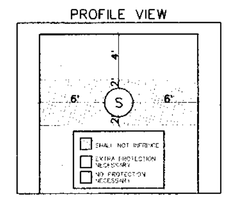
The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department.

Under no circumstances will the vertical separation of a sewer main installed above a water main be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main. Refer to the diagram above for clarification.

c. When unusual conditions such as, but not limited to, highway or bridge crossings prevent the water and sewer main separations required from being met, the appropriate state and/or county health department will review and may approve requests for authorization to use alternate construction techniques, materials and joints on a case by case basis.

d. No water pipe shall pass through or come into contact with any part of a sewer manhole. The minimum horizontal separation between water mains and manholes shall be six feet (6'), measured from the center of the manhole.

e. The minimum separation between force mains or pressure sewers and water mains shall be two feet (2') vertically and six feet (6') horizontally under all conditions. Where a sewer force main crosses above, or less than six feet (6') below, a water line, the sewer main shall be encased in at least six inches (6") of concrete for ten feet (10') on either side of the water main. Refer to the diagram below for clarification.



f. Sewer mains (gravity, pressure, force) shall be kept a minimum of fifty feet (50') from drinking water wells unless the following conditions are met:

1. Water main pipe, pressure tested in place to 50 psi without excessive leakage may be used for gravity sewers at distances greater than twenty feet (20') from drinking water wells.

2. Water main pipe, pressure tested in place to 150 psi without excessive leakage, may be used for pressure sewers and force mains at distances greater than twenty feet (20') from drinking water wells.

g. No septic tank/disposal field system shall be constructed within one hundred feet (100') of a drinking water well.

h. All distances are measured perpendicularly from the outside of the sewer main to the outside of the water main. These separation requirements do not apply to building plumbing or individual house service connections.

i. Use Mechanical Joint ductile iron pipe with Megalug thrust restraints a minimum of ten (10') feet on each side of a sewer or storm drain crossing.

(11.) COMPACTION

When crossing existing water mains a minimum of 95% compaction is required to the bottom of existing mains.

Arizona Water Company requires that no slurry be permitted to contact existing cement/asbestos or ductile iron pipes, unless authorized by the company. Slurry may be poured in the bottom of the sewer trench stopping three inches (3") below the existing water main. The backfill used around the main should be AB in sufficient depth to prevent slurry from contacting existing main.

(12.) WATER MAIN MATERIAL SPECIFICATIONS

Ductile iron pipe (flush on type) minimum class 350, cement lined and conform to AWWA C151.

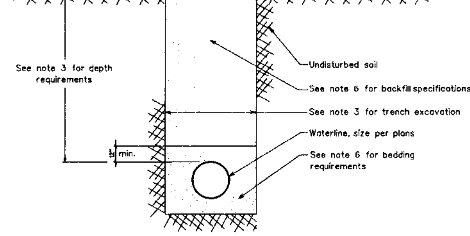
All main line valves shall conform to AWWA C509 with a minimum working pressure of 200 psi.

All cast iron fittings to be cement lined in accordance with AWWA C104 and shall conform to AWWA C110 with a minimum working pressure of 250 psi (Except for the Coolidge System - See Note 4).

Maximum joint deflection for 6" mechanical joint ductile iron pipe is seven degrees, seven minutes (7° 7') or twenty-seven inches (27") per eighteen-foot (18') length pipe, for a maximum curve of one hundred forty five feet (145').

Maximum joint deflection for 8" and 12" mechanical joint ductile iron pipe is five degrees, twenty-one minutes (5° 21') or twenty inches (20") per eighteen-foot (18') length pipe, for a maximum curve of one hundred ninety five feet (195').

Maximum joint deflection for 6", 8" and 12" push-on joint ductile iron pipe is five degrees (5°) or nineteen inches (19") per eighteen foot (18') length pipe for a maximum curve of two hundred five feet (205').



TYPICAL TRENCH DETAIL
Per MAG Detail 601, 601.4.2, 601.4.6

The installation shown is to be installed in accordance with the Arizona Water Company standard specifications on file with the Arizona Department of Environmental Quality

CALL TWO WORKING DAYS BEFORE YOU DIG
263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

W.R. NO.	1-5309
SYSTEM	WHITE TANK
LEGAL DESC.	NE 1/4 SEC. 8, T. 1 N., R. 2 W.
TAX DIST.	2590
DATE	2/6/2015
SCALE	AS SHOWN
DRAWN BY	BWP

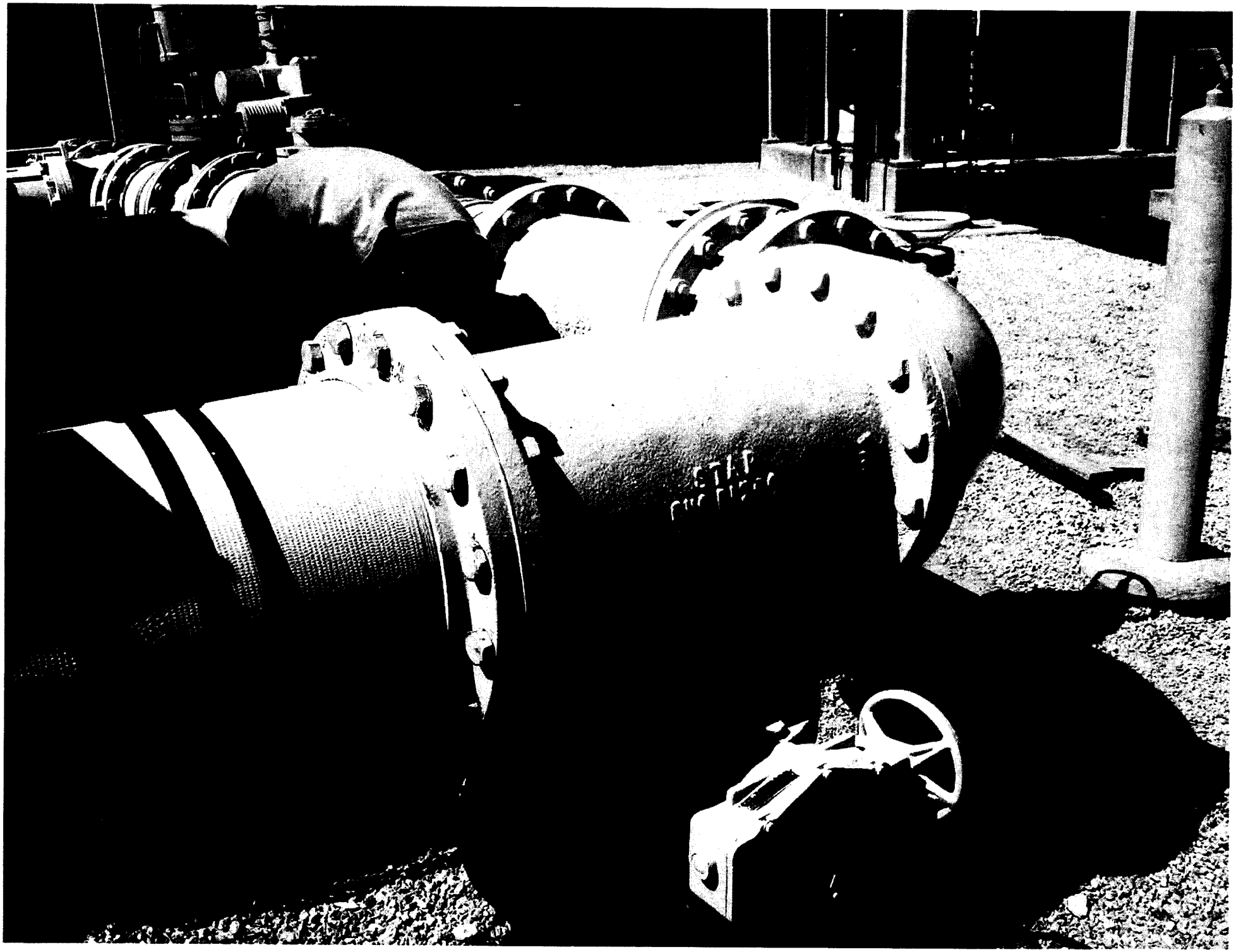
ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

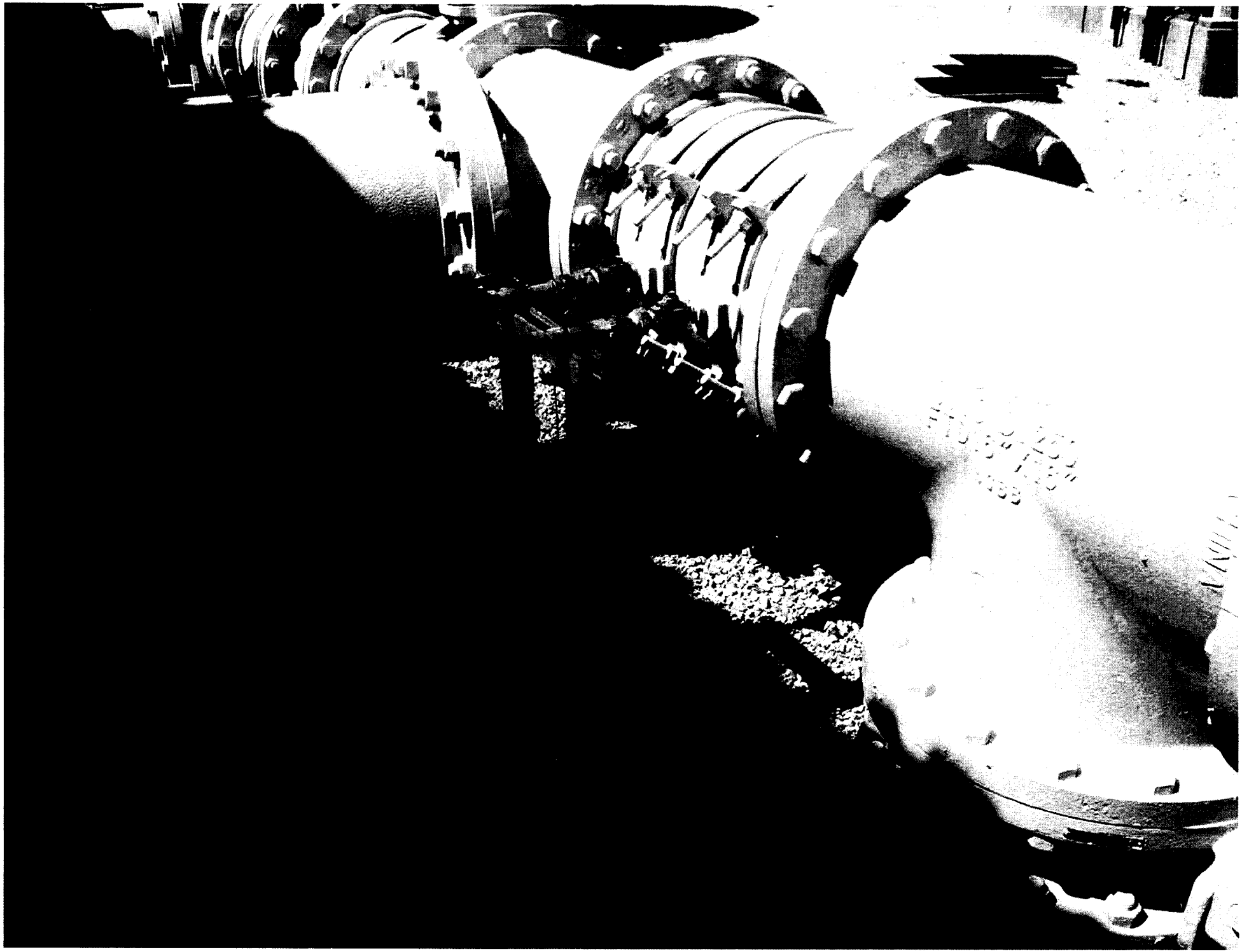
PROJECT DESC: REPLACE EX. 16" DUCTILE IRON FITTINGS AND VALVES W/ NEW 16" DUCTILE IRON FITTINGS AND VALVES ON THE CHEMICAL INJECTION HEADER AT THE BLUE HORIZON ARF.

PROJECT SHEET DESC: AWC NOTES

JAMES T. WILSON 41046 ARIZONA, U.S.A. Expires 6/30/16

DWG. NO. WT-0320
SHEET 3 OF 3





ARIZONA WATER COMPANY

CONSTRUCTION PLACED IN SERVICE NOTICE

WORK AUTHORIZATION NO.: 1-5309

DIVISION: WT/CG

DATE PLACED IN SERVICE: 4 | 21 | 15

CONTRACT NO:

FOR PURPOSES OF *MODIFIED ACCELERATED COST RECOVERY SYSTEM*, AN ASSET IS "PLACED IN SERVICE" WHEN IT IS IN A CONDITION OR STATE OF READINESS AND AVAILABILITY FOR A SPECIFICALLY ASSIGNED FUNCTION, WHETHER IT BE FOR USE IN A TRADE OR BUSINESS, OR FOR THE PRODUCTION OF INCOME.

I CERTIFY THAT THE ASSET(S) CONSTRUCTED PURSUANT TO THE PROVISIONS OF THE ABOVE-REFERENCED WORK AUTHORIZATION ARE READY FOR SERVICE AS OF THE DATE SHOWN ABOVE.

Division Manager or Operations Superintendent
(signature)

5-29-15
Date

SUBMIT ORIGINAL TO ACCOUNTING DEPARTMENT

A-1-3-1
FKS 11/24/11

Western Group Rate Case

Exhibit FKS-1

5360 BAE Tank

ARIZONA WATER COMPANY
WORK AUTHORIZATION

W.A. NUMBER: 1-5360
P.E. NUMBER:
BUDGET ITEM NO.: Special No. 26
SHEET NO.: 1 of 2

SYSTEM:	WHITE TANK	RETENTION REQUIRED:	☐ YES ☑ NO
DIVISION:	CASA GRANDE	WORK TO START BY:	UPON AUTHORIZATION
RESPONSIBLE PERSON:	TED MILLSPAUGH	WORK TO BE FINISHED BY:	WITHIN 30 DAYS
TAX CODE:			

DESCRIPTION OF WORK:

Replace the interior ladder and construct a 12-inch overflow to replace a 6-inch overflow line at the Beautiful Arizona Estates (BAE) water storage tank in the White Tank water system.

FACTORS JUSTIFYING WORK:

The storage tank interior ladder failed and requires replacement. A storage tank interior ladder is required to perform routine tank inspections and maintenance. The existing 6-inch overflow is undersized due to increased production capacity in the White Tank water system. Constructing a 12-inch overflow line is required to comply with Arizona Department of Environmental Quality Bulletin No. 10 requirements and to prevent over pressurizing the tank. The BAE tank provides 30% of the storage capacity to the Northern portion of the White Tank water system.

COST ESTIMATE		AUTHORIZATION	DATE
COST OF WORK:		PREPARED BY: Mario Mendez	
MATERIAL	0		
LABOR	2,200	REVIEWED FOR ESMT/ROW VERIFICATION: Charles Briggs	
CONTRACT PORTION	15,009		
OVERHEAD	2,100	REVIEWED BY: Ted Millspaugh	
TOTAL AUTHORIZED EXPENDITURES CHARGEABLE TO THIS W.A.	$ 19,309		
FUNDS RECEIVED:		APPROVED BY ENGINEERING: Fredrick K. Schneider	
CONTRIBUTIONS RECEIVED	0		
REFUNDABLE ADVANCES RECEIVED	0	APPROVED BY FINANCE: Joseph D. Harris	
TOTAL CONTRIBUTIONS/ADVANCES	0		
NET COMPANY CASH REQUIRED	$ 19,309	SPECIAL ITEM EXCEEDING $10,000; AUTHORIZED BY PRESIDENT: William M. Garfield	
		SPECIAL ITEM EXCEEDING $10,000; AUTHORIZED BY CHAIRMAN: M. L. Whitehead	

COMMENTS:

Transfer $19,309 from WA 1-5308 Camelback Main to fund this project.

CONSTRUCTION RELEASE:

AFH

ARIZONA WATER COMPANY

WORK AUTHORIZATION - DETAIL SHEET

W.A. NUMBER: 1-5360
P.E. NUMBER:
BUDGET ITEM NO.: Special No. 26
SHEET NO. 2 of 3

RETIREMENT PROPERTY UNITS	PLANT PROPERTY ACCOUNT	UNIT DESCRIPTION	QUANTITY	YEAR INSTALLED AND W.A. NUMBER
	342	Interior Ladder	1	
	342	6-inch Overflow	1	

PROJECT DESCRIPTION

Replace the interior ladder and construct a 12-inch overflow to replace a 6-inch overflow line at the Beautiful Arizona Estates (BAE) water storage tank in the White Tank water system.

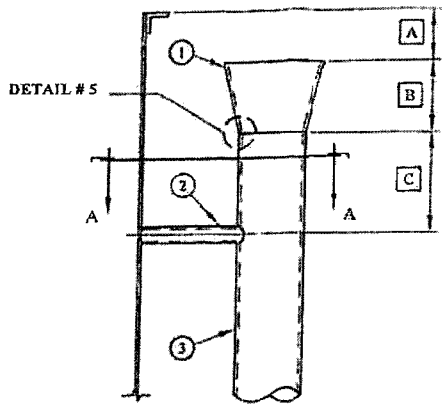
	DESCRIPTION	PLANT PROP ACCT	QUANTITY	UNIT COST	TOTAL
CONTRACT WORK	Replace ladder	342	1	$ 5,469.23	$ 5,469
	Install new 12-inch steel overflow	342	1	9,539.58	9,540
	SERVICE CONNECTIONS COMPLETE: DOUBLE-LONG	345			
	SERVICE CONNECTIONS COMPLETE: DOUBLE-SHORT	345			
	SERVICE CONNECTIONS COMPLETE: SINGLE-LONG	345			
	SERVICE CONNECTIONS COMPLETE: SINGLE-SHORT	345			
TOTAL CONTRACT WORK					$ 15,009
MATERIALS					
	SERVICE CONNECTIONS: DOUBLE-LONG	345			
	SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	SERVICE CONNECTIONS: SINGLE-LONG	345			
	SERVICE CONNECTIONS: SINGLE-SHORT	345			
	METERS	346			
TOTAL MATERIALS					$ -
LABOR	Engineering design and management	342	20	$ 55.00	$ 1,100
	TESTING FEE				
	PERMIT FEE				
	SURVEY FEE				
	FIELD INSPECTION	342	20	55.00	1,100
	INSTALL SERVICE CONNECTIONS: DOUBLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-SHORT	345			
TOTAL LABOR					$ 2,200
SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR					$ 17,209
OVERHEAD					2,100
TOTAL	REFUNDABLE PORTION ☐	NON-REFUNDABLE PORTION ☐		COST ESTIMATE	$ 19,309

AFH

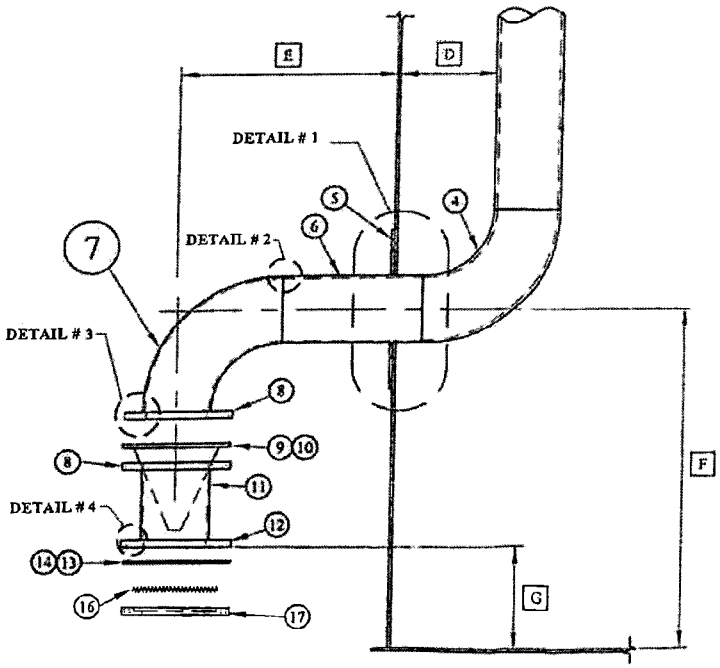
(11)

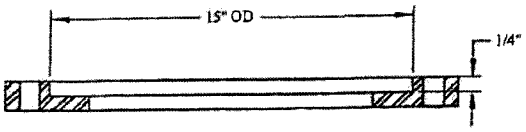
12" INSIDE OVERFLOW

A	8"	E	4'- 4"
B	1'- 2"	F	4'- 3"
C	1'- 0"	G	1'- 6"
D	1'- 2 5/8"		



1. 1 @ 16" x 12" STD # CONCENTRIC REDUCER
2. 1 @ 1 1/2" STD# x 1'- 2 5/8"
3. 1 @ 12" STD# x 10'- 3 1/2"
4. 1 @ 12" STD.# L.R. 90°
5. 1 @ 1/4" x 12 15/16" ID x 27" OD (ROLL TO 50' Ø)
6. 1 @ 12" STD# x 3'- 7 5/16"
7. 1 @ 12" STD# S.R. 90°
8. 2 @ 1/2" x 12" ID x 19" OD
   w/ 12 @ 1" Ø HOLES ON A 17" B.C.
9. 1 @ 12" SERIES 37 TIDEFLEX VALVE FOR 12" I.D. PIPE
   (NO BACK PRESSURE)
10. 12 @ 7/8" x 2 1/2" A307B ZINC PLATE BOLTS
    12 @ 7/8" A307B ZINC PLATE NUTS
11. 1 @ 12" STD# x 1'- 7"
12. 1 @ 1/2" x 12" ID x 19" OD
    w/ 4 @ 7/8" Ø HOLES ON A 17" B.C.
13. 1 @ 1/8" x 12" ID x 19" OD
    w/ 4 @ 7/8" Ø HOLES ON A 17" B.C.
    BLACK NEOPRENE GASKET
14. 4 @ 3/4" x 2" A307B ZINC PLATE BOLTS
    4 @ 3/4" A307B ZINC PLATE NUTS
15. SCREEN OMITTED
16. 1 @ 3/4" # 9 FLAT EXPANDED METAL x 14" OD
    PAINT EXPANDED METAL WITH THE SAME MATERIAL AS THE INTERIOR OF THE TANK.
17. 1 @ 1/2" x 12" ID x 19" OD
    w/ 4 @ 7/8" Ø HOLES ON A 17" B.C.
    FLANGE TO BE MACHINED AS SHOWN





ARIZONA WATER COMPANY

White Tank Division
220 E. 2nd Street
Casa Grande, AZ 85122 PH: 520-836-8785

PROPOSAL/CONTRACT

CONTRACTOR: MMI TANK AND INDUSTRIAL SERVICES	SYSTEM: WHITE TANK
ADDRESS: 3240 S. 37TH AVENUE	W.A. No(s):
CITY ST ZIP: PHOENIX, AZ 85009	BID DUE DATE: October 22, 2013

CONTRACTOR SUBMITS this PROPOSAL/CONTRACT to ARIZONA WATER COMPANY, an Arizona corporation (the "Company"), to perform the work and complete the project described on Page 2 (the "Project"), as an independent prime contractor.

1. Contractor certifies that it has a complete copy of, and has read, understands and accepts, the Company's General Conditions of Contract, and the Company's Construction Specifications and Standard Specification Drawings, (the "Specifications"), all of which are attached hereto. Contractor has examined the specific plans and related construction drawings for the Project (the "Drawings"), copies of which are also attached hereto. The General Conditions of Contract, Specifications and Drawings are incorporated into this Proposal/Contract. Contractor affirms that all work and materials to be furnished or purchased for the Project will be in strict conformance with the General Conditions of Contract, Specifications and Drawings.
2. Contractor represents and warrants that it has satisfied and complied with the provisions of Section 6, Contractor Understands Work and Working Conditions, of the General Conditions of Contract prior to submitting this Proposal/Contract.
3. Contractor represents that this Proposal/Contract is fair and honest in all respects, is submitted in good faith and is not submitted in collusion with any other company, entity or person.
4. Contractor acknowledges that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work.
5. Prior to the commencement of work, Contractor will submit to the Company a list of all materials to be used in the Project. The materials list will include the manufacturer, part number, price and quantity included in this Proposal/Contract.
6. Contractor will furnish all labor, tools, equipment and materials required to complete the Project according to the General Conditions of Contract, Specifications and Drawings. No materials purchased by Contractor to be incorporated into the Project are subject to tax at the time of purchase and Contractor will not charge the Company for any such tax. Contractor will pay the applicable transaction privilege tax (the "Contracting Tax") on the Project after Contractor receives payment of the final Project invoice from the Company. The cost of materials incorporated into the Project which are exempt by Arizona Revised State Statues ("A.R.S.") from the Contracting Tax, for example, pipes or valves having a diameter of four (4) inches or larger, including equipment, fittings and any other related part that is used in operating the pipes or valves (A.R.S. §42-5061 B.6.), will not be included in the total cost of the labor and materials upon which the Contracting Tax is computed. Contractor retains full liability and obligation to pay the Contracting Tax and will defend and indemnify the Company against any demand or obligation to pay the Contracting Tax.
7. Contractor will maintain detailed accounting records of all materials purchased and incorporated into the Project. Such records will include all supporting original vendor invoices for all materials purchased. Following completion of the Project, Contractor will submit an itemized accounting to the Company which will include all supporting original vendor invoices and satisfactory evidence of payment thereof. The Company will not pay Contractor for materials not actually incorporated into the Project, and the disposition of such materials will remain Contractor's responsibility.
8. The Estimated Total Cost of the Project, shown on Page 2, is based on estimated labor and material quantities to be furnished. It includes an estimate of the Contracting Tax and the cost of the required Performance and Payment Bonds. Contractor will not cancel, modify or withdraw this Proposal/Contract during a ninety-day (90) period commencing on the Bid Due Date. The Company may accept this Proposal/Contract by signing and mailing, or otherwise delivering, a copy hereof to Contractor during such ninety-day (90) period. If the Company does not accept this Proposal/Contract during such ninety-day (90) period, Contractor may cancel this Proposal/Contract by giving written notice of cancellation to the Company.
9. Prior to the commencement of work, Contractor will provide the Company with a detailed construction schedule, in either Gantt or CPM form, identifying all tasks to be performed from the date of the written Commencement Notice through completion of the Project, including testing, training of Company Personnel and final Project invoicing. Contractor will provide the Company with a copy of such construction schedule documenting the progress of work on the Project at least monthly.
10. Contractor will not commence work on the Project until the Company gives Contractor a written Commencement Notice. Contractor will complete the Project within 60 calendar days after the Commencement Notice is issued.
11. Following the Company's written notice of satisfactory completion of the Project, and upon receipt of the final Project invoice from Contractor, the Company shall pay Contractor the actual total cost of the Project, which will be calculated as shown on Page 2, except that actual labor and material quantities installed/constructed will be substituted for the estimated labor and materials quantities and the Contracting Tax will be recalculated based on such actual labor and materials quantities.
12. The amount of applicable liquidated damages for Contractor's failure to deliver or perform within the time limit shown in Paragraph 10 may be deducted from the Company's payment of the final Project invoice. This provision shall not limit the Company's ability to terminate this Proposal/Contract for Contractor's unsatisfactory performance or failure to perform as provided in the General Conditions of Contract, Specifications or Drawings, or in this Proposal/Contract.

SPECIAL CONDITIONS:

CONTRACTOR	PROPOSAL/CONTRACT ACCEPTED:
MMI TANK AND INDUSTRIAL SERVICES	*ARIZONA WATER COMPANY*
By: Don M	By: [signature]
Print Name: DON MARMON	Print Name: Fredrick K. Schneider, PE
Title: COATINGS MANAGER	Title: Vice President - Engineering
Date: 10/22/13	Date: 11-4-2013

AFH

E-3-11-5,6 MMI Tank Proposal Contract WT xlsx | 10/8/2013

01/20/09 | FKS | E-3-11-5/6

AJH

ARIZONA WATER COMPANY

White Tank Division
220 E. 2nd Street
Casa Grande, AZ 85122 PH: 520-836-8785

PROPOSAL/CONTRACT

CONTRACTOR:	MMI TANK AND INDUSTRIAL SERVICES	SYSTEM: WHITE TANK
AZ CONTRACTOR LICENSE NO:	CLASSIFICATION:	W.A. No(s):
ADDRESS:	3240 S. 37TH AVENUE	BID DUE DATE: October 22, 2013
CITY ST ZIP	PHOENIX, AZ 85009	BID BOND REQUIRED ☑ Yes ☐ No

DESCRIPTION OF PROJECT: Interior and exterior coating of the Beautiful Arizona Estates 500,000 gallon water storage tank in the White Tank water system.

1-2. MATERIALS EXEMPT FROM CONTRACTING TAX (per Paragraph 6)	QUANTITY	UNIT PRICE LABOR	UNIT PRICE MATERIALS	TOTAL COST LABOR	TOTAL COST MATERIALS
Coat interior of the Beautiful Arizona Estates 500,000 water storage tank (49' D X 36' H) in the White Tank water system; near white abrasive blast cleaning; per attached specifications.	1			30,390	25,230
Coat exterior of the Beautiful Arizona Estates 500,000 water storage tank (49' D X 36' H) in the White Tank water system; per attached Level 1 surface preparation specifications.	1			11,662	8,614
PRICE ONLY					
Coat exterior of the Beautiful Arizona Estates 500,000 water storage tank (49' D X 36' H); per attached Level 2 surface preparation specifications.	1	18,000	24,731		
Apply Chlor*Rid Surface Treatment on the interior of the Beautiful Arizona Estates 500,000 water storage tank (49' D X 36' H).	1	41,810	44,219		
3. Total Labor to Install Exempt Materials (add the amounts in column 1)				3 42,052	
4. Total Exempt Materials (add the amounts in column 2)					4 33,844

5-6. NON-EXEMPT MATERIALS	QUANTITY	LABOR	MATERIALS	LABOR	MATERIALS
7. Total Labor to Install Non-Exempt Materials (add the amounts in column 5)				7 N/A	
8. Total Non-Exempt Materials (add the amounts in column 6)					8 N/A
9. Subtotal A (add lines 3, 7 and 8)					9 42,052
10. Contracting Tax Base (multiply the amount on line 9 by 0.65)				10 27,334	
11. Applicable Contracting Tax Rate				11 6.3%	
12. Contracting Tax (multiply the amount on line 10 by line 11)					12 1722
13. Subtotal B (add lines 4, 9 and 12)					13 77618
14. 100% Performance and Payment Bonds Cost					14 1552
15. Estimated Total Cost (add lines 13 and 14)					15 79,170.

NOTE. The Estimated Total Cost includes all labor and materials for backfill, pavement replacement, chip seal, and traffic control necessary for the Project.

ARIZONA WATER COMPANY

CONTRACT CHANGE ORDER

CONTRACTOR: MMI Tank and Industrial Services	DATE:	CONTRACT DATE: October 22, 2013
	W.A. NO.:	CHANGE ORDER NO.: 2

DESCRIPTION OF WORK:

1. Apply additional coat of Carboline Carboguard 891 on Inside Tank
2. Replace failed Interior ladder on Tank
3. Replace existing undersized Tank Overflow
4. Additional 5 days for contract time

APPLICABLE C. O. COST: $ 30,628.00

ORIGINAL CONTRACT AMOUNT: $ 79,170.00

SUM OF ALL CHANGE ORDERS TO DATE: $ 30,628.00

REASON FOR ADDITIONAL WORK:

1. The Tank is very pitted consistently throughout the entire shell and the floor. Two coats of epoxy it would be near impossible to make the tank as "holiday" or pinhole free.
2. Interior ladder is deteriorated and could break away from side straps causing a saftey hazard when entering Tank from top of Tank.
3. The overflow is undersized and is almost level with top of shell line.
4. 5 days for contract time to complete additional work.

APPROVAL LEVEL REQ'D: (CIRCLE ALL THAT APPLY) (BASED ON SUM)

Mgr & Eng	VP Eng	VP Tres & Pres
Up to $10,000 or 10% whichever is less	Up to $100,000 or 20% whichever is less	greater than $100,000 or 20%

BASIS OF PAYMENT:

- [ ] In accordance with rates contained in Contractor's Proposal/Contract dated:
- [ ] In accordance with material prices, labor and equipment rates shown on Proposal dated:
- [ ] Lump Sum Price (including taxes) of: (Include supporting documentation) $
- [x] Other: Three attached Quotes attached Totaling $30,628.00

Contractor is hereby authorized to proceed with the work as described above. The Company will pay for the above-described work as indicated above.

Contractor agrees, as an independent contractor, to perform the above-described work in accordance with the Company's *General Conditions of Contract, and the Company's Construction Specifications* and *Standard Specification Drawings* ("General Conditions of Contract") and related construction drawings which, were provided with the original Proposal/Contract and supplemented herein, and agrees that all provisions of said General Conditions of Contract dated as of April 2004, including any subsequent amendments thereto, and related construction drawings, apply to work covered under this Contract Change Order.

Work Authorization Approval for additional funds required YES (NO) (circle one) If yes, attach applicable form & proof of payment for outside funded work.

Division Superintendent/Manager

Project Engineer/Project Manager

AWC Vice President – Engineering

CHANGE ORDER AUTHORIZATION OVER $100,000 OR 20% OF THE CONTRACT NOT VALID WITHOUT SIGNATURES BELOW

AWC Vice President and Treasurer

AWC President

MMI TANK AND INDUSTRIAL
Contractor: (Name)

By: *Contractor's Representative Signature*

Name: STACY PINCKARD *(Printed)*

It's: PRESIDENT *(Title or Position)*

Date Work Started

Date Work Completed

CONTRACTOR'S INVOICE APPROVED BY:

Company's Representative Overseeing the Work (signature)

DISTRIBUTION:
Original to Person Authorizing Work and, when completed, to Accounting Dept. with approved invoice for the work with supporting documentation. Copy to Contractor. Copy to Project Engineer.

Labor and Material Releases Required: ☐ Yes ☐ No
Releases Received and Approved By:

Company's Authorized Signature

C:\80 FILES\WORK FOR TM\MMI CHG ORDER 2 FOR WHITE TANK - PL9.DOCX

ARIZONA WATER COMPANY

CONTRACT CHANGE ORDER

CONTRACTOR: MMI Tank and Industrial Services	DATE: March 2, 2015	CONTRACT DATE: October 22, 2013
	W.A. NO.: Routine	CHANGE ORDER NO.: 3
DESCRIPTION OF WORK: Sweep Blasting (SSPC SP7) the prime coat on interior floor on White Tank 0.5 MG storage tank. Cost breakdown for labor and material on attached quote from MMI Coatings	APPLICABLE C. O. COST: $ 5,900.00	
	ORIGINAL CONTRACT AMOUNT: $ 79,170.00	
	SUM OF ALL CHANGE ORDERS TO DATE: $ 36,528.00	
REASON FOR ADDITIONAL WORK: 1. Interior coating was stopped on Dec. 23, 2014 when the interior floor prime coat was completed, AWC requested MMI to install new overflow and internal ladder, the design and approval from AWC was over the 30 days recoat time for the Carboline Carboguard 891 coating. Maximum recoat time of 30 days at 60 degrees. 2. Extended days for completion revised in service date is 3-30-15.	APPROVAL LEVEL REQ'D: (CIRCLE ALL THAT APPLY) (BASED ON SUM) Mgr & Eng: Up to $10,000 or 10% whichever is less; VP Eng: Up to $100,000 or 20% whichever is less; VP Tres & Pres: greater than $100,000 or 20%	

BASIS OF PAYMENT:

- [ ] In accordance with rates contained in Contractor's Proposal/Contract dated:
- [ ] In accordance with material prices, labor and equipment rates shown on Proposal dated:
- [ ] Lump Sum Price (including taxes) of: (Include supporting documentation) $
- [X] Other: Attached quote for $5,900.00

Contractor is hereby authorized to proceed with the work as described above. The Company will pay for the above-described work as indicated above.

Contractor agrees, as an independent contractor, to perform the above-described work in accordance with the Company's *General Conditions of Contract, and the Company's Construction Specifications* and *Standard Specification Drawings* ("General Conditions of Contract") and related construction drawings which, were provided with the original Proposal/Contract and supplemented herein, and agrees that all provisions of said General Conditions of Contract dated as of April 2004, including any subsequent amendments thereto, and related construction drawings, apply to work covered under this Contract Change Order.

Work Authorization Approval for additional funds required

Division Superintendent/Manager

Project Engineer/Project Manager

AWC Vice President - Engineering

YES NO (circle one) If yes, attach applicable form & proof of payment for outside funded work.

MMI Tank + Industrial Services
Contractor: (Name)

By: *Contractor's Representative Signature*

Name: Mike DesPres
(Printed)

It's: Coatings Manager
(Title or Position)

CHANGE ORDER AUTHORIZATION OVER $100,000 OR 20% OF THE CONTRACT NOT VALID WITHOUT SIGNATURES BELOW

AWC Vice President and Treasurer

AWC President

Date Work Started

Date Work Completed

CONTRACTOR'S INVOICE APPROVED BY:

Company's Representative Overseeing the Work (signature)

DISTRIBUTION:
Original to Person Authorizing Work and, when completed, to Accounting Dept. with approved Invoice for the work with supporting documentation. Copy to Contractor. Copy to Project Engineer.

Labor and Material Releases Required: ☐ Yes ☐ No
Releases Received and Approved By:

Company's Authorized Signature

COATINGS

The schedule to complete all interior coating operation will be 6 work days from today February 23, 2015. Completion of interior coating work shall be March 2, 2015. Cure time will begin on the same day.

Cost break down of Cost for change order.

1. **Labor for sweeping blasting (SSPC SP7) the prime coat on the interior floor** **$2600.00**
2. **Abrasive** **No Charge**
3. **Abrasive Disposal** **$920.00**
4. **Man lift** **$601.00**
5. **Air Compressor** **$220.00**
6. **Forklift** **$368.00**
7. **Pickup truck** **$207.00**
8. **Fuel for equipment** **$294.00**
9. **Additional Engineering for overflow pipe** **$690.00**
10. **Total** **$5,900.00**

Sincerely
MMI Tank and Industrial Services

Mike DesPres
C 602-292-1818
O 480-553-6118
miked@mmitank.com

ARIZONA WATER COMPANY

Storage Tank Record

THIS SECTION TO BE COMPLETED BY AWC

STORAGE TANK DATA

System: White Tanks	Map Reference (e.g. Site Name):	Tank No.: Beautiful Hacienda #1
W.A. #:	Location (e.g. SE ¼ SEC 25 T1N R7E): SW ¼ Sec 17 T12N R2W	Tank Status (e.g. In Service, Not In Service, Abandoned, etc): In Service
Tank Capacity (gal): 500,000	Shell Dia. (feet): 48.67 ft	Shell Height (feet): 36.00 ft
Inlet/Outlet Dia. (inch): 8"	Inlet Dia. (inch): 8"	Outlet Dia. (inch): 8"
Tank Material: Steel		
Tank Foundation: Concrete Ring		Floor Elevation (feet):
Built By: Chicago Bridge & Iron	Year Built: 1982	Cathodic Protection (yes/no): No
Cathodic Date:		

Remarks:

THIS SECTION TO BE COMPLETED BY AWC

STORAGE TANK PAINT DATA

Original Interior Paint System:

Original Exterior Paint System:

Original Exterior Color:

Painted By:

Remarks:

ARIZONA WATER COMPANY

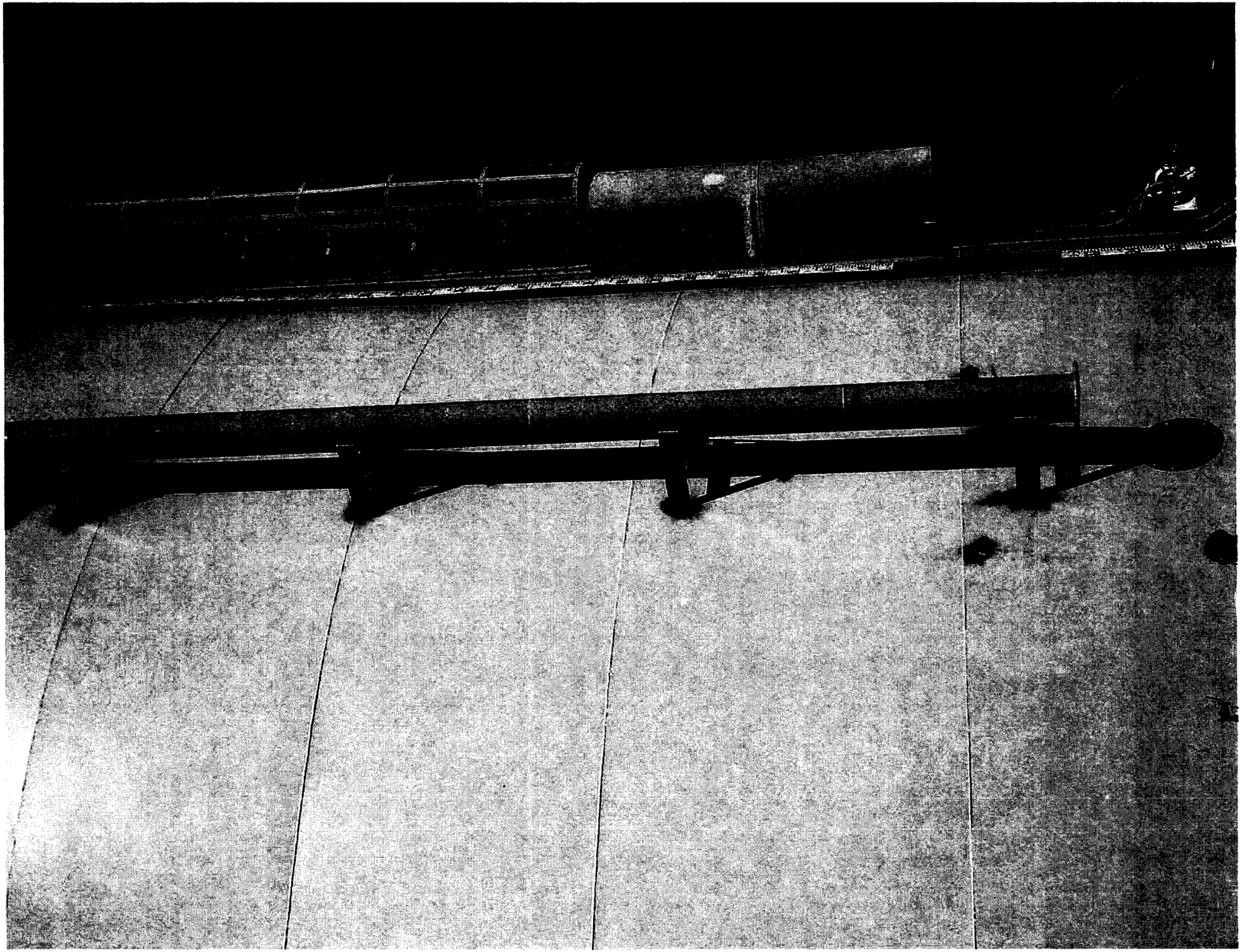
Storage Tank Record

System:	Map Reference (e.g. Site Name):	Tank No.

PHOTOGRAPHS ARE TO BE TAKEN BY AWC

STORAGE TANK PHOTOGRAPHS

insert photos

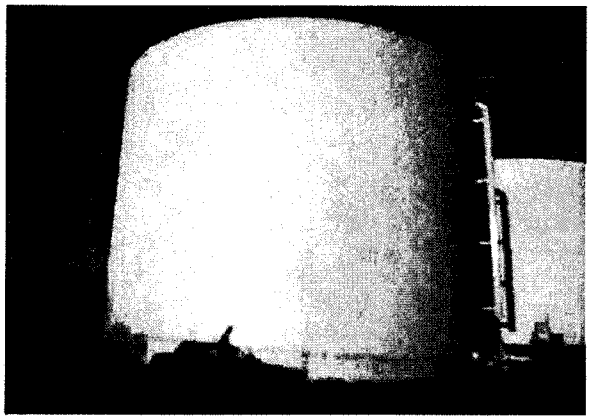


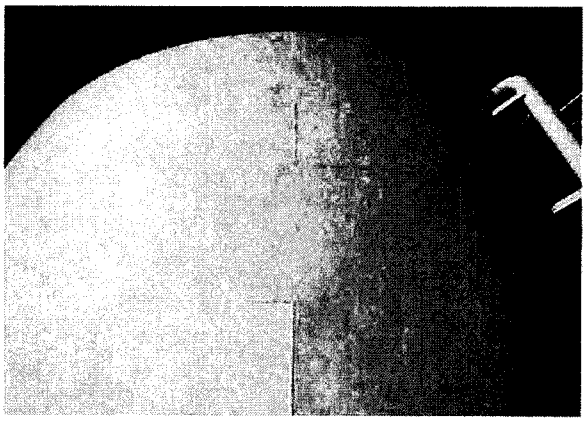
INDUSTRIAL INSPECTION AND CONSULTING, LLC

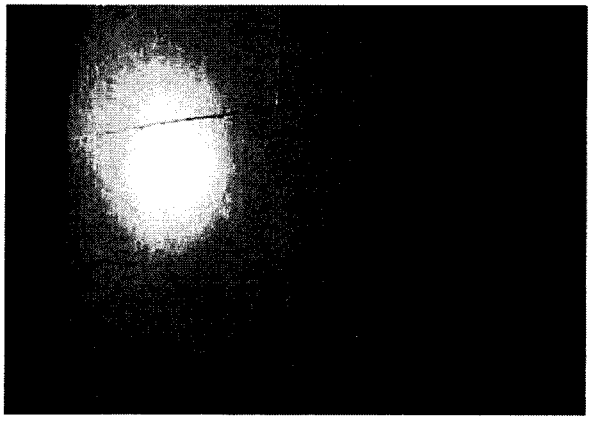
CERTIFIED NACE INSPECTORS

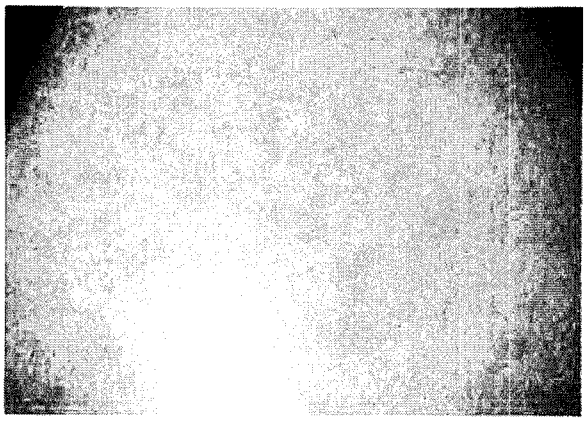
Paint Inspection Photo Documentation

Exterior Coating System - Carboline Carbothane 133HB









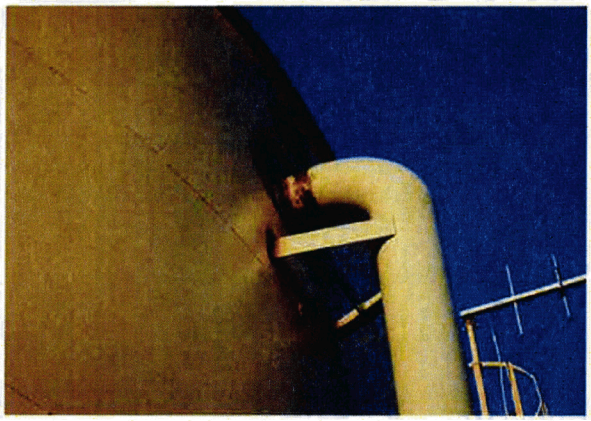
Company:	Arizona Water Company	**Report No.**	7	**Page**	6
Project:	Beautiful Estates Tank Rehabilitation	**Job No.**	Water Storage Tank		
Location:	Buckeye, Arizona	**Date:**	February 26th 2015		

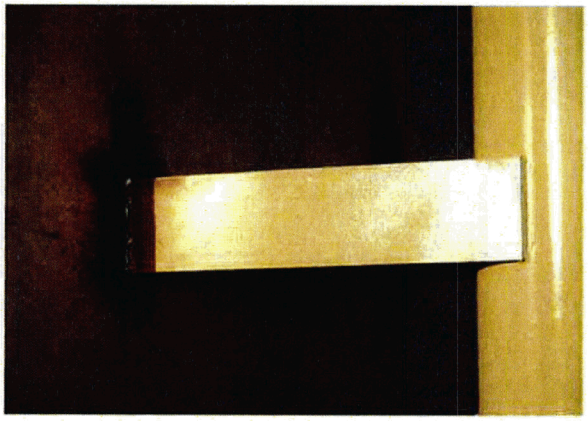
INDUSTRIAL INSPECTION AND CONSULTING, LLC

CERTIFIED NACE INSPECTORS

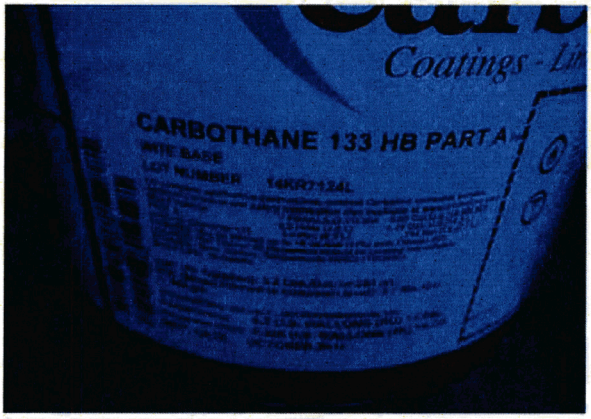
Paint Inspection Photo Documentation

Exterior Weld Seams - Not Prepared At This Time





Carboline Carbothane 133 HB - Product Batch Numbers



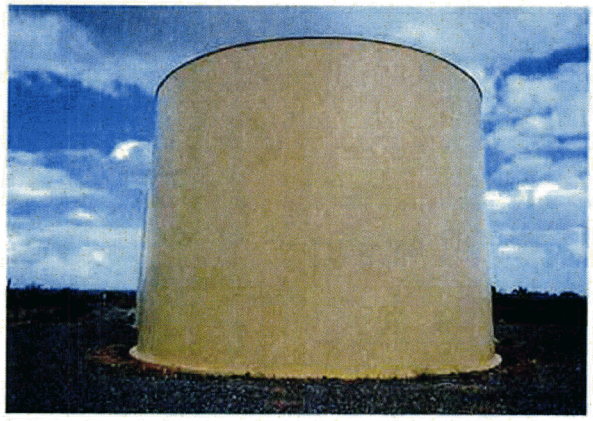
Company:	Arizona Water Company	**Report No.**	7	**Page**	7
Project:	Beautiful Estates Tank Rehabilitation	**Job No.**	Water Storage Tank		
Location:	Buckeye, Arizona	**Date:**	February 26th 2015		

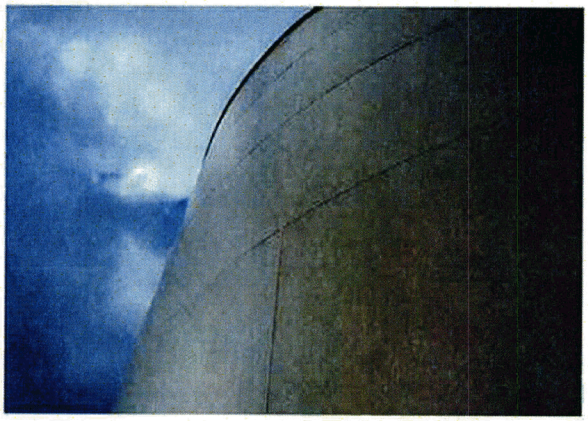
INDUSTRIAL INSPECTION AND CONSULTING, LLC

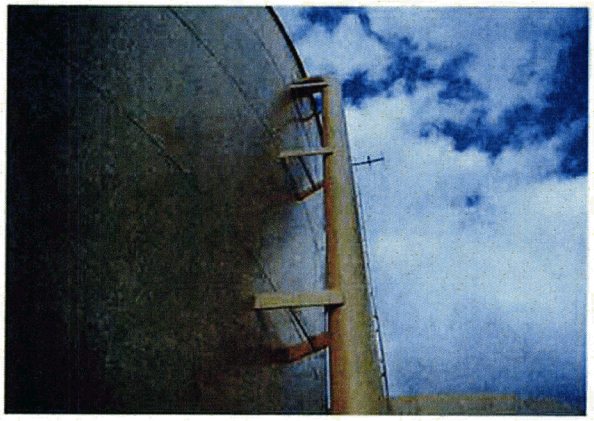
CERTIFIED NACE INSPECTORS

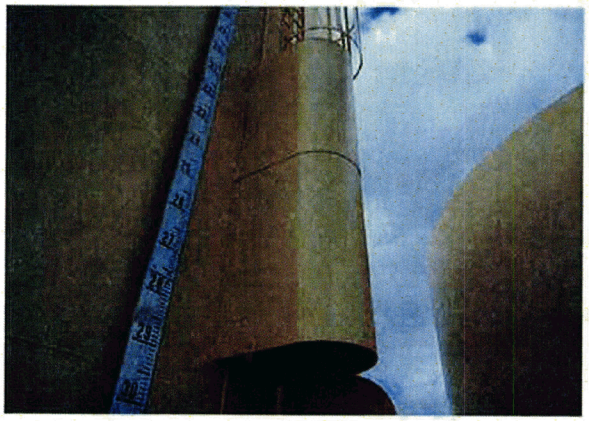
Paint Inspection Photo Documentation

Completed Exterior Coating System - Carboline Carbothane 133HB









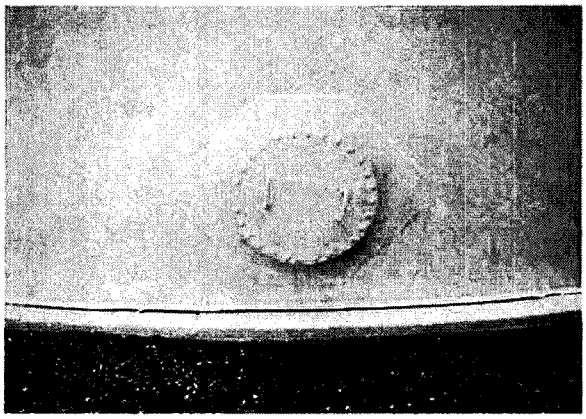
Company:	Arizona Water Company	**Report No.**	11	**Page**	2
Project:	Beautiful Estates Tank Rehabilitation	**Job No.**	Water Storage Tank		
Location:	Buckeye, Arizona	**Date:**	April 24th 2015		

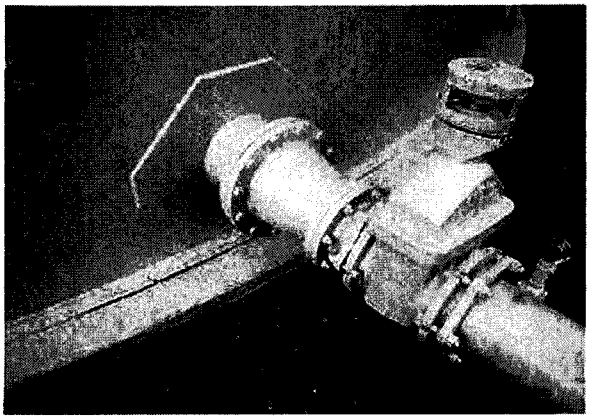
INDUSTRIAL INSPECTION AND CONSULTING, LLC

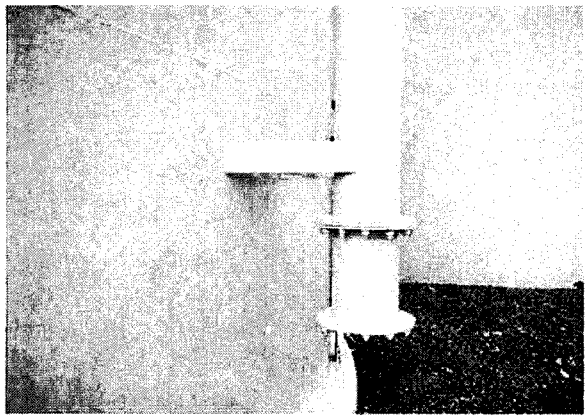
CERTIFIED NACE INSPECTORS

Paint Inspection Photo Documentation

Completed Exterior Coating System - Carboline Carbothane 133HB







Company:	Arizona Water Company	**Report No.**	11	**Page**	3
Project:	Beautiful Estates Tank Rehabilitation	**Job No.**	Water Storage Tank		
Location:	Buckeye, Arizona	**Date:**	April 24th 2015		

LEGEND
Technical Services, Inc.
www.legend-group.com

17631 N. 25th Avenue • Phoenix, AZ 85023
P (602) 324-6100 • F (602) 324-6101

Ray Murrieta
Arizona Water Company - White Tanks 07-128
220 E. 2nd Street
Casa Grande, AZ85222

Project: Drinking Water Analysis
Project Number: 07128

Reported:
04/16/15 08:48

Analyte

BAE Tank (5041231-01) Drinking Water (Grab) Sampled: 04/14/15 11:00 Received: 04/14/15 13:40

Analyte	Result	PQL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
			Legend Technical Services of Arizona, Inc.						
Volatile Organic Compounds									Q3
1,1,1-Trichloroethane	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
1,1,2-Trichloroethane	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
1,1-Dichloroethene	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
1,2,4-Trichlorobenzene	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
1,2-Dichlorobenzene	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
1,2-Dichloroethane	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
1,2-Dichloropropane	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
1,4-Dichlorobenzene	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
Benzene	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
Bromodichloromethane	**0.0016**	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
Bromoform	**0.0307**	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
Carbon tetrachloride	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
Chlorobenzene	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
Chloroform	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
cis-1,2-Dichloroethylene	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
Dibromochloromethane	**0.0090**	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
Dichloromethane	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
Ethylbenzene	**0.0022**	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
m,p-Xylene	**0.0108**	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
o-Xylene	**0.0032**	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
Styrene	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
Tetrachloroethene	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
Toluene	**0.0014**	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
Total THMs	**0.0413**	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
trans-1,2-Dichloroethene	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
Trichloroethene	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
Vinyl chloride	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
Xylenes (total)	**0.0140**	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 15:16	EPA 524.2	
Surrogate: 1,2-Dichlorobenzene-d4		*108 %*	*70-130*		*B5D0397*	*04/14/15 14:30*	*04/14/15 15:16*	*EPA 524.2*	
Surrogate: 1,2-Dichloroethane-d4		*106 %*	*70-130*		*B5D0397*	*04/14/15 14:30*	*04/14/15 15:16*	*EPA 524.2*	
Surrogate: 4-Bromofluorobenzene		*104 %*	*70-130*		*B5D0397*	*04/14/15 14:30*	*04/14/15 15:16*	*EPA 524.2*	
Surrogate: Pentafluorobenzene		*112 %*	*70-130*		*B5D0397*	*04/14/15 14:30*	*04/14/15 15:16*	*EPA 524.2*	

BAE Tank (5041231-02) Drinking Water (Grab) Sampled: 04/14/15 11:00 Received: 04/14/15 13:40

Analyte	Result	PQL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
			Legend Technical Services of Arizona, Inc.						
Microbiology									
E. coli	Absent		P/A	1	B5D0414	04/14/15 14:45	04/14/15 14:45	SM 9223B	
Total Coliforms	Absent		P/A	1	B5D0414	04/14/15 14:45	04/14/15 14:45	SM 9223B	

Legend Technical Services of Arizona, Inc.

Barbara Franks

Client Services Representative

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Phone Number: (602) 324-6100

Ray Murrieta Arizona Water Company - White Tanks 07-128 220 E. 2nd Street Casa Grande, AZ85222	Project: Drinking Water Analysis Project Number: 07128	Reported: 04/16/15 08:48

Travel Blank (5041231-03) DI Water (Grab) Sampled: 04/14/15 11:00 Received: 04/14/15 13:40

Legend Technical Services of Arizona, Inc.

Analyte	Result	PQL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Volatile Organic Compounds									
1,1,1-Trichloroethane	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
1,1,2-Trichloroethane	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
1,1-Dichloroethene	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
1,2,4-Trichlorobenzene	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
1,2-Dichlorobenzene	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
1,2-Dichloroethane	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
1,2-Dichloropropane	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
1,4-Dichlorobenzene	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
Benzene	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
Bromodichloromethane	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
Bromoform	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
Carbon tetrachloride	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
Chlorobenzene	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
Chloroform	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
cis-1,2-Dichloroethylene	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
Dibromochloromethane	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
Dichloromethane	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
Ethylbenzene	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
m,p-Xylene	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
o-Xylene	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
Styrene	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
Tetrachloroethene	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
Toluene	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
Total THMs	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
trans-1,2-Dichloroethene	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
Trichloroethene	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
Vinyl chloride	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
Xylenes (total)	<0.0005	0.0005	mg/L	1	B5D0397	04/14/15 14:30	04/14/15 16:18	EPA 524.2	
Surrogate: 1,2-Dichlorobenzene-d4		*117 %*	*70-130*		*B5D0397*	*04/14/15 14:30*	*04/14/15 16:18*	*EPA 524.2*	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*		*B5D0397*	*04/14/15 14:30*	*04/14/15 16:18*	*EPA 524.2*	
Surrogate: 4-Bromofluorobenzene		*90 %*	*70-130*		*B5D0397*	*04/14/15 14:30*	*04/14/15 16:18*	*EPA 524.2*	
Surrogate: Pentafluorobenzene		*109 %*	*70-130*		*B5D0397*	*04/14/15 14:30*	*04/14/15 16:18*	*EPA 524.2*	

Sample Condition Upon Receipt:

Temperature: 5.20 C

All samples were received in acceptable condition unless noted otherwise in the case narrative.

Case Narrative:

Holding Times: All holding times were met unless otherwise qualified.

QA/QC Criteria: All analyses met method requirements unless otherwise qualified.

Accreditations: AZ(PHX)0004, AZ(TUC)OOO4, AIHA#102982, CDC ELITE Member.

Accreditation is applicable only to the test methods specified on each scope of accreditation held by LEGEND.

Comments: There were no problems encountered during the processing of the samples, unless otherwise noted.
All samples were analyzed on a "wet" basis unless designated as "dry weight".

Chain of Custody indicates special only do not report to ADEQ- BF
Notified Henry of the absent results on 04/16/15. BF

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

Q3 Sample received with improper chemical preservation.

504 1231

CHAIN OF CUSTODY RECORD

LEGEND Technical Services, Inc.
www.legend-group.com

☐ 17631 N. 25th Avenue • Phoenix, AZ 85023 • (602) 324-6100 • Fax (602) 324-6101
☐ 4585 S. Palo Verde Rd, Ste 423 • Tucson, AZ 85714 • (520) 327-1234 • Fax (520) 327-0518

Page 1 of 1

Please Print Clearly

CLIENT INFORMATION

Client Name	Address	City	State	Zip	Phone	Fax or Email
Arizona Water Co	PO Box 11030	Casa Grande	AZ	85021	520 836 8715	520 836 3880

System Name: OH White tanks
PWS#: 07-128
Contact: Ray Murrieta
P.O. No.:
Fax Results ☒ QC Report ☐ EDD ☐
Email Results ☐ Special Detection Limits ☐

IOC OPTIONS

IOC's I: Sb, As, Ba, Be, Cd, Cr, Hg, Ni, Se, Tl, CN, F
IOC's II (New Source): Sb, As, Ba, Be, Ca, Cd, Cr, Cu, Pb, Hg, Mg, Ni, Se, Na, Tl, Ca Hardness, Total Hardness, Alk, Asbestos, CN, F, Langelier, NO_2, NO_3, pH, SO_4, TDS, Temp (in field)

REQUESTED ANALYSES

Client's Sample Identification	Date	Time	POE # / DWR #	Compliance	No. of Containers	pH ✓ (Legend Use)	Coliform	IOCs (see left)	IOCs II (see left)	Lead & Copper	Nitrate, Nitrite	Radiochemicals	524 (TTHM)	552 (HAA)	524 (VOCs)	504	505	515	525	531	547	548	549	1613 (Dioxin)	Perchlorate	Bromate	Chlorite	LAB NO
BAE TANK	4-14	11am			3										X													01
BAE TANK	4-14	11am			1		X																					02
			TB		2																							03

SOCs

RUSH
504 = 4/15/15

TO ENSURE COMPLETION OF ANALYSIS, SAMPLES MUST BE RECEIVED AT LEAST 6 HOURS PRIOR TO THE HOLD TIME EXPIRATION

Comments: Special Samples Not for Reporting to ADEQ

☐ Yes, I have followed the instructions provided by the laboratory for dechlorination of my samples.

TURN AROUND TIME
☐ Standard 15 - 20 day
☐ Other_____
Laboratory Authorization Required for Rush

SAMPLE CONDITION UPON RECEIPT

No. of Containers	6	
Temperature	5.2°C	
Custody Seals	Y	(N)
Seals Intact	(Y)	N
Preserved	(Y)	N

White- Lab Yellow- Client

FORM GEN-173 (6/06)

	RELINQUISHED BY			SAMPLES RECEIVED BY		
①	Sampler's Signature	Date 4-14		Signature	Date 4/14	
	Sampler Printed Name R. Rosas	Time 340		Printed Name	Time 340	
②	Sampler Signature	Date		Signature	Date	
	Sampler Printed Name	Time		Printed Name	Time	
③	Sampler Signature	Date		Signature	Date	
	Sampler Printed Name	Time		Printed Name	Time	

RUSH NOTICE W.O. #: 504031

*** Only verbal or preliminary results can be guaranteed on RUSHES

*****If sample(s) does not come in on day indicated by client, RUSH may not be available.

Company: AzWater-WT Phone: 602 294-2146

Contact: Regina Lynde

Prelim Due Date: _____ Final Due Date: _____

Analysis: 524

Number of Samples: 1 Date Samples Expected*****: 4/14/15

Matrix: DW Expiration Date: _____

Supervisor Approval Inorganics: _____ Specifics: _____

Metals: _____ Specifics: _____

Micro: _____ Specifics: _____

SOC: _____ Specifics: _____

VOC: B 4/13/15 Specifics: _____

Sub1: _____ Specifics: _____

Sub2: _____ Specifics: _____

Comments: 24 hr.

COST: _____ Project Manager: BCub

RUSH Initiator: _____

FORM GEN-086.2 (02/15)

ARIZONA WATER COMPANY

PROJECT CLOSE-OUT NOTICE

PROJECT CLOSE-OUT DATE:		DIVISION/ SYSTEM:	A.V / W.T
		WORK AUTHORIZATION NUMBER:	ROUTINE

PREPARED BY

THE FOLLOWING RECORD REQUIREMENTS ARE ATTACHED:

1. W.A. FINAL COMPLETION CHECKLIST..... _____
2. FINAL AUTHORIZATION TO BILL HAS BEEN SENT TO PHOENIX ON _____ ..... _____

Date

WA FINAL COMPLETION CHECK LIST

FACILITIES RECORDS
- ☐ Valve Records – Main & Blow-off
- ☐ Fire Hydrant Records – Include Flow Test Data

ABANDONED FACILITIES
- ☐ Property Disposal Report (PDR)
- ☐ Voided Valve Records
- ☐ Voided Fire Hydrant Records

COMPLETION DOCUMENTS
- ☐ Public Fire Hydrants Installation Request (E-3-23)
- ☐ Notice of Fire Hydrant Installation (E-5-5)
- ☐ Permits Acquired By Division Office
- ☐ Bill Of Sale (E-3-36-3)
- ☐ Final Acceptance of Facilities Letter (E-3-36-5)

ON-SITE PHOTOGRAPHS
- ☐ To Show All New Installations At Completion Of W.A.

IF NO ATB IS REQUIRED

☐ ADEQ DATA REQUIRED WITH ECC APPLICATION
NOTE: "Footage Tested" to match total pipe installed ("343" ONLY)

AS-BUILT DRAWING
- ☐ Label Cover Sheet "AS BUILT"
- ☐ Pipe footage and size to be listed on AS-BUILT cover sheet ("343" ONLY)
- ☐ Printed name of AS-BUILT preparer
- ☐ ONLY Changes to original construction drawing to be marked in red on AS-BUILTs, NOTE: Include any additional Air Release Valves

FORMS
- ☐ Well Record (E-5-7)
- ☒ Storage Tank Record (E-5-8)
- ☐ Booster Pump Record (E-5-9)
- ☐ Hydropneumatic Tank Record (E-5-10)

OPERATIONS & MAINTENANCE MANUALS
- ☐ Electric S.E.S. & M.C.C.
- ☐ S.C.A.D.A./Controls
- ☐ Treatment Facilities

☐ AOC (Approval of Construction)
- ☒ Placed in Service Notice
- ☒ Daily Progress Reports

I certify that construction on the above Work Authorization is complete and for which all materials have been accounted. I further certify that I have inspected the work and determined it s satisfactory and in accordance with Company specifications.

_____ Division Manager, Operations Superintendent, or Project Engineer *(signature)*

_____ Date of Notice

ATTACH TO CONSTRUCTION & ENGINEERING FILE COPY OF WORK AUTHORIZATION

TO: ACCOUNTING DEPARTMENT (ACCOUNTANT II)
CC: ENGINEERING DEPARTMENT (ENG. SEC.)

ARIZONA WATER COMPANY

CONSTRUCTION PLACED IN SERVICE NOTICE

WORK AUTHORIZATION NO.: BAE # 1 Tank Coating

DIVISION: CG/WT

DATE PLACED IN SERVICE: 4 | 13 | 2015

CONTRACT NO:

FOR PURPOSES OF *MODIFIED ACCELERATED COST RECOVERY SYSTEM*, AN ASSET IS "PLACED IN SERVICE" WHEN IT IS IN A CONDITION OR STATE OF READINESS AND AVAILABILITY FOR A SPECIFICALLY ASSIGNED FUNCTION, WHETHER IT BE FOR USE IN A TRADE OR BUSINESS, OR FOR THE PRODUCTION OF INCOME.

I CERTIFY THAT THE ASSET(S) CONSTRUCTED PURSUANT TO THE PROVISIONS OF THE ABOVE-REFERENCED WORK AUTHORIZATION ARE READY FOR SERVICE AS OF THE DATE SHOWN ABOVE.

Division Manager or Operations Superintendent
(signature)

4-27-2015
Date

SUBMIT ORIGINAL TO ACCOUNTING DEPARTMENT

A-1-3-1
FKS 11/24/11

Document2
XXX:XXX 9:39 AM 4/27/15

Western Group Rate Case

Exhibit FKS-1

5324 Phone System

ARIZONA WATER COMPANY

CONSTRUCTION BUDGET REQUEST

SPECIFIC PROJECT

BUDGET YEAR: 2015 DIVISION: Phoenix

PROJECT NO.: 1-0001 SYSTEM: Phoenix

DESCRIPTION OF FACILITIES TO BE CONSTRUCTED (ATTACH MAP OR SKETCH)

Replace Phoenix, Casa Grande and Coolidge phone systems with a Shoretel Voice Over IP system.

FACTORS JUSTIFYING PROJECT (ATTACH ANY SUPPORTING DOCUMENTS SUCH AS PRESSURE RECORDINGS, ETC.)

The current Phoenix phone system is an analog system that is 15 years old and part of the system runs on Windows NT which hasn't been supported by Microsoft for many years. The phone system itself is no longer supported by the manufacturer and replacement parts have become difficult to obtain. In the last quarter of 2014 the phone system has failed on three occasions causing disruption of company business. Installing a new phone system will improve reliability of the phone system and will support improvements in technology. The phone systems in the Casa Grande and Coolidge offices are experiencing lock-up issues that require re-booting the system and several of the handsets need to be replaced due to poor call quality. By moving to a Voice Over IP system, it will allow the company to tie the Phoenix office and division offices together allowing call transferring between locations, which will make customer call handling more efficient. Additionally, this type of system will allow call overload at the Casa Grande office to be directed to the Coolidge office enabling a more efficient use of Customer Service Resources.

DESCRIPTION OF EXISTING FACILITIES

Inter-tel phone system and handsets.

ARIZONA WATER COMPANY

CONSTRUCTION BUDGET REQUEST

PERMITS REQUIRED None
COST/BENEFIT ANALYSIS
MATERIALS TO BE RETIRED Inter-tel phone system
PROJECT SCHEDULE (ATTACH GANTT CHART)
ESTIMATE OF CONSTRUCTION COST (ATTACH COST ESTIMATE WORKSHEET) $85,000

ENGINEER APPROVAL: _____ Date: _____

MANAGER APPROVAL: _____ Date: _____

VP – ENGINEERING APPROVAL: _____ Date: _____

ARIZONA WATER COMPANY

WORK AUTHORIZATION - DETAIL SHEET

W.A. NUMBER:
P.E. NUMBER:
BUDGET ITEM NO.:
SHEET NO.:

RETIREMENT PROPERTY UNITS	PLANT PROPERTY ACCOUNT	UNIT DESCRIPTION	QUANTITY	YEAR INSTALLED AND W.A. NUMBER
	397	Phone system		1999 1-2606

PROJECT DESCRIPTION:

Replace Phoenis, Casa Grande, Coolidge, White Tank and Ajo phone systems

	DESCRIPTION	PLANT PROP ACCT	QUANTITY	UNIT COST	TOTAL
CONTRACT WORK	Installation labor and project management	397	96	$ 111.00	$ 10,656
	User Training	397	8	115.00	920
	SERVICE CONNECTIONS COMPLETE: DOUBLE-LONG	345			
	SERVICE CONNECTIONS COMPLETE: DOUBLE-SHORT	345			
	SERVICE CONNECTIONS COMPLETE: SINGLE-LONG	345			
	SERVICE CONNECTIONS COMPLETE: SINGLE-SHORT	345			
TOTAL CONTRACT WORK					$ 11,576
MATERIALS	ShoreGear 90	397	2	$ 2,366.05	$ 4,732
	ShoreGear 50	397	1	1,576.00	1,576
	ShoreGear T1k	397	1	2,761.05	2,761
	ShoreTel IP Phone IP420	397	38	149.31	5,674
	ShoreTel IP Phone IP480g	397	39	291.51	11,369
	Dell PowerEdge R320	391	1	2,551.50	2,552
	Extension and Mailbox License	397	77	158.00	12,166
	ShoreWare Operator Communicator	397	1	470.00	470
	Miscellaneous Phone System Equipment and Software	397	1	9,064.00	9,064
	Switches (48 port and 24 port)	391	2	2,700.00	5,400
TOTAL MATERIALS					$ 55,764
LABOR					
	TESTING FEE				
	PERMIT FEE				
	SURVEY FEE				
	FIELD INSPECTION	397			8,500
	INSTALL SERVICE CONNECTIONS: DOUBLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-SHORT	345			
TOTAL LABOR					$ 8,500
SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR					$ 75,840
OVERHEAD					9,100
TOTAL	REFUNDABLE PORTION ☐	NON-REFUNDABLE PORTION ☐		COST ESTIMATE	$ 84,940

COPPER • STATE COMMUNICATIONS

CONNECTING BUSINESS TO TECHNOLOGY!

What Differentiates Copper State Communications from the Competition?

OUR PEOPLE

- Our company is financially sound with tenure; we have been in business since 1982.
- Copper State Communications has over 950 years of combined technical experience (as of 8/1/14).
- We have the state of Arizona covered with offices in Phoenix, Tucson and Flagstaff.
- All of our friendly technicians and sales people undergo continuous educational and training courses on existing and emerging technologies.

OUR SERVICE

- Every solution we design is customized to fit your unique needs.
- We offer expense audit management services on all voice and internet bills.
- Copper State Communications assigns a Project Manager to every phone system installation and has a dedicated provisioning team for all voice, internet, and carrier services we order on your behalf.
- Our expert staff will install, set up your equipment and coordinate your carrier services as well as train your staff on proper use and best practices to optimize productivity.
- Various maintenance options are available for your phone system, even if you didn't buy it from us.
- Our fully stocked warehouses throughout the state, mean that if your equipment goes down, we can replace it.
- All service vehicles have GPS, which ensures we can get a technician to you quickly in case of emergency.
- We guarantee a 2 hour emergency response time in the Metro areas. However, since times are monitored, chances are we will get to you much faster:
  - Phoenix- 57 minutes and 37 seconds
  - Tucson- 40 minutes and 53 seconds
  - Flagstaff- 41 minutes and 56 seconds

  (Statistics based on a 2 year average of response times ending June 2014)
- We monitor the success of your solutions and work to continually optimize all systems for maximum efficiency and productivity.

OUR PRODUCTS

- Copper State Communications represents multiple hardware manufacturer's and over 65 voice, internet and carrier service providers including:

AVAYA ShoreTel TOSHIBA

Aerohive NETWORKS Clear there CLEARLY CONNECTED GANZ twtelecom

CenturyLink Channel Alliance Level(3) Integra windstream

EarthLink BUSINESS MegaPath XO verizon Sprint

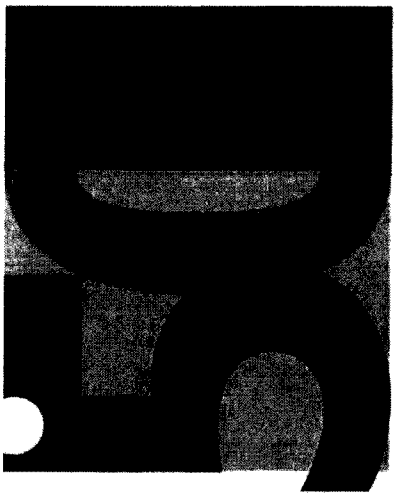
FROST & SULLIVAN

2013

ShoreTel

2013 North American Unified Communications and Collaboration Company of the Year Award

FROST & SULLIVAN



50 Years of Growth, Innovation & Leadership

Company of the Year Award
Unified Communications and Collaboration
North America, 2013

Frost & Sullivan's Global Research Platform

Frost & Sullivan is in its 50th year in business with a global research organization of 1,800 analysts and consultants who monitor more than 300 industries and 250,000 companies. The company's research philosophy originates with the CEO's 360-Degree Perspective™, which serves as the foundation of its TEAM Research™ methodology. This unique approach enables us to determine how best-in-class companies worldwide manage growth, innovation and leadership. Based on the findings of this Best Practices research, Frost & Sullivan is proud to present the 2013 North American Company of the Year Award in Unified Communications to ShoreTel.

Key Industry Challenges

The enterprise communications market is undergoing multiple transitions that are presenting significant challenges to all market participants. Growth rates in the mature premises-based telephony systems market have declined. With few greenfield opportunities available market participants are turning to each other's customer bases for growth and market share gains. This has compelled vendors to revamp competitive strategies in order to ensure long-tem survival and growth.

The weak global economy of the recent years further restricted growth in the telecom market. The recovery in 2013 has been slow and most vendors have been unable to show significant growth in the first half of the year. While other regions have been more impacted, North American vendors with international exposure have suffered too.

One of the key transformational trends in the telecom industry is the migration to software-based communications and the resulting proliferation of advanced, IP-based communications tools. Today, businesses use a plethora of communications applications including: telephony; e-mail; voice and unified messaging; presence, instant messaging and chat; audio, web, and video conferencing; content and file sharing; mobility; and more. Furthermore, the essential role of communications technologies is changing. Previously siloed communications technologies are now becoming more tightly integrated with productivity and business-process software and are thus becoming ever more critical enablers of operational efficiencies and business agility.

As a result of these trends, the pace of technology innovation has accelerated challenging vendors to continually expand and enhance their portfolios in order to stay competitive. Greater choice and intense competition have given customers more power in the purchasing process, forcing vendors to be more creative with how they position and price their solutions. This has put considerable pressure on their resources and many have struggled to maintain profitable growth.

An important facet of the larger industry shift to software-based solutions is the growing migration to cloud communications. Customers have gained considerable awareness of the benefits of cloud business models and are actively exploring hosted IP communications as a viable alternative to existing premises-based implementations. Fiscal uncertainty, coupled with rapid technology evolution and accelerated technology refresh cycles, have increased the risks associated with customer-owned technology investments. Therefore, many businesses are looking to avoid locking into risky CAPEX investments in premises-based solutions. Instead, they are switching to hosted communications for the benefit of predictable monthly charges, which can be adjusted based on actual usage and changing capacity requirements. Furthermore, outsourced solutions provide access to a larger pool of technology expertise and enable businesses to reduce the costs associated with hiring, training, and retraining skilled IT staff.

Vendors in the stagnant premises-based telephony market are compelled to explore growth opportunities with the cloud delivery model and have launched multi-tenant and multi-instance solutions for customers that wish to outsource their communications infrastructure. Going forward, the cloud communications market will represent the new battleground for communications vendors.

Frost & Sullivan recognizes that a company that has demonstrated competitive strategy excellence has properly identified industry trends and has positioned itself for long-term growth through sustainable strategies that deliver superior customer value. Such a forward-thinking provider offers solutions that help enhance user productivity, improve operational efficiencies and accelerate business processes. Its solutions are also easy to deploy and manage and provide investment protection through scalability, resiliency, and reliability. A leader is also fully committed to continually enhancing product and feature functionality to address evolving customer needs. Finally, fiscal discipline and strict cost management are key elements of a successful competitive strategy execution that enable the leader to better address tough macro-economic times, as well as the specific challenges of a maturing industry.

Key Benchmarking Criteria for Company of the Year Award

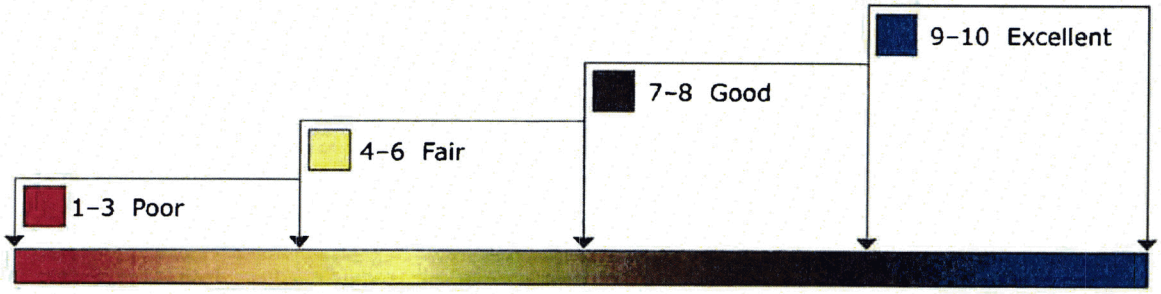
For the Company of the Year Award, the following criteria were used to benchmark ShoreTel's performance against key competitors:

- Growth Strategy Excellence
- Growth Implementation Excellence
- Degree of Innovation with Products and Technologies
- Leadership in Customer Value
- Leadership in Market Penetration

Decision Support Matrix and Measurement Criteria

To support its evaluation of best practices across multiple business performance categories, Frost & Sullivan employs a customized Decision Support Matrix (DSM). The DSM is an analytical tool that compares companies' performance relative to each other with an integration of quantitative and qualitative metrics. The DSM features criteria unique to each Award category and ranks importance by assigning weights to each criterion. The relative weighting reflects current market conditions and illustrates the associated importance of each criterion according to Frost & Sullivan. Fundamentally, each DSM is distinct for each market and Award category. The DSM allows our research and consulting teams to objectively analyze each company's performance on each criterion relative to its top competitors and assign performance ratings on that basis. The DSM follows a 10-point scale that allows for nuances in performance evaluation; ratings guidelines are shown in Chart 1.

Chart 1: Performance-Based Ratings for Decision Support Matrix



This exercise encompasses all criteria, leading to a weighted average ranking of each company. Researchers can then easily identify the company with the highest ranking. As a final step, the research team confirms the veracity of the model by ensuring that small changes to the ratings for a specific criterion do not lead to a significant change in the overall relative rankings of the companies.

Chart 2: Frost & Sullivan's 10-Step Process for Identifying Award Recipients

Best Practice Award Analysis for ShoreTel

The Decision Support Matrix, shown in Chart 3, illustrates the relative importance of each criterion for the Company of the Year Award and the ratings for each company under evaluation. To remain unbiased while also protecting the interests of the other organizations reviewed, we have chosen to refer to the other key players as Competitor 1 and Competitor 2.

Chart 3: Decision Support Matrix for Company of the Year Award

Measurement of 1-10 (1 = lowest; 10 = highest)	**Award Criteria**					
	Growth Strategy Excellence	Growth Implementation Excellence	Degree of Innovation with Products and Technologies	Leadership in Customer Value	Leadership in Market Penetration	**Weighted Rating**
Relative Weight (%)	**20%**	**25%**	**20%**	**20%**	**15%**	**100%**
ShoreTel	10.0	10.0	10.0	10.0	9.0	9.9
Competitor 1	9.5	9.5	10.0	10.0	10.0	9.8
Competitor 2	9.0	9.0	10.0	10.0	10.0	9.6

Criterion 1: Growth Strategy Excellence

ShoreTel has founded its growth strategy on the value proposition of delivering "brilliantly simple" communications solutions to the business market. Frost & Sullivan research reveals that this proposition resonates well with customers of all sizes, but it has a particularly strong appeal in the small and medium-size business (SMB) segment, where skilled IT resources are scarcer. The main tenets of ShoreTel's growth strategy and key success factors include its unique architecture, strong focus on innovation, channel expansion, and the ability to deliver a highly competitive premises-based and a cloud alternative to its customers.

From the beginning, ShoreTel focused its solutions on addressing the specific needs of the distributed enterprise. Compared to the more complex hub-and-spoke architectures of the incumbent vendors, ShoreTel's unique distributed architecture provides a flexible, resilient, scalable and cost-effective alternative to businesses with multiple, geographically dispersed sites. Frost & Sullivan analysis confirms that this differentiated approach has enabled ShoreTel to deliver superior value to this particular type of customers and has given ShoreTel a strong competitive advantage in this previously underserved market segment.

Over the years, ShoreTel has continued to innovate and expand its IP communications portfolio. In addition to scaling up its core IP PBX platform, the company has added a number of advanced applications and capabilities to its flagship IP telephony and voice messaging solution, including presence, instant messaging (IM)/chat, multichannel conferencing, mobility, soft clients, third-party integrations and more. With the move to unified communications, it has enabled access to its suite of applications via phone, PC/Mac and mobile interfaces. Today, it delivers a compelling stack of unified communications capabilities to its customers.

An important factor in ShoreTel's growth strategy is its channel expansion. This has enabled the vendor to extend its customer reach and geographic footprint and to compete more successfully against its larger competitors. ShoreTel sells 100 percent through the channel, which helps eliminate conflicts of interest and enables partners to fully leverage existing sales opportunities and deliver greater value to end-user organizations. The Champion Partner Program comprised of Authorized, Silver, Gold and Platinum partners offers compelling benefits and incentives to ShoreTel resellers.

In line with the industry's move to cloud communications, ShoreTel acquired hosted IP communications provider M5, which is now the ShoreTel Sky arm of the company. As the premises-based telephony market matures and growth rates decline, the cloud business provides ShoreTel with new growth opportunities and the ability to offer its customers additional deployment options. ShoreTel customers can choose to deploy ShoreTel's distributed architecture on the premises, subscribe to cloud services or implement a hybrid solution with a mix of both.

ShoreTel can continue to capitalize on certain customers' continued preference to deploy their communications infrastructure on the premises—whether for superior features and functionality, greater security and control or the ability to customize and integrate their system more tightly with other solutions. However, as more customers adopt cloud communications for the flexibility to adjust capacity and features on-demand, gain access to a larger pool of technology expertise or simply to better focus on their core business, ShoreTel is prepared to accommodate their needs. A third option—a hybrid architecture—is often a good fit for distributed organizations with both large and small sites.

Frost & Sullivan firmly believes that ShoreTel has executed on its competitive strategy, and now has the ability to satisfy a wide berth of customer requirements.

Criterion 2: Growth Implementation Excellence

Today, ShoreTel has more than 2.8 million licenses in use and more than 28,000 business customers worldwide, more than 80 percent of which are in the North American region. ShoreTel has gained significant traction in the North American SMB segment and continues to grow its market share in the total North American IP telephony market. In 2012 and the first half of 2013, ShoreTel is one of the top six market share leaders with 3.3 percent share

of IP telephony licenses shipped. While many of its larger competitors are losing share to each other or Microsoft, ShoreTel has held strong and maintained its share of shipments and revenues in 2012 and 2013.

Frost & Sullivan competitive analysis reveals that ShoreTel's competitors have struggled to grow over the past six years, and some are no longer in existence. ShoreTel, on the other hand, has grown its IP telephony shipments by about 13 percent over the period from 2007 to 2013, and its revenues by about 11 percent over the same time period. In 2013, most telephony vendors reported declining shipments and revenues in the first quarters. ShoreTel reported consistent revenue growth year-over-year in all four quarters of its fiscal 2013 (which includes Q1 and Q2 of calendar 2013). It ended its fiscal 2013 (on June 30, 2013) with a record $313.5 million, up 27 percent from fiscal 2012, which is clear evidence of its sound competitive strategy and implementation excellence. ShoreTel's financial performance is all the more impressive in view of its competitors' declining premises-based businesses and the overall stagnant growth rates in the entire North American telephony market.

ShoreTel Sky, the company's cloud division, is also one of the top performers in its industry. In 2012, ShoreTel Sky held the fourth largest share of 4.5 percent of North American hosted IP telephony and cloud UCC revenues and ranked ninth in terms of users with 2.6 percent share of the total installed base in the region. ShoreTel Sky also reported consistent growth and improved metrics throughout fiscal 2013. Fiscal 2013 revenue was up 26 percent year-over-year on an organic basis. The installed base grew at double digits year over the first two quarters of 2013. The company also reported an increase in the average number of seats per customer, stable average revenue per user and low churn rates.

ShoreTel has demonstrated superior competitive strategy implementation than most vendors in the North American market. Its execution has been a balanced combination of growth strategies and fiscal discipline, which have resulted in profitable growth.

Criterion 3: Degree of Innovation with Products and Technologies

ShoreTel continued to innovate in 2013 in spite of macro-economic challenges and slow industry growth. It launched several new products and product enhancements that will enable it to provide greater value to its customers going forward.

In the beginning of the year it launched the Call Flow Editor feature for the ShoreTel Sky Portal, a web-based VoIP management application. It allows customer staff to make changes to auto attendants, ring groups, time-of-day routing and other settings, which can help improve the user experience and also streamline or enhance specific business processes. Also early in the year, ShoreTel Enterprise Contact Center 8.0 was released, delivering feature enhancements to the e-mail and chat capabilities of the multi-channel solution.

Three significant announcements in the year included the release of ShoreTel Mobility 6 for iOS users, followed by ShoreTel Mobility 7 for iOS and Android users, and ShoreTel Conferencing for iOS users. ShoreTel Mobility 6 and 7 provide a native user interface that enables users to place and receive calls with their business identity, exchange instant messages, listen to voicemail messages and initiate multi-party calls by dragging names from enterprise directories with a swipe gesture. With ShoreTel Mobility 7, the new "Today" application integrates with the native calendar of an Android or iOS device and enables a one-click access to a conference call. Another key feature of the latest release is the ability to use the user's personal ID with non-business calls. ShoreTel Conferencing for iOS allows users to share presentations on their iPads and iPhones and view content on their colleagues' PC and MAC desktop/laptop computers.

Later in the year, ShoreTel introduced ShoreTel SBE 100, an innovative solution for businesses with up to 100 users. It is an integrated hardware and software package that is very easy to set up and manage, even by customer staff with no technical skills, yet provides the reliability and scalability of a business-grade solution. With a software upgrade, the solution can scale up to thousands of users should the customer require additional capacity. ShoreTel SBE 100 features advanced capabilities such as desktop call control and unified messaging (access to e-mail, voicemail and fax from the e-mail box). Contact center and collaboration capabilities can be added a-la-carte.

ShoreTel also launched a new series of IP phones and business-grade DECT phones. The ShoreTel 400 series of IP phones feature visual voice mail, an advanced user interface and built-in diagnostics. The new DECT phones feature the full set of ShoreTel deskphone capabilities, including directory access and multiple line appearances.

Arguably the most interesting announcement from ShoreTel in 2013 and the most unique product it launched to the marketplace this year is the ShoreTel Dock for iPhone and iPad. When paired with ShoreTel Mobility, the dock transforms an iOS device into a full-featured desk phone. With the Dock, the mobile device stays fully charged during the day and can be used with a high-quality speakerphone, a convenient dial pad, and a familiar handset. Since ShoreTel Mobility works over WiFi and cellular, the dock can be used in a variety of office settings.

ShoreTel's multiple product launches and enhancements in 2013 evidence its continued focus on innovation and ability to promptly address new customer needs.

Criterion 4: Leadership in Customer Value

ShoreTel's distributed IP telephony architecture offers a compelling balance of cost efficiencies, scalability, resiliency and functionality to multi-site businesses. Frost & Sullivan notes that unlike incumbent vendors, ShoreTel built its solution with the distributed enterprise in mind from the ground up; so ShoreTel's customers do not need to deal with the complexity and cost of adjusting legacy technologies for new use cases. As ShoreTel's

solution evolves, new capabilities are added to a core architecture that already has the foundation to meet the key needs of that particular customer segment.

ShoreTel's solution is also designed to be very easy to deploy, manage and use. Customers attest to ShoreTel's leadership in delivering "brilliantly simple" solutions, which is a key factor in the SMB segment, but is also becoming increasingly important in the large enterprise segment as businesses choose to focus their resources on their core operations in order to be more competitive.

ShoreTel also delivers considerable customer value through a rich set of IP telephony and UC features and capabilities. Its customers can choose to deploy voice, voice mail and unified messaging, presence and IM, a UC client, conferencing, mobility, and more. ShoreTel also integrates its applications with popular software platforms such as Outlook and Sametime calendars and e-mail, CRM and ERP software, partner-provided video conferencing systems and more. Continued innovation in key areas such as mobility and conferencing enables ShoreTel to respond promptly to evolving customer demand.

Finally, Frost & Sullivan finds that ShoreTel brings superior value to customers by giving them a choice of a deployment model. They can deploy their communications solution on their premises or in the cloud. As more businesses choose to outsource their communications, they will see significant value in having a partner that offers both options. ShoreTel's ability to offer both types of solutions not only allows businesses to make the right choice today, but also gives them the flexibility and piece of mind that they can switch in the future, or deploy a hybrid architecture, if that best suits their needs.

Criterion 5: Leadership in Market Penetration

ShoreTel has proven to be a nimble competitor that promptly addresses market trends and customer needs, which has enabled it to grow and gain market share. It has climbed steadily to the top sixth market share position in terms of North American IP telephony line license shipments and is well positioned to grow its share as competitors struggle. Its growth rates and overall performance over the years and throughout the tough 2013 have been outstanding.

ShoreTel Sky ranks fourth in terms of revenue in the North American hosted IP telephony market and reported double-digit growth rates in 2013 so far. It has one of the strongest track records in this market and has grown consistently over the years.

Both ShoreTel and ShoreTel Sky are well positioned to remain among the top competitors in their respective markets and eventually increase their penetration.

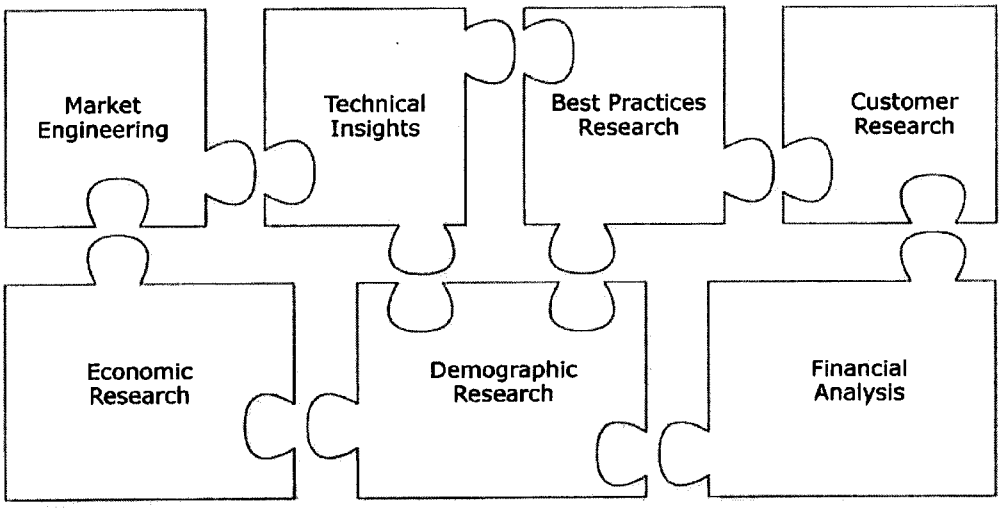
Conclusion

Frost & Sullivan's independent analysis of the Unified Communications market clearly shows that with a sound growth strategy in place, a strong track record of successful execution and unwavering focus on innovation and customer value, ShoreTel is well positioned to continue to grow its revenues and gain market share. Frost & Sullivan is proud to present the 2013 Company of the Year Award in the North American Unified Communications and Collaboration Market to ShoreTel for its outstanding accomplishments.

Critical Importance of TEAM Research

Frost & Sullivan's TEAM Research methodology represents the analytical rigor of our research process. It offers a 360-degree view of industry challenges, trends, and issues by integrating all seven of Frost & Sullivan's research methodologies. Our experience has shown over the years that companies too often make important growth decisions based on a narrow understanding of their environment, leading to errors of both omission and commission. Frost & Sullivan contends that successful growth strategies are founded on a thorough understanding of market, technical, economic, financial, customer, best practices, and demographic analyses. In that vein, the letters T, E, A and M reflect our core technical, economic, applied (financial and best practices) and market analyses. The integration of these research disciplines into the TEAM Research methodology provides an evaluation platform for benchmarking industry players and for creating high-potential growth strategies for our clients.

Chart 4: Benchmarking Performance with TEAM Research



About Frost & Sullivan

Frost & Sullivan, the Growth Partnership Company, enables clients to accelerate growth and achieve best-in-class positions in growth, innovation and leadership. The company's Growth Partnership Service provides the CEO and the CEO's Growth Team with disciplined research and best-practice models to drive the generation, evaluation and implementation of powerful growth strategies. Frost & Sullivan leverages 50 years of experience in partnering with Global 1000 companies, emerging businesses and the investment community from more than 40 offices on six continents. To join our Growth Partnership, please visit http://www.frost.com.

ShoreTel

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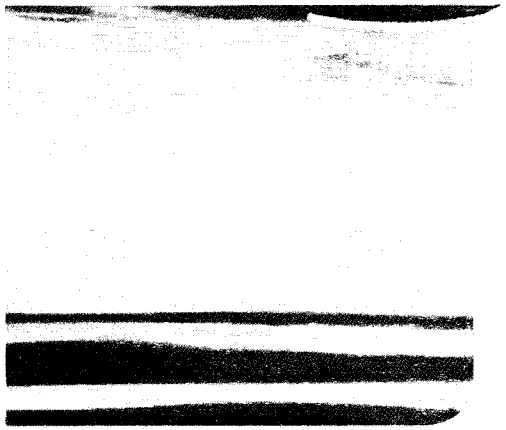

Introducing ShoreTel IP 400 Series Phones

ShoreTel
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[illegible]

Multiple devices

Multimedia

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ShoreTel
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Offering a wide selection of desktop devices

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Introducing the New ShoreTel IP Phone Series

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ShoreTel
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Designed by phone users for the best user experience

SIGHT: Visually appealing
- Unique angular design
- Concave profile keeps keys horizontal and display vertical

TOUCH: Tactile handset
- Contoured grip
- Finger notch
- Balanced weight
- Easily rests on shoulder

SOUND: Unmatched clarity
- Wideband audio
- 7 versus 3 octaves of range
- High gain microphones
- Booming speakerphone

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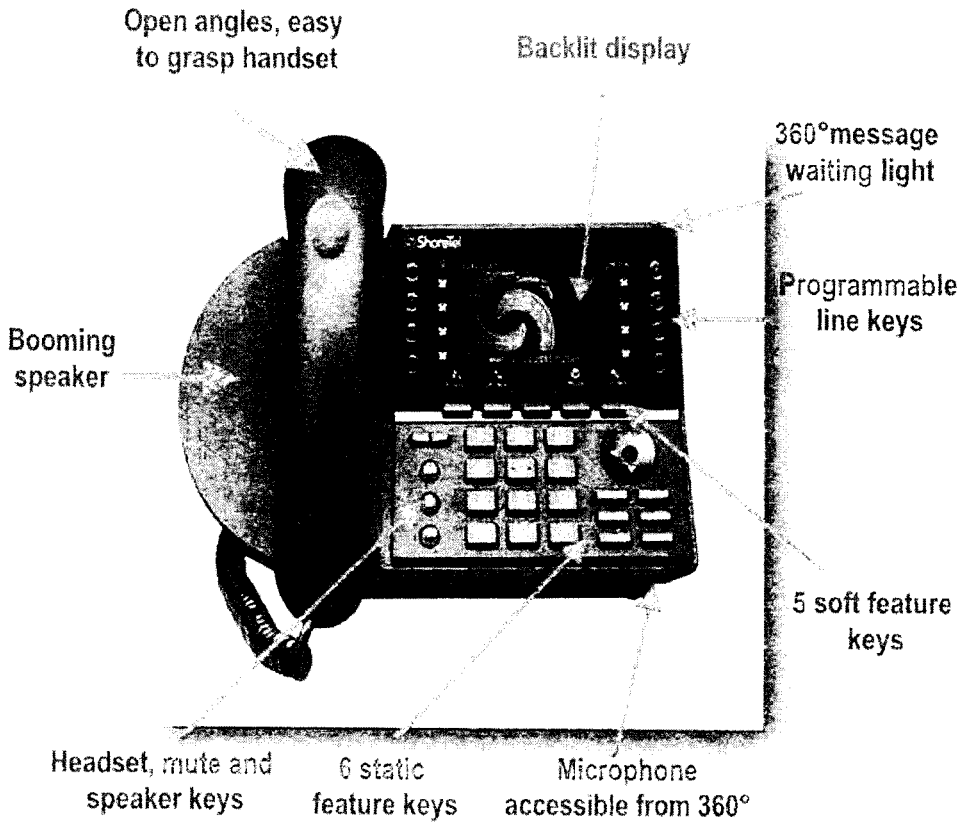
Incorporates new functionality requested by users

VISUAL VOICE MAIL
- Play voice mail in any order
- Intuitive user interface

EXTENDED FEATURES:
- More info in directory and history
- More call appearance buttons
- More soft feature keys

BUILT IN DIAGNOSTICS
- Network tools and log file capture for faster issue resolution

DEPLOYMENT FLEXIBILITY:
- Support for ShoreTel Sky cloud services in early 2014



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ShoreTel IP Phone 485g

BACKLIT COLOR SCREEN

8 LINE KEYS

EXPANDED CALL HISTORY

VISUAL VOICE MAIL

INTEGRATED 10/100/1000 NETWORK

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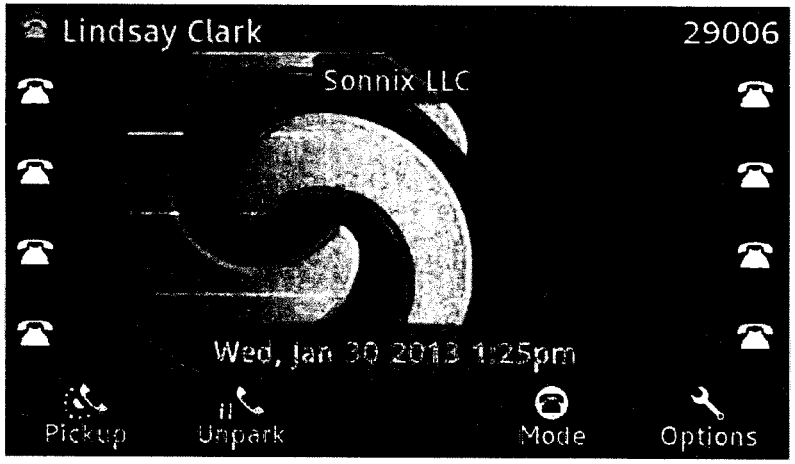
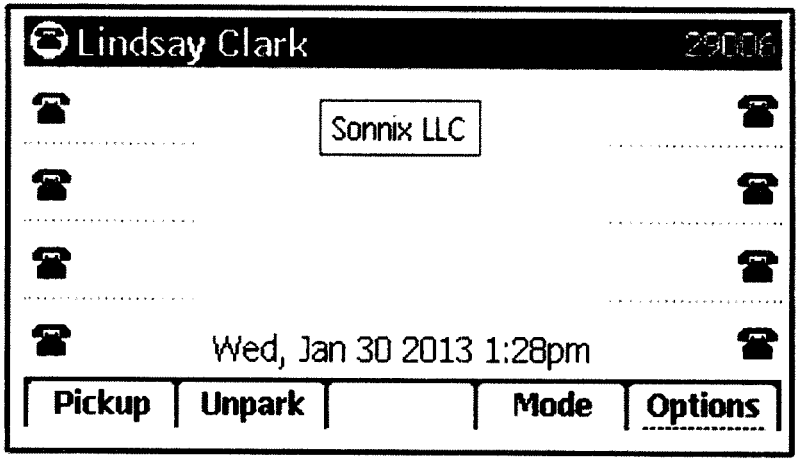
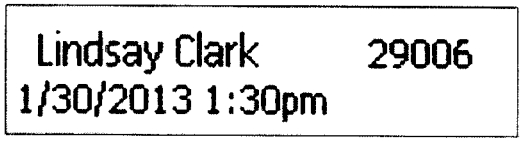
Screen Shots







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Questions

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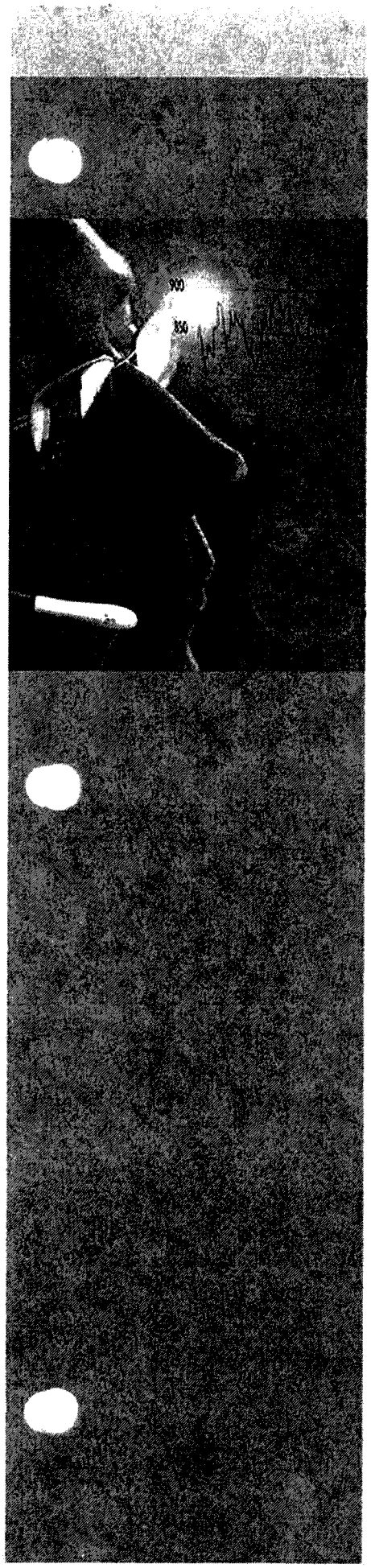

AVAYA

The Power of We™

Ethernet Switch Product Feature Comparison

The Avaya Ethernet Switch product line provides complete coverage ranging from entry-level branch office through premium high-performance wiring closet, to campus core and data center applications. Our continuous improvement program has led to a number of pioneering products and capabilities. Recent development includes the introduction of the 'Unified Access' solution, leveraging the high performance data plane of the ERS 8800 and the scalable control plane of the WLAN 8100 Series.

The Avaya Ethernet Switch portfolio:

- Virtual Services Platform 9000
- Ethernet Routing Switch 8800
- Ethernet Routing Switch 8300
- Virtual Services Platform 7000 Series
- Ethernet Routing Switch 5000 Series
- Ethernet Routing Switch 4000 Series
- Ethernet Routing Switch 3500 Series
- Ethernet Routing Switch 2500 Series

Core Ethernet Switching

The core plays a pivotal role in determining overall network availability and performance.

Positioned at the heart of the network, core Ethernet Switches provide the aggregation point between users (connected to the Access Switches) and applications (running to the data center infrastructure). 'Switch Clustering' is an Avaya capability that delivers simplified always-on resiliency, extending beyond just the Switches to empower true end-to-end application availability that clearly differentiates the Avaya strategy. The 'Distributed Top-of-Rack' capability delivers improved application performance by reducing the latency of server-to-server transactions. The key to our competitive advantage in the LAN Switching segment is our field-proven ability to create more resilient networks that need fewer and less complex elements, and our network design and build approach that ensures delivery of the highest levels of performance and

reliability. Avaya is again leading the market with the development of a true end-to-end network fabric capability; our 'Fabric Connect' leverages the Shortest Path Bridging standard – with key Avaya enhancements and extensions – to dramatically optimize availability, performance, and time-to-service.

Access Ethernet Switching

The Avaya portfolio of fixed-format 'Stackable Chassis' Switches reflects the evolution of a number of innovative products that offer converged data and voice services for the enterprise branch and remote sites. We have completely refreshed our award winning Stackable line with solutions that provide even greater resiliency, performance, efficiency, and flexibility. A common thread that links the portfolio is our truly resilient, high-performance 'Stackable Chassis' architecture – leveraging Flexible Advanced Stacking Technology (FAST) – one of many differentiators that makes our solutions genuinely unique and superior to competitive offerings.

Learn More

To learn more about the Avaya Ethernet Switch product line, contact your Avaya Account Manager or Avaya Authorized Partner. Or, visit us online at avaya.com.

Avaya Fixed-Format Ethernet Feature Matrix

	Product Lines	ERS 2500	ERS 3500	ERS 4000			ERS 5000		VSP 7000
				4500 Switches	4500-PWR+ Switches	4800 Switches	5500 Switches	5600 Switches	
Models		2526T 2526T-PWR 2550T 2550T-PWR	3510GT 3510GT-PWR+ 3526T 3526T-PWR+ 3524GT 3524GT-PWR+	4526FX 4526T 4526T-PWR 4550T 4550T-PWR 4524GT 4524GT-PWR 4548GT 4548GT-PWR 4526GTX 4526GTX-PWR	4526T-PWR+ 4526T-PWR+	4826GTS 4826GTS-PWR+ 4850GTS 4850GTS-PWR+	5510-24T 5510-48T 5520-24T-PWR 5520T-PWR 5530-24TFD	5632FD 5650TD 5650TD-PWR 5698TFD 5698TFD-PWR	7024XLS
Avaya UVP	Avaya VENA Fabric Connect	-	-	-	-	f	-	-	f
	Avaya VENA Switch Clustering	-	-	-	-	-	Y	Y	f
	Avaya VENA Stackable Chassis	Y	f	Y	Y	Y	Y	Y	Y
	Avaya VENA Distributed ToR	-	-	-	-	-	-	-	Y
	Avaya VENA Unified Access	-	-	-	-	f	-	-	-
	Avaya Energy Saver	-	f	Y	Y	Y	Y	Y	f
	Avaya Dynamic PoE Power Management	Y	Y	Y	Y	Y	Y	Y	-
	Avaya Automatic QoS	Y	Y	Y	Y	Y	Y	Y	-
	Avaya Custom Auto Negotiation Advertisement	Y	Y	Y	Y	Y	Y	Y	f
	Avaya Virtual Link Aggregation Control Protocol	Y	Y	Y	Y	Y	Y	Y	Y
ds & Feeds	100BASE-FX	-	Y	Y	Y	Y	-	Y	Y
	10/100BASE-TX	Y	Y	Y	Y	Y	-	-	-
	1000BASE-T	Y	-	-	-	-	-	-	-
	10/100/1000BASE-T	Y	Y	Y	Y	Y	Y	Y	Y
	1000BASE-X SFP	Y	Y	Y	Y	Y	Y	Y	Y
	10GBASE-X XFP	-	-	Y	-	-	Y	Y	-
	10GBASE-X SFP+	-	-	-	-	Y	-	-	Y
	802.3af Power-over-Ethernet	Y[2]	Y	Y	-	Y	Y	Y	-
	802.3at Power-over-Ethernet	-	Y	-	Y	Y	-	-	-
	MAC Addresses	16k	16k	8k	8k	8k	16k	16k	128K
	Switch Fabric (Gbps)	12.8-15.6	12.8-52	48.8-184	48.8-77.6	128-184	80-192	288-384	1,280
	Forwarding Rate (Mpps)	9.5-11.6	9.5-38.7	6.6-72	6.6-10.2	66-102	35.7-71.4	101.2-172.7	960
	Virtual Backplane (Gbps)	32	f	384	384	384	640	1,152	5,120
Layer 2	802.1D Spanning Tree (STP)	Y	Y	Y	Y	Y	Y	Y	Y
	802.1s Multiple STP	Y	Y	Y	Y	Y	Y	Y	Y
	802.1w Rapid Reconfiguration STP	Y	Y	Y	Y	Y	Y	Y	Y
	Avaya Multiple Spanning Trees	Y	Y	Y	Y	Y	Y	Y	Y
	802.1Q VLANs	256	256	1,024	1,024	1,024	1,024	1,024	1,024
	802.1aq Shortest Path Bridging	-	-	-	-	-	-	-	f
	IPv6 VLANs	Y	Y	Y	Y	Y	Y	Y	Y
	Hardware Queues	4	4	8	8	8	8	8	8
	802.1p/DSCP Quality of Service (QoS)	Y	Y	Y	Y	Y	Y	Y	Y
	Advanced QoS Filtering & Remarking	Y	Y	Y	Y	Y	Y	Y	Y
	Avaya Auto Discovery & Auto Configuration	Y	Y	Y	Y	Y	Y	Y	-
	802.1AB Media End-point Discovery	Y	Y	Y	Y	Y	Y	Y	-
	802.1AB Location TLV	Y	Y	Y	Y	Y	Y	Y	-
Layer 3	IP Static/Default Routing	Y	Y	Y	Y	Y	Y	Y	f
	IP RIP v1/v2 Routing	-	f	Y	Y	Y	Y	Y	f
	IP OSPF Routing	-	-	Y	Y	Y	Y	Y	f
	IP BGP Routing	-	-	-	-	-	-	Y[3]	-
	IP VRRP	-	-	Y	Y	Y	Y	Y	f
	IP ECMP	-	-	Y	Y	Y	Y[4]	Y	f
	IP VRF-Lite	-	-	-	-	-	-	Y	-
	Content-Based Forwarding	-	-	-	-	-	-	Y	-
	IPv6 Routing	-	f	f	f	f	-	Y	f
	Mutli-Netting	-	-	f	f	f	Y	Y	-

	Product Lines	ERS 2500	ERS 3500	ERS 4000			ERS 5000		VSP 7000
				4500 Switches	4500-PWR+ Switches	4800 Switches	5500 Switches	5600 Switches	
Security	DHCP Snooping / ARP Inspection	Y	Y	Y	Y	Y	Y	Y	f
	BPDU Filtering	Y	Y	Y	Y	Y	Y	Y	f
	IP Source Guard	Y	Y	Y	Y	Y	Y	Y	f
	802.1X EAPoL (Single Host Single Authentication)	Y	Y	Y	Y	Y	Y	Y	-
	802.1X Multiple Host Single Authentication (MHSA)	Y	Y	Y	Y	Y	Y	Y	-
	802.1X Multiple Host Multiple Authentication (MHMA)	Y	Y	Y	Y	Y	Y	Y	-
	802.1X MHMA Multi-VLAN	-	f	Y	Y	Y	Y	Y	-
	802.1X Guest VLAN	Y	Y	Y	Y	Y	Y	Y	-
	802.1X Non-EAP	Y	Y	Y	Y	Y	Y	Y	-
	802.1X/NEAP & Guest VLAN support	Y	Y	Y	Y	Y	Y	Y	-
	802.1X/NEAP Last Assigned RADIUS VLAN	Y	Y	Y	Y	Y	Y	Y	-
	802.1X/NEAP Fail-Open VLAN	Y	Y	Y	Y	Y	Y	Y	-
	802.1X/NEAP with VLAN Names	Y	Y	Y	Y	Y	Y	Y	-
	RADIUS Accounting	Y	Y	Y	Y	Y	Y	Y	Y
	802.1AE MACsec	-	-	-	-	f[1]	-	-	-
	Identity Engines	Y	Y	Y	Y	Y	Y	Y	-
Multicast	IGMPv1	Y	Y	Y	Y	Y	Y	Y	Y
	IGMPv2	Y	Y	Y	Y	Y	Y	Y	Y
	IGMPv3	Y	Y	Y	Y	Y	Y	Y	f
	PIM-SM	-	-	-	f	f	Y[4]	Y	f
	PIM-SSM	-	-	-	-	-	Y[4]	f	-
ncy	Flexible Advanced Stacking Technology (FAST)	Y	f	Y	Y	Y	Y	Y	Y
	Auto Unit Replacement (AUR)	Y	f	Y	Y	Y	Y	Y	Y
	802.3ad Link Agaregation Control Protocol (LACP)	Y	Y	Y	Y	Y	Y	Y	Y
	Avaya Simple Loop Prevention Protocol (SLPP)	-	-	-	-	-	Y	Y	f
	Multi-Link Trunking (MLT)	Y	Y	Y	Y	Y	Y	Y	Y
	Distributed MLT	Y	Y	Y	Y	Y	Y	Y	Y
	Single Link Trunking (SLT)	-	-	-	-	-	Y	Y	f
	External HA Power (RPS 15)	-	-	Y	-	-	Y	-	-
	Internal HA Power	-	-	-	Y	Y	-	Y	Y
Management & Miscellaneous	Standardized CLI	Y	Y	Y	Y	Y	Y	Y	Y
	GUI Management	Y	Y	Y	Y	Y	Y	Y	Y
	SNMPv3	Y	Y	Y	Y	Y	Y	Y	-
	SSHv2	Y	Y	Y	Y	Y	Y	Y	Y
	TACACS+	Y	Y	Y	Y	Y	Y	Y	Y
	RADIUS Authentication	Y	Y	Y	Y	Y	Y	Y	Y
	IPv6 Management	Y	Y	Y	Y	Y	Y	Y	Y
	802.1ag Connectivity Fault Management	-	-	-	-	-	-	-	f
	IP Flow Information Export (IPFIX)	-	f	Y	Y	Y	Y	Y	f
	Multi-Port Mirroring	-	f	Y	Y	Y	Y	Y	f
	802.3az Energy Efficient Ethernet	-	f	-	f	f	-	-	Y
	Software Licensing	Y[5]	-	Y	Y	Y	Y	Y	f

Based on:

ERS 2500 4.4 ERS 3500 5.0 ERS 4000 5.7 ERS 5000 6.3 VSP 7000 10.1

Legend:

Y = Support f = Future (i.e. Roadmapped & Hardware-ready) n = Scale - = Not supported

Notes:

[1] Supported on ERS 5632TFD only

[2] ERS 2500 PWR models support PoE on half of their Link Ports

[3] Future models

[4] Supported on ERS 5520 models, but not 5510 models

[5] Partial implementation: that is iBGP

[6] Software Licensing available to field-enable Stacking on the stand-alone ERS 2500 models

Avaya Modular Ethernet Feature Matrix

	Product Lines	ERS 8300	ERS 8600/8800			VSP 9000
			8600 R Modules	8600 R5 Modules	8800 Modules	
	Avaya VENA Fabric Connect	-	Y	Y	Y	Y
	Avaya VENA Switch Clustering	Y	Y	Y	Y	Y
	Avaya VENA Unified Access	-	Y	Y	Y	-
	Avaya IP VPN-Lite	-	Y[a]	Y	Y	-
	Avaya Energy Saver	Y	-	-	-	-
	Avaya Dynamic PoE Power Management	Y	-	-	-	-
	Avaya Automatic QoS	Y	Y	Y	Y	Y
	Avaya Custom Auto Negotiation Advertisement	Y	Y[g]	Y[g]	Y[g]	Y
	Avaya Virtual Link Aggregation Control Protocol	Y	Y	Y	Y	Y
Speeds & Feeds	100BASE-FX	Y	Y	Y	Y	-
	10/100BASE-TX	Y	-	-	-	-
	1000BASE-T	Y	-	-	-	-
	10/100/1000BASE-T	Y	Y	Y	Y	Y
	1000BASE-X SFP	Y	Y	Y	Y	Y
	10GBASE-X XFP	Y	Y	Y	Y	-
	10GBASE-X SFP+	-	-	-	Y	Y
	802.3af Power-over-Ethernet	Y	-	-	-	-
	MAC Addresses	16k	64k	64k	64k	128k
	Switch Fabric (Gbps)	Up to 464	Up to 512	Up to 512	Up to 512	Up to 8,400
	Forwarding Rate (Mpps)	Up to 345	Up to 380	Up to 380	Up to 380	Up to 1,050
Layer 2	802.1D Spanning Tree (STP)	Y	Y	Y	Y	Y
	802.1s Multiple STP	Y	Y	Y	Y	Y
	802.1w Rapid Reconfiguration STP	Y	Y	Y	Y	Y
	Avaya Multiple Spanning Trees	Y	Y	Y	Y	Y
	802.1Q VLANs	2k	4k	4k	4k	4k
	802.1aq Shortest Path Bridging	-	Y[h]	Y	Y	Y
	IPv6 VLANs	Y	Y	Y	Y	Y
	Hardware Queues	8	Up to 64	Up to 64	Up to 64	8
	802.1p/DSCP Quality of Service (QoS)	Y	Y	Y	Y	Y
	Advanced QoS Filtering & Remarking	Y	Y	Y	Y	Y
	802.1Qbb Priority-based Flow Control	-	-	-	-	Y
	802.3x Pause-based Flow Control	-	Y	Y	Y	Y
	Avaya Auto Discovery & Auto Configuration	Y	Y	Y	Y	-
	802.1AB Core	Y	f	f	f	f
	802.1AB Media End-point Discovery	Y	-	-	-	-
Layer 3	IP Static/Default Routing	Y	Y	Y	Y	Y
	IP RIP v1/v2 Routing	Y	Y	Y	Y	Y
	IP OSPF Routing	Y	Y	Y	Y	Y
	IP VRRP	Y	Y	Y	Y	Y
	IP VRRP Backup Master	Y	Y	Y	Y	Y
	IP ECMP	Y	Y	Y	Y	Y
	IP BGP	Y[5]	Y	Y	Y	Y
	IPv6 Routing	Y[7]	Y[e]	Y[e]	Y[e]	Y
	Avaya VRF-Lite	Y	Y[e]	Y[e]	Y[e]	Y
	RFC 2547/4364 IP VPN	-	Y[e]	Y[e]	Y[e]	-
	Multi-Procotol Label Switching	-	Y[e]	Y[e]	Y[e]	-
	Microsoft Network Load-Balancing (NLB)	Y	Y	Y	Y	Y
	Multi-Homing	Y	Y	Y	Y	Y
	Multi-Netting	-	Y	Y	Y	Y
Security	DHCP Snooping / ARP Inspection	Y	Y	Y	Y	f
	EPDU Filtering	Y	Y	Y	Y	f
	IP Source Guard	Y	Y	Y	Y	f
	802.1X EAPoL (Single Host Single Authentication)	Y	Y	Y	Y	Y
	802.1X Multiple Host Single Authentication (MHSA)	Y	-	-	-	-
	802.1X Multiple Host Multiple Authentication (MHMA)	Y	-	-	-	-
	802.1X Non-EAP	Y	Y	Y	Y	-
	RADIUS Accounting	Y	Y	Y	Y	-
	802.1AE MACsec	-	-	-	-	Y
	Identity Engines	Y	Y	Y	Y	f

	Product Lines	ERS 8300	ERS 8600/8800			VSP 9000
			8600 R Modules	8600 RS Modules	8800 Modules	
Multicast	IGMPv1	Y	Y	Y	Y	Y
	IGMPv2	Y	Y	Y	Y	Y
	IGMPv3	Y	Y	Y	Y	Y
	PIM-SM	Y	Y	Y	Y	Y
	PIM-SSM	-	Y	Y	Y	Y
	DVRMP	-	Y	Y	Y	-
	MSDP	-	Y	Y	Y	-
	Multicast over SPB (MoSPB)	-	Y[e]	Y[e]	Y[e]	f
Resiliency	802.3ad/ax Link Aggregation Control Protocol (LACP)	Y	Y	Y	Y	Y
	Avaya Simple Loop Prevention Protocol (SLPP)	Y	Y	Y	Y	Y
	Multi-Link Trunking (MLT)	Y	Y	Y	Y	Y
	Distributed MLT	Y	Y	Y	Y	Y
	Routed Split Multi-Link Trunking (RSMLT)	Y	Y	Y	Y	Y
	Single Link Trunking (SLT)	Y	Y	Y	Y	Y
	Bi-Directional Forwarding Detection (BFD)	-	Y	Y	Y	-
Management & Miscellaneous	Standardized CLI	Y	Y	Y	Y	Y
	GUI Management	Y	Y	Y	Y	Y
	SNMPv3	Y	Y	Y	Y	Y
	SSHv2	Y	Y	Y	Y	Y
	TACACS+	Y	Y	Y	Y	f
	RADIUS Authentication	Y	Y	Y	Y	Y
	IPv6 Management	Y	Y	Y	Y	Y
	802.1ag Connectivity Fault Management (CFM)	-	Y	Y	Y	Y
	IP Flow Information Export (IPFIX)	Y	Y	Y	Y	Y
	Multi-Port Mirroring	-	Y	Y	Y	Y
	Layer 2 Remote Port Mirroring	-	Y	Y	Y	Y
	Layer 3 Remote Port Mirroring	-	-	-	-	Y
	802.3az Energy Efficient Ethernet	-	-	-	-	-
	Software Licensing	Y	Y	Y	Y	Y

Based on:

ERS 8300 4.2.3 ERS 8800 7.2 VSP 9000 3.3

Legend:

Y = Support f = Future (i.e. Roadmapped & Hardware-ready) n = Scale - = Not Supported

Notes:

[e] Requires V-Mode to be enabled, therefore requires the exclusive use of V-Mode capable hardware

[f] Requires the 8895SF, or the 8692SF with the Enhanced CPU Daughter Card (SuperMezz) upgrade

[g] Requires R, RS, or 8800 Series Interface Models

About Avaya

Avaya is a global provider of business collaboration and communications solutions, providing unified communications, contact centers, networking and related services to companies of all sizes around the world. For more information please visit **www.avaya.com**.

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10/12 • DN4532-02

Western Group Rate Case

Exhibit FKS-1

5325 Office Signs

ARIZONA WATER COMPANY

INTER-OFFICE CORRESPONDENCE

To: Bill Garfield, Fred Schneider, Joe Harris, Rob Spear *Date:* July 14, 2015

From: Ted Millspaugh and Robert Romo

Subject: Phoenix Office

There are currently two Arizona Water Company signs on the Phoenix office and are located on the Southwest (back) and the Northwest (front) corners of the building. These signs are difficult to see by Vendors, Customers and Business Partners looking for the office. Currently, there is not a sign in front of the office adjacent to Indianola where you enter the driveway into the parking lot.

The sign on the Northwest corner cannot be seen until you turn into the parking lot off Indianola. The sign located on the Southwest corner is difficult to see while traveling on I-17 Northbound or the frontage road adjacent to I-17 Northbound.

I will discuss options for increasing the visibility at each of the locations below.

Option No. 1: Shows the existing signs currently on the Northwest corner and the Southwest corner of the building. With this option, we would add hallo illuminated reverse pan channel letters with the AWC Logo. The cost for option no. 1 is approximately $19,500 for both signs.

Option No. 2: Shows the existing signs currently on the Northwest corner and the Southwest corner of the building. With this option, we would refurbish the old letters and add halo illuminated pan letters with the AWC Logo. The proposed display on option 2 does not show the logo but it is included in the proposal. The cost for option no. 2 is approximately $18,000 for both signs.

Both of these options would require electrical installed within 5-feet of each sign. We would contract for the installation of electrical with a separate contractor.

To assist visitors in identifying the office, I also developed two options for signs at the driveway entrance from Indianola. Those are described below:

Option No. 3: Shows a new non-illuminated sign installed on the 3 foot block wall on the east side of the west driveway entrance off Indianola to the Phoenix office, see attached map. This sign would be made using aluminum flat cut letters painted blue and mounted on existing block wall. This cost is approximately $2,800.

Option No. 4: Shows a new sign installed at the same location as option no. 3 but is a new non-illuminated sign with the AWC logo and aluminum flat letters stud mounted to sign. This cost is approximately $8,200.

Recommendation:
I recommend the Company complete option no. 2 and install a new sign at driveway from Indianola using option no. 3. The addition of illuminated signs at the front of the Phoenix office would improve the visibility for the company's visitors.

PRELIMINARY ☐

ACTUAL ☐

ARIZONA WATER COMPANY
COST ESTIMATE WORKSHEET

DATE PREPARED:

PREPARED BY:

SYSTEM:

SHEET OF

PROJECT LOCATION:

DRAWING NO

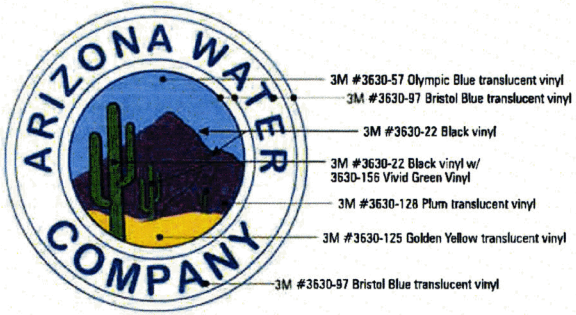
PROJECT DESCRIPTION:

Cost for Three Signs @ AWC Phx. Office

	DESCRIPTION	PLANT PROP ACCT	QUANTITY	UNIT COST	TOTAL
CONTRACT WORK	Halo Illuminated Reverse Pan Channel				
	Letters w/ Face & Halo Illuminated Logo		2	4550	9100
	Non Illuminated D/F Monument Sign		1	5450	5450
	Permits		1	3000	3000
	Tax		1	2000	2000
	Electrical To Signs		3	2500	7500
	SERVICE CONNECTIONS: DOUBLE-LONG	345			
	SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	TAXABLE SERVICE CONNECTIONS COMPLETE: SINGLE-LONG	345			
	TAXABLE SERVICE CONNECTIONS COMPLETE: SINGLE-SHORT	345			
					$ 27,050 -
MATERIALS					
	SERVICE CONNECTIONS: DOUBLE-LONG	345			
	SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	TAXABLE SERVICE CONNECTIONS: SINGLE-LONG	345			
	TAXABLE SERVICE CONNECTIONS: SINGLE-SHORT	345			
	TAXABLE METERS	346			
	METERS	346			
TOTAL MATERIALS					$ -
LABOR					
	TESTING FEE				
	PERMIT FEE				
	SURVEY FEE				
	FIELD INSPECTION				
	INSTALL SERVICE CONNECTIONS: DOUBLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	INSTALL **TAXABLE** SERVICE CONNECTIONS: SINGLE-LONG	345			
	INSTALL **TAXABLE** SERVICE CONNECTIONS: SINGLE-SHORT	345			
TOTAL LABOR					$ -
SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR					$ 27,050 -
OVERHEAD				15%	4058 -
TOTAL	REFUNDABLE PORTION ☐ NON-REFUNDABLE PORTION ☐			**COST ESTIMATE**	$ 31,000 -

A HALO ILLUMINATED REVERSE PAN CHANNEL LETTERS w/ FACE & HALO ILLUMINATED LOGO

SCALE: 1/2"=1'-0" 49.83 sf



Scope of Work
Manufacture and install one (1) set of halo illuminated reverse pan channel letters with 3" returns & blue LED modules.

Manufacture and install one (1) set of halo illuminated & halo illuminated pan channel logo with pushed through ½" acrylic. 5" returns and are white .125" aluminum face & White LED module illumination. Mount spaced off wall 1-1/2"

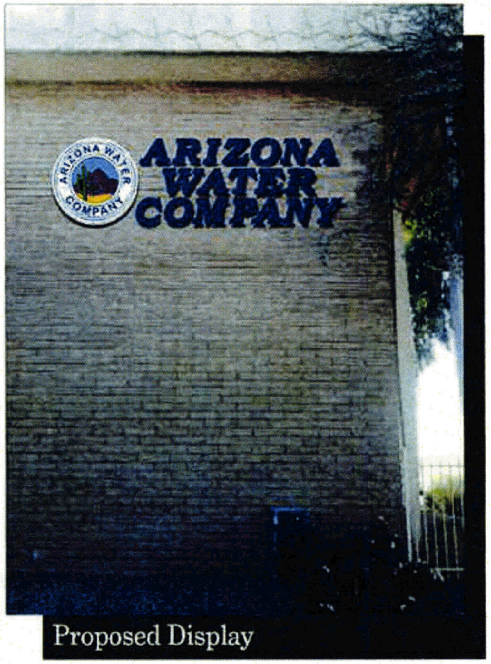
CUSTOMER RESPONSIBLE TO BRING ONE (1) DEDICATED, 120V/20A CIRCUIT TO WITHIN 5' OF DISPLAY AREA.

$4550.00 + TAX AND PERMITS PER CITY EA.

Existing Wall

Existing Wall

Night Illumination



Proposed Display

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ARIZONA COMMERCIAL SIGNS
4018 E. WINSLOW • PHOENIX AZ 85040
OFFICE: (480) 921-8900 • FAX (602)437-8073

PROJECT NAME
ARIZONA WATER COMPANY
PHOENIX, AZ

CONTACT:
PHONE:

CONTACT REP:
JAY BOYD—480-478-5117

DESIGNER
MIKE KEEN

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DESIGN NUMBER:
AZ WATER PHX 12-05-14 DESIGN

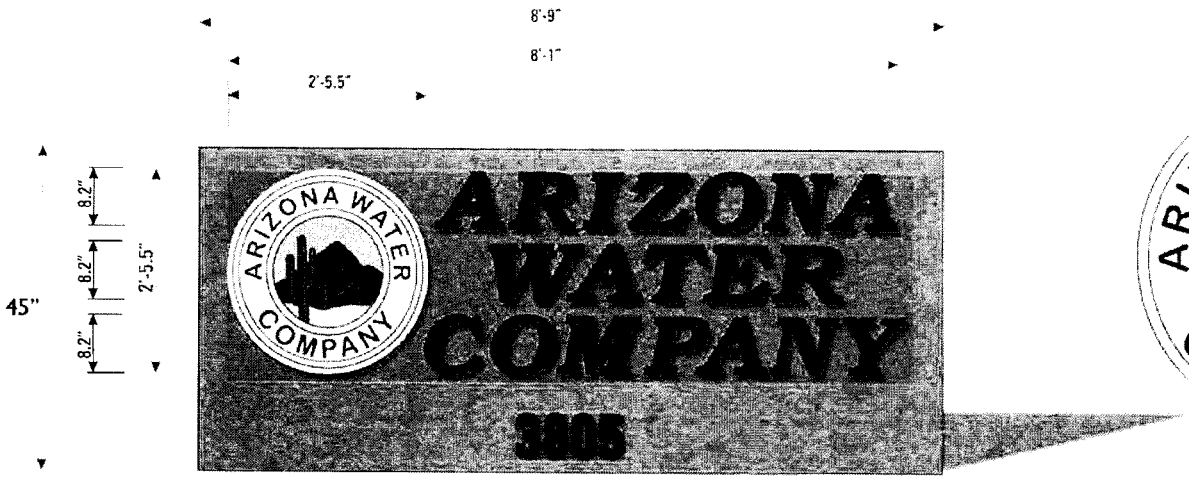
SCALE
AS NOTED

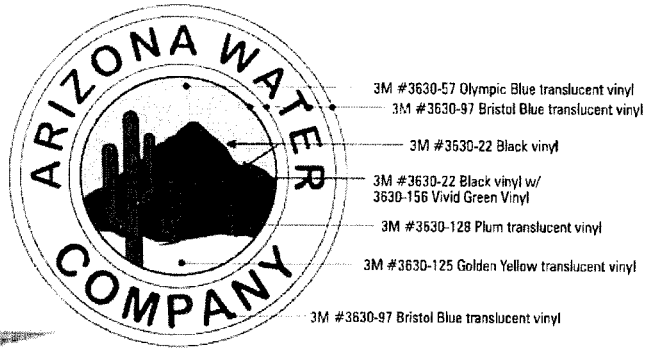
REVISIONS
1
2
3
4
5

LANDLORD / DEVELOPER APPROVAL
SIGNATURE & DATE

CUSTOMER APPROVAL
SIGNATURE & DATE

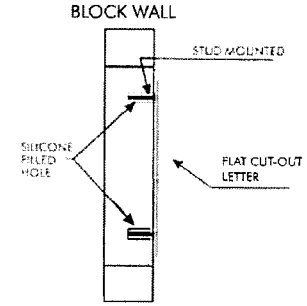
SHEET:
1 OF 3
DESIGN





$5450.00 + TAX AND PERMITS PER CITY

CROSS SECTION: FLAT CUT-OUT LETTER



A NON-ILLUMINATED D/F MONUMENT SIGN

SCALE: 3/4" = 1'-0"

MANUFACTURE AND INSTALL (1) NON-ILLUMINATED D/F MONUMENT SIGN. PAINTED TO MATCH SITE WALL COPY AND LOGO ARE .25" ALUMINUM FLAT CUT LETTERS STUD MOUNTED TO SIGN.

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OFFICE: (480) 921-9800 • FAX: (602) 437-3073

PROJECT NAME
ARIZONA WATER COMPANY
PHOENIX, AZ

CONTACT:
PHONE:

CONTACT REP
JAY BOYD – 480-478-5117

DESIGNER:
MIKE KEEN

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DESIGN NUMBER:
AZ WATER PHX 12-05-14 DESIGN

SCALE
AS NOTED

REVISIONS

LANDLORD / DEVELOPER APPROVAL
SIGNATURE & DATE

CUSTOMER APPROVAL
SIGNATURE & DATE

SHEET:
3 OF 3
DESIGN

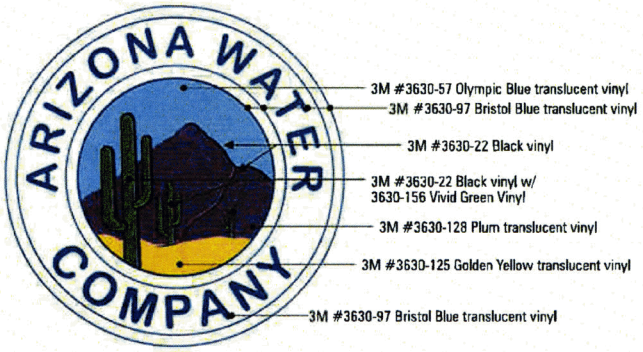
C .25" FLAT CUT LETTERS — 12.17 Total Sq. Ft.

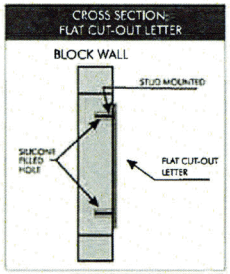
Scale: 1-1/2" = 1'- 0"

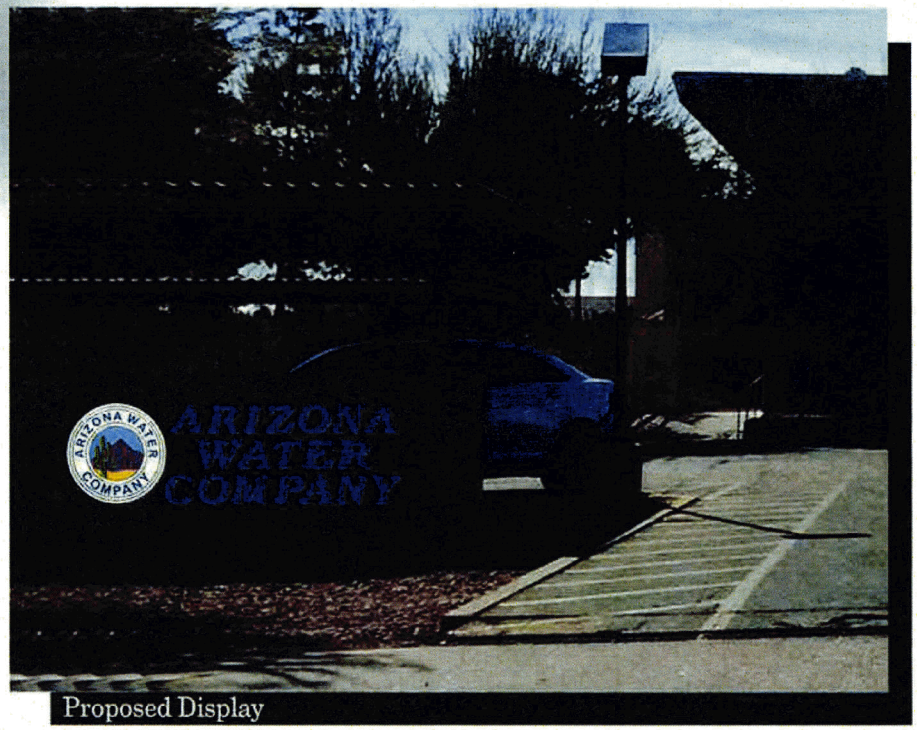
Scope of Work

Manufacture and install one (1) set of aluminum flat cut letters stud mounted to existing site wall.

$2,260.00 + TAX AND PERMITS PER CITY







Proposed Display

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- JAY BOYD~480-478-5117

DESIGNER:
- MIKE KEEN

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DESIGN NUMBER:
- AZ WATER PHX 12-05-14 DESIGN

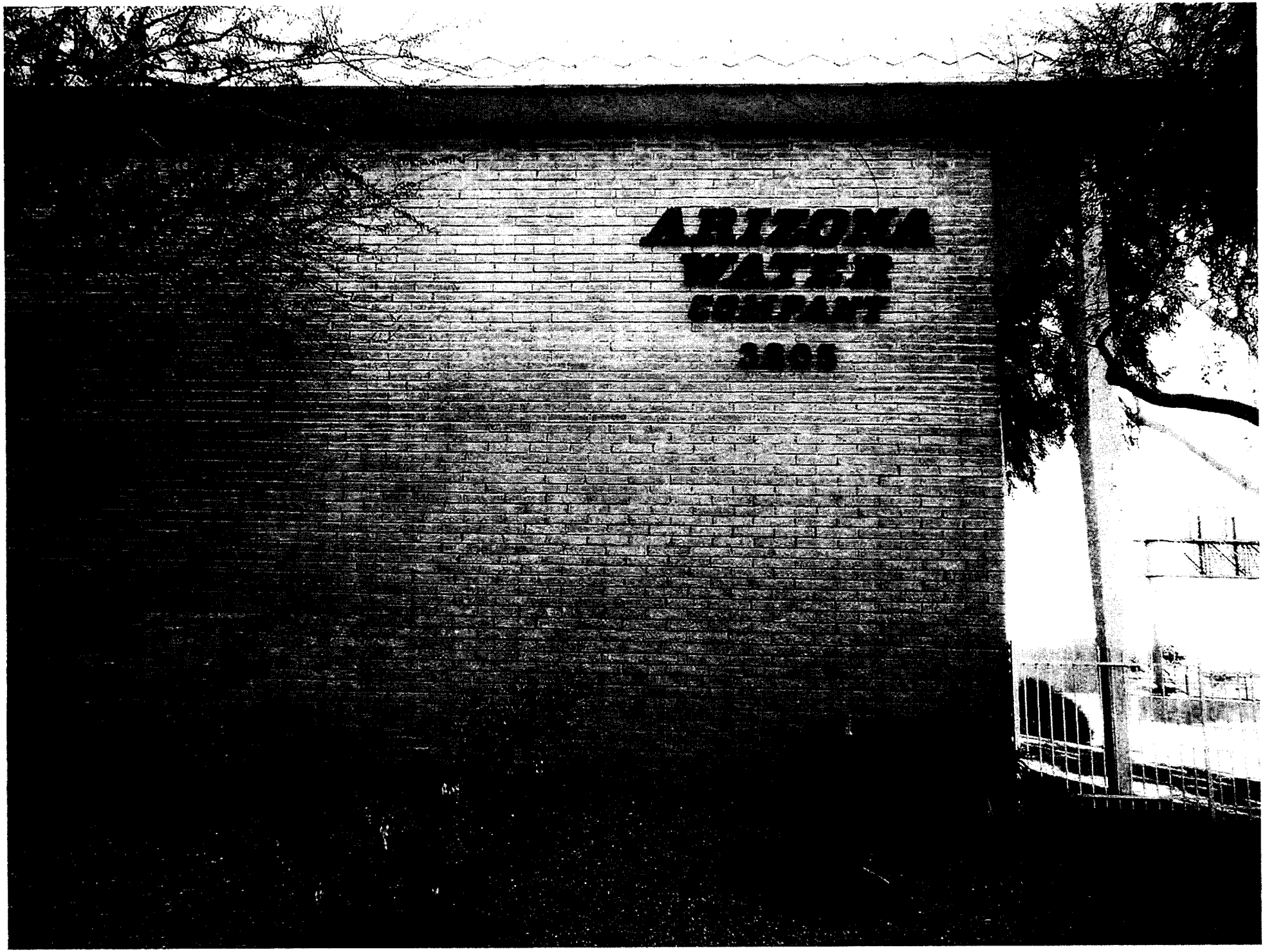
SCALE
- AS NOTED

REVISIONS
1
2
3
4
5

LANDLORD / DEVELOPER APPROVAL
SIGNATURE & DATE

CUSTOMER APPROVAL
SIGNATURE & DATE

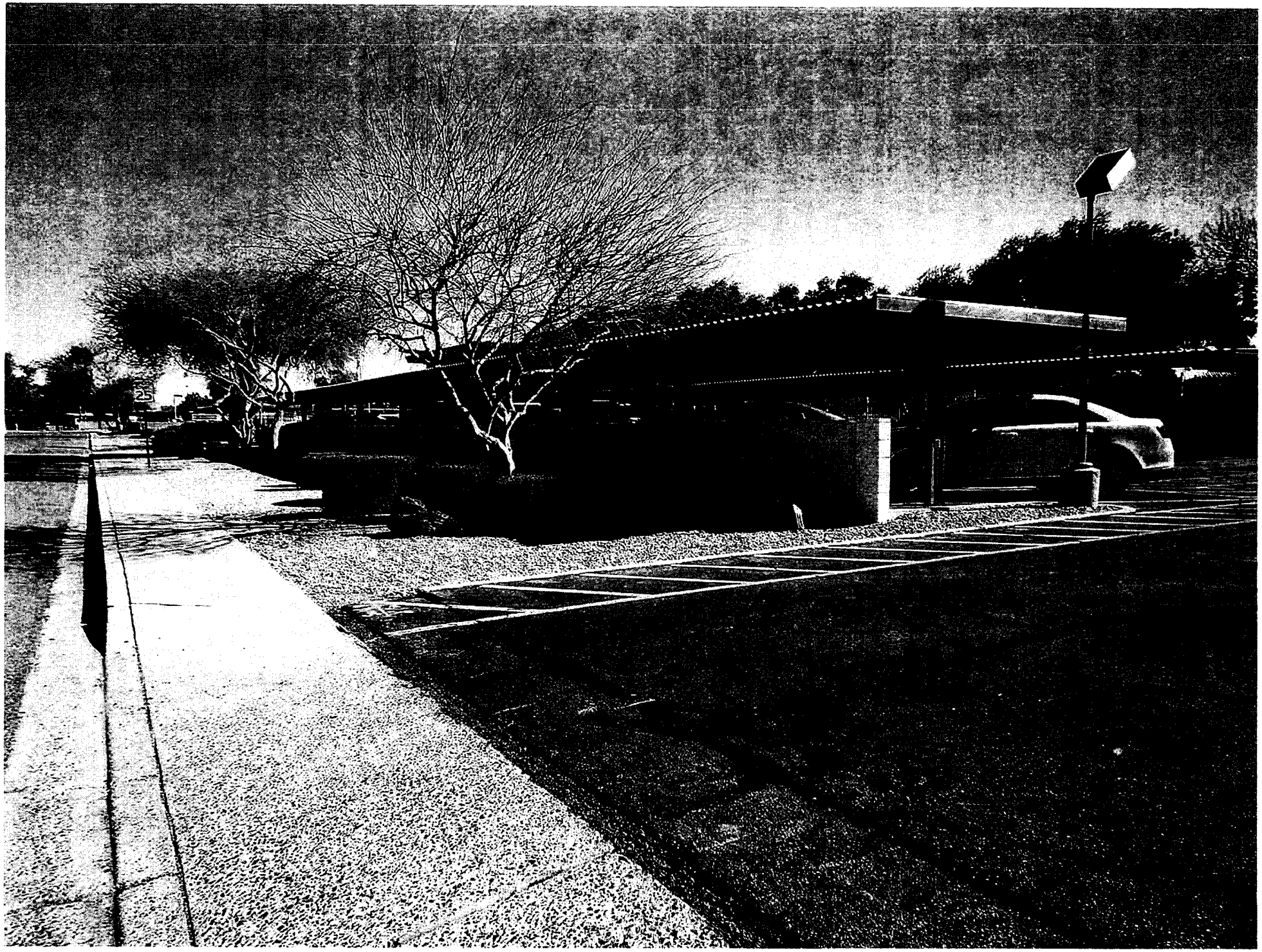
SHEET:
2 OF 3
DESIGN

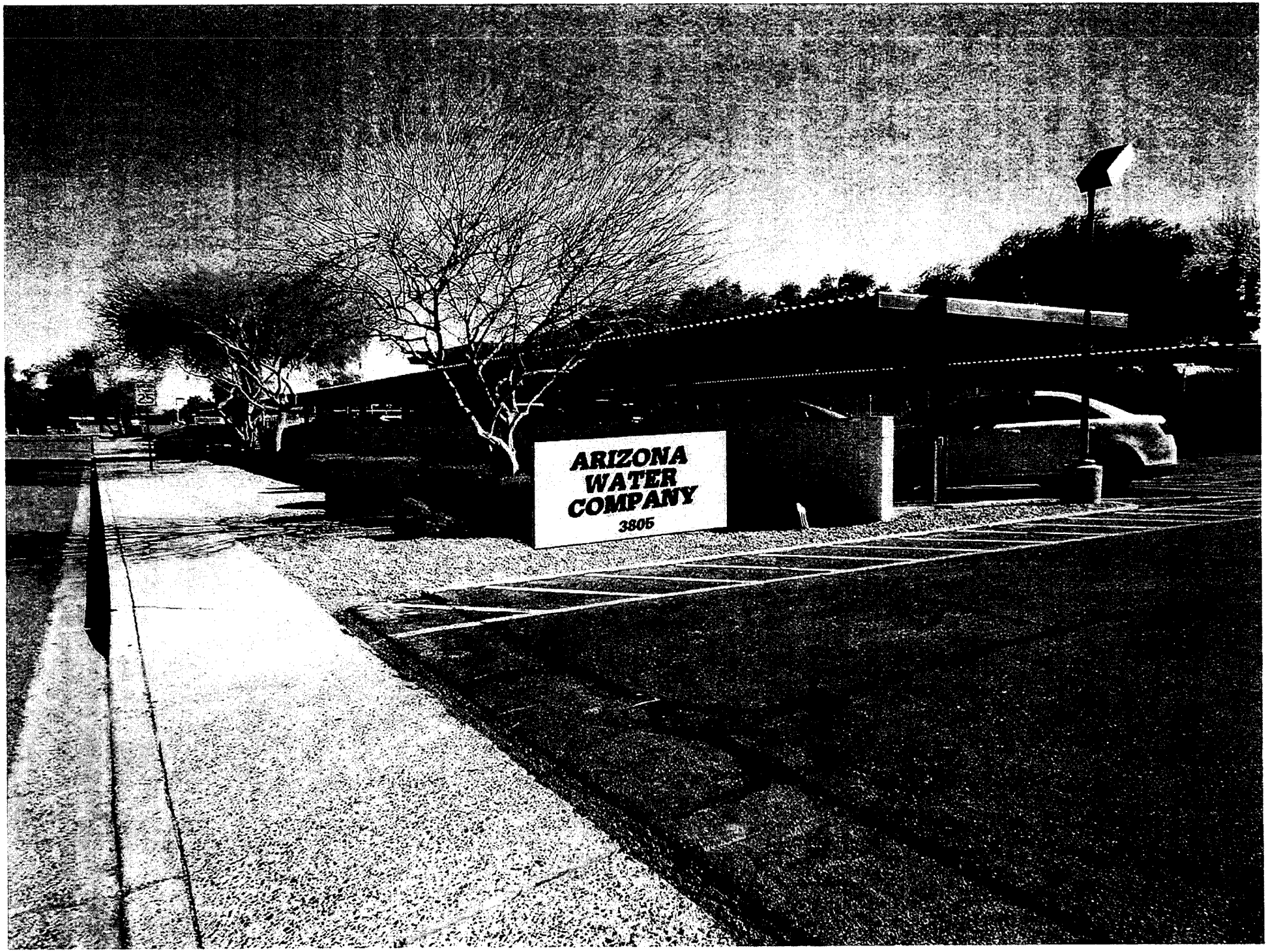

ARIZONA
WATER
COMPANY

ARIZONA WATER COMPANY
ARIZONA
WATER
COMPANY
3805

ARIZONA
WAGNER
COMPANY
3805

ARIZONA WATER COMPANY
ARIZONA WATER COMPANY
3805


25


ARIZONA
WATER
COMPANY
3805

Western Group Rate Case

Exhibit FKS-1

5326 Server Replacement

ARIZONA WATER COMPANY

CONSTRUCTION BUDGET REQUEST

SPECIFIC PROJECT

BUDGET YEAR: 2015 DIVISION: Phoenix

PROJECT NO.: 1-0003 SYSTEM: Phoenix

DESCRIPTION OF FACILITIES TO BE CONSTRUCTED (ATTACH MAP OR SKETCH)

Replace the anti-virus and patch servers and migrate Active Directory to new server.

FACTORS JUSTIFYING PROJECT (ATTACH ANY SUPPORTING DOCUMENTS SUCH AS PRESSURE RECORDINGS, ETC.)

The patch and anti-virus servers are used to push software updates to user workstations and to run the company's anti-virus software. These functions are critical to maintain the health and reliability of the company's computer network. These servers are also five plus years old and need to be replaced. The Company evaluates all of its servers for age and performance issues and makes replacements when necessary. The Active Directory service which controls all user access to the network needs to be migrated. Migrating Active Directory to a newer server will help ensure trouble free user access to the company's network.

DESCRIPTION OF EXISTING FACILITIES

Existing patch and anti-virus servers.

ARIZONA WATER COMPANY

CONSTRUCTION BUDGET REQUEST

PERMITS REQUIRED None
COST/BENEFIT ANALYSIS
MATERIALS TO BE RETIRED N/A
PROJECT SCHEDULE (ATTACH GANTT CHART)
ESTIMATE OF CONSTRUCTION COST (ATTACH COST ESTIMATE WORKSHEET) $14,000

ENGINEER APPROVAL: _____ Date: _____

MANAGER APPROVAL: _____ Date: _____

VP – ENGINEERING APPROVAL: _____ Date: _____

ARIZONA WATER COMPANY

WORK AUTHORIZATION - DETAIL SHEET

W.A. NUMBER:
P.E. NUMBER:
BUDGET ITEM NO.:
SHEET NO.:

RETIREMENT PROPERTY UNITS	PLANT PROPERTY ACCOUNT	UNIT DESCRIPTION	QUANTITY	YEAR INSTALLED AND W.A. NUMBER
	391	Servers		

PROJECT DESCRIPTION:

Design and implement new company website

	DESCRIPTION	PLANT PROP ACCT	QUANTITY	UNIT COST	TOTAL
CONTRACT WORK	Consulting services - migration of Active Directory	391			$ 6,500
	SERVICE CONNECTIONS COMPLETE: DOUBLE-LONG	345			
	SERVICE CONNECTIONS COMPLETE: DOUBLE-SHORT	345			
	SERVICE CONNECTIONS COMPLETE: SINGLE-LONG	345			
	SERVICE CONNECTIONS COMPLETE: SINGLE-SHORT	345			
TOTAL CONTRACT WORK					$ 6,500
MATERIALS	Dell PowerEdge R210II Server	391	2	$ 2,800.00	$ 5,600
TOTAL MATERIALS					$ 5,600
LABOR					
	TESTING FEE				
	PERMIT FEE				
	SURVEY FEE				
	INSTALL SERVICE CONNECTIONS: DOUBLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-SHORT	345			
TOTAL LABOR					$ -
SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR					$ 12,100
OVERHEAD					1,500
TOTAL	REFUNDABLE PORTION ☐	NON-REFUNDABLE PORTION ☐		COST ESTIMATE	$ 13,600

Western Group Rate Case

Exhibit FKS-1

5327 Company Website

ARIZONA WATER COMPANY

CONSTRUCTION BUDGET REQUEST

SPECIFIC PROJECT

BUDGET YEAR: 2015 DIVISION: Phoenix

PROJECT NO.: **1-0004** SYSTEM: Phoenix

DESCRIPTION OF FACILITIES TO BE CONSTRUCTED (ATTACH MAP OR SKETCH)

Design and implement a new company website.

FACTORS JUSTIFYING PROJECT (ATTACH ANY SUPPORTING DOCUMENTS SUCH AS PRESSURE RECORDINGS, ETC.)

The company's website is used by customers to find payment options, local office addresses, phone numbers, tariffs, conservation tips and Consumer Confidence Reports. Over time the website has become difficult to maintain and can be difficult for customers to navigate. Designing and implementing a new website will allow the company to address these issues, as well as allow it to plan for future offerings such as e-billing.

DESCRIPTION OF EXISTING FACILITIES

Existing company website.

ARIZONA WATER COMPANY

CONSTRUCTION BUDGET REQUEST

PERMITS REQUIRED None
COST/BENEFIT ANALYSIS
MATERIALS TO BE RETIRED N/A
PROJECT SCHEDULE (ATTACH GANTT CHART)
ESTIMATE OF CONSTRUCTION COST (ATTACH COST ESTIMATE WORKSHEET) $20,000

ENGINEER APPROVAL: _____ Date: _____

MANAGER APPROVAL: _____ Date: _____

VP – ENGINEERING APPROVAL: _____ Date: _____

ARIZONA WATER COMPANY

WORK AUTHORIZATION - DETAIL SHEET

W.A. NUMBER:
P.E. NUMBER:
BUDGET ITEM NO.:
SHEET NO.:

RETIREMENT PROPERTY UNITS	PLANT PROPERTY ACCOUNT	UNIT DESCRIPTION	QUANTITY	YEAR INSTALLED AND W.A. NUMBER
	391	Company website		

PROJECT DESCRIPTION:

Design and implement new company website

	DESCRIPTION	PLANT PROP ACCT	QUANTITY	UNIT COST	TOTAL
CONTRACT WORK	Content development / site architecture	391			$ 1,500
	Page design	391			3,500
	Page development	391			3,000
	Creation/testing/archiving	391			1,300
	SERVICE CONNECTIONS COMPLETE: DOUBLE-LONG	345			
	SERVICE CONNECTIONS COMPLETE: DOUBLE-SHORT	345			
	SERVICE CONNECTIONS COMPLETE: SINGLE-LONG	345			
	SERVICE CONNECTIONS COMPLETE: SINGLE-SHORT	345			
TOTAL CONTRACT WORK					$ 9,300
MATERIALS					
TOTAL MATERIALS					$ -
LABOR					
	TESTING FEE				
	PERMIT FEE				
	SURVEY FEE				
	COMPANY LABOR	391			8,500
	INSTALL SERVICE CONNECTIONS: DOUBLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-SHORT	345			
TOTAL LABOR					$ 8,500
SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR					$ 17,800
OVERHEAD					2,100
TOTAL	REFUNDABLE PORTION ☐	NON-REFUNDABLE PORTION ☐		COST ESTIMATE	$ 19,900