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*Date:* **NOV 22 2017**  
*Symbol:* EPC-DO: 17-465  
*LA-UR:* 17-29978  
*Locates Action No.:* U1601822

Ms. Michelle Hunter, Chief  
Ground Water Quality Bureau  
New Mexico Environment Department  
Harold Runnels Building, Room N2261  
1190 St. Francis Drive  
P.O. Box 26110  
Santa Fe, NM 87502

**Subject: Integrity Testing of Injection Well CrIN-6 and Distribution Piping from Extraction Wells to Injection Wells, Discharge Permit DP-1835, Class V Underground Injection Control Wells**

Dear Ms. Hunter:

In accordance with Condition No. 3 of Discharge Permit DP-1835, the U.S. Department of Energy and Los Alamos National Security, LLC (DOE/LANS) are submitting mechanical integrity test results to the New Mexico Environment Department (NMED) for the Chromium Pipeline and Infrastructure Project. This submittal includes the results for (1) injection well CrIN-6 and (2) the piping from CrEX-1, CrEX-2, and CrEX-3 to the groundwater treatment system and the distribution piping connecting the groundwater system to underground injection wells CrIN-1, CrIN-2, CrIN-3, CrIN-4, and CrIN-5.

***Integrity Testing of Injection Wells***

Mechanical integrity test methods for the injection wells were submitted to NMED by DOE/LANS on November 10, 2016 (EPC-DO-16-341). Test methods were approved by NMED on November 22, 2016 (email communication, Mr. Greg Huey (NMED) to Mr. Bob Beers (LANS)). The mechanical integrity test results for CrIN-1, CrIN-2, and CrIN-3 were previously submitted to NMED on December 9, 2016 (EPC-DO-16-365). The mechanical integrity test results for CrIN-4 and CrIN-5 on November 15, 2016 (EPC-DO-16-345).

The NMED-approved test methods were followed during the mechanical integrity testing at injection well CrIN-6. Video logs and test results are presented below. In addition, Enclosure 1 contains the as-built specifications for CrIN-6.

1. **Video Logging.** The principal reasons for video logging new wells are to (1) ensure the physical integrity and placement of casings and screens and (2) establish a baseline for future evaluations. The video logs are collected following well development and aquifer testing. Generally, they are a final check of the physical construction of the well.

The condition and set depths of the well casing and screen are inspected. Also available from these videos are static water level, water clarity, condition of the filter pack behind the screen, casing joint condition, and any unusual condition in the sump space. Additional video logging may be performed if an injection/pumping system is removed from the well. The original video log will be used as a comparison to evaluate conditions that may affect water well performance, such as mineral encrustation or biofouling within the well screen interval.

Enclosure 2 contains the video log (on CD) of injection well CrIN-6.

2. **Column Pipe.** The column pipe for the injection wells is a spline-lock coupling design manufactured by Johnson Screens. Each coupled union (20-ft pipe joints) is a mating pin-and-box with two inner o-rings and two stainless-steel wire-rope splines. The column pipe is tested for leaks during installation because it relies on the precise installation of the o-rings for sealing. Testing of the column pipe is a hydrostatic test that is also, by default, an additional pressure test of the Baski flow-control valve (FCV) and check valve between the FCV and pump shroud. The FCV in the injection well is open (full flow) at zero pressure. To test the column pipe, the FCV must be pressurized to a shut-in condition (zero flow). The column pipe in each injection well is tested three times as the downhole assembly is installed: once early in the process, a second time approximately at the half way point, and a third time when the assembly is fully installed. The FCV is pressurized and the column pipe is filled with potable water. Upon filling to the top, the water level in the column pipe is observed to see if it remains static or if it falls.

Table 1 provides the results from hydrostatic tests of the column pipe at injection well CrIN-6.

Table 1. Results from Column Pipe and FCV Testing at Injection Well CrIN-6

Test	Date	Pressure	Duration	Result
FCV: initial pressure	7/22/17	160 psi	57 min	pass
Column pipe: hydrostatic #1, 20 ft of pipe above FCV	7/23/17	160 psi	15 min	pass
Column pipe: hydrostatic #2, 520 ft of pipe above FCV	7/23/17	350 psi	35 min	pass
Column pipe: hydrostatic #3, 1020 ft of pipe above FCV	7/24/17	410 psi	55 min	FCV: pass Pipe: fail

- 3. FCV Installation and Testing.** Critical to the performance and operational integrity of an injection well is the FCV. The FCV regulates recharge injection flow into the well and provides controlled, noncavitating head loss from the column pipe. Because of the design of the FCV, injected water will enter the wells under significantly reduced pressure and velocity. The FCV is pneumatically adjustable, which will allow flexibility in optimizing flows for particular injection wells. The injection wells may require pumping periodically to prevent and/or remedy well-screen plugging. A submersible pump is installed inside a pump shroud beneath the FCV. A check valve is installed between the FCV and pump to allow pumping with a single column pipe when the FCV is shut-in (closed).

Pressure testing of the FCVs at injection well CrIN-6 was conducted per the manufacturer's installation guidance. Testing is conducted to confirm the connections at the control line to FCV fittings and the FCV liquid inflation chamber and inflatable element. The FCVs are new equipment and are thoroughly tested by the manufacturer before shipping.

Table 1 provides the results from testing the FCV at injection well CrIN-6.

The final hydrostatic test of the column pipe at CrIN-6 demonstrated a slow leak. The water level in the pipe was observed for several days and eventually fell to the static water level in the well. It is believed that the single check valve located below the FCV in the system was disturbed and became unseated because the column pipe passed previous tests and the water level inside the pipe fell to a level below previously tested joints. The submersible pump was tested and operated on its performance curve indicating no significant leak. Results of the installation testing do not compromise the functionality of the injection system or well. The injection/pumping system in CrIN-6 will be monitored to assess whether a problem exists that warrants removing the system.

### ***Integrity Testing of Distribution Piping***

On October 14, 2016 DOE/LANS submitted a mechanical integrity test method to NMED for the Chromium Pipeline and Infrastructure Project (EPC-DO-16-299). NMED approved the test method on October 17, 2016. Results for the piping from CrEX-1 to the groundwater treatment system and for the distribution piping from the groundwater treatment system to CrIN-4 and CrIN-5 were submitted to NMED on November 15, 2016 (EPC-DO-16-345). Additional results for the pipelines connecting extraction wells CrEX-1, CrEX-2, and CrEX-3 to the groundwater treatment system and the distribution piping connecting the groundwater treatment system with injection wells CrIN-1, CrIN-2, CrIN-3, CrIN-4 and CrIN-5 were submitted to NMED on August 28, 2017 (EPC-DO: 17-302).

DOE/LANS has completed integrity testing of additional segments of piping in accordance with the NMED-approved test methods for the: high-density polyethylene (HDPE) pipelines connecting extraction wells CrEX-1, CrEX-2, and CrEX-3 to the groundwater treatment system and for the distribution piping connecting the groundwater treatment system with injection wells CrIN-1, CrIN-2, CrIN-3, CrIN-4, CrIN-5, and CrIN-6 which were not included in either the November 15, 2016 or the August 28, 2017 submittals. Enclosure 3 provides a cross-reference of the integrity testing completed to date. Enclosure 4 contains the inspection reports (on CD) of these tests. All test results demonstrated satisfactory pipe integrity per the specified test method.

Ms. Michelle Hunter  
EPC-DO: 17-465

- 4 -

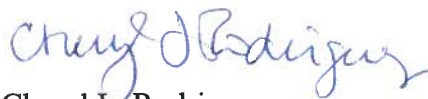
Please contact William J. Foley by telephone at (505) 665-8423 or by email at [bfoley@lanl.gov](mailto:bfoley@lanl.gov) if you have questions regarding this information.

Sincerely,



John C. Bretzke  
Division Leader

Sincerely,



Cheryl L. Rodriguez  
Program Manager, FPD-II

JCB/CLR/MTS/WJF:am

Enclosure(s):

- 1) As-Built Specifications for CrIN-6
- 2) Video logs (CD) From Injection Well CrIN-6 (upon request)
- 3) Summary Table of Distribution Piping Integrity Test Results
- 4) Distribution Piping Integrity Test Results (CD) for Pipelines Connecting Extraction Wells With Injection Wells (upon request)

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**GROUND WATER**  
**NOV 22 2017**  
**BUREAU**

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# **ENCLOSURE 1**

As-Built Specifications for CrIN-6

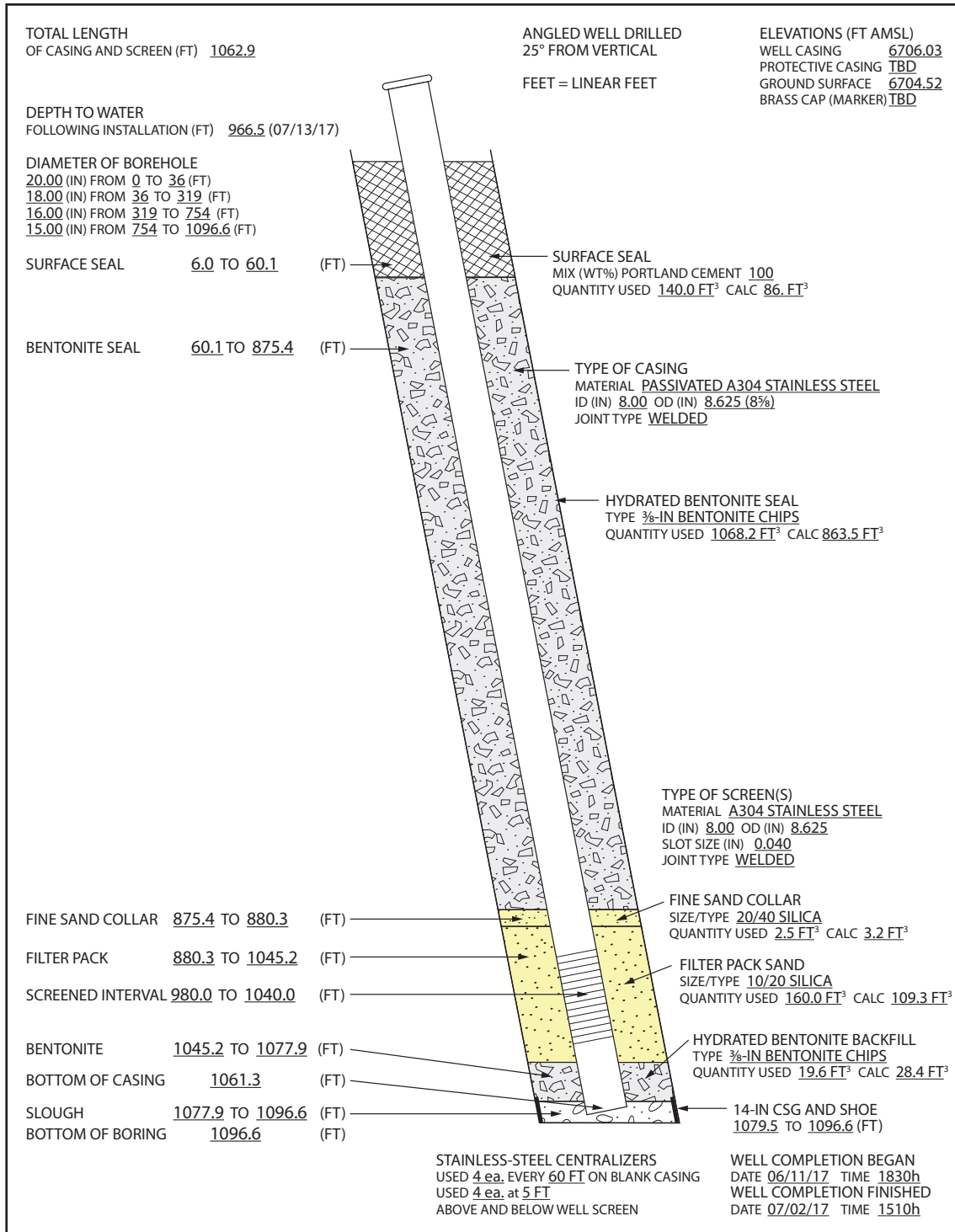
EPC-DO: 17-465


LA-UR-17-29978

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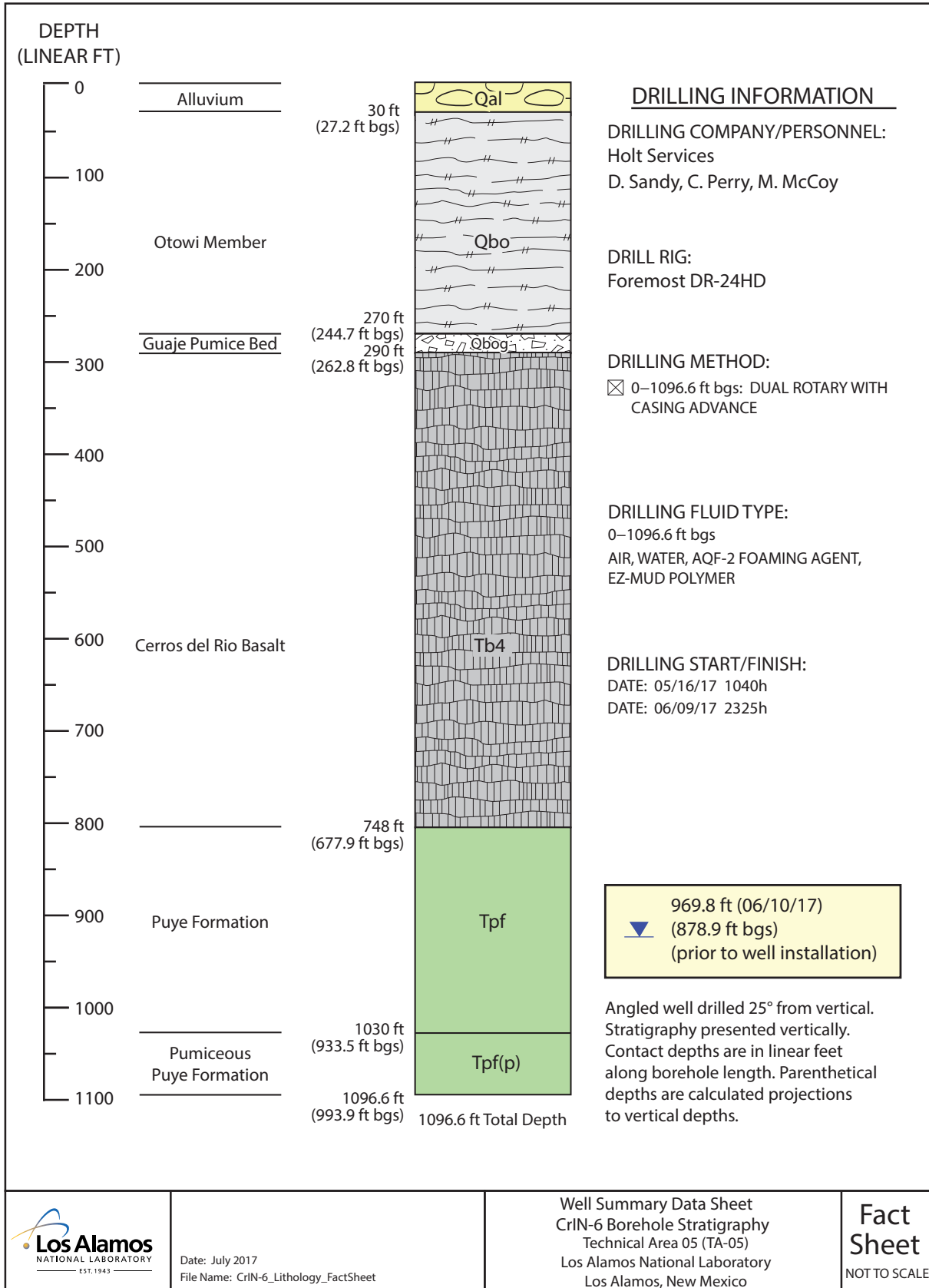
Date: NOV 22 2017

ENCLOSURE 1



 <p>Date: July 2017 File Name: CrIN-6_AsBuiltDiagram_FactSheet</p>	<p>Well CrIN-6 As-Built Well Construction Diagram                  Technical Area 05 (TA-05)                  Los Alamos National Laboratory                  Los Alamos, New Mexico</p>	<p><b>Fact Sheet</b>                  NOT TO SCALE</p>
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ENCLOSURE 1





## **ENCLOSURE 2**

Video logs (CD) From Injection Well CrIN-6  
(upon request)

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LA-UR-17-29978

U1601822

Date: NOV 22 2017

## ENCLOSURE 2

### ABSTRACT: ENCLOSURE 2 CD (1)

Enclosure 2 contains one CD from the video logging of Chromium Project Injection Well CrIN-6. This well is located in Mortandad Canyon within Technical Area (TA)-05.

Video logging of a groundwater well is the process of slowly lowering a camera inside the well casing from the top of the well (ground surface) to the bottom of the well.

Downhole video logging was conducted at these two wells to: (1) document the physical integrity and placement of casings and screens, and (2) establish a baseline for future evaluations. The video logs are collected following well development and aquifer testing.

# **ENCLOSURE 3**

## **Summary Table of Distribution Piping Integrity Test Results**

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**U1601822**

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Enclosure 3  
Summary Table of Distribution Piping Integrity Test Results

Report Number	Rev	Discipline	Short Description	Test Type	Current Action
INP-103371-0249	0	Mechanical	visual weld inspection of 33 HDPE thermal fusion welded piping joints	NA	Complete
INP-103371-0229	0	Mechanical	Leak test at CrIn # 1 vault	Hydrostatic	Preparer
INP-103371-0228	0	Mechanical	hydrostatic pressure test on 4ea. spools of 4"HDPE PIPE .	Hydrostatic	Reviewer
INP-103371-0225	0	Mechanical	Pneumatic pressure testing of Low Point Leak Detection HDPE saddle tees	Pneumatic	Preparer
INP-103371-0224	0	Mechanical	Pneumatic pressure testing of Low Point Leak Detection HDPE saddle tees	Pneumatic	Preparer
INP-103371-0213	0	Mechanical	Visual weld inspection of 12 various size HDPE piping joints -	NA	Complete
INP-103371-0212	0	Mechanical	In-service leak test of various P.O.C.s - R28	In-Service Leak Test	Complete
INP-103371-0211	0	Mechanical	Pre - Operational leak test of 6" HDPE piping from Booster Pump to (2) Frac tank drain lines	Hydrostatic	Complete
INP-103371-0210	0	Mechanical	Pre - Operational leak test of 6" HDPE piping from Treatment Cont. to Frac. tank fill lines	Hydrostatic	Complete
INP-103371-0210	1	Mechanical	Pre - Operational leak test of 6" HDPE piping from Treatment Cont. to Frac. tank fill lines	Hydrostatic	Complete
INP-103371-0209	0	Mechanical	Observation of Flange Bolt Torquing at 4 - 3" flange connections at Frac Tanks R28	NA	Complete
INP-103371-0207	0	Mechanical	Observation of Flange Bolt Torquing at 6" connection - locations as shown on Sheet C-1010 Rev 2	Torque	Preparer
INP-103371-0206	0	Mechanical	Observation of Flange Bolt Torquing at 4" valves - locations as shown on Sheet C-1010 Rev 2	Torque	Preparer
INP-103371-0205	0	Mechanical	Observation of Flange Bolt Torquing at 4" valves - locations as shown on Sheet C-1000 Rev 2	Torque	Preparer
INP-103371-0204	0	Mechanical	Observation of Flange Bolt Torquing at 4" valves - locations as shown on Sheet C-1010 Rev 2	Torque	Preparer
INP-103371-0203	0	Mechanical	Hydrostatic pressure test of approx. 480 ft. of 4" HDPE at CrIN-1 / CrIN-6 well pads	Hydrostatic	Complete

Enclosure 3  
Summary Table of Distribution Piping Integrity Test Results

Report Number	Rev	Discipline	Short Description	Test Type	Current Action
INP-103371-0201	0	Mechanical	Pneumatic pressure testing of a total of 2 Low Point Leak Detection HDPE saddle tees	Pneumatic	Complete
INP-103371-0200	0	Mechanical	Pneumatic pressure testing of a total of 4 Low Point Leak Detection HDPE saddle tees	Pneumatic	Complete
INP-103371-0196	0	Mechanical	Pneumatic pressure testing of approx. 250 ft. of 8" containment pipe of 4" x 8" HDPE - CrEX-2	Pneumatic	Complete
INP-103371-0190	0	Mechanical	Pneumatic pressure test - low point leak detection saddle tee at CrEX-1, Manhole #4	Pneumatic	Complete
INP-103371-0189	0	Mechanical	Observation of Flange Bolt Torquing at 4" and 6" valves - locations as shown on Sheet C-1003 Rev 2	Torque	Complete
INP-103371-0188	0	Mechanical	Observation of Flange Bolt Torquing at 4" and 6" valves - locations as shown on Sheet C-1004 Rev 2	Torque	Complete
INP-103371-0187	0	Mechanical	Hydrostatic pressure test of CrEX-2 manifold piping assembly	Hydrostatic	Complete
INP-103371-0186	0	Mechanical	Observation of Flange Bolt Torquing at Booster Pump - inside and outside	Torque	Complete
INP-103371-0185	0	Mechanical	Visual weld inspection of 61 various size HDPE piping joints -	NA	Complete
INP-103371-0184	0	Mechanical	visual weld inspection of 8 HDPE thermal fusion welded piping joints at CrEX-1 treatment container	NA	Complete
INP-103371-0183 <sup>1</sup>	0	Mechanical	Hydrostatic and Pneumatic pressure tests of approx. 130 ft. of 4" x 8" HDPE piping at CrEX-1	Hydrostatic	Complete
INP-103371-0182 <sup>1</sup>	0	Mechanical	Hydrostatic pressure test of approx. 500 ft. of 4" x 8" HDPE from CrEX-2 vault to 1st manhole down	Hydrostatic	Complete
INP-103371-0181 <sup>1</sup>	0	Mechanical	Observation of Flange Bolt Torquing at 4 - Frac Tank (Fill Line) flanged connections to HDPE	Torque	Complete

Enclosure 3  
Summary Table of Distribution Piping Integrity Test Results

Report Number	Rev	Discipline	Short Description	Test Type	Current Action
INP-103371-0180 <sup>1</sup>	0	Mechanical	Observation of Flange Bolt Torquing in CrEX-2 Vault	Torque	Complete
INP-103371-0179 <sup>1</sup>	0	Mechanical	Hydrostatic pressure test of approx. 250 ft. of 6" and 4" HDPE piping -various spool pcs.	Hydrostatic	Complete
INP-103371-0178 <sup>1</sup>	0	Mechanical	In-service leak test at R28 Treatment Container	In-Service Leak Test	Complete
INP-103371-0177 <sup>1</sup>	0	Mechanical	Hydrostatic and Pneumatic pressure tests of approx. 310 ft. of 4" x 8" HDPE piping R28 to CrEX-3	Hydrostatic	Complete
INP-103371-0176 <sup>1</sup>	0	Mechanical	visual weld inspection of 19 HDPE thermal fusion welded piping joints	NA	Complete
INP-103371-0175 <sup>1</sup>	0	Mechanical	Visual weld inspection of 61 various size HDPE piping joints -	NA	Complete
INP-103371-0174 <sup>1</sup>	0	Mechanical	Visual weld inspection of 22 various size HDPE piping joints -	NA	Complete
INP-103371-0158 <sup>1</sup>	0	Mechanical	Visual weld inspection of 28 various size HDPE piping joints -	NA	Complete
INP-103371-0155 <sup>1</sup>	0	Mechanical	Hydrostatic and Pneumatic pressure tests of approx. 130 ft. of 6" HDPE piping	Hydrostatic	Complete
INP-103371-0154 <sup>1</sup>	0	Mechanical	Visual weld inspection of 28 various size HDPE piping joints -	NA	Complete
INP-103371-0151 <sup>1</sup>	0	Mechanical	Hydrostatic and Pneumatic pressure tests of approx. 350 ft. of 6" HDPE piping	Hydrostatic	Complete
INP-103371-0150 <sup>1</sup>	0	Mechanical	Visual weld inspection of 18 various size HDPE piping joints -	NA	Complete
INP-103371-0149 <sup>1</sup>	0	Mechanical	Hydrostatic pressure testing of 2 - 1" on 6" HDPE Saddle tees	Hydrostatic	Complete
INP-103371-0148 <sup>1</sup>	0	Mechanical	Hydrostatic and Pneumatic pressure tests of approx. 400 ft. of HDPE piping	Hydrostatic	Complete
INP-103371-0147 <sup>1</sup>	0	Mechanical	Hydrostatic and Pneumatic pressure tests of approx. 460 ft. of 6" HDPE piping	Hydrostatic	Complete
INP-103371-0146 <sup>1</sup>	0	Mechanical	Pneumatic pressure tests of approx. 20 ft. of HDPE piping	Pneumatic	Complete
INP-103371-0142 <sup>1</sup>	0	Mechanical	Pre -operational hydrostatic leak test of portion of 6" HDPE piping	Hydrostatic	Complete
INP-103371-0141 <sup>1</sup>	0	Mechanical	Torque verification of 152 flange bolts	Torque	Complete

Enclosure 3  
Summary Table of Distribution Piping Integrity Test Results

Report Number	Rev	Discipline	Short Description	Test Type	Current Action
INP-103371-0140 <sup>1</sup>	0	Mechanical	Visual weld inspection of 18 various size HDPE piping joints -	NA	Complete
INP-103371-0138 <sup>1</sup>	0	Mechanical	Visual weld inspection of 19 various size HDPE piping joints -	NA	Complete
INP-103371-0137 <sup>1</sup>	0	Mechanical	Visual weld inspection a a min. of 10% of s.s. well casing joints CrIN-6	NA	Complete
INP-103371-0135 <sup>1</sup>	0	Mechanical	Hydrostatic and Pneumatic pressure tests of approx. 1300 ft. of HDPE piping	Hydrostatic	Complete
INP-103371-0132 <sup>1</sup>	0	Mechanical	Hydrostatic pressure test of HDPE piping assembly near R28 well pad; frac tanks and treatment units	Hydrostatic	Complete
INP-103371-0131 <sup>1</sup>	0	Mechanical	Hydrostatic and Pneumatic pressure tests of approx. 380 ft. of 6" HDPE piping	Hydrostatic	Complete
INP-103371-0130 <sup>1</sup>	0	Mechanical	Visual weld inspection of 14 HDPE piping joints -	NA	Complete
INP-103371-0129 <sup>1</sup>	0	Mechanical	Visual weld inspection of 25 HDPE thermal fusion / electro fusion welded piping joints	NA	Complete
INP-103371-0122 <sup>1</sup>	0	Mechanical	Visual weld inspection of 7 HDPE piping joints -	NA	Complete
INP-103371-0121 <sup>1</sup>	0	Mechanical	Visual weld inspection of 8 HDPE thermal fusion / electro fusion welded piping joints	NA	Complete
INP-103371-0120 <sup>1</sup>	0	Mechanical	Hydrostatic and Pneumatic pressure tests of approx. 350 ft. of 4" x 8" HDPE piping	Pneumatic	Complete
INP-103371-0099 <sup>1</sup>	0	Mechanical	Visual weld inspection of 23 various size HDPE piping joints -	NA	Complete
INP-103371-0098 <sup>1</sup>	0	Mechanical	Hydrostatic leak test of approx. 2400 ft. of 6" HDPE pipeline, flanges, and valves	Hydrostatic	Complete
INP-103371-0097 <sup>1</sup>	0	Mechanical	Hydrostatic and Pneumatic pressure tests of approx. 440 ft. of 4" x 8" HDPE piping	Pneumatic	Complete
INP-103371-0096 <sup>1</sup>	0	Mechanical	Hydrostatic and Pneumatic pressure tests of approx. 80 ft. of 4" x 8" HDPE piping	Pneumatic	Complete
INP-103371-0095 <sup>1</sup>	0	Mechanical	Torque verification of 40 flange bolts	Torque	Complete

Enclosure 3  
Summary Table of Distribution Piping Integrity Test Results

Report Number	Rev	Discipline	Short Description	Test Type	Current Action
INP-103371-0094 <sup>1</sup>	0	Mechanical	Visual weld inspection of 19 various size and types of HDPE piping fusion welds	NA	Complete
INP-103371-0090 <sup>1</sup>	0	Mechanical	Hydrostatic and Pneumatic pressure tests of approx. 940 ft. of 4" x 8" HDPE piping	Hydrostatic	Complete
INP-103371-0089 <sup>1</sup>	0	Mechanical	Hydrostatic pressure test of a single 6" saddle tee (for CAV) in vault, near CrEX-1	Hydrostatic	Complete
INP-103371-0088 <sup>1</sup>	0	Mechanical	Hydrostatic pressure test of a single 4" saddle tee (for CAV) in vault, near CrEX-1	Hydrostatic	Complete
INP-103371-0087 <sup>1</sup>	0	Mechanical	Visual weld inspection of 16 various size HDPE piping joints -	NA	Complete
INP-103371-0086 <sup>1</sup>	0	Mechanical	Visual weld inspection of 32 various size HDPE piping joints -	NA	Complete
INP-103371-0085 <sup>1</sup>	0	Mechanical	Hydrostatic and Pneumatic pressure tests of approx. 485 ft. of 4" x 8" HDPE piping	Pneumatic	Complete
INP-103371-0084 <sup>1</sup>	0	Mechanical	Hydrostatic and Pneumatic pressure tests of approx. 485 ft. of 4" x 8" HDPE piping	Pneumatic	Complete
INP-103371-0083 <sup>1</sup>	0	Mechanical	Hydrostatic and Pneumatic pressure tests of approx. 600 ft. of 4" x 8" HDPE piping	Pneumatic	Complete
INP-103371-0082 <sup>1</sup>	0	Mechanical	Torque verification of 42 - 3/4" s.s. flange bolts on 3 6" isolation valves	Torque	Complete
INP-103371-0081 <sup>1</sup>	0	Mechanical	Visual weld inspection of 32 various size HDPE piping joints -	NA	Complete
INP-103371-0080 <sup>1</sup>	0	Mechanical	Hydrostatic pressure test of approx. 1010 ft. of 4" x 8" dia. HDPE pipe	Hydrostatic	Complete
INP-103371-0078 <sup>1</sup>	0	Mechanical	Hydrostatic and Pneumatic pressure tests of approx. 511 ft. of 4" x 8" HDPE piping	Pneumatic	Complete
INP-103371-0077 <sup>1</sup>	0	Mechanical	Visual weld inspection of 20 4" x 8" HDPE piping joints -	NA	Complete
INP-103371-0076 <sup>1</sup>	0	Mechanical	Pneumatic pressure test of approx. 520 ft. of 8" containment pipe (of section of 4" x 8" HDPE X2)	Pneumatic	Complete



Enclosure 3  
Summary Table of Distribution Piping Integrity Test Results

Report Number	Rev	Discipline	Short Description	Test Type	Current Action
INP-103371-0075 <sup>1</sup>	0	Mechanical	Pneumatic pressure test of approx. 490 ft. of 8" containment pipe (of section of 4" x 8" HDPE X2)	Pneumatic	Complete
INP-103371-0074 <sup>1</sup>	0	Mechanical	Hydrostatic pressure test of approx. 1010 ft. of 4" x 8" dia. HDPE pipe	Hydrostatic	Complete
INP-103371-0073 <sup>1</sup>	0	Mechanical	Visual weld inspection of 18 HDPE piping joints -	NA	Complete
INP-103371-0072 <sup>1</sup>	0	Mechanical	Visual weld inspection of 19 HDPE piping joints -	NA	Complete
INP-103371-0071 <sup>1</sup>	0	Mechanical	Hydrostatic and Pneumatic pressure tests of approx. 520 ft. of 4" x 8" HDPE piping	Hydrostatic	Complete
INP-103371-0066 <sup>1</sup>	0	Mechanical	Visual weld inspection of 15 - 4" x 8" HDPE thermal fusion piping joints	NA	Complete
INP-103371-0064 <sup>1</sup>	0	Mechanical	visual weld inspection of 14 - 8" dia. HDPE thermal fusion piping joints	NA	Complete
INP-103371-0063 <sup>1</sup>	0	Mechanical	Hydrostatic and Pneumatic pressure tests of approx. 770 ft. of 4" x 8" HDPE piping	Hydrostatic	Complete
INP-103371-0062 <sup>1</sup>	0	Mechanical	visual weld inspection of 21 HDPE piping joints	NA	Complete
INP-103371-0061 <sup>1</sup>	0	Mechanical	Observation of handling of 6" HDPE pipe from CrEX-1 downhill towards R45 entrance	NA	Complete
INP-103371-0061 <sup>1</sup>	1	Mechanical	Observation of handling of 6" HDPE pipe from CrEX-1 downhill towards R45 entrance	Hydrostatic	Complete
INP-103371-0060 <sup>1</sup>	0	Mechanical	Hydrostatic pressure test of approx. 1250 ft. 6" dia. HDPE pipe	Hydrostatic	Complete
INP-103371-0051 <sup>1</sup>	0	Mechanical	Visual weld inspection of 20 thermal fusion HDPE piping joints (#8-6 through #8-25)	NA	Complete
INP-103371-0050 <sup>1</sup>	0	Mechanical	Visual weld inspection of 16 thermal fusion HDPE piping joints	NA	Complete
INP-103371-0048 <sup>1</sup>	0	Mechanical	visual weld inspection of 18 6" HDPE thermal fusion piping joints, and 1 electrofusion saddle joint	NA	Complete

Enclosure 3  
Summary Table of Distribution Piping Integrity Test Results

Report Number	Rev	Discipline	Short Description	Test Type	Current Action
INP-103371-0047 <sup>1</sup>	0	Mechanical	Hydrostatic pressure testing of approx. 1250 ft. of 6" HDPE pipe, CrEX-1 downhill towards CrIN-1	Hydrostatic	Complete
INP-103371-0046 <sup>1</sup>	0	Mechanical	Observation of 19 6" HDPE thermal fusion joints - CrEX-1 towards CrIN-1	NA	Complete
INP-103371-0045 <sup>1</sup>	0	Mechanical	Observation of 44 6" HDPE fusion joints, and 1 HDPE electro fusion joint - CrEX-1 towards CrIN-1	NA	Complete
INP-103371-0036 <sup>1</sup>	0	Mechanical	Hydrostatic pressure test performed on S.S. threaded piping in Treatment Container at R-42	Hydrostatic	Complete
INP-103371-0034 <sup>1</sup>	0	Mechanical	Hydrostatic pressure test, per ASTM F-2164/Spec. 22-0813, of approx. 420 ft. of 4" HDPE pipe - CrIN-1	Hydrostatic	Complete
INP-103371-0029 <sup>1</sup>	0	Mechanical	Visual weld inspection of 12 thermal fusion HDPE piping joints (CrIN-1)	NA	Complete
INP-103371-0028 <sup>1</sup>	0	Mechanical	visual weld inspection of 16 thermal fusion 4" HDPE piping joints (CrIN-2)	NA	Complete
INP-103371-0027 <sup>1</sup>	0	Mechanical	Hydrostatic pressure test, per ASTM F2164 /Spec. 22-0813, of approx. 205 ft. of 4" HDPE (CrIN-2)	Hydrostatic	Complete
INP-103371-0024 <sup>1</sup>	0	Mechanical	Hydrostatic pressure test on approx. 2240 feet of 4" HDPE pipe from approx. CrIn-3 to approx. R45	Hydrostatic	Complete
INP-103371-00019 <sup>1</sup>	0	Mechanical	Hydrostatic pressure test on the threaded and flanged galv. piping from the CrEX-1 well head to the POC at treatment container	Hydrostatic	Complete
INP-103371-00012 <sup>1</sup>	0	Mechanical	Hydrostatic pressure test on HDPE piping from CrIN-4/CrIN-5 vaults to CrEX-1 well pad	Hydrostatic	Complete
INP-103371-00011 <sup>1</sup>	0	Mechanical	Observation of proper torquing of 160 valve flange bolts / sample verification	Torque	Complete

Enclosure 3  
Summary Table of Distribution Piping Integrity Test Results

Report Number	Rev	Discipline	Short Description	Test Type	Current Action
INP-103371-00007 <sup>1</sup>	0	Mechanical	Hydrostatic pressure retest on approx. 160 ft. of 4" HDPE piping from CrIN-4 vault to CrIN-5 vault	Hydrostatic	Complete
INP-103371-00006 <sup>2</sup>	0	Mechanical	Hydrostatic pressure test on approx. 160 ft. of 4" HDPE piping from CrIN-4 vault to CrIN-5 vault	Hydrostatic	Complete
INP-103371-00005 <sup>2</sup>	0	Mechanical	Hydrostatic pressure test on approx. 210 ft. of 6" HDPE piping from CrEX-1 treatment container up to first 6" isolation valve uphill, towards cutoff to CrIN-4/5 pad	Hydrostatic	Complete
INP-103371-00004 <sup>2</sup>	0	Mechanical	Hydrostatic pressure test on approx. 720 ft. of 6" HDPE piping from CrIN-4/5 cutoff to CrEX-1 pad	Hydrostatic	Complete
INP-103371-00003 <sup>2</sup>	0	Mechanical	Hydrostatic pressure test on approx. 735 ft. of 6" HDPE piping at CrIN4/5 well pad	Hydrostatic	Complete
INP-103371-00002 <sup>1</sup>	0	Mechanical	visual weld inspection of 6 s.s. well casing welds at CrEX-3	NA	Complete
INP-103371-00001 <sup>1</sup>	0	Mechanical	visual weld inspection of 10% of s.s. well casing welds at CrEX-3	NA	Complete

Notes:

1. Test result previously submitted on August 28, 2017 (EPC-DO: 17-302).
2. Test result previously submitted on November 15, 2016 (EPC-DO-16-345).

## **ENCLOSURE 4**

**Distribution Piping Integrity Test Results (CD) for  
Pipelines Connecting Extraction Wells With Injection  
Wells (upon request)**

**EPC-DO: 17-465**

**LA-UR-17-29978**

**U1601822**

**Date: NOV 22 2017**

## ENCLOSURE 4

### ABSTRACT: ENCLOSURE 4 CD (1)

Enclosure 4 contains one CD which provides the integrity test results not previously submitted for pipelines connecting extraction wells CrEX-1, CrEX-2, and CrEX-3 with injection wells CrIN-1, CrIN-2, CrIN-3, CrIN-4, CrIN-5, and CrIN-6. This well is located in and adjacent to Mortandad Canyon within Technical Area (TA)-05.