

**DOCUMENT 00 90 01
ADDENDUM #1**

Project: 2019-0113

Date: Monday, July 15, 2019
Bid Date: Tuesday, July 23, 2019
Bid Time: 2:00 p.m.

This addendum shall be considered part of the Contract Document for the above referenced project as though it had been issued at the same time and shall be incorporated integrally therewith. Where provisions of the following supplementary data differ from those of the original Contract Documents, this Addendum shall govern and take precedence. Receipt of this addendum shall be acknowledged in the Bid form.

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GENERAL INFORMATION

1. Minor clarifications and modifications to plans and specifications have been included in this addendum.
2. Attached specification sections highlight changes by bolding the text changes and ~~striketrough~~ text for deleted portions.
3. Drawing modifications have been highlighted using revision clouds.
4. The Bid opening date has been pushed back to July 23rd at 2:00 p.m. at the District offices.

PROJECT MANUAL

Section C BID

Delete and replace this section with the version attached.

Section 01 02 50 Measurement and Payment

Delete and replace this section with the version attached.

Section 01 11 00 Summary of Work

Paragraph 1.2 – Amend Newbury point 28 to read as follows:

Furnish and Install nameplate on discharge head to show ~~submersible~~ pump and motor specifications

Paragraph 1.2 – Amend 98th & 23rd point 3 to read as follows:

Remove, clean and inspect existing pumping equipment and store on site, including 3” recharge pipe.

Paragraph 1.9.A – Added additional column for well casing diameter

Section 01 74 15 Mobilization / Demobilization / Cleanup

Paragraph 3.2.A – Add the following sentence to end of paragraph:

If the designated site does not have enough space to store permanent pumping equipment while working on the well, it must be stored at CONTRACTORS shop above grade on wood or metal.

Section 22 11 23 Vertical Turbine Pump, Motor and Appurtenances

Paragraph 1.2.B – Added motor voltage, and tube and shaft sizing and adjusted a few quantities in operating capacities.

Paragraph 2.6.A – Added the following chart:

Well	Transducer Pressure Range	Estimated Additional Cable Length Beyond Well Head	Transducer Setting Depth	Sounder Setting Depth	Chemical Addition Line Setting Depth
Newbury	0-100 psi	5 ft	740 ft	740 ft	1010 ft
10 th & 78 th	0-150 psi	60 ft	390 ft	390 ft	870 ft
98 th & 23 rd	0-100 psi	65 ft	755 ft	755 ft	890 ft
8200 S 700 E	0-150 psi	60 ft	434 ft	434 ft	910 ft

Section 33 20 22 Install Development Pump Equipment

Paragraph 2.2.A – Amend second sentence to read as follows:

The Contractor shall initially set the pump at a depth of ~~300~~ **720** feet below ground surface...

Section 33 20 28 Constant-Rate Discharge Test

Paragraph 3.2.A – Strikethrough last sentences of points 2 and 3 as they did not pertain to this project.

PROJECT DRAWINGS

Sheet G002

10th & 78th Well discharge head label moved.

Sheet G004

98th & 23rd Well discharge head label moved.

Sheet G006

Added note and hatching indicating the gravel in northwest corner of the well site is unusable storage and work space.

Sheet G008

Salt Lake County Property label added

ATTACHMENTS:

1. Section C Bid
2. Specifications

END OF ADDENDUM

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ATTACHMENT #1

BID

BID

BID TO: JORDAN VALLEY WATER CONSERVANCY DISTRICT

The undersigned Bidder hereby proposes to furnish all plant machinery, labor, services, materials, equipment, tools, supplies, transportation, utilities, and all other items and facilities necessary to perform all work required under the Bidding Schedule of the Owner's Contract Documents entitled "Four Well Rehabilitation Project" drawings and all addenda issued by said Owner prior to opening of the bids.

Addenda are only delivered by e-mail and through the internet.

The undersigned bidder acknowledges receipt of the following addenda:

<u>No.</u>	<u>Date Received</u>	<u>No.</u>	<u>Date Received</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Bidder agrees that, within 10 calendar days after receipt of Notice of Award from Owner, he will execute the Agreement in the required form, of which the Notice Inviting Bids, Instructions to Bidders, Bid, Information Required of Bidder, Technical Specifications, Drawings, and all addenda issued by Owner prior to the opening of bids, are a part, and will secure the required insurance and bonds and furnish the required insurance certificates; and that upon failure to do so within said time, then the bid guarantee furnished by Bidder shall be forfeited to Owner as liquidated damages for such failure; provided, that if Bidder shall execute the Agreement, secure the required insurance and bonds, and furnish the required insurance certificates within said time, his check, if furnished, shall be returned to him within five days thereafter, and the bid bond, if furnished, shall become void. It is further understood that this bid may not be withdrawn for a period of 45 days after the date set for the opening thereof, unless otherwise required by law.

Bidder hereby certifies he has registered and participates in the Status Verification System (E-Verify).

Dated: _____

Bidder: _____

By: _____
(Signature)

Title: _____

Bidder further agrees to complete all work required within the time stipulated in the Contract Documents, and to accept in full payment therefore the price(s) named in the above-mentioned Bidding Schedule(s).

BID

Bid Schedule A: Newbury Well (Addendum #1)

Item No.	Description	Unit	Est. Qnty.	Bid Unit Price	Bid Price
A1	Mobilization/ Demobilization	LS	1		
A2	Remove and Inspect Permanent Pumping Equipment	EA	1		
A3	Video Survey	EA	3		
A4	Brush and Evacuate Well	HR	24		
A5	Chemicals	LS	1	\$50,000.00	\$50,000.00
A6	Acid Treatment/Agitate/ Neutralize/Dispose	HR	80		
A7	Shock Chlorination/ Agitate/ Dechlorinate/ Dispose	HR	60		
A8	Initial Well Redevelopment	HR	110		
A9	Furnish, Install, and Remove Temporary Pump	EA	1		
A10	Pump Development	HR	24		
A11	Step Drawdown Test	HR	8		
A12	Constant Rate Test	HR	24		
A13	Modify Discharge head to accommodate (3) 1-1/2" tremie lines	LS	1		
A14	Re-Install Furnish and Install Permanent Pumping Equipment	LS	1		
A15	Furnish and Install Pump and Motor Nameplate on Discharge Head	LS	1		
A16	Furnish and Install (3) 1-1/2" PVC Tremie Lines	LF	3060 2490		
A17	Clean-up of Site	LS	1		
Sub-Total of All Newberry Well Bid Items				\$	

BID

Bid Schedule B: 10th & 78th Well (Addendum #1)

Item No.	Description	Unit	Est. Quantity	Bid Unit Price	Bid Price
B1	Mobilization/ Demobilization	LS	1		
B2	Remove, Inspect, and Clean Permanent Pumping Equipment	EA	1		
B3	Video Survey	EA	1		
B4	Furnish and Install New Transducer	LS	1		
B5	Modify Discharge head to accommodate (3) 1-1/2" tremie lines	LS	1		
B6	Furnish and Install (3) 1-1/2" PVC Tremie Lines	LF	2670 1650		
B7	Re-install Existing Permanent Pumping Equipment with New Column, Tube, and Shaft	LS	1		
B8	Clean-up of Site	LS	1		
Sub-Total of All 10th & 78th Well Bid Items				\$	

BID

Bid Schedule C: 98th & 23rd Well (Addendum #1)

Item No.	Description	Unit	Est. Quantity	Bid Unit Price	Bid Price
C1	Mobilization/ Demobilization	LS	1		
C2	Remove, Inspect, and Clean Permanent Pumping Equipment	EA	1		
C3	Video Survey	EA	3		
C4	Brush and Evacuate Well	HR	20		
C5	Assess and Repair Screens as Needed (~20' Mild Steel Swage)	LS	1		
C6	Chemicals	LS	1	\$30,000.00	\$30,000.00
C7	Acid Treatment/Agitate/ Neutralize/Dispose	HR	60		
C8	Shock Chlorination/ Agitate/ Dechlorinate/ Dispose	HR	45		
C9	Initial Well Redevelopment	HR	100		
C10	Modify Discharge head to accommodate (3) 1-1/2" tremie lines	LS	1		
C11	Install New Well Cable for Submersible Motor	LF	760		
C12	Re-Install Permanent Pumping Equipment	LS	1		
C13	Furnish and Install (3) 1-1/2" PVC Tremie Lines	LF	2700 2400		
C14	Furnish and Install Pump and Motor Nameplate on Discharge Head	LS	1		
C15	Clean-up of Site	LS	1		
Sub-Total of All 98th & 23rd Well Bid Items				\$	

BID

Bid Schedule D: 8200 S 700 E Well (Addendum #1)

Item No.	Description	Unit	Est. Quantity	Bid Unit Price	Bid Price
D1	Mobilization/ Demobilization	LS	1		
D2	Traffic Control	LS	1		
D3	Remove, Inspect, and Clean Permanent Pumping Equipment Including 3-inch Recharge Pipe	EA	1		
D4	Video Survey	EA	3		
D5	Brush and Evacuate Well	HR	24		
D6	Chemicals	LS	1	\$62,000.00	\$62,000.00
D7	Acid Treatment/Agitate/ Neutralize/Dispose	HR	80		
D8	Shock Chlorination/ Agitate/ Dechlorinate/ Dispose	HR	60		
D9	Initial Well Redevelopment	HR	110		
D10	Submersible BJ Pump Assessment and Repair/Replace	LS	1	\$25,000.00	\$25,000.00
D11	Modify Discharge head to accommodate (3) 1-1/2" tremie lines	LS	1		
D12	New Motor and Well Cable	LS	1		
D13	Re-install Permanent Pumping Equipment Including 3-inch Recharge Pipe	LS	1		
D14	Furnish and Install (3) 1-1/2" PVC Tremie Lines	LF	2760 1780		
D15	Furnish and Install Pump and Motor Nameplate on Discharge Head	LS	1		
D16	Clean-up of Site	LS	1		
Sub-Total of All 8200 S & 700 E Well Bid Items				\$	

8200 S & 700 E Well Alternate Bid Items:

D-Alt1	New 8" Column Pipe	LF	444		
Sub-Total of All 8200 S & 700 E Well Alternate Bid Items				\$	

BID

Summary of all Four Wells:

Sub-Total of All Newbury Well Bid Items	\$
Sub-Total of All 10th & 78th Well Bid Items	\$
Sub-Total of All 98th & 23rd Well Bid Items	\$
Sub-Total of All 8200 S & 700 E Well Bid Items	\$
Total Price of All Bid Items	\$

TOTAL BASE BID (words):

ATTACHMENT #2

SPECIFICATIONS

SECTION 01 02 50 MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Measurement and payment criteria applicable to portions of the Work performed under a unit price payment method.
- B. Defect assessment and non-payment for rejected work.

1.2 RELATED WORK

- A. Section 00 41 00 – Bid Form
- B. Section 00 52 00 – Agreement, Paragraph 6.02 – Progress Payments; Retainage
- C. Section 00 70 00 – General Conditions, Article 15
- D. Section 01 33 00 – Submittals

1.3 SUBMITTALS

- A. Submit the payment request to Engineer at least 20 days before the date established in the Agreement for each progress payment. Engineer will, within 10 days of receiving the payment request, complete the review of the progress payment and either recommend it for payment to the Owner or return it to the Contractor for correction, per the requirements of Article 15 of the General Conditions.
- B. Submit an updated progress schedule with each Application for Payment as required in Section 01 33 00 – Submittals.
- C. Submit Application for Payment on a form approved by the Engineer.

1.4 UNIT QUANTITIES SPECIFIED

- A. Quantities and measurements indicated in the Contract Documents are for bidding and contract purposes only. Quantities and measurements supplied or placed in the Work and verified by the Engineer shall determine payment.
- B. If the actual Work requires more or fewer quantities than those quantities indicated, provide the required quantities at the unit sum/prices contracted.

1.5 MEASUREMENT OF QUANTITIES

- A. Measurement Devices:
 - 1. Weigh Scales: Inspected, tested and certified by the applicable state Weights and Measures department within the past year.

2. Platform Scales: Of sufficient size and capacity to accommodate the conveying vehicle.
 3. Metering Devices: Inspected, tested and certified by the applicable State department within the past year.
- B. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.
- C. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.
- D. Measurement by Area: Measured by square dimension using mean length and width or radius.
- E. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.
- F. Lump Sum: Items measured as appropriate, as a completed item or unit of the Work.

1.6 PAYMENT

- A. Payment Includes: Full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work; permits, taxes, overhead and profit.
- B. Final payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities accepted by the Engineer multiplied by the unit sum/price for Work which is incorporated in or made necessary by the Work.
- C. It is the responsibility of the Contractor to fully inform himself regarding all Federal, State and local tax laws, rules or regulations furnished under this Contract, including all exemption provisions and procedures. All bid prices for material, equipment and labor for the Work under this Contract is inclusive of any tax for materials which are imposed by any governing agency to which the Work hereunder is subject. The Contractor is solely responsible for assuring that all applicable taxes are included in his bid.

1.7 DESCRIPTION OF BID ITEMS

- A. The work generally consists of the following, which are numbered according to the bid schedule found in Article 5 of Section 00 41 00 – Bid Form:

NEWBURY WELL:

A1. MOBILIZATION/ DEMOBILIZATION

- a. Measured by lump sum.
- b. Payment covers cost of mobilization, demobilization, installation of temporary facilities, bringing all necessary construction equipment to the site, all bonds,

insurances, permits and fees, traffic control, clearing and grubbing, snow removal to the well site, quality control of materials, preparation of project schedule, final cleanup and project closeout, and all other items not specifically called for in any other bid item or called for in the plans and specifications or is customary, incidental or appurtenant to performance of a complete project.

- c. Payment will be made according to the following schedule:

<u>Percent of Original Contract Amount Earned</u>	<u>Percent of Amount Bid for Mobilization to be Paid</u>
5%	40
15%	20
40%	30
50%	10

A2. REMOVE AND INSPECT PERMANENT PUMPING EQUIPMENT

- a. Measurement is per each pump assembly removed
- b. This item includes all labor, materials, transportation and other items associated with the removal, storage, and protection of the permanent pumping equipment in the wells.

A3. VIDEO SURVEY

- a. Measurement is per each video survey completed.
- b. This item includes all materials, transportation, equipment, labor and other items required for performing a video survey of the well.
- c. Payment of this item shall be on a unit price basis for each successful well video survey that is performed at the unit price bid.

A4. BRUSH AND EVACUATE WELL

- a. Measurement is on a per hour basis for each hour spent
- b. This item includes all materials, transportation, equipment, labor and other items required to brush and evacuate the well with the use of a nylon brush and submersible pump.
- c. Payment of this item shall be on a unit price basis for each hour spent performing brushing and evacuation work on the well.

A5. CHEMICALS

- a. Measurement is on a lump sum basis.
- b. This item includes all materials, transportation, equipment, labor and other items required for purchasing, delivery, and safe handling of all chemicals required to perform the acid and chlorine treatments.
- c. Payment shall be for chemicals after they are delivered safely to the site.

A6. ACID TREATMENT/AGITATE/NEUTRALIZE/DISPOSE

- a. Measurement is on per hour basis for each hour spent.
- b. This item includes all materials, transportation, equipment, tools, labor and other items required for the mixing, injection, agitation, evacuation, neutralization and disposal of neutralized acid
- c. Payment shall be on a unit price basis for each hour spent performing the acid treatment work including mixing, injection, agitation, removal and neutralization and disposal. Time spent in set up, daily preparations, and downtime due to equipment failure are not paid under this item and should be included in hourly rates.

A7. SHOCK CHLORINATION/AGGITATE/DECHLORINATE/DISPOSE

- a. Measurement is on a per hour basis for each hour spent
- b. This item includes all materials, transportation, equipment, tools, labor and other items required for the mixing, injection, agitation, evacuation, de-chlorination and disposal of de-chlorinated water
- c. Payment shall be on a unit price basis for each hour spent performing the shock chlorination work including mixing, injection, agitation, removal and neutralization and disposal. Time spent in set up, daily preparations, and downtime due to equipment failure are not paid under this item and should be included in hourly rates.

A8. INITIAL WELL REDEVELOPMENT

- a. Measurement is on an hourly basis for the time it takes to perform initial well redevelopment.
- b. This item includes all materials, transportation, equipment, tools, labor, and other items required for performing initial well redevelopment.
- c. Payment shall be on hourly basis for the actual hours performing initial well redevelopment as part of the project including swabbing, pumping, and bailing out removed materials.

A9. FURNISH, INSTALL, AND REMOVE TEMPORARY PUMP

- a. Measurement is per each pump installed and removed
- b. This includes all labor, materials, supplies, tools, and equipment required to provide, install, and remove the pump and associated appurtenance for the development and testing of the production well as, required by Specifications. This pay item shall constitute full compensation for all labor, equipment, tools, supplies, and materials required to complete this portion of the Work for this construction project.
- c. Payment shall be on a unit price basis for each full installation and removal of temporary pump for pump development and testing.

A10. PUMP DEVELOPMENT

- a. Measurement is on a per hour basis for each hour spent
- b. This item includes all materials, transportation, equipment, tools labor and other items required for performing pump development of the well.
- c. Payment shall be on a unit price basis for each hour spent performing pump development work as part of the project.

A11. STEP DRAWDOWN TEST

- a. Measurement is on per hour basis for each hour spent.
- b. This item includes all materials, transportation, equipment, tools, labor, and other items required to perform the step-drawdown test as specified in these specifications.
- c. Payment of this item shall be on a unit price basis for the each hour spent to perform the step-drawdown test at the unit price bid per hour.

A12. CONSTANT RATE TEST

- a. Measurement is on a per hour basis for each hour spent.
- b. This item includes all materials, transportation, equipment, tools, labor, and other items required to perform the constant rate test as specified in these specifications.
- c. Payment of this item shall be on a unit price basis for the each hour spent to perform the constant rate test at the unit price bid per hour.

A13. MODIFY DISCHARGE HEAD TO ACCOMMODATE (3) 1-1/2" TREMIE LINES

- a. Measurement is on a per lump sum basis

- b. This item includes all materials, transportation, equipment, tools, labor, and other items required for modifying the existing discharge head to accommodate for 3 new 1-1/2" PVC tremie lines.
- c. Payment of this item shall be on a lump sum basis for the installation of all three PVC tremie lines.

A14. ~~RE-INSTALL~~ **FURNISH AND INSTALL PERMANENT PUMPING EQUIPMENT**

- a. Measurement is on a lump sum basis
- b. This item includes all materials, transportation, equipment, tools, labor, and other items required for re-installing existing vertical turbine motor and purchasing and installing all new permanent pumping equipment including 750-feet of 14" column, tube, and shaft, and vertical turbine pump.
- c. Payment of this item shall be on a lump sum basis for re-installing existing vertical turbine motor and the purchase and installation of new permanent pumping equipment.

A15. **FURNISH AND INSTALL PUMP AND MOTOR NAMEPLATE ON DISCHARGE HEAD**

- a. Measurement is on a lump sum basis.
- b. This item includes all materials, transportation, equipment, tools, labor, and other items required for furnishing and installing a steel nameplate on the discharge head that contains the technical specifications of the submersible pumping equipment for future reference.
- c. Payment of this item shall be on a lump sum basis for the installation of the nameplate.

A16. **FURNISH AND INSTALL (3) 1-1/2" PVC TREMIE LINES**

- a. Measurement is on a per linear foot basis.
- b. This item includes all materials, transportation, equipment, tools, labor, and other items required for the installation of three separate 1-1/2" PVC tremie line.
- c. Payment of this item shall be on a linear foot basis for the installation of the three tremie lines.

A17. **CLEAN-UP OF SITE**

- a. Measurement is on a lump sum basis, which shall constitute the total cost to the Owner.

- b. This item includes all materials, transportation, equipment, tools, labor and other items required to clean site of all materials, debris and equipment and return the site to its original condition.
- c. Payment of this item shall be on a lump sum basis for final cleanup of the site prior to full de-mobilization.

10th & 78th WELL:

B1. MOBILIZATION/ DEMOBILIZATION

- a. Measured by lump sum.
- b. Payment covers cost of mobilization, demobilization, installation of temporary facilities, bringing all necessary construction equipment to the site, all bonds, insurances, permits and fees, traffic control, clearing and grubbing, snow removal to the well site, quality control of materials, preparation of project schedule, final cleanup and project closeout, and all other items not specifically called for in any other bid item or called for in the plans and specifications or is customary, incidental or appurtenant to performance of a complete project.
- c. Payment will be made according to the following schedule:

<u>Percent of Original Contract Amount Earned</u>	<u>Percent of Amount Bid for Mobilization to be Paid</u>
5%	40
15%	20
40%	30
50%	10

B2. REMOVE, INSPECT, AND CLEAN PERMANENT PUMPING EQUIPMENT

- a. Measurement is per each pump assembly removed
- b. This item includes all labor, materials, transportation and other items associated with the removal, inspection, cleaning, storage, and protection of the permanent pumping equipment in the wells.

B3. VIDEO SURVEY

- a. Measurement is per each video survey completed.
- b. This item includes all materials, transportation, equipment, labor and other items required for performing a video survey of the well.

- c. Payment of this item shall be on a unit price basis for each successful well video survey that is performed at the unit price bid.
- B4. FURNISH AND INSTALL NEW TRANSDUCER
- a. Measurement is on a lump sum basis.
 - b. This item includes all materials, transportation, equipment, tools, labor, and other items required for installation of a new transducer.
 - c. Payment of this item shall be on a lump sum basis for the installation of the transducer.
- B5. MODIFY DISCHARGE HEAD TO ACCOMMODATE (3) 1-1/2" TREMIE LINES
- a. Measurement is on a per lump sum basis
 - b. This item includes all materials, transportation, equipment, tools, labor, and other items required for modifying the existing discharge head to accommodate for 3 new 1-1/2" PVC tremie lines.
 - c. Payment of this item shall be on a lump sum basis for the installation of all three PVC tremie lines.
- B6. FURNISH AND INSTALL (3) 1-1/2" PVC TREMIE LINES
- a. Measurement is on a per linear foot basis.
 - b. This item includes all materials, transportation, equipment, tools, labor, and other items required for the installation of three separate 1-1/2" PVC tremie line.
 - c. Payment of this item shall be on a linear foot basis for the installation of the three tremie lines.
- B7. RE-INSTALL EXISTING PERMANENT PUMPING EQUIPMENT
- a. Measurement is on a lump sum basis.
 - b. This item includes all materials, transportation, equipment, tools, labor, and other items required for re-installing existing permanent pumping equipment with 401-feet of new 10" column, tube, and shaft.
 - c. Payment of this item shall be on a lump sum basis for the re-installation of all permanent pumping equipment.
- B8. CLEAN-UP OF SITE

- a. Measurement is on a lump sum basis, which shall constitute the total cost to the Owner.
- b. This item includes all materials, transportation, equipment, tools, labor and other items required to clean site of all materials, debris and equipment and return the site to its original condition.
- c. Payment of this item shall be on a lump sum basis for final cleanup of the site prior to full de-mobilization.

98th & 23rd WELL:

C1. MOBILIZATION/ DEMOBILIZATION

- a. Measured by lump sum.
- b. Payment covers cost of mobilization, demobilization, installation of temporary facilities, bringing all necessary construction equipment to the site, all bonds, insurances, permits and fees, traffic control, clearing and grubbing, snow removal to the well site, quality control of materials, preparation of project schedule, final cleanup and project closeout, and all other items not specifically called for in any other bid item or called for in the plans and specifications or is customary, incidental or appurtenant to performance of a complete project.
- c. Payment will be made according to the following schedule:

<u>Percent of Original Contract Amount Earned</u>	<u>Percent of Amount Bid for Mobilization to be Paid</u>
5%	40
15%	20
40%	30
50%	10

C2. REMOVE, INSPECT, AND CLEAN PERMANENT PUMPING EQUIPMENT

- a. Measurement is per each pump assembly removed
- b. This item includes all labor, materials, transportation and other items associated with the removal, inspection, cleaning, storage, and protection of the permanent pumping equipment in the wells.

C3. VIDEO SURVEY

- a. Measurement is per each video survey completed.

- b. This item includes all materials, transportation, equipment, labor and other items required for performing a video survey of the well.
- c. Payment of this item shall be on a unit price basis for each successful well video survey that is performed at the unit price bid.

C4. BRUSH AND EVACUATE WELL

- a. Measurement is on a per hour basis for each hour spent
- b. This item includes all materials, transportation, equipment, labor and other items required to brush and evacuate the well with the use of a nylon brush and submersible pump.
- c. Payment of this item shall be on a unit price basis for each hour spent performing brushing and evacuation work on the well.

C5. ASSESS AND REPAIR SCREENS AS NEEDED (~20' **MILD STEEL SWAGE**)

- a. Measurement is on a lump sum basis.
- b. This item includes all materials, transportation, equipment, labor and other items required for assessing existing damage to well screens and determining how many feet need patching, patching and repairing all screens needing repair **with a hydraulic press and mild steel**.
- c. Payment shall be per lump sum of all screens assessed and repaired.

C6. CHEMICALS

- d. Measurement is on a lump sum basis.
- e. This item includes all materials, transportation, equipment, labor and other items required for purchasing, delivery, and safe handling of all chemicals required to perform the acid and chlorine treatments.
- f. Payment shall be for chemicals after they are delivered safely to the site.

C7. ACID TREATMENT/AGITATE/NEUTRALIZE/DISPOSE

- a. Measurement is on per hour basis for each hour spent.
- b. This item includes all materials, transportation, equipment, tools, labor and other items required for the mixing, injection, agitation, evacuation, neutralization and disposal of neutralized acid
- c. Payment shall be on a unit price basis for each hour spent performing the acid treatment work including mixing, injection, agitation, removal and neutralization and disposal. Time spent in set up, daily preparations, and

downtime due to equipment failure are not paid under this item and should be included in hourly rates.

C8. SHOCK CHLORINATION/AGGITATE/DECHLORINATE/DISPOSE

- a. Measurement is on a per hour basis for each hour spent
- b. This item includes all materials, transportation, equipment, tools, labor and other items required for the mixing, injection, agitation, evacuation, de-chlorination and disposal of de-chlorinated water
- c. Payment shall be on a unit price basis for each hour spent performing the shock chlorination work including mixing, injection, agitation, removal and neutralization and disposal. Time spent in set up, daily preparations, and downtime due to equipment failure are not paid under this item and should be included in hourly rates.

C9. INITIAL WELL REDEVELOPMENT

- a. Measurement is on an hourly basis for the time it takes to perform initial well redevelopment.
- b. This item includes all materials, transportation, equipment, tools, labor, and other items required for performing initial well redevelopment.
- c. Payment shall be on hourly basis for the actual hours performing initial well redevelopment as part of the project including swabbing, pumping, and bailing out removed material.

C10. MODIFY DISCHARGE HEAD TO ACCOMMODATE (3) 1-1/2" TREMIE LINES

- a. Measurement is on a per lump sum basis
- b. This item includes all materials, transportation, equipment, tools, labor, and other items required for modifying the existing discharge head to accommodate for 3 new 1-1/2" PVC tremie lines.
- c. Payment of this item shall be on a lump sum basis for the installation of all three PVC tremie lines.

C11. INSTALL NEW WELL CABLE FOR SUBMERSIBLE MOTOR

- a. Measurement is on a per linear foot basis
- b. This item includes all materials, transportation, equipment, tools, labor, and other items required for the purchasing and installation of new electrical well cable down to submersible motor.
- c. Payment of this item shall be on a linear foot basis for each foot of well cable

installed.

C12. RE-INSTALL PERMANENT PUMPING EQUIPMENT

- a. Measurement is on a lump sum basis.
- b. This item includes all materials, transportation, equipment, tools, labor, and other items required for re-installing all existing permanent pumping equipment including submersible pump, motor, and 10" column pipe.
- c. Payment of this item shall be on a lump sum basis for the re-installation of all permanent pumping equipment.

C13. FURNISH AND INSTALL (3) 1-1/2" PVC TREMIE LINES

- a. Measurement is on a per linear foot basis.
- b. This item includes all materials, transportation, equipment, tools, labor, and other items required for the installation of three separate 1-1/2" PVC tremie line.
- c. Payment of this item shall be on a linear foot basis for the installation of the three tremie lines.

C14. FURNISH AND INSTALL PUMP AND MOTOR NAMEPLATE ON DISCHARGE HEAD

- d. Measurement is on a lump sum basis.
- e. This item includes all materials, transportation, equipment, tools, labor, and other items required for furnishing and installing a steel nameplate on the discharge head that contains the technical specifications of the submersible pumping equipment for future reference.
- f. Payment of this item shall be on a lump sum basis for the installation of the nameplate.

C15. CLEAN-UP OF SITE

- a. Measurement is on a lump sum basis, which shall constitute the total cost to the Owner.
- b. This item includes all materials, transportation, equipment, tools, labor and other items required to clean site of all materials, debris and equipment and return the site to its original condition.
- c. Payment of this item shall be on a lump sum basis for final cleanup of the site prior to full de-mobilization.

8200 S & 700 E WELL:

D1. MOBILIZATION/DEMOBILIZATION

- a. Measured by lump sum.
- b. Payment covers cost of mobilization, demobilization, installation of temporary facilities, bringing all necessary construction equipment to the site, all bonds, insurances, permits and fees, traffic control, clearing and grubbing, snow removal to the well site, quality control of materials, preparation of project schedule, final cleanup and project closeout, and all other items not specifically called for in any other bid item or called for in the plans and specifications or is customary, incidental or appurtenant to performance of a complete project.
- c. Payment will be made according to the following schedule:

<u>Percent of Original Contract Amount Earned</u>	<u>Percent of Amount Bid for Mobilization to be Paid</u>
5%	40
15%	20
40%	30
50%	10

D2. TRAFFIC CONTROL

- a. Measurement is on a lump sum basis.
- b. This item includes all materials, transportation, equipment, labor and other items required to prepare and implement a traffic control plan including but not limited to coordination with the applicable agencies, updates to traffic control plan, set-up and removal of traffic control devices and periodic inspections of traffic control for the Work.
- c. Payment will be made on all work completed for this item in accordance with the project plans and specifications.

D3. REMOVE PERMANENT PUMPING EQUIPMENT INCLUDING 3-INCH RECHARGE PIPE

- c. Measurement is per each pump assembly removed
- d. This item includes all labor, materials, transportation and other items associated with the removal, storage, and protection of the permanent pumping equipment in the well including a 3" recharge pipe that extends down to 760-foot bgs.

D4. VIDEO SURVEY

- d. Measurement is per each video survey completed.
- e. This item includes all materials, transportation, equipment, labor and other items required for performing a video survey of the well.
- f. Payment of this item shall be on a unit price basis for each successful well video survey that is performed at the unit price bid.

D5. BRUSH AND EVACUATE WELL

- a. Measurement is on a per hour basis for each hour spent
- b. This item includes all materials, transportation, equipment, labor and other items required to brush and evacuate the well with the use of a nylon brush and submersible pump.
- c. Payment of this item shall be on a unit price basis for each hour spent performing brushing and evacuation work on the well.

D6. CHEMICALS

- a. Measurement is on a lump sum basis.
- b. This item includes all materials, transportation, equipment, labor and other items required for purchasing, delivery, and safe handling of all chemicals required to perform the acid and chlorine treatments.
- c. Payment shall be for chemicals after they are delivered safely to the site.

D7. ACID TREATMENT/AGITATE/NEUTRALIZE/DISPOSE

- d. Measurement is on per hour basis for each hour spent.
- e. This item includes all materials, transportation, equipment, tools, labor and other items required for the mixing, injection, agitation, evacuation, neutralization and disposal of neutralized acid
- f. Payment shall be on a unit price basis for each hour spent performing the acid treatment work including mixing, injection, agitation, removal and neutralization and disposal. Time spent in set up, daily preparations, and downtime due to equipment failure are not paid under this item and should be included in hourly rates.

D8. SHOCK CHLORINATION/AGGITATE/DECHLORINATE/DISPOSE

- d. Measurement is on a per hour basis for each hour spent

- e. This item includes all materials, transportation, equipment, tools, labor and other items required for the mixing, injection, agitation, evacuation, de-chlorination and disposal of de-chlorinated water
- f. Payment shall be on a unit price basis for each hour spent performing the shock chlorination work including mixing, injection, agitation, removal and neutralization and disposal. Time spent in set up, daily preparations, and downtime due to equipment failure are not paid under this item and should be included in hourly rates.

D9. INITIAL WELL REDEVELOPMENT

- d. Measurement is on an hourly basis for the time it takes to perform initial well redevelopment.
- e. This item includes all materials, transportation, equipment, tools, labor, and other items required for performing initial well redevelopment.
- f. Payment shall be on hourly basis for the actual hours performing initial well redevelopment as part of the project including swabbing, pumping, and bailing out removed material.

D10. SUBMERSIBLE BJ PUMP ASSESSMENT AND REPAIR/REPLACE

- a. Measurement is on a lump sum basis
- b. This item includes all materials, transportation, equipment, tools, labor, and other items required to assess and make necessary repairs (or replace **and disposed properly**) to the existing submersible BJ pump.
- c. Payment of this item shall be on a lump sum basis for the repair/replace of the existing permanent pump.

D11. MODIFY DISCHARGE HEAD TO ACCOMMODATE (3) 1-1/2" TREMIE LINES

- a. Measurement is on a per lump sum basis
- b. This item includes all materials, transportation, equipment, tools, labor, and other items required for modifying the existing discharge head to accommodate for 3 new 1-1/2" PVC tremie lines.
- c. Payment of this item shall be on a lump sum basis for the installation of all three PVC tremie lines.

D12. NEW MOTOR AND WELL CABLE

- a. Measurement is on a lump sum basis

- b. This item includes all materials, transportation, equipment, tools, labor, and other items required for the purchasing and installation of a new submersible motor and electrical well cable.
 - c. Payment of this item shall be on a lump sum basis for the purchase and installation of a new submersible motor and well cable
- D13. RE-INSTALL PERMANENT PUMPING EQUIPMENT 3-INCH RECHARGE PIPE
- a. Measurement is on a lump sum basis
 - b. This item includes all materials, transportation, equipment, tools, labor, and other items required for re-installing the repaired BJ 12 Stage Submersible Pump, a new submersible motor, 444-feet of 8" column pipe, and the existing 760-feet of 3" discharge pipe.
 - c. Payment of this item shall be on a lump sum basis for the reinstallation of all permanent pumping equipment.
- D14. FURNISH AND INSTALL (3) 1-1/2" PVC TREMIE LINES
- d. Measurement is on a per linear foot basis.
 - e. This item includes all materials, transportation, equipment, tools, labor, and other items required for the installation of three separate 1-1/2" PVC tremie line.
 - f. Payment of this item shall be on a linear foot basis for the installation of the three tremie lines.
- D15. FURNISH AND INSTALL PUMP AND MOTOR NAMEPLATE ON DISCHARGE HEAD
- g. Measurement is on a lump sum basis.
 - h. This item includes all materials, transportation, equipment, tools, labor, and other items required for furnishing and installing a steel nameplate on the discharge head that contains the technical specifications of the submersible pumping equipment for future reference.
 - i. Payment of this item shall be on a lump sum basis for the installation of the nameplate.
- D16. CLEAN-UP OF SITE
- a. Measurement is on a lump sum basis, which shall constitute the total cost to the Owner.

- b. This item includes all materials, transportation, equipment, tools, labor and other items required to clean site of all materials, debris and equipment and return the site to its original condition.
- c. Payment of this item shall be on a lump sum basis for final cleanup of the site prior to full de-mobilization.

D14. FURNISH AND INSTALL (3) 1-1/2" PVC TREMIE LINES

- a. Measurement is on a per linear foot basis.
- b. This item includes all materials, transportation, equipment, tools, labor, and other items required for the installation of three separate 1-1/2" PVC tremie line.
- c. Payment of this item shall be on a linear foot basis for the installation of the three tremie lines.

8200 S & 700 E WELL ALTERNATES:

D-ALT1. NEW 8" COLUMN PIPE

- a. Measurement is on a per linear foot basis.
- b. This item includes all materials, transportation, equipment, tools, labor, and other items required for the installation of all new steel column pipe from the well head to the pump.
- c. Payment of this item shall be on a linear foot basis for the installation of all new column pipe.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

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SECTION 01 11 00 SUMMARY OF WORK

PART 1 – GENERAL

1.1 GENERAL

- A. The Work to be performed under this Contract shall consist of furnishing all tools, equipment, materials, supplies, and manufactured articles and furnishing all labor, transportation, and services, including fuel, power, water, and essential communications, and performing all work, or other operations required for the fulfillment of the Contract in strict accordance with the Contract Documents. The work shall be complete, and all work, materials, and services not expressly indicated or called for in the Contract Documents which may be necessary for the complete, safe and proper construction of the Work in good faith shall be provided by the CONTRACTOR as though originally so indicated, at no increase in cost to the OWNER.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- A. The work of this contract comprises the rehabilitation of the culinary water wells using mechanical and chemical treatment methods and pump development of the well as generally described below. The CONTRACTOR is responsible for providing all the labor, materials, and equipment necessary to inspect, clean, chemically treat, disinfect, test pump and re-equip the wells. Location and site figures as well as drawings of the well construction details are given in the DRAWINGS. The work shall include, but not be limited to, the following at the well site:

Newbury Well:

1. Mobilization, demobilization, snow removal and site cleanup for the well site
2. Clean and disinfect all downhole equipment prior to placement in well
3. Remove, clean and inspect existing pumping equipment and store on site
4. Perform video camera survey of well
5. Wire brush casing and screen and use bailer to remove all debris
6. Perform video camera survey after pumping
7. Mix and inject Hydrogen Peroxide solution (tremie from bottom of screen to water surface)
8. Mix and inject mineral acid solution (tremie from bottom of screen to water surface)
9. Periodically monitor pH levels in well and adjust pH as directed by the Engineer.
10. Mechanically agitate acid solution with surge block for 12 hours (total contact time 24 hours)
11. Evacuate acid solution with submersible pump (250 gpm); discharge to holding tank. Approximately 10 hours of pumping
12. Neutralize water and discharge to area shown in the drawings

13. Mix and inject Sodium Hypochlorite solution (tremie from bottom of screen to water surface)
14. Mechanically agitate chlorine solution with surge block for 12 hours (total contact time 24 hours)
15. Evacuate Chlorine solution with submersible pump (250 gpm); discharge to holding tank. Approximately 10 hours of pumping
16. Dechlorinate water and discharge to area shown in the drawings
17. Perform initial well redevelopment by dual swab and pumping
18. Perform video camera survey of well post cleaning
19. Furnish, install and remove temporary test pump (variable speed capacity up to 3000 gpm)
20. Conduct development pumping for approximately 36 hours
21. Conduct 12 hour pump test.
22. Perform pump development
23. Conduct well step drawdown test
24. Conduct constant rate discharge test
25. Size and order new vertical turbine pump
26. Install new pumping equipment between perforated sections 1 and 2
27. Re-install existing vertical turbine motor
28. Furnish and install nameplate on discharge head to show ~~submersible~~ pump and motor specifications
29. Modify Discharge head to accommodate for (3) 1-1/2" PVC tremie lines
30. Furnish and Install (3) 1-1/2" PVC Tremie lines
31. Monitor gravel pack level throughout rehabilitation and top off with 8x10 gravel pack to ground level as needed.
32. Restore the well site to its original condition
33. Furnish logs, daily records, and other items as specified to the ENGINEER.

10th & 78th Well:

1. Mobilization, demobilization, snow removal and site cleanup for the well site
2. Clean and disinfect all downhole equipment prior to placement in well
3. Remove, clean and inspect existing pumping equipment and store on site.
4. Perform video camera survey of well
5. Furnish and install new transducer
6. Modify Discharge head to accommodate for (3) 1-1/2" PVC tremie lines
7. Furnish and Install (3) 1-1/2" PVC Tremie lines
8. Reinstall existing pumping equipment with new 10" column, tube, and shaft
9. Restore the well site to its original condition
10. Furnish logs, daily records, and other items as specified to the ENGINEER

98th & 23rd Well:

1. Mobilization, demobilization, snow removal and site cleanup for the well site
2. Clean and disinfect all downhole equipment prior to placement in well

3. Remove, clean and inspect existing pumping equipment and store on site, **including 3" recharge pipe**
4. Perform video camera survey of well
5. Wire brush casing and screen and use bailer to remove all debris
6. Perform video camera survey after brushing and bailing
7. Assess and repair well screens as needed, anticipated 20' swage
8. Mix and inject Hydrogen Peroxide solution (tremie from bottom of screen to water surface)
9. Mix and inject mineral acid solution (tremie from bottom of screen to water surface)
10. Periodically monitor pH levels in well and adjust pH as directed by the Engineer.
11. Mechanically agitate acid solution with surge block for 12 hours (total contact time 24 hours)
12. Evacuate acid solution with submersible pump (250 gpm); discharge to holding tank. Approximately 10 hours of pumping
13. Neutralize water and discharge to area shown in the drawings
14. Mix and inject Sodium Hypochlorite solution (tremie from bottom of screen to water surface)
15. Mechanically agitate chlorine solution with surge block for 12 hours (total contact time 24 hours)
16. Evacuate Chlorine solution with submersible pump (250 gpm); discharge to holding tank. Approximately 10 hours of pumping
17. Dechlorinate water and discharge to area shown in the drawings
18. Perform initial well redevelopment by dual swab and pumping
19. Perform video camera survey of well post cleaning
20. Modify Discharge head to accommodate for (3) 1-1/2" PVC tremie lines
21. Reinstall existing pumping equipment and new well cable
22. Furnish and Install (3) 1-1/2" PVC Tremie lines
23. Monitor gravel pack level throughout rehabilitation and top off with 8x10 gravel pack to ground level as needed.
24. Furnish and install nameplate on discharge head to show submersible pump and motor specifications
25. Restore the well site to its original condition
26. Furnish logs, daily records, and other items as specified to the ENGINEER.

8200 S 700 E Well:

1. Mobilization, demobilization, snow removal and site cleanup for the well site
2. Clean and disinfect all downhole equipment prior to placement in well
3. Remove, clean and inspect existing pumping equipment including 3-inch recharge pipe and store on site
4. Perform video camera survey of well
5. Wire brush casing and screen and use bailer to remove all debris
6. Perform video camera survey after brushing and bailing
7. Mix and inject Hydrogen Peroxide solution (tremie from bottom of screen to water surface)
8. Mix and inject mineral acid solution (tremie from bottom of screen to water surface) Approximately 10 hours.

9. Periodically monitor pH levels in well and adjust pH as directed by the Engineer.
10. Mechanically agitate acid solution with surge block for 12 hours (total contact time 24 hours)
11. Evacuate acid solution with submersible pump (250 gpm); discharge to holding tank. Approximately 10 hours of pumping
12. Neutralize water and discharge to area shown in the drawings
13. Mix and inject Sodium Hypochlorite solution (tremie from bottom of screen to water surface)
14. Mechanically agitate chlorine solution with surge block for 12 hours (total contact time 24 hours)
15. Evacuate Chlorine solution with submersible pump (250 gpm); discharge to holding tank. Approximately 10 hours of pumping
16. Dechlorinate water and discharge to area shown in the drawings
17. Perform initial well redevelopment by dual swab and pumping
18. Perform video camera survey after brushing and bailing
19. Assess and repair/replace existing BJ submersible pump
20. Furnish and install new submersible motor and well cable
21. Modify Discharge head to accommodate for (3) 1-1/2" PVC tremie lines
22. Reinstall repaired and new pumping equipment including 3-inch recharge pipe.
23. Furnish and Install (3) 1-1/2" PVC Tremie lines
24. Monitor gravel pack level throughout rehabilitation and top off with 8x10 gravel pack to ground level as needed.
25. Furnish and install nameplate on discharge head to show submersible pump and motor specifications
26. Restore the well site to its original condition
27. Furnish logs, daily records, and other items as specified to the ENGINEER.

- A. The Engineer reserves the right to change materials and quantities specified in the following documents based on conditions encountered in the field. In addition, the Engineer reserves the right to discontinue the rehabilitation of the well if at any time the Engineer believes it is in the Owner's best interest to discontinue. In such a case, the Contractor shall be paid at the prices bid for the actual work accomplished.

1.2 DOWN TIME

- A. Downtime shall mean that time, other than standby time, during which work could occur but does not or when machinery is broken down, materials or equipment are not available, or the Contractor elects not to work. All downtime shall be at the sole expense of the Contractor.

1.3 SUBMITTALS DURING CONSTRUCTION

- A. Submittals during construction shall be made in accordance with Section 01 33 00

- B. Specific submittal items are specified within individual sections of these Specifications.

1.4 NOTIFICATION TO THE ENGINEER

- A. The CONTRACTOR shall be responsible for giving the Engineer advance notice prior to performance of specific work items as specified within individual sections of these Specifications.

1.5 STANDARDS, SPECIFICATIONS, AND CODES

- A. The well shall be cleaned in conformance with the State of Utah Rules for Public Drinking Water Systems, General Responsibilities of Public Water Systems for Systems administered by the Utah Division of Drinking Water as described in the Utah Administrative Code R309 (most recent version), and the State of Utah, water Well Handbook (most recent version), R655-4 Utah Administrative Code as administered by the Division of Water Rights

1.6 SITE PROTECTION

- A. Throughout the period of work, the Contractor shall keep the work site free and clean of all rubbish and debris. Protective barriers and other safety protection necessary to protect the public and workers shall be provided by the Contractor. The Contractor shall protect all existing fences, walls, buildings, trees, surface water bodies, wetlands, riparian areas, and landscape during the progress of work. In the event of damage to such property, the Contractor shall, at his own expense, immediately restore the property to a condition equal to its original condition and to the satisfaction of the Engineer. This provision includes damage to surface and subsurface utilities. After completion of the work, the Contractor shall remove from the premises and work areas all materials, tools and debris. At the completion of the work, the site shall be cleared of all materials and left in a condition acceptable to the Engineer.

1.7 CONTAMINATION

- A. The Contractor shall at all times perform his operation in such a manner as to prevent the introduction of contaminants into the well. Tools, pumps and other elements shall be kept clean and disinfected prior to insertion into the well. Water supply shall be protected from contamination. The Engineer may require the materials and equipment to be periodically cleaned and disinfected if, in the Engineer's sole opinion, the operation is introducing contaminants into the well.

1.8 DISPOSAL OF MATERIAL

- A. The Contractor shall be responsible for disposing all materials generated during well cleaning, well development, and well testing. The materials generated from these activities and any associated activities shall be disposed of as specified in Section 33 20 61 – DISPOSAL OF DRILLING FLUIDS, CUTTINGS AND PUMPED WATER.

1.9 WELL CHARACTERISTICS

- A. The total depth, pump setting, and production rate of the production wells is as shown in the table on the following page:

Well	Depth of Well	Screened/ Perforated Length	Current Pump Setting	Pump Capacity gpm	Pump Type	Motor HP	Casing Diam.
Newbury	1030'	290'	620'	4000	6-Stage Vertical Turbine	1000	20"
10 th & 78 th	890'	317'	401'	1400	9-Stage Vertical Turbine	250	18"-14"-10"
98 th & 23 rd	960'	200'	765'	1850	8-Stage Submersible	500	20"
8200 S & 700 E	1000'	363'	444'	1000	10-Stage Submersible	200	20"-16"

1.10 EQUIPMENT AND PERSONNEL

- A. The Engineer must approve mobilization of any equipment or personnel under this Contract.

1.11 WELL SITE

- A. Equipment shall be set up within the areas designated by the Engineer. Upon completion and acceptance of the work, all equipment, unused materials, temporary facilities, and other miscellaneous items resulting from or used in the operations shall be removed.
- B. If additional space is required for temporary storage of materials and equipment within the limits of the site, the Contractor shall coordinate with Owner and Engineer. All stored materials and equipment shall be removed from the site as part of demobilization upon completion of this contract.

PART 2 – PRODUCTS

2.1 GENERAL

- A. The treatment chemicals, if any required, will be provided by the Contractor.

PART 3 – EXECUTION

3.1 GENERAL

- A. Equipment: All equipment shall be of the proper type and size and shall be in good condition to assure that the work can proceed without interruption. Frac tanks, tools, pumps and other equipment shall be adequate to perform the required treatment.
- B. The process of the rehabilitation shall follow the outline provided in Section 33 01 22.

- END OF SECTION -

SECTION 01 74 15
MOBILIZATION / DEMOBILIZATION / CLEANUP

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Work to be performed under this Section includes the work necessary to mobilize, demobilize, and clean up the drill site related to the drilling, construction, development, and testing of the production wells.

1.2 RELATED WORK

Not Used.

1.3 REFERENCES

Not Used.

1.4 SUBMITTALS

Not Used.

PART 2 PRODUCTS

2.1 GENERAL

- A. Provide all temporary and permanent materials, equipment, and labor required to accomplish the work as specified.

2.2 SECURITY FENCE

- A. Newbury Well: A security fence with locking gate exists on the north side of the project site at the dead end of Newbury Dr.

10th & 78th: A security fence with locking gate exists on the east side of the project site adjacent to S 1000 E.

98th & 23rd: A security fence with locking gate exists on the southwest side of the project site adjacent to the intersection of Eastdell Dr and E 9800 S.

8200 S & 700 E: A security fence with locking gate exists on the east side of the project site adjacent to S 1000 E.

Owner shall allow Contractor to place a padlock on all 4 gates. The gates shall remain locked at any time Contractor is not on site.

- B. The Contractor shall provide access at any time and any necessary keys to the Engineer.

2.3 PARKING FACILITIES

- A. Parking facilities for personnel working on the project will be limited. Contractor shall maintain the access road to the well site open at all times.

2.4 NOISE CONTROL FACILITIES

- A. Where applicable, the Contractor will obtain a noise permit from the Salt Lake County Health Department (SLCHD). The Contractor will be fully responsible for compliance to the permit and the Contractor shall demonstrate compliance with the noise control requirements. Copies of the pertinent SLCHD ordinances are located in Appendix A.
- B. Diesel engine acoustical enclosure of steel framed, fiberglass filled panels shall be required for all drill rigs, compressors and pumps. Where these engines are not properly isolated to prevent noise in the supporting structure, this secondary noise shall be mitigated such as by the use of acoustical skirts for drill rig trailers. High performance mufflers shall be used on all diesel engines in regular use on the drill site.
- C. Noise barrier walls shall be constructed where required to meet sound regulations found in the SLCHD ordinance found in Appendix A to mitigate noise. The noise barrier walls shall consist of fiberglass filled acoustical walls, or equal, and have a minimum wall height of 20 feet. The noise barrier walls shall reduce the maximum continuous noise from drilling/development operations to less than 60 dB at 50 feet around the perimeter of the drill site, or to levels designated in the noise permit, whichever is stricter.

2.5 CLEARING AND GRUBBING

- A. Remove all surface vegetation to a depth necessary for complete removal of all roots and other deleterious materials from within the areas to receive structural fill or base course.
- B. All trees, stumps, roots, etc. to be removed within the construction limits shall be cut off, excavated, or removed to a depth of not less than 3 feet below the existing ground.
- C. Branches of trees extending over the construction limits shall be trimmed to the boles to give a clear height of 20 feet above the existing ground surface. All trimming shall be done in accordance with recognized tree surgery standards. Remove additional tree branches under the direction of the Owner in such a manner that the tree will present a balanced appearance.

PART 3 EXECUTION

3.1 WELL DRILLING

- A. Set up well drilling and related other equipment within the area designated by the Engineer. Accomplish all required work in accordance with applicable portions of

these Specifications.

3.2 CONSTRUCTION LAYOUT

- A. Set up construction facilities in a neat and orderly manner within designated area. Accomplish all required work in accordance with applicable portions of these Specifications. Confine operations to work area shown. **If the designated site does not have enough space to store permanent pumping equipment while working on the well, it must be stored at CONTRACTORS shop above grade on wood or metal.**
- B. Some obstructions may not be shown. Bidders are advised to carefully inspect the existing facilities before preparing their bids. The removal and replacement of obstructions such as electrical conduits, water, waste piping, and similar items shall be anticipated and accomplished even though not shown or specifically mentioned.
- C. Major obstructions encountered that are not shown on the Drawings or could not have been foreseen by visual inspection of the site prior to bidding, should immediately be brought to the attention of the Engineer. The Engineer will make a determination for proceeding with the work.

3.3 CONTAMINATION PRECAUTIONS

- A. Avoid contamination of the project area. Do not dump waste oil, rubbish, or other materials on the ground.

3.4 DISPOSAL OF MATERIAL

- A. The Contractor shall be responsible for disposal of all drilling fluids, drill cuttings, development water, and test waters as further described in these Specifications.

3.5 CLEANUP OF CONSTRUCTION AREAS

- A. During execution of the work, the Contractor shall daily clean the site, adjacent properties, and public access roads and dispose of waste materials, debris, and rubbish to assure that grounds, and public and private properties are maintained free from accumulations of waste materials and rubbish. Contractor will provide container for collection and disposal of waste materials, rubbish, and debris.
- B. Upon completion and acceptance of the well, remove from the site the drill rig and related equipment and all debris, unused materials, temporary construction buildings, and other miscellaneous items resulting from or used in the operations. Replace and repair any facility that has been damaged during the construction work. Restore the site as nearly as possible to its original condition.

3.6 NOISE CONTROL

- A. The Contractor shall demonstrate compliance with the noise control requirements. Noise levels shall be monitored at least once daily, and at the request of the Engineer, during a time when onsite equipment is in use and noise levels are expected to be the highest. Noise levels shall be measured next to the drill site

- boundary and at 50 and 100 feet from the drill site using a calibrated and certified sound level meter furnished by the Contractor and kept on site at all times. Noise levels will also be measured at the property boundary.
- B. Night time drilling operations shall be conducted while limiting the following activities: hammering on pipe, racking or making-up of pipe, rapid acceleration and deceleration of diesel engines, and picking up or laying down drill pipe.
- C. If, at any time, the noise limits are exceeded, immediate corrective action shall be taken through drilling equipment modifications, addition of noise abatement equipment or changes in operating procedures. Noise levels shall be monitored to demonstrate compliance.

END OF SECTION

SECTION 22 11 23
DEEP WELL VERTICAL TURBINE PUMP, MOTOR AND APPURTENANCES

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Scope. Provide replacement pumps and motors for a water lubricated surface discharge deep well turbine pump.

- B. Submittals. Shop drawings shall be submitted in accordance with Section 01 00 00 and shall include descriptive information as required to fully describe the pump, controls (if required), and overall operating performance. The shop drawings shall clearly state any deviations from the specified requirements. The following shall also be furnished with the shop drawings. Performance requirements specified hereinafter shall be defined in the Hydraulic Institute Standards and ANSI/AWWA E101-88.
 - 1. Performance data curves (adjusted for operating speed) showing head, capacity, horsepower demand, and pump efficiency over the entire operating range of the pump, from shutoff to maximum capacity. The equipment manufactured shall indicate separately the head, capacity, horsepower demand, overall efficiency, and minimum submergence required at the specified design point.
 - 2. Equipment manufactured shall provide complete and detailed information regarding the installation of the pumps. Any installation requirements or operating conditions which the supplier or manufacturer feels to be critical to the safe and reliable operation of the pumps should be identified and described in detail.
 - 3. Operating and Maintenance manuals and Maintenance Summary Sheets for the equipment specified herein shall be furnished as specified in section 01 00 00.

1.2 DESIGN CRITERIA

- A. General. Pumps shall be capable of continuous operation while pumping untreated groundwater. The pump bowl and discharge head shall be NSF61, Annex G, **CERTIFIED**.

- B. Operating Capacities
 - 1. Newbury Well

Pump Setting Depth	750 Feet Below Top of Casing
Maximum Capacity	3,500 US GPM
Low End Capacity	2,750 US GPM
Total Dynamic Head	~900 Feet TDH
Nominal Operating Speed	1785 RPM
Minimum Efficiency	82%
Minimum Motor Horsepower	1000
Minimum Column Size	14"

Tube Size 4"
Shaft Size 2-11/16" oil lube
Motor Voltage 4160 V

2. 10th & 78th Well

Pump Setting Depth 401 Feet Below Top of Casing
Maximum Capacity 1,400 US GPM
Low End Capacity 1,100 US GPM
Total Dynamic Head 570 Feet TDH
Nominal Operating Speed 1775 RPM
Minimum Efficiency 82%
Minimum Motor Horsepower 250
Minimum Column Size 10"
Tube Size 2-1/2"
Shaft Size 1-11/16" oil lube
Motor Voltage 480 V

3. 98th & 23rd Well

Pump Setting Depth 760 Feet Below Top of Casing
Maximum Capacity 2,000 US GPM
Low End Capacity 1,500 US GPM
Total Dynamic Head 850 Feet TDH
Nominal Operating Speed ~1,750 RPM
Minimum Efficiency 82%
Minimum Motor Horsepower 450
Minimum Column Size 10"
Motor Voltage 4160 V

4. 8200 S & 700 E Well

Pump Setting Depth 444 Feet Below Top of Casing
Maximum Capacity 1000 US GPM
Low End Capacity 700 US GPM
Total Dynamic Head 650 Feet TDH
Nominal Operating Speed 1800 RPM
Minimum Efficiency 82%
Minimum Motor Horsepower 200
Minimum Column Size 8"
Motor Voltage 480 V

C. The pump and motor shall be capable of operating within specified parameters without permanent damage.

PART 2 – PRODUCTS

2.1 PUMP BOWL ASSEMBLY

- A. General. The pump bowls shall be of close grained, cast iron ASTM A48 Class 30. The water passages on bowl sizes 4" through 20" shall be lined with porcelain enamel and larger sizes shall be Heresite or fusion epoxy-lined to reduce friction losses; shall be free of blow holes, sand holes and other detrimental defects, and shall be accurately machined and fitted. The impellers shall be of bronze ASTM B584C87600 No-lead bronze or 416 Stainless Steel and statically and dynamically balanced. Impellers shall be securely fastened to the shaft with taper split bushings of steel. Impellers shall be adjusted vertically by an external means.
- B. The pump shaft shall be of A276GR416 stainless steel, turned, ground and polished. It shall be supported by bronze bearings of ASTM B505C84400 above and below each impeller. The suction case bearing shall be grease lubricated and protected by bronze sand collar of ASTM B505C84400. The size of the shaft shall be no less than that determined by ANSI/AWWA Specifications E101, Section A4.3 paragraph 4.3.3.
- C. The discharge case shall also be fitted with a bronze ASTM B505C84400 tube adapter bearing of proper size to connect to the shaft enclosing tube. Also, the discharge case shall be fitted with a cast iron ASTM A48 Class 30 column adapter of the proper size to connect to the column selected.
- D. The pump exterior shall be coated with 10-12 mils, DFT of, NSF 61, potable epoxy paint. And, shall be NSF-61, Annex G, **CERTIFIED**.

2.2 DISCHARGE HEAD

- A. General. The discharge head shall be close grained, cast iron, ASTM A48 Class 30 free of sand holes and other defects, accurately machined and with a surface discharge. Discharge flange shall be machined and drilled to ANSI standards for 125# rating and shall be 12 inches nominal inside diameter equal to the driver base diameter (BD) and no less than 16-1/2 inches.
- B. The discharge head shall be equipped with a stuffing box rated at 300 Psi, minimum. The packing box shall contain no less than 6 Graphite Fiberglass packing rings and 2 ASTM B584GDC83600 Lantern rings. Sealing between the stuffing box and the discharge head and the plate and shaft enclosing tube shall be accomplished by means of "O" rings.
- C. The head shaft shall be of ASTM A276GR416 stainless steel which shall not exceed 10' in length. Impeller adjustment shall be provided at the top of the head shaft by means of a steel adjusting nut, which shall be positively locked in position.
- D. The existing well casing shall be fitted with a steel sole plate designed to support the weight of pump and motor assembly. The bolt holes shall be tapped into the sole plate and capped on the bottom side to prevent concrete intrusion. A neoprene gasket and cadmium plate bolts shall be used to seal the discharge head to the sole plate.

- E. For artesian type wells the base discharge head to sole plate bolt pattern shall be 125# flanged type. For non-artesian type wells a manufactures standard may be used.
- F. The discharge head interior shall be coated with 10-12 mils, DFT of, NSF 61, potable epoxy paint. And, shall be NSF-61, Annex G, **CERTIFIED**.

2.3 COLUMN ASSEMBLY

- A. The line shafts shall be of carbon steel ASTM A108 grade C1045, turned and ground. They shall be furnished in interchangeable sections not over 20 feet in length. An ASTM A269GR304 stainless steel sleeve shall be swaged onto the shaft at each bearing location.
- B. The butting faces shall be machined square to the axis of the shaft, with maximum permissible axial misalignment of the thread axis with the shaft axis 0.002" in 6". The size of the shaft shall be no less than that determined by ANSI/AWWA-E101 Specifications, Section 5.5 for C1045 line shaft and shall be such that elongation due to hydraulic thrust will not exceed the axial clearance of the impellers in the pump bowls. Maximum run out in 10' shall not exceed .005".
- C. The line shaft bearing shall be C-844 bronze, internally grooved to allow proper lubrication to enclosed lineshaft and threaded externally for connecting oil tube sections at each column joint.
- D. Shaft Enclosing Tubes shall be ASTM A53 Grade A schedule 80 steel pipe in interchangeable sections not over 20 ft. in length with the ends machined square and parallel and shall butt to ensure proper alignment and sealing. They shall be straight within 0.005 in. total indicator reading for a 5 ft. section. Threaded internally to receive the lineshaft bearings. The top section shall be designed for allowing proper tension to the tube. The enclosed tube shall be stabilized and centered in the column pipe by centering spiders spaced 20 ft. from the top and bottom, and at 40 ft. intervals throughout the balance of the column pipe.
- E. The outer column pipe shall be of ASTM A53GRB steel pipe in interchangeable sections not over 20 feet in length and with the ends of each section faced parallel and machined with 8 straight threads per inch permitting the ends to butt and insuring alignment when connected by standard mill steel couplings. The weight of the column pipe shall be no less than that stated in ANSI Specification E101, Section 5.1 "Standard Specifications for Discharge Column Pipe."
- F. The column and shaft sizes shall be as indicated in section 1.2 DESIGN CRITERIA.

2.4 MOTOR AND VARIABLE FREQUENCY DRIVE

- A. General. The electric motor shall be vertical hollow shaft 1800 RPM, 3 phase 60 Hertz 480 volts with Non-Reversing Ratchet coupling, P base, squirrel cage induction design. Enclosure shall meet NEMA weather protected type 1 design with stainless steel screens to prevent entrance of rodents. Motor shall have Class B or Class F insulation with temperature rise as specified by NEMA standards for class of insulation used and shall have a 1.15 service factor. The motor shall be of premium efficiency, inverter duty, equal to that of US Electric type HUSI.
- B. Thrust bearing shall be chosen to handle the continuous down thrust as specified by the pump manufacturer with an AFBMA B-10 50,000 hour minimum life at 110% design head conditions. Provisions shall be made for momentary upthrust equal to 30% of rated down thrust.
- C. The motor shall be equipped with an Aegis SGR shaft grounding system. It shall include, as a minimum, an upper bearing shield, and a lower shaft grounding ring.
- D. The motor rating shall be such that at design it will not be loaded beyond nameplate rating and at no place on the pump curve shall the loading exceed the service factor.

2.5 SOUNDER TUBE

- A. General. A PVC sounder tube shall be installed with the column. The sounder tube shall be a minimum of 1.25" schedule 80 flush thread PVC pipe. Threads shall conform to ASTM F480. The sounder tube shall extend from the top of the pump assembly to the surface. The bottom of the sounder tube shall be capped. The bottom 10 feet of the sounder tube shall be slotted. Slots shall be .020", and conform to ASTM F-480. The sounder tube shall be strapped to the discharge column with stainless steel bands.

2.6 WATER LEVEL INDICATOR ASSEMBLY

- A. The water level indicator shall be an INW PS98i transducer with a Powers Model 330 process controller or equal. The transducer unit shall be mounted through the pump discharge head with a sounder tube terminating at the top of the bowl assembly. Transducer cable shall be routed through the existing conduit into to the Owner's RTU cabinet at the 10th&78th, 98th&23rd, and 8200 S 700 E wells, contractor to field verify the required length of transducer cable. The transducer cable will terminate at pump discharge head at the Newbury Well.

Well	Transducer Pressure Range	Estimated Additional Cable Length Beyond Well Head	Transducer Setting Depth	Sounder Setting Depth	Chemical Addition Line Setting Depth
Newbury	0-100 psi	5 ft	740 ft	740 ft	1010 ft
10 th & 78 th	0-150 psi	60 ft	390 ft	390 ft	870 ft
98 th & 23 rd	0-100 psi	65 ft	755 ft	755 ft	890 ft
8200 S 700 E	0-150 psi	60 ft	434 ft	434 ft	910 ft

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Installation shall meet manufacturers requirements.

3.2 PAINTING

- A. Shop and field painting shall be specified by owner.

3.3 FUNCTIONAL TEST

- A. Prior to owner acceptance and formal pump station start-up, all equipment shall be inspected for proper alignment, quiet operation, proper connection, and satisfactory performance by means of a function test. A start up report showing function testing, motor voltages, running amperages and well water levels shall be provided to the engineer after pump station start-up.

3.4 SUPPLIER

- A. The supplier of the well pump, motor and appurtenances shall have been in business for not less than 10 years. The primary function of the supplier shall be water well pumps and motors. This supplier shall have sole responsibility for all materials contained within this specification section.
- B. Approved manufacturers are: Flowserve Pump Co, National Pump Co., or preapproved equal. Any alternate manufacturers must be NSF 61, Annex G, **CERTIFIED**. Certifications must be provided, to engineer, 14 days prior to bid, for approval.

-END OF SECTION-

SECTION 33 01 22 WATER WELL REHABILITATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. The Work included under this section includes furnishing all labor, materials, tools, equipment, transportation and other items required to remove existing pumping equipment, perform downhole video camera surveys, mechanically clean well using a brush and dual swab, chemically treat and remove scale and iron bacterial accumulations, chemically treat to remove residual drilling additives, swab and bail to remove formation clay, silt, fine sand and other debris, development pumping to remove chemicals, pH control and chemical neutralization, disposal of pumped water, pump test, reinstall pumping equipment and disinfect well and equipment.

1.2 RELATED WORK

- A. Section 33 01 25 – Initial Well Redevelopment
- B. Section 33 20 24 – Well Development by Pumping
- C. Section 33 20 26 – Step Rate Drawdown Test
- D. Section 33 20 28 – Constant Rate Drawdown Test
- E. Section 33 20 30 – Video Camera Survey

1.3 REFERENCES

- A. ANSI/NSF 60 – Drinking Water Treatment Chemicals - Health Effects
- B. ANSI/NSF 61 – Drinking Water System Components - Health Effects
- C. American Water Works Association (AWWA)
 - 1. ANSI/AWWA A100-90 - Water Wells
 - 2. ANSI/AWWA C654 – Disinfection of Wells
- D. State of Utah, Administrative Rules for Public Drinking Water System
- E. OSHA 29 CFR 1910 – Occupational Safety and Health Standards

1.4 SUBMITTALS

- A. Contractor shall submit a list of his proposed equipment to the Engineer for approval prior to beginning rehabilitation work on the water well.
- B. Submittal data shall include but not be limited to the following:

1. Well development and pumping equipment.
2. Description of holding tanks for de-chlorination of treated well water
3. Technical and specification sheets for replacement pump equipment
4. Monitoring data on pH and chlorine levels in the well and holding tanks, pumping rates, drawdowns, and pH and chlorine levels and discharge rates from the holding tanks to the discharge locations

1.5 QUALITY ASSURANCE

- A. Use of all chemicals, well development activities and discharge of well development water and removal of debris shall be in accordance with industry standards, the referenced standards as well as pertinent State and Local regulations and requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. All chemicals used in treating the well shall be carefully transported, stored and handled in accordance with local, state and federal regulations, as appropriate, and in accordance with the manufactures recommendation and MSDS sheets.

1.7 PROJECT CONDITIONS

- A. Well site and permission for access shall be provided by the Owner, who shall provide land and/or right of way for the Work as described herein and shall make suitable provisions for ingress and egress to the site.
- B. Contractor shall not enter the property adjacent to the project site, nor occupy with men, materials, tools, or equipment adjacent properties without written consent of the Owner of such adjacent properties.
- C. All development water shall be held on-site in holding tanks until approved for discharge to a storm drain as shown in the Drawings and as approved by the Engineer.

PART 2 PRODUCTS

2.1 CONSTRUCTION WATER QUALITY

- A. The only water that is to be introduced into the well shall be taken from a public drinking water system. The owner will provide the contractor with access to culinary water. The contractor will be responsible for conveyance of water to the site.
- B. Control of Development Water
 1. Contractor shall take sufficient precautions to insure that discharges from well rehabilitation operations do not contaminate local streams or waters.
 2. Contractor shall contain all development water in mobile on-site holding tanks and neutralize or de-chlorinate the water until the water quality reaches acceptable levels.

3. Upon completion of well rehabilitation, holding tanks shall be removed from the project site.

C. Discharge of Development Water

1. When water being pumped from the well reaches background chlorine residual levels of zero, discharge water may be discharged directly to the designated location.

2.2 WELL EQUIPMENT AND TREATMENT MATERIALS

- A. All interior surfaces must consist of products complying with ANSI/NSF Standard 61. This requirement applies to the pump, pump column, tremie pipe, electrical wire, sensors, and all other equipment or surfaces which may make contact with drinking water.
- B. All substances introduced into the well during construction or development shall be certified to comply with ANSI/NSF Standard 60 or as specifically approved in writing by the Division of Drinking Water. This requirement applies to treatment additives including biocide dispersants, wetting agents, surfactants, and acid for removing mineral deposits.
 1. Chemicals to be used will be provided by the CONTRACTOR may include, but are not limited to:
 - a. Hydrogen Peroxide (NSF 60 Certified)
 - b. Mineral Acid (NSF 60 Certified)
 - c. Bio-Dispersant (NSF 60 Certified)
 - d. Non-Ionic Surfactant (NSF 60 Certified)
 - e. Acid Inhibitor (NSF 60 Certified or as approved)
 - f. Sodium Hypochlorite (NSF 60 Certified)
 - g. Chlorine Enhancer (NSF 60 Certified)
 - h. Chlorine Neutralizer (NSF 60 Certified)

PART 3 EXECUTION

3.1 WELL TREATMENT, RE-DEVELOPMENT AND RE-EQUIPPING

A. General Sequence of Work

1. The general sequence of work shall be as follows:
 - a. Remove all pumping equipment
 - b. Perform a TV video survey of well casing and screen
 - c. Perform wire brushing and dual swabbing of well casing and screen
 - d. If needed, add acid treatment chemicals and monitor pH to ensure optimal cleaning effects.
 - e. Swab perforated sections of well

- f. Adjust pH of standing well water to maintain desired pH level
- g. Bail and/or pump debris from bottom of well, if necessary
- h. Pump well into holding tanks to purge acid chemicals from well
- i. Neutralize and discharge purge water to area shown on drawings
- j. Add "shock chlorination" to well and monitor pH to ensure optimal cleaning effects.
- k. Swab perforated sections of well
- l. Adjust pH of standing well water to maintain desired pH level
- m. Perform initial re-development of well casing and screen
- n. Bail and/or pump debris from bottom of well, if necessary
- o. Pump well into holding tanks to purge treatment chemicals from well
- p. De-chlorinate and discharge purge water to area shown on drawings
- q. Perform pump development, step drawdown testing, and continuous pumping test
- r. Clean existing pumping equipment
- s. Modify discharge head for installation of a chemical addition tremie line
- t. Install permanent pumping equipment and PVC tremie line
- u. Perform site clean-up and demobilize equipment

B. Removal of Pumping Equipment

- 1. All pumping equipment shall be removed from the well and carefully stored above the ground surface on the project site for inspection.

C. Video of well casing and screen

- 1. Video survey shall conform to Section 33 20 30 – Video Camera Survey.

D. Wire Brushing of Well Casing

- 1. The contractor shall use a stiff metal wire brush or a nylon brush with a dual swab tool to remove mineral scale and iron bacterial growth from the inside surface of the well casing. The type of brush to be used will be determined by the engineer after review of the well video survey. The bottom of the well shall be cleaned with a submersible pump capable of purging accumulated debris from the bottom of the well.

E. Addition of Chemicals

- 1. Liquid chemicals shall be pumped into the perforated sections of the well by means of a tremie pipe or through the dual swab tool. A tremie line or similar applicator shall be installed inside the dual swab tool if this is the chosen method. The chemicals shall be added from the bottom of the perforations up through the perforated portions of the well. The flow rate of the chemicals shall be metered at the surface and controlled to no more than 10 gpm. The tremie pipe shall be from 1 to 2-inch diameter and consist of non-reactive

materials.

2. All chemicals will be provided by JVWCD. After adding the initial chemical treatment, the well water shall be mechanically agitated with a surge block for at least 30 minutes before checking the pH level with a non-reactive sampling bailer fitted with a ball valve at the bottom. If the pH is above 3 for acid treatment or 5.0 for chlorination, the chemistry of the water should be adjusted by adding a sufficient volume, by means of a tremie pipe, to lower the pH to less than 3.0 for acid and 5.0 for chlorination. While chemicals are in the well, pH should always be kept below these levels.
3. The mechanical development process should be started immediately once the liquid treatment chemicals have been added to the well. Agitation with a surge block shall be started from the bottom of the well and worked upward in even sections and time increments to the static water level. Once the surge block reaches the top of the screen interval, pump any accumulated debris from the bottom of the well. Monitor the content of any debris recovered for color of scale/sludge, percentage of scale/sludge of total debris, sand, etc. Surge for 3-4 hours and check the chemistry for color and pH with an inert sample bailer.
4. Monitoring and Adjusting the pH during Treatment: Samples of well water should be collected every 3-4 hours during treatment time and monitored for pH and color. Samples should be collected with a non-reactive sampling bailer fitted with a ball valve at the bottom. Multiple samples should be collected from various points within the well screen. When the pH rises above the required levels, adjust pH downward by adding a sufficient volume of chemicals to lower the pH to less than these levels. The pH should be checked prior to leaving the site in the evening. After any dosage of chemicals to adjust pH, the well shall be surged for 30 minutes to assure a uniform mixture. In the morning, the well should be surged for 30-60 minutes before checking pH to assure similar well conditions. If pH is greater than the required levels, adjust accordingly. If pH is lower than the required levels, agitate for 2-4 hours and recheck pH. Continue this process until instructed by the engineer to stop (approximately 12 to 16 hours).
5. Record Keeping: Keep a log of time, pH, color, and pH adjustments for review and evaluation of treatment effectiveness. Full treatment is estimated to take 36 hours per chemical treatment.

F. Removal and Disposal of Treatment Water and Debris

1. Once each stage of chemical treatment is complete, the well should be bailed and/or pumped clean of all materials and debris from the bottom of the well. The well shall then be redeveloped by means of a dual swab surge block with simultaneous pumping to remove any development debris. When the well is redeveloped and cleaned of development debris, a development pump shall be installed. The pump suction should be installed to a minimum depth of 10 feet above the first set of screens. The well should then be pumped to purge the treatment water from the well. Pump discharge should be directed to portable surface holding tanks with a minimum total storage capacity of approximately 40,000 gallons.
2. The water in the holding tanks shall be neutralized or de-chlorinated by

adding a neutralizing or dechlorination agent. To assure thorough mixing in the holding tanks, the neutralizing additive should be injected into the pump discharge on a constant feed basis. For acid treatments, pH should return to 6.5 or higher and for chlorine, no chlorine residual shall remain prior to disposal. The discharge from the holding tanks to the designated area shall be monitored with a flow meter and regulated to no greater than 50 gallons per minute. Chlorine or pH readings of the discharge water should be recorded regularly for permitting submittals.

3. When the holding tanks have been emptied, the well pump can be restarted and the process repeated. The residual pH/chlorine levels of subsequent batches will be expected to improve with each batch but may fluctuate somewhat. This process of pumping into the holding tanks should be repeated until the water coming from the well reaches background levels, or as directed by the Engineer
4. When the pH level coming from the well during acid treatment reaches 6.5 or higher, and when chlorine residual of the water coming from the well during chlorine treatments reaches zero, the discharge water may be disposed of directly to the designated discharge area.
 - a. Alternative methods of acid neutralization/de-chlorination must be approved by the Engineer and meet the requirements for discharge prior to allowing any water to be discharged to the designated area.

G. Initial Well Re-Development

1. Initial well re-development will be executed in accordance with Section 33 01 25 - Initial Well Redevelopment

H. Well Development and Pump Testing

1. Contractor shall install a test pump and perform additional development by pumping in accordance with Section 33 20 24 – Well Development by Pumping and test pumping in accordance with Section 33 20 26 – Step Rate Drawdown Test and 33 20 28 – Constant Rate Drawdown Test.

I. Modify Discharge Head

1. The discharge head shall have three (3) ports added for installation of (3) 1½ -inch PVC tremie lines.

J. Clean Permanent Pumping Equipment

1. In order to ensure adequate cleaning of the pumping equipment, the bowls shall be disassembled and all mineral accumulation shall be removed.
2. After disassembly, cleaning is to include wire brushing to remove all iron oxide scale and any mineral deposition prior to steam cleaning.
3. All existing permanent pumping equipment that will be re-installed in the well shall be thoroughly steam cleaned inside and out.
4. Water used for steam cleaning shall maintain a chlorine level of at least 50 parts per million.
5. After steam cleaning the pumping equipment shall be re-assembled and

prepared for installation

K. Installation of Permanent Pumping Equipment

1. Upon completion of all development and well testing work, the contractor shall install the existing or replacement pumping equipment and appurtenant piping and electrical control equipment.

L. Tremie Line

1. The Contractor shall install (3) 1½ -inch schedule 80 PVC tremie lines into the well simultaneously with the pumping equipment.
2. The pipes will either be flush threaded or connected using threaded couplings capable of withstanding the weight of the pipe below each coupling.
3. The tremie lines shall be strapped to the pump column above the bowls and centralizers shall be added below the bowls at 40-foot intervals to center the lines in the well.
4. Contractor shall submit a proposed design for centering lines below bowls, securing lines to pump column and passing the pump bowls.
5. The tremie lines shall be sealed at the surface where it connects to the well head. The Contractor shall submit a plan for sealing these lines with the proposed centering plan.
6. Perforate one of the PVC tremie lines with 1/8- inch diameter holes once every 10 feet in the area below the pump.

PART 4 HEALTH AND SAFETY PROCEDURES

4.1 HEALTH AND SAFETY PROCEDURES

A. Health and Safety Plan

1. There are a number of critical health and safety issues related to general well and pump mechanical and electrical operation and control, as well as specific concerns of handling potentially hazardous well treatment and rehabilitation fluids, and related issues such as electrical supplies including overhead wires and confined space operation.
2. The requirement for overall safety for human health and the environment is of paramount importance. The contractor shall have a health and safety plan that is specific yet is flexible to assure that personnel are thoroughly familiar with chemical use and handling and mechanical activities.
 - a. The contractor is responsible for and shall ensure that all personnel have proper personal protective equipment (PPE) that is appropriate to protect workers from the chemicals to be used for well treatment.

B. Level of Protection for Mixing and Handling Well Treatment Chemicals

1. Well maintenance treatments involve the use of reactive chemicals. Once a chemical regime is selected, the appropriate use of chemical-resistant gloves, boots, and apparel, full-face splash shields, and other specific protection such as for handling hot and cold solutions should be specified. An excellent

strategic policy for safety is to, as a rule, employ treatment mixtures that minimize hazard and the likelihood of personal injury due to error, while still being effective.

C. Chemical Handling Hazards

1. Transferring chemical solutions: Typically, the major exposure injury risk point during treatment is at drums containing concentrated acid, caustic, or oxidizing agent solutions. Spilling or transfer hose troubles may result in skin exposure. Vapors may cause mucous membrane and eye tissue irritation or damage. Persons handling concentrated chemicals should wear full-face splash guards and respirators and chemical resistant clothing and gloves. Persons handling dilute solutions may work with care in OSHA Level D gear (29 CFR 1910).

D. Mixing Chemicals

1. Mixing hazards: Mixing of concentrated reactive solutions can result in personal hazards. For example, neutralization of acids poses a potential hazard if basic compounds are added too rapidly to strongly acidic solutions (pH <5) as significant foaming may occur.
2. Personnel should review how to handle specific chemical source stock and solutions. MSDS provide general guidance but should not be relied upon for complete instructions.
3. General chemical mixing safety requirements are listed below:
 - a. Personnel should always add acid to water and not vice versa.
 - b. Strong oxidants should never be used where hydrocarbon concentrations are high in well water solutions, as ignition is a low-but-not-zero probability.
 - c. Alkaline and caustic compounds should be added slowly to acidic compounds when neutralization is required, and never added to wells when acid solutions are still in the well.
 - d. Hoses, valves, and connections should be secured and not leaking. Spraying acid or oxidant chemicals can result in dermal burns and clothing damage.
 - e. All work should be conducted in unobstructed and/or well-ventilated areas.
 - f. Personnel must routinely review MSDS and company recipe sheets before each treatment event and work at a deliberate pace, avoiding rush.
 - g. Extra lime or soda ash should be kept on hand to treat spills, and eyewash packages and abundant clean water should be kept close at hand for dilution if personnel are splashed.
 - h. An emergency action plan should be prepared by the contractor to cover any spills, accidental contact with chemicals or unanticipated events.
 - i. An emergency evacuation plan should be prepared by the contractor

and in place prior to initiating work on the project.

- j. Phone numbers for emergency responders should be placed in a safe and prominent location on the job site.

E. Site Security

1. The contractor shall ensure that there is no public access to the site during work activities.
2. The contractor shall ensure that the well house is locked and that there is no public access to the well head either during or after work hours.
3. The contractor shall ensure that all chemicals used for treatment and/or neutralization are secured from public access and are protected from tampering or removal from the job site.

END OF SECTION

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SECTION 33 01 25 INITIAL WELL REDEVELOPMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Work to be performed under this Section includes the labor, supplies, tools, materials, and equipment necessary for the redevelopment of the production well using the dual swab tool or other Engineer approved development method.

1.2 RELATED WORK

- A. Section 33 20 61 – Disposal of Drilling Fluids, Cuttings and Pumped Water. Dispose of water and residual drilling fluids generated during surge block and air lift or submersible pump development as specified herein.

1.3 REFERENCES

- A. Groundwater and Wells, Second Edition, Pages 507 and 515 (by Fletcher G. Driscoll, 1986, published by Johnson Division, St. Paul, Minnesota 55112).

1.4 SUBMITTALS

- A. Submittals shall include but are not limited to:
 - a. Drilling mud dispersant
 - b. Dual rubber swab
 - c. Well driller's log

1.5 REDEVELOPMENT TIME

- A. The total redevelopment time is estimated to be 36 hours per well using the dual swab tool. However the Engineer shall be the sole judge as to when development is complete and may therefore increase or decrease the total development time.

1.6 NOTIFICATION OF THE ENGINEER

- A. The Contractor shall be responsible to give the Engineer 24-hour advance notice prior to beginning well development by surge block and submersible pump for the well.

PART 2 PRODUCTS

2.1 GENERAL

- A. Provide all temporary and permanent materials, supplies, tools, equipment, and labor required to accomplish the work as specified.

2.2 SURGING AND BAILING EQUIPMENT

- A. Furnish a surge block consisting of a double rubber swab, submersible pump system, and all necessary appurtenant equipment necessary for developing the well. The swab shall be of sufficient thickness, stiffness, and size to effectively agitate the well. The rubber swab shall be at least 1-inch thick and sized to be 1/2-inch smaller diameter than the well.

2.3 SAND CONTENT MEASURING DEVICE

- A. Provide a sand content measuring device such as an Imhoff cone, Rossum centrifugal sand tester, or equal.

PART 3 EXECUTION

3.1 GENERAL

- A. After the chlorine treatment has been completed, the Contractor shall notify the Engineer and make the necessary arrangements for conducting well development. The time required for development will be recorded by the hour with one-half hour intervals as the smallest units of time credited to the Contractor. Fractions of an hour less than one-half hour but exceeding one quarter hour will be considered to be one-half hour. Fractions of an hour less than one hour but exceeding three-quarters of an hour will be considered to be one full hour.
- B. The time to be recorded for well development shall commence when the equipment is installed in the well and is placed in operation, and shall end when development pumping or testing is stopped at the direction of the Engineer. No time will be recorded for delays resulting from equipment stuck in the hole; equipment breakdown; arranging major drilling, pumping or testing apparatus; or failure to conduct the operations in a diligent and workmanlike manner by which the desired results could ordinarily be expected.
- C. The Contractor may be required to add a mud dispersant to aid in removal of any clay particles. Drilling mud dispersants shall be purchased and provided by the Owner. The method for adding the chemical to the well shall be developed by the Contractor and approved by the Engineer.

3.2 SURGE BLOCK AND SUBMERSIBLE PUMP DEVELOPMENT USING CABLE TOOL RIG

- A. Upon completion of the chlorine treatment, the Contractor shall commence development with the cable tool rig or approved equal.
- B. Development shall consist of swabbing with a dual swab while simultaneously pumping with a submersible pump.
- C. The clay dispersant additive (e.g., NW-220 or approved equal) shall be introduced into the well via a tremie pipe or perforated surge block at three different depths specified by the Engineer. The Contractor shall mix and agitate the additive into the

- well by swabbing with the surge block. The additive will be allowed to sit in the well for a period of 24 hours and subsequently removed by pumping. No standby charges will be allowed for the 24 hour period the clay dispersant must sit in the well.
- D. Surging shall begin at the top of the upper perforated interval and work continuously downward to the base of the lower perforated interval. The well shall be surged using the spudding action of a cable tool drilling rig. The length of surge strokes and approximate number of strokes per minute shall be recorded by the Contractor on a field log sheet.
 - E. A submersible electric pumping system capable of producing a minimum of 250 gallons per minute under conditions existing at the site shall be used to remove water and solids from the well. The Contractor shall supply and install temporary discharge piping of sufficient size and length to conduct water to holding tanks and then to the discharge point shown in the drawings.
 - F. A surge block shall consist of a dual rubber swab assembly with two (2) swabs on a 4-inch minimum pipe separated by a 10-foot section of perforated drill pipe. Sufficient perforations shall be drilled between the surge blocks for passage of at least 600 gpm. There shall be a minimum of twenty 1-inch minimum diameter holes in the pipe, between the swabs. The rubber swabs shall fit snugly in the well so as to minimize leakage around the swabs. For an example of a dual rubber swab, refer to Groundwater and Wells, Second Edition, Pages 507 and 515 (by Fletcher G. Driscoll, 1986, published by Johnson Division, St. Paul, Minnesota 55112).
 - G. Pumping and surging from each treatment interval shall continue for each perforated interval in the well, or until all sand, silt, mud, and other solids have been removed from the treatment interval or as directed by the Engineer. Multiple development passes shall be used as directed by the Engineer. Pumping and surging shall begin at the top of the perforated interval and work downward to the bottom of the lower-screened interval. The quality, quantity and type of solids removed from the well shall be recorded by the Contractor.
 - H. Solids settling is required before the water is discharged from the surface storage tank, as well as adherence to other State of Utah Division of Water Quality requirements. Contractor shall follow Division of Water Quality BMP's which are attached in APPENDIX A.
 - I. Periodically, the Contractor shall measure and pump from the well all sand, silt, and clay that has accumulated at the bottom. Development shall be continued until all cuttings, fines and sand have been removed from the well. Upon completion of this operation, the well shall be pumped clean of all accumulations of mud, sand, rock, or sediment to its full depth prior to commencing the pumping of the well.
 - J. Sand measurements shall be made with a Rossum centrifugal sand tester during cable tool development pumping.
 - K. The total amount of material removed from the well during rehabilitation shall be recorded in the Driller's log.

END OF SECTION

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SECTION 33 20 22 INSTALL DEVELOPMENT PUMP EQUIPMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Work to be performed under this Section includes the work necessary to provide, install, and remove the pump and associated appurtenances for development, test pumping, and water level measurement, and includes installation of a 2-inch water level measurement access pipe.

1.2 RELATED WORK

- A. Section 33 20 40 – Plumbness and Alignment
- B. Section 33 20 61 – Disposal of Drilling Fluids, Cuttings and Pumped Water

1.3 REFERENCES

Not Used.

1.4 SUBMITTALS

Not Used.

PART 2 PRODUCTS

2.1 GENERAL

- A. Provide all temporary and permanent materials, supplies, tools, equipment, and labor required to accomplish the work as specified.
- B. Plumbness and alignment testing will be performed prior to installing the test pump in accordance with Section 33 20 40 – Plumbness and Alignment.

2.2 PUMPING EQUIPMENT

- A. The test pump shall be a vertical turbine line shaft type pump capable of pumping from 500 to 4000 gallons per minute under the head conditions anticipated for the project. The Contractor shall initially set the pump at a depth of ~~300~~ **720** feet below ground surface but be capable of lowering the pump setting to achieve the maximum rated capacity of the pump, if necessary.
- B. The pump motor shall be of a variable-speed type and be equipped with sound deadening devices as appropriate. Discharge piping shall be provided by the Contractor and be of sufficient size and length to conduct water to the wastewater disposal area as specified in Section 33 20 61 – Disposal of Drilling Fluids, Cuttings and Pumped Water. The Contractor shall provide instantaneous and totalizing flow meters or other approved devices that will-measure the flow rate to an accuracy of at

least 5 percent. The Contractor shall also provide an orifice plate and manometer with appropriate apparatuses to measure discharge flow from the well.

2.3 SAMPLE PORT

- A. Provide a sample port at the well head for the collection of water quality samples.
- B. Provide an access port and tube for measurement of water level with an electric water level probe.
- C. Provide a 2-inch diameter access port and tube for water level sensing with a transducer and data logger.

2.4 DATA LOGGER AND ELECTRIC WATER LEVEL PROBE

- A. Provide a water level transducer and data logger along with an electric water level probe acceptable to the Engineer.

2.5 SAND CONTENT MEASURING DEVICE

- A. Provide a sand content measuring device such as a Rossum centrifugal sand separator, or equal.

PART 3 EXECUTION

3.1 GENERAL

- A. Following the completion of initial development with the cable tool rig, the Contractor shall install a deep well high capacity test pump to perform the development of the well by pumping. This pump shall not be removed from the well until all well testing, including recovery monitoring, is complete. All fuel shall be provided by the Contractor.
- B. Provide a 2-inch diameter sounding tube adequate for insertion of water level sensing devices into the well before, during, and after the test pumping. The access pipe must allow free passage of pressure transducers that are 1-inch in diameter and approximately 8-inches long. The sounding tube shall be securely fastened to the pump column assembly, terminate approximately 5 feet above the pump, and be perforated along the bottom 10 feet.
- C. Provide and install a water level transducer and data logger with an electric water level probe to a depth determined by Engineer. Water level transducer and data logger shall remain down-hole until all development and test pumping are complete. Failure of compliance or equipment failure shall result in the contractor performing the test pumping again until satisfactory records are produced from the water level transducer.

END OF SECTION

SECTION 33 20 26 STEP-RATE DRAWDOWN TEST

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Work to be performed under this Section includes the work necessary to test the production well by the Step-Rate Drawdown Test.

1.2 RELATED WORK

- A. Section 01 00 10 – Special Conditions for Drilling
- B. Section 33 20 61 – Disposal of Drilling Fluids, Cuttings and Pumped Water.

1.3 REFERENCES

Not Used.

1.4 SUBMITTALS

- A. The Contractor shall submit pump test data for the well in hard copy and electronic form.
- B. The submittals shall be made in accordance with Section 01 00 10 – Special Conditions for Drilling.

1.5 NOTIFICATION OF THE ENGINEER

- A. The Contractor shall be responsible to give the Engineer 48-hour advance notice prior to beginning the step rate drawdown test for the well.

PART 2 PRODUCTS

2.1 GENERAL

- A. Provide all temporary and permanent materials, supplies, tools, equipment, and labor required to accomplish the work as specified.
- B. Provide water level pressure transducer and data logger as specified.

PART 3 EXECUTION

3.1 GENERAL

- A. A step-rate drawdown (discharge) test shall be performed to determine well performance characteristics.

- B. The step-rate drawdown test will be performed after the well has been sufficiently developed by the test pump as approved by the Engineer.
- C. The Contractor shall monitor and document the specific capacity (pumping rate and drawdown) of the well as it is pumped. The monitoring frequency and instrumentation shall be approved by the Engineer.
- D. During the step-rate drawdown test the discharge rates from the pump shall be controlled by both a valve and engine throttle. The discharge rate shall be controlled and maintained at approximately the desired discharge rate for each step with inaccuracy of at least plus or minus 5 percent. Pump discharge rates shall be measured with instantaneous and totalizing flow meters as approved by the Engineer.
- E. Step-Rate Drawdown Test: The well shall be "step" tested at rates of approximately 1/2, 3/4, 1, 1.25, and 1.5 times the design capacity of the well or at rates specified by the Engineer. The test shall be conducted under the supervision of the Engineer.
- F. Whenever continuous pumping at a uniform rate has been specified, failure of pump operation shall require that the test be aborted and further testing suspended until the water level in the pumped well has recovered to its original level for the purposes of this section, recovery shall be considered "complete" after the well has been allowed to rest-for a period at least equal to the elapsed pumping time of the aborted test, with the exception that if any three successive water level, measurements spaced at least 20 minutes apart show no further rise in the water level in the pumped well, the test may be resumed at the direction of the Engineer.
- G. Any test that does not meet the duration requirement specified above; or that is initiated too soon after an aborted test as defined above, shall be declared invalid, and the Contractor will not be paid for the invalid test.
- H. Water used for pump testing shall be disposed of per Section 33 20 61 – Disposal of Drilling Fluids, Cuttings and Pumped Water.

3.2 WATER LEVEL MEASUREMENT

- A. Equipment needed to adequately monitor water level before, during, and after the step-rate drawdown test include:
 - 1. Electronic water level sounder (Solinst or equal) of sufficient length to monitor water level.
 - 2. Pressure transducer (In-Situ Inc. PXD-261, miniTROLL, or equal) to be placed in the water level sounding tube of sufficient length to remain below the water table during the entire duration of the pumping test.
 - 3. Data logger (Hermit 3000, miniTROLL, or equal) for the purpose of obtaining frequent and automated water level readings during the pump test.

END OF SECTION

SECTION 33 20 28 CONSTANT-RATE DISCHARGE TEST

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Work to be performed under this Section includes the work necessary to test the production well by the Constant-Rate Discharge Test.
- B. Water generated during pump testing shall be disposed of as specified in Section 33 20 61 – Disposal of Drilling Fluids, Cuttings and Pumped Water.

1.2 RELATED WORK

- A. Section 01 00 10 – Special Conditions for Drilling
- B. Section 33 20 61 – Disposal of Drilling Fluids, Cuttings and Pumped Water

1.3 REFERENCES

- A. Safe Drinking Water Act

1.4 SUBMITTALS

- A. The Contractor shall submit pump test data for the well in hard copy and electronic form.
- B. The submittals shall be made in accordance with Section 01 00 10 – Special Conditions for Drilling.

1.5 NOTIFICATION OF THE ENGINEER

- A. The Contractor shall be responsible to give the Engineer 48-hour advance notice prior to beginning the step rate drawdown test for the well

PART 2 PRODUCTS

2.1 GENERAL

- A. Provide all temporary and permanent materials, supplies, tools, equipment, and labor required to accomplish the work as specified.
- B. Provide water level pressure transducer and data logger as specified.

PART 3 EXECUTION

3.1 GENERAL

- A. A long-term constant-rate discharge test shall be performed to determine local

aquifer characteristics.

- B. The constant-rate test shall be conducted not less than 12 hours after completion of the step test by pumping the well at the design rate for a period of 24 hours, or until the Engineer terminates the test. The test should not commence until drawdown has recovered at least 90% after the step rate drawdown test. When the pumping is terminated, the Contractor shall not conduct any activities for the duration that the well was pumped that might affect water levels in the well during the recovery period.
- C. The Contractor shall monitor and document the specific capacity (pumping rate and drawdown) of the well as it is pumped. The monitoring frequency and instrumentation shall be approved by the Engineer.
- D. During the constant-rate drawdown test, the discharge rate from the pump shall be controlled by both a valve and engine throttle. The discharge rate shall be controlled and maintained at approximately the desired discharge with an accuracy of at least 5 percent. Pump discharge rates shall be measured with an instantaneous and totalizing flow meter and orifice plate and manometer apparatus, as approved by the Engineer.
- E. Whenever continuous pumping at a uniform rate has been specified failure of pump operation shall require that the test be aborted and further testing suspended until the water level in the pumped well has recovered to its original level. For the purposes of this section, recovery shall be considered "complete" after the well has been allowed to rest for a period at least equal to the elapsed pumping time of the aborted test, with the exception that if any "three successive water level measurements spaced at least 20 minutes apart show no further rise in the water level in the pumped well, the test may be resumed at the direction of the Engineer.
- F. Any test that does not meet the duration requirement specified above, or that is initiated too soon after an aborted test, as defined above, shall be declared invalid and the Contractor will not be paid for the invalid test.
- G. The Contractor shall provide all information to the Engineer regarding the type, of pumping equipment used, including engines, drive components, bowls lines, and shafts. The Contractor shall keep records of the operation of equipment during the tests including engine rpm and horsepower, fuel use, and other essential-information that will be useful in designing a pump system.
- H. After completion of water level monitoring, and after the pump has been removed from the well, the Contractor shall remove all sand and debris that has accumulated in the bottom of the well.
- I. During the constant rate pump test, the Contractor will provide assistance and access to the Engineer for collecting water quality samples from the pump discharge water. Approximately one water quality sample may be taken for the full suite of Safe Drinking Water Act parameters near the end of the test.
- J. Water used for pump testing shall be disposed of per Section 33 20 61 – Disposal of Drilling Fluids, Cuttings and Pumped Water.

3.2 WATER LEVEL MEASUREMENT

- A. Equipment needed to adequately monitor water level before, during, and after the constant rate pumping test include:
1. Electronic water level sounder (Solinst or equal) of sufficient length to monitor water level.
 2. Two Pressure transducers (In-Situ Inc. PXD 261, miniTROLL, or equal) to be placed in the water level sounding tube of sufficient length to remain below the water table during the entire duration of the pumping test. ~~Transducers will be placed on both the existing and new Meadowbrook well.~~
 3. Two Data loggers (Hermit 3000, miniTROLL, or equal) for the purpose of obtaining frequent and automated water level readings during the pump test. ~~Each well (existing and new Meadowbrook wells) will be equipped with a data logger and transducer.~~
- B. Hand (manual) measurements of depth to water shall be performed before and after the test using an electronic water level sounder to test the accuracy of the transducer. Manual measurements will also be performed during the pumping test -at a frequency approved by the Engineer. The data logger and transducer shall be set-up and started prior to the pump test so that the initial static water level is determined and recorded. Several measurements shall be taken over the 24-hour period before the test. The data logger will be set up to record water level measurements at a logarithmic time frequency as the pumping is started. At a minimum, water level measurements will be collected in accordance with the following table:

Time Since Pumping Started/Stopped	Time Interval for Drawdown Measurements
0-2 minutes	10 seconds
2-5 minutes	30 seconds
5-15 minutes	1 minutes
15-60 minutes	5 minutes
1-2 hours	10 minutes
2-8 hours	30 minutes
8-24 hours	1 hour

- C. Flow rates shall be measured accurately and recorded at the same time interval as drawdown data.
- D. After pumping is terminated (24-hour minimum test duration) the same pumping schedule shall be followed until drawdown has recovered at least 90%.

END OF SECTION

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SECTION 33 20 30 VIDEO CAMERA SURVEY

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Work to be performed under this Section includes the work necessary to make the video camera survey.

1.2 RELATED WORK

Not Used.

1.3 REFERENCES

Not Used.

1.4 SUBMITTALS

- A. The Contractor shall provide the Engineer with the original video tape or DVD and two copies within 48 hours of the completion of the survey. These tapes shall be compatible with the VHS format or DVD.

1.5 NOTIFICATION OF THE ENGINEER

- A. The Contractor shall be responsible to give the Engineer 48-hour- advance notice prior to beginning the video camera survey for the well.

PART 2 PRODUCT

2.1 GENERAL

- A. Provide all temporary and permanent materials, supplies, tools, equipment, and labor required to accomplish the work as specified:

PART 3 EXECUTION

3.1 GENERAL

- A. After completion of well discharge tests, the well shall be cleaned of all accumulated sediment (including fines) and then a color video camera survey shall be run the full depth of the well by the Contractor. The equipment used shall produce a VHS tape or DVD with an automatic depth indication. The camera and cable shall be disinfected prior to being placed in the well. The proposed camera survey shall receive the Engineer's approval before being performed. The survey shall be performed in the presence of the Engineer.
- B. The equipment used shall produce a video with an automatic depth indication at 1-

foot maximum intervals. The beginning and end of the video shall contain the date and well name. The VHS tape or DVD and box/case shall be labeled clearly with the date and well name. The video camera shall have vertical down-hole and horizontal side-hole viewing capability. Horizontal side-hole viewing shall be controllable to allow viewing at any angle within a 360 degree rotation.

1. A dynamic vertical down-hole view video shall be run from the top of the well to the bottom of the well at a speed not exceeding 30 feet per minute.
 2. The video camera during the dynamic vertical down-hole view run shall be interrupted at the direction of the Engineer for periodic static horizontal side-hole viewing.
- C. The Engineer reserves the right to inspect the video tape of the hole for defects in the well casing. Any sediment/debris or defects noted will be either cause for rejection by the Engineer or correction by the Contractor. If sediment or debris is found in the well the Contractor shall bear the cost of re-cleaning and resurveying the well. If defects in the casing are found and the cause is due to installation by the Contractor, the Contractor shall bear the cost for the necessary repairs and the cost of resurveying the hole.

END OF SECTION

SECTION 33 20 61 DISPOSAL OF DRILLING FLUIDS, CUTTINGS AND PUMPED WATER

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Work to be performed under this Section includes the labor, supplies, tools, materials, and equipment necessary to dispose all drilling fluids, drill cuttings, and water generated during borehole drilling, well construction, well development, and well testing.

1.2 RELATED WORK

- A. Section 01 00 10 – Special Conditions for Drilling
- B. The Contractor shall comply with all applicable permits, laws, and regulations in disposing of drilling fluids, drill cuttings, and water generated during drilling, well construction, well development, well testing, and disinfection. The permits, laws and regulations shall include, but not be limited to all federal, state, and local laws, regulations, and ordinances related to disposing of materials generated in constructing wells.

1.3 REFERENCES

- A. Utah Division of Water Quality Fact Sheet Regarding Water Discharge from Water Well Drilling and Operation

1.4 SUBMITTALS

- A. The Contractor shall submit the following:
 - 1. If applicable, or requested by the Engineer, approved chain-of-custody form(s) demonstrating compliance with federal, state, and local laws, regulations, and ordinances related to disposing of materials generated during well construction.
- B. The submittals shall be made in accordance with Part 10 of Section 01 00 10 – Special Conditions for Drilling.

PART 2 PRODUCTS

2.1 GENERAL

- A. Provide all temporary and permanent materials, supplies, tools, equipment, and labor required to accomplish the work as specified.

2.2 OWNER-SUPPLIED FACILITIES

- A. The Owner will make available to the Contractor the use of an existing storm drain to directly discharge well development water and pump test water. The locations to discharge water are shown on Drawings. The Contractor is responsible for supplying the transmission piping and other appurtenances to convey the water from the well to the designated discharge point. The Contractor is responsible to ensure the discharge water meets all applicable water quality standards prior to discharge.
- B. The Owner will designate an area on owner's property at the construction site where the Contractor may dispose of the drill cuttings and solid earth materials generated from drilling operations. The drill cuttings and solids shall be spread on the existing ground surface in the designated area so as to be consistent with the existing ground surface contours, as directed by the Owner.

PART 3 EXECUTION

3.1 DRILLING FLUIDS FROM FLOODED REVERSE ROTARY DRILLING METHOD

- A. All dewatered drill cuttings and solid materials shall be disposed of at no charge on the Owner's construction site by spreading on the ground surface in an area designated by the Owner. The Contractor shall give the Owner 48-hour advance notice prior to spreading any drill cuttings at the site.
- B. All other materials, both hazardous and non-hazardous shall be removed from the site and disposed of by the Contractor at a State-Approved landfill within five (5) days of generation. The Contractor is responsible for transportation of said wastes. The Contractor shall supply the Owner with documentation that the materials were disposed of properly.
- C. All drilling fluids, all displacement fluids generated during the well construction process, and all initial surge block and airlift development fluids shall be contained onsite in appropriate containers, such as Baker tanks, Frac tanks, or equivalent, as approved by the Engineer.
- D. All drilling fluids and all displacement fluids generated during the construction process and all initial surge block and airlift development fluids shall be disposed by the Contractor off site at a State-Approved landfill within 5 days upon completion of surge block and airlift development. Following disposal, the Contractor shall supply the Owner with documentation in accordance with local, state, and federal regulations to demonstrate compliance. If water quality of the drilling and development fluids- is suitable in accordance with State of Utah regulation, the fluids can be discharged to the Owner-designated location. A copy of the Fact Sheet Regarding Water Discharge from Water Well Drilling and Operation, prepared by the Utah Division of Water Quality, is located in Appendix B.

3.2 DISCHARGE WATER FROM DEVELOPMENT BY PUMPING AND WELL TESTING

- A. All development and testing water shall be contained onsite in appropriate containers, such as Baker tanks, Frac tanks, or equivalent until such time water

- quality suitable for discharge is achieved in accordance with State of Utah regulations.
- B. Solid matter will be separated from the drilling fluids and displacement fluids prior to disposal.
 - C. The water remaining after separation that meets State of Utah water quality standards shall be discharged to the Owner-designated location.
 - D. The dewatered solid matter remaining after separation shall be disposed of on site by the Contractor as described above.
 - E. The water discharged from pump development and well testing shall be disposed via temporary pipelines provided by the Contractor. Well development and testing water shall be disposed of at the locations shown on Drawings. The Contractor's pipelines shall have a minimum capacity to convey the maximum test pump rate for the well. The Contractor shall discharge water so as not to create erosion or cause turbidity in any surface water channel.
 - F. It is the Contractor's responsibility to prevent the discharge stream from damaging or eroding the site or any drainage channel.
 - G. It is the Contractor's responsibility to minimize impacts to access and use of private and public road by the transmission piping and discharge stream. Use of ramps, earthen berms, or similar means for pipeline crossings of public and private accesses shall be employed. In addition, caution signs and speed restrictions shall be employed where public right-of-ways are impacted. The Contractor shall coordinate ramps and signage with the Owner.

END OF SECTION

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FIGURES

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FIGURES

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JORDAN VALLEY WATER CONSERVANCY DISTRICT
 JWCD-2019 4 WELL UPGRADE PROJECT
 10TH & 78TH WELL LOCATION MAP

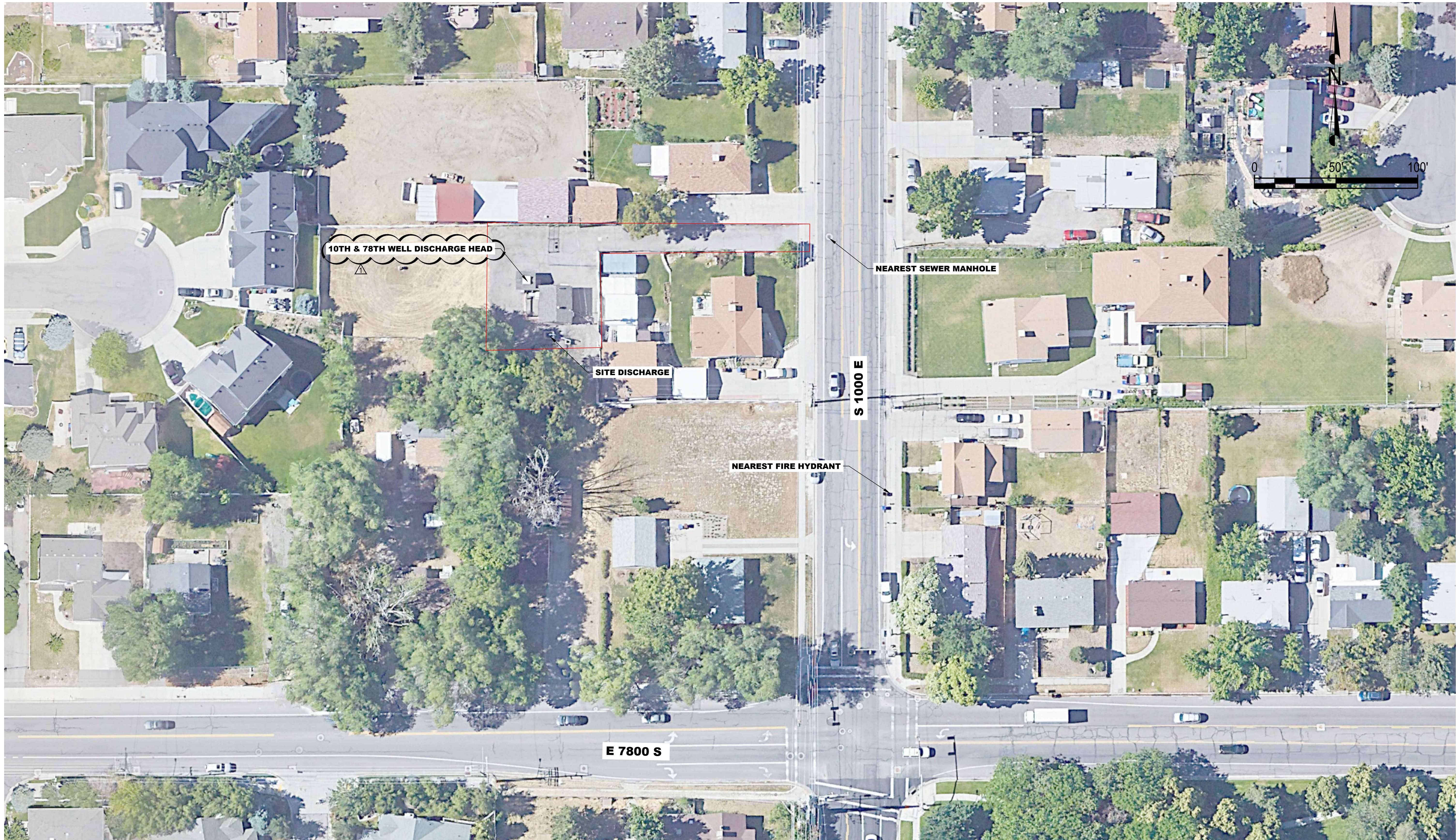
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PROJECT NUMBER: 2019-0113
 SHEET: 1 OF 8
 SHEET NUMBER: G001

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 10TH & 78TH WELL SITE DISCHARGE MAP

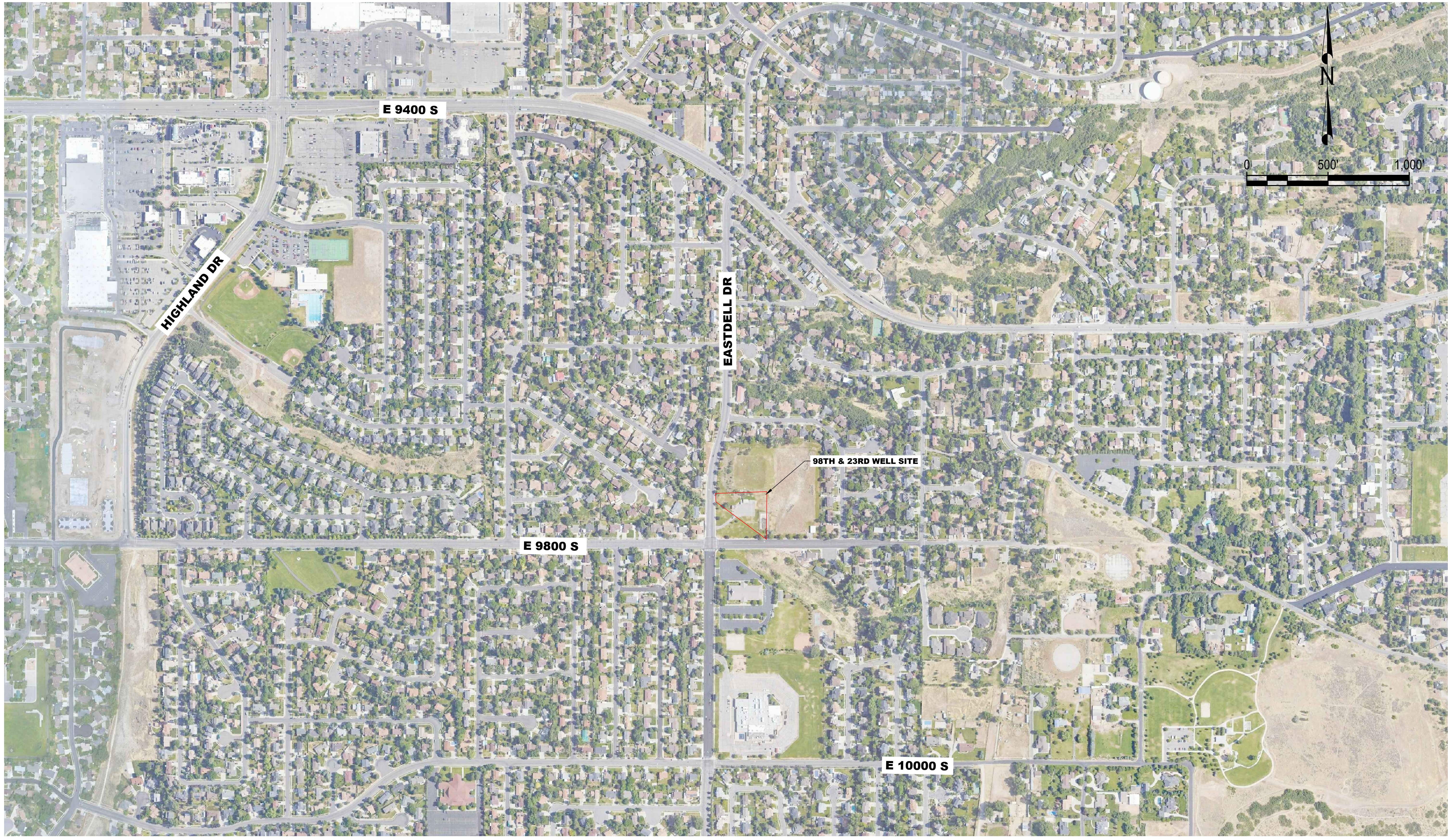
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PROJECT NUMBER 2019-0113	
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SHEET NUMBER G002	

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 JWVCD-2019 4 WELL UPGRADE PROJECT
 98TH & 23RD WELL LOCATION MAP

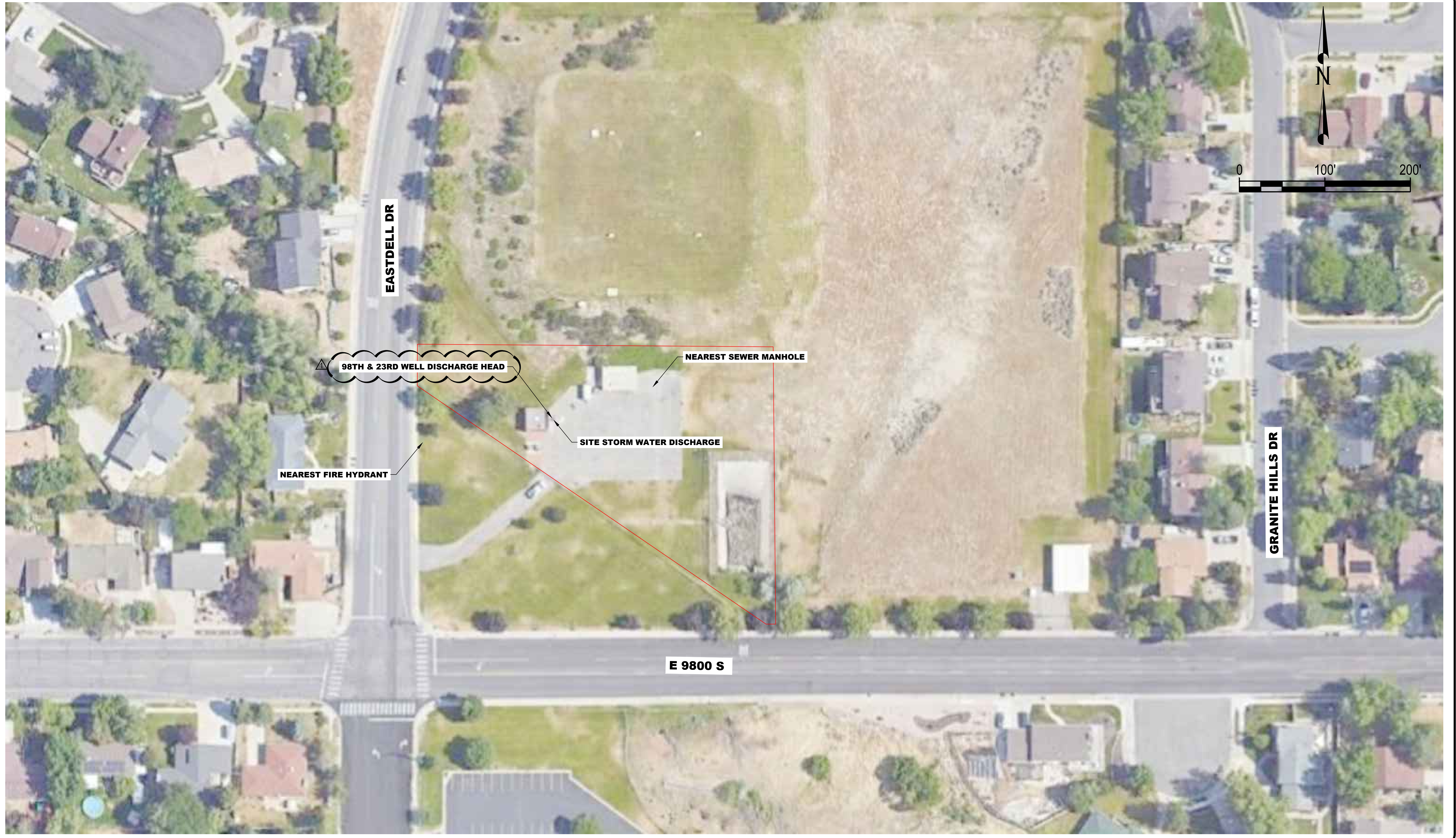
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PROJECT NUMBER	2019-0113	
SHEET	3	OF 8
SHEET NUMBER	G003	

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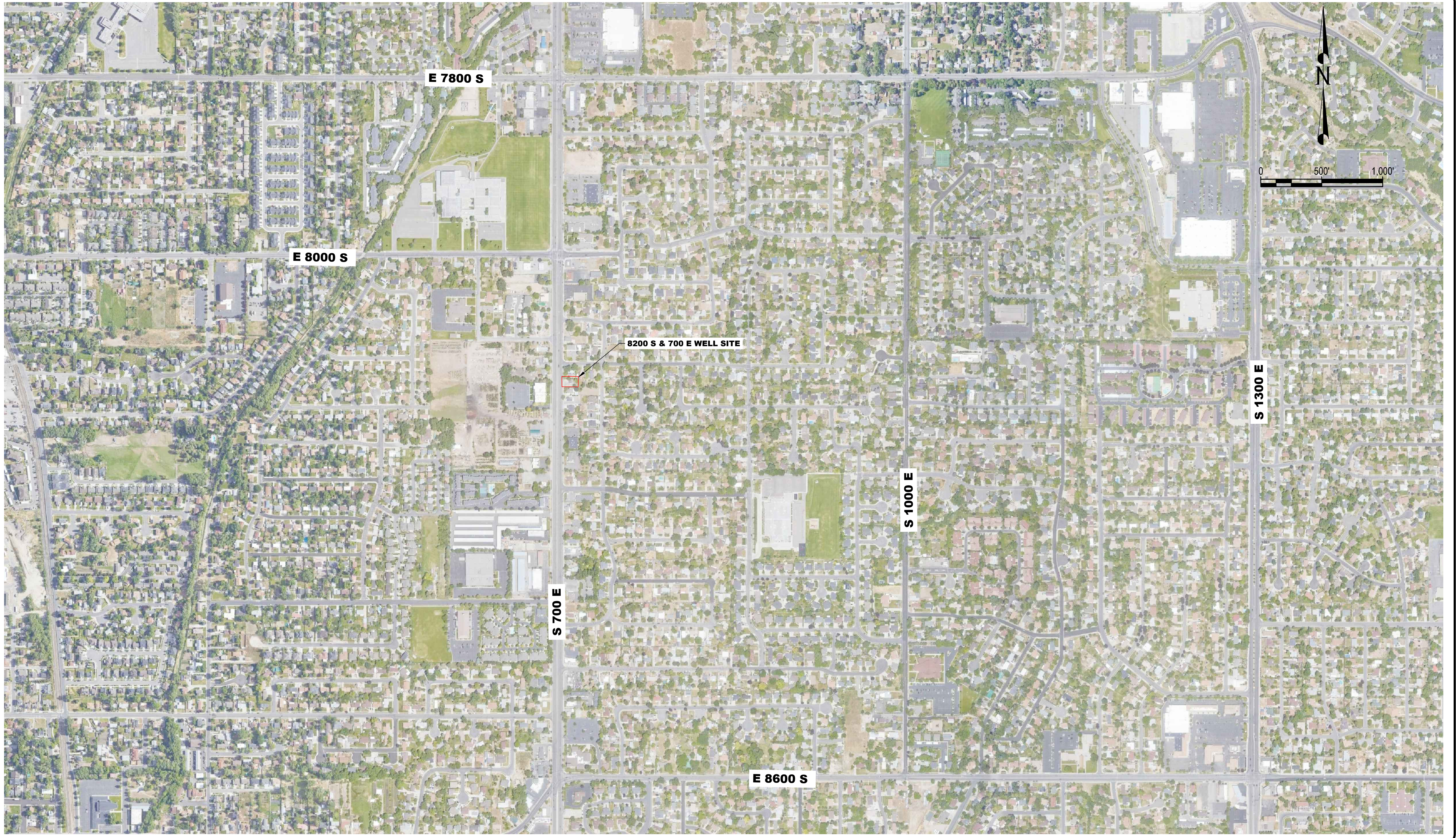
JORDAN VALLEY WATER CONSERVANCY DISTRICT
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 98TH & 23RD WELL SITE DISCHARGE MAP

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JORDAN VALLEY WATER CONSERVANCY DISTRICT
 JWCD-2019 4 WELL UPGRADE PROJECT
 8200 S & 700 E WELL LOCATION MAP

8190 S 700 E

SANDY, UT 84094

STAMP

PROJECT NUMBER	2019-0113	
SHEET	5	OF 8
SHEET NUMBER	G005	

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RECORD OF REVISIONS			
NO.	DATE	BY	DESCRIPTION
1	JUL 15, 2019	CDH	ADDENDUM 1

IF THE ABOVE SCALE BAR DOES NOT MEASURE 1-INCH IN LENGTH, DO NOT USE THIS DRAWING FOR SCALING PURPOSES. DIMENSIONS AND MEASUREMENTS SPECIFIED IN THE DRAWING TAKE PRECEDENCE TO SCALED MEASUREMENTS.

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JORDAN VALLEY WATER CONSERVANCY DISTRICT
JVWCD-2019 4 WELL UPGRADE PROJECT
 8200 S & 700 E WELL SITE DISCHARGE MAP

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SANDY, UT 84094

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PROJECT NUMBER		2019-0113	
SHEET	OF	6	8
SHEET NUMBER		G006	

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JORDAN VALLEY WATER CONSERVANCY DISTRICT
 JWCD-2019 4 WELL UPGRADE PROJECT
 NEWBURY WELL LOCATION MAP

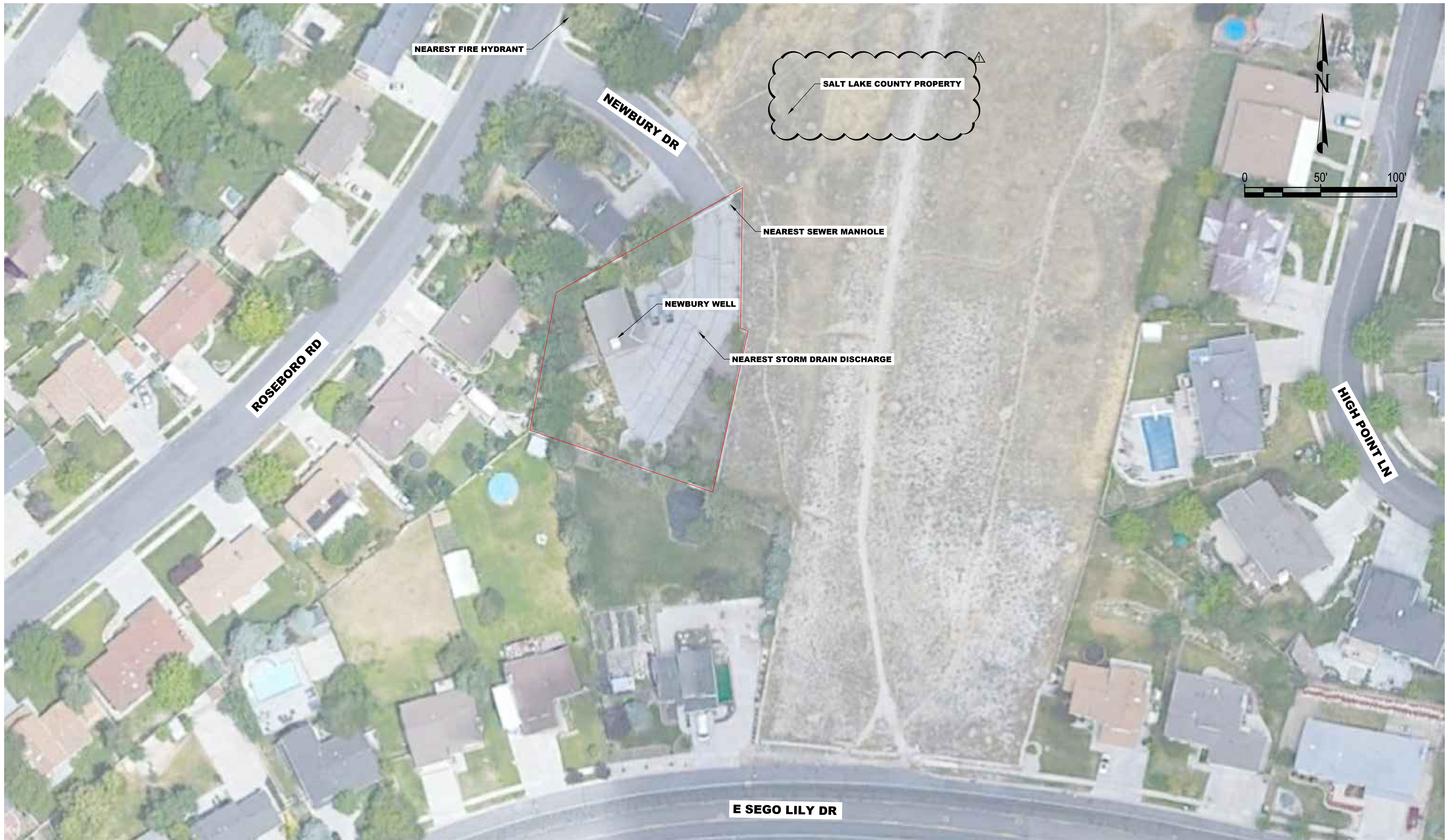
10190 NEWBURY DR

SANDY, UT 84092

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PROJECT NUMBER: 2019-0113
 SHEET: 7 OF 8
 SHEET NUMBER: G007

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JORDAN VALLEY WATER CONSERVANCY DISTRICT
 JWCD-2019 4 WELL UPGRADE PROJECT
 NEWBURY WELL SITE DISCHARGE MAP

10190 NEWBURY DR

SANDY, UT 84092

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PROJECT NUMBER 2019-0113	
SHEET 8	OF 8
SHEET NUMBER G008	

APPENDICES

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APPENDIX A

SALT LAKE COUNTY NOISE POLLUTION ORDINANCE

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Salt Lake Valley Health Department

Health Regulation

#21

**COMMUNITY NOISE
POLLUTION CONTROL**

**Adopted by the Salt Lake Valley Board of Health
September 6, 1984**

**Amended:
August 1, 1991,
December 7, 1995,
May 3, 2001,
August 7, 2008
August 2, 2012**

**Under Authority of Section 26A-1-114
Utah Code Ann.**

1. PURPOSE & APPLICABILITY OF REGULATION

- 1.1 The purpose of this Regulation is to establish standards for the control of noise pollution within Salt Lake County and to reduce the making and creation of harmful sound to secure, protect, and promote the public health and safety of the residents of Salt Lake County.

2. DEFINITIONS

- 2.1 “dBA or A-Weighted Sound Pressure Level” shall mean the sound pressure level in decibels as measured with a sound level meter using the A-weighting network. The unit for reporting is dB(A) or dBA. Sounds measured with the “A” weighting network approximate the response of human hearing when measuring sounds of low to moderate intensity.
- 2.2 “Ambient Sound” shall mean the sound pressure level which represents the summation of the sound from all the discrete sources affecting a given site at a given time, exclusive of the source under investigation.
- 2.3 “Best Management Practices or BMPs” shall mean auxiliary operational procedures implemented by a business or facility that effectively reduce noise levels. BMPs include but are not limited to scheduling of activities, prohibitions of practices, maintenance procedures, and other management practices or institutional controls that prevent or reduce noise decibel levels.
- 2.4 “CFR” shall mean Code of Federal Regulations.
- 2.5 “Construction” shall mean any site preparation, assembly, erection, substantial repair, alteration or similar action.
- 2.6 “Construction equipment” shall mean any mechanical apparatus used in excavation, construction or demolition.
- 2.7 “Decibel” shall mean a logarithmic unit used in measuring the magnitude of sound. Decibel is abbreviated dB.
- 2.8 “Demolition” shall mean any dismantling, intentional destruction or removal of any right- of-way surfaces, building, structure, utility or similar property.
- 2.9 “Department” shall mean the Salt Lake Valley Health Department (SLVHD).

- 2.10 “Director” shall mean the Director of the Salt Lake Valley Health Department or his or her designated representative.
- 2.11 “Dwelling” shall mean a building or structure that is intended or designed to be used, rented, leased, let or hired out for human habitation.
- 2.12 “Dynamic braking device” shall mean a device used to transform a motor vehicle’s internal combustion engine into an air compressor for the purpose of braking without the use of wheel brakes, commonly referred to as “Jake brakes,” “compression brakes,” or “engine brakes.”
- 2.13 “Emergency power generator” shall mean the equipment used to generate electrical power in the event of an interruption, malfunction, or failure of the electrical power otherwise supplied by the service provider.
- 2.14 “Emergency vehicle” shall mean an authorized motor vehicle, motorboat, or aircraft which can lawfully be used for the transportation of emergency personnel, equipment, and supplies while responding to the scene of an emergency.
- 2.15 “Emergency work” shall mean;
- 2.15.1 Work required to restore property to a safe condition following a disaster or declaration of emergency;
 - 2.15.2 Work required to protect persons or property from an imminent exposure to danger; or
 - 2.15.3 Work that absolutely cannot be done otherwise during the daytime hours to protect the public’s health by private or public entities for providing or restoring immediately necessary utility service.
- 2.16 “EPA” shall mean the U.S. Environmental Protection Agency.
- 2.17 “Exhaust system” shall mean all components responsible for conducting exhaust gasses or reducing sound from a motor vehicle or motorboat including, but not limited to, mufflers, baffles, header pipes, manifolds, air intakes, or any other similar component.
- 2.18 “Gross Vehicle Weight Rating” or “GVWR” shall mean the value specified by the manufacturer as the recommended maximum loaded weight of a single motor vehicle. In cases where trailers and tractors are separable, the gross combination weight rating (GCWR), which is the value specified by the manufacturer as the recommended maximum loaded weight of the combination of vehicle, shall be used.
- 2.19 “Heating, Ventilation, and Air Conditioning (HVAC)” shall mean any system installed on or within a dwelling, facility, building or structure for the purpose of providing heating, ventilation, or air conditioning. HVAC may include furnaces, air exchangers,

central air condensing units, evaporative “swamp” coolers, heat pumps, exhaust fans, and other heating and cooling equipment.

- 2.20 “Impulse sound” shall mean sound of short duration, generally less than one second, especially of high intensity, abrupt onset and rapid decay, and often rapidly changing spectral composition.
- 2.21 “Infrasound” includes any sound frequency less than or equal to 16 Hz.
- 2.22 “ L_{eq} ” shall mean the average measure of continuous noise that has the equivalent acoustic energy of the fluctuating signal over the same time period. For the purposes of this Regulation, an L_{eq} measurement will be taken for a minimum of two minutes.
- 2.23 “ L_{max} ” shall mean the highest root-mean-square (RMS) sound level measured over 1000 milliseconds in a slow response. For the purpose of this Regulation L_{max} will be the highest A-weighted sound level occurring during a noise event.
- 2.24 “Motor vehicle” shall mean any vehicle required to be licensed for on-road use in the State of Utah, and is propelled by a motorized power source.
- 2.25 “Muffler” shall mean a properly functioning sound dissipative device or system consisting of a series of chambers, baffle plates, or other mechanical devices for abating the sound of escaping exhaust gases.
- 2.26 “Multi-dwelling unit building” shall mean any building comprising two or more dwelling units, including, but not limited to, apartments, condominiums, co-ops, multiple family houses, townhouses, and attached residences.
- 2.27 “Municipal Approved Event” shall mean an assembly of people which continues, and can reasonably be expected to continue for two or more hours per day, and has received a permit, license or authorization from the municipality in whose jurisdiction the event is located.
- 2.28 “Noise” shall mean sound that may be harmful to health.
- 2.29 “Noise control system” shall mean parts, mufflers, assemblies or systems, including all exhaust system components, originally installed by the manufacturer which controls or reduces noise emissions.
- 2.30 “Octave band” shall mean an interval in Hertz between two frequencies having a ratio of 2:1. For purposes of this Regulation, octave band sound pressure levels shall be measured at any of the following center frequencies: 31.5, 63, 125, 250, 500, 1,000, 2,000, 4,000 and 8,000 Hz.
- 2.31 “Off-highway vehicle” shall mean any vehicle not permitted to be licensed for on-road use in the State of Utah and is propelled by an engine.

- 2.32 “Owner” shall mean any person who alone or jointly and severally with others:
- 2.32.3 has legal title to any premise, dwelling, or dwelling unit with or without accompanying actual possession thereof; or
 - 2.32.4 has charge, care, or control of any premises, dwelling, or dwelling unit, as legal or equitable owner, agent of the owner, or is an executor, executrix, administrator, administratrix, trustee, or guardian of the estate of the owner.
- 2.33 “Person” shall mean any individual, public or private corporation and its officers, partnership, association, firm, trustee, executor of an estate, the State or its departments, institutions, bureau or agency thereof, municipal corporation, county, city, or any legal entity recognized by the law.
- 2.34 “Public assembly” shall mean an activity regardless of whether or not a ticket or payment of any type is required for admission.
- 2.35 “Pure tone” shall mean any sound that can be distinctly heard as a single pitch or a set of single pitches. For the purposes of this Regulation a pure tone shall exist if the one-third octave band sound pressure level, within the investigated band of the tone and frequency range, exceeds the arithmetic average of the sound pressure levels of the two contiguous one-third octave bands by:
- 15 dB for bands with center frequencies less than 160 Hz
 - 8 dB for bands with center frequencies of 160 Hz to 400 Hz
 - 5 dB for bands with center frequencies greater than 400 Hz
- 2.36 “Receiving property” shall mean any property, including an individual unit of a multi-dwelling or multi-use property, that is adversely affected by noise transmitted by another property or from another unit within the same multi-dwelling or multi-use property.
- 2.37 “Repetitive impulse sound” shall mean any impulse sound repeated at intervals such that a sound level meter set at “fast” meter characteristic will show changes in sound pressure level greater than 10 dB(A) within one second.
- 2.38 “Salt Lake Valley Board of Health” shall mean the Salt Lake Valley Board of Health as authorized by Section 26A-1-109, Utah Code Ann.
- 2.39 “Snow removal equipment” shall mean any mechanical equipment used for removing snow from land or building surfaces including snow plows, snow blowers, snow sweepers, and any spreader or applicator employed to apply a snow or ice melting product.

- 2.40 “Sound” shall mean an oscillation in pressure, particle displacement, particle velocity or other physical parameter in a medium with interval forces that cause compression or rarefaction of the medium.
- 2.41 “Sound level meter” shall mean an instrument that includes a microphone, amplifier, RMS detector, integrator, or time averager, output meter and weighing networks used to measure sound pressure levels.
- 2.42 “Sound pressure level” shall mean twenty times the logarithm to the base 10 of the ratio of the RMS sound pressure to the reference pressure of 20 micropascals (20 micronewtons per square meter). The sound pressure level is denoted Lp or SPL and is expressed in decibels (dB).
- 2.43 “Ultrasound” includes any sound frequency higher than 20 kHz.
- 2.44 “Z-Weighted Sound Pressure Level or dBZ or dB(Z)” shall mean the sound pressure level in decibels as measured with a sound level meter using the Z-weighted filter. Infrasound shall be measured with the Z-weighted filter.

3. GENERAL PROVISIONS

3.1 Jurisdiction of the Department.

- 3.1.1 This Regulation is promulgated by the Salt Lake Valley Board of Health as authorized by Section 26A-1-121(1), Utah Code Ann. and Chapter 9.04, Salt Lake County Code of Ordinances.
- 3.1.2 The Department is empowered to enforce this Regulation in all incorporated and unincorporated areas served by the Department as authorized by Section 26A-1-114(1)(a), Utah Code Ann. and Chapter 9.04, Salt Lake County Code of Ordinances.

3.2 The Department and local law enforcement agencies shall have enforcement responsibility for this Regulation.

3.3 Except as otherwise provided for, it shall be unlawful for any person not to comply with any regulation promulgated by the Department unless granted an express variance by the Salt Lake Valley Board of Health.

3.4 Compliance with this Regulation does not constitute a defense if charged with any environmental crime or violation of any local, state, or federal law.

3.5 Legal action taken by the Department under this Regulation does not preclude prosecution for any environmental crime that may have been committed or violation of any other local, state, or federal law.

3.6 Nothing in this Regulation affects or modifies in any way the obligations or liability of any person under any other regulation or provision thereof issued by the Department, any ordinance adopted by Salt Lake County or any municipality located within Salt Lake County, or any state or federally issued law, including common law. However, except as otherwise provided for, Departmental regulations supersede other existing local and county standards, regulations and ordinances pertaining to similar subject matter that are inconsistent.

3.7 **Severance.** If any section, sub-section, sentence, clause, or phrase of this Regulation is for any reason held to be invalid or unconstitutional by a decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Regulation.

4. SUBSTANTIVE PROVISIONS

4.1 **General Prohibition of Noise.** Notwithstanding the specific noise restrictions in Sub-section 4.7, no person shall emit, nor shall any person cause, allow, permit, or fail to control the emission of any noise source so as to exceed the maximum allowable sound pressure levels set forth in Sub-section 4.2 Tables 1a and Sub-section 4.7 Table 2 when measured from the receiving property.

4.2 **Maximum Permissible Sound Pressure Level Tables.**

Table 1a
Maximum Permissible Sound Pressure Levels (L_{eq}) Table

Receiving Property Use*	Between 10:00 p.m. and 7:00 a.m.	Between 7:00 a.m. and 10:00 p.m.
Type A	5 dBA above ambient sound not to exceed 50 dBA	10 dBA above ambient sound not to exceed 60 dBA
Type B	5 dBA above ambient sound not to exceed 55 dBA	10 dBA above ambient sound not to exceed 65 dBA
Type C	5 dBA above ambient sound not to exceed 70 dBA	10 dBA above ambient sound not to exceed 70 dBA
Type D	5 dBA above ambient sound not to exceed 75 dBA	10 dBA above ambient sound not to exceed 75 dBA

*See Appendix A referencing property use examples.

Table 1b
Maximum Permissible Sound Pressure Levels (L_{max}) Table

Receiving Property Use*	Between 10:00 p.m. and 7:00 a.m.	Between 7:00 a.m. and 10:00 p.m.
Type A & B	70 dBA	100 dBA
Type C & D	100 dBA	100 dBA

*See Appendix A referencing property use examples.

4.3 Sound Pressure Level Measurements.

4.3.1 Sound pressure level measurements shall be made with a calibrated and certified Type 2 sound level meter or better instrument as specified in the American National Standards Institute's (ANSI) publication S1.4-1983 (Reaffirmed 2001) entitled, "Specifications for Sound Level Meters", or its current successor; or the International Electrochemical Commission (IEC) class or type 1 and 2 standard 61672.

4.3.2 All sound level measurements required by this Regulation shall be taken in dBA, unless specifically measuring infrasound and ultrasound which shall be taken in dBZ.

4.4 **Infrasound and Ultrasound.** For any source of sound which emits infrasound (below 16 Hz) or ultrasound (above 20 kHz) frequencies, the sound pressure level shall not exceed 100 dBZ when measured from the receiving property.

4.5 **Pure Tone and Repetitive Impulse Sound.** For any stationary source of sound which emits a pure tone or repetitive impulse sound, the limits set forth in Tables 1a shall be reduced by 5 dBA when measured between the hours of 7:00 a.m. to 10:00 p.m. and reduced by 10 dBA for Type A and Type B property use when measured between the hours of 10:00 p.m. to 7:00 a.m.

4.6 **Non-Sound Based Vibrations.** The transmission of vibrations that are not sound based and cannot be measured by a sound pressure meter are not restricted by this Regulation.

4.7 Specific Noise Restrictions.

4.7.1 **Commercial Refuse Compactors.** No person shall operate or use, nor shall any person cause, allow, permit or fail to control the operation or use of any

commercial refuse compactor within 300 feet of a Type A or Type B property use between the hours of 10 p.m. and 7 a.m. unless the responsible party demonstrates to the Department compliance with Sub-section 4.2 Tables 1a and 1b.

- 4.7.2 **Construction Equipment and Activities.** No person shall operate nor shall any person cause, allow, permit, or fail to control the operation of any mechanical construction equipment or conduct any construction or demolition activities outside between the hours of 10 p.m. and 7 a.m. unless a permit has been issued in accordance with Section 5.
- 4.7.3 **Fireworks or Explosives.** No person shall use fireworks or other explosive devices between the hours of 10 p.m. and 7 a.m. unless the responsible party demonstrates to the Department compliance with Sub-section 4.2 Tables 1a and 1b.
- 4.7.4 **Garbage Collection.** No person shall collect garbage, waste, or refuse nor shall any person cause, allow, permit, or fail to control the collection of garbage, waste, or refuse within 300 feet of a Type A or Type B property use between the hours of 10 p.m. and 7 a.m. unless the responsible party demonstrates to the Department compliance with Sub-section 4.2 Tables 1a, 1b and Sub-section 4.7 Table 2.
- 4.7.5 **Loading/Unloading Operations.** No person shall load or unload any equipment, vehicle, box, crate, container, garbage container, or other object or open, close, or otherwise handle these objects within 300 feet of a Type A or Type B property use between the hours of 10 p.m. and 7 a.m. unless the responsible party demonstrates to the Department compliance with Sub-section 4.2 Tables 1a, 1b and Sub-section 4.7 Table 2.
- 4.7.6 **Motor Vehicles.**
- (i) No person shall operate or use, nor shall any person cause, allow, permit, or fail to control the operation or use of any motor vehicle:
 - a. Without a noise control system that meets the original specifications installed by the manufacturer;
 - b. Unless the noise control system is in constant operation and free of defects that affect sound reduction;
 - c. With any cut out, bypass or similar device which increases sound pressure levels;
 - d. When the noise control system has been modified, punctured, or rendered inoperative; and

- e. Unless the noise control system of the motor vehicle or combination of vehicles of a type subject to registration, at any time or under any condition of grade, load, acceleration or deceleration does not exceed the maximum allowable sound pressure levels set forth in Table 2 at a distance of 25 feet or more for the category of motor vehicle, based on the legal speed limit, posted or not, of the road on which such vehicle or vehicles are operated using testing methods as prescribed by the Department.

Table 2
 Maximum Sound Pressure Levels for Motor Vehicles
 Sound Pressure Level, dBA

	Measured at a Distance of	Speed limit 40 mph or less	Speed limit over 40 mph
Any motor vehicle with a gross manufacturer's gross vehicle weight rating (GVWR) or gross combination weight rating (GCWR) of 10,000 pounds or more or any combination of vehicles towed by such motor vehicle	25 ft.	88 dBA	94 dBA
Any other motor vehicle and any combination of motor vehicles towed by such motor vehicle	25 ft.	80 dBA	84 dBA

- (ii) **Defect in Vehicle.** No person shall operate, nor shall any person cause, allow, permit, or fail to control the operation or use of any motor vehicle that emits excessive or unusual noises because of disrepair or mode of operation.
- (iii) **Dynamic Braking Devices.** No person shall operate, nor shall any person cause, allow, permit or fail to control the operation of any motor vehicle with a dynamic braking device engaged, except for the avoidance of imminent danger.
- (iv) **Motorcycles and Motorcycle Exhaust Systems.**
 - a. **EPA Noise Emission Control Requirements.** No person shall cause, allow, permit or fail to control the operation or use of any motorcycle manufactured after December 31, 1982, without its required Motorcycle Noise Emission Control Label on the motorcycle vehicle itself in accordance with 40 CFR § 205.158 and on any motorcycle exhaust system as required by 40 CFR § 205.169. i. The following is an example of an EPA Noise Control Label: “This (manufacturer’s name) exhaust system (serial

number) meets EPA Noise Emission Requirements of (noise emission standard) dB(A) for the following motorcycles: (list of model specific codes). Installation of this exhaust system on motorcycle models not specified may violate federal law.”

- b. **Label Tampering.** No person shall deface or allow any person to deface any noise emission control label required by federal law which is affixed to any motorcycle or motorcycle part for purposes of identifying the motorcycle or motorcycle part as a federally regulated product.
 - c. **Mismatched Mufflers.** No person shall operate, nor shall any person cause, allow, permit, or fail to control the operation of any motorcycle manufactured to federal noise law standards that does not bear a label or mark on the exhaust system that matches the model specific code of the motorcycle vehicle on which the system is installed.
 - d. **Competition Motorcycles.** No person shall operate, nor shall any person cause, allow, permit, or fail to control the operation of any motorcycle identified by the noise emission control label or mark as being for “competition use only” on any property other than within a motor sports facility for the purpose of participating in a practice session or racing event.
 - e. **Competition Motorcycle Exhaust System.** No person shall operate, nor shall any person cause, allow, permit, or fail to control the operation of any motorcycle fitted with an exhaust system or exhaust system component identified by the noise emission control label or mark as being for “competition motorcycles only” on any property other than a motor sports facility for the purpose of participating in a practice session or racing event.
- (iv) **Motor Vehicle Repair and Testing.** No person shall repair, rebuild, modify, idle, run, accelerate, or test any motor vehicle, nor any auxiliary equipment attached to such vehicle within 300 feet of a Type A or Type B property use between the hours of 10 p.m. and 7 a.m. unless this activity complies with Sub-section 4.2 Tables 1a, 1b and Sub-section 4.7 Table 2.
- (v) **Off-Highway Vehicles.** No person shall operate, nor shall any person cause, allow, permit, or fail to control the operation of any off-highway vehicle between the hours of 10 p.m. and 7 a.m. unless this activity complies with Sub-section 4.2 Tables 1a and 1b.

4.7.7 **Parking Lot or Road Sweepers.** No person shall operate, nor shall any person cause, allow, permit, or fail to control the operation of any motorized mechanical sweeper, blower or vacuum within 300 feet of a Type A or Type B property use between the hours of 10 p.m. and 7 a.m. unless the responsible party demonstrates to the Department compliance with Sub-section 4.2 Tables 1a, 1b and Sub-section 4.7 Table 2.

4.7.8 **Public Assembly.** No person shall operate, play, nor shall any person cause, allow, permit, or fail to control the operation or playing of any noise emitting device in such a manner:

- (i) That the maximum sound pressure level exceeds 100 dB(A) at a point normally occupied by a patron on the premises of a public assembly unless conspicuous and legible written notification is provided to the public prior to entrance into the event stating, “WARNING: SOUND LEVELS ON THESE PREMISES MAY CAUSE HEARING DAMAGE. HEARING PROTECTION IS AVAILABLE.” In the alternative, the above warning may be provided on a sign of a color and lettering design in high contrast with its background and posted where it is plainly visible at each public entrance in bold letters of at least 1 inch in height. This Sub-part shall not be construed to permit conduct prohibited by any other provision of this Regulation; and
- (ii) Every public assembly with the potential of exceeding 100 dB(A) shall have readily available for public distribution, at a cost not excessive of the retail value, single-use earplugs that have a Noise Reduction Rating (NRR) of at least 20 decibels.

4.8 **Exemptions.**

4.8.1 In the rare event compliance causes extreme or undue hardship to a facility, business or community activity, the Department may allow the activity if the responsible party demonstrates to the Department best management practices are being applied.

4.8.2 **Emergency Events and Equipment.** Noise resulting from a response to any emergency event shall be exempt from this Regulation, including the use of emergency equipment, emergency vehicles, emergency relief valves, emergency work, and emergency power generators which provide emergency power or potable water to any hospital, health clinic, nursing home, similar facilities, or physician prescribed home based personal medical equipment as approved by the Department, where the loss of electrical power or potable water poses an immediate risk to the health, safety, and welfare of any person, or as required by federal or state law shall be exempt from this Regulation. During a power failure, other commercial or personal emergency power generators operating between the hours of 10 p.m. and 7 a.m. may reach but not exceed the

maximum day time sound pressure levels set forth in Sub-section 4.2 Table 1a and 1b when measured from the receiving property.

4.8.3 Fireworks and Explosives. Noise resulting from lawful fireworks and explosives shall be exempt from this Regulation when discharged:

- (i) For lawful mining activities between the hours of 7 a.m. and 10 p.m. the same day;
- (ii) By the public:
 - a. Between the hours of 11 a.m. and 11 p.m. on the days allowed by statute which include July 1 through July 7 and July 21 through July 27, except that on July 4 and July 24, the hours are 11:00 a.m. to midnight;
 - b. Between the hours of 11 a.m. December 31 and 1 a.m. the following day, except when New Year's Eve falls on a Sunday and the local municipality determines to celebrate New Year's Eve on the prior Saturday; and
 - c. Between the hours of 11 a.m. on Chinese New Year's Eve and 1 a.m. the following day.
- (iii) By a licensed display or special effects operator to conduct a professional fireworks display:
 - a. Between the hours of 7 a.m. and 10 p.m. the same day;
 - b. Between the hours of 11 a.m. and midnight on the day officially celebrated as and including July 4th and July 24th;
 - c. Between the hours of 11 a.m. and 11 p.m. for a special event sponsored by a local municipality, provided the municipality has made application and received a mass gathering permit;
 - d. Between the hours of 11 a.m. on December 31 and 1 a.m. the following day; and
 - e. Between the hours of 11 a.m. on Chinese New Year's Eve and 1 a.m. of the following day.

4.8.4 Heating, Ventilation, and Air Conditioning (HVAC). Noise resulting from the operation of a HVAC system used on or within a Type A property use, including central air conditioning units, evaporative coolers, or window cooling units, regardless of the time or frequency of operation, shall be exempt from this Regulation, provided the system is in good repair and operating within manufacturer's specifications.

- 4.8.5 **Mechanical Equipment.** Noise resulting from the use of portable mechanical equipment shall be exempt from this Regulation between the hours of 7 a.m. and 10 p.m. so long as the equipment is in good repair, performs a legitimate service, and is being used according to the manufacturer's specifications.
- 4.8.6 **Municipal Approved Event.** Except as otherwise provided for, noise resulting from a municipal approved event shall be exempt from this Regulation on the condition that the municipality shall assume responsibility for responding to any noise-related matters associated with the event approved by the municipality. The Department shall, upon request, provide noise related technical assistance to a municipality.
- 4.8.7 **Public Assembly.** Noise directly resulting from crowd noise associated with a public assembly shall be exempt from this Regulation.
- 4.8.8 **Snow Removal.** Noise resulting from the operation of snow removal equipment shall be exempt from this Regulation;
- (i) Beginning at 4 a.m. when snow has accumulated during the prior 12 hours for a Type A or Type B property use;
 - (ii) At any time for a Type C or Type D property use NOT within 300 feet of a Type A or Type B property use; and
 - (iii) At any time on any street, avenue, road, boulevard or highway by a governing entity.

5. TEMPORARY NOISE PERMIT and FEES

- 5.1 **Department Authority.** The Department has the authority to permit the requirements and restrictions of this Regulation on the basis of undue hardship or for a temporary event. The Department may prescribe any reasonable conditions or requirements upon a permit deemed necessary to minimize adverse health effects upon a community or the surrounding neighborhood.
- 5.2 **Temporary Noise Permit Requirements.**
- 5.2.1 To apply for a Temporary Noise Permit, the applicant shall complete and submit the Department-approved application form.
 - 5.2.2 Permit Duration: A Temporary Noise Permit is valid only at the location stated in the application and for the length of time approved by the Department on the application.
- 5.3 **Notice Requirements.**

5.3.1 Upon approval of any permit granted by the Department, the applicant shall notify, in writing, each dwelling and facility located within 800 feet of the event or activity, unless otherwise required by the Department, at least 48 hours in advance. The Department shall approve the content of each notice before it is distributed.

5.3.2 The notice shall contain the following information:

- (i) The name of the event or company name;
- (ii) The name of the coordinator or project manager;
- (iii) The contact phone number(s) of the coordinator or project manager;
- (iv) The name and contact phone number(s) of the on-site manager;
- (v) The address of the event;
- (vi) The specific date(s) and operating time;
- (vii) A detailed description of the activities; and
- (viii) A brief description of all measures taken to maximize the abatement of the noise emission (or to minimize the noise emission) by means of Source Reduction Practices, Best Management Practices, and Best Operational Practices.

5.4 The Department may establish and collect appropriate fees for licenses, certificates, and permits as set out in this Regulation. The Department may collect appropriate fees as set out in this Regulation for the performance of services, including plan reviews. If information on a license, certificate, or permit application changes, the applicant shall notify the Department in writing within 20 calendar days.

5.4.1 **Temporary Noise Permit Fee.** Any applicant who applies for a Temporary Noise Permit shall remit to the Department a Permit fee in the amount of \$120.

5.4.2 The Department may waive the temporary noise permit fees for governmental agencies, departments or municipalities provided compliance with all other requirements of Section 5 are met.

5.4.3 If a governmental agency, department or municipality approves an activity otherwise regulated by the Department as a temporary noise permitted activity, the Department may waive the temporary noise permit fee provided compliance with all other requirements of Section 5 are met.

5.5 **Late Fees.**

- 5.5.1 The Department may impose upon any party subject to this Regulation penalties and charges for failure to timely pay service and permit fees as set out in this Regulation. Attorney's fees and collection fees may also be applied.
- 5.5.2 Fees unpaid to the Department after one month of the due date will be assessed a penalty of 10% of the outstanding balance. Failure to pay the fees and additional charges after two months of the due date will be assessed an additional penalty of 15% of the outstanding balance including previous penalties. Failure to pay the fees and additional charges after 100 days of the due date will result in suspension of the permit and the right to operate. A \$40.00 charge will be assessed for each returned check.
- 5.5.3 An applicant who fails to give at least a ten (10) day notice to the Department of their intent to obtain a Temporary Noise permit shall remit to the Department a late notification fee of \$35.

5.6 **Denial, Suspension, or Revocation of License or Permit.** Any permit applied for or issued pursuant to this Regulation may be denied, suspended, or revoked by the Department for any of the following reasons:

- 5.6.1 Failure of the applicant to show that the temporary noise event will be held or operated in accordance with the requirements of this Regulation;
- 5.6.2 Submission of incorrect, incomplete, or false information in the application;
- 5.6.3 Failure to pay applicable fees;
- 5.6.4 The temporary noise event will be in violation of law;
- 5.6.5 Failure of the coordinator, owner, or operator at a temporary noise event to allow the Department to conduct inspections as necessary to determine compliance with this Regulation;
- 5.6.6 Operation of a temporary noise event in a way that causes or creates a hazard to the public health, safety, or welfare;
- 5.6.7 Failure to operate or maintain the temporary noise event in accordance with the application, report, plans, and specifications approved by the Department; or
- 5.6.8 Failure to comply with any provision of this Regulation.

6. INSPECTIONS & INVESTIGATIONS

6.1. To ensure compliance, the Department has the authority to perform inspections, investigations, reviews, and other actions as necessary.

6.2. **Authority for Department to Enter Premises.**

6.2.1. **Regulated Commercial Premises.** Upon presenting proper identification, authorized representatives of the Department may enter upon the premises of properties regulated by the Department to perform routine inspections to ensure compliance with rules, standards, regulations, and ordinances adopted by the Department, the Departments of Health & Environmental Quality, county or municipal governing bodies, or the Division of Occupational and Professional Licensing.

6.2.2. **Unregulated Commercial Properties.** The Department may enter upon the premises of commercial properties not pervasively regulated by the Department upon the consent of the owner or other party having legal authority or upon a court order.

6.2.3. **Private Dwellings.** Inspections of private dwellings are made by consent of the owner or other party having legal authority or upon a court order.

6.2.4. **Consent by Permit.** The Department shall require permit holders to allow access for inspections as part of their permit. Failure to allow access for inspections as set out in the permit may result in the suspension or revocation of the permit.

7. **ENFORCEMENT MECHANISMS** If the Department has investigated or inspected any property or facility and believes the property owner or other responsible party is in violation of this Regulation or the Department has other reasonable grounds to believe that there has been a violation of any part of this Regulation or that the property owner or otherwise responsible party is not in compliance with this Regulation, the Department may take civil enforcement action as authorized by statute, rule, ordinance, and regulation and may also refer the matter for criminal prosecution. Civil enforcement may involve court or administrative actions, injunctive actions, and closures and may involve cost recovery, penalties, and other remedies. Civil and criminal actions may be brought simultaneously. A person does not need to be first adjudged liable in a civil matter before facing criminal charges.

7.1. **Criminal Enforcement Actions.** The Department may recommend criminal prosecution for environmental violations either alone or in conjunction with civil enforcement. Criminal prosecutions for environmental violations of state or federal law may be filed by the District Attorney, Utah Attorney General, United States Department of Justice, or other enforcement entity. Factors that the Department may

consider in recommending criminal enforcement include the following factors and any other relevant factors:

- 7.1.1. The nature and seriousness of the offense including the immediacy of the threat of danger to the life or safety of another or the harm or threatened harm to human health or environment;
 - 7.1.2. The degree to which the violation was designed to provide economic gain or cost avoidance, or involved a pattern of conduct or a common attitude of illegal conduct;
 - 7.1.3. The degree to which the offender is a known violator and has avoided prior actions by the Department;
 - 7.1.4. The degree to which prosecution might deter future violations;
 - 7.1.5. The person's actual culpability in connection with the offense including the presence in connection with the offense including the presence of criminal intent;
 - 7.1.6. The person's willingness to cooperate in the investigation including whether the violator has attempted to conceal evidence or prosecution of others;
 - 7.1.7. The appropriateness of referring the case to other agencies having prosecutorial interest; and
 - 7.1.8. Possibilities of civil remedies which would be more appropriate than initiating the criminal justice process.
- 7.2. **Civil Enforcement Actions.** The Department may request that the District Attorney bring an action to restrain or enjoin actions in violation of public health, environmental laws, and other laws or abate conditions in violation of such laws.
- 7.3. **Administrative Actions.**
- 7.3.1. The Department may, at its discretion, issue a Notice of Violation & Order of Compliance (NOV).
 - 7.3.2. **Service of NOV.** The Department may provide notice to the owner of the property or otherwise responsible person by sending the NOV via certified mail to the last known address of the owner of the property or other responsible person. If notice is returned undeliverable, the owner of the property or other responsible person may be personally served or be given notice by other methods reasonably calculated to give actual notice to the owner or other responsible party.

7.3.3. **Contents of NOV.** The NOV shall:

- (i) Describe the property and the persons believed to be in violation;
- (ii) Describe the violation;
- (iii) Describe remedial action that will comply with the provisions of this Regulation;
- (iv) Set a reasonable time for the performance of any required remedial action(s);
- (v) Describe the procedure to contest the NOV and the time limits for such a contest; and
- (vi) Notify the owner or other responsible person that if no written contest is filed within the time required, the NOV will become final and unappealable to any administrative entity or court.

7.3.4. **Challenging an NOV.** As detailed in the SLVHD's Adjudicative Hearing Procedures, a party aggrieved by an NOV may request a departmental conference, departmental hearing, or departmental appeal in writing within ten (10) days of the date of the NOV.

7.3.5. **Departmental Conference, Settlement Agreements, and Stipulations & Orders.**

- (i) After issuance of the NOV, the alleged violator has the option to request and attend a Departmental Conference to discuss the NOV and settlement with the Department and its legal counsel. No hearing officer will be present. The process of requesting a Departmental Conference is more fully described in the SLVHD's Adjudicative Hearing Procedures.
- (ii) If the parties agree to a settlement, the Department will prepare, in conjunction with the District Attorney's Office, a binding Settlement Agreement or Stipulation & Consent Order which may require the payment of penalties and the costs of investigation. Parties may also agree to a settlement at any time subsequent to the Departmental Conference. After signing a Settlement Agreement or Stipulation & Consent Decree, the parties waive all rights to further department and court hearings or appeals. Settlement Agreements or Stipulation & Consent orders may be enforced in state courts.

7.3.6. **Hearings & Appeals.** Parties Aggrieved by an NOV may also request a Departmental Hearing or a Departmental Appeal. A hearing officer is present at

these proceedings and makes a written determination. The methods of challenging an NOV are more fully described in the SLVHD's Adjudicative Hearing Procedures. Departmental Hearing Orders and Departmental Appeal Orders may be appealed to the entities and within the time limits set out in the SLVHD's Adjudicatory Hearing Procedures.

7.3.7. **Failing to respond to an NOV.** If a party fails to respond to an NOV within the required time, the NOV becomes a final order unappealable to any administrative entity or court. The Department may then enforce the order in state court.

7.4. **Additional Administrative Enforcement Authority.**

7.4.1. Any variances allowed by the Department to the requirements of this Regulation shall be only by written approval of the Salt Lake Valley Board of Health.

7.4.2. **Emergency Enforcement.** If the Director finds that an emergency exists that requires immediate action to protect the public health, he or she may without notice or hearing issue an order declaring the existence of an emergency and requiring that action be taken as he deems necessary to meet the emergency. The order shall be effective immediately. Any person to whom the order is directed shall comply and abate the nuisance immediately, but may petition the Director for a hearing in accordance with the SLVHD's Adjudicative Hearing Procedures. After the hearing and depending upon the findings as to whether the person has complied with the provisions of this Regulation, the Director shall continue the order in effect or modify or revoke it. If circumstances warrant because of the seriousness of the hazard, the Department may act to correct or abate the emergency without issuance of an order or directive or without waiting for the expiration of compliance time previously given in an order.

8. **CRIMINAL, CIVIL & ADMINISTRATIVE PENALTIES**

8.1. **Criminal Penalties.**

8.1.1. Any person who is found guilty by a court of violating any of the provisions of this Regulation, either by failing to do the acts required herein or by doing a prohibited act, is guilty of a class B misdemeanor, pursuant to Section 26A-1-123, Utah Code Ann.

8.1.2. Each day such violation is committed or permitted to continue shall constitute a separate violation.

8.1.3. Each similar subsequent violation occurring within two years of the initial violation may constitute a class A misdemeanor.

8.2. Civil & Administrative Penalties.

8.2.1. Penalties may be included in a Settlement Agreement or Stipulation & Consent Order. Penalties may be assessed according to the following factors:

- (i) The violator's history of compliance or non-compliance;
- (ii) The violator's economic benefit of non-compliance;
- (iii) The documented costs associated with environmental or health damage;
- (iv) The violator's degree of willfulness or negligence; and
- (v) The violator's good faith efforts to comply and cooperate.

8.2.2. The Director may multiply the penalty by the number of days the violation occurred.

8.3. Recovery of Investigation & Abatement Costs.

8.3.1. The Department may recover its inspection, investigative and abatement expenses and costs from owners or other responsible person.

8.3.2. The Department may record a judgment lien on a violator's property to recover its expenses and costs.

9. EFFECTIVE DATE

9.1. This Regulation shall become effective upon its adoption by the Salt Lake Valley Board of Health.

APPROVED AND ADOPTED this _____ day of _____, 2012.

SALT LAKE VALLEY BOARD OF HEALTH

By: _____
PAULA JULANDER, Chair

ATTEST:

Gary L. Edwards, M.S.
Executive Director
Salt Lake Valley Health Department

APPENDIX A

Noise Area Classifications

Type A Property Use Activities/Examples

- Single family residential structure that does not share a common wall with residential or any other use.

Type B Property Use Activities/Examples

- All other residential use not included in Type A including but not limited to:
 - Apartment/Condominium/Twin Home/Poli-Plex
 - Group home, community living
 - Residential hotel/motel
 - Mobile home park or court
 - Transient lodging
- Correctional institution
- Medical/other health service
- Religious, Church activity
- School, Educational Institution activity
- Cultural activity and nature exhibition
- Camping and picnicking areas (designated)
- Resort, group camp
- Other cultural, recreational activity

Type C Property Use Activities/Examples

- Retail trade
 - building materials
 - hardware
 - farm equipment
 - general merchandise
 - food, eating and drinking, other recreation (bar, discotheques, clubs)
 - automotive & accessories, gas stations
 - marine craft & accessories
 - aircraft & accessories
 - apparel & accessories
 - furniture, home furnishings and equipment
- Other retail trade
 - Finance, insurance, and real estate services
 - Personal services
 - Business services
 - Repair services
 - Legal services

- Other professional services
- Contract construction services
- Governmental services (except correctional institutions)
- Miscellaneous services (except religious activities)
- Amusements (except fairgrounds and amusement parks)
- Parks
- Automobile parking

Type D Property Use Activities/Examples

- Food and kindred products - manufacturing
- Textile mill products - manufacturing
- Apparel & other finished products made from fabrics, leather & similar materials - manufacturing
- Lumber and wood products (except furniture) – manufacturing
- Furniture and fixtures - manufacturing
- Paper and allied products- manufacturing
- Printing, publishing, and allied industries
- Chemicals and allied products – manufacturing
- Petroleum refining and related industries
- Rubber and miscellaneous plastic products – manufacturing
- Stone, clay, & glass products – manufacturing
- Primary metal industries
- Fabricated metal products - manufacturing
- Professional, scientific, and controlling instruments, photographic & optical goods, watches and clocks - manufacturing
- Miscellaneous manufacturing (except motion picture production)
- Railroad, rapid transit, and street railway transportation (except passenger terminals)
- Motor vehicle transportation (except passenger terminals)
- Aircraft transportation (except passenger terminals)
- Marine craft transportation (except passenger and freight terminals)
- Highway and street right-of-way Communication (except telegraph message centers)
- Utilities
- Other transportation, communication & utilities (except transportation services and arrangements)
- Event and entertainment venues
- Race tracks
- Fairgrounds and amusement parks
- Agricultural
- Agricultural and related activities
- Forestry activities and related services (including commercial forest land, timber production, and other related activities)
- Fishing activities and related services
- Mining activities and related services
- Other resource production and extraction

- All other activities not otherwise listed
- Undeveloped and unused land area (excluding noncommercial forest development)
- Noncommercial forest development
- Water areas
- Vacant floor area
- Under construction
- Other undeveloped land and water areas
- All other property uses not previously identified

APPENDIX B

BMP'S – WATER DISCHARGES FROM WATER WELL DRILLING AND OPERATION

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Fact Sheet Regarding Water Discharges From Water Well Drilling and Operation

Prepared by: Utah Division of Water Quality

Updated July 2002

Background:

Utah Administrative Code (UAC) R317-8-2 requires a UPDES discharge permit for the discharge of pollutants from any point source into waters of the State. A point source is defined as “any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, from which pollutants are or may be discharged.”

Through the use of various drilling methods and reasonable best management practices, water well drilling generally can be conducted such that no discharge occurs or that only de minimis (insignificant) amounts of pollutants would be released into waters of the State. As such, it has been the policy of the Division of Water Quality to not require water well drilling operations to obtain a discharge permit as long as they do not discharge or discharge de minimis amounts of pollutants.

There may be circumstances where a discharge permit is necessary or desired by the well driller or owner. However, because a discharge permit can take several months to issue, requires payment of a permit fee, and because the permit would contain specific enforceable effluent quality limits and frequent self-monitoring and reporting requirements, it is highly recommended that all options to avoid discharge or attain the de minimis discharge be explored before pursuing an individual discharge permit.

Best Management Practices (BMP's)

The goal of BMP implementation is to avoid discharge or, if this is not practicable, to obtain a de minimis pollutant discharge during any phase of well development. The primary pollutants of concern are total suspended solids and turbidity in the form of drill cuttings and muds. Occasionally chemicals such as surfactants are used during the drilling operation. It is the responsibility of the operator and/or owner to assure that BMP's are properly installed and operated in order to contain all fluids or to produce a de minimis pollutant discharge to waters of the State. Some BMP's are indicated below:

1. Drill pits or ponds of adequate size for total containment of all fluids containing drill cuttings, surfactants and associated chemicals.
2. Pits or ponds used for settling; followed by filter cloth and/or straw bales which can be used for filtration prior to fluids entering surface waters of the state.
3. Land application of produced waters during drilling, pump testing, and well development where no discharge would occur to waters of the State.
4. Land application where sufficient filtration through vegetation removes solids and turbidity before water is diffused and enters any surface waters.
5. Other sediment and turbidity reduction treatment such as frac tanks, cyclone separators, etc.

Pollution of waters of the state is a violation of the Water Quality Act, UCA 19-5, which provides for significant monetary penalties, and additional penalties for violations that are willful or caused by gross negligence.

If you have any concerns not covered in this fact sheet or any further questions, please contact:

Mike Herkimer
(801) 538-6058
Division of Water Quality
288 North 1460 West
P.O. Box 144870
Salt Lake City, Utah 84114-4870

Jim Goddard
(801) 538-7314
Division of Water Rights
1594 West North Temple, Suite 220
Salt Lake City, Utah 84114-6300

APPENDIX C

ORIGINAL WELL LOGS

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Utah Division of Water Rights



WELLPRT Well Log Information Listing

Version: 2003.09.18.00 Rundate: 10/09/2003 08:24 AM

Utah Division of Water Rights

Water Well Log

LOCATION:

N 378 ft W 201 ft from S4 CORNER of SECTION 29 T 2S R 1E BASE SL Elevation: 4490.00 feet
7750 S. 1000 E.

DRILLER ACTIVITIES:

ACTIVITY # 1 WELL REPAIR
DRILLER: WIDDISON TURBINE SERVICE, LLC LICENSE #: 533
START DATE: 04/01/1994 COMPLETION DATE: 10/10/1994

WATER LEVEL DATA:

Date	Time	Water Level (feet)	Status
10/04/1994		(-)above ground 197.92	STATIC

CONSTRUCTION - CASING:

Depth(ft)	Material	Gage(in)	Diameter(in)
From To			
+2 326	A53GB	.250	18.0
326 419	A53GB	.250	14.0
419 430	A53GB	.250	10.0
575 620	A53GB	.250	10.0
680 696	A53GB	.250	10.0
703 720	A53GB	.250	10.0
765 805	A53GB	.250	10.0
865 895	A53GB	.250	10.0

CONSTRUCTION - SCREENS/PERFORATIONS:

Depth(ft)	Screen(S) or Perforation(P)	Slot/Perf. siz	Screen Diam/Length	Perf(in)	Screen Type/# Perf.
From To					
430 475	PERFORATION	.045	10.0		LOW CARBON
620 680	PERFORATION	.045	10.0		LOW CARBON
696 703	PERFORATION	.045	10.0		LOW CARBON
720 765	PERFORATION	.045	10.0		LOW CARBON
805 865	PERFORATION	.045	10.0		LOW CARBON

CONSTRUCTION - FILTER PACK/ANNULAR SEALS

Depth(ft)	Material	Amount	Density(pcf)
From To			
2 895	8-16 CO SILICA SAND	1180	

WELL TESTS:

Date	Test Method	Yield (CFS)	Drawdown (ft)	Time Pumped (hrs)
10/04/1994	PUMP TEST	2.228	77.04	1.50
10/04/1994	PUMP TEST	2.674	104.40	1.50
10/04/1994	PUMP TEST	3.119	130.52	1.50
10/04/1994	PUMP TEST	3.565	166.15	1.50

WATER QUALITY DATA AVAILABLE

GENERAL COMMENTS:

REPAIR REPORTED 3/26/96

This well was drilled in 1960 by Rosco Moss. We have screened the well developed and test pumped it. A new lineshaft turbine pump was installed.

CONSTRUCTION INFORMATION:

Well head configuration: Line shaft pump head

Casing joint type: Welded

Perforator used: Mills

Filter Pack: a 5' deep neat cement plug was set from 890' to 895' to prevent gravel pack from coming around the bottom of the well

PUMP: Goulds 12 CHC 9 stg

HP: 250

Intake Depth: 417 feet

Approx pump rate: 1400

Well disinfected: Yes

comments: The well was test pumped a total of 84 hours most of it was development pumping. There is a Longmire patch in the well at 421'-425'. The screens were first set with a "K" packer. This packer failed so it was pulled and casing was then run to the surface. The patch joined the two strings of casing together. See the attached drawing.

Additional data not available

Utah Division of Water Rights



WELLPRT Well Log Information Listing

Version: 2003.09.18.00 Rundate: 10/08/2003 10:20 PM

Utah Division of Water Rights

Water Well Log

LOCATION:

S 2370 ft E 190 ft from N4 CORNER of SECTION 10 T 3S R 1E BASE SL Elevation: 4948.00 feet

DRILLER ACTIVITIES:

ACTIVITY # 1 NEW WELL
 DRILLER: LANG EXPLORATORY DRILLING INC LICENSE #: 568
 START DATE: 07/06/1991 COMPLETION DATE: 08/06/1991

BOREHOLE INFORMATION:

Depth(ft)	Diameter(in)	Drilling Method	Drilling Fluid
From To			
0 960	20	ROTARY	

LITHOLOGY:

Depth(ft)	Lithologic Description	Color	Rock Type
From To			
0 15	SAND, COBBLES		
15 110	SAND, COBBLES		
110 115	CLAY		
115 310	SAND, GRAVEL		
310 370	CLAY, SAND, GRAVEL, COBBLES		
370 430	SAND, GRAVEL		
430 600	CLAY, SAND, GRAVEL		
600 630	SAND		
630 640	CLAY		
640 660	SAND, GRAVEL		
660 690	CLAY, SAND, GRAVEL		
690 710	SAND, GRAVEL, COBBLES		
710 780	CLAY, SAND, GRAVEL		
780 850	CLAY		
850 960	CLAY, SAND, GRAVEL HARD ROCK		

WATER LEVEL DATA:

Date	Time	Water Level (feet)	Status
07/25/1991		492.00	STATIC

ADDITIONAL DATA AVAILABLE, USE OTHER PRINT OPTION

CONSTRUCTION - CASING:

Depth(ft)	Material	Gage(in)	Diameter(in)
From To			
0 35		.375	32
+3 610		.375	20
630 650		.375	20
750 870		.375	20

CONSTRUCTION - SCREENS/PERFORATIONS:

Depth(ft)	Screen(S) or Perforation(P)	Slot/Perf. siz	Screen Diam/Length Perf(in)	Screen Type/# Perf.
From To				

610	630	SCREEN	.050	20	JOHNSON HI
650	750	SCREEN	.050	20	JOHNSON HI
870	950	SCREEN	.050	20	JOHNSON HI

CONSTRUCTION - FILTER PACK/ANNULAR SEALS

Depth(ft)	Material	Amount	Density(pcf)
From	To		
0	220	BENTONITE, NEAT CEMENT	
220	960	8-12, 6-9 SIZE GRAVEL	

WELL TESTS:

Date	Test Method	Yield (CFS)	Drawdown (ft)	Time Pumped (hrs)
/ /	PUMP	1.203	22.67	1.5
/ /	PUMP	2.270	45.18	3
/ /	PUMP	3.291	76.42	5
/ /	PUMP	4.456	107.05	7
/ /	PUMP	5.096	129.40	9

WATER QUALITY DATA AVAILABLE

Utah Division of Water Rights



WELLPRT Well Log Information Listing

Version: 2003.09.18.00 Rundate: 10/09/2003 08:24 AM

Utah Division of Water Rights

Water Well Log

LOCATION:

S 2611 ft W 78 ft from N4 CORNER of SECTION 32 T 2S R 1E BASE SL Elevation: 4514.00 feet
8200 S. 1000 E.

DRILLER ACTIVITIES:

ACTIVITY # 1 NEW WELL
DRILLER: Lee & Sons Drilling LICENSE #: 11
START DATE: 05/16/1960 COMPLETION DATE: 07/25/1960

BOREHOLE INFORMATION:

Depth(ft)	Diameter(in)	Drilling Method	Drilling Fluid
From	To		
0	881	CABLE	

LITHOLOGY:

Depth(ft)	Lithologic Description	Color	Rock Type
From	To		
0	2 OTHER		TOP SOIL
2	6 SAND,BOULDERS		
6	60 CLAY,SAND		
60	113 SAND		
113	123 OTHER		CONGLOMERATE
123	140 CLAY,SAND		
140	163 CLAY	BROWN	
163	205 OTHER		CONGLOMERATE
205	216 SAND,GRAVEL		
216	240 CLAY	BLUE	
240	245 GRAVEL		
245	270 SAND		
270	293 CLAY,SAND		
293	351 SAND		CEMENTED
351	362 CLAY,SAND,GRAVEL		
362	382 OTHER		CONGLOMERATE
382	400 CLAY,GRAVEL		STICKY
400	437 SAND		CEMENTED
437	439 GRAVEL		
439	445 SAND		
445	451 GRAVEL		
	1/2" TO 3" DIAMETER		
451	453 CLAY		
453	456 GRAVEL		
456	468 CLAY	BROWN	
468	475 CLAY,GRAVEL		
475	490 GRAVEL		
	1/2" TO 6" DIAMETER		
490	502 CLAY,GRAVEL		
502	510 OTHER		CONGLOMERATE
510	523 CLAY		STICKY
523	524 GRAVEL		
524	527 SAND		FINE
527	546 CLAY,GRAVEL		

546	547	GRAVEL		
547	558	CLAY, GRAVEL		STICKY
558	562	OTHER		CONGLOMERATE
562	590	CLAY, GRAVEL		STICKY
590	615	CLAY, SAND		
615	618	CLAY	BROWN	
618	626	OTHER		CONGLOMERATE
626	632	GRAVEL		
632	641	CLAY		STICKY
641	650	OTHER		CONGLOMERATE
650	720	CLAY, GRAVEL		STICKY
720	729	OTHER		CONGLOMERATE
729	762	CLAY, GRAVEL		
762	766	OTHER		CONGLOMERATE
766	772	CLAY, GRAVEL		
772	777	OTHER		CONGLOMERATE
777	827	CLAY, GRAVEL		STICKY
827	831	SAND, GRAVEL		
831	867	CLAY, GRAVEL		
867	872	GRAVEL		
872	881	CLAY, GRAVEL	BLUE	

WATER LEVEL DATA:

Date	Time	Water Level (feet) (-)above ground	Status
07/21/1960		170.00	STATIC

CONSTRUCTION - CASING:

Depth(ft) From	To	Material	Gage(in)	Diameter(in)
0	339	NEW	.250	20
319	878	NEW	.250	16

CONSTRUCTION - SCREENS/PERFORATIONS:

Depth(ft) From	To	Screen(S) or Perforation(P)	Slot/Perf. siz	Screen Diam/Length	Perf(in)	Screen Type/# Perf.
475	510	PERFORATION	.25		3	
540	580	PERFORATION	.25		3	
620	8870	PERFORATION	.25		3	

WELL TESTS:

Date	Test Method	Yield (CFS)	Drawdown (ft)	Time Pumped (hrs)
07/21/1960	PUMP	2.952	75	99

Utah Division of Water Rights



WELLPRT Well Log Information Listing

Version: 2003.09.18.00 Rundate: 10/11/2003 03:05 PM

Utah Division of Water Rights

Water Well Log

LOCATION:

S 20 ft W 1465 ft from NE CORNER of SECTION 16 T 3S R 1E BASE SL Elevation: feet

DRILLER ACTIVITIES:

ACTIVITY # 1 NEW WELL
 DRILLER: BEYLIK DRILLING INC LICENSE #: 471
 START DATE: 09/24/1997 COMPLETION DATE: 11/01/1997

BOREHOLE INFORMATION:

Depth(ft)		Diameter(in)	Drilling Method	Drilling Fluid
From	To			
0	40	38.0	REVERSE CIRCULATION	WATER
40	1030	28.0	REVERSE CIRCULATION	WATER

LITHOLOGY:

Depth(ft)		Lithologic Description	Color	Rock Type
From	To			
50	80	CLAY	GRAY	
80	90	CLAY, GRAVEL BIG ROCKS		ROCK
90	100	CLAY	GRAY	
100	120	GRAVEL ROCK		ROCK
120	125	GRAVEL ROCK		ROCK
125	130	GRAVEL ROCKS/BIG AND LITTLE ROCKS		ROCKS
130	135	SAND, GRAVEL FINE SAND		
135	145	CLAY, SAND		
145	150	CLAY, SAND LITTLE CLAY		
150	160	SAND FINE SAND		
160	165	GRAVEL ROCK		
165	170	CLAY ROCK		
170	175	GRAVEL		
175	180	CLAY		
180	185	GRAVEL ROCKS		
185	190	GRAVEL ROCKS/SMALL ROCKS		
190	195	CLAY, GRAVEL		
195	200	CLAY		
200	210	SAND ROCKS		
210	215	CLAY, SAND		
215	280	GRAVEL		

		ROCKS
280	295	GRAVEL
		ROCKS
295	300	GRAVEL
		ROCKS
300	315	GRAVEL
315	320	GRAVEL
		ROCKS
320	325	GRAVEL
325	345	GRAVEL
		ROCKS
345	355	GRAVEL
		ROCKS/BIG ROCKS
355	405	GRAVEL
		ROCKS
405	415	GRAVEL
415	430	GRAVEL
		ROCKS
430	440	SAND
		ROCKS
440	495	GRAVEL
		ROCKS
495	500	GRAVEL
500	505	GRAVEL
		ROCKS
505	515	SAND
515	520	SAND
520	575	GRAVEL
575	605	CLAY, GRAVEL
615	645	GRAVEL
		ROCKS
645	680	GRAVEL
		ROCK
680	685	SAND, GRAVEL
		ROCKS
685	690	SAND, GRAVEL
		ROCKS
690	695	GRAVEL
		ROCKS/SANDY CLAY
695	700	SAND, GRAVEL
		ROCKS
700	705	SAND, GRAVEL
		ROCKS/LITTLE SAND
705	710	SAND, GRAVEL
		ROCKS
710	715	SAND, GRAVEL
715	720	SAND
720	725	SAND, GRAVEL
725	730	SAND, GRAVEL
730	740	CLAY, SAND
		ROCKS
740	745	CLAY, SAND, GRAVEL
		ROCKS
745	750	SAND
750	755	CLAY, SAND, GRAVEL
		ROCKS
755	760	CLAY, SAND
760	765	CLAY, SAND
765	785	CLAY
785	790	CLAY
		ROCKS
790	795	SAND
795	800	SAND
		ROCKS
800	805	SAND, GRAVEL
		ROCKS
805	810	SAND, GRAVEL
810	815	GRAVEL
		ROCKS
815	840	SAND, GRAVEL
		ROCKS/LITTLE SAND
840	850	SAND, GRAVEL
850	860	SAND, GRAVEL
		ROCKS
860	865	CLAY, SAND

865	870	ROCKS/SOME ROCKS CLAY, SAND ROCKS
870	875	SAND, GRAVEL ROCKS
875	880	SAND ROCKS
880	895	SAND ROCKS
895	900	SAND
900	915	GRAVEL ROCKS
915	925	GRAVEL ROCKS/SOME ROCKS
925	930	SAND ROCKS
930	935	SAND, GRAVEL ROCKS
935	940	SAND ROCKS
940	945	CLAY, SAND ROCKS/SOME CLAY
945	950	SAND ROCKS
950	965	SAND ROCKS/SOME ROCKS
965	1005	SAND ROCKS
1005	1010	SAND
1010	1025	SAND, GRAVEL ROCKS
1025	1030	SAND ROCKS
1030	1035	SAND
1035	1045	SAND ROCKS/SOME ROCKS
1045	1050	SAND ROCKS/SOME ROCKS
1050	1055	SAND, GRAVEL ROCKS
1055	1060	SAND, GRAVEL ROCKS

WATER LEVEL DATA:

Date	Time	Water Level (feet) (-)above ground	Status
10/29/1997		430.00	STATIC

CONSTRUCTION - CASING:

Depth(ft) From	Depth(ft) To	Material	Gage(in)	Diameter(in)
0	50	A53B	.375	30.0
+2	610	A53B	.375	20.0
700	810	A53B	.375	20.0
1010	1030	A53B	.375	20.0

CONSTRUCTION - SCREENS/PERFORATIONS:

Depth(ft) From	Depth(ft) To	Screen(S) or Perforation(P)	Slot/Perf. siz	Screen Diam/Length	Perf(in)	Screen Type/#	Perf.
610	700	PERFORATION	.060	20.0		CW 304 SS	
810	1010	PERFORATION	.060	20.0		CW 304 SS	

CONSTRUCTION - FILTER PACK/ANNULAR SEALS

Depth(ft) From	Depth(ft) To	Material	Amount	Density(pcf)
0	50	CEMENT	26	
0	245	CEMENT	12.6	

WELL TESTS:

Date	Test Method	Yield (CFS)	Drawdown (ft)	Time Pumped (hrs)
10/31/1997	PUMP	8.913	120	20

GENERAL COMMENTS:

CONSTRUCTION INFORMATION:

Well head configuration: No data

Casing Joint Type: Weld

Perforator used: N/A

Additional data not available

FIGURES

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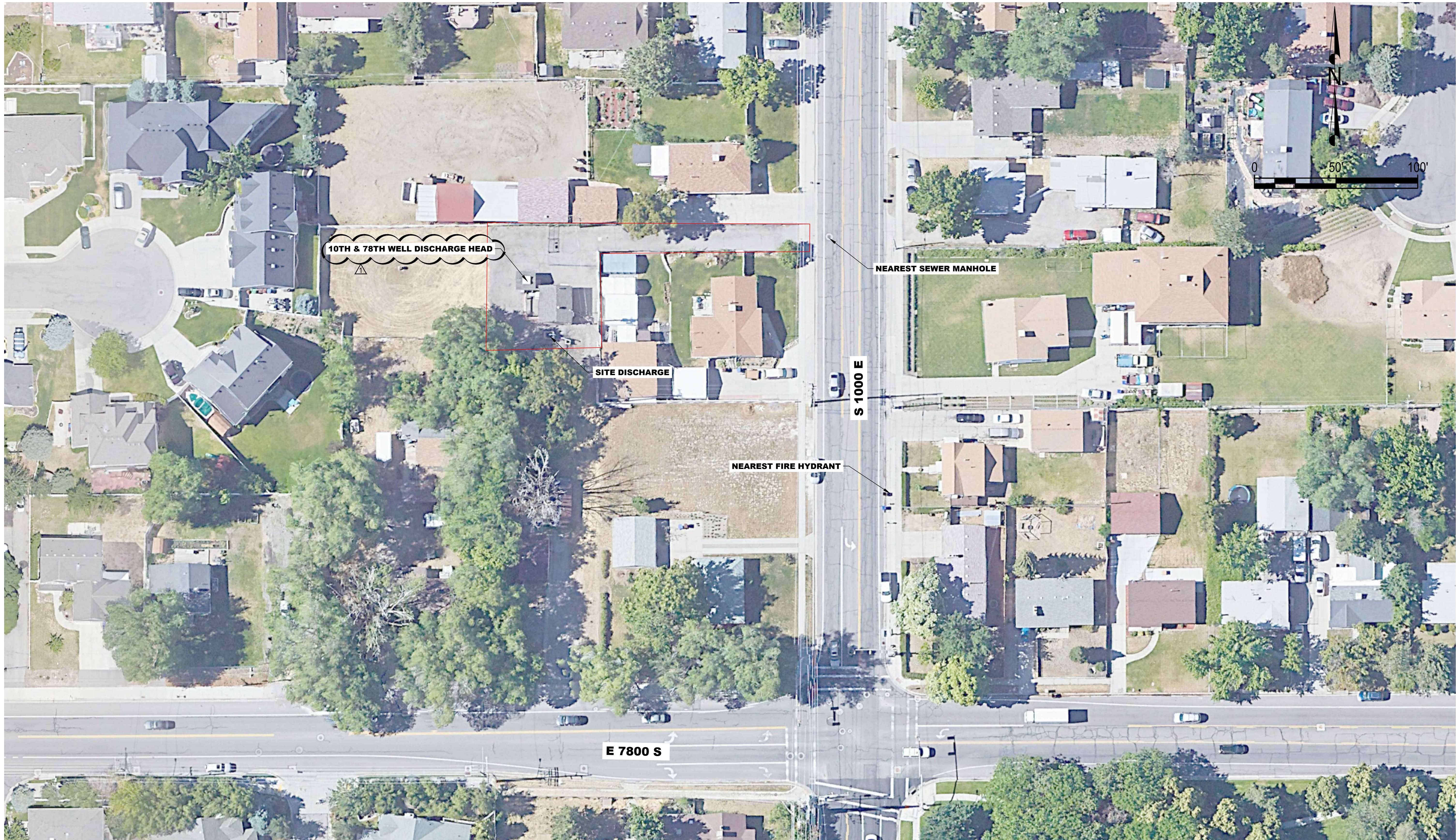
JORDAN VALLEY WATER CONSERVANCY DISTRICT
 JWCD-2019 4 WELL UPGRADE PROJECT
 10TH & 78TH WELL LOCATION MAP

7778 S 1000 E

MIDVALE, UT 84047

PROJECT NUMBER: 2019-0113
 SHEET: 1 OF 8
 SHEET NUMBER: G001

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JVWCD-2019 4 WELL UPGRADE PROJECT
 10TH & 78TH WELL SITE DISCHARGE MAP

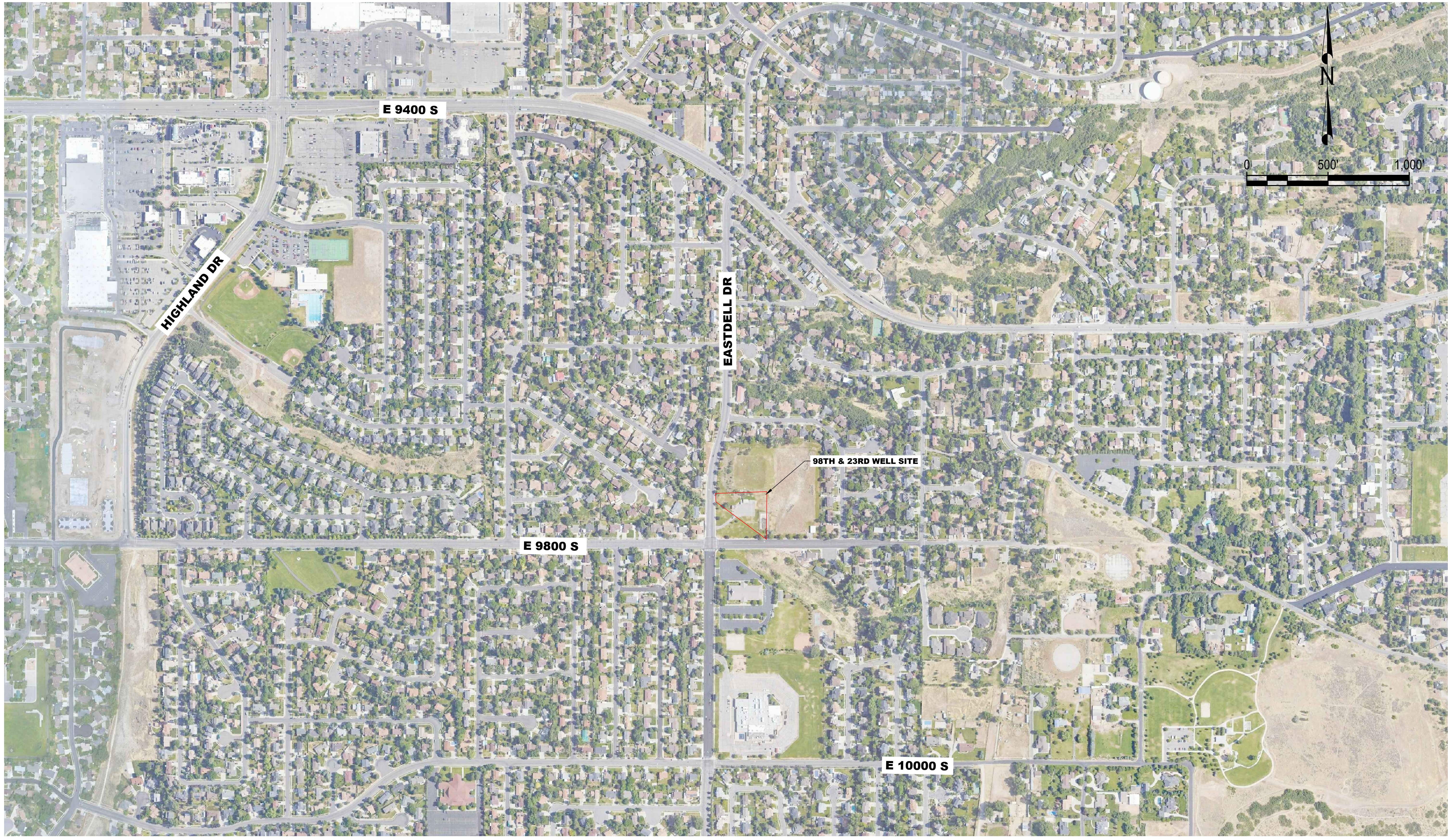
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PROJECT NUMBER 2019-0113	
SHEET 2	OF 8
SHEET NUMBER G002	

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JORDAN VALLEY WATER CONSERVANCY DISTRICT
 JWVCD-2019 4 WELL UPGRADE PROJECT
 98TH & 23RD WELL LOCATION MAP

9799 S 2300 E

SANDY, UT 84092

STAMP

PROJECT NUMBER	2019-0113	
SHEET	3	OF 8
SHEET NUMBER	G003	

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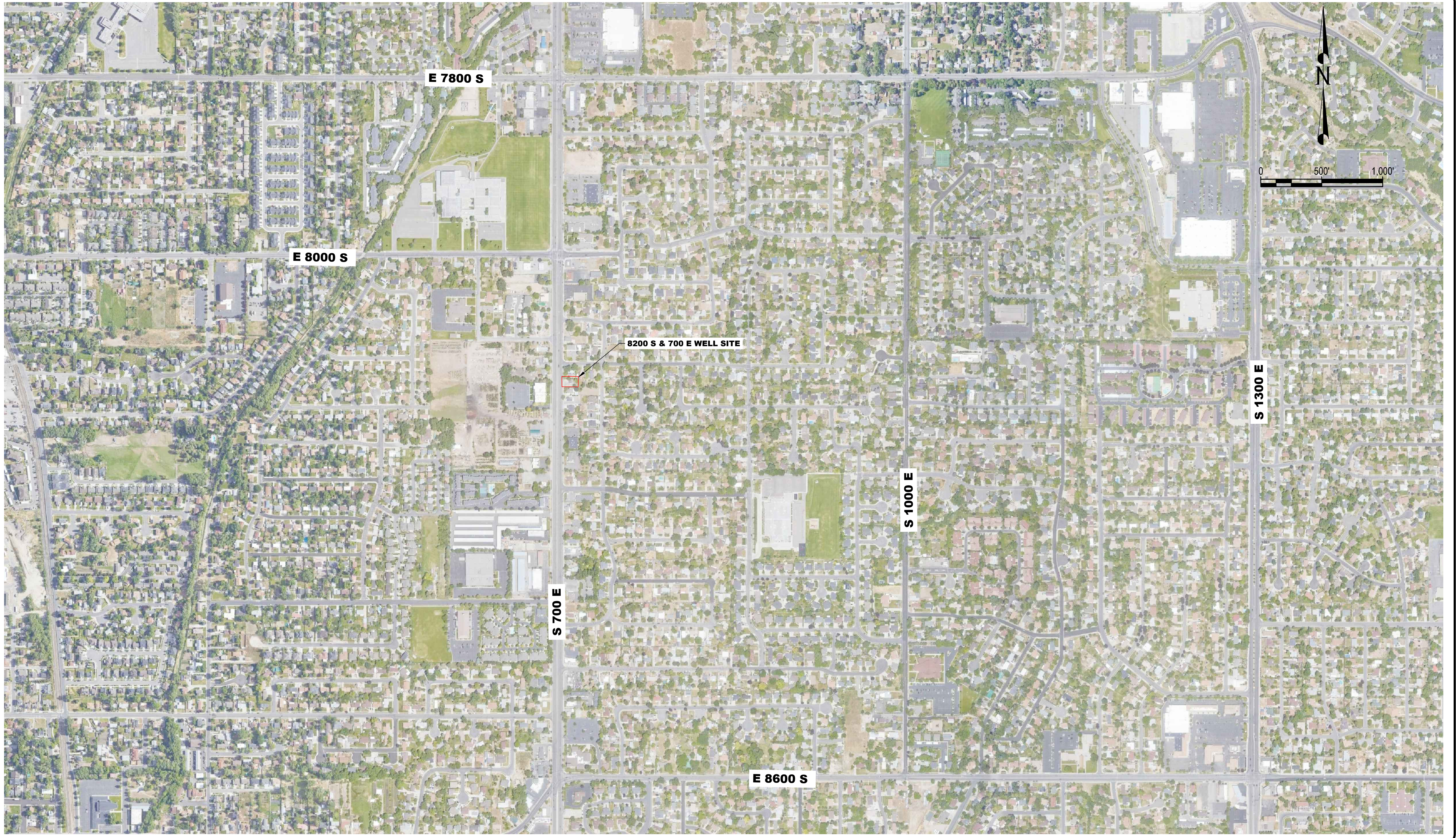
JORDAN VALLEY WATER CONSERVANCY DISTRICT
 JWCD-2019 4 WELL UPGRADE PROJECT
 98TH & 23RD WELL SITE DISCHARGE MAP

9799 S 2300 E
SANDY, UT 84092

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PROJECT NUMBER 2019-0113	
SHEET 4	OF 8
SHEET NUMBER G004	

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 JWCD-2019 4 WELL UPGRADE PROJECT
 8200 S & 700 E WELL LOCATION MAP

8190 S 700 E

SANDY, UT 84094

STAMP

PROJECT NUMBER	2019-0113	
SHEET	5	OF 8
SHEET NUMBER	G005	

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 JWVCD-2019 4 WELL UPGRADE PROJECT
 8200 S & 700 E WELL SITE DISCHARGE MAP

8190 S 700 E

SANDY, UT 84094

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PROJECT NUMBER		2019-0113	
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SHEET NUMBER		G006	

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JORDAN VALLEY WATER CONSERVANCY DISTRICT
 JWCD-2019 4 WELL UPGRADE PROJECT
 NEWBURY WELL LOCATION MAP

10190 NEWBURY DR

SANDY, UT 84092

STAMP

PROJECT NUMBER: 2019-0113
 SHEET: 7 OF 8
 SHEET NUMBER: G007

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JORDAN VALLEY WATER CONSERVANCY DISTRICT
 JWCD-2019 4 WELL UPGRADE PROJECT
 NEWBURY WELL SITE DISCHARGE MAP

10190 NEWBURY DR

SANDY, UT 84092

PROJECT NUMBER: 2019-0113
 SHEET: 8 OF 8
 SHEET NUMBER: G008

APPENDICES

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APPENDIX A

SALT LAKE COUNTY NOISE POLLUTION ORDINANCE

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Salt Lake Valley Health Department

Health Regulation

#21

**COMMUNITY NOISE
POLLUTION CONTROL**

**Adopted by the Salt Lake Valley Board of Health
September 6, 1984**

**Amended:
August 1, 1991,
December 7, 1995,
May 3, 2001,
August 7, 2008
August 2, 2012**

**Under Authority of Section 26A-1-114
Utah Code Ann.**

1. PURPOSE & APPLICABILITY OF REGULATION

- 1.1 The purpose of this Regulation is to establish standards for the control of noise pollution within Salt Lake County and to reduce the making and creation of harmful sound to secure, protect, and promote the public health and safety of the residents of Salt Lake County.

2. DEFINITIONS

- 2.1 “dBA or A-Weighted Sound Pressure Level” shall mean the sound pressure level in decibels as measured with a sound level meter using the A-weighting network. The unit for reporting is dB(A) or dBA. Sounds measured with the “A” weighting network approximate the response of human hearing when measuring sounds of low to moderate intensity.
- 2.2 “Ambient Sound” shall mean the sound pressure level which represents the summation of the sound from all the discrete sources affecting a given site at a given time, exclusive of the source under investigation.
- 2.3 “Best Management Practices or BMPs” shall mean auxiliary operational procedures implemented by a business or facility that effectively reduce noise levels. BMPs include but are not limited to scheduling of activities, prohibitions of practices, maintenance procedures, and other management practices or institutional controls that prevent or reduce noise decibel levels.
- 2.4 “CFR” shall mean Code of Federal Regulations.
- 2.5 “Construction” shall mean any site preparation, assembly, erection, substantial repair, alteration or similar action.
- 2.6 “Construction equipment” shall mean any mechanical apparatus used in excavation, construction or demolition.
- 2.7 “Decibel” shall mean a logarithmic unit used in measuring the magnitude of sound. Decibel is abbreviated dB.
- 2.8 “Demolition” shall mean any dismantling, intentional destruction or removal of any right- of-way surfaces, building, structure, utility or similar property.
- 2.9 “Department” shall mean the Salt Lake Valley Health Department (SLVHD).

- 2.10 “Director” shall mean the Director of the Salt Lake Valley Health Department or his or her designated representative.
- 2.11 “Dwelling” shall mean a building or structure that is intended or designed to be used, rented, leased, let or hired out for human habitation.
- 2.12 “Dynamic braking device” shall mean a device used to transform a motor vehicle’s internal combustion engine into an air compressor for the purpose of braking without the use of wheel brakes, commonly referred to as “Jake brakes,” “compression brakes,” or “engine brakes.”
- 2.13 “Emergency power generator” shall mean the equipment used to generate electrical power in the event of an interruption, malfunction, or failure of the electrical power otherwise supplied by the service provider.
- 2.14 “Emergency vehicle” shall mean an authorized motor vehicle, motorboat, or aircraft which can lawfully be used for the transportation of emergency personnel, equipment, and supplies while responding to the scene of an emergency.
- 2.15 “Emergency work” shall mean;
- 2.15.1 Work required to restore property to a safe condition following a disaster or declaration of emergency;
 - 2.15.2 Work required to protect persons or property from an imminent exposure to danger; or
 - 2.15.3 Work that absolutely cannot be done otherwise during the daytime hours to protect the public’s health by private or public entities for providing or restoring immediately necessary utility service.
- 2.16 “EPA” shall mean the U.S. Environmental Protection Agency.
- 2.17 “Exhaust system” shall mean all components responsible for conducting exhaust gasses or reducing sound from a motor vehicle or motorboat including, but not limited to, mufflers, baffles, header pipes, manifolds, air intakes, or any other similar component.
- 2.18 “Gross Vehicle Weight Rating” or “GVWR” shall mean the value specified by the manufacturer as the recommended maximum loaded weight of a single motor vehicle. In cases where trailers and tractors are separable, the gross combination weight rating (GCWR), which is the value specified by the manufacturer as the recommended maximum loaded weight of the combination of vehicle, shall be used.
- 2.19 “Heating, Ventilation, and Air Conditioning (HVAC)” shall mean any system installed on or within a dwelling, facility, building or structure for the purpose of providing heating, ventilation, or air conditioning. HVAC may include furnaces, air exchangers,

central air condensing units, evaporative “swamp” coolers, heat pumps, exhaust fans, and other heating and cooling equipment.

- 2.20 “Impulse sound” shall mean sound of short duration, generally less than one second, especially of high intensity, abrupt onset and rapid decay, and often rapidly changing spectral composition.
- 2.21 “Infrasound” includes any sound frequency less than or equal to 16 Hz.
- 2.22 “ L_{eq} ” shall mean the average measure of continuous noise that has the equivalent acoustic energy of the fluctuating signal over the same time period. For the purposes of this Regulation, an L_{eq} measurement will be taken for a minimum of two minutes.
- 2.23 “ L_{max} ” shall mean the highest root-mean-square (RMS) sound level measured over 1000 milliseconds in a slow response. For the purpose of this Regulation L_{max} will be the highest A-weighted sound level occurring during a noise event.
- 2.24 “Motor vehicle” shall mean any vehicle required to be licensed for on-road use in the State of Utah, and is propelled by a motorized power source.
- 2.25 “Muffler” shall mean a properly functioning sound dissipative device or system consisting of a series of chambers, baffle plates, or other mechanical devices for abating the sound of escaping exhaust gases.
- 2.26 “Multi-dwelling unit building” shall mean any building comprising two or more dwelling units, including, but not limited to, apartments, condominiums, co-ops, multiple family houses, townhouses, and attached residences.
- 2.27 “Municipal Approved Event” shall mean an assembly of people which continues, and can reasonably be expected to continue for two or more hours per day, and has received a permit, license or authorization from the municipality in whose jurisdiction the event is located.
- 2.28 “Noise” shall mean sound that may be harmful to health.
- 2.29 “Noise control system” shall mean parts, mufflers, assemblies or systems, including all exhaust system components, originally installed by the manufacturer which controls or reduces noise emissions.
- 2.30 “Octave band” shall mean an interval in Hertz between two frequencies having a ratio of 2:1. For purposes of this Regulation, octave band sound pressure levels shall be measured at any of the following center frequencies: 31.5, 63, 125, 250, 500, 1,000, 2,000, 4,000 and 8,000 Hz.
- 2.31 “Off-highway vehicle” shall mean any vehicle not permitted to be licensed for on-road use in the State of Utah and is propelled by an engine.

- 2.32 “Owner” shall mean any person who alone or jointly and severally with others:
- 2.32.3 has legal title to any premise, dwelling, or dwelling unit with or without accompanying actual possession thereof; or
 - 2.32.4 has charge, care, or control of any premises, dwelling, or dwelling unit, as legal or equitable owner, agent of the owner, or is an executor, executrix, administrator, administratrix, trustee, or guardian of the estate of the owner.
- 2.33 “Person” shall mean any individual, public or private corporation and its officers, partnership, association, firm, trustee, executor of an estate, the State or its departments, institutions, bureau or agency thereof, municipal corporation, county, city, or any legal entity recognized by the law.
- 2.34 “Public assembly” shall mean an activity regardless of whether or not a ticket or payment of any type is required for admission.
- 2.35 “Pure tone” shall mean any sound that can be distinctly heard as a single pitch or a set of single pitches. For the purposes of this Regulation a pure tone shall exist if the one-third octave band sound pressure level, within the investigated band of the tone and frequency range, exceeds the arithmetic average of the sound pressure levels of the two contiguous one-third octave bands by:
- 15 dB for bands with center frequencies less than 160 Hz
 - 8 dB for bands with center frequencies of 160 Hz to 400 Hz
 - 5 dB for bands with center frequencies greater than 400 Hz
- 2.36 “Receiving property” shall mean any property, including an individual unit of a multi-dwelling or multi-use property, that is adversely affected by noise transmitted by another property or from another unit within the same multi-dwelling or multi-use property.
- 2.37 “Repetitive impulse sound” shall mean any impulse sound repeated at intervals such that a sound level meter set at “fast” meter characteristic will show changes in sound pressure level greater than 10 dB(A) within one second.
- 2.38 “Salt Lake Valley Board of Health” shall mean the Salt Lake Valley Board of Health as authorized by Section 26A-1-109, Utah Code Ann.
- 2.39 “Snow removal equipment” shall mean any mechanical equipment used for removing snow from land or building surfaces including snow plows, snow blowers, snow sweepers, and any spreader or applicator employed to apply a snow or ice melting product.

- 2.40 “Sound” shall mean an oscillation in pressure, particle displacement, particle velocity or other physical parameter in a medium with interval forces that cause compression or rarefaction of the medium.
- 2.41 “Sound level meter” shall mean an instrument that includes a microphone, amplifier, RMS detector, integrator, or time averager, output meter and weighing networks used to measure sound pressure levels.
- 2.42 “Sound pressure level” shall mean twenty times the logarithm to the base 10 of the ratio of the RMS sound pressure to the reference pressure of 20 micropascals (20 micronewtons per square meter). The sound pressure level is denoted Lp or SPL and is expressed in decibels (dB).
- 2.43 “Ultrasound” includes any sound frequency higher than 20 kHz.
- 2.44 “Z-Weighted Sound Pressure Level or dBZ or dB(Z)” shall mean the sound pressure level in decibels as measured with a sound level meter using the Z-weighted filter. Infrasound shall be measured with the Z-weighted filter.

3. GENERAL PROVISIONS

3.1 Jurisdiction of the Department.

- 3.1.1 This Regulation is promulgated by the Salt Lake Valley Board of Health as authorized by Section 26A-1-121(1), Utah Code Ann. and Chapter 9.04, Salt Lake County Code of Ordinances.
- 3.1.2 The Department is empowered to enforce this Regulation in all incorporated and unincorporated areas served by the Department as authorized by Section 26A-1-114(1)(a), Utah Code Ann. and Chapter 9.04, Salt Lake County Code of Ordinances.

3.2 The Department and local law enforcement agencies shall have enforcement responsibility for this Regulation.

3.3 Except as otherwise provided for, it shall be unlawful for any person not to comply with any regulation promulgated by the Department unless granted an express variance by the Salt Lake Valley Board of Health.

3.4 Compliance with this Regulation does not constitute a defense if charged with any environmental crime or violation of any local, state, or federal law.

3.5 Legal action taken by the Department under this Regulation does not preclude prosecution for any environmental crime that may have been committed or violation of any other local, state, or federal law.

3.6 Nothing in this Regulation affects or modifies in any way the obligations or liability of any person under any other regulation or provision thereof issued by the Department, any ordinance adopted by Salt Lake County or any municipality located within Salt Lake County, or any state or federally issued law, including common law. However, except as otherwise provided for, Departmental regulations supersede other existing local and county standards, regulations and ordinances pertaining to similar subject matter that are inconsistent.

3.7 **Severance.** If any section, sub-section, sentence, clause, or phrase of this Regulation is for any reason held to be invalid or unconstitutional by a decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Regulation.

4. SUBSTANTIVE PROVISIONS

4.1 **General Prohibition of Noise.** Notwithstanding the specific noise restrictions in Sub-section 4.7, no person shall emit, nor shall any person cause, allow, permit, or fail to control the emission of any noise source so as to exceed the maximum allowable sound pressure levels set forth in Sub-section 4.2 Tables 1a and Sub-section 4.7 Table 2 when measured from the receiving property.

4.2 **Maximum Permissible Sound Pressure Level Tables.**

Table 1a
Maximum Permissible Sound Pressure Levels (L_{eq}) Table

Receiving Property Use*	Between 10:00 p.m. and 7:00 a.m.	Between 7:00 a.m. and 10:00 p.m.
Type A	5 dBA above ambient sound not to exceed 50 dBA	10 dBA above ambient sound not to exceed 60 dBA
Type B	5 dBA above ambient sound not to exceed 55 dBA	10 dBA above ambient sound not to exceed 65 dBA
Type C	5 dBA above ambient sound not to exceed 70 dBA	10 dBA above ambient sound not to exceed 70 dBA
Type D	5 dBA above ambient sound not to exceed 75 dBA	10 dBA above ambient sound not to exceed 75 dBA

*See Appendix A referencing property use examples.

Table 1b
Maximum Permissible Sound Pressure Levels (L_{max}) Table

Receiving Property Use*	Between 10:00 p.m. and 7:00 a.m.	Between 7:00 a.m. and 10:00 p.m.
Type A & B	70 dBA	100 dBA
Type C & D	100 dBA	100 dBA

*See Appendix A referencing property use examples.

4.3 Sound Pressure Level Measurements.

4.3.1 Sound pressure level measurements shall be made with a calibrated and certified Type 2 sound level meter or better instrument as specified in the American National Standards Institute's (ANSI) publication S1.4-1983 (Reaffirmed 2001) entitled, "Specifications for Sound Level Meters", or its current successor; or the International Electrochemical Commission (IEC) class or type 1 and 2 standard 61672.

4.3.2 All sound level measurements required by this Regulation shall be taken in dBA, unless specifically measuring infrasound and ultrasound which shall be taken in dBZ.

4.4 **Infrasound and Ultrasound.** For any source of sound which emits infrasound (below 16 Hz) or ultrasound (above 20 kHz) frequencies, the sound pressure level shall not exceed 100 dBZ when measured from the receiving property.

4.5 **Pure Tone and Repetitive Impulse Sound.** For any stationary source of sound which emits a pure tone or repetitive impulse sound, the limits set forth in Tables 1a shall be reduced by 5 dBA when measured between the hours of 7:00 a.m. to 10:00 p.m. and reduced by 10 dBA for Type A and Type B property use when measured between the hours of 10:00 p.m. to 7:00 a.m.

4.6 **Non-Sound Based Vibrations.** The transmission of vibrations that are not sound based and cannot be measured by a sound pressure meter are not restricted by this Regulation.

4.7 Specific Noise Restrictions.

4.7.1 **Commercial Refuse Compactors.** No person shall operate or use, nor shall any person cause, allow, permit or fail to control the operation or use of any

commercial refuse compactor within 300 feet of a Type A or Type B property use between the hours of 10 p.m. and 7 a.m. unless the responsible party demonstrates to the Department compliance with Sub-section 4.2 Tables 1a and 1b.

- 4.7.2 **Construction Equipment and Activities.** No person shall operate nor shall any person cause, allow, permit, or fail to control the operation of any mechanical construction equipment or conduct any construction or demolition activities outside between the hours of 10 p.m. and 7 a.m. unless a permit has been issued in accordance with Section 5.
- 4.7.3 **Fireworks or Explosives.** No person shall use fireworks or other explosive devices between the hours of 10 p.m. and 7 a.m. unless the responsible party demonstrates to the Department compliance with Sub-section 4.2 Tables 1a and 1b.
- 4.7.4 **Garbage Collection.** No person shall collect garbage, waste, or refuse nor shall any person cause, allow, permit, or fail to control the collection of garbage, waste, or refuse within 300 feet of a Type A or Type B property use between the hours of 10 p.m. and 7 a.m. unless the responsible party demonstrates to the Department compliance with Sub-section 4.2 Tables 1a, 1b and Sub-section 4.7 Table 2.
- 4.7.5 **Loading/Unloading Operations.** No person shall load or unload any equipment, vehicle, box, crate, container, garbage container, or other object or open, close, or otherwise handle these objects within 300 feet of a Type A or Type B property use between the hours of 10 p.m. and 7 a.m. unless the responsible party demonstrates to the Department compliance with Sub-section 4.2 Tables 1a, 1b and Sub-section 4.7 Table 2.
- 4.7.6 **Motor Vehicles.**
- (i) No person shall operate or use, nor shall any person cause, allow, permit, or fail to control the operation or use of any motor vehicle:
 - a. Without a noise control system that meets the original specifications installed by the manufacturer;
 - b. Unless the noise control system is in constant operation and free of defects that affect sound reduction;
 - c. With any cut out, bypass or similar device which increases sound pressure levels;
 - d. When the noise control system has been modified, punctured, or rendered inoperative; and

- e. Unless the noise control system of the motor vehicle or combination of vehicles of a type subject to registration, at any time or under any condition of grade, load, acceleration or deceleration does not exceed the maximum allowable sound pressure levels set forth in Table 2 at a distance of 25 feet or more for the category of motor vehicle, based on the legal speed limit, posted or not, of the road on which such vehicle or vehicles are operated using testing methods as prescribed by the Department.

Table 2
 Maximum Sound Pressure Levels for Motor Vehicles
 Sound Pressure Level, dBA

	Measured at a Distance of	Speed limit 40 mph or less	Speed limit over 40 mph
Any motor vehicle with a gross manufacturer's gross vehicle weight rating (GVWR) or gross combination weight rating (GCWR) of 10,000 pounds or more or any combination of vehicles towed by such motor vehicle	25 ft.	88 dBA	94 dBA
Any other motor vehicle and any combination of motor vehicles towed by such motor vehicle	25 ft.	80 dBA	84 dBA

- (ii) **Defect in Vehicle.** No person shall operate, nor shall any person cause, allow, permit, or fail to control the operation or use of any motor vehicle that emits excessive or unusual noises because of disrepair or mode of operation.
- (iii) **Dynamic Braking Devices.** No person shall operate, nor shall any person cause, allow, permit or fail to control the operation of any motor vehicle with a dynamic braking device engaged, except for the avoidance of imminent danger.
- (iv) **Motorcycles and Motorcycle Exhaust Systems.**
 - a. **EPA Noise Emission Control Requirements.** No person shall cause, allow, permit or fail to control the operation or use of any motorcycle manufactured after December 31, 1982, without its required Motorcycle Noise Emission Control Label on the motorcycle vehicle itself in accordance with 40 CFR § 205.158 and on any motorcycle exhaust system as required by 40 CFR § 205.169. i. The following is an example of an EPA Noise Control Label: “This (manufacturer’s name) exhaust system (serial

number) meets EPA Noise Emission Requirements of (noise emission standard) dB(A) for the following motorcycles: (list of model specific codes). Installation of this exhaust system on motorcycle models not specified may violate federal law.”

- b. **Label Tampering.** No person shall deface or allow any person to deface any noise emission control label required by federal law which is affixed to any motorcycle or motorcycle part for purposes of identifying the motorcycle or motorcycle part as a federally regulated product.
 - c. **Mismatched Mufflers.** No person shall operate, nor shall any person cause, allow, permit, or fail to control the operation of any motorcycle manufactured to federal noise law standards that does not bear a label or mark on the exhaust system that matches the model specific code of the motorcycle vehicle on which the system is installed.
 - d. **Competition Motorcycles.** No person shall operate, nor shall any person cause, allow, permit, or fail to control the operation of any motorcycle identified by the noise emission control label or mark as being for “competition use only” on any property other than within a motor sports facility for the purpose of participating in a practice session or racing event.
 - e. **Competition Motorcycle Exhaust System.** No person shall operate, nor shall any person cause, allow, permit, or fail to control the operation of any motorcycle fitted with an exhaust system or exhaust system component identified by the noise emission control label or mark as being for “competition motorcycles only” on any property other than a motor sports facility for the purpose of participating in a practice session or racing event.
- (iv) **Motor Vehicle Repair and Testing.** No person shall repair, rebuild, modify, idle, run, accelerate, or test any motor vehicle, nor any auxiliary equipment attached to such vehicle within 300 feet of a Type A or Type B property use between the hours of 10 p.m. and 7 a.m. unless this activity complies with Sub-section 4.2 Tables 1a, 1b and Sub-section 4.7 Table 2.
- (v) **Off-Highway Vehicles.** No person shall operate, nor shall any person cause, allow, permit, or fail to control the operation of any off-highway vehicle between the hours of 10 p.m. and 7 a.m. unless this activity complies with Sub-section 4.2 Tables 1a and 1b.

4.7.7 **Parking Lot or Road Sweepers.** No person shall operate, nor shall any person cause, allow, permit, or fail to control the operation of any motorized mechanical sweeper, blower or vacuum within 300 feet of a Type A or Type B property use between the hours of 10 p.m. and 7 a.m. unless the responsible party demonstrates to the Department compliance with Sub-section 4.2 Tables 1a, 1b and Sub-section 4.7 Table 2.

4.7.8 **Public Assembly.** No person shall operate, play, nor shall any person cause, allow, permit, or fail to control the operation or playing of any noise emitting device in such a manner:

- (i) That the maximum sound pressure level exceeds 100 dB(A) at a point normally occupied by a patron on the premises of a public assembly unless conspicuous and legible written notification is provided to the public prior to entrance into the event stating, “WARNING: SOUND LEVELS ON THESE PREMISES MAY CAUSE HEARING DAMAGE. HEARING PROTECTION IS AVAILABLE.” In the alternative, the above warning may be provided on a sign of a color and lettering design in high contrast with its background and posted where it is plainly visible at each public entrance in bold letters of at least 1 inch in height. This Sub-part shall not be construed to permit conduct prohibited by any other provision of this Regulation; and
- (ii) Every public assembly with the potential of exceeding 100 dB(A) shall have readily available for public distribution, at a cost not excessive of the retail value, single-use earplugs that have a Noise Reduction Rating (NRR) of at least 20 decibels.

4.8 **Exemptions.**

4.8.1 In the rare event compliance causes extreme or undue hardship to a facility, business or community activity, the Department may allow the activity if the responsible party demonstrates to the Department best management practices are being applied.

4.8.2 **Emergency Events and Equipment.** Noise resulting from a response to any emergency event shall be exempt from this Regulation, including the use of emergency equipment, emergency vehicles, emergency relief valves, emergency work, and emergency power generators which provide emergency power or potable water to any hospital, health clinic, nursing home, similar facilities, or physician prescribed home based personal medical equipment as approved by the Department, where the loss of electrical power or potable water poses an immediate risk to the health, safety, and welfare of any person, or as required by federal or state law shall be exempt from this Regulation. During a power failure, other commercial or personal emergency power generators operating between the hours of 10 p.m. and 7 a.m. may reach but not exceed the

maximum day time sound pressure levels set forth in Sub-section 4.2 Table 1a and 1b when measured from the receiving property.

4.8.3 Fireworks and Explosives. Noise resulting from lawful fireworks and explosives shall be exempt from this Regulation when discharged:

- (i) For lawful mining activities between the hours of 7 a.m. and 10 p.m. the same day;
- (ii) By the public:
 - a. Between the hours of 11 a.m. and 11 p.m. on the days allowed by statute which include July 1 through July 7 and July 21 through July 27, except that on July 4 and July 24, the hours are 11:00 a.m. to midnight;
 - b. Between the hours of 11 a.m. December 31 and 1 a.m. the following day, except when New Year's Eve falls on a Sunday and the local municipality determines to celebrate New Year's Eve on the prior Saturday; and
 - c. Between the hours of 11 a.m. on Chinese New Year's Eve and 1 a.m. the following day.
- (iii) By a licensed display or special effects operator to conduct a professional fireworks display:
 - a. Between the hours of 7 a.m. and 10 p.m. the same day;
 - b. Between the hours of 11 a.m. and midnight on the day officially celebrated as and including July 4th and July 24th;
 - c. Between the hours of 11 a.m. and 11 p.m. for a special event sponsored by a local municipality, provided the municipality has made application and received a mass gathering permit;
 - d. Between the hours of 11 a.m. on December 31 and 1 a.m. the following day; and
 - e. Between the hours of 11 a.m. on Chinese New Year's Eve and 1 a.m. of the following day.

4.8.4 Heating, Ventilation, and Air Conditioning (HVAC). Noise resulting from the operation of a HVAC system used on or within a Type A property use, including central air conditioning units, evaporative coolers, or window cooling units, regardless of the time or frequency of operation, shall be exempt from this Regulation, provided the system is in good repair and operating within manufacturer's specifications.

- 4.8.5 **Mechanical Equipment.** Noise resulting from the use of portable mechanical equipment shall be exempt from this Regulation between the hours of 7 a.m. and 10 p.m. so long as the equipment is in good repair, performs a legitimate service, and is being used according to the manufacturer's specifications.
- 4.8.6 **Municipal Approved Event.** Except as otherwise provided for, noise resulting from a municipal approved event shall be exempt from this Regulation on the condition that the municipality shall assume responsibility for responding to any noise-related matters associated with the event approved by the municipality. The Department shall, upon request, provide noise related technical assistance to a municipality.
- 4.8.7 **Public Assembly.** Noise directly resulting from crowd noise associated with a public assembly shall be exempt from this Regulation.
- 4.8.8 **Snow Removal.** Noise resulting from the operation of snow removal equipment shall be exempt from this Regulation;
- (i) Beginning at 4 a.m. when snow has accumulated during the prior 12 hours for a Type A or Type B property use;
 - (ii) At any time for a Type C or Type D property use NOT within 300 feet of a Type A or Type B property use; and
 - (iii) At any time on any street, avenue, road, boulevard or highway by a governing entity.

5. TEMPORARY NOISE PERMIT and FEES

- 5.1 **Department Authority.** The Department has the authority to permit the requirements and restrictions of this Regulation on the basis of undue hardship or for a temporary event. The Department may prescribe any reasonable conditions or requirements upon a permit deemed necessary to minimize adverse health effects upon a community or the surrounding neighborhood.
- 5.2 **Temporary Noise Permit Requirements.**
- 5.2.1 To apply for a Temporary Noise Permit, the applicant shall complete and submit the Department-approved application form.
 - 5.2.2 Permit Duration: A Temporary Noise Permit is valid only at the location stated in the application and for the length of time approved by the Department on the application.
- 5.3 **Notice Requirements.**

5.3.1 Upon approval of any permit granted by the Department, the applicant shall notify, in writing, each dwelling and facility located within 800 feet of the event or activity, unless otherwise required by the Department, at least 48 hours in advance. The Department shall approve the content of each notice before it is distributed.

5.3.2 The notice shall contain the following information:

- (i) The name of the event or company name;
- (ii) The name of the coordinator or project manager;
- (iii) The contact phone number(s) of the coordinator or project manager;
- (iv) The name and contact phone number(s) of the on-site manager;
- (v) The address of the event;
- (vi) The specific date(s) and operating time;
- (vii) A detailed description of the activities; and
- (viii) A brief description of all measures taken to maximize the abatement of the noise emission (or to minimize the noise emission) by means of Source Reduction Practices, Best Management Practices, and Best Operational Practices.

5.4 The Department may establish and collect appropriate fees for licenses, certificates, and permits as set out in this Regulation. The Department may collect appropriate fees as set out in this Regulation for the performance of services, including plan reviews. If information on a license, certificate, or permit application changes, the applicant shall notify the Department in writing within 20 calendar days.

5.4.1 **Temporary Noise Permit Fee.** Any applicant who applies for a Temporary Noise Permit shall remit to the Department a Permit fee in the amount of \$120.

5.4.2 The Department may waive the temporary noise permit fees for governmental agencies, departments or municipalities provided compliance with all other requirements of Section 5 are met.

5.4.3 If a governmental agency, department or municipality approves an activity otherwise regulated by the Department as a temporary noise permitted activity, the Department may waive the temporary noise permit fee provided compliance with all other requirements of Section 5 are met.

5.5 **Late Fees.**

- 5.5.1 The Department may impose upon any party subject to this Regulation penalties and charges for failure to timely pay service and permit fees as set out in this Regulation. Attorney's fees and collection fees may also be applied.
- 5.5.2 Fees unpaid to the Department after one month of the due date will be assessed a penalty of 10% of the outstanding balance. Failure to pay the fees and additional charges after two months of the due date will be assessed an additional penalty of 15% of the outstanding balance including previous penalties. Failure to pay the fees and additional charges after 100 days of the due date will result in suspension of the permit and the right to operate. A \$40.00 charge will be assessed for each returned check.
- 5.5.3 An applicant who fails to give at least a ten (10) day notice to the Department of their intent to obtain a Temporary Noise permit shall remit to the Department a late notification fee of \$35.

5.6 **Denial, Suspension, or Revocation of License or Permit.** Any permit applied for or issued pursuant to this Regulation may be denied, suspended, or revoked by the Department for any of the following reasons:

- 5.6.1 Failure of the applicant to show that the temporary noise event will be held or operated in accordance with the requirements of this Regulation;
- 5.6.2 Submission of incorrect, incomplete, or false information in the application;
- 5.6.3 Failure to pay applicable fees;
- 5.6.4 The temporary noise event will be in violation of law;
- 5.6.5 Failure of the coordinator, owner, or operator at a temporary noise event to allow the Department to conduct inspections as necessary to determine compliance with this Regulation;
- 5.6.6 Operation of a temporary noise event in a way that causes or creates a hazard to the public health, safety, or welfare;
- 5.6.7 Failure to operate or maintain the temporary noise event in accordance with the application, report, plans, and specifications approved by the Department; or
- 5.6.8 Failure to comply with any provision of this Regulation.

6. INSPECTIONS & INVESTIGATIONS

6.1. To ensure compliance, the Department has the authority to perform inspections, investigations, reviews, and other actions as necessary.

6.2. **Authority for Department to Enter Premises.**

6.2.1. **Regulated Commercial Premises.** Upon presenting proper identification, authorized representatives of the Department may enter upon the premises of properties regulated by the Department to perform routine inspections to ensure compliance with rules, standards, regulations, and ordinances adopted by the Department, the Departments of Health & Environmental Quality, county or municipal governing bodies, or the Division of Occupational and Professional Licensing.

6.2.2. **Unregulated Commercial Properties.** The Department may enter upon the premises of commercial properties not pervasively regulated by the Department upon the consent of the owner or other party having legal authority or upon a court order.

6.2.3. **Private Dwellings.** Inspections of private dwellings are made by consent of the owner or other party having legal authority or upon a court order.

6.2.4. **Consent by Permit.** The Department shall require permit holders to allow access for inspections as part of their permit. Failure to allow access for inspections as set out in the permit may result in the suspension or revocation of the permit.

7. **ENFORCEMENT MECHANISMS** If the Department has investigated or inspected any property or facility and believes the property owner or other responsible party is in violation of this Regulation or the Department has other reasonable grounds to believe that there has been a violation of any part of this Regulation or that the property owner or otherwise responsible party is not in compliance with this Regulation, the Department may take civil enforcement action as authorized by statute, rule, ordinance, and regulation and may also refer the matter for criminal prosecution. Civil enforcement may involve court or administrative actions, injunctive actions, and closures and may involve cost recovery, penalties, and other remedies. Civil and criminal actions may be brought simultaneously. A person does not need to be first adjudged liable in a civil matter before facing criminal charges.

7.1. **Criminal Enforcement Actions.** The Department may recommend criminal prosecution for environmental violations either alone or in conjunction with civil enforcement. Criminal prosecutions for environmental violations of state or federal law may be filed by the District Attorney, Utah Attorney General, United States Department of Justice, or other enforcement entity. Factors that the Department may

consider in recommending criminal enforcement include the following factors and any other relevant factors:

- 7.1.1. The nature and seriousness of the offense including the immediacy of the threat of danger to the life or safety of another or the harm or threatened harm to human health or environment;
 - 7.1.2. The degree to which the violation was designed to provide economic gain or cost avoidance, or involved a pattern of conduct or a common attitude of illegal conduct;
 - 7.1.3. The degree to which the offender is a known violator and has avoided prior actions by the Department;
 - 7.1.4. The degree to which prosecution might deter future violations;
 - 7.1.5. The person's actual culpability in connection with the offense including the presence in connection with the offense including the presence of criminal intent;
 - 7.1.6. The person's willingness to cooperate in the investigation including whether the violator has attempted to conceal evidence or prosecution of others;
 - 7.1.7. The appropriateness of referring the case to other agencies having prosecutorial interest; and
 - 7.1.8. Possibilities of civil remedies which would be more appropriate than initiating the criminal justice process.
- 7.2. **Civil Enforcement Actions.** The Department may request that the District Attorney bring an action to restrain or enjoin actions in violation of public health, environmental laws, and other laws or abate conditions in violation of such laws.
- 7.3. **Administrative Actions.**
- 7.3.1. The Department may, at its discretion, issue a Notice of Violation & Order of Compliance (NOV).
 - 7.3.2. **Service of NOV.** The Department may provide notice to the owner of the property or otherwise responsible person by sending the NOV via certified mail to the last known address of the owner of the property or other responsible person. If notice is returned undeliverable, the owner of the property or other responsible person may be personally served or be given notice by other methods reasonably calculated to give actual notice to the owner or other responsible party.

7.3.3. **Contents of NOV.** The NOV shall:

- (i) Describe the property and the persons believed to be in violation;
- (ii) Describe the violation;
- (iii) Describe remedial action that will comply with the provisions of this Regulation;
- (iv) Set a reasonable time for the performance of any required remedial action(s);
- (v) Describe the procedure to contest the NOV and the time limits for such a contest; and
- (vi) Notify the owner or other responsible person that if no written contest is filed within the time required, the NOV will become final and unappealable to any administrative entity or court.

7.3.4. **Challenging an NOV.** As detailed in the SLVHD's Adjudicative Hearing Procedures, a party aggrieved by an NOV may request a departmental conference, departmental hearing, or departmental appeal in writing within ten (10) days of the date of the NOV.

7.3.5. **Departmental Conference, Settlement Agreements, and Stipulations & Orders.**

- (i) After issuance of the NOV, the alleged violator has the option to request and attend a Departmental Conference to discuss the NOV and settlement with the Department and its legal counsel. No hearing officer will be present. The process of requesting a Departmental Conference is more fully described in the SLVHD's Adjudicative Hearing Procedures.
- (ii) If the parties agree to a settlement, the Department will prepare, in conjunction with the District Attorney's Office, a binding Settlement Agreement or Stipulation & Consent Order which may require the payment of penalties and the costs of investigation. Parties may also agree to a settlement at any time subsequent to the Departmental Conference. After signing a Settlement Agreement or Stipulation & Consent Decree, the parties waive all rights to further department and court hearings or appeals. Settlement Agreements or Stipulation & Consent orders may be enforced in state courts.

7.3.6. **Hearings & Appeals.** Parties Aggrieved by an NOV may also request a Departmental Hearing or a Departmental Appeal. A hearing officer is present at

these proceedings and makes a written determination. The methods of challenging an NOV are more fully described in the SLVHD's Adjudicative Hearing Procedures. Departmental Hearing Orders and Departmental Appeal Orders may be appealed to the entities and within the time limits set out in the SLVHD's Adjudicatory Hearing Procedures.

7.3.7. **Failing to respond to an NOV.** If a party fails to respond to an NOV within the required time, the NOV becomes a final order unappealable to any administrative entity or court. The Department may then enforce the order in state court.

7.4. **Additional Administrative Enforcement Authority.**

7.4.1. Any variances allowed by the Department to the requirements of this Regulation shall be only by written approval of the Salt Lake Valley Board of Health.

7.4.2. **Emergency Enforcement.** If the Director finds that an emergency exists that requires immediate action to protect the public health, he or she may without notice or hearing issue an order declaring the existence of an emergency and requiring that action be taken as he deems necessary to meet the emergency. The order shall be effective immediately. Any person to whom the order is directed shall comply and abate the nuisance immediately, but may petition the Director for a hearing in accordance with the SLVHD's Adjudicative Hearing Procedures. After the hearing and depending upon the findings as to whether the person has complied with the provisions of this Regulation, the Director shall continue the order in effect or modify or revoke it. If circumstances warrant because of the seriousness of the hazard, the Department may act to correct or abate the emergency without issuance of an order or directive or without waiting for the expiration of compliance time previously given in an order.

8. **CRIMINAL, CIVIL & ADMINISTRATIVE PENALTIES**

8.1. **Criminal Penalties.**

8.1.1. Any person who is found guilty by a court of violating any of the provisions of this Regulation, either by failing to do the acts required herein or by doing a prohibited act, is guilty of a class B misdemeanor, pursuant to Section 26A-1-123, Utah Code Ann.

8.1.2. Each day such violation is committed or permitted to continue shall constitute a separate violation.

8.1.3. Each similar subsequent violation occurring within two years of the initial violation may constitute a class A misdemeanor.

8.2. Civil & Administrative Penalties.

8.2.1. Penalties may be included in a Settlement Agreement or Stipulation & Consent Order. Penalties may be assessed according to the following factors:

- (i) The violator's history of compliance or non-compliance;
- (ii) The violator's economic benefit of non-compliance;
- (iii) The documented costs associated with environmental or health damage;
- (iv) The violator's degree of willfulness or negligence; and
- (v) The violator's good faith efforts to comply and cooperate.

8.2.2. The Director may multiply the penalty by the number of days the violation occurred.

8.3. Recovery of Investigation & Abatement Costs.

8.3.1. The Department may recover its inspection, investigative and abatement expenses and costs from owners or other responsible person.

8.3.2. The Department may record a judgment lien on a violator's property to recover its expenses and costs.

9. EFFECTIVE DATE

9.1. This Regulation shall become effective upon its adoption by the Salt Lake Valley Board of Health.

APPROVED AND ADOPTED this _____ day of _____, 2012.

SALT LAKE VALLEY BOARD OF HEALTH

By: _____
PAULA JULANDER, Chair

ATTEST:

Gary L. Edwards, M.S.
Executive Director
Salt Lake Valley Health Department

APPENDIX A

Noise Area Classifications

Type A Property Use Activities/Examples

- Single family residential structure that does not share a common wall with residential or any other use.

Type B Property Use Activities/Examples

- All other residential use not included in Type A including but not limited to:
 - Apartment/Condominium/Twin Home/Poli-Plex
 - Group home, community living
 - Residential hotel/motel
 - Mobile home park or court
 - Transient lodging
- Correctional institution
- Medical/other health service
- Religious, Church activity
- School, Educational Institution activity
- Cultural activity and nature exhibition
- Camping and picnicking areas (designated)
- Resort, group camp
- Other cultural, recreational activity

Type C Property Use Activities/Examples

- Retail trade
 - building materials
 - hardware
 - farm equipment
 - general merchandise
 - food, eating and drinking, other recreation (bar, discotheques, clubs)
 - automotive & accessories, gas stations
 - marine craft & accessories
 - aircraft & accessories
 - apparel & accessories
 - furniture, home furnishings and equipment
- Other retail trade
 - Finance, insurance, and real estate services
 - Personal services
 - Business services
 - Repair services
 - Legal services

- Other professional services
- Contract construction services
- Governmental services (except correctional institutions)
- Miscellaneous services (except religious activities)
- Amusements (except fairgrounds and amusement parks)
- Parks
- Automobile parking

Type D Property Use Activities/Examples

- Food and kindred products - manufacturing
- Textile mill products - manufacturing
- Apparel & other finished products made from fabrics, leather & similar materials - manufacturing
- Lumber and wood products (except furniture) – manufacturing
- Furniture and fixtures - manufacturing
- Paper and allied products- manufacturing
- Printing, publishing, and allied industries
- Chemicals and allied products – manufacturing
- Petroleum refining and related industries
- Rubber and miscellaneous plastic products – manufacturing
- Stone, clay, & glass products – manufacturing
- Primary metal industries
- Fabricated metal products - manufacturing
- Professional, scientific, and controlling instruments, photographic & optical goods, watches and clocks - manufacturing
- Miscellaneous manufacturing (except motion picture production)
- Railroad, rapid transit, and street railway transportation (except passenger terminals)
- Motor vehicle transportation (except passenger terminals)
- Aircraft transportation (except passenger terminals)
- Marine craft transportation (except passenger and freight terminals)
- Highway and street right-of-way Communication (except telegraph message centers)
- Utilities
- Other transportation, communication & utilities (except transportation services and arrangements)
- Event and entertainment venues
- Race tracks
- Fairgrounds and amusement parks
- Agricultural
- Agricultural and related activities
- Forestry activities and related services (including commercial forest land, timber production, and other related activities)
- Fishing activities and related services
- Mining activities and related services
- Other resource production and extraction

- All other activities not otherwise listed
- Undeveloped and unused land area (excluding noncommercial forest development)
- Noncommercial forest development
- Water areas
- Vacant floor area
- Under construction
- Other undeveloped land and water areas
- All other property uses not previously identified

APPENDIX B

BMP'S – WATER DISCHARGES FROM WATER WELL DRILLING AND OPERATION

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Fact Sheet Regarding Water Discharges From Water Well Drilling and Operation

Prepared by: Utah Division of Water Quality

Updated July 2002

Background:

Utah Administrative Code (UAC) R317-8-2 requires a UPDES discharge permit for the discharge of pollutants from any point source into waters of the State. A point source is defined as “any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, from which pollutants are or may be discharged.”

Through the use of various drilling methods and reasonable best management practices, water well drilling generally can be conducted such that no discharge occurs or that only de minimis (insignificant) amounts of pollutants would be released into waters of the State. As such, it has been the policy of the Division of Water Quality to not require water well drilling operations to obtain a discharge permit as long as they do not discharge or discharge de minimis amounts of pollutants.

There may be circumstances where a discharge permit is necessary or desired by the well driller or owner. However, because a discharge permit can take several months to issue, requires payment of a permit fee, and because the permit would contain specific enforceable effluent quality limits and frequent self-monitoring and reporting requirements, it is highly recommended that all options to avoid discharge or attain the de minimis discharge be explored before pursuing an individual discharge permit.

Best Management Practices (BMP's)

The goal of BMP implementation is to avoid discharge or, if this is not practicable, to obtain a de minimis pollutant discharge during any phase of well development. The primary pollutants of concern are total suspended solids and turbidity in the form of drill cuttings and muds. Occasionally chemicals such as surfactants are used during the drilling operation. It is the responsibility of the operator and/or owner to assure that BMP's are properly installed and operated in order to contain all fluids or to produce a de minimis pollutant discharge to waters of the State. Some BMP's are indicated below:

1. Drill pits or ponds of adequate size for total containment of all fluids containing drill cuttings, surfactants and associated chemicals.
2. Pits or ponds used for settling; followed by filter cloth and/or straw bales which can be used for filtration prior to fluids entering surface waters of the state.
3. Land application of produced waters during drilling, pump testing, and well development where no discharge would occur to waters of the State.
4. Land application where sufficient filtration through vegetation removes solids and turbidity before water is diffused and enters any surface waters.
5. Other sediment and turbidity reduction treatment such as frac tanks, cyclone separators, etc.

Pollution of waters of the state is a violation of the Water Quality Act, UCA 19-5, which provides for significant monetary penalties, and additional penalties for violations that are willful or caused by gross negligence.

If you have any concerns not covered in this fact sheet or any further questions, please contact:

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APPENDIX C

ORIGINAL WELL LOGS

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Utah Division of Water Rights



WELLPRT Well Log Information Listing

Version: 2003.09.18.00 Rundate: 10/09/2003 08:24 AM

Utah Division of Water Rights

Water Well Log

LOCATION:

N 378 ft W 201 ft from S4 CORNER of SECTION 29 T 2S R 1E BASE SL Elevation: 4490.00 feet
7750 S. 1000 E.

DRILLER ACTIVITIES:

ACTIVITY # 1 WELL REPAIR
DRILLER: WIDDISON TURBINE SERVICE, LLC LICENSE #: 533
START DATE: 04/01/1994 COMPLETION DATE: 10/10/1994

WATER LEVEL DATA:

Date	Time	Water Level (feet)	Status
10/04/1994		(-)above ground 197.92	STATIC

CONSTRUCTION - CASING:

Depth(ft)	Material	Gage(in)	Diameter(in)
From To			
+2 326	A53GB	.250	18.0
326 419	A53GB	.250	14.0
419 430	A53GB	.250	10.0
575 620	A53GB	.250	10.0
680 696	A53GB	.250	10.0
703 720	A53GB	.250	10.0
765 805	A53GB	.250	10.0
865 895	A53GB	.250	10.0

CONSTRUCTION - SCREENS/PERFORATIONS:

Depth(ft)	Screen(S) or Perforation(P)	Slot/Perf. siz	Screen Diam/Length	Perf(in)	Screen Type/# Perf.
From To					
430 475	PERFORATION	.045	10.0		LOW CARBON
620 680	PERFORATION	.045	10.0		LOW CARBON
696 703	PERFORATION	.045	10.0		LOW CARBON
720 765	PERFORATION	.045	10.0		LOW CARBON
805 865	PERFORATION	.045	10.0		LOW CARBON

CONSTRUCTION - FILTER PACK/ANNULAR SEALS

Depth(ft)	Material	Amount	Density(pcf)
From To			
2 895	8-16 CO SILICA SAND	1180	

WELL TESTS:

Date	Test Method	Yield (CFS)	Drawdown (ft)	Time Pumped (hrs)
10/04/1994	PUMP TEST	2.228	77.04	1.50
10/04/1994	PUMP TEST	2.674	104.40	1.50
10/04/1994	PUMP TEST	3.119	130.52	1.50
10/04/1994	PUMP TEST	3.565	166.15	1.50

WATER QUALITY DATA AVAILABLE

GENERAL COMMENTS:

REPAIR REPORTED 3/26/96

This well was drilled in 1960 by Rosco Moss. We have screened the well developed and test pumped it. A new lineshaft turbine pump was installed.

CONSTRUCTION INFORMATION:

Well head configuration: Line shaft pump head

Casing joint type: Welded

Perforator used: Mills

Filter Pack: a 5' deep neat cement plug was set from 890' to 895' to prevent gravel pack from coming around the bottom of the well

PUMP: Goulds 12 CHC 9 stg

HP: 250

Intake Depth: 417 feet

Approx pump rate: 1400

Well disinfected: Yes

comments: The well was test pumped a total of 84 hours most of it was development pumping. There is a Longmire patch in the well at 421'-425'. The screens were first set with a "K" packer. This packer failed so it was pulled and casing was then run to the surface. The patch joined the two strings of casing together. See the attached drawing.

Additional data not available

Utah Division of Water Rights



WELLPRT Well Log Information Listing

Version: 2003.09.18.00 Rundate: 10/09/2003 08:24 AM

Utah Division of Water Rights

Water Well Log

LOCATION:

N 340 ft E 82 ft from W4 CORNER of SECTION 32 T 2S R 1E BASE SL Elevation: 4491.00 feet
8201 S. 700 E.

DRILLER ACTIVITIES:

ACTIVITY # 1 NEW WELL
START DATE: 05/24/1960 COMPLETION DATE: 09/10/1960

BOREHOLE INFORMATION:

Depth(ft)	Diameter(in)	Drilling Method	Drilling Fluid
From	To		
0	1007	20	CABLE

LITHOLOGY:

Depth(ft)	Lithologic Description	Color	Rock Type
From	To		
0	2 OTHER		SOIL
2	5 CLAY,SAND		
5	16 CLAY	GREY	
16	34 CLAY,GRAVEL		
	2" GRAVEL		
34	42 GRAVEL		
	2" GRAVEL		
42	60 CLAY,SAND		
	HARD		
60	80 CLAY,SAND,GRAVEL		
	GRAVEL 1"		
80	143 GRAVEL,BOULDERS		
	HARD CEMENTED		
143	170 CLAY,GRAVEL		
	1/2" GRAVEL		
170	190 SAND		
	HARD CEMENTED		
190	204 CLAY,GRAVEL		
	1" GRAVEL		
204	232 CLAY,SAND		
	LITTLE CLAY		
232	240 CLAY,GRAVEL		
	1/2" GRAVEL		
240	265 SAND		
	HARD AND CEMENTED		
265	276 CLAY	BROWN	
	STICKY AND BROWN		
276	350 GRAVEL,OTHER		
350	360 CLAY,GRAVEL		
	1" GRAVEL		
360	388 GRAVEL,OTHER		
	HARD		
388	410 CLAY,GRAVEL		
410	428 CLAY		
	STICKY		

428	455	CLAY HARD	
455	495	CLAY, GRAVEL 2" GRAVEL	
495	500	CLAY, GRAVEL IN LAYERS 2"	
500	578	GRAVEL CEMENTED 1/2"	
578	588	CLAY, GRAVEL 1/2" GRAVEL	
588	604	CLAY STICKY	
604	616	CLAY, GRAVEL CEMENTED 2"	
616	622	CLAY STICKY	
622	630	CLAY, GRAVEL 2" GRAVEL	
630	648	CLAY STICKY CLAY	
648	662	CLAY, GRAVEL 1" GRAVEL	
662	675	CLAY STICKY	
675	684	CLAY, GRAVEL CLAY AND LITTLE GRAVEL	
684	692	SAND, GRAVEL HARD CEMENTED SAND AND GRAVEL	
692	715	OTHER	CONGLOMERATE
715	739	CLAY, GRAVEL CLAY AND LITTLE GRAVEL 1"	
739	745	GRAVEL HARD CEMENTED GRAVEL 3"	
745	764	CLAY STICKY CLAY	
764	775	GRAVEL CEMENTED GRAVEL 3"	
775	785	OTHER	CONGLOMERATE
785	798	GRAVEL CEMENTED GRAVEL 3"	
798	822	CLAY, GRAVEL CLAY AND LITTLE GRAVEL 1"	
822	833	GRAVEL CEMENTED GRAVEL 3"	
833	838	CLAY, GRAVEL CLAY AND LITTLE GRAVEL (BLUE) 1/2"	BLUE
838	865	CLAY STICKY CLAY	
865	886	CLAY, GRAVEL HARD CLAY AND GRAVEL 1"	
886	888	SAND CEMENTED SAND	
888	905	CLAY TOUGH STICKY CLAY	
905	918	CLAY, GRAVEL CEMENTED GRAVEL, LITTLE CLAY 3"	
918	935	CLAY, SAND STICKY CLAY, CEMENTED SAND	
935	955	CLAY TOUGH STICKY CLAY (YELLOW)	YELLOW
955	960	CLAY, GRAVEL GRAVEL 1"	
960	972	CLAY TOUGH STICKY CLAY	
972	980	CLAY, GRAVEL CLAY AND GRAVEL 1"	
980	996	CLAY, GRAVEL CEMENTED GRAVEL AND LITTLE CLAY 3"	
996	1007	CLAY STICKY CLAY	

WATER LEVEL DATA:

Date	Time	Water Level (feet)	Status
09/10/1960		(-)above ground 155.00	STATIC

CONSTRUCTION - CASING:

Depth(ft)	Material	Gage(in)	Diameter(in)
From To			
0 306		.312	20
296 1007		.312	16

CONSTRUCTION - SCREENS/PERFORATIONS:

Depth(ft)	Screen(S) or Perforation(P)	Slot/Perf. siz	Screen Diam/Length Perf(in)	Screen Type/# Perf.
From To				
475 588	PERFORATION	.50	4.5	1356
604 616	PERFORATION	.5	4.5	144
622 630	PERFORATION	.5	4.5	96
648 662	PERFORATION	.5	4.5	168
675 745	PERFORATION	.5	4.5	840
764 833	PERFORATION	.5	4.5	828
865 886	PERFORATION	.5	4.5	252
905 920	PERFORATION	.5	4.5	180
955 960	PERFORATION	.5	4.5	60
960 996	PERFORATION	.5	4.5	432

WELL TESTS:

Date	Test Method	Yield (CFS)	Drawdown (ft)	Time Pumped (hrs)
09/10/1960	PUMP	2.340	120	35

WATER QUALITY DATA AVAILABLE

Utah Division of Water Rights



WELLPRT Well Log Information Listing

Version: 2003.09.18.00 Rundate: 10/08/2003 10:20 PM

Utah Division of Water Rights

Water Well Log

LOCATION:

S 2370 ft E 190 ft from N4 CORNER of SECTION 10 T 3S R 1E BASE SL Elevation: 4948.00 feet

DRILLER ACTIVITIES:

ACTIVITY # 1 NEW WELL
 DRILLER: LANG EXPLORATORY DRILLING INC LICENSE #: 568
 START DATE: 07/06/1991 COMPLETION DATE: 08/06/1991

BOREHOLE INFORMATION:

Depth(ft)	Diameter(in)	Drilling Method	Drilling Fluid
From To			
0 960	20	ROTARY	

LITHOLOGY:

Depth(ft)	Lithologic Description	Color	Rock Type
From To			
0 15	SAND, COBBLES		
15 110	SAND, COBBLES		
110 115	CLAY		
115 310	SAND, GRAVEL		
310 370	CLAY, SAND, GRAVEL, COBBLES		
370 430	SAND, GRAVEL		
430 600	CLAY, SAND, GRAVEL		
600 630	SAND		
630 640	CLAY		
640 660	SAND, GRAVEL		
660 690	CLAY, SAND, GRAVEL		
690 710	SAND, GRAVEL, COBBLES		
710 780	CLAY, SAND, GRAVEL		
780 850	CLAY		
850 960	CLAY, SAND, GRAVEL HARD ROCK		

WATER LEVEL DATA:

Date	Time	Water Level (feet)	Status
07/25/1991		492.00	STATIC

ADDITIONAL DATA AVAILABLE, USE OTHER PRINT OPTION

CONSTRUCTION - CASING:

Depth(ft)	Material	Gage(in)	Diameter(in)
From To			
0 35		.375	32
+3 610		.375	20
630 650		.375	20
750 870		.375	20

CONSTRUCTION - SCREENS/PERFORATIONS:

Depth(ft)	Screen(S) or Perforation(P)	Slot/Perf. siz	Screen Diam/Length Perf(in)	Screen Type/# Perf.
From To				

610	630	SCREEN	.050	20	JOHNSON HI
650	750	SCREEN	.050	20	JOHNSON HI
870	950	SCREEN	.050	20	JOHNSON HI

CONSTRUCTION - FILTER PACK/ANNULAR SEALS

Depth(ft) From	To	Material	Amount	Density(pcf)
0	220	BENTONITE, NEAT CEMENT		
220	960	8-12, 6-9 SIZE GRAVEL		

WELL TESTS:

Date	Test Method	Yield (CFS)	Drawdown (ft)	Time Pumped (hrs)
/ /	PUMP	1.203	22.67	1.5
/ /	PUMP	2.270	45.18	3
/ /	PUMP	3.291	76.42	5
/ /	PUMP	4.456	107.05	7
/ /	PUMP	5.096	129.40	9

WATER QUALITY DATA AVAILABLE

Utah Division of Water Rights



WELLPRT Well Log Information Listing

Version: 2003.09.18.00 Rundate: 10/11/2003 03:05 PM

Utah Division of Water Rights

Water Well Log

LOCATION:

S 20 ft W 1465 ft from NE CORNER of SECTION 16 T 3S R 1E BASE SL Elevation: feet

DRILLER ACTIVITIES:

ACTIVITY # 1 NEW WELL
 DRILLER: BEYLIK DRILLING INC LICENSE #: 471
 START DATE: 09/24/1997 COMPLETION DATE: 11/01/1997

BOREHOLE INFORMATION:

Depth(ft)		Diameter(in)	Drilling Method	Drilling Fluid
From	To			
0	40	38.0	REVERSE CIRCULATION	WATER
40	1030	28.0	REVERSE CIRCULATION	WATER

LITHOLOGY:

Depth(ft)		Lithologic Description	Color	Rock Type
From	To			
50	80	CLAY	GRAY	
80	90	CLAY, GRAVEL BIG ROCKS		ROCK
90	100	CLAY	GRAY	
100	120	GRAVEL ROCK		ROCK
120	125	GRAVEL ROCK		ROCK
125	130	GRAVEL ROCKS/BIG AND LITTLE ROCKS		ROCKS
130	135	SAND, GRAVEL FINE SAND		
135	145	CLAY, SAND		
145	150	CLAY, SAND LITTLE CLAY		
150	160	SAND FINE SAND		
160	165	GRAVEL ROCK		
165	170	CLAY ROCK		
170	175	GRAVEL		
175	180	CLAY		
180	185	GRAVEL ROCKS		
185	190	GRAVEL ROCKS/SMALL ROCKS		
190	195	CLAY, GRAVEL		
195	200	CLAY		
200	210	SAND ROCKS		
210	215	CLAY, SAND		
215	280	GRAVEL		

		ROCKS
280	295	GRAVEL
		ROCKS
295	300	GRAVEL
		ROCKS
300	315	GRAVEL
315	320	GRAVEL
		ROCKS
320	325	GRAVEL
325	345	GRAVEL
		ROCKS
345	355	GRAVEL
		ROCKS/BIG ROCKS
355	405	GRAVEL
		ROCKS
405	415	GRAVEL
415	430	GRAVEL
		ROCKS
430	440	SAND
		ROCKS
440	495	GRAVEL
		ROCKS
495	500	GRAVEL
500	505	GRAVEL
		ROCKS
505	515	SAND
515	520	SAND
520	575	GRAVEL
575	605	CLAY, GRAVEL
615	645	GRAVEL
		ROCKS
645	680	GRAVEL
		ROCK
680	685	SAND, GRAVEL
		ROCKS
685	690	SAND, GRAVEL
		ROCKS
690	695	GRAVEL
		ROCKS/SANDY CLAY
695	700	SAND, GRAVEL
		ROCKS
700	705	SAND, GRAVEL
		ROCKS/LITTLE SAND
705	710	SAND, GRAVEL
		ROCKS
710	715	SAND, GRAVEL
715	720	SAND
720	725	SAND, GRAVEL
725	730	SAND, GRAVEL
730	740	CLAY, SAND
		ROCKS
740	745	CLAY, SAND, GRAVEL
		ROCKS
745	750	SAND
750	755	CLAY, SAND, GRAVEL
		ROCKS
755	760	CLAY, SAND
760	765	CLAY, SAND
765	785	CLAY
785	790	CLAY
		ROCKS
790	795	SAND
795	800	SAND
		ROCKS
800	805	SAND, GRAVEL
		ROCKS
805	810	SAND, GRAVEL
810	815	GRAVEL
		ROCKS
815	840	SAND, GRAVEL
		ROCKS/LITTLE SAND
840	850	SAND, GRAVEL
850	860	SAND, GRAVEL
		ROCKS
860	865	CLAY, SAND

865	870	ROCKS/SOME ROCKS CLAY, SAND ROCKS
870	875	SAND, GRAVEL ROCKS
875	880	SAND ROCKS
880	895	SAND ROCKS
895	900	SAND
900	915	GRAVEL ROCKS
915	925	GRAVEL ROCKS/SOME ROCKS
925	930	SAND ROCKS
930	935	SAND, GRAVEL ROCKS
935	940	SAND ROCKS
940	945	CLAY, SAND ROCKS/SOME CLAY
945	950	SAND ROCKS
950	965	SAND ROCKS/SOME ROCKS
965	1005	SAND ROCKS
1005	1010	SAND
1010	1025	SAND, GRAVEL ROCKS
1025	1030	SAND ROCKS
1030	1035	SAND
1035	1045	SAND ROCKS/SOME ROCKS
1045	1050	SAND ROCKS/SOME ROCKS
1050	1055	SAND, GRAVEL ROCKS
1055	1060	SAND, GRAVEL ROCKS

WATER LEVEL DATA:

Date	Time	Water Level (feet) (-)above ground	Status
10/29/1997		430.00	STATIC

CONSTRUCTION - CASING:

Depth(ft) From	Depth(ft) To	Material	Gage(in)	Diameter(in)
0	50	A53B	.375	30.0
+2	610	A53B	.375	20.0
700	810	A53B	.375	20.0
1010	1030	A53B	.375	20.0

CONSTRUCTION - SCREENS/PERFORATIONS:

Depth(ft) From	Depth(ft) To	Screen(S) or Perforation(P)	Slot/Perf. siz	Screen Diam/Length	Perf(in)	Screen Type/#	Perf.
610	700	PERFORATION	.060	20.0		CW 304 SS	
810	1010	PERFORATION	.060	20.0		CW 304 SS	

CONSTRUCTION - FILTER PACK/ANNULAR SEALS

Depth(ft) From	Depth(ft) To	Material	Amount	Density(pcf)
0	50	CEMENT	26	
0	245	CEMENT	12.6	

WELL TESTS:

Date	Test Method	Yield (CFS)	Drawdown (ft)	Time Pumped (hrs)
10/31/1997	PUMP	8.913	120	20

GENERAL COMMENTS:

CONSTRUCTION INFORMATION:

Well head configuration: No data

Casing Joint Type: Weld

Perforator used: N/A

Additional data not available
