From:	Chavez, Carl, EMNRD
To:	Ayarbe, John
Cc:	"Pieter Bergstein (pieter@bergsteinenterprises.com)"; "susan@bergsteinenterprises.com"; Myers, Jessica
Bcc:	Goetze, Phillip, EMNRD; Wrinkle, Justin, EMNRD
Subject:	BW-8 Brine Supply Well No.1 / fCJC2117638475 SUBMITTAL of 2022 Annual Class III Well Report: API# 30-025-26307
Date:	Friday, May 26, 2023 9:24:00 AM

John, et al.,

Good morning!

The New Mexico Oil Conservation Division (OCD) is wrapping up its review of the above subject report and will be processing the submittal via E-Permitting Action ID# 220147 soon.

I wanted to share some observations based on the report with you below.

First, OCD appreciates the efforts being made at the facility by the Permittee.

OCD general comments for your consideration are:

1. Max. Surface Injection Pressure under the DP is 350 psig. OCD notices some exceedances to the injection pressure during March, April, June, July, August and September with pressures reaching 360 psig. There should be an automatic shut-off switch that prevents exceedances to this pressure. Please look into this.

2. The SMP-5 survey elevation discrepancy of about 1.66 inches seems to occur only at SMP-5 and not the rest of the SMP Monuments. Please monitor for any concentric surface cracking around the perimeter. Surface cracks were evident in the brine wells that collapsed in 2008. Better to error on the side of caution. The safety ratio in the report indicates there is a safe condition at the facility.

3. Figures 1 and 3 of the report display a “reverse flow” scenario which OCD does not allow only when cleaning salt out of the well casing, tubing, etc. If the current flow regime is as displayed in these figure, please change flow to injection of freshwater down the tubing with brine production up the back-side or annulus between the well casing and tubing. If there is an issue with this requirement, please contact OCD to discuss further.

4. MWs 9 and 10 display elevated levels of Chlorides at the hydrogeologically downgradient end of the facility. OCD has inquired in its review of the quarterly report that the Permittee should be looking into capturing the plume by perhaps adding a pump into MW-10, but this was just a suggestion. It does not appear based on the existing system that the plume is being completely captured.

5. A reminder that sundries, i.e., C-103s are required for all well entry work and well testing to be approved in advance by the OCD.

Please contact me if you have questions or wish to communicate on the above.

Have a Happy Memorial Day Weekend! Thank you.

Carl J. Chavez ● UIC Group
Engineering Bureau
EMNRD - Oil Conservation Division
Horizon Building
8801 Horizon Blvd., Suite 260 | Albuquerque, NM 87113
505.660.7923 | CarlJ.Chavez@emnrd.nm.gov
www.emnrd.nm.gov

From: Ayarbe, John <jayarbe@geo-logic.com>
Sent: Wednesday, May 24, 2023 9:34 AM
To: Chavez, Carl, EMNRD <Carlj.Chavez@emnrd.nm.gov>
Cc: 'Pieter Bergstein (pieter@bergsteinenterprises.com)' <pieter@bergsteinenterprises.com>; 'susan@bergsteinenterprises.com' <susan@bergsteinenterprises.com>; Myers, Jessica <jmyers@geo-logic.com>
Subject: [EXTERNAL] SUBMITTAL of 2022 Annual Class III Well Report

Hi Carl,

Attached is an electronic copy of the 2022 Annual Class III Well Report for the Salty Dog brine station. I'm submitting the report to you on behalf of PAB Services, Inc. The report was prepared in accordance with the requirements of discharge permit BW-8. Please let me know if you have questions.

If you don't mind, please let us know where you would like us to upload the report to through the E-Permitting Portal. I'm assuming we should associate it with one of the C forms.

Thanks!

John P. Ayarbe
Senior Hydrogeologist

Daniel B. Stephens & Associates, Inc.
a Geo-Logic Company
6020 Academy Road NE, Suite 100
Albuquerque, New Mexico 87109
Office: (505) 822-9400 | Direct: (505) 353-9137
Mobile: (505) 280-4339

jayarbe@dbstephens.com or jayarbe@geo-logic.com

www.dbstephens.com | www.geo-logic.com

DBS&A
a Geo-Logic Company

May 23, 2023

Mr. Carl Chavez
New Mexico Oil Conservation Division
Environmental Bureau
1220 South St. Francis Drive
Santa Fe, New Mexico 87505-4225

Re: 2022 Annual Class III Well Report
Salty Dog Brine Station, Lea County, New Mexico
DP-BW-8, API No. 30-025-26307

Dear Mr. Chavez:

On behalf of PAB Services, Inc., Daniel B. Stephens & Associates, Inc. (DBS&A) is submitting the enclosed annual Class III well report for the Salty Dog brine station located in Lea County, New Mexico. The report includes the annual certification by the site operator (Appendix A).

Please call us at (505) 822-9400 if you have any questions or require additional information.

Sincerely,

DANIEL B. STEPHENS & ASSOCIATES, INC.

John Ayarbe, P.G.
Senior Hydrogeologist

JA/rpf
Enclosure
cc: Pieter Bergstein, PAB Services, Inc.

2022 Annual Class III Well Report

Salty Dog Brine Station
Lea County, New Mexico
DP-BW-8, API No. 30-025-26307

Prepared for

New Mexico Energy, Minerals and Natural Resources Department, Oil Conservation Division
Santa Fe, New Mexico

Prepared by

DBS&A a Geo-Logic Company

6020 Academy NE, Suite 100
Albuquerque, New Mexico 87109
www.dbstephens.com

DB19.1198

May 23, 2023

Table of Contents

List of Figures

List of Tables

List of Appendices

1. Introduction

Daniel B. Stephens & Associates, Inc. (DBS&A) has prepared this annual Class III well report for submission to the New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division (OCD) Environmental Bureau on behalf of PAB Services, Inc. (PAB) for operation of a brine well (Brine Supply Well #1 [API No. 30-025-26307]) at the Salty Dog Brine Station (the site). The site is located in Lea County, New Mexico, approximately 11 miles west of Hobbs, New Mexico along U.S. Highway 62/180 (US 62/180) (Figure 1). This report summarizes operational and monitoring activities conducted at the site in 2022, and was prepared in accordance with the requirements of discharge permit (DP) BW-8, last renewed on May 17, 2019 (NMEMNRD, 2019). Submittal of this report meets Condition 2.J of the permit.

Appendix A provides an annual certification signed by Mr. Pieter Bergstein stating that continued salt solution mining will not cause cavern collapse, surface subsidence, or property damage, and will not otherwise threaten public health and the environment, based on geologic and engineering data.

Salty Dog is a brine water production and loading station, consisting of fresh water supply wells, a brine production well, and a concrete truck loading pad with two brine filling stations. Fresh water is stored in two 1,000-barrel (bbl) aboveground storage tanks (ASTs) near the loading station and a series of ASTs at the brine well. Produced brine is pumped from the brine well to a bermed tank battery consisting of six 750-bbl ASTs, where the brine is stored for sale. The brine well is located approximately 0.5 mile southwest of the brine filling station (Figure 1). Figure 2 provides an aerial photograph of the brine station showing the layout of the current facility infrastructure.

Brine is produced from the in situ extraction of salt at the brine well, a UIC Class III well (Brine Supply Well #1 [API No. 30-025-26307]). The brine well is approximately 3,000 feet deep and has been in operation since the early 1980s. The Salty Dog brine well is configured for reverse circulation brine recovery, where fresh water is circulated down the casing annulus into the Salado Formation—a Permian-age sedimentary rock unit composed of halite (salt) and other evaporative beds. Fresh water dissolves the salt, and the brine is extracted through the center tubing of the well. Figure 3 provides a generalized schematic of the brine well showing its construction, current tubing depth, and the penetrated geologic units.

The physical location of the brine well is 1,980 feet from south line (FSL) and 1,980 feet from east line (FEL) (NW/4 SE/4, Unit Letter J) in Section 5, Township 19 South, Range 36 East, New Mexico Principal Meridian (NMPM). The brine well was installed in June 1979. The original discharge permit for the brine well (GWB-2) appears to have been issued on December 18, 1982 (OCD, 1994). The discharge permit was last renewed on May 17, 2019 (NMEMNRD, 2019).

Injection water used in brine production is obtained from the Ogallala Aquifer by pumping from two fresh water supply wells (FWS-1 and FWS-2) and groundwater remediation well RW-2. Well FWS-1 is the main fresh water supply well. Well FWS-2, located near the brine well, is used as an auxiliary fresh water well during periods of high brine demand. Well RW-2 is used to remove and provide hydraulic containment of chloride-impacted groundwater in the brine well area; groundwater extracted from this well is also used for brine production. Chloride-impacted groundwater in the former brine pond area is contained and removed by pumping from FWS-1. Depth to regional groundwater is approximately 70 feet below ground surface (bgs). Figure 4 shows the well locations.

2. Brine Well Operational Activities

The following subsections report fluid injection/brine production volumes and well maintenance activities.

2.1 Fluid Injection and Brine Production

Except for an approximately 2-year shutdown between 2011 and 2013 and temporary interruptions for routine maintenance and testing (e.g., February 2009 sonar survey [SOCON, 2009]), the brine well has been in continuous operation since 1980, producing an average of approximately 10,500 barrels per month (bbl/mo) of brine between 1980 and 2009. This production rate is based on 1987, 1996–1999, and 2009 brine production and sales records (Salty Dog, 1988, 1999, and Undated).

Both fluid injection and brine production volumes are metered, and daily volumes are recorded on monthly fresh and brine water report forms (Appendix B). Table 1 summarizes monthly injection and production volumes for the reporting period. Injection water for the brine well comes from two fresh water wells (FWS-1 and FWS-2) and a groundwater remediation well (RW-2) (Figure 4). In 2022, average monthly ratios of injected water to produced brine ranged from 0.84 to 1.01.

Table 1. Monthly Water Injection and Brine Production Volumes, 2022

Month	Volume (bbl)		Ratio (Injection: Production)
	Water Injection	Brine Production	
January	17,060	17,060	1.00
February	6,065	6,065	1.00
March	11,350	11,285	1.01
April	29,655	29,785	1.00
May	58,835	58,620	1.00
June	63,275	66,025	0.96
July	43,342	47,305	0.92
August	57,150	64,627	0.88
September	44,560	48,490	0.92
October	30,530	36,370	0.84
November	67,325	71,615	0.94
December	49,570	50,750	0.98
Annual total	478,717	507,997	—

bbl = Barrels

Based on the data reported in Table 1 and previously reported production records (Salty Dog, 1988, 1999, and Undated; DBS&A, 2014), the estimated cumulative volume of brine production is 7,749,571 bbl.

In 2022, brine production activities at the site dissolved an estimated 75,270 bbl of Salado Formation. This estimate is based on the brine production data reported in Table 1, the average total dissolved solids (TDS) concentrations of the produced brine and injection water reported in Table 2, and an assumed density of the Salado Formation of 2.17 grams per cubic centimeter (g/cm^3). Based on the historical and current brine production data, the total estimated size of the brine solution cavern is approximately 1,122,402 bbl, with an estimated brine cavern floor diameter of 181 feet and safety ratio of 0.25. The estimation of the cavern floor diameter was calculated using the OCD example salt cavern characterization approach and site data (Appendix C). In 2012, OCD estimated a volume of 1,022,196 bbl for the Salty Dog solution cavern (NMEMNRD, 2012).

Table 2. Injection Water and Produced Brine Chemical and Physical Characteristics

Constituent	Average Concentration (mg/L [a])	
	Injection Water	Produced Brine
pH (s.u.)	7.57	7.11
Specific gravity (unitless)	0.996	1.196
Chloride	590	175,000
Sodium	300	75,500
TDS	1,470	323,000

[a] Unless otherwise noted
mg/L = Milligram per liter
NM = Not measured
s.u. = Standard units
TDS = Total dissolved solids

2.2 Injection Pressure

Pressure is monitored on the well tubing and on the annulus between the inner tubing and outer casing. These measurements are recorded on the monthly fresh and brine water report forms (Appendix B). In 2022, recorded daily tubing pressure ranged between 40 and 340 pounds per square inch (psi), while annulus pressure ranged between 250 and 360 psi.

2.3 Chemical and Physical Analyses

Condition 2.A of DP-BW-8 requires semiannual monitoring of the chemical and physical characteristics of the injection water and produced brine, including pH, density, and TDS and chloride concentrations. The permit also requires that the sodium concentration of the produced brine be analyzed.

Table 2 reports average constituent concentrations calculated from the 2022 semiannual monitoring data. Samples of the injection water and produced brine were collected in June 2022. Another sample of produced brine was collected in December 2022. Injection water was not sampled in December 2022 because the outlet pipe and valve were frozen. Dissolution of the Salado Formation increases the constituent concentrations and specific gravity of the produced brine relative to the injection water. The average TDS concentration and average specific gravity of the injection water are 1,470 milligrams per liter (mg/L) and 0.996, respectively, while the same properties of the produced brine are 323,000 mg/L and 1.196,

respectively. Appendix D provides the laboratory analytical reports associated with the semiannual monitoring events.

Historical water quality analyses show TDS concentrations of the fresh water and produced brine to be approximately 600 mg/L and 320,000 to 350,000 mg/L, respectively (Martin, 1982; Unichem, 1987).

2.4 Deviations from Normal Operations

There were no deviations from normal operations in 2022.

2.5 Leaks and Spills

There were no leaks or spills in 2022.

2.6 Area of Review

Condition 3.G of DP BW-8 requires Salty Dog to report within 72 hours the discovery of any new wells, conduits, or other devices that (1) are within a 1-mile radius and (2) may penetrate to the injection zone of the brine well.

The brine station is located on private property in rural southeastern New Mexico, approximately 11 miles west of Hobbs. The majority of the area surrounding the site is undeveloped and owned by the State of New Mexico.

On February 15, 2023, DBS&A conducted an area of review evaluation using the OCD online oil and gas maps application. This application is accessible through the OCD website (http://www.emnrd.state.nm.us/OCD/ocdgis.html). Appendix E provides a map produced from the area of review evaluation. The map shows that there are two previously plugged and abandoned wells (API 30-025-03989 and API 30-025-42773) southwest of the Salty Dog brine well. However, no new brine wells or other penetrations that may penetrate into the injection zone of the Salty Dog brine well are present within a 1-mile radius of the brine well.

2.7 Mechanical Integrity Test

A mechanical integrity test (MIT) was not conducted on the brine well in 2022. The last MIT was performed in 2018.

In December 2017, the brine well was damaged because anhydrite had collapsed the well tubing. The well was subsequently repaired, and was operational again in February 2018. On February 9, 2018, before placing the well back in operation, PAB conducted an MIT on the well; it passed the test. Gary Robinson of OCD was present during the MIT. A record of the MIT was provided in the 2017 annual Class III well report (DBS&A, 2018a).

Prior to the February 2018 MIT, the last MIT was performed on October 31, 2013, when Salty Dog conducted a Bradenhead test on the brine well. The test showed no problems with the integrity of the well casing. Results of this test were reported to OCD on November 15, 2013.

Pursuant to 20.6.2.5204 New Mexico Administrative Code (NMAC), PAB is required to demonstrate mechanical integrity of the brine well at least once every five years. PAB has scheduled a MIT to be completed on the brine well in May 2023. Results of the MIT will be submitted to OCD through the OCD E-Permitting portal and in the 2023 Annual Class III Well Report.

3. Other Facility Activities

There were no other facility activities in 2022 outside of normal operations.

4. Subsidence Monitoring and Cavern Characterization

Condition 2.B.1 of DP BW-08 requires Salty Dog to monitor for potential land subsidence in the area of the brine well (OCD, 2019). To meet this condition, PAB contracted Peterson Drilling and Testing, Inc. and DBS&A to install five subsidence survey monitoring points at the site in March 2018 (DBS&A, 2018b). The five subsidence survey monitoring points include three points located approximately 200 feet from the brine well, one point located approximately 60 feet from the brine well, and one point that is a metal tab welded to the brine well casing (Figure 5). Construction and placement of the monitoring points were conducted in accordance with DBS&A (2014). Basin Surveys of Hobbs, New Mexico surveyed the monitoring points after their installation (Appendix F). The initial survey was conducted on March 23, 2018 using the nearest U.S. Geological Survey (USGS) benchmark referenced to NMSPCE (NAD 83).

In accordance with Condition 2.B.1 of DP-BW-8, Salty Dog has each monitoring point surveyed semiannually to at least the nearest 0.10 foot (OCD, 2019). Atkins Engineering Associates Inc. (Atkins) conducted the 2022 semiannual surveys on June 9, 2022 and February 2, 2023. The survey data are reported in Table 3, and show no indication of land subsidence. The semiannually surveyed elevations at SMP-01 through SMP-04 are all within ±0.03 foot of the initial survey. At SMP-05, the 2022 elevations are 1.66 feet lower than the initial elevation; however, there are no indications of subsidence at the brine well, where the SMP-05 metal tab is welded. In 2021, Atkins replaced Basin Surveys and began to conduct subsidence monitoring at the site. The differences between the initial survey and those in 2022 at SMP-05 appear to be due to the change in surveyors. Appendix F provides the survey reports.

Table 3. Semiannual Surface Subsidence Monitoring, 2022

Survey Monitoring Point	Elevation (feet msl)		
	Initial 3/23/2018	First Semiannual 6/9/2022	Second Semiannual 2/2/2023
SMP-01	3,810.11	3,810.10	3,810.10
SMP-02	3,809.01	3,809.02	3,809.02
SMP-03	3,808.80	3,808.83	3,808.83
SMP-04	3,806.32	3,806.33	3,806.33
SMP-05 (brine well)	3,811.72	3,810.06	3,810.06

msl = Above mean sea level

Condition 2.B.2 of DP BW-08 requires solution cavern characterization using geophysical methods to estimate the size and shape of the solution cavern. During a December 9, 2016 phone call between DBS&A (on behalf of PAB) and OCD (Jim Griswold and Carl Chavez), it was agreed that solution cavern characterization using geophysical methods would be conducted only if surface subsidence was detected during semiannual surveying of the monitoring points. Section 2.1 of this report presents an estimated size and diameter for the solution cavern.

5. Groundwater Conditions

Salty Dog is addressing groundwater impacts resulting from releases at the brine well and a former brine pond. A hole in the casing of the brine well at 250 feet bgs was discovered in 1999 (Salty Dog, 1999). The hole released brine, impacting groundwater, and was repaired in August

1999 by installing a casing liner (Salty Dog, 1999). In October 2008, the brine pond was removed and impacted soil was excavated and disposed of (DBS&A, 2008). The area of the former brine pond is shown in Figures 1 and 2.

Two chloride plumes currently exist at the site: one in the area of the brine station (i.e., the former brine pond area) and a second near the brine well. In 2009, PAB initiated groundwater extraction to remove and provide hydraulic containment of brine-impacted groundwater at the brine station and near the brine well (DBS&A, 2009). Groundwater abatement and monitoring activities are being conducted to satisfy an administrative compliance order issued by OCD (ACO 2008-02) and settlement agreement and stipulated revised final order (NM-OCD 2008-2A) between OCD and Mr. Bergstein.

Groundwater monitoring and extraction data are reported and evaluated in reports submitted to OCD (e.g., DBS&A, 2023). The data include water levels and water quality at the site monitor wells. Site monitor wells are shown in Figure 4.

References

Daniel B. Stephens & Associates, Inc. (DBS&A). 2008. *Closure report, brine pond and loading area, Salty Dog Brine Station, Lea County, New Mexico*. Prepared for the New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division, Environmental Bureau, Santa Fe, New Mexico. December 3, 2008.

DBS&A. 2009. *Recovery well installation and pump test report, Salty Dog Brine Station, Lea County, New Mexico*. Prepared for the New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division, Environmental Bureau, Santa Fe, New Mexico. November 20, 2009.

DBS&A. 2014. *Work plan for surface subsidence monitoring and solution cavern characterization, Salty Dog Brine Station*. Prepared for the New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division, Environmental Bureau, Santa Fe, New Mexico. September 17, 2014.

DBS&A. 2018a. *2017 annual Class III well report, Salty Dog Brine Station, DP BW-8, API No. 30-025-26307, Lea County, New Mexico*. Prepared for the New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division. May 1, 2018.

DBS&A. 2018b. Letter report from John Ayarbe and Michael D. McVey to Carl Chavez, Oil Conservation Division, regarding Installation of monitor well and subsidence survey monitoring points, Salty Dog Brine Station (API No. 30-025-26307). June 25, 2018.

DBS&A. 2023. *Second semiannual 2022 groundwater monitoring and operation and maintenance report, Salty Dog Brine Station, Lea County, New Mexico*. Prepared for the New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division, Santa Fe, New Mexico. April 7, 2023.

Martin Water Laboratories, Inc. (Martin). 1982. Result of water analyses for raw water and brine water samples collected November 1, 1982. Prepared for Natural Resources Engineering Inc. November 1, 1982.

New Mexico Energy, Minerals and Natural Resources Department (NMEMNRD). 2012. Presentation from pre-proposal conference, Request for professional & technical services, I&W Brine Cavern project, Carlsbad, New Mexico. May 9, 2012.

NMEMNRD. 2019. Letter from Adrienne Sandoval to Pieter Bergstein, PAB Services, Inc., regarding Renewal of discharge permit (BW-8) PAB Services, Inc., UIC Class III Brine Well "Brine Supply Well No.1" (API No. 30-025-26307) UL: J Section 5 Township 19 South, Range 36 East, 1980 FSL, 1980 FEL, Lat. N 32.68847°, Long. W 103.37445°, NMPM, Lea County, New Mexico. May 17, 2019.

Oil Conservation Division, New Mexico Energy, Minerals and Natural Resources Department (OCD). 1994. Letter from Roger C. Anderson to Larry Squires, Salty Dog, regarding Discharge plan BW-08 renewal, Salty Dog Inc. water station, Lea County, New Mexico. March 4, 1994.

Salty Dog, Inc. (Salty Dog). 1988. Letter report outlining facility data for quarter ending September 1987. February 25, 1988.

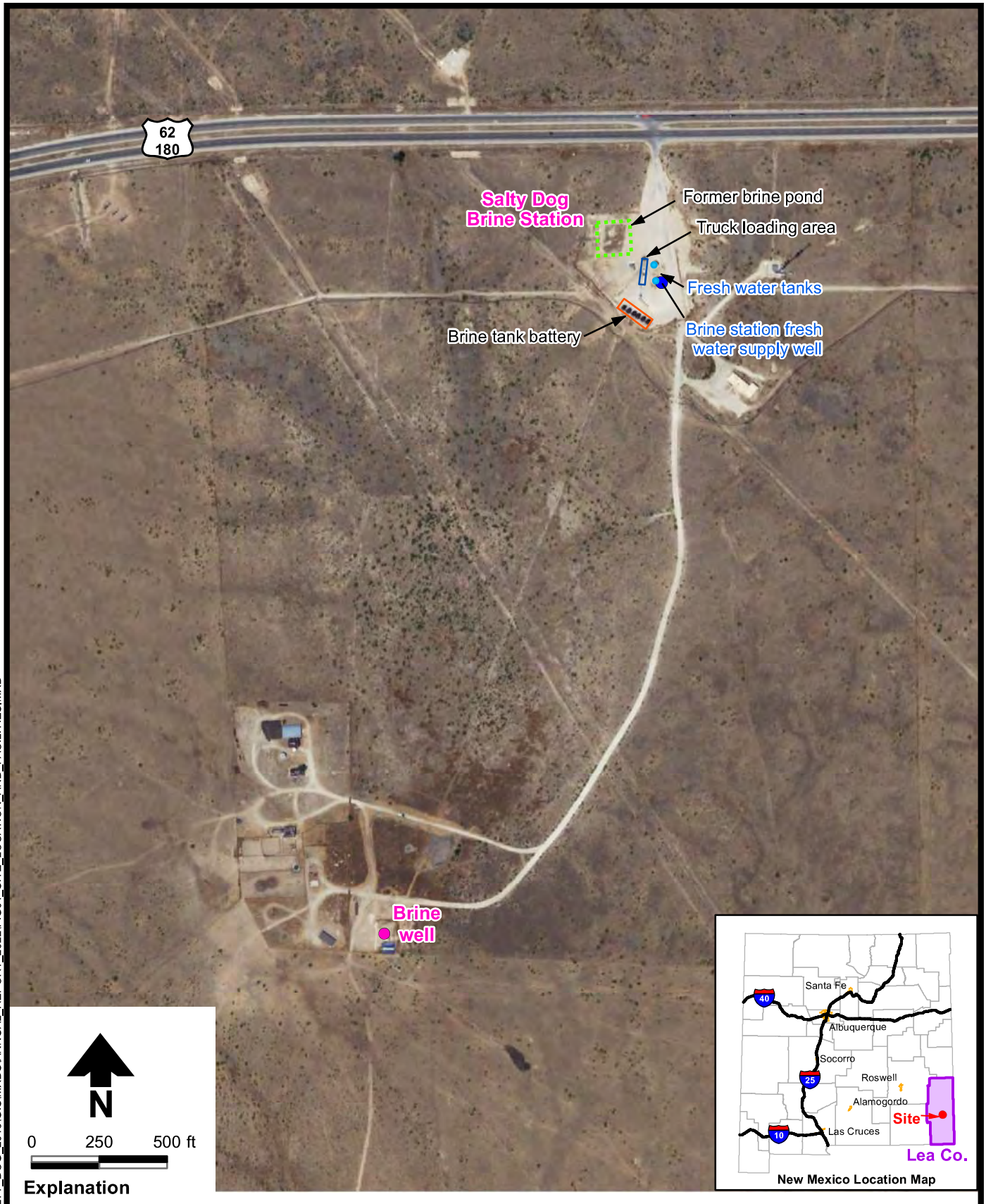
Salty Dog. 1999. Form C-103 report on Brine supply well #1. Submitted September 8, 1999. Approved by OCD December 1, 1999.

Salty Dog. Undated. E-mail from James Millett to Jim Griswold, OCD, regarding Salty Dog 2009 sales.

SOCON Sonar Well Services, Inc. (SOCON). 2009. *ECHO-LOG, Salty Dog, Inc. Brine well No: 1, Hobbs, New Mexico: First SOCON Sonar Well Services survey.* February 5, 2009.

Unichem International (Unichem). 1987. Laboratory results for water samples collected on November 25, 1987. Prepared for Larry Squires. December 1, 1987.

Figures



Source: Aerial imagery (NAIP, 2022).

S:\PROJECTS\DB19.1198_SALTY_DOG_2019\GIS\MXDS\ANNUAL_REPORT_2022\FIG01_SITE_LOCATION_AND_FACILITIES.MXD

DBS&A
a Geo-Logic Company

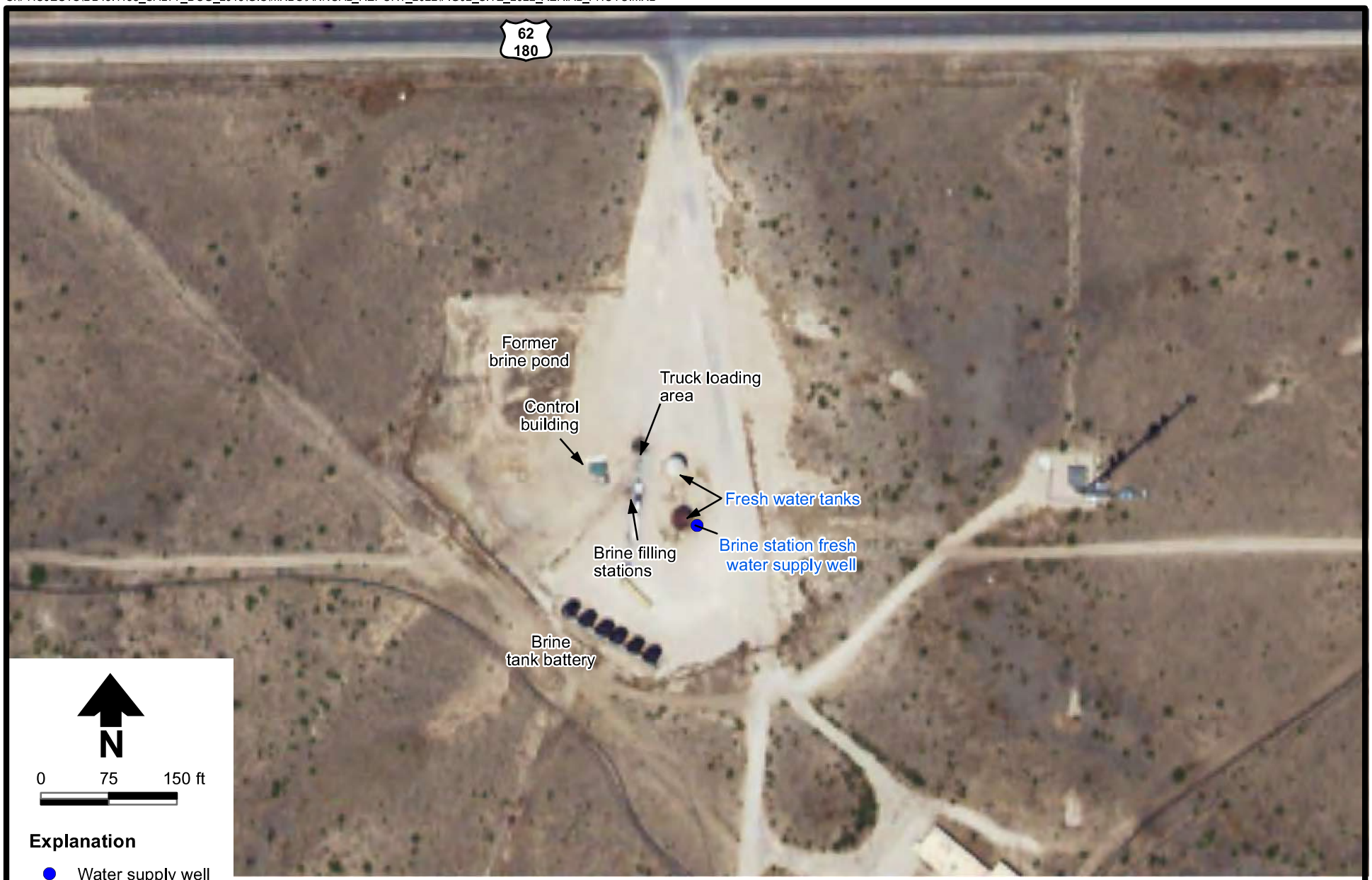
2/15/2023 DB19.1198

SALTY DOG BRINE STATION

Site Location and Facilities

Figure 1

S:\PROJECTS\DB19.1198_SALTY_DOG_2019\GIS\MXDS\ANNUAL_REPORT_2022\FIG02_SITE_2022_AERIAL_PHOTO.MXD



Source: Aerial imagery (NAIP, 2022).

Figure 2

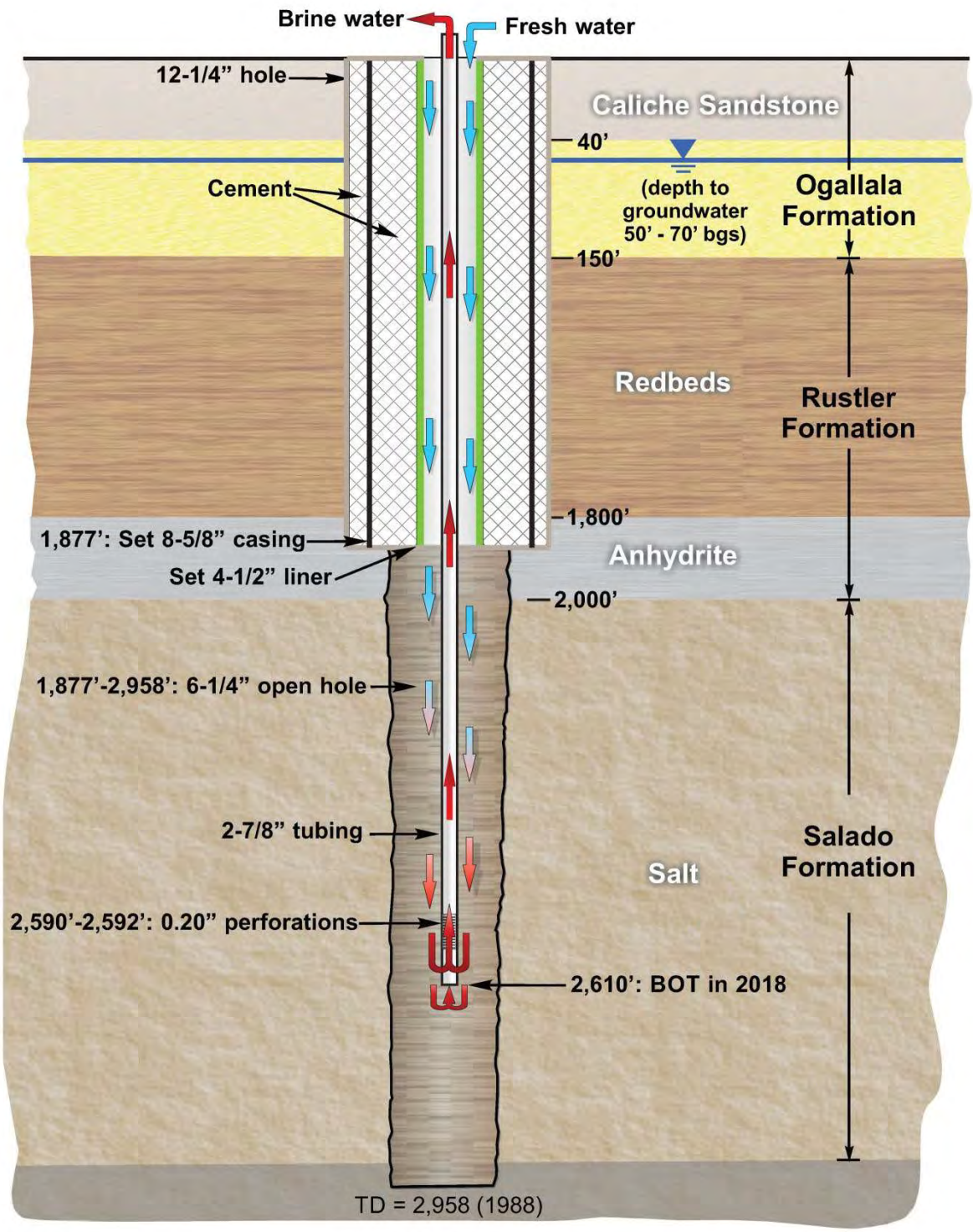
DBS&A a Geo-Logic Company

2/15/2023 DB19.1198

SALTY DOG BRINE STATION

2022 Aerial Photograph of Salty Dog Brine Station

Salty Dog Brine Well



Notes:
1. BOT = Bottom of tubing
2. Figure not to scale

Sources:
1. Completion data based on OCD well reports
2. Lithology from Salty Dog (1988)

P:_DB19-1198\2022 Annl Rpt.5-23\Figures\Word\Fig03_Well Schematic.docx

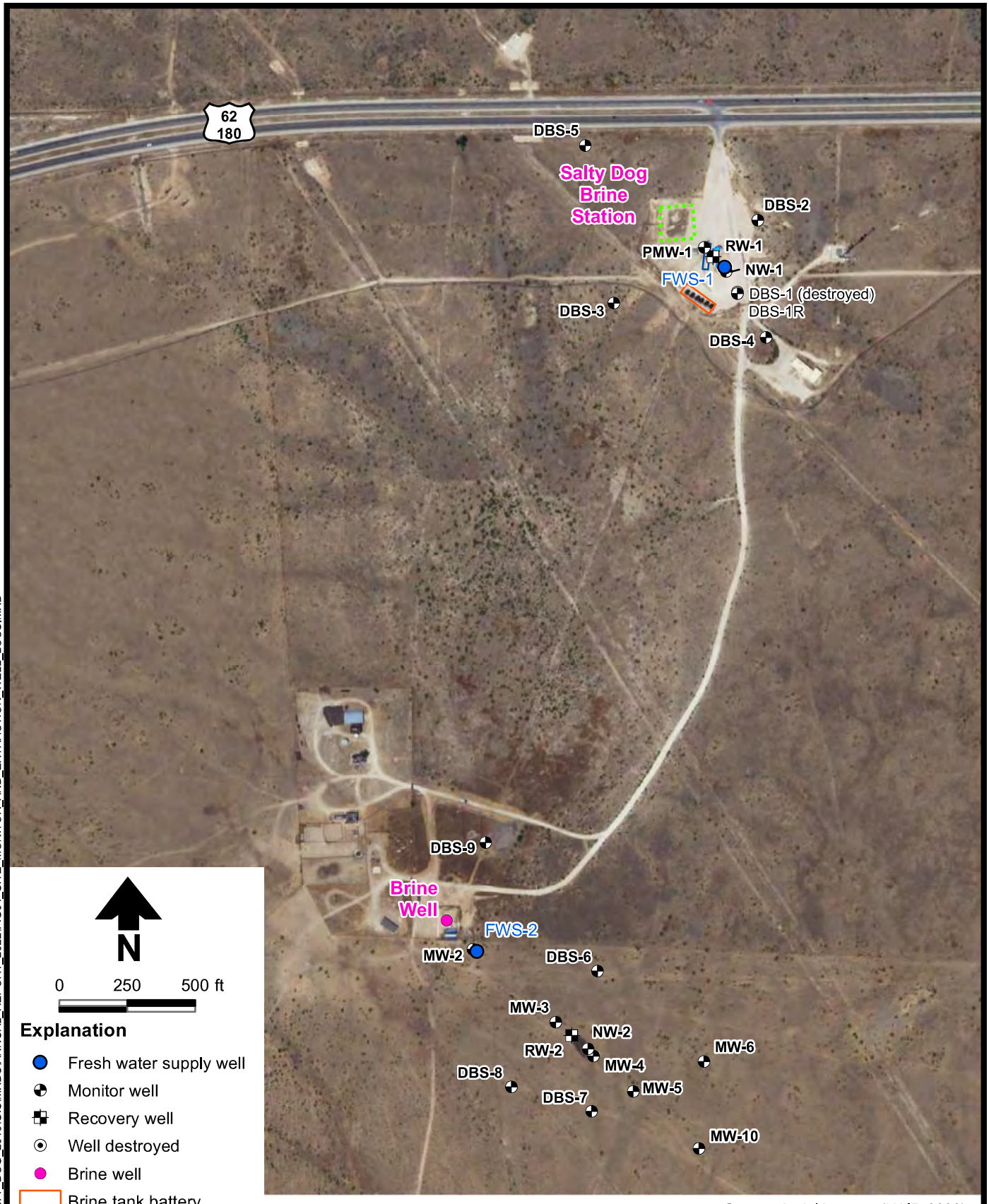
DBS&A a Geo-Logic Company

5/18/2023 DB19.1198

SALTY DOG BRINE STATION

Generalized Brine Well Schematic

Figure 3



Source: Aerial imagery (NAIP, 2022).

S:\PROJECTS\DB19.1198_SALTY_DOG_2019\GIS\MXDS\ANNUAL_REPORT_2022\FIG04_SITE_MONITOR_AND_EXTRACTION_WELL_LOCS.MXD

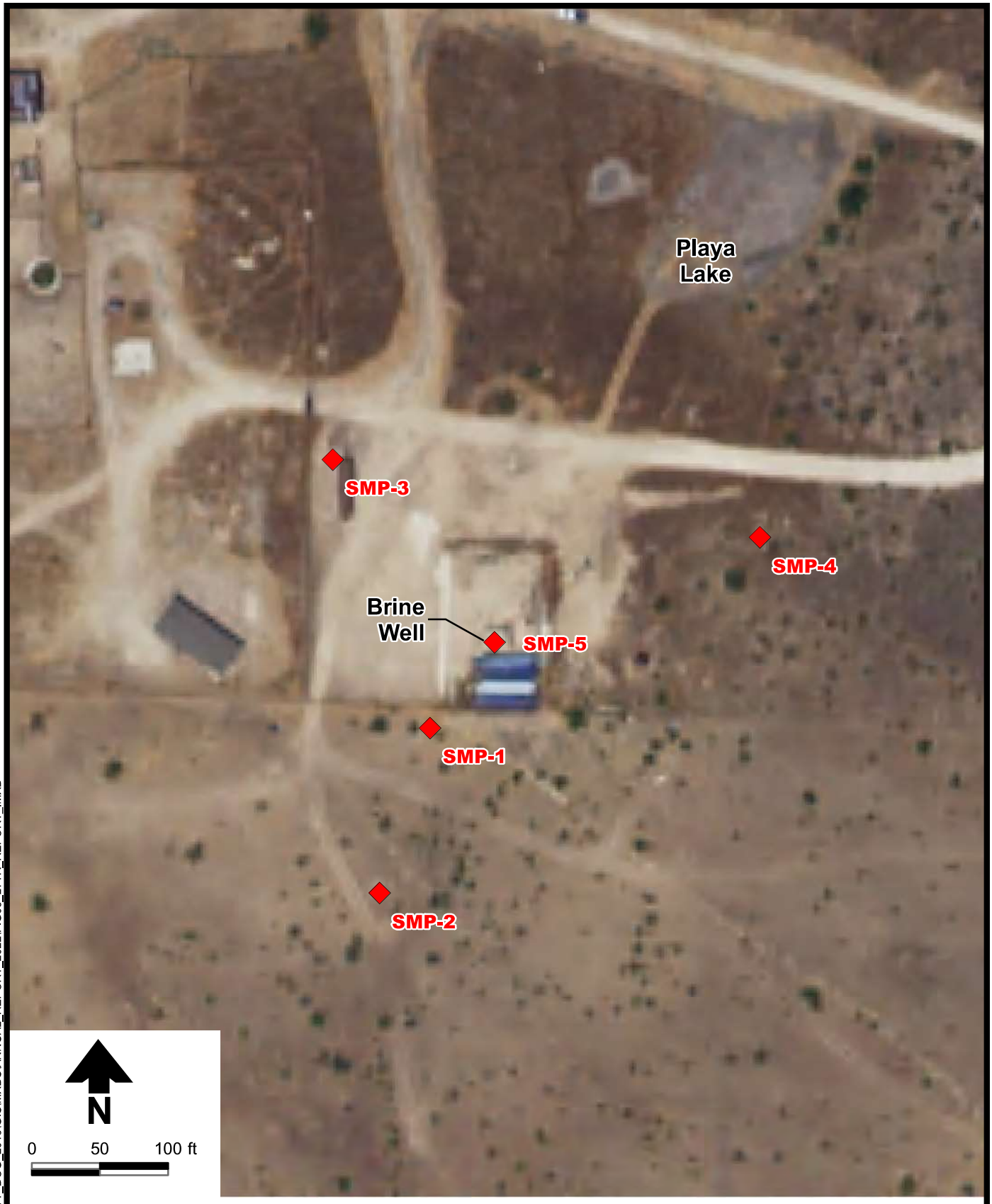
DBS&A a Geo-Logic Company

2/15/2023 DB19.1198

SALTY DOG BRINE STATION

Monitor and Extraction Well Locations

Figure 4



Source: Aerial imagery (NAIP, 2022).

S:\PROJECTS\DB19.1198_SALTY_DOG_2019\GIS\MXDS\ANNUAL_REPORT_2022\FIG05_LTTR_REPORT_.MXD

SALTY DOG BRINE STATION

Land Subsidence
Survey Monitoring Point Locations

DBS&A
a Geo-Logic Company

2/15/2023 DB19.1198

Figure 5

Appendix A

Annual Certification

Annual Certification

PAB Services, Inc. certifies that continued salt solution mining will not cause cavern collapse, surface subsidence, property damage, or otherwise threaten public health and the environment based on geologic and engineering data.

Preston Bergstein — Name

Manager — Title

Signature

5/23/23 — Date

Appendix B

2022 Monthly Fresh Water and Brine Report Forms

DBS&A a Geo-Logic Company

MONTHLY FRESH & BRINE WATER REPORT

FACILITY /LOCATION:	Salty Dog
MONTH/YEAR :	Jan 2022

DATE	AMOUNT OF FRESH WATER PUMPED DOWN HOLE BBLS	AMOUNT OF BRINE WATER OUT OF HOLE BBLS SOLD	DAILY TUBING PRESSURES PSI	DAILY CASING PRESSURES PSI	FRESH WATER SOLD
1	0	0	60	250	100
2	0	0	60	250	0
3	600	600	60	250	50
4	160	160	60	250	50
5	450	450	60	250	110
6	800	800	60	250	225
7	600	600	60	250	50
8	450	450	60	250	0
9	0	0	85	250	0
10	1000	1000	85	250	0
11	450	450	85	250	75
12	450	450	85	250	45
13	750	750	85	250	150
14	560	560	85	250	75
15	1100	1100	85	250	120
16	0	0	85	250	0
17	840	840	85	250	0
18	450	450	85	250	0
19	650	650	85	250	50
20	930	930	85	250	100
21	1300	1300	85	250	100
22	0	0	85	250	0
23	0	0	85	250	0
24	1000	1000	85	250	150
25	1400	1400	85	250	70
26	540	540	85	250	125
27	1230	1230	85	250	45
28	850	850	85	250	0
29	500	500	85	250	0
30	0	0	85	250	0
31	0	0	85	250	0
TOTALS	17060	17060	--	--	1690

MONTHLY FRESH & BRINE WATER REPORT

FACILITY /LOCATION:	Salty Dog
MONTH/YEAR :	Feb 2022

DATE	AMOUNT OF FRESH WATER PUMPED DOWN HOLE BBLS	AMOUNT OF BRINE WATER OUT OF HOLE BBLS SOLD	DAILY TUBING PRESSURES PSI	DAILY CASING PRESSURES PSI	FRESH WATER SOLD
1	670	670	85	250	
2	0	0	85	250	
3	0	0	85	250	
4	720	720	85	250	
5	300	300	85	250	
6	0	0	85	250	
7	0	0	85	250	
8	0	0	85	250	
9	100	100	85	250	
10	90	90	85	250	
11	100	100	85	250	
12	100	100	85	250	
13	0	0	85	250	
14	300	300	85	250	
15	780	780	85	250	
16	1300	1300	85	250	
17	600	600	95	250	
18	425	425	110	250	
19	0	0	60	250	
20	0	0	60	250	
21	0	0	60	250	
22	0	0	60	250	
23	0	0	60	250	
24	0	0	60	250	
25	580	580	125	250	
26	0	0	--	250	
27	0	0	--	250	
28	0	0	--	250	
29					
30					
31					
TOTALS	6065	6065	--	--	0

MONTHLY FRESH & BRINE WATER REPORT

FACILITY /LOCATION:	Salty Dog
MONTH/YEAR :	Mar-22

DATE	AMOUNT OF FRESH WATER PUMPED DOWN HOLE BBLS	AMOUNT OF BRINE WATER OUT OF HOLE BBLS SOLD	DAILY TUBING PRESSURES PSI	DAILY CASING PRESSURES PSI	FRESH WATER SOLD
1	0	0	--	250	150
2	0	0	--	250	190
3	0	0	--	250	0
4	0	0	--	250	0
5	0	0	--	250	92
6	0	0	--	250	0
7	0	0	--	250	8
8	0	0	--	250	455
9	0	0	--	250	145
10	0	0	--	250	160
11	0	0	--	250	0
12	0	0	--	250	0
13	0	0	--	250	0
14	0	0	--	250	0
15	1050	1000	100	350	300
16	1000	950	100	280	70
17	0	0	--	280	220
18	0	310	280	280	70
19	0	100	280	280	12
20	0	170	280	280	0
21	2000	580	340	340	25
22	500	355	60 (flowing)	340	70
23	500	480	--	360	95
24	500	1600	--	360	100
25	500	510	60	340	115
26	1000	200	60	340	0
27	500	100	--	360	70
28	500	1580	60	360	0
29	1000	800	60	360	0
30	1300	1290	60	360	0
31	1000	1260	60	360	170
TOTALS	11350	11285	--	--	2517

MONTHLY FRESH & BRINE WATER REPORT

FACILITY /LOCATION:	Salty Dog
MONTH/YEAR :	Apr-22

DATE	AMOUNT OF FRESH WATER PUMPED DOWN HOLE BBLS	AMOUNT OF BRINE WATER OUT OF HOLE BBLS SOLD	DAILY TUBING PRESSURES PSI	DAILY CASING PRESSURES PSI	FRESH WATER SOLD
1	650	650	60	340	210
2	960	960	60	340	0
3	300	300	40	280	0
4	300	300	60	360	225
5	940	940	70	340	33
6	750	780	60	340	250
7	1425	1425	60	340	140
8	800	800	60	340	140
9	1400	1400	60	340	0
10	700	700	60	340	0
11	500	500	60	340	215
12	850	850	60	340	25
13	450	450	60	340	70
14	2440	2440	60	340	200
15	2210	2210	60	340	0
16	700	700	60	340	0
17	400	400	60	340	0
18	1100	1100	60	340	0
19	500	500	60	340	70
20	470	470	60	340	240
21	1250	1250	60	340	150
22	2820	2820	60	340	190
23	1220	1220	60	340	178
24	2500	2500	60	340	452
25	200	200	60	340	225
26	500	600	60	340	195
27	520	520	60	340	120
28	400	400	60	340	50
29	1060	1060	60	340	100
30	1340	1340	60	340	90
31					
TOTALS	29655	29785	--	--	3568

MONTHLY FRESH & BRINE WATER REPORT

FACILITY /LOCATION:	Salty Dog
MONTH/YEAR :	May-22

DATE	AMOUNT OF FRESH WATER PUMPED DOWN HOLE BBLS	AMOUNT OF BRINE WATER OUT OF HOLE BBLS SOLD	DAILY TUBING PRESSURES PSI	DAILY CASING PRESSURES PSI	FRESH WATER SOLD
1	2250	2300	62	342	540
2	3650	3630	64	344	515
3	1330	1330	62	344	270
4	900	930	65	342	190
5	3200	3185	65	340	145
6	4150	4110	66	342	0
7	1200	1270	64	342	0
8	1050	1000	65	340	0
9	1600	1500	62	341	0
10	2300	2320	61	344	0
11	1800	1850	63	344	0
12	2200	2090	65	342	70
13	1000	985	64	342	25
14	1600	1790	64	344	0
15	1550	1550	62	346	0
16	850	840	62	345	25
17	4350	4290	64	345	270
18	3150	3240	65	345	490
19	2390	2390	65	346	200
20	2500	2590	66	344	0
21	1600	1450	64	344	190
22	0	230	64	342	0
23	1300	1140	62	330	70
24	1650	1600	64	340	0
25	2000	1800	68	347	70
26	1580	1580	69	350	70
27	2210	2210	67	349	12
28	2650	2600	66	345	100
29	725	700	64	342	25
30	800	800	66	345	100
31	1300	1320	68	346	25
TOTAL	58835	58620	--	--	3402

MONTHLY FRESH & BRINE WATER REPORT

FACILITY /LOCATION:	Salty Dog
MONTH/YEAR	Jun-22

DATE	AMOUNT OF FRESH WATER PUMPED DOWN HOLE BBLS	AMOUNT OF BRINE WATER OUT OF HOLE BBLS SOLD	DAILY TUBING PRESSURES PSI	DAILY CASING PRESSURES PSI	FRESH WATER SOLD
1	3695	3705	67	345	570
2	1800	1840	65	343	120
3	2000	2430	66	346	355
4	3500	3800	100	350	0
5	550	585	97	340	0
6	1600	1610	105	360	120
7	2500	2540	102	355	0
8	3100	3130	104	354	0
9	2200	2340	104	352	0
10	2750	2820	102	350	70
11	600	650	100	350	0
12	1850	1970	104	352	0
13	2150	2340	102	350	0
14	2400	2440	102	350	0
15	1150	1200	104	352	120
16	2950	3000	103	352	25
17	2480	2515	102	354	120
18	2625	2700	103	352	0
19	1225	1300	104	350	0
20	2590	2630	102	352	165
21	1200	1250	106	354	0
22	1900	1960	102	352	0
23	2240	2300	105	350	120
24	1640	1700	104	352	0
25	1250	1330	105	350	0
26	1950	2090	104	348	315
27	1100	1350	102	342	30
28	4150	4240	104	340	120
29	1980	2050	102	335	70
30	2150	2210	102	330	120
31					
TOTAL	63275	66025	--	--	2440

MONTHLY FRESH & BRINE WATER REPORT

FACILITY /LOCATION:	Salty Dog
MONTH/YEAR :	Jul-22

DATE	AMOUNT OF FRESH WATER PUMPED DOWN HOLE BBLS	AMOUNT OF BRINE WATER OUT OF HOLE BBLS SOLD	DAILY TUBING PRESSURES PSI	DAILY CASING PRESSURES PSI	FRESH WATER SOLD
1	1550	1565	101	347	70
2	1000	1020	100	350	120
3	2200	2260	101	351	0
4	1450	1590	103	350	25
5	1000	1085	101	350	220
6	1038	1060	103	349	0
7	2710	2890	100	350	70
8	1059	1050	98	348	120
9	95	100	101	354	0
10	1700	1730	101	351	0
11	1310	1290	99	350	0
12	1900	1935	100	352	100
13	2200	2245	100	350	0
14	2050	2130	98	348	0
15	1750	1790	100	352	0
16	980	1000	101	351	0
17	950	1000	100	348	0
18	1400	1430	100	351	0
19	1750	1850	101	354	0
20	150	1030	102	350	0
21	1600	1650	100	349	0
22	650	700	100	350	0
23	1200	1260	101	351	0
24	1650	1745	103	349	0
25	900	920	101	350	0
26	400	1730	101	348	0
27	1350	1360	100	349	0
28	1500	1820	102	350	0
29	2550	2690	102	349	0
30	1800	1850	101	347	125
31	1500	1530	100	348	0
TOTALS	43342	47305	--	--	850

MONTHLY FRESH & BRINE WATER REPORT

FACILITY /LOCATION:	Salty Dog
MONTH/YEAR :	Aug-22

DATE	AMOUNT OF FRESH WATER PUMPED DOWN HOLE BBLS	AMOUNT OF BRINE WATER OUT OF HOLE BBLS SOLD	DAILY TUBING PRESSURES PSI	DAILY CASING PRESSURES PSI	FRESH WATER SOLD
1	1150	1200	101	348	0
2	2950	3020	100	349	0
3	2300	2360	99	348	0
4	4500	4540	101	347	0
5	3500	3540	102	350	0
6	1750	1760	100	351	0
7	1650	1665	101	350	0
8	1300	1310	100	349	0
9	4550	4620	101	350	0
10	2500	2530	101	349	0
11	2050	2100	100	347	0
12	1850	1900	100	347	0
13	500	1560	101	348	0
14	1100	1120	102	350	0
15	2250	2300	101	349	0
16	800	1182	100	350	0
17	1200	2640	100	350	0
18	1850	2460	100	348	0
19	775	800	101	349	0
20	1150	1200	100	347	0
21	1750	1900	101	347	0
22	2450	2500	101	349	0
23	950	1000	102	348	0
24	1500	1580	100	347	0
25	925	3730	100	347	0
26	1450	1460	102	351	0
27	2700	2720	99	349	0
28	2700	2730	100	350	0
29	500	530	100	347	0
30	1500	1520	101	349	0
31	1050	1150	101	349	0
TOTALS	57150	64627	--	--	0

MONTHLY FRESH & BRINE WATER REPORT

FACILITY /LOCATION:	Salty Dog
MONTH/YEAR :	Sep-22

DATE	AMOUNT OF FRESH WATER PUMPED DOWN HOLE BBLS	AMOUNT OF BRINE WATER OUT OF HOLE BBLS SOLD	DAILY TUBING PRESSURES PSI	DAILY CASING PRESSURES PSI	FRESH WATER SOLD
1	3450	3560	99	348	0
2	1550	1620	100	349	0
3	down	down	down	down	0
4	250	280	101	350	0
5	100	100	100	350	0
6	195	1210	100	351	0
7	1150	1200	99	350	0
8	875	900	100	349	0
9	2000	2060	100	350	0
10	1725	1740	101	351	0
11	2300	2320	100	350	0
12	1950	1980	99	350	0
13	1450	1490	100	349	0
14	2550	2580	101	348	0
15	1000	1030	101	347	0
16	1650	1665	100	348	0
17	1000	1020	98	349	0
18	1275	1300	99	350	0
19	800	810	99	351	0
20	1650	1670	101	349	0
21	1650	1690	100	347	0
22	3775	3800	100	348	0
23	1850	1870	99	349	0
24	1625	1630	101	350	0
25	1425	1500	100	349	0
26	1350	3400	100	349	0
27	1250	1280	101	350	0
28	2100	2120	101	351	0
29	1200	1245	100	349	0
30	1415	1420	99	348	0
31					
TOTALS	44560	48490	--	--	0

MONTHLY FRESH & BRINE WATER REPORT

FACILITY /LOCATION:	Salty Dog
MONTH/YEAR :	Oct-22

DATE	AMOUNT OF FRESH WATER PUMPED DOWN HOLE BBLS	AMOUNT OF BRINE WATER OUT OF HOLE BBLS SOLD	DAILY TUBING PRESSURES PSI	DAILY CASING PRESSURES PSI	FRESH WATER SOLD
1	1700	1730	100	349	0
2	1715	1720	101	347	0
3	1690	1700	99	349	0
4	1400	1410	99	349	0
5	1500	1540	100	347	0
6	2950	2980	99	347	0
7	2525	2575	101	349	0
8	1200	1235	101	347	0
9	500	540	99	348	0
10	0	1770	DOWN	DOWN	0
11	0	200	DOWN	DOWN	0
12	0	0	DOWN	DOWN	0
13	0	400	DOWN	DOWN	0
14	0	100	DOWN	DOWN	0
15	0	500	DOWN	DOWN	0
16	0	700	DOWN	DOWN	0
17	0	490	DOWN	DOWN	0
18	0	760	DOWN	DOWN	0
19	0	0	DOWN	DOWN	0
20	0	280	DOWN	DOWN	0
21	600	610	101	342	0
22	0	0	100	346	0
23	175	200	100	347	0
24	825	830	101	349	0
25	2100	2170	101	348	0
26	3100	3150	100	346	0
27	1800	1830	99	347	0
28	2000	2080	100	349	0
29	750	770	101	347	0
30	1200	1280	100	349	0
31	2800	2820	99	347	0
TOTALS	30530	36370	--	--	0

EXISTING WATER IN TANKS

MONTHLY FRESH & BRINE WATER REPORT

FACILITY /LOCATION:	Salty Dog
MONTH/YEAR :	Nov-22

DATE	AMOUNT OF FRESH WATER PUMPED DOWN HOLE BBLS	AMOUNT OF BRINE WATER OUT OF HOLE BBLS SOLD	DAILY TUBING PRESSURES PSI	DAILY CASING PRESSURES PSI	FRESH WATER SOLD
1	2200	2260	100	349	0
2	1500	1540	99	350	0
3	2200	2220	101	348	25
4	1550	1570	100	348	25
5	2475	2500	100	347	0
6	2200	2230	99	349	0
7	1700	1710	100	350	0
8	1050	1100	99	349	20
9	2300	2380	99	350	25
10	2750	2780	101	349	120
11	3250	3295	100	350	0
12	2925	2950	99	347	0
13	2350	2360	100	347	0
14	3700	3760	100	349	0
15	3660	3710	99	347	0
16	850	890	99	350	0
17	4550	4600	100	349	0
18	2580	2600	97	347	0
19	3250	3280	99	349	0
20	2610	2640	98	347	60
21	2400	2440	99	349	0
22	3150	3200	99	348	0
23	2550	2670	100	349	0
24	3400	3515	98	347	0
25	1450	1500	99	350	0
26	POWER OUTAGE	0	--	--	0
27	POWER OUTAGE	0	--	--	0
28	3100	3180	100	349	0
29	BUSTED PIPE	1595	99	350	0
30	1625	3140	99	349	0
31					
TOTALS	67325	71615	--	--	275

MONTHLY FRESH & BRINE WATER REPORT

FACILITY /LOCATION:	Salty Dog
MONTH/YEAR :	Dec-22

DATE	AMOUNT OF FRESH WATER PUMPED DOWN HOLE BBLS	AMOUNT OF BRINE WATER OUT OF HOLE BBLS SOLD	DAILY TUBING PRESSURES PSI	DAILY CASING PRESSURES PSI	FRESH WATER SOLD	
1	1775	1800	99	349	0	
2	2050	2100	98	347	0	
3	1950	1990	99	347	0	
4	2600	2635	97	349	0	
5	3350	3370	97	347	0	
6	1250	1720	99	349	0	
7	0	0	--	--	0	DOWN FOR BROKEN PIPE
8	950	960	97	350	0	
9	0	0	--	--	0	DOWN FOR BROKEN PIPE
10	290	300	96	349	0	
11	0	0	--	--	0	
12	300	330	97	347	0	
13	2850	2890	99	349	0	BACK IN SERVICE
14	3300	3330	100	350	0	
15	1200	1250	99	349	0	
16	1175	1200	100	348	0	
17	375	400	99	347	0	
18	200	220	97	347	0	
19	1225	1230	98	349	0	
20	1800	1835	96	347	0	
21	2100	2140	98	349	0	
22	2425	2430	97	348	0	
23	3315	3340	98	349	0	
24	1200	1215	98	347	0	
25	900	910	97	347	0	
26	1750	1765	96	349	0	
27	2925	2980	97	348	0	
28	2200	2250	97	347	0	
29	2110	2140	98	346	0	
30	2000	2010	99	347	0	
31	2005	2010	99	347	0	
TOTALS	49570	50750	--	--	0	

Appendix C

Brine Well Cavern Characterization

DBS&A
a Geo-Logic Company

DBS&A a Geo-Logic Company

Calculation Cover Sheet

Project Name Salty Dog Brine Well Cavern Characterization Project Number DB19.1198.00

Calculation Number 1 Discipline Hydrology No. of Sheets 2

PROJECT:

Salty Dog

SITE:

Salty Dog Brine Station, Lea County, New Mexico

SUBJECT:

Brine Well Cavern Characterization

SOURCES OF DATA:

1. Monthly fresh and brine water report forms
2. Laboratory analytical reports for brine and freshwater sampling
3. Historical documents and information

The above data sources are referenced and summarized in the main body of the *2022 Annual Class III Well Report, Salty Dog Brine Station*.

SOURCES OF FORMULAE & REFERENCES:

New Mexico Energy, Minerals and Natural Resources Department (NMEMNRD). Undated. Example Salt Cavern Characterization. Emailed to DBS&A from NMENMRD on December 7, 2018.

Daniel B. Stephens & Associates, Inc. (DBS&A). 2023. *2022 Annual Class III Well Report, Salty Dog Brine Station, Lea County, New Mexico*. Prepared for the New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division, Environmental Bureau, Santa Fe, New Mexico. May 19, 2023.

☐ Preliminary Calculation ☒ Final Calculation Supersedes Calculation No. _____

Rev. No.	Revision	Calculation By	Date	Checked By	Date	Approved By	Date

DBS&A a Geo-Logic Company

Calculation Sheet

Project No. DB19.1198.00 Date 5/11/2023

Subject Brine Well Cavern Characterization Sheet 1 of 2

By J. Myers Checked By J. Ayarbe Calculation No. 1

1. Purpose

Calculate the estimated height, estimated floor diameter, and safety ratio of the brine cavern at the Salty Dog Brine Station.

2. Given

1. Volume of the brine cavern at the end of 2022:

Volume = 1,122,402 barrels (bbl)

Value based on historical and present brine production data, as presented in the main body of the 2022 Annual Class III Well Report, Salty Dog Brine Station.

2. Equation for the volume of a cone:

$$Volume = \frac{\pi \times radius^2 \times height}{3}$$

3. Brine well construction (Figure 1):

Casing is set at 1,877 feet below ground surface (feet bgs). Tubing was set at 2,610 feet bgs in 2018, when the brine well was repaired. Figure 1 is a schematic of the brine well.

3. Method

Cavern height calculated as the difference between the bottom of the well casing of 1,877 feet bgs and the 2018 tubing depth of 2,610 feet bgs.

Floor diameter calculated by solving for radius in the cone-volume equation.

Safety ratio is the floor diameter divided by the cavern height.

DBS&A a Geo-Logic Company

Calculation Sheet

Project No. DB19.1198.00 Date 5/11/2023

Subject Brine Well Cavern Characterization Sheet 1 of 2

By J. Myers Checked By J. Ayarbe Calculation No. 1

4. Solution

$$Cavern\ height = 2{,}610 \text{ feet} - 1{,}877\ feet = 733\ feet$$

Cavern floor diameter:

$$1\ bbl = 5.61458\ ft^3$$

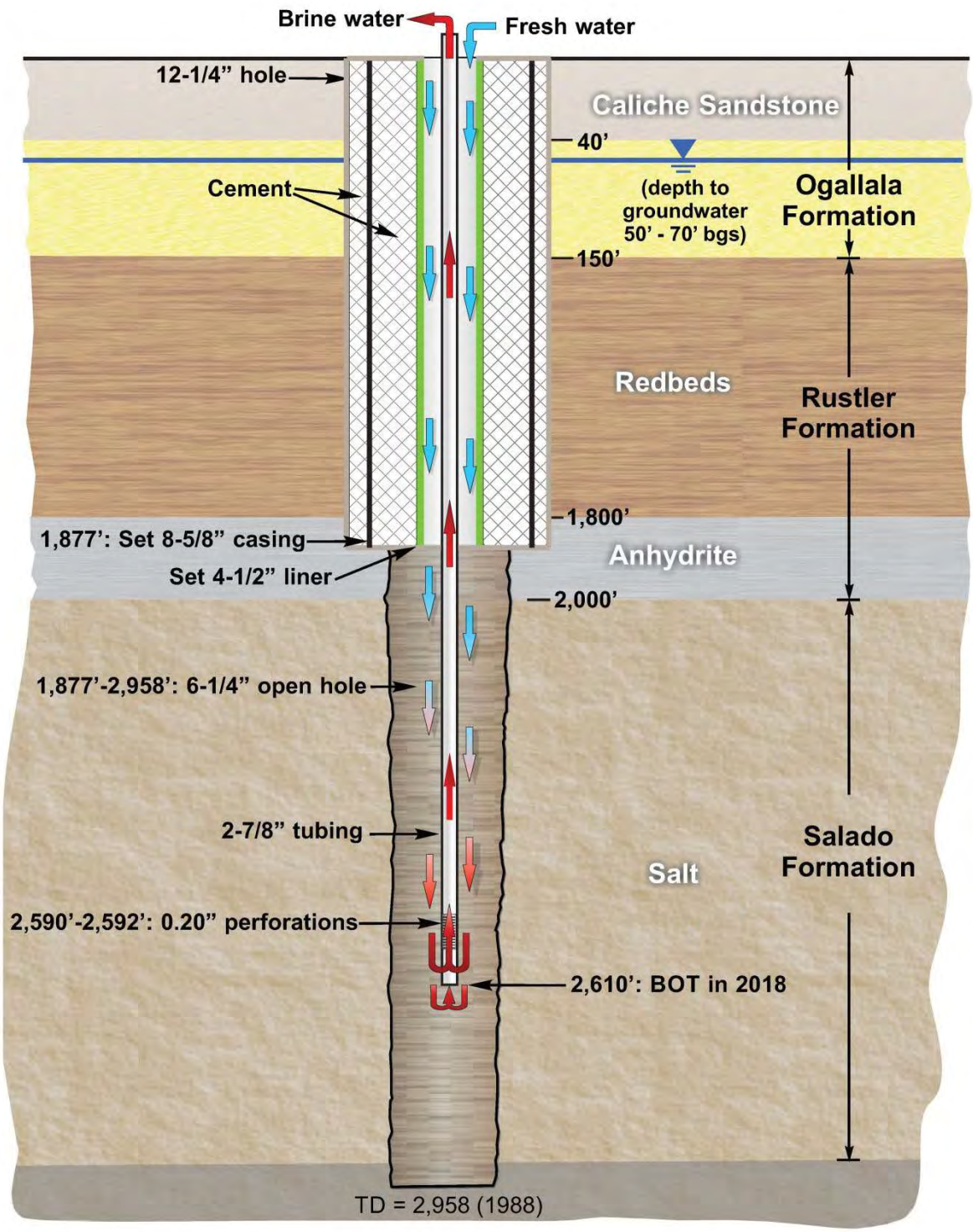
$$radius = \sqrt{\frac{3 \times Volume}{\pi \times height}} = \sqrt{\frac{3 \times 1{,}122{,}746\ bbl}{\pi \times 733\ feet} \times \frac{5.61458\ ft^3}{bbl}} = 90.61\ feet$$

$$diameter = 2 \times radius = 2 \times 90.62\ feet = 181\ feet$$

Brine cavern safety ratio:

$$Safety\ Ratio = \frac{Diameter}{Height} = \frac{181\ feet}{733\ feet} = 0.25$$

Salty Dog Brine Well



Notes:
1. BOT = Bottom of tubing
2. Figure not to scale

Sources:
1. Completion data based on OCD well reports
2. Lithology from Salty Dog (1988)

P:_DB19-1198\2022 Anml Rpt.5-23\Figures\Word\Fig03_Well Schematic.docx

DBS&A a Geo-Logic Company

5/18/2023 DB19.1198

SALTY DOG BRINE STATION

Generalized Brine Well Schematic

Figure 1

Appendix D

Laboratory Analytical Reports

DBS&A a Geo-Logic Company

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

July 14, 2022

John Ayarbe

Daniel B. Stephens & Assoc.
6020 Academy NE Suite 100
Albuquerque, NM 87109
TEL:
FAX:

RE: Salty Dog OrderNo.: 2206811

Dear John Ayarbe:

Hall Environmental Analysis Laboratory received 14 sample(s) on 6/15/2022 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2206811**
Date Reported: **7/14/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** DBS-1R
Project: Salty Dog **Collection Date:** 6/9/2022 4:08:00 PM
Lab ID: 2206811-001 **Matrix:** GROUNDWA **Received Date:** 6/15/2022 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	940	50	*	mg/L	100	6/15/2022 6:21:58 PM	R88776

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2206811**
Date Reported: **7/14/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** DBS-3
Project: Salty Dog **Collection Date:** 6/9/2022 3:24:00 PM
Lab ID: 2206811-002 **Matrix:** GROUNDWA **Received Date:** 6/15/2022 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	57	5.0		mg/L	10	6/15/2022 6:34:51 PM	R88776

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2206811**
Date Reported: **7/14/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** DBS-4
Project: Salty Dog **Collection Date:** 6/9/2022 2:42:00 PM
Lab ID: 2206811-003 **Matrix:** GROUNDWA **Received Date:** 6/15/2022 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	44	5.0		mg/L	10	6/15/2022 7:26:17 PM	R88776

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2206811**
Date Reported: **7/14/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** DBS-5
Project: Salty Dog **Collection Date:** 6/9/2022 4:45:00 PM
Lab ID: 2206811-004 **Matrix:** GROUNDWA **Received Date:** 6/15/2022 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	200	5.0		mg/L	10	6/15/2022 7:52:01 PM	R88776

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2206811**
Date Reported: **7/14/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** DBS-6
Project: Salty Dog **Collection Date:** 6/9/2022 6:44:00 PM
Lab ID: 2206811-005 **Matrix:** GROUNDWA **Received Date:** 6/15/2022 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	290	50	*	mg/L	100	6/15/2022 8:30:35 PM	R88776

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2206811**
Date Reported: **7/14/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** DBS-8
Project: Salty Dog **Collection Date:** 6/9/2022 6:16:00 PM
Lab ID: 2206811-006 **Matrix:** GROUNDWA **Received Date:** 6/15/2022 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	37	5.0		mg/L	10	6/15/2022 8:43:27 PM	R88776

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2206811**
Date Reported: **7/14/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** DBS-9
Project: Salty Dog **Collection Date:** 6/9/2022 5:40:00 PM
Lab ID: 2206811-007 **Matrix:** GROUNDWA **Received Date:** 6/15/2022 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	350	50	*	mg/L	100	6/15/2022 9:22:01 PM	R88776

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2206811**
Date Reported: **7/14/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** DBS-10
Project: Salty Dog **Collection Date:** 6/9/2022 7:25:00 PM
Lab ID: 2206811-008 **Matrix:** GROUNDWA **Received Date:** 6/15/2022 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	530	50	*	mg/L	100	6/15/2022 10:13:28 PM	R88776

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2206811**
Date Reported: **7/14/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** MW-5
Project: Salty Dog **Collection Date:** 6/10/2022 3:35:00 PM
Lab ID: 2206811-009 **Matrix:** GROUNDWA **Received Date:** 6/15/2022 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	590	50	*	mg/L	100	6/15/2022 10:39:11 PM	R88776

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2206811**
Date Reported: **7/14/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** PMW-1
Project: Salty Dog **Collection Date:** 6/9/2022 8:24:00 PM
Lab ID: 2206811-010 **Matrix:** GROUNDWA **Received Date:** 6/15/2022 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JTT**	
Chloride	13000	500	*	mg/L	1E+	6/27/2022 12:11:08 PM	R89065

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2206811**
Date Reported: **7/14/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** Ranch Well
Project: Salty Dog **Collection Date:** 6/10/2022 10:27:00 AM
Lab ID: 2206811-011 **Matrix:** GROUNDWA **Received Date:** 6/15/2022 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	54	5.0		mg/L	10	6/15/2022 11:17:45 PM	R88776

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **2206811**
Date Reported: **7/14/2022**

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** MW-3
Project: Salty Dog **Collection Date:** 6/10/2022 1:38:00 PM
Lab ID: 2206811-012 **Matrix:** GROUNDWA **Received Date:** 6/15/2022 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY						Analyst:	**CAS**
Specific Gravity	1.000	0			1	6/30/2022 3:28:00 PM	R89169
EPA METHOD 300.0: ANIONS						Analyst:	**JMT**
Fluoride	ND	1.0		mg/L	10	6/16/2022 12:34:56 AM	R88776
Chloride	5100	250	*	mg/L	500	6/27/2022 12:24:00 PM	R89065
Bromide	2.0	1.0		mg/L	10	6/16/2022 12:34:56 AM	R88776
Phosphorus, Orthophosphate (As P)	ND	5.0	H	mg/L	10	6/16/2022 12:34:56 AM	R88776
Sulfate	250	5.0		mg/L	10	6/16/2022 12:34:56 AM	R88776
Nitrate+Nitrite as N	ND	4.0		mg/L	20	6/27/2022 2:58:28 PM	R89065
SM2510B: SPECIFIC CONDUCTANCE						Analyst:	**CAS**
Conductivity	17000	100		µmhos/c	10	6/20/2022 1:03:46 PM	R88891
SM2320B: ALKALINITY						Analyst:	**CAS**
Bicarbonate (As CaCO3)	195.9	20.00		mg/L Ca	1	6/16/2022 2:16:25 PM	R88821
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	6/16/2022 2:16:25 PM	R88821
Total Alkalinity (as CaCO3)	195.9	20.00		mg/L Ca	1	6/16/2022 2:16:25 PM	R88821
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst:	**KS**
Total Dissolved Solids	10800	200	*D	mg/L	1	6/20/2022 12:44:00 PM	68166
SM4500-H+B / 9040C: PH						Analyst:	**CAS**
pH	7.48		H	pH units	1	6/16/2022 2:16:25 PM	R88821
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst:	**JRR**
Calcium	680	100		mg/L	100	6/16/2022 12:41:23 PM	68150
Magnesium	110	100		mg/L	100	6/16/2022 12:41:23 PM	68150
Potassium	12	1.0		mg/L	1	6/16/2022 12:22:17 PM	68150
Sodium	2400	100		mg/L	100	6/16/2022 12:41:23 PM	68150

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2206811**
Date Reported: **7/14/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** Brine
Project: Salty Dog **Collection Date:** 6/10/2022 3:58:00 PM
Lab ID: 2206811-013 **Matrix:** GROUNDWA **Received Date:** 6/15/2022 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY						Analyst: **CAS**	
Specific Gravity	1.200	0			1	6/30/2022 3:28:00 PM	R89169
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	170000	10000	*	mg/L	2E+	6/16/2022 1:13:30 AM	R88776
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	326000	2000	*D	mg/L	1	6/20/2022 12:44:00 PM	68166
SM4500-H+B / 9040C: PH						Analyst: **CAS**	
pH	7.13		H	pH units	1	6/16/2022 12:07:45 PM	R88821
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JRR**	
Sodium	56000	1000		mg/L	1E+	6/16/2022 12:43:36 PM	68150

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2206811**
Date Reported: **7/14/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** Injection
Project: Salty Dog **Collection Date:** 6/10/2022 4:50:00 PM
Lab ID: 2206811-014 **Matrix:** GROUNDWA **Received Date:** 6/15/2022 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY						Analyst: **CAS**	
Specific Gravity	0.9959	0			1	6/30/2022 3:28:00 PM	R89169
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	590	50	*	mg/L	100	6/16/2022 1:39:12 AM	R88776
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	1470	20.0	*	mg/L	1	6/20/2022 12:44:00 PM	68166
SM4500-H+B / 9040C: PH						Analyst: **CAS**	
pH	7.57		H	pH units	1	6/16/2022 12:12:18 PM	R88821
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JRR**	
Sodium	300	100		mg/L	100	6/16/2022 12:47:59 PM	68150

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

ANALYTICAL REPORT

July 13, 2022

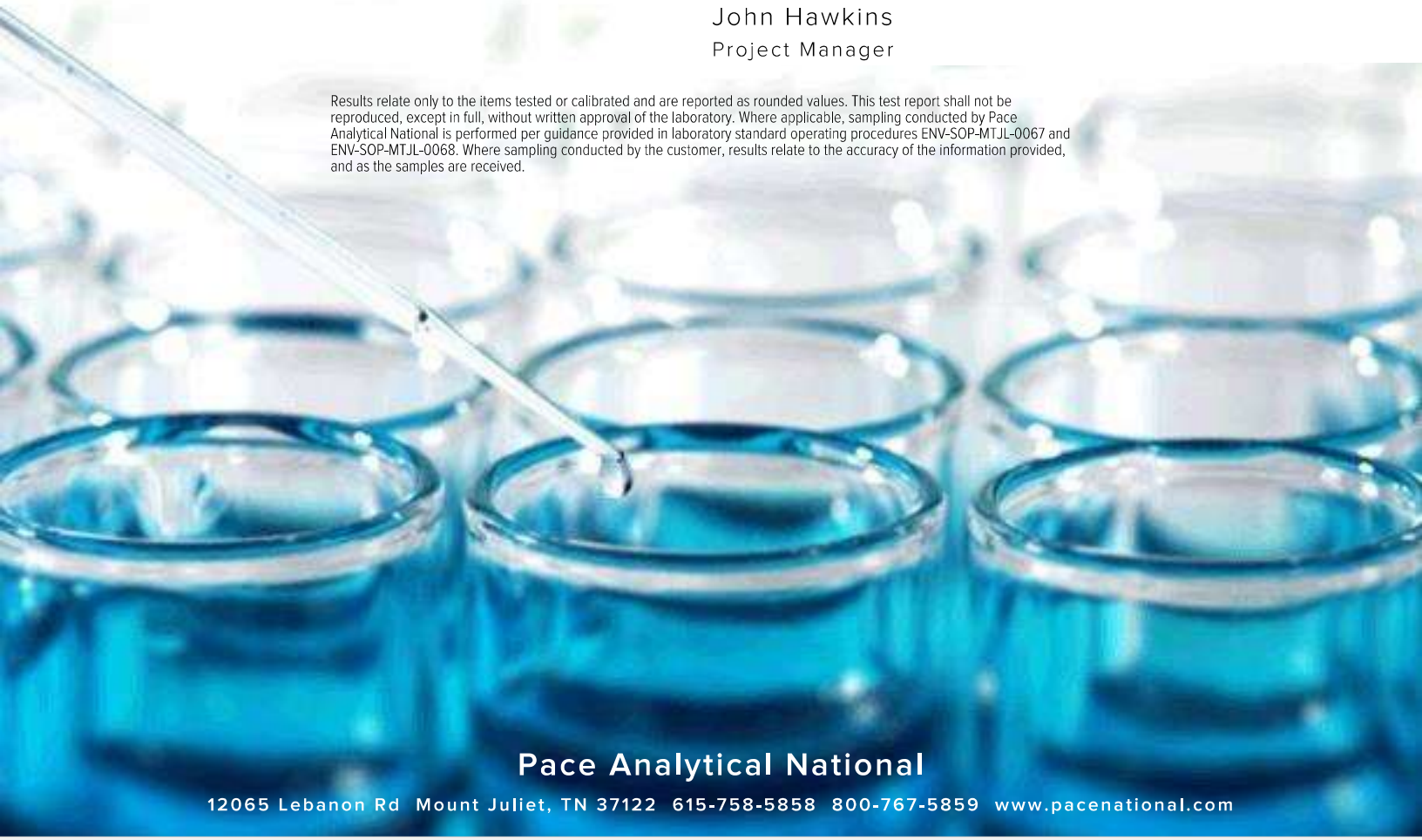
Hall Environmental Analysis Laboratory

Sample Delivery Group:	L1505736
Samples Received:	06/16/2022
Project Number:	
Description:	

Report To: Andy Freeman
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

SAMPLE SUMMARY

	Collected by	Collected date/time	Received date/time
2206811-012C MW-3 L1505736-01 GW		06/10/22 13:38	06/16/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1891794	1	07/13/22 13:16	07/13/22 13:16	ARD	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Wet Chemistry by Method 2580

Analyte	Result mV	Qualifier	Dilution	Analysis date / time	Batch
ORP	176	T8	1	07/13/2022 13:16	WG1891794

L1505736-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1505736-01 07/13/22 13:16 • (DUP) R3814296-3 07/13/22 13:16

	Original Result	DUP Result	Dilution	DUP Diff	DUP Qualifier	DUP Diff Limits
Analyte	mV	mV		mV		mV
ORP	176	176	1	0.700		20

L1508843-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1508843-02 07/13/22 13:16 • (DUP) R3814296-4 07/13/22 13:16

	Original Result	DUP Result	Dilution	DUP Diff	DUP Qualifier	DUP Diff Limits
Analyte	mV	mV		mV		mV
ORP	198	197	1	1.00		20

L1510492-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1510492-01 07/13/22 13:16 • (DUP) R3814296-5 07/13/22 13:16

	Original Result	DUP Result	Dilution	DUP Diff	DUP Qualifier	DUP Diff Limits
Analyte	mV	mV		mV		mV
ORP	-83.5	-82.3	1	0.000		20

L1512255-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1512255-02 07/13/22 13:16 • (DUP) R3814296-6 07/13/22 13:16

	Original Result	DUP Result	Dilution	DUP Diff	DUP Qualifier	DUP Diff Limits
Analyte	mV	mV		mV		mV
ORP	166	166	1	0.500		20

L1512255-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1512255-03 07/13/22 13:16 • (DUP) R3814296-7 07/13/22 13:16

	Original Result	DUP Result	Dilution	DUP Diff	DUP Qualifier	DUP Diff Limits
Analyte	mV	mV		mV		mV
ORP	93.6	91.3	1	2.30		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3814296-1 07/13/22 13:16 • (LCSD) R3814296-2 07/13/22 13:16

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	Diff	Diff Limits
Analyte	mV	mV	mV	%	%	%			mV	mV
ORP	108	107	110	99.2	102	90.0-110			2.70	20

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
T8	Sample(s) received past/too close to holding time expiration.

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

D176

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: www.hallenvironmental.com

SUB CONTRATOR: Pace TN	COMPANY: PACE TN		PHONE: (800) 767-5859	FAX: (615) 758-5859	
ADDRESS: 12065 Lebanon Rd			ACCOUNT #:	EMAIL:	
CITY, STATE, ZIP: Mt. Juliet, TN 37122					

4505736

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2206811-012C	MW-3	125HDP	Groundwater	6/10/2022 1:38:00 PM	1	ORP -01

cmc 6/15/22

5755 8089 3826

Sample Receipt Checklist

COC Seal Present/Intact:	Y N	If Applicable	
COC Signed/Accurate:	Y N	VOA Zero Headspace:	Y N
Bottles arrive intact:	Y N	Pres.Correct/Check:	Y N
Correct bottles used:	Y N		
Sufficient volume sent:	Y N		
RAD Screen <0.5 mR/hr:	Y N		

DRA7 2.7 + 0 = 2.7

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By: cmc	Date: 6/15/2022	Time: 11:00 AM	Received By: Matt Elv	Date: 6/16/22	Time: 0900
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:

☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples _____ ℃ Attempt to Cool ? _____

Comments: _____

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2206811**

14-Jul-22

Client: Daniel B. Stephens & Assoc.

Project: Salty Dog

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R88776**	RunNo: **88776**
Prep Date:	Analysis Date: **6/15/2022**	SeqNo: **3151883** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Bromide	ND	0.10								
Phosphorus, Orthophosphate (As P)	ND	0.50								
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R88776**	RunNo: **88776**
Prep Date:	Analysis Date: **6/15/2022**	SeqNo: **3151884** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.51	0.10	0.5000	0	102	90	110			
Chloride	4.7	0.50	5.000	0	94.9	90	110			
Bromide	2.5	0.10	2.500	0	99.6	90	110			
Phosphorus, Orthophosphate (As P)	4.6	0.50	5.000	0	92.0	90	110			
Sulfate	10	0.50	10.00	0	102	90	110			

Sample ID: **2206811-001AMS**	SampType: **ms**	TestCode: **EPA Method 300.0: Anions**
Client ID: **DBS-1R**	Batch ID: **R88776**	RunNo: **88776**
Prep Date:	Analysis Date: **6/15/2022**	SeqNo: **3151886** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	5.8	1.0	5.000	0.9770	95.9	79.7	110			
Bromide	25	1.0	25.00	0.6060	99.0	91.2	106			
Sulfate	170	5.0	100.0	62.38	104	90.5	112			

Sample ID: **2206811-001AMSD**	SampType: **msd**	TestCode: **EPA Method 300.0: Anions**
Client ID: **DBS-1R**	Batch ID: **R88776**	RunNo: **88776**
Prep Date:	Analysis Date: **6/15/2022**	SeqNo: **3151887** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	5.8	1.0	5.000	0.9770	96.0	79.7	110	0.0866	20	
Bromide	25	1.0	25.00	0.6060	98.8	91.2	106	0.162	20	
Sulfate	170	5.0	100.0	62.38	104	90.5	112	0.0673	20	

Sample ID: **2206811-011AMS**	SampType: **ms**	TestCode: **EPA Method 300.0: Anions**
Client ID: **Ranch Well**	Batch ID: **R88776**	RunNo: **88776**
Prep Date:	Analysis Date: **6/15/2022**	SeqNo: **3151912** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2206811**

14-Jul-22

Client: Daniel B. Stephens & Assoc.

Project: Salty Dog

Sample ID: **2206811-011AMS**	SampType: **ms**	TestCode: **EPA Method 300.0: Anions**
Client ID: **Ranch Well**	Batch ID: **R88776**	RunNo: **88776**
Prep Date:	Analysis Date: **6/15/2022**	SeqNo: **3151912** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	5.4	1.0	5.000	0.6930	94.9	79.7	110			
Chloride	100	5.0	50.00	53.87	97.8	86.3	114			
Bromide	24	1.0	25.00	0	97.2	91.2	106			
Sulfate	160	5.0	100.0	60.34	101	90.5	112			

Sample ID: **2206811-011AMSD**	SampType: **msd**	TestCode: **EPA Method 300.0: Anions**
Client ID: **Ranch Well**	Batch ID: **R88776**	RunNo: **88776**
Prep Date:	Analysis Date: **6/15/2022**	SeqNo: **3151913** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	5.5	1.0	5.000	0.6930	96.1	79.7	110	1.17	20	
Chloride	100	5.0	50.00	53.87	99.5	86.3	114	0.855	20	
Bromide	24	1.0	25.00	0	98.0	91.2	106	0.762	20	
Sulfate	160	5.0	100.0	60.34	103	90.5	112	1.01	20	

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R89065**	RunNo: **89065**
Prep Date:	Analysis Date: **6/27/2022**	SeqNo: **3163601** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Nitrate+Nitrite as N	ND	0.20								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R89065**	RunNo: **89065**
Prep Date:	Analysis Date: **6/27/2022**	SeqNo: **3163602** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.7	0.50	5.000	0	94.9	90	110			
Nitrate+Nitrite as N	3.6	0.20	3.500	0	102	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2206811**

14-Jul-22

Client: Daniel B. Stephens & Assoc.

Project: Salty Dog

Sample ID:	**lcs-1 99.6uS eC**	SampType:	**lcs**	TestCode:	**SM2510B: Specific Conductance**					
Client ID:	**LCSW**	Batch ID:	**R88891**	RunNo:	**88891**					
Prep Date:		Analysis Date:	**6/20/2022**	SeqNo:	**3156279**	Units:	**µmhos/cm**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	10	99.60	0	103	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2206811**

14-Jul-22

Client: Daniel B. Stephens & Assoc.

Project: Salty Dog

Sample ID: **MB-68150**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **68150**	RunNo: **88834**
Prep Date: **6/15/2022**	Analysis Date: **6/16/2022**	SeqNo: **3154017** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID: **LCS-68150**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **68150**	RunNo: **88834**
Prep Date: **6/15/2022**	Analysis Date: **6/16/2022**	SeqNo: **3154019** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	50	1.0	50.00	0	100	80	120			
Magnesium	50	1.0	50.00	0	99.0	80	120			
Potassium	49	1.0	50.00	0	97.0	80	120			
Sodium	47	1.0	50.00	0	94.1	80	120			

Sample ID: **2206811-012BMS**	SampType: **MS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **MW-3**	Batch ID: **68150**	RunNo: **88834**
Prep Date: **6/15/2022**	Analysis Date: **6/16/2022**	SeqNo: **3154026** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	62	1.0	50.00	12.40	99.4	75	125			

Sample ID: **2206811-012BMSD**	SampType: **MSD**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **MW-3**	Batch ID: **68150**	RunNo: **88834**
Prep Date: **6/15/2022**	Analysis Date: **6/16/2022**	SeqNo: **3154030** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	62	1.0	50.00	12.40	99.8	75	125	0.353	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2206811**

14-Jul-22

Client: Daniel B. Stephens & Assoc.

Project: Salty Dog

Sample ID: **mb-1 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R88821**	RunNo: **88821**							
Prep Date:	Analysis Date: **6/16/2022**	SeqNo: **3153402**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-1 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R88821**	RunNo: **88821**							
Prep Date:	Analysis Date: **6/16/2022**	SeqNo: **3153403**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	75.00	20.00	80.00	0	93.8	90	110			

Sample ID: **mb-2 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R88821**	RunNo: **88821**							
Prep Date:	Analysis Date: **6/16/2022**	SeqNo: **3153425**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-2 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R88821**	RunNo: **88821**							
Prep Date:	Analysis Date: **6/16/2022**	SeqNo: **3153426**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	75.16	20.00	80.00	0	93.9	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2206811**

14-Jul-22

Client: Daniel B. Stephens & Assoc.

Project: Salty Dog

Sample ID: **2206811-012ADUP**	SampType: **DUP**	TestCode: **Specific Gravity**							
Client ID: **MW-3**	Batch ID: **R89169**	RunNo: **89169**							
Prep Date:	Analysis Date: **6/30/2022**	SeqNo: **3169253**	Units:						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Specific Gravity	1.000	0						0.0300	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2206811**

14-Jul-22

Client: Daniel B. Stephens & Assoc.

Project: Salty Dog

Sample ID: **MB-68166**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **68166**	RunNo: **88869**
Prep Date: **6/17/2022**	Analysis Date: **6/20/2022**	SeqNo: **3155242** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: **LCS-68166**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **68166**	RunNo: **88869**
Prep Date: **6/17/2022**	Analysis Date: **6/20/2022**	SeqNo: **3155243** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1040	20.0	1000	0	104	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **Daniel B. Stephens & Assoc.** Work Order Number: **2206811** RcptNo: **1**

Received By: **Cheyenne Cason** **6/15/2022 10:30:00 AM**

Completed By: **Cheyenne Cason** **6/15/2022 10:36:32 AM**

Reviewed By: KDG 6.15.22

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	UPS		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☐	No ☐	NA ☑
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: 4 (<2 or >12 unless noted)

Adjusted? NO

Checked by: CMC 6/15/22

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.1	Good	Not Present			

Chain-of-Custody Record

Client: DBS+A

Mailing Address: ABQ Office

Phone #: 505.822.9400

email or Fax#: JAyarbe@geo-logic.com

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: Salty Dog

Project #: DB19.1198 ph 8

Project Manager: John Ayarbe

Sampler: York Morgan

On Ice: ☒ Yes ☐ No

# of Coolers: (

Cooler Temp(including CF): 4.1-0=4.1 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2206811	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)	Cl only - 300.0
6-9-22	1608	GW	DBS-1R	1 Poly	none	001											X
	1524		DBS-3			002											X
	1442		DBS-4			003											X
	1641		DBS-5			004											X
	1844		DBS-6			005											X
	1816		DBS-8			006											X
	1740		DBS-9			007											X
	1925		DBS-10			008											X
6-10-22	1535		MW-5			009											X
6-9-22	2024		PMW-1			010											X
6-10-22	1027		Ranch Well			011											X

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
6-14-22	1315	York Morgan	CNC UPS		6/15/22	1030
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time

Remarks:

Page 1 of 2

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: DBS+A

Mailing Address:

Phone #: 505.822.9400

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: Salty Dog

Project #: J. Ayarbe

Project Manager:

Sampler: Y. Morgan

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp (including CF): 4.1 - 0 = 4.1 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2206811
6-10-22	13:38	GW	MW-3	4 poly	Varies	012
"	15:58	"	Brine	3 poly	"	013
↓	16:50	↓	Injection	3 poly	↓	014

Analysis Request

BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals 300.0	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA) ORP	8270 (Semi-VOA)	Total Coliform (Present/Absent)	Specific Gravity, TDS, PH	Specific Conductance	Total Bicarbonate Carbonate Alkalinity	Ca, Mg, K, NA - 6010B	NA - 6010B	Cl-only 300.0
						X	X			X	X	X	X		
										X				X	X
										X				X	X

Remarks:

Page 2 of 2

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
6-14-22	13:15		CM	UPS	6/15/22	1030
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 20, 2023

John Ayarbe

Daniel B. Stephens & Assoc.
6020 Academy NE Suite 100
Albuquerque, NM 87109
TEL:
FAX:

RE: Salty Dog OrderNo.: 2212E17

Dear John Ayarbe:

Hall Environmental Analysis Laboratory received 12 sample(s) on 12/28/2022 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued January 18, 2023.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **2212E17**
Date Reported: **1/20/2023**

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** DBS-1R
Project: Salty Dog **Collection Date:** 12/23/2022 1:11:00 PM
Lab ID: 2212E17-001 **Matrix:** GROUNDWA **Received Date:** 12/28/2022 9:31:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **NAI**	
Chloride	1200	50	*	mg/L	100	12/30/2022 6:06:57 PM	R93667

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212E17**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** DBS-3
Project: Salty Dog **Collection Date:** 12/23/2022 10:52:00 AM
Lab ID: 2212E17-002 **Matrix:** GROUNDWA **Received Date:** 12/28/2022 9:31:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **NAI**	
Chloride	68	5.0		mg/L	10	12/30/2022 6:19:48 PM	R93667

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212E17**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** DBS-4
Project: Salty Dog **Collection Date:** 12/23/2022 12:07:00 PM
Lab ID: 2212E17-003 **Matrix:** GROUNDWA **Received Date:** 12/28/2022 9:31:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **NAI**	
Chloride	47	5.0		mg/L	10	12/30/2022 7:11:17 PM	A93667

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212E17**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** DBS-5
Project: Salty Dog **Collection Date:** 12/23/2022 11:34:00 AM
Lab ID: 2212E17-004 **Matrix:** GROUNDWA **Received Date:** 12/28/2022 9:31:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **NAI**	
Chloride	230	50		mg/L	100	12/30/2022 8:41:24 PM	A93667

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212E17**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** DBS-6
Project: Salty Dog **Collection Date:** 12/22/2022 3:23:00 PM
Lab ID: 2212E17-005 **Matrix:** GROUNDWA **Received Date:** 12/28/2022 9:31:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **NAI**	
Chloride	360	50	*	mg/L	100	12/30/2022 9:07:06 PM	A93667

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212E17**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** DBS-8
Project: Salty Dog **Collection Date:** 12/22/2022 2:50:00 PM
Lab ID: 2212E17-006 **Matrix:** GROUNDWA **Received Date:** 12/28/2022 9:31:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **NAI**	
Chloride	43	5.0		mg/L	10	12/30/2022 9:19:58 PM	A93667

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212E17**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** DBS-9
Project: Salty Dog **Collection Date:** 12/23/2022 9:56:00 AM
Lab ID: 2212E17-007 **Matrix:** GROUNDWA **Received Date:** 12/28/2022 9:31:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **NAI**	
Chloride	400	50	*	mg/L	100	12/30/2022 9:58:34 PM	A93667

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212E17**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** DBS-10
Project: Salty Dog **Collection Date:** 12/22/2022 11:40:00 AM
Lab ID: 2212E17-008 **Matrix:** GROUNDWA **Received Date:** 12/28/2022 9:31:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **NAI**	
Chloride	570	50	*	mg/L	100	12/30/2022 10:50:03 PM	A93667

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212E17**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** MW-5
Project: Salty Dog **Collection Date:** 12/22/2022 1:48:00 PM
Lab ID: 2212E17-009 **Matrix:** GROUNDWA **Received Date:** 12/28/2022 9:31:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **NAI**	
Chloride	710	50	*	mg/L	100	12/30/2022 11:15:46 PM	A93667

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212E17**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** PMW-1
Project: Salty Dog **Collection Date:** 12/23/2022 1:55:00 PM
Lab ID: 2212E17-010 **Matrix:** GROUNDWA **Received Date:** 12/28/2022 9:31:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **NAI**	
Chloride	12000	500	*	mg/L	1E+	1/5/2023 2:59:27 AM	A93728

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212E17**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** MW-3
Project: Salty Dog **Collection Date:** 12/22/2022 5:32:00 PM
Lab ID: 2212E17-011 **Matrix:** GROUNDWA **Received Date:** 12/28/2022 9:31:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY						Analyst:	**CAS**
Specific Gravity	1.003	0			1	12/30/2022 5:04:00 PM	R93653
EPA METHOD 300.0: ANIONS						Analyst:	**NAI**
Fluoride	ND	1.0		mg/L	10	12/30/2022 11:54:21 PM	A93667
Chloride	5700	250	*	mg/L	500	1/5/2023 3:12:19 AM	A93728
Bromide	2.4	1.0		mg/L	10	12/30/2022 11:54:21 PM	A93667
Phosphorus, Orthophosphate (As P)	ND	5.0	H	mg/L	10	1/7/2023 1:18:49 AM	A93791
Sulfate	330	5.0	*	mg/L	10	12/30/2022 11:54:21 PM	A93667
Nitrate+Nitrite as N	ND	4.0		mg/L	20	1/10/2023 11:07:42 PM	A93860
SM2510B: SPECIFIC CONDUCTANCE						Analyst:	**JTT**
Conductivity	21000	100		µmhos/c	10	1/4/2023 11:58:38 AM	R93716
SM2320B: ALKALINITY						Analyst:	**SNS**
Bicarbonate (As CaCO3)	192.8	20.00		mg/L Ca	1	12/28/2022 7:21:11 PM	A93608
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	12/28/2022 7:21:11 PM	A93608
Total Alkalinity (as CaCO3)	192.8	20.00		mg/L Ca	1	12/28/2022 7:21:11 PM	A93608
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst:	**SNS**
Total Dissolved Solids	11200	200	*D	mg/L	1	12/30/2022 4:07:00 PM	72374
SM4500-H+B / 9040C: PH						Analyst:	**SNS**
pH	7.56		H	pH units	1	12/28/2022 7:21:11 PM	R93608
EPA METHOD 200.7: TOTAL METALS						Analyst:	**VP**
Calcium	910	10		mg/L	10	1/9/2023 6:49:07 PM	72387
Magnesium	130	5.0		mg/L	5	1/9/2023 6:45:40 PM	72387
Potassium	17	1.0		mg/L	1	1/3/2023 3:02:27 PM	72387
Sodium	2400	50		mg/L	50	1/12/2023 1:19:00 PM	72387

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212E17**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** Brine
Project: Salty Dog **Collection Date:** 12/23/2022 1:55:00 PM
Lab ID: 2212E17-012 **Matrix:** AQUEOUS **Received Date:** 12/28/2022 9:31:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY						Analyst: **CAS**	
Specific Gravity	1.192	0			1	12/30/2022 5:04:00 PM	R93653
EPA METHOD 300.0: ANIONS						Analyst: **NAI**	
Chloride	180000	5000	*	mg/L	1E+	1/5/2023 3:25:11 AM	A93728
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **SNS**	
Total Dissolved Solids	320000	2000	*D	mg/L	1	12/30/2022 4:07:00 PM	72374
SM4500-H+B / 9040C: PH						Analyst: **SNS**	
pH	7.09		H	pH units	1	12/28/2022 7:43:49 PM	R93608
EPA METHOD 200.7: TOTAL METALS						Analyst: **VP**	
Sodium	95000	1000		mg/L	1E+	1/13/2023 11:14:02 AM	72387

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

ANALYTICAL REPORT

January 05, 2023

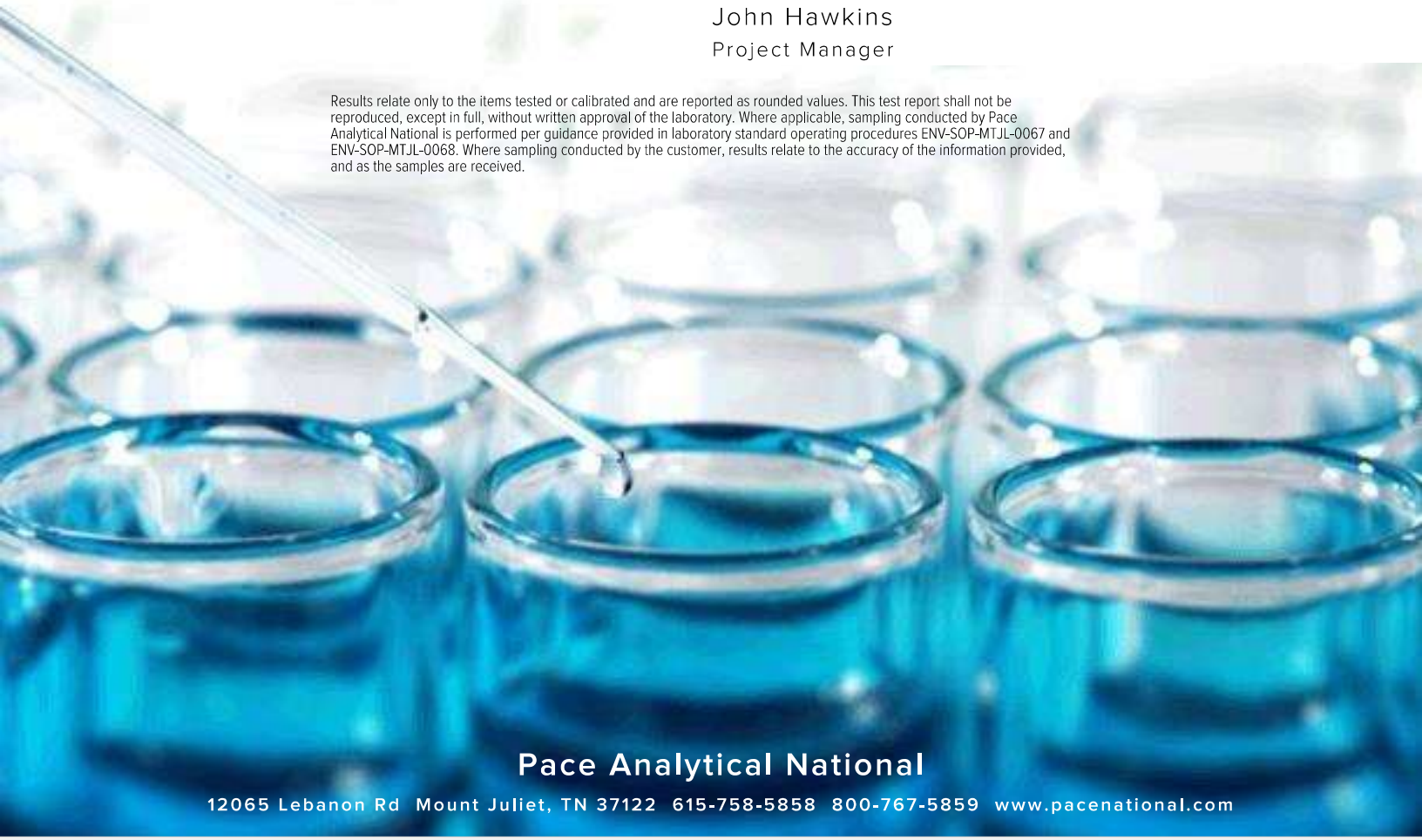
Hall Environmental Analysis Laboratory

Sample Delivery Group:	L1571472
Samples Received:	12/29/2022
Project Number:	
Description:	

Report To: Andy Freeman
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

SAMPLE SUMMARY

2212E17-011C L1571472-01 GW

			Collected by	Collected date/time	Received date/time
				12/22/22 17:32	12/29/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1983561	1	01/05/23 13:51	01/05/23 13:51	ARD	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Wet Chemistry by Method 2580

Analyte	Result mV	Qualifier	Dilution	Analysis date / time	Batch
ORP	300	T8	1	01/05/2023 13:51	WG1983561

L1570777-15 Original Sample (OS) • Duplicate (DUP)

(OS) L1570777-15 01/05/23 13:51 • (DUP) R3878319-3 01/05/23 13:51

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	372	369	1	3.00		20

L1570777-16 Original Sample (OS) • Duplicate (DUP)

(OS) L1570777-16 01/05/23 13:51 • (DUP) R3878319-4 01/05/23 13:51

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	371	371	1	0.000		20

L1571472-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1571472-01 01/05/23 13:51 • (DUP) R3878319-5 01/05/23 13:51

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	300	301	1	0.200		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3878319-1 01/05/23 13:51 • (LCSD) R3878319-2 01/05/23 13:51

Analyte	Spike Amount mV	LCS Result mV	LCSD Result mV	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	Diff mV	Diff Limits mV
ORP	98.0	99.4	94.1	101	96.0	90.0-110			5.30	20

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
T8	Sample(s) received past/too close to holding time expiration.

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

J037

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: www.hallenvironmental.com

SUB CONTRATOR: Pace TN	COMPANY: PACE TN		PHONE: (800) 767-5859	FAX: (615) 758-5859	
ADDRESS: 12065 Lebanon Rd			ACCOUNT #:	EMAIL:	
CITY, STATE, ZIP: Mt. Juliet, TN 37122					

L157472

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2212E17-011C	MW-3	125HDP	Groundwater	12/22/2022 5:32:00 PM	1	Oxidation Reduction Potential

Sample Receipt Checklist

COC Seal Present/Intact:	Y N	If Applicable	
COC Signed/Accurate:	Y N	VOA Zero Headspace:	Y N
Bottles arrive intact:	Y N	Pres.Correct/Check:	Y N
Correct bottles used:	Y N		
Sufficient volume sent:	Y N		
RAD Screen <0.5 mR/hr:	Y N		

9201 7708 9777 3873

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date: 12/28/2022	Time: 10:23 AM	Received By:	Date: 12/29/22	Time: 0900
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☐ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples 2.5+0.2.5 °C KFAL Attempt to Cool ?
Comments:

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2212E17**

20-Jan-23

Client: Daniel B. Stephens & Assoc.

Project: Salty Dog

Sample ID: **MB-72387**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Total Metals**
Client ID: **PBW**	Batch ID: **72387**	RunNo: **93679**
Prep Date: **12/30/2022**	Analysis Date: **1/3/2023**	SeqNo: **3381321** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID: **LCSLL-72387**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Total Metals**
Client ID: **BatchQC**	Batch ID: **72387**	RunNo: **93679**
Prep Date: **12/30/2022**	Analysis Date: **1/3/2023**	SeqNo: **3381322** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0	0.5000	0	103	50	150			
Magnesium	ND	1.0	0.5000	0	107	50	150			
Potassium	ND	1.0	0.5000	0	103	50	150			
Sodium	ND	1.0	0.5000	0	106	50	150			

Sample ID: **LCS-72387**	SampType: **LCS**	TestCode: **EPA Method 200.7: Total Metals**
Client ID: **LCSW**	Batch ID: **72387**	RunNo: **93679**
Prep Date: **12/30/2022**	Analysis Date: **1/3/2023**	SeqNo: **3381323** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	51	1.0	50.00	0	101	85	115			
Magnesium	52	1.0	50.00	0	103	85	115			
Potassium	50	1.0	50.00	0	100	85	115			
Sodium	50	1.0	50.00	0	100	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2212E17**

20-Jan-23

Client: Daniel B. Stephens & Assoc.

Project: Salty Dog

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R93667**	RunNo: **93667**
Prep Date:	Analysis Date: **12/30/2022**	SeqNo: **3380579** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R93667**	RunNo: **93667**
Prep Date:	Analysis Date: **12/30/2022**	SeqNo: **3380580** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	5.0	0.50	5.000	0	100	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **A93667**	RunNo: **93667**
Prep Date:	Analysis Date: **12/30/2022**	SeqNo: **3380620** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Bromide	ND	0.10								
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **A93667**	RunNo: **93667**
Prep Date:	Analysis Date: **12/30/2022**	SeqNo: **3380621** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.50	0.10	0.5000	0	100	90	110			
Chloride	5.1	0.50	5.000	0	102	90	110			
Bromide	2.6	0.10	2.500	0	104	90	110			
Sulfate	10	0.50	10.00	0	102	90	110			

Sample ID: **2212E17-004AMS**	SampType: **ms**	TestCode: **EPA Method 300.0: Anions**
Client ID: **DBS-5**	Batch ID: **A93667**	RunNo: **93667**
Prep Date:	Analysis Date: **12/30/2022**	SeqNo: **3380627** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	5.4	1.0	5.000	0	109	78.6	114			
Bromide	28	1.0	25.00	1.422	105	89.4	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2212E17**

20-Jan-23

Client: Daniel B. Stephens & Assoc.

Project: Salty Dog

Sample ID: **2212E17-004AMSD**	SampType: **msd**	TestCode: **EPA Method 300.0: Anions**
Client ID: **DBS-5**	Batch ID: **A93667**	RunNo: **93667**
Prep Date:	Analysis Date: **12/30/2022**	SeqNo: **3380628** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	5.4	1.0	5.000	0	109	78.6	114	0.147	20	
Bromide	28	1.0	25.00	1.422	105	89.4	110	0.0254	20	

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **A93728**	RunNo: **93728**
Prep Date:	Analysis Date: **1/4/2023**	SeqNo: **3383396** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **A93728**	RunNo: **93728**
Prep Date:	Analysis Date: **1/4/2023**	SeqNo: **3383397** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.8	0.50	5.000	0	96.0	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **A93791**	RunNo: **93791**
Prep Date:	Analysis Date: **1/6/2023**	SeqNo: **3386005** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Orthophosphate (As P)	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **A93791**	RunNo: **93791**
Prep Date:	Analysis Date: **1/6/2023**	SeqNo: **3386006** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Orthophosphate (As P)	4.7	0.50	5.000	0	93.2	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **A93860**	RunNo: **93860**
Prep Date:	Analysis Date: **1/10/2023**	SeqNo: **3388320** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate+Nitrite as N	ND	0.20								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2212E17**

20-Jan-23

Client: Daniel B. Stephens & Assoc.

Project: Salty Dog

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSW**	Batch ID: **A93860**	RunNo: **93860**							
Prep Date:	Analysis Date: **1/10/2023**	SeqNo: **3388321**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate+Nitrite as N	3.4	0.20	3.500	0	96.3	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2212E17**

20-Jan-23

Client: Daniel B. Stephens & Assoc.

Project: Salty Dog

Sample ID:	**lcs-1 99.4uS eC**	SampType:	**LCS**	TestCode:	**SM2510B: Specific Conductance**					
Client ID:	**LCSW**	Batch ID:	**R93716**	RunNo:	**93716**					
Prep Date:		Analysis Date:	**1/4/2023**	SeqNo:	**3382829**	Units:	**µmhos/cm**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	10	99.40	0	101	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2212E17**

20-Jan-23

Client: Daniel B. Stephens & Assoc.

Project: Salty Dog

Sample ID: **2212E17-011A DUP**	SampType: **dup**	TestCode: **SM4500-H+B / 9040C: pH**							
Client ID: **MW-3**	Batch ID: **R93608**	RunNo: **93608**							
Prep Date:	Analysis Date: **12/28/2022**	SeqNo: **3377830**	Units: **pH units**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.54							0.265		H

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2212E17**

20-Jan-23

Client: Daniel B. Stephens & Assoc.

Project: Salty Dog

Sample ID: **mb-2 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **A93608**	RunNo: **93608**							
Prep Date:	Analysis Date: **12/28/2022**	SeqNo: **3377798**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-2 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **A93608**	RunNo: **93608**							
Prep Date:	Analysis Date: **12/28/2022**	SeqNo: **3377799**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	78.88	20.00	80.00	0	98.6	90	110			

Sample ID: **2212E17-011A DUP**	SampType: **dup**	TestCode: **SM2320B: Alkalinity**							
Client ID: **MW-3**	Batch ID: **A93608**	RunNo: **93608**							
Prep Date:	Analysis Date: **12/28/2022**	SeqNo: **3377807**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	193.1	20.00						0.166	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2212E17**

20-Jan-23

Client: Daniel B. Stephens & Assoc.

Project: Salty Dog

Sample ID: **MB-72374**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **72374**	RunNo: **93734**
Prep Date: **12/29/2022**	Analysis Date: **12/30/2022**	SeqNo: **3383491** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: **LCS-72374**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **72374**	RunNo: **93734**
Prep Date: **12/29/2022**	Analysis Date: **12/30/2022**	SeqNo: **3383492** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	992	20.0	1000	0	99.2	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Daniel B. Stephens & Assoc. Work Order Number: 2212E17 RcptNo: 1

Received By: Cheyenne Cason 12/28/2022 9:31:00 AM

Completed By: Tracy Casarrubias 12/28/2022 10:01:28 AM

Reviewed By: JLR 12/28/22

Chain of Custody

1. Is Chain of Custody complete?	Yes ☐	No ☑	Not Present ☐
2. How was the sample delivered?	UPS		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☐	No ☐	NA ☑
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: 4 (<2 or >12 unless noted)
Adjusted? NO
Checked by: JLR 12/28/22

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☑ No ☐ NA ☐

Person Notified:	John Ayarbe	Date:	12/28/2022
By Whom:	Tracy Casarrubias	Via:	☐ eMail ☑ Phone ☐ Fax ☐ In Person
Regarding:	Anion Analysysis on sample 011.		
Client Instructions:	I did got get a response. Voice mail was left.		

16. Additional remarks:

COC incomplete. Address not filled in correctly. - TMC 12/28/22

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Not Present			

Chain-of-Custody Record

Client: DBS&A

Mailing Address: ABQ office

Phone #: 505-822-9400

email or Fax#: JAyarbe@geo-logic.com

QA/QC Package: ☒ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance ☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: ☒ Standard ☐ Rush

Project Name: Salty Dog

Project #: DB19.1198.00 Ph 8 T2

Project Manager: John Ayarbe

Sampler: York Morgan

On Ice: ☒ Yes ☐ No

# of Coolers: 1 IR Yogi

Cooler Temp (Including CF): 1.0-0=1.0 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 22E1212E17	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)	Cl only - 300.0
12-23-22	1311	GW	DBS-1R ✓	1 Plastic	None	001											X
〃	1052	↓	DBS-3 ✓	↓	↓	002											X
〃	1217	↓	DBS-4 ✓	↓	↓	003											X
〃	1134	↓	DBS-5 ✓	↓	↓	004											X
12-22-22	1523	↓	DBS-6 ✓	↓	↓	005											X
〃	1450	↓	DBS-8 ✓	↓	↓	006											X
12-23-22	0956	↓	DBS-9 ✓	↓	↓	007											X
12-22-22	1140	↓	DBS-10 ✓	↓	↓	008											X
12-22-22	1348	↓	MW-5 ✓	↓	↓	009											X
12-23-22	1355	↓	PMW-1 ✓	↓	↓	010											X

York Morgan

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
12/27/22	1510	[signature]	UPS Store - Hobbs			
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
			Chris	UPS	12/28/22	0931

Remarks: Page 1 of 2

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Client: DBS+A

Mailing Address:

Phone #:

email or Fax#:

QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance ☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: ☐ Standard ☐ Rush

Project Name: Salty Dog

Project #:

Project Manager: J Ayarbe

Sampler: Y Bozan

On Ice: ☒ Yes ☐ No

# of Coolers: 1 IR Yogi

Cooler Temp (including CF): 1.0-0=1.0 (°C)

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2212E17	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4 300.0	~~8260 (VOA)~~ ORP	8270 (Semi-VOA)	Total Coliform (Present/Absent)	Specific gravity, TDS, pH	Cl only 300.0	Sodium 6010B	Specific Conductance	Ca, Mg, K, Na 6010B	Total alkalinity, Bicarbonate, Carbonate
12-22-22	1732	GW	MW-3	4 plastic	Varies	011							X	X			X			X	X	X
12-23-22	1355	GW	Brine	3 plastic	Varies	012											X	X	X			

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
12/27/22	1510	[signature]	UPS	Store - Hobbs		
			[illegible] UPS		12/28/22	0931

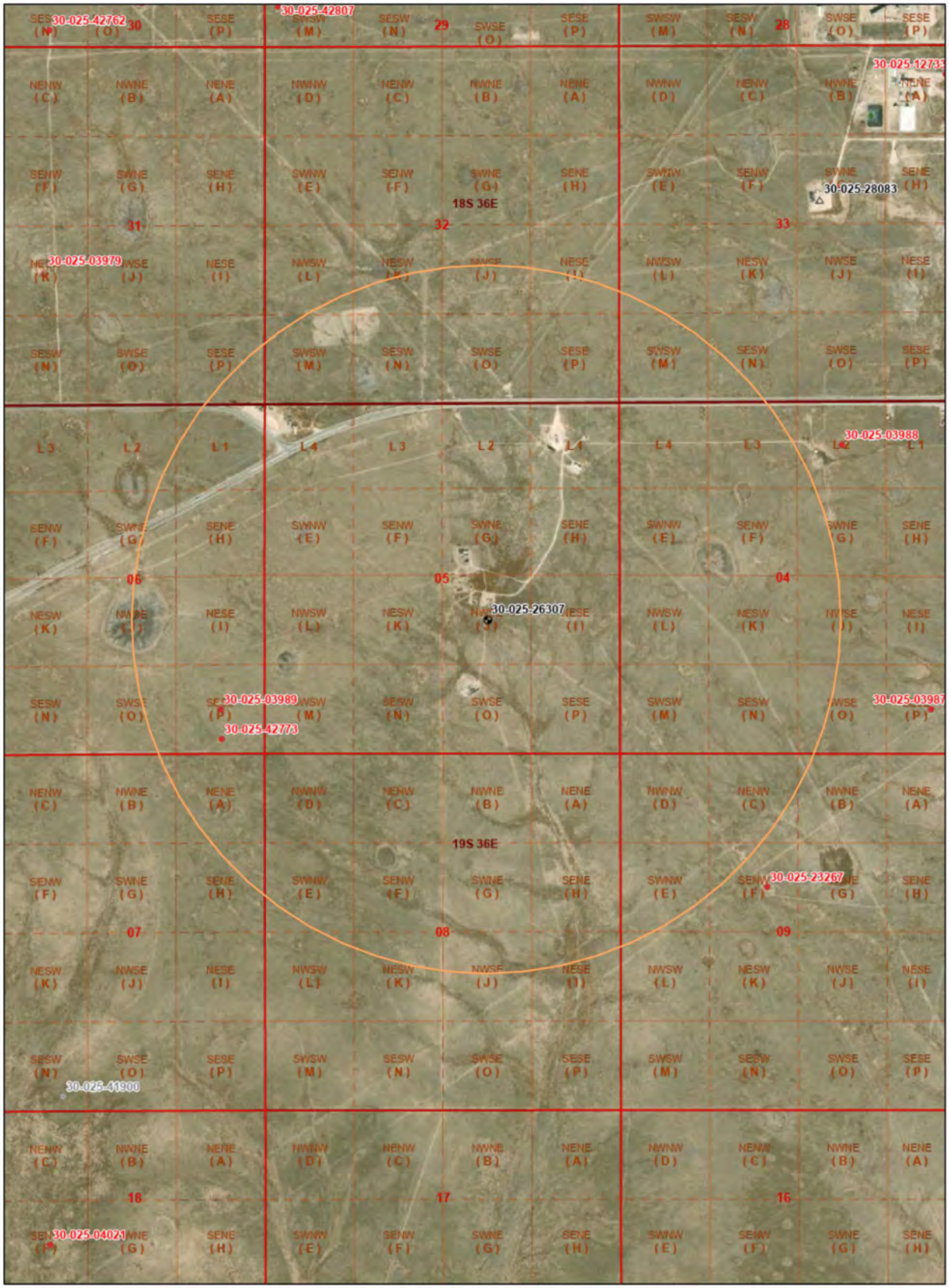
Remarks: Page 2 of 2

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Appendix E

Area of Review Evaluation

30-025-26307 - BW-8 Area of Review



2/15/2023, 1:41:38 PM

Wells - Large Scale
- undefined
- Miscellaneous
- CO2, Active
- CO2, Cancelled
- CO2, New
- CO2, Plugged
- CO2, Temporarily Abandoned
- Gas, Active
- Gas, Cancelled
- Gas, New
- Gas, Plugged
- Gas, Temporarily Abandoned
- Injection, Active
- Injection, Cancelled
- Injection, New
- Injection, Plugged
- Injection, Temporarily Abandoned
- Oil, Active
- Oil, Cancelled
- Oil, New
- Oil, Plugged
- Oil, Temporarily Abandoned
- Salt Water Injection, Active

1:20,000

0 0.17 0.35 0.7 mi

0 0.28 0.55 1.1 km

Oil Conservation Division of the New Mexico Energy, Minerals and Natural Resources Department.
Maxar
BLM

New Mexico Oil Conservation Division

Appendix F

2022 Survey Data for Land Surface Subsidence Monitoring

DBS&A
a Geo-Logic Company

Atkins ENGINEERING ASSOCIATES INC.
2904 W 2nd St
Roswell, NM 88201
voice: 575.624.2420
fax: 575.624.2421
www.atkinseng.com

06/09/2022

John P. Ayarbe
Senior Hydrogeologist
Daniel B. Stephens & Associates, Inc.
6020 Academy Road NE, Suite 100
Albuquerque, NM 87109

Emailed to: jayarbe@geo-logic.com on date of letter.

RE: Salty Dog Brine Facility

Atkins Engineering Associates, Inc. (AEA) has completed the survey at the Salty Dog Brine Facility. Field work was performed on 06/09/2022. The following table summarizes the coordinate and elevation data for the subsidence monitoring locations located on site.

Name	Northing (USft)	Easting (USft)	Latitude (DMS)	Longitude (DMS)	Elevation (USft)
SMP-1	615475.977	836301.437	32°41'17.960"	-103°22'28.520"	3810.10
SMP-2	615354.850	836264.338	32°41'16.795"	-103°22'28.966"	3809.02
SMP-3	615673.004	836230.089	32°41'19.945"	-103°22'29.334"	3808.83
SMP-4	615615.830	836543.487	32°41'19.352"	-103°22'25.673"	3806.33
SMP-5	615539.029	836348.733	32°41'18.609"	-103°22'27.960"	3810.06
Benchmark	615608.14	836310.07	32°41'19.27"	-103°22'28.40"	3808.62

Horizontal coordinates shown are coordinates provided by earlier survey. Previous survey was conducted by Gary L. Jones, NMPS 7977. Coordinates are in NM State Plane East (NAD83).

Elevations for subsidence monitoring locations were established by using closed level loops, referenced to onsite benchmark previously set by Gary L. Jones. Benchmark is a ½" rebar with plastic cap 7977.

If you have any questions, please contact me at (575) 624-2420 or ryan@atkinseng.com

Ryan C. Cortez, PS 22761

6/9/2022
Date (Signed)

RYAN C CORTEZ NEW MEXICO 22761 PROFESSIONAL SURVEYOR

Atkins ENGINEERING ASSOCIATES INC.
2004 W 2nd St
Roswell, NM 88201
Voice: 575.624.2420
FAX: 575.624.2421
www.atkinseng.com

02/03/2023

John P. Ayarbe
Senior Hydrogeologist
Daniel B. Stephens & Associates, Inc.
6020 Academy Road NE, Suite 100
Albuquerque, NM 87109

Emailed to: jayarbe@geo-logic.com on date of letter.

RE: Salty Dog Brine Facility

Atkins Engineering Associates, Inc. (AEA) has completed the survey at the Salty Dog Brine Facility. Field work was performed on 02/02/2023. The following table summarizes the coordinate and elevation data for the subsidence monitoring locations located on site.

Name	Northing (USft)	Easting (USft)	Latitude (DMS)	Longitude (DMS)	Elevation (USft)
SMP-1	615475.977	836301.437	32°41'17.960"	-103°22'28.520"	3810.10
SMP-2	615354.850	836264.338	32°41'16.795"	-103°22'28.966"	3809.02
SMP-3	615673.004	836230.089	32°41'19.945"	-103°22'29.334"	3808.83
SMP-4	615615.830	836543.487	32°41'19.352"	-103°22'25.673"	3806.33
SMP-5	615539.029	836348.733	32°41'18.609"	-103°22'27.960"	3810.06
Benchmark	615608.14	836310.07	32°41'19.27"	-103°22'28.40"	3808.62

Horizontal coordinates shown are coordinates provided by earlier survey that was conducted by Gary L. Jones, NMPS 7977. Coordinates are in NM State Plane East (NAD83).

Elevations for subsidence monitoring locations were established by using closed level loops, referenced to onsite benchmark previously set by Gary L. Jones. Benchmark is a ½" rebar with plastic cap 7977.

If you have any questions, please contact me at (575) 624-2420 or ryan@atkinseng.com

Ryan C. Cortez, PS 22761

02/03/2023
Date (Signed)

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

COMMENTS

Action 220147

COMMENTS

Operator: SALTY DOG INC P.O. Box 513 Hobbs, NM 88240	OGRID: 184208
	Action Number: 220147
	Action Type: [UF-DP] Brine Facility Discharge Plan (DISCHARGE PLAN BRINE EXTRACTION)

COMMENTS

Created By	Comment	Comment Date
cchavez	Annual Report 2022 Submittal	5/26/2023

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 220147

CONDITIONS

Operator: SALTY DOG INC P.O. Box 513 Hobbs, NM 88240	OGRID: 184208
	Action Number: 220147
	Action Type: [UF-DP] Brine Facility Discharge Plan (DISCHARGE PLAN BRINE EXTRACTION)

CONDITIONS

Created By	Condition	Condition Date
cchavez	1. Please review OCD Correspondence dated 5/26/2023 incorporated into the front page of this Annual Report in the OCD Administrative Record.	5/26/2023