DEPARTMENT OF THE AIR FORCE
377TH AIR BASE WING (AFGSC)

ENTERED

MAR 2 9 2018

Colonel Dawn A. Nickell
377th Air Base Wing
2000 Wyoming Blvd SE
Kirtland AFB NM 87117

RECEIVED
APR 0 2 2018
NMED
Hazardous Waste
Bureau

Mr. John Kieling, Bureau Chief
Hazardous Waste Bureau (HWB)
New Mexico Environment Department (NMED)
2905 Rodeo Park Drive East, Building 1
Santa Fe NM 87505-6303

Dear Mr. Kieling

Attached please find the *Standard Operating Procedure for Disinfection of the Groundwater Treatment System Remediation Wells and Groundwater Monitoring Wells*. This procedure has been prepared to summarize the proposed approach to disinfect remediation and groundwater monitoring wells in compliance with American Water Works Association C654-13 Standards for Disinfection of Wells.

If you have any questions or concerns, please contact Mr. Scott Clark at (505) 846-9017 or at scott.clark@us.af.mil or Mrs. Holly O'Grady at (505) 853-3484 or at holly.ogrady@us.af.mil.

Sincerely

DAWN A. NICKELL, Colonel, USAF
Vice Commander

Attachment:
Standard Operating Procedure for Disinfection of the Groundwater Treatment System Remediation Wells and Groundwater Monitoring Wells; 2 Hard Copies/2 CDs

cc:
NMED (Borrego) letter
NMED-OOTS (McQuillan), letter and CD
NMED GWQB (Hunter), letter and CD
EPA Region 6 (King, Ellinger), letter and CD
COA (Faris), letter and CD
ABCWUA (Shean), letter and CD
SAF-IEE (Lynnes), electronic only
AFCEC/CZ (Renaghan, Segura, Clark, O'Grady), electronic only
USACE-ABQ District Office (Simpler, Phaneuf, Dreeland, Sanchez, Salazar), electronic only
Public Info Repository, Administrative Record/Information Repository (AR/IR) and File

KAFB4653

Standard Operating Procedure for Disinfection of the Groundwater Treatment System Remediation Wells and Groundwater Monitoring Wells

Revision 0
April 2018

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1 Groundwater Extraction and Treatment System Location

2 Groundwater Monitoring Network and Extraction Well Locations

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1 Sodium Hypochlorite Safety Data Sheet

2 Remediation Well Construction Diagrams

3 Monitoring Well Construction Information

DOCUMENT REVISION HISTORY

ORIGINAL (MASTER) DOCUMENT REVISION HISTORY				
Revision Number	**Revision Date**	**Revision Summary**	**Revised By**	**Reviewed By**
0	3/13/2018	Created Standard Operating Procedure	K. McKeage	T. Curley, PE

1. SCOPE AND APPLICATION

The purpose of this Standard Operating Procedure is to delineate protocols for performing well disinfection at the Kirtland Air Force Base (AFB) groundwater treatment system (GWTS) (Figure 1) and associated monitoring wells without dedicated pump systems (Figure 2). Currently, the GWTS has four extraction wells (KAFB-106228, KAFB-106233, KAFB-106234, and KAFB-106239), one injection well (KAFB-7; Figure 1) and 143 monitoring wells (Figure 2). Over time, the pumping efficiency of a well and/or the flow through the filter pack may decline due to bacterial growth and biofouling. Routine disinfection (every few months) will assist in maintaining well efficiency.

A remediation well (extraction or injection) with permanent equipment installed shall be disinfected by providing the casing, screen, and surrounding filter pack around the well with a free chlorine residual of at least 50 milligrams per liter (mg/L), adequate mixing, and then removal from the well (American Water Works Association [AWWA], 2013). For injection wells, downhole equipment will require removal prior to disinfection in order to pump the well and remove the residual chlorine. The same standard describes the chlorination of existing gravel pack in wells not installed with equipment (monitoring wells) at a concentration not less than 100 mg/L free chlorine residual (AWWA, 2013). The following procedure has been prepared in accordance with the guidelines provided in the AWWA C654-13 Standards for Disinfection of Wells (AWWA, 2013) except where otherwise noted.

2. EQUIPMENT AND MATERIALS

The following equipment and materials may be required:

- 250-gallon polyethylene tote equipped with a ball valve and adapter to fit 0.5-inch polyethylene tubing
- City backflow preventer and permission to withdraw potable water from a nearby fire hydrant
- 3,000+-gallon potable water truck equipped with adaptor to reach and fit the wellhead 1-inch polyvinyl chloride sounding drop pipe
- 600-foot length of 0.5-inch polyethylene tubing
- 5-gallon high-density polyethylene carboy with spigot adapted to fit a 0.5-inch polyethylene tube
- Field vehicle with the ability to elevate the 250-gallon tote at least 3 feet above the top of the well

- Germicidal bleach (8.25 percent sodium hypochlorite solution) (Safety Data Sheet for appropriate material is provided in Attachment 1)
- Potable water (from municipal/Base source)
- Field logbook
- Indelible ink pen
- Vault keys
- Camera
- Chlorine colorimeter and reagents.
- Well bailing or pumping equipment
- 21,000 gallon tank (injection well only)

3. PROCEDURE

The locations of GWTS remediation wells are provided in Figure 1 and monitoring wells in Figure 2. Prior to performing disinfection on any GWTS remediation well, the well shall be removed from service. Refer to the GWTS Operations and Maintenance Plan (U.S. Army Corps of Engineers [USACE], 2016) or most current approved version for remediation well shutdown. Other remediation wells will continue to be in operation during the disinfection process.

Remediation well disinfection is performed following the steps outlined below:

1. Prepare the 0.5-inch polyethylene tubing by measuring and marking the length to be deployed to have the bottom end of the tubing reach the bottom of the sounding drop pipe (Attachment 2). Place the 250-gallon polyethylene tote into the bed of the field vehicle.

2. Gauge the remediation well intended for disinfection as well as the nearby observation well. Wells designated as observation wells for each remediation well are provided in the table below:

Remediation Well	Observation Well
KAFB-106228	KAFB-106212
KAFB-106233	KAFB-106229
KAFB-106234	KAFB-106225
KAFB-106239	KAFB-106082
KAFB-7	KAFB-0508

3. Determine the static water volume by calculating the volume of static water in the well casing and filter pack (assuming that the filter pack occupies no volume) using the well construction information (Attachment 2) and water level obtained from the observation well in Step 2. One static water volume will be between approximately 800 and 1,400 gallons. Exact static water volume can be calculated using the following equation:

   If the well screen is not submerged:

$$V = 7.48\frac{gal}{ft^3}\left[\pi\left(\frac{d_b}{2}\right)^2 (B - H)\right]$$
$$V = static\ water\ volume\ (gal)$$
$$d_b = borehole\ diameter\ (ft)$$
$$H = water\ level\ (ft\ bgs)$$
$$B = total\ depth\ (ft\ bgs)$$

   If the well screen is submerged:

$$V = 7.48\frac{gal}{ft^3}\left[\pi\left(\frac{d_b}{2}\right)^2 (B - T)\right] + 7.48\frac{gal}{ft^3}\left[\pi\left(\frac{d_c}{2}\right)^2 (T - H)\right]$$
$$V = static\ water\ volume\ (gal)$$
$$d_b = borehole\ diameter\ (ft)$$
$$d_c = casing\ diameter\ (ft)$$
$$H = water\ level\ (ft\ bgs)$$
$$B = total\ depth\ (ft\ bgs)$$
$$T = top\ of\ screen\ (ft\ bgs)$$

4. Prepare and have ready three static water volumes worth of potable chase water in a 3,000+-gallon water truck to surge the well. Potable water should be obtained from a nearby fire hydrant using an approved Albuquerque Bernalillo County Water Utility Authority (ABCWUA) backflow preventer and meter (ensure that the appropriate permits have been provided by ABCWUA to utilize fire hydrant water) or brought from Kirtland AFB.

5. Using the 250-gallon polyethylene tote, prepare 50 gallons of sodium hypochlorite stock solution that will yield a concentration of 50 mg/L free chlorine in four static water volumes worth of water using the following equation:

$$82{,}500\frac{mg}{L} \times V_1 = (C_2 \times 50gal) = 50\frac{mg}{L} \times 4 \times V_3$$
$$V_1 = volume\ of\ bleach\ to\ add\ to\ the\ stock\ solution\ (gal)$$
$$C_2 = free\ chlorine\ concentration\ of\ stock\ solution\ \left(\frac{mg}{L}\right)$$
$$V_3 = static\ water\ volume\ (gal, Step\ 3)$$

6. For extraction wells, remove the air relief valve (ARV) overflow tubing connection from the sounding drop pipe, partially extract the well transducer so that it is suspended at least 50 feet above the water level, and lower the bottom end of the 0.5-inch tubing down the well sounding drop pipe so that it deploys immediately below the drop tube. The 0.5-inch tubing is not fully deployed to the bottom of the well screen as described in AWWA C654-13 due to concerns with tubing becoming caught on downhole equipment. If the well intended for disinfection is an injection well, ensure all downhole equipment has been removed, then lower the bottom end of the tubing down the well casing so that it deploys to the top of the well sump. Affix the surface end of the 0.5-inch tube to the 250-gallon tote containing the sodium hypochlorite solution. Open the ball valve attached to the tote and begin adding the sodium hypochlorite solution. The tote should empty in approximately 3-4 minutes. During application into an injection well, the deployed end of the 0.5-inch polyethylene tubing shall be raised slowly throughout the water column to ensure even application throughout the submerged well screen. The 0.5-inch tubing is then removed from the sounding drop pipe or well casing.

7. After the addition of the sodium hypochlorite solution down the tubing, water in the well must be agitated to ensure even distribution of free chlorine throughout the entire water column and surrounding filter pack. Connect the water truck tank to the well sounding drop pipe (or well casing for injection wells) and open the valve on the truck to discharge the three static water volumes worth of potable water to surge the well. The water truck tank pump may be used as long as pressure on the sounding drop pipe or well casing does not exceed 50 pounds per square inch. Then disconnect the water truck tank from the sounding drop pipe or well casing and reattach the well ARV overflow tubing (if applicable). Ensure all wellhead openings have been adequately sealed before proceeding to the next step.

8. The disinfectant is then left in the well without any agitation overnight (approximately 12 hours).

9. After approximately 12 hours of retention time have elapsed.

   For extraction wells:

   The extraction well will be restarted. Isolate the influent trains on the influent pipe tree and between the influent tanks. Refer to the GWTS Operations and Maintenance Plan (USACE, 2016) or most current approved version for extraction well startup. Monitor the influent of the isolated train treating water from the disinfected well. The influent will be monitored for free chlorine concentrations on the influent skid at the pump discharge and at the sampling point immediately downstream of the sand filters on the isolated train. Initially, these locations will be sampled every 10 minutes for the first 60 minutes of extraction well operation. If elevated concentrations of free chlorine (>1 mg/L) persist at the influent skid pump discharge past this 60-minute time period, monitoring of both locations will continue at 20-minute intervals until the free chlorine concentration drops below 1 mg/L. Due to the catalytic nature of the sand filter media,

minimal free chlorine is expected to pass through the sand filters and reach the granular activated carbon vessels; however, if concentrations exceeding 2 mg/L are detected at the sampling point immediately downstream of the sand filters, the extraction well will be shut down and water extracted from the well will be monitored and diverted to a holding tank upstream of the sand filters to preserve granular activated carbon life. Once the extraction well water free chlorine concentration has decreased below 2 mg/L entering the holding tank, the extraction well water discharge will be directed to the GWTS and the 60-minute monitoring as mentioned above will be restarted. Bacteriological testing will not be performed as these wells are not intended for distribution as a drinking water supply. All well disinfection information will be recorded and reported in the appropriate quarterly monitoring report.

For injection wells:

The injection well will be bailed or pumped until free chlorine residual concentration in water removed from the well decreases to less than 0.4 mg/L, which is 10 percent of the National Primary Drinking Water Regulations 40 Code of Federal Regulations 141.54 Maximum residual disinfectant level goals for disinfectants (U.S. Environmental Protection Agency, 1998). All bailed or pumped water will be collected and held pending approval to discharge to the GWTS or for offsite disposal. Bacteriological testing will not be performed as these wells are not intended for distribution as a drinking water supply. All well disinfection information will be recorded and reported in the appropriate quarterly monitoring report.

Monitoring well disinfection is performed following the steps outlined below:

1. Prepare the 0.5-inch tubing by measuring and marking the length to be deployed to have the bottom end of the tubing reach the top of the sump and, when removed, the top of the screen using the well construction information (Attachment 3) and the most current annual total depth measurements for the well. Place the 250-gallon polyethylene tote into the bed of the field vehicle.

2. Gauge the well that is intended for disinfection.

3. Determine the static water volume by calculating the volume of water in the submerged well casing and filter pack (assuming that the filter pack occupies no volume) using the well construction information (Attachment 3) and water level obtained in Step 2. One static water volume will be between approximately 90 and 170 gallons for reference elevation interval (REI) 4857, between 105 and 140 gallons for REI 4838, and between 135 and 225 gallons for REI 4814. Exact static water volume can be calculated using the following equation:

If the well screen is not submerged:

$$V = 7.48\frac{gal}{ft^3}\left[\pi\left(\frac{d_b}{2}\right)^2 (B - H)\right]$$

$V = static\ water\ volume\ (gal)$
$d_b = borehole\ diameter\ (ft)$
$H = water\ level\ (ft\ bgs)$
$B = total\ depth\ (ft\ bgs)$

If the well screen is submerged:

$$V = 7.48\frac{gal}{ft^3}\left[\pi\left(\frac{d_b}{2}\right)^2 (B - T)\right] + 7.48\frac{gal}{ft^3}\left[\pi\left(\frac{d_c}{2}\right)^2 (T - H)\right]$$

$V = static\ water\ volume\ (gal)$
$d_b = borehole\ diameter\ (ft)$
$d_c = casing\ diameter\ (ft)$
$H = water\ level\ (ft\ bgs)$
$B = total\ depth\ (ft\ bgs)$
$T = top\ of\ screen\ (ft\ bgs)$

4. Prepare and have ready three static water volumes worth of potable chase water in the 3,000+-gallon water truck or in polyethylene totes in additional field vehicles to surge the well. Potable water should be obtained from a nearby fire hydrant using an approved ABCWUA backflow preventer and meter (ensure that the appropriate permits have been provided by ABCWUA to utilize fire hydrant water) or brought from Kirtland AFB.

5. Using an empty 250-gallon polyethylene tote, prepare 50 gallons of sodium hypochlorite stock solution that will yield a concentration of 100 mg/L free chlorine in four static water volumes worth of water using the following equation:

$$82{,}500\frac{mg}{L} \times V_1 = (C_2 \times 50gal) = 100\frac{mg}{L} \times 4 \times V_3$$

$V_1 = volume\ of\ bleach\ to\ add\ to\ the\ stock\ solution\ (gal)$
$C_2 = free\ chlorine\ concentration\ of\ stock\ solution\ (\frac{mg}{L})$
$V_3 = well\ volume\ (gal, Step\ 3)$

6. Lower the bottom end of the tubing down the well casing so that it deploys to the top of the well sump. Affix the surface end of the 0.5-inch polyethylene tubing to the 250-gallon tote containing the sodium hypochlorite solution. Open the ball valve attached to the tote and begin adding the sodium hypochlorite solution. During application, the deployed end of the 0.5-inch polyethylene tubing shall be raised slowly throughout the water column to ensure even application throughout the submerged well screen. The tote should empty in approximately 3-4 minutes. The 0.5-inch polyethylene tubing is then removed from the monitoring well.

7. After the addition of the sodium hypochlorite solution down the tubing, water in the well must be agitated to ensure even distribution of free chlorine throughout the entire water column and surrounding filter pack. Connect the water truck tank or additional polyethylene totes to the wellhead and open the valve on the truck to discharge the three static water volumes worth of potable water and surge the well.. Then disconnect the water truck tank or polyethylene totes from the monitoring well. Ensure all wellhead openings have been adequately sealed before proceeding to the next step.

8. The disinfectant is then left in the well without any agitation overnight (approximately 12 hours).

9. After approximately 12 hours of retention time have elapsed, the well will be bailed until free chlorine residual concentration in water bailed from the well decreases to less than 0.4 mg/L, which is 10 percent of the National Primary Drinking Water Regulations 40 Code of Federal Regulations 141.54 *Maximum residual disinfectant level goals for disinfectants* (U.S. Environmental Protection Agency, 1998). All bailed water will be collected and held pending approval to discharge to the GWTS or for offsite disposal. Bacteriological testing will not be performed as these wells are not intended for distribution as a drinking water supply. All well disinfection information will be recorded and reported in the appropriate quarterly monitoring report.

4. MAINTENANCE

Not applicable.

5. PRECAUTIONS

Ensure the remediation well to be disinfected has been fully shut down prior to initiating the disinfection process. Concentrated sodium hypochlorite solutions should be handled carefully utilizing the appropriate personal protective equipment. Review the appropriate sections of any relevant safety documentation (i.e., an Accident Prevention Plan) and any safety data sheets prior to initiating disinfection.

6. REFERENCES

American Water Works Association (AWWA). 2013. C654-13. *Standards for Disinfection of Wells.*

U.S. Army Corps of Engineers (USACE). 2016. Operations and Maintenance Plan, Groundwater Treatment System – Annual Update, Bulk Fuels Facility, SWMU ST-106/SS-111, Kirtland Air Force Base, New Mexico. Prepared by EA Engineering, Science, and Technology, Inc., PBC for the USACE–Albuquerque District under USACE Contract No. W912DR-12-D-0006. August.

U.S. Environmental Protection Agency (EPA). 1998. 40 CFR 141.54. *Maximum residual disinfectant level goals for disinfectants.*

FIGURES

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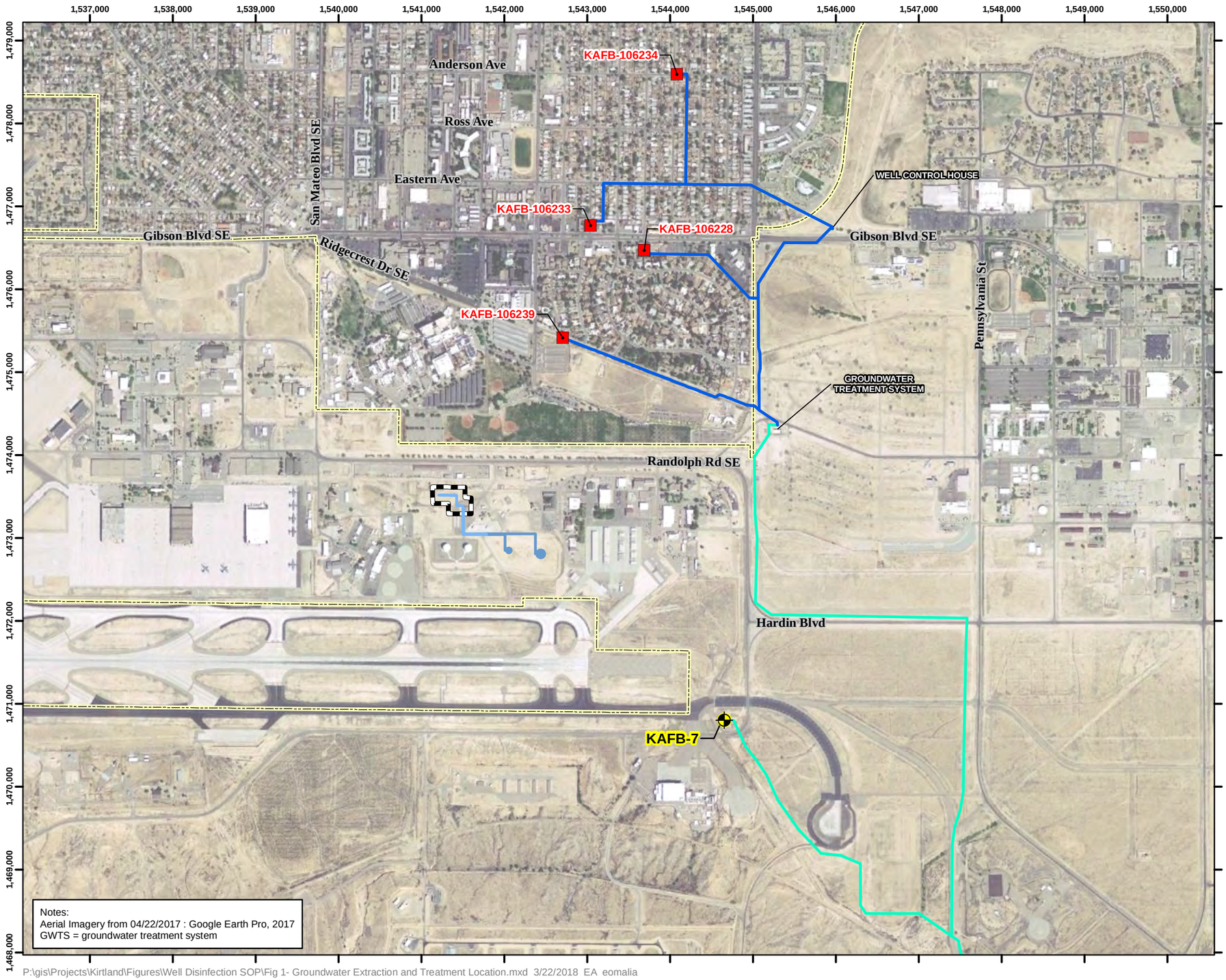
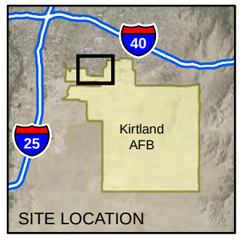


P:\gis\Projects\Kirtland\Figures\Well Disinfection SOP\Fig 1- Groundwater Extraction and Treatment Location.mxd 3/22/2018 EA eomalia

Legend

- Extraction Well
- Injection Well KAFB-7
- Former Aboveground Storage Tank
- Former Buried Fuel Transfer Line
- Former Aboveground Fuel Transfer Line
- GWTS Influent Piping
- GWTS Effluent Piping
- Installation Boundary
- Source Area



N

0 625 1,250 2,500

Feet

1 inch = 1,250 feet

Projection: NAD83 State Plane New Mexico Central FIPS3002 Feet

STANDARD OPERATING PROCEDURE FOR
DISINFECTION OF THE GWTS EXTRACTION WELLS
AND GROUNDWATER MONITORING WELLS
BULK FUELS FACILITY
SOLID WASTE MANAGEMENT UNIT ST-106/SS-111
KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 1

GROUNDWATER EXTRACTION
AND TREATMENT SYSTEM LOCATION

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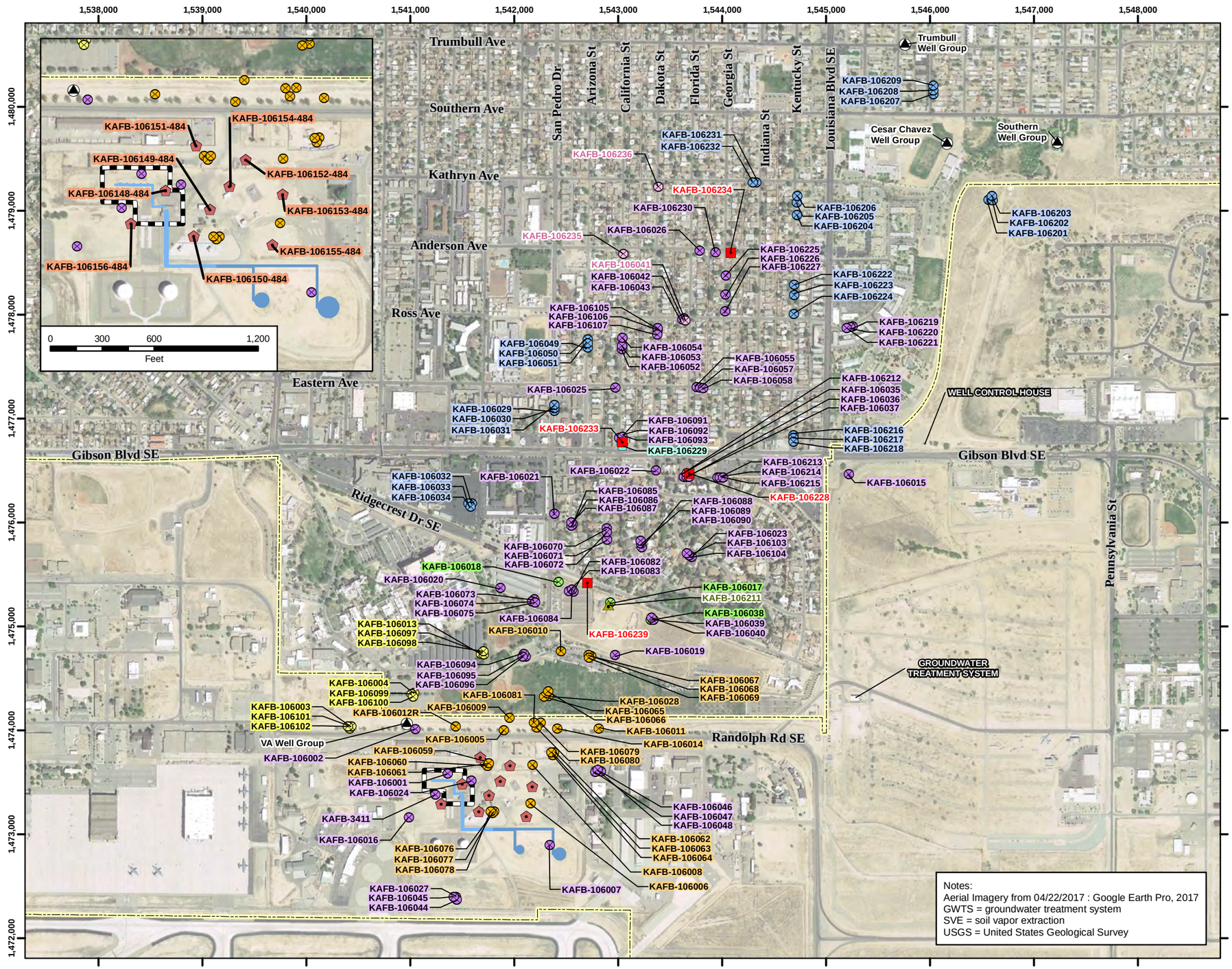
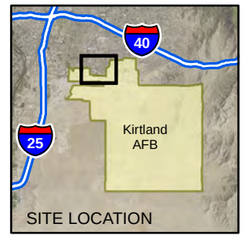


Legend

- Newly Added Monitoring Well
- Groundwater Monitoring Well
- Signal Monitoring Well
- Source Area Monitoring Well
- VA Proximal Monitoring Well
- Downgradient Proximal Monitoring Well
- Extraction Well
- Pneulog Observation Well
- Observation Well
- Former SVE Well
- USGS Sentinel Well Group
- Installation Boundary
- Former Buried Fuel Transfer Line
- Former Aboveground Fuel Transfer Line
- Former Aboveground Storage Tank
- Bulk Fuels Facility (SWMU ST-106/SS-111)



N

0 500 1,000 2,000

Feet

1 inch = 1,000 feet

Projection: NAD83 State Plane New Mexico Central FIPS3002 Feet

STANDARD OPERATING PROCEDURE FOR
DISINFECTION OF THE GWTS EXTRACTION WELLS
AND GROUNDWATER MONITORING WELLS
BULK FUELS FACILITY
SOLID WASTE MANAGEMENT UNIT ST-106/SS-111
KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 2

GROUNDWATER MONITORING NETWORK AND EXTRACTION WELL LOCATIONS

P:\gis\Projects\Kirtland\Figures\Well Disinfection SOP\Fig 2 - GWM Network and Extraction Wells.mxd 3/12/2018 EA eomalia

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ATTACHMENTS

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ATTACHMENT 1
SODIUM HYPOCHLORITE SAFETY DATA SHEET

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KIK CUSTOM PRODUCTS

Material Safety Data Sheet

8.25% Bleach Regular

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name	8.25% Bleach Regular
Reference Number	40000753 (H12-023)
Company	KIK Custom Products 33 MacIntosh Blvd. Concord, Ontario L4K 4L5 T: 905-660-0444
24 Hour Emergency Contact	1-800-255-3924
Prepared By	Product Development KIK Classic Division
Revised Date	May 9, 2012 Revision: New

SECTION 2: HAZARD IDENTIFICATION

General Advice: DANGER! CORROSIVE.
May cause severe burns or damage to eyes.
May cause severe skin burns or irritation.
Harmful if swallowed.
Vapor or mist may irritate.
If irritation occurs see a doctor immediately. Keep out of reach of children and pets.

Routes of Exposure: Eyes, Skin, Inhalation, Ingestion
Potential Health Effects:
Eyes: Vapor or mist can be irritation, causing redness. Concentrated vapor, mist or splashed liquid can cause severe irritation, burns or even permanent blindness.
Skin: Contact may produce severe irritation or corrosive skin damage, depending upon length of contact. Under normal consumer use conditions the likelihood of any adverse health effects are low.
Inhalation: Vapor or mist can cause irritation to nose, throat and upper respiratory tract. Symptoms include: coughing, choking. Severe exposure can result in pulmonary edema and corrosion of tissues in the nose and throat.
Ingestion: Causes severe burns of the mouth, esophagus, and stomach, with consequent pain, nausea, vomiting, diarrhea, circulatory collapse.
Target organs: Eyes. Skin.
Chronic effects: Not known.

8.25% Bleach Regular

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	*Concentration %*	*CAS No.*	*Worker Exposure Limit*
Sodium Hypochlorite	6% - 9%	7681-52-9	5800 mg/kg / >10500
Sodium Hydroxide	<1.00%	7647-01-0	Not Established

SECTION 4: FIRST AID MEASURES

Eyes: Flush eyes immediately with lukewarm water for at least 20 minutes. Remove contact lenses after first 5 minutes. Forcibly hold eyelids apart to ensure complete irrigation of eye tissue. See doctor immediately.

Skin: Remove contaminated clothing. Immediately wash the skin with copious amount of lukewarm water for at least 20 - 30 minutes. See doctor immediately.

Inhalation: Move to fresh air immediately and restore breathing. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. See doctor immediately.

Ingestion: DO NOT INDUCE VOMITING UNLESS DIRECTED TO DO SO BY MEDICAL PERSONNEL! Rinse mouth out with water. Drink 1 or 2 glasses of water, if swallowing is possible. Do not give anything by mouth to a convulsing or unconscious person. See a doctor immediately.

SECTION 5: FIRE FIGHTING MEASURES

This product is neither flammable nor explosive.

Suitable extinguishing media : Treat for surrounding material.

Protective equipment for fire-fighters : As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

8.25% Bleach Regular

SECTION 6: ACCIDENTAL RELEASE MEASURES

Always contained all type of spills. Be sure to wear protective equipment (see Section 8)

Leak and Spill Procedure: Rinse with water, mop up, dispose of in accordance with local, state/provincial and federal regulations.

Large Spills: Large spills should be contained, and if not recoverable, then diluted with water. Use a water rinse for final clean-up.

SECTION 7: HANDLING AND STORAGE

Handling: Use only as directed. Avoid any contact with eyes, skin and clothing. When using, do not eat or drink.

Storage: Store in a cool, dry and well-ventilated area. Always keep the container closed when not in use. KEEP OUT OF REACH OF CHILDREN AND PETS.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Household Setting

Eyes Protection – No special requirements under normal use conditions.

Hand Protection – Use gloves for prolonged exposure.

Footwear – No special requirements under normal use conditions.

Respiratory protection – Not normally required.

Industrial Setting

Eyes Protection – Wear splash-resistant, full-face shield chemical goggles.

Hand Protection – Use suitable gloves.

Footwear – Impervious boots of chemically resistant material should be worn at all times.

Respiratory protection – If ventilation is not sufficient to prevent vapor build up, use appropriate NIOSH/MSHA respiratory protection.

8.25% Bleach Regular

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Form	: Liquid
Appearance	: Colorless or slightly yellow liquid
Color	: Colorless or slightly yellow
Odor	: Bleach/Chlorine
pH	: 11.5 – 12.5
Specific Gravity	: 1.09 minimum (water = 1)
Viscosity	: Water thin
Water Solubility	: Complete
Boiling Point	: 212°F (100°C)
Melting Point	: no data available
Freezing point	: no date available

SECTION 10: STABILITY AND REACTIVITY

Chemical Stability: Stable under normal use and storage conditions.
Conditions to avoid: Temperature above 40°C, sunlight and metals.
Materials to avoid: Acids, ammonia, urea, metals and oxidizers.
Reactivity: Releases Chlorine gas if mixed with ammonia.

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Oral Toxicity: Will cause membrane irritation, pain and inflammation to digestive tract.

Acute dermal toxicity: Will cause moderate irritation to skin and severe irritation and pain to eyes.

Chronic toxicity	: None known.
Carcinogenic Effects	: Not considered to be carcinogenic by IARC, NTP and ACGIH
Mutagenic Effects	: None Known
Reproductive Toxicity	: None Known

8.25% Bleach Regular

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity effects : Not Available

SECTION 13: DISPOSAL CONSIDERATIONS

Reclaim or dispose in accordance with federal, provincial and local regulations.

SECTION 14: TRANSPORTATION INFORMATION

U.S. DOT and Canadian TDG land Transportation

Class 8: Corrosive material
UN Number: 1791
Proper Shipping name: Sodium Hypochlorite Solution
Packaging group: III
Marine pollutant: No

IMDG Sea Transport

Class 8: Corrosive material
UN Number: 1791
Proper Shipping name: Sodium Hypochlorite Solution
Packaging group: III
Marine pollutant: No

SECTION 15: REGULATORY INFORMATION

TSCA/DSL Status: All components in this product are on the U.S. TSCA and Canadian DSL.

WHMIS (Canada): Class C: Oxidizing Material
Class D, Div. 2, Toxic Liquid, Skin Sensitizer

8.25% Bleach Regular

SECTION 16: OTHER INFORMATION

HMIS Ratings

Health	: 2
Flammability	: 0
Reactivity	: 2

NFPA Ratings

Health	: 2
Flammability	: 0
Reactivity	: 2

Created By: Mitul Bhandari	Date: 9/May/2012
Approved By: Eden Mercado	Date: 9/May/2012

ATTACHMENT 2
REMEDIATION WELL CONSTRUCTION DIAGRAMS

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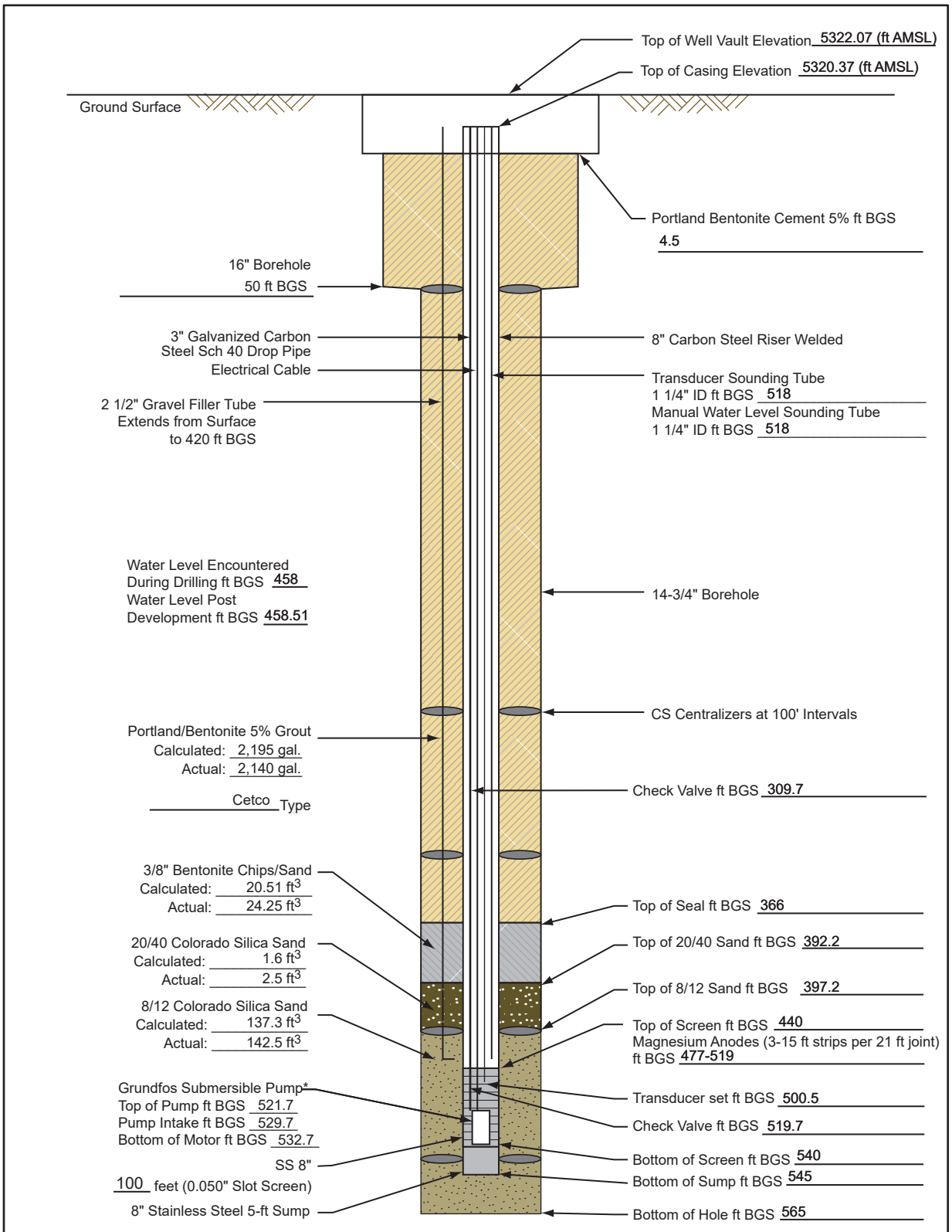
Extraction Well Construction Diagram KAFB-106228

Installation Start Date/Time: 5/18/2015
Installation End Date/Time: 6/2/2015
Magnesium Anodes and Sounding Tubes added: 7/6/2016



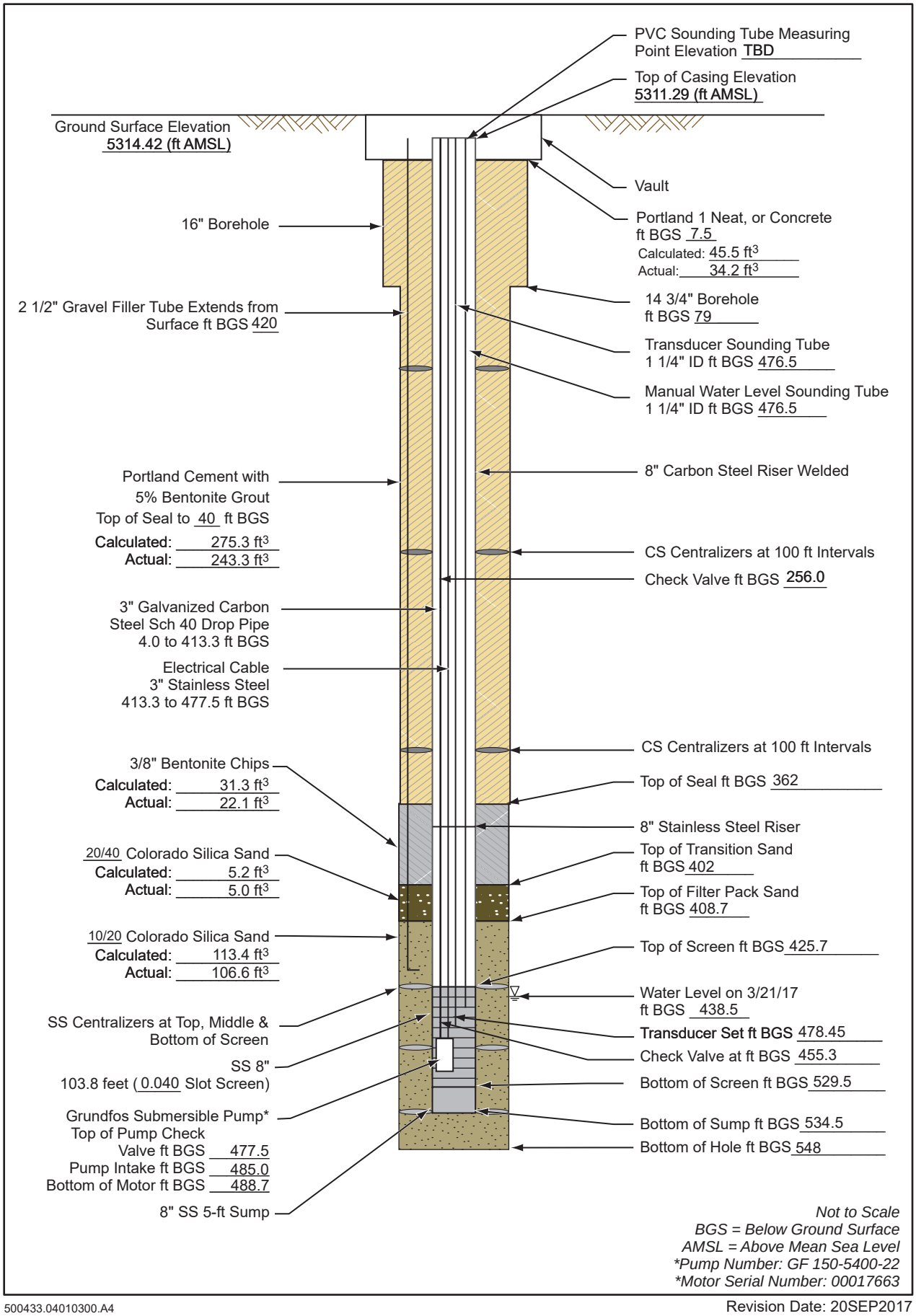
Elevations are NAVD 88 Datum values based on NGS Control Station "Hanger", Elevation = 5,343.43 ft. GPS/RTK methods and GEO1D99 model were used to determine elevations of all surveyed points.

Not to Scale
BGS = Below Ground Surface
AMSL = Above Mean Sea Level
**Pump Serial Number: 7656-13P21328*
**Motor Serial Number: 7656-13P21328*

140705.CB020403.A19

Revision Date: 20SEP2017

Extraction Well Construction Diagram KAFB-106233



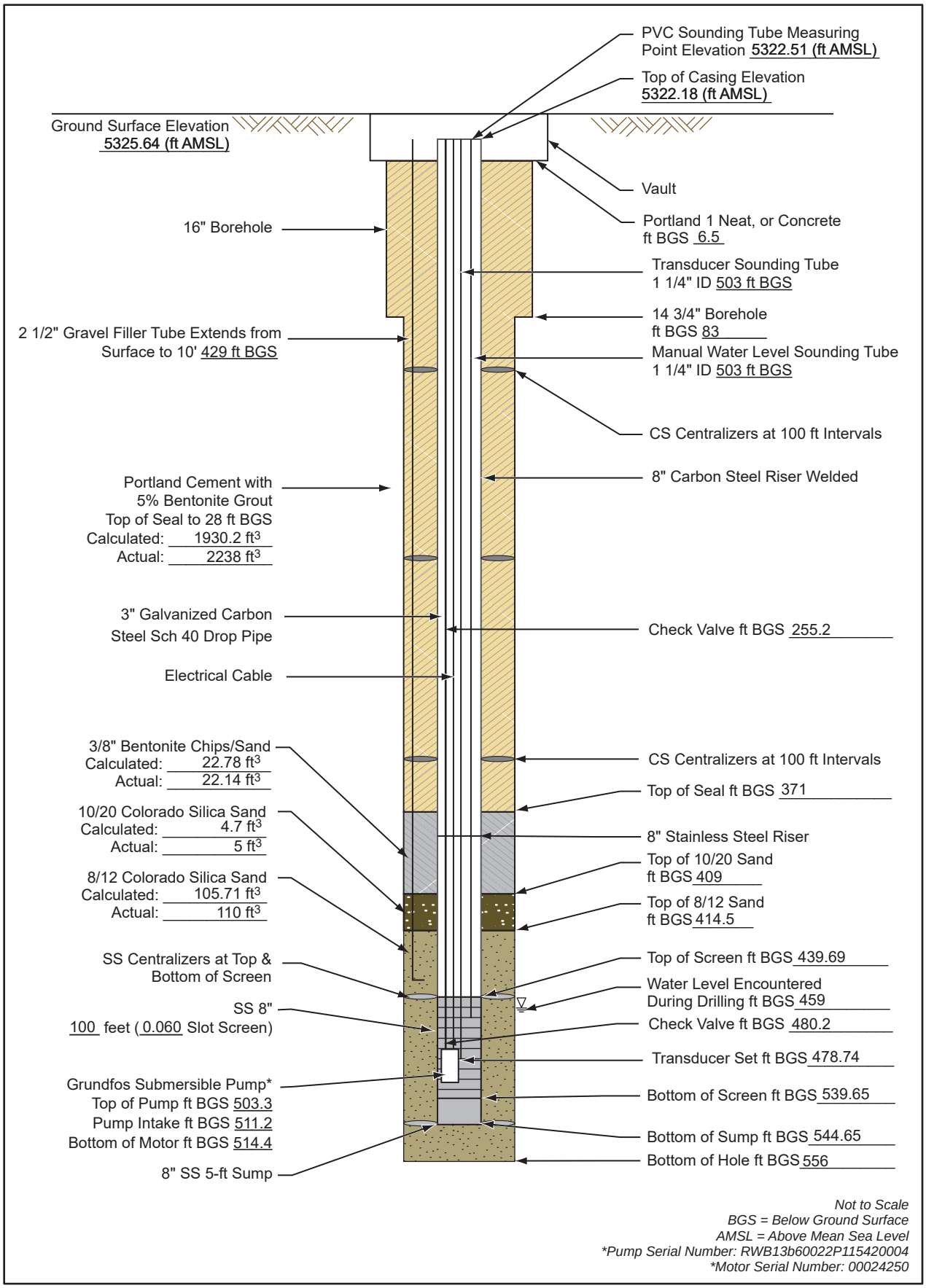
Not to Scale
BGS = Below Ground Surface
AMSL = Above Mean Sea Level
**Pump Number: GF 150-5400-22*
**Motor Serial Number: 00017663*

500433.04010300.A4

Revision Date: 20SEP2017

Extraction Well Construction Diagram KAFB-106234

Installation Start Date/Time: 10/2/2015
Installation End Date/Time: 10/9/2015

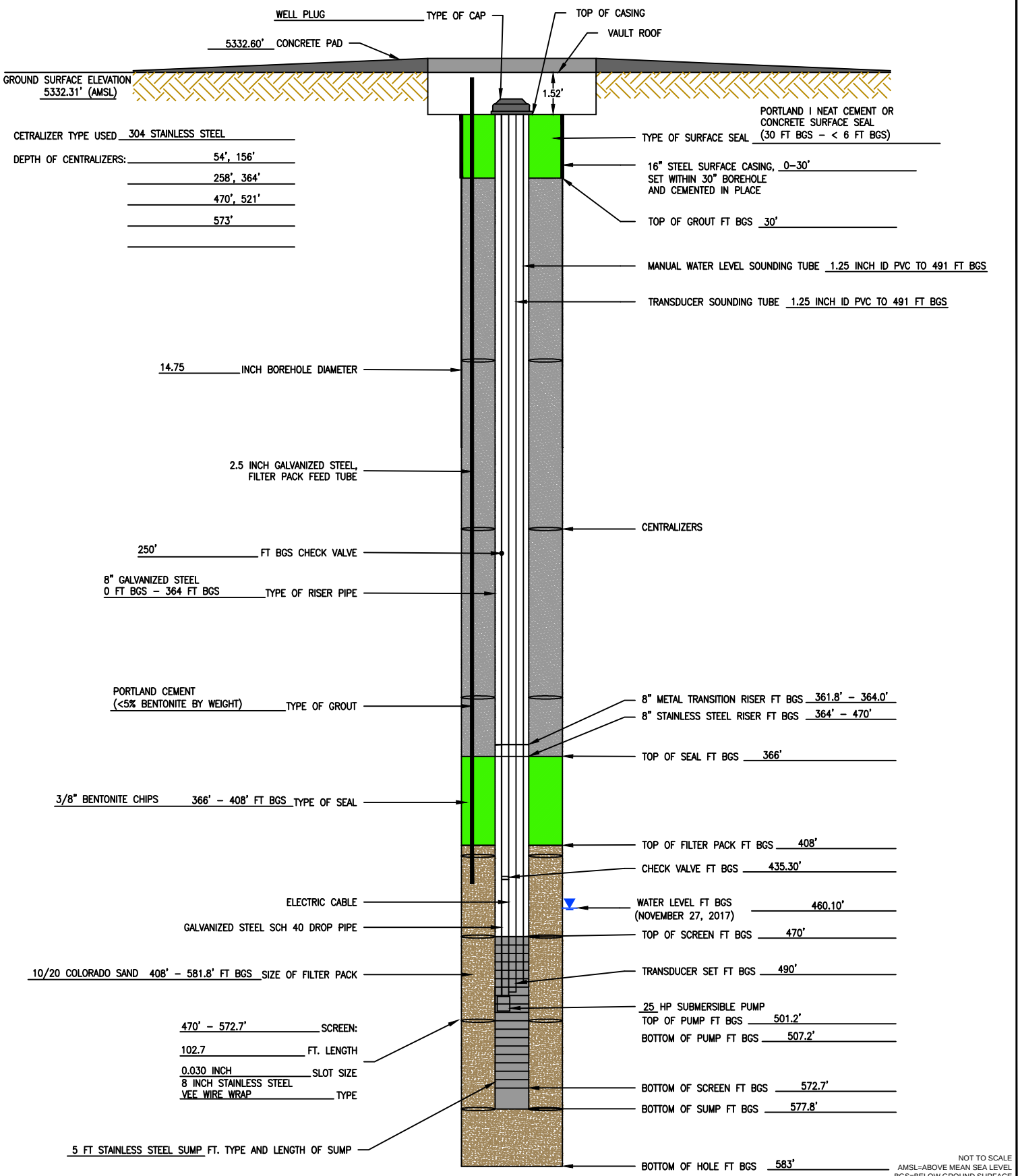


Not to Scale
BGS = Below Ground Surface
AMSL = Above Mean Sea Level
**Pump Serial Number: RWB13b60022P115420004*
**Motor Serial Number: 00024250*

500433.04010300.A5

Revision Date: 20SEP2017

EXTRACTION WELL CONSTRUCTION - KAFB-106239
FIGURE 2



NOT TO SCALE
AMSL=ABOVE MEAN SEA LEVEL
BGS=BELOW GROUND SURFACE
FT-FEET

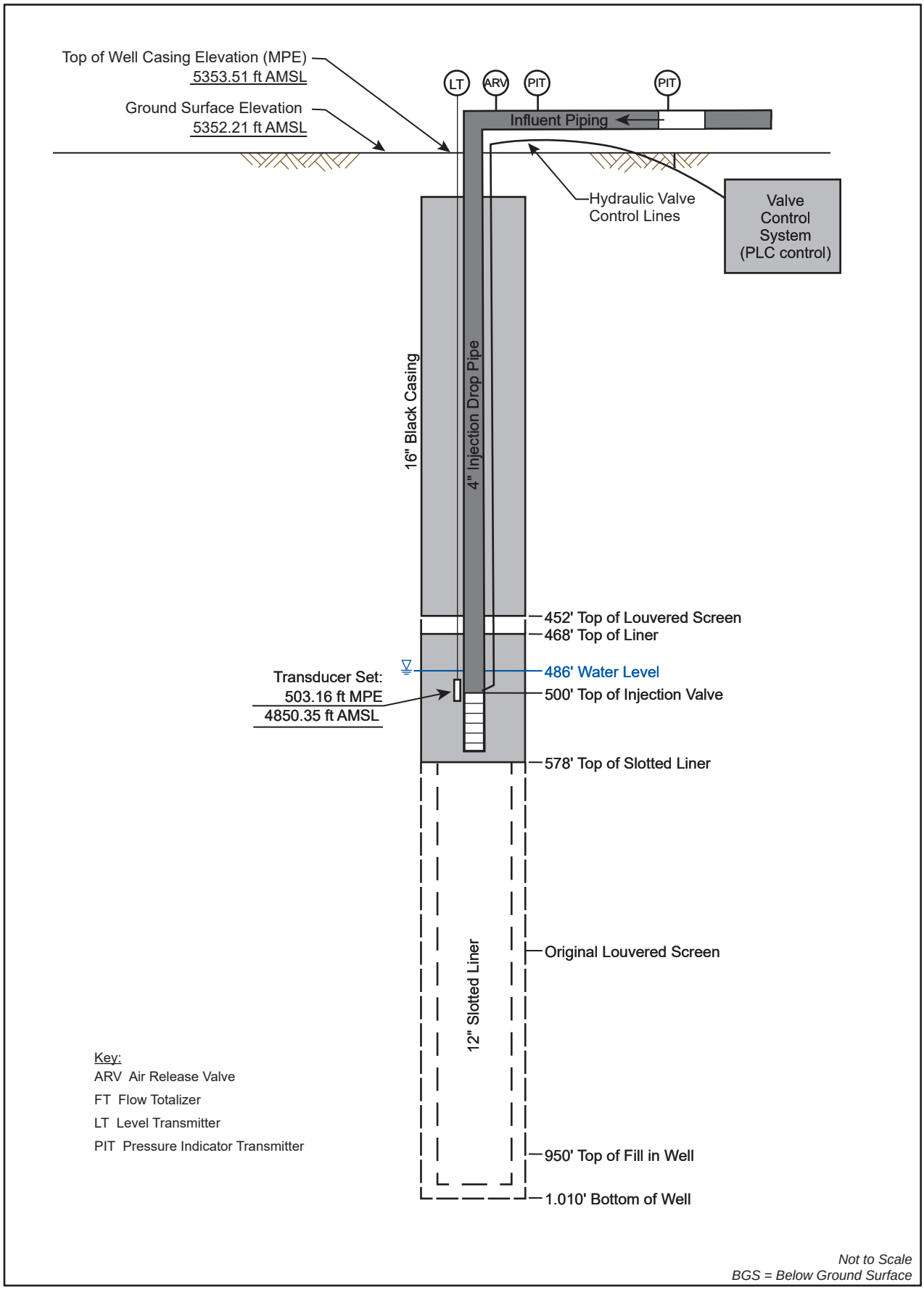
NOTE: ALL DEPTHS REFERENCE IN FEET BELOW GROUND SURFACE

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC., PBC
320 Gold Avenue, SW Suite 1300
Albuquerque, NM 87102
Phone: (505) 224-9013

KIRTLAND AIR FORCE BASE		INSTALLATION START DATE/TIME: NOV 3, 16	INSTALLATION END DATE/TIME: DEC 9, 16
PROJECT NO.: 62599DM01	WELL ID: KAFB-106239 (EXTRACTION)	GEOLOGIST: R. MARLEY	DRILLER: YELLOW JACKET

FILE PATH: Y:\ACTIVE PROJECTS\62599DM01 KIRTLAND BFF_USACE\9.1 GWTS EXTRACTION WELLS\KAFB-106239 AUTOCAD\EXTRACTION WELL COMPLETION DIAGRAM-KAFB-106239.DWG [EXTRACTION WELL COMBINED FIGURE] MCKEAGE, KEVIN 3/5/2018 3:33 PM

KAFB-7 Injection Schematic



Not to Scale
BGS = Below Ground Surface

500433.04010300.A6

Revision Date: 20SEP2017

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ATTACHMENT 3
MONITORING WELL CONSTRUCTION INFORMATION

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Monitoring Well Construction Information

Well_ID	Dedicated System?	REI	Top of Screen (bgs)	Bottom of Screen (bgs)	Total Well Depth (bgs)	Borehole Diameter (in)	Borehole Diameter Screen Interval (in)	Casing Diameter (in)	Water Level (bgs)	Water Level (MRP)	WL Date	MPE-GE	G_Elevation_USGS	MPE_USGS	Well Volume (Q1 2018 Gauging)
KAFB-106001		4857 & 4838	483	508	508.5	12	10	4	468.36	471.64	01-Feb-18	3.28	5341.615	5344.897	114
KAFB-106002	Y	4857	479	504	505	12	10	4	466.25	468.64	01-Feb-18	2.39	5339.854	5342.244	114
KAFB-106003		4857	476	501	503	12	10	4	463.76	466.76	01-Feb-18	3.00	5337.275	5340.276	118
KAFB-106004		4857	484	509	510	12	10	4	469.37	472.11	01-Feb-18	2.74	5343.068	5345.806	116
KAFB-106005		4857	479	504	507	12	10	4	470.67	473.54	01-Feb-18	2.87	5344.041	5346.909	120
KAFB-106006		4857	483.5	508.5	511	12	12	4	475.02	478.2	01-Feb-18	3.18	5348.303	5351.479	167
KAFB-106007	Y	4857	484	509	511	12	12	4	471.88	476.54	01-Feb-18	4.66	5344.944	5349.601	167
KAFB-106008		4857	486	511	513.5	12	10	4	475.49	478.41	01-Feb-18	2.92	5348.848	5351.765	119
KAFB-106009		4857	480	505	507.5	12	10	4	471.53	475.22	01-Feb-18	3.69	5344.853	5348.545	118
KAFB-106010		4857	483	508	510.5	12	10	4	469.98	469.98	01-Feb-18	0.00	5343.255	5343.255	121
KAFB-106011	Y	4857	486	511	516	12	10	4	476.98	480.03	01-Feb-18	3.05	5350.097	5353.15	128
KAFB-106012R		4857	465.58	494.83	500	10	10	5	468.88	471.79	01-Feb-18	2.91	5342.092	5344.998	127
KAFB-106013		4857	486.5	511.5	516.5	12	10	4	473.96	477.11	31-Jan-18	3.15	5347.469	5350.619	131
KAFB-106014		4857	486	511	516	12	10	4	473.84	477.03	01-Feb-18	3.19	5347.032	5350.219	130
KAFB-106015		4857 & 4838	485	510	515	12	10	4	466.69	469.21	01-Feb-18	2.52	5339.92	5342.437	134
KAFB-106016	Y	4857	475	500	505	12	10	4	465.78	469.07	01-Feb-18	3.29	5339.131	5342.425	128
KAFB-106017	Y	4857 & 4838	482	507	512	12	10	4	465.85	469.46	01-Feb-18	3.61	5338.905	5342.516	133
KAFB-106018	Y	4857 & 4838	476	501	506	12	10	4	460.11	463.07	01-Feb-18	2.96	5333.345	5336.3098	133
KAFB-106019		4857 & 4838	493	518	523	12	10	4	478.85	481.76	30-Jan-18	2.91	5351.705	5354.615	132
KAFB-106020		4857	482	507	512	12	10	4	467.57	467.57	01-Feb-18	0.00	5341.045	5341.045	132
KAFB-106021		4857 & 4838	458	483	488	12	10	4	441.00	441	31-Jan-18	0.00	5314.327	5314.327	133
KAFB-106022		4857 & 4838	462	487	492	12	10	4	445.04	445.03	30-Jan-18	-0.01	5318.071	5318.063	133
KAFB-106023		4857	473	498	503	12	10	4	455.53	455.56	01-Feb-18	0.03	5328.723	5328.758	134
KAFB-106024	Y	4857	481	506	511	12	10	4	470.30	470.3	01-Feb-18	0.00	5343.547	5343.547	129
KAFB-106025		4857 & 4838	465	490	495	12	10	4	444.12	444.12	30-Jan-18	0.00	5317.284	5317.284	136
KAFB-106027	Y	4857	481	501	506	12	10	4	472.57	475.73	29-Jan-18	3.16	5345.453	5348.617	107
KAFB-106028	Y	4857	486	510	515	12	10	4	475.65	475.65	01-Feb-18	0.00	5348.894	5348.894	125
KAFB-106029		4857	450.8	470.8	475.8	12	10	5	437.60	437.6	30-Jan-18	0.00	5310.936	5310.936	115
KAFB-106030		4838	469.5	484.5	489.9	12	10	5	437.69	437.69	30-Jan-18	0.00	5311.026	5311.026	116
KAFB-106031		4814	495.8	509.5	514.9	12	10	5	437.74	437.74	30-Jan-18	0.00	5311.06	5311.06	137
KAFB-106032		4857	456	476	480.5	12	10	5	444.20	444.2	30-Jan-18	0.00	5317.603	5317.603	112
KAFB-106033		4838	477	492	496.6	12	10	5	444.36	444.36	30-Jan-18	0.00	5317.757	5317.757	113
KAFB-106034		4814	502	517	522	12	10	5	445.20	445.2	30-Jan-18	0.00	5318.627	5318.627	140
KAFB-106035		4857	452	482	487	12	10	5	448.50	448.63	30-Jan-18	0.13	5321.451	5321.577	146
KAFB-106036		4838	481.8	496.8	501.8	12	10	5	448.84	448.92	30-Jan-18	0.08	5321.763	5321.847	115
KAFB-106037		4814	507	522	527	12	10	5	449.12	449.17	30-Jan-18	0.05	5322.057	5322.103	141
KAFB-106038		4857	478	508	513	12	10	5	475.38	478.63	30-Jan-18	3.26	5348.355	5351.61	145
KAFB-106039		4838	508.3	523.3	528.3	12	10	5	475.27	478.4	30-Jan-18	3.13	5348.196	5351.324	115
KAFB-106040		4814	530.6	545.6	550.6	12	10	5	474.29	477.3	30-Jan-18	3.01	5347.25	5350.263	139
KAFB-106041		4857	449	469	473.8	12	10	5	451.05	451.05	30-Jan-18	0.00	5324.354	5324.354	93
KAFB-106042		4857	469	483.5	488.5	12	10	5	450.76	450.76	30-Jan-18	0.00	5324.069	5324.069	98
KAFB-106043		4814	543	557.5	562.5	12	10	5	451.01	451.01	30-Jan-18	0.00	5324.295	5324.295	173
KAFB-106044	Y	4838	504.2	519.2	523.9	12	10	5	472.72	475.86	29-Jan-18	3.14	5345.652	5348.793	112
KAFB-106045		4814	528.3	543.3	548	6	10	5	473.12	476.54	29-Jan-18	3.42	5345.094	5348.517	137
KAFB-106046	Y	4857	490	510	515	12	10	5	479.74	479.74	01-Feb-18	0.00	5352.839	5352.839	112
KAFB-106047	Y	4838	512	527	532	12	10	5	479.83	479.83	01-Feb-18	0.00	5352.809	5352.809	114
KAFB-106048		4814	535.5	550.5	555.5	12	10	5	479.54	479.54	01-Feb-18	0.00	5352.575	5352.575	139
KAFB-106049		4857	456.8	476.8	480.7	12	10	5	442.64	442.64	30-Jan-18	0.00	5316.101	5316.101	112
KAFB-106050		4838	474.4	489.4	494.8	12	10	5	442.03	442.03	30-Jan-18	0.00	5315.51	5315.51	116
KAFB-106051		4814	500.8	515.8	521.2	12	10	5	442.34	442.34	30-Jan-18	0.00	5315.775	5315.775	143
KAFB-106052		4857	449.6	479.6	484.8	12	10	5	445.61	445.61	30-Jan-18	0.00	5318.857	5318.857	148
KAFB-106053		4838	478.4	493.4	498.4	12	10	5	445.52	445.52	30-Jan-18	0.00	5318.673	5318.673	115
KAFB-106054		4814	504	519	524	12	10	5	445.10	445.1	30-Jan-18	0.00	5318.383	5318.383	142
KAFB-106055		4857	465.8	485.8	490.3	12	10	5	451.66	451.66	31-Jan-18	0.00	5325.089	5325.089	114
KAFB-106057		4838	484.9	499.9	505.3	12	10	5	452.13	452.13	31-Jan-18	0.00	5325.46	5325.46	117
KAFB-106058		4814	511.8	526.8	530.3	12	10	5	452.55	452.55	31-Jan-18	0.00	5326.047	5326.047	136
KAFB-106059		4857	483.4	503.4	508.4	12	10	5	471.45	474.51	01-Feb-18	3.06	5344.813	5347.873	114
KAFB-106060	Y	4838	503	518	523	12	10	5	472.17	472.17	01-Feb-18	0.00	5345.316	5345.316	113
KAFB-106061	Y	4814	573.2	588.2	593.2	12	10	5	472.14	472.14	01-Feb-18	0.00	5345.434	5345.434	185
KAFB-106062	Y	4814	575.3	590.3	595	12	10	5	475.09	478.06	02-Feb-18	2.97	5348.232	5351.199	183
KAFB-106065	Y	4838	508	523	528	12	10	5	475.56	475.56	31-Jan-18	0.00	5348.757	5348.757	115
KAFB-106066	Y	4814	575.6	590.6	595.8	12	10	5	475.74	475.74	31-Jan-18	0.00	5349.088	5349.088	184
KAFB-106067	Y	4857	485	505	510	12	10	5	474.46	474.46	31-Jan-18	0.00	5347.497	5347.497	113
KAFB-106068	Y	4814	580	595	600	12	10	5	474.22	474.22	31-Jan-18	0.00	5347.229	5347.229	189
KAFB-106069		4838	506	521	526	12	10	5	474.07	474.07	31-Jan-18	0.00	5347.249	5347.249	114

Monitoring Well Construction Information

Well_ID	Dedicated System?	REI	Top of Screen (bgs)	Bottom of Screen (bgs)	Total Well Depth (bgs)	Borehole Diameter (in)	Borehole Diameter Screen Interval (in)	Casing Diameter (in)	Water Level (bgs)	Water Level (MRP)	WL Date	MPE-GE	G_Elevation_USGS	MPE_USGS	Well Volume (Q1 2018 Gauging)
KAFB-106070		4857	460	480	485	12	10	5	445.37	445.37	31-Jan-18	0.00	5318.538	5318.538	117
KAFB-106071		4814	548	563	568	12	10	5	447.57	447.57	31-Jan-18	0.00	5320.898	5320.898	184
KAFB-106072		4838	475	495	500	12	10	5	445.87	445.87	31-Jan-18	0.00	5319.293	5319.293	132
KAFB-106073		4838	499.5	514.5	519.5	12	10	5	466.41	466.41	01-Feb-18	0.00	5339.871	5339.871	115
KAFB-106074		4814	569.5	584.5	589.5	12	10	5	467.14	467.14	01-Feb-18	0.00	5340.587	5340.587	186
KAFB-106075	Y	4857	480	500	505	12	10	5	467.10	467.1	01-Feb-18	0.00	5340.499	5340.499	115
KAFB-106076		4857	480	500	505	12	10	5	471.98	471.98	01-Feb-18	0.00	5344.923	5344.923	110
KAFB-106077		4838	504	519	524	12	10	5	472.09	472.09	01-Feb-18	0.00	5344.721	5344.721	114
KAFB-106078	Y	4814	573.5	588.5	593.5	12	10	5	472.22	472.22	01-Feb-18	0.00	5344.599	5344.599	185
KAFB-106079		4857	483.9	503.9	509.5	12	10	5	473.56	476.49	01-Feb-18	2.93	5346.737	5349.668	115
KAFB-106080	Y	4838	503.1	518.1	523.3	12	10	5	472.41	475.22	01-Feb-18	2.81	5345.677	5348.483	114
KAFB-106081	Y	4814	574.8	589.3	594.8	12	10	5	473.28	476.35	01-Feb-18	3.07	5346.405	5349.479	185
KAFB-106082		4857	472	492	497.3	12	10	5	462.08	462.08	01-Feb-18	0.00	5335.263	5335.263	113
KAFB-106083		4838	495.5	510.5	515.7	12	10	5	461.68	461.68	01-Feb-18	0.00	5335.037	5335.037	117
KAFB-106084		4814	566	581	585.8	12	10	5	460.97	464.59	01-Feb-18	3.62	5334.319	5337.936	188
KAFB-106085		4857	446.5	476.5	481.5	12	10	5	443.81	443.81	31-Jan-18	0.00	5317.233	5317.233	146
KAFB-106086		4838	476	491	496	12	10	5	444.19	444.19	31-Jan-18	0.00	5317.646	5317.646	114
KAFB-106087		4814	546	561	565.5	12	10	5	443.40	443.4	31-Jan-18	0.00	5316.872	5316.872	184
KAFB-106088		4857	460	480	485	12	10	5	451.11	451.11	31-Jan-18	0.00	5324.274	5324.274	111
KAFB-106089		4838	481.5	496.5	501.5	12	10	5	450.76	450.82	31-Jan-18	0.06	5323.477	5323.537	113
KAFB-106090		4814	555	570	575	12	10	5	449.56	449.64	31-Jan-18	0.08	5322.768	5322.846	189
KAFB-106091		4857	454	474	479	12	10	5	442.28	442.28	29-Jan-18	0.00	5314.33	5314.33	114
KAFB-106092		4838	474	489	493.7	12	10	5	442.61	442.61	29-Jan-18	0.00	5314.509	5314.509	112
KAFB-106093		4814	544	559	563.2	12	10	5	442.02	442.02	29-Jan-18	0.00	5314.624	5314.624	182
KAFB-106094	Y	4857	484.2	504.2	509.2	12	10	5	471.74	471.74	31-Jan-18	0.00	5345.069	5345.069	115
KAFB-106095	Y	4838	503.75	518.75	523.75	12	10	5	471.21	471.31	31-Jan-18	0.10	5344.559	5344.657	115
KAFB-106096	Y	4814	576.3	591.3	596.3	12	10	5	471.75	471.9	31-Jan-18	0.15	5345.157	5345.306	188
KAFB-106097		4838	506	521	526	12	10	5	474.01	474.05	31-Jan-18	0.04	5347.701	5347.741	114
KAFB-106098		4814	531	546	551.1	12	10	5	474.12	474.14	31-Jan-18	0.02	5347.803	5347.825	140
KAFB-106099		4838	501	516	521	12	10	5	469.09	469.09	01-Feb-18	0.00	5342.854	5342.854	114
KAFB-106100		4814	526	541	546	12	10	5	469.11	469.11	01-Feb-18	0.00	5342.852	5342.852	140
KAFB-106101		4838	495.9	511.2	515.1	12	10	5	463.97	466.88	01-Feb-18	2.91	5337.411	5340.32	111
KAFB-106102		4814	521.1	534.8	540.2	12	10	5	464.14	467.01	01-Feb-18	2.88	5337.448	5340.323	136
KAFB-106103		4838	485	500	505.2	12	10	5	455.74	455.8	01-Feb-18	0.06	5328.387	5328.443	112
KAFB-106104		4814	510	525	530	12	10	5	455.19	455.24	01-Feb-18	0.05	5328.028	5328.075	137
KAFB-106105		4838	484	499	504	12	10	5	448.96	448.96	29-Jan-18	0.00	5321.961	5321.961	117
KAFB-106106		4857	453.6	483.6	488.6	12	10	5	448.85	448.85	29-Jan-18	0.00	5321.799	5321.799	148
KAFB-106107		4814	510.2	525.2	530.2	12	10	5	449.06	449.06	29-Jan-18	0.00	5322.117	5322.117	144
KAFB-106201		4857	487	517	522	12	10	5	480.61	483.26	01-Feb-18	2.65	5354.349	5356.997	149
KAFB-106202		4838	517	532	537	12	10	5	481.06	483.95	01-Feb-18	2.89	5354.901	5357.796	118
KAFB-106203		4814	620	635	640	12	10	5	480.93	484.01	01-Feb-18	3.08	5354.443	5357.518	223
KAFB-106204		4857	462.5	492.5	497.5	12	10	5	459.29	459.29	29-Jan-18	0.00	5332.857	5332.857	146
KAFB-106205		4838	492.5	507.5	512.5	12	10	5	459.69	459.69	29-Jan-18	0.00	5333.291	5333.291	115
KAFB-106206		4814	593.5	608.2	613.2	12	10	5	459.82	459.82	29-Jan-18	0.00	5333.462	5333.462	217
KAFB-106207		4857	473	503	508	12	10	5	470.24	470.18	29-Jan-18	-0.06	5344.253	5344.195	146
KAFB-106208		4838	503	518	523	12	10	5	469.92	469.9	29-Jan-18	-0.02	5343.871	5343.851	115
KAFB-106209		4814	603	617	622	12	10	5	469.38	469.34	29-Jan-18	-0.04	5343.415	5343.376	214
KAFB-106212		4814	543.2	558.2	563.4	12	10	5	448.84	448.83	30-Jan-18	-0.01	5321.814	5321.799	179
KAFB-106213		4857	448	478	483.4	12	10	5	452.47	452.38	30-Jan-18	-0.09	5325.281	5325.191	126
KAFB-106214		4838	478.23	492.73	498.13	12	10	5	452.47	452.49	30-Jan-18	0.02	5325.43	5325.451	107
KAFB-106215		4814	547	562	567	12	10	5	452.74	452.73	30-Jan-18	-0.01	5325.781	5325.771	178
KAFB-106216		4857	455.5	485.5	490.5	12	10	5	461.06	461.06	29-Jan-18	0.00	5333.911	5333.911	120
KAFB-106217		4838	485	500	505	12	10	5	460.98	460.98	29-Jan-18	0.00	5333.845	5333.845	106
KAFB-106218		4814	552	567	572.45	12	10	5	461.11	461.11	29-Jan-18	0.00	5333.637	5333.637	176
KAFB-106219		4857	462.7	492.7	497.9	12	10	5	466.71	466.71	31-Jan-18	0.00	5340.41	5340.41	127
KAFB-106220		4838	493	508	513	12	10	5	466.64	466.64	31-Jan-18	0.00	5340.342	5340.342	108
KAFB-106221		4814	561	576	581	12	10	5	466.39	466.39	31-Jan-18	0.00	5340.097	5340.097	178
KAFB-106222		4857	457.8	487.8	493.2	12	10	5	460.08	460.08	29-Jan-18	0.00	5333.24	5333.24	135
KAFB-106223		4838	487.8	502.8	508	12	10	5	460.79	460.79	29-Jan-18	0.00	5333.957	5333.957	110
KAFB-106224		4814	555	570	575.5	12	10	5	461.94	461.94	29-Jan-18	0.00	5335.076	5335.076	179
KAFB-106225		4857	450	480	485.2	12	10	5	453.61	453.61	29-Jan-18	0.00	5326.357	5326.357	129
KAFB-106226		4838	480	495	500	12	10	5	454.27	454.27	29-Jan-18	0.00	5327.309	5327.309	108
KAFB-106227		4814	548	563	568.5	12	10	5	454.04	454.04	29-Jan-18	0.00	5328.087	5328.087	179
KAFB-106231		4857	440	475	480	12	10	5	453.76	453.76	30-Jan-18	0.00	5327.563	5327.563	107
KAFB-106232		4838	503	518	523	12	10	5	453.29	453.29	30-Jan-18	0.00	5327.197	5327.197	132

Monitoring Well Construction Information

Well_ID	Dedicated System?	REI	Top of Screen (bgs)	Bottom of Screen (bgs)	Total Well Depth (bgs)	Borehole Diameter (in)	Borehole Diameter Screen Interval (in)	Casing Diameter (in)	Water Level (bgs)	Water Level (MRP)	WL Date	MPE-GE	G_Elevation_USGS	MPE_USGS	Well Volume (Q1 2018 Gauging)
KAFB-106235-463		4857	438	463	465	12	12	3	442.92	442.88	29-Jan-18	-0.04	5315.55	5315.51	130
KAFB-106235-492		4838	472	492	494	12	12	3	442.87	442.83	29-Jan-18	-0.04	5315.55	5315.51	140
KAFB-106235-521		4814	501	521	523	12	12	3	442.94	442.9	29-Jan-18	-0.04	5315.55	5315.51	151
KAFB-106236-461		4857	436	461	463	12	12	3	442.56	442.5	29-Jan-18	-0.06	5315.76	5315.7	120
KAFB-106236-490		4838	470	490	492	12	12	3	442.58	442.52	29-Jan-18	-0.06	5315.76	5315.7	139
KAFB-106236-519		4814	499	519	521	12	12	3	442.62	442.56	29-Jan-18	-0.06	5315.76	5315.7	150
KAFB-3411		4857	477	502	503	9	9	4	467.16	470.22	01-Feb-18	3.06	5340.424	5343.485	92

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