TPWD
TWENTYNINE PALMS WATER DISTRICT

4 February 2022

Ms. Cathy Sanford, P.G., REA II
Engineering Geologist
Regional Water Quality Control Board
Colorado River Basin Region
73-720 Fred Waring Drive, Suite 100
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Dear Ms. Sanford,

Attached is the revised 2020 Annual Groundwater Monitoring Report for Twentynine Palms Water District's (District) Salt Nutrient Management Plan that was originally submitted on 21 May 2021. The revisions were requested in a comment letter dated 26 August 2021 from the Colorado River Basin Region Regional Water Quality Control Board.

Sincerely,

Ray Kolisz
General Manager

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SNMP
2020 Groundwater Monitoring Report

21 May 2021
Revised 4 February 2022

2/4/2022

Prepared for

Twentynine Palms Water District
72401 Hatch Road
Twentynine Palms, CA 92277

KJ Project No. 2165029*00

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Section 1: Introduction

This 2020 Groundwater Monitoring Report summarizes the activities conducted for the first two phases of the Twentynine Palms Water District's (District) Groundwater Monitoring Implementation Plan (Implementation Plan). This report includes: (1) a summary of monitoring and data collection efforts performed; (2) table and charts of the monitoring results; and (3) recommended changes to the monitoring program including the implementation of Phase 3 and Phase 4 monitoring efforts.

The report is organized as follows:

- Section 2 - Background information about the District and the origin of this Implementation Plan.
- Section 3 - Details about the activities conducted in the 2020 calendar year.
- Section 4 - An assessment describing the groundwater conditions in each of the subbasins along with any notes or recommendations for improving the effectiveness of the groundwater monitoring plan.

Section 2: Background

The District is located in the high desert of southern California, approximately 72 miles due east of the City of San Bernardino and 35 miles northeast of the City of Palm Springs. It is located within the jurisdiction of the Colorado River Basin Regional Water Quality Control Board (Regional Water Board) and adheres to the water quality standards and control measures for surface and ground waters of the Colorado River Basin Region. These standards and control measures are contained in the Regional Water Board's Water Quality Control Plan for the Colorado River Basin Region (Basin Plan) (RWQCB 2019). This plan designates the beneficial uses for water bodies and establishes water quality objectives, waste discharge prohibitions, and other implementation measures to protect those beneficial uses.

In June 2014, the District submitted a Salt and Nutrient Management Plan (SNMP) (KJC 2014) to develop a strategy for the District, along with the City of Twentynine Palms (City), to monitor and protect the groundwater resources in the Twentynine Palms area. The need to develop the SNMP was cited in the State Water Resources Control Board's (State Water Board) Resolution No. 2009-0011, amended in 2013 (Resolution No. 2013-0003) and again in 2018 (Resolution No. 2018-0057). The SNMP recognized and addressed the increased need to assess potential groundwater quality impacts from salt and nutrient sources that are derived primarily from regional septic tanks.

In 2017, the City and District submitted the Implementation Plan (KJC 2017) that included a detailed monitoring plan and time schedule for the groundwater monitoring activities discussed in the SNMP. The Implementation Plan was approved by the Regional Water Board in a letter dated 10 December 2019 and consists of four phases:

- Phase 1 – Increase Sampling Frequency of the District's Existing Production Wells
- Phase 2 – Establish a Water Quality Monitoring Well Network Using Existing Wells
- Phase 3 – Installation of New Monitoring Wells
- Phase 4 – Conduct a One-Time Existing Conditions Sampling Event

2.1 District Services

The District service area encompasses approximately 87 square miles and includes the City (see Figure 1). Residential development is currently the single largest land use within the District, with the remaining land use made up of some multi-family residential units, commercial properties, and minor light industry. As of 2015, the District serves 6,759 active connections, all of which are metered accounts with greater than 90% being residential. Commercial connections account for approximately 4%, and landscape irrigation and fire protection/non-potable connections account for less than 1% of the District's total connections.

The District's mission is to provide a safe and adequate supply of water at the lowest feasible cost to the people of the District and to preserve and protect the water resources within the established boundaries of the District. Potable water is limited in the District due to:

- Drought conditions
- Negligible infiltration of direct precipitation in thick alluvial deposit areas
- Substantial runoff lost to evaporation
- Naturally occurring soluble minerals, such as fluoride, hexavalent chromium, and arsenic.

2.2 Water Use Characteristics

Water provided by the District to its customers is derived solely from groundwater pumped from supply wells located along the southern limit of the service area. The District provides potable water treatment services. Additional details are provided in the following subsections.

2.2.1 Groundwater Use

The District overlies two non-adjudicated groundwater basins, the Twentynine Palms Valley Basin and the Joshua Tree Basin. Within the Twentynine Palms Valley Basin are the Mesquite Lake and Mainside subbasins. Within the Joshua Tree Basin are three subbasins: Indian Cove, Fortynine Palms, and Eastern subbasins. The District also overlies a portion of the Dale Valley Basin, but there is little to no pumping or historical data from this basin and the District has no production wells in this basin. Except for the Dale Valley Basin, the location of the subbasins and the District wells are shown on Figure 2.

The District had 18 total groundwater production wells in its history. There are currently seven (7) active production wells. The remaining wells are inactive and/or used for groundwater monitoring. Available information indicates that more than 400 private wells have also been constructed within the District's service area. Most of these wells are not currently operated. The District collects groundwater level, water quality and water production data from its seven active production wells for use in groundwater management and other reporting purposes.

2.2.2 Groundwater Quality Trends

Groundwater quality in the region is quite variable. Minerals are added to the groundwater as it flows through the aquifer; water that spends more time in the aquifer tends to have higher concentrations of chemical constituents than water with a low residence time. Water near the mountain fronts, which gets recharged frequently, tends to be of high quality, with low concentrations of chemical constituents. This is the case in the Indian Cove, Fortynine Palms, and Eastern Subbasins, where groundwater is close to its source area. In the Mesquite Lake Subbasin, groundwater has had a longer residence time and, therefore, tends to have higher concentrations of minerals. A general summary of the spatial trends in groundwater quality, for the subbasins within the District's service area, is summarized in Section 2.2.4 of the Implementation Plan.

2.2.3 District Water Treatment

The District has historically pumped water from the Indian Cove, Fortynine Palms and Eastern Subbasins in the south because of the generally good water quality in these areas. However, the District does have to treat water from certain wells for naturally-occurring constituents including fluoride and arsenic.

The following information is summarized from Section 2.3 of the Implementation Plan:

- Elevated fluoride concentrations above the maximum contaminant level (MCL) are widespread across the District's service area.
- The District was granted a variance in 1993 from the California Primary MCL for fluoride[1].
- Fluoride concentrations in the Indian Cove, Fortynine Palms and Eastern Subbasins generally averages below 2 milligrams per liter (mg/L), but several average above 3 mg/L. Use of this groundwater is allowed without fluoride treatment because of the variance.
- Fluoride concentrations in the Mesquite Lake Subbasin groundwater are generally well above 3 mg/L. Water is treated through the Twentynine Palms Fluoride Removal Water Treatment Plant.
- The MCL for arsenic was reduced from 50 micrograms per liter (µg/L) down to 10 µg/L by the State Water Resources Control Board (SWRCB), Division of Drinking Water (DDW) in 2008. The District has been required to install an arsenic treatment system to comply.
- Three of eight production wells were shut down in 2014 due to exceeding the total chromium MCL; two of them are still physically connected to the distribution system.
- A wellhead hexavalent chromium treatment system is still pending (Senate Bill 385) until a new MCL is established.

2.2.4 Wastewater Management

There is no community sewage system within the District service area and wastewater is disposed of through individual septic tank and tile field disposal systems. There are two major categories of onsite wastewater treatment systems in the Twentynine Palms area – residential and non-residential. Single family and multifamily households all fall under the residential category. A variety of commercial (e.g., restaurants and hotels) and institutional (e.g., school) establishments and facilities fall into the non-residential wastewater category.

[1] "The District shall not serve water containing fluoride levels in excess of 3.0 milligrams per liter (mg/L) or 75 percent of the U.S. Environmental Protection Agency (USEPA) Primary Drinking Water Standard (currently at 4.0 mg/L), whichever is higher." The variance is set to expire in 2023.

Section 3: Overview of Implementation Plan

The Implementation Plan is part of the SNMP and intended to provide water quality data to help determine, in part, if a sewer system would be required to protect public health and water quality in the District. It provides an adaptive approach for data collection efforts needed to make more informed decisions on the effects of septic tanks on groundwater supply. A sufficient amount of time is needed to collect and analyze the data to determine if, based on scientific evidence, groundwater pollution and degradation in the area are caused by septic tanks. Existing wells that are in good condition, well documented, and in representative locations are used for this program.

The Implementation Plan includes the following activities to collect groundwater level and water quality data:

1) Document groundwater level and groundwater quality trends through time

2) Identify salt and nutrient constituents of concern

3) Identify potential sources of salts and nutrients

4) Identify existing monitoring well locations that will be used to track potential changes in water quality over time

5) Conduct fate/transport evaluations of the constituents of concern.

3.1 Phased Approach

As mentioned in Section 2, the Implementation Plan consists of four phases. Phase 1 has been implemented. Implementation of Phases 2 and 3 activities have not yet begun. Minor activities have begun for Phase 4, but full implementation is awaiting the acquisition of additional funds. The following subsections discuss the details and progress made for these four phases of the Implementation Plan.

3.1.1 Phase 1 – Increase Sampling Frequency of District's Existing District Production Wells

Historically, the District collected water quality samples from the active groundwater production wells at least every 3 years as required by DDW. Although the Implementation Plan's recommendation to increase this sampling frequency to annually was made in 2017, the District made the switch in 2015 after the 2014 SNMP was submitted. A list of the District's active and inactive production wells is provided below.

CURRENT GROUNDWATER MONITORING BY TWENTYNINE PALMS WATER DISTRICT

Well Name	Well Type	Water Levels	Water Quality – Other Constituents
4	Inactive	Not measured	Not analyzed
6	Inactive	Not measured	Not analyzed
7	Destroyed	Not measured	Not analyzed
8	Inactive	Not measured	Not analyzed
9[a]	Inactive	Not measured	Not analyzed
10	Inactive	Not measured	Not analyzed
11[a]	Destroyed	Not measured	Not analyzed
11-B[(a)]	Active water supply	Monthly	Annually
12	Active water supply	Monthly	Annually since 2015
14	Active water supply	Monthly	Annually since 2015
15	Active water supply	Monthly	Annually since 2015
16	Active water supply	Monthly	Annually since 2015
17	Active water supply	Monthly	Annually since 2015 every 6 years for VOCs
WTP-1	Active water supply	Monthly	Annually since 2015

Note:
(a) Well 11 was taken out of service in 2016 after the sampling event due to well casing failure and replaced with Well 11-B in 2018.
(b) Well 11-B was put into service and first sampled in 2020.

As noted in the table above, the annual sampling activities were conducted on the seven active wells. The sampling and analysis plan proposed in the Implementation Plan for the wells is provided below.

PROPOSED SAMPLING AND ANALYSIS PLAN – LIST OF PARAMETERS FOR ACTIVE PRODUCTION WELLS ONLY

Analyte	Units	EPA Test Method	Typical Lab PQL
General Minerals, Cations, and Anions			
Boron	mg/L	200.7	0.3
Calcium	mg/L	200.7	0.3
Total Iron	mg/L	200.7	0.05
Manganese	mg/L	200.7	0.1
Potassium	mg/L	200.7	0.2
Total Alkalinity	mg/L	310.1	0.3
Bicarbonate	mg/L	310.1	10
Carbonate	mg/L	310.1	10
Hydroxide	mg/L	310.1	10
Bromide	mg/L	300	10
Chloride	mg/L	300	1
Fluoride	mg/L	340.2	50
Nitrate	mg/L	300	0.1
Nitrite	mg/L	354.1	0.1
Orthophosphate	mg/L	365.2	0.01
pH	s.u.	150.1	0.2

Analyte	Units	EPA Test Method	Typical Lab PQL
Sodium	mg/L	200.7	0.01
Specific Conductivity	µmhos/cm	120.1	1
Sulfate	mg/L	300	1
TDS	mg/L	160.1	50
Total organic carbon	mg/L	SM5310C	40
Field Sampling			
Dissolved Oxygen	mg/L	Field Probe	NA
Temperature	F	Field Probe	NA
Microbiological Analysis			
Total Coliform	MPN/100 ml	SM9223B	2
Fecal Coliform	MPN/100 ml	SM9223B	2
Anthropogenic Analytes			
Sucralose	µg/L	Non-standard	0.01
Caffeine	µg/L	8270M/SIMS	0.01
17B-estradiol	µg/L	Non-standard	0.001
NDMA	µg/L	Non-standard	0.002
Triclosan	µg/L	Non-standard	0.05
DEET	µg/L	Non-standard	0.05

Historically, samples collected from the production wells were analyzed for the general minerals, cations, and anions constituents. Temperature readings have also been historically collected at the time of collection. The additional constituents proposed in the table above were to be added for the samples collected after approval of the Implementation Plan, which was granted on 10 December 2019. The production wells were sampled on 10 February 2020, except for Well 11-B which was sampled on 9 November 2020. However, due to a delay in incorporating the newly approved requirements of the SNMP into the District's monitoring and reporting practices, and then the subsequent disruptions and challenges from the COVID-19 pandemic, these additional constituents were not included in the sampling protocol for the 2020 sampling events. Historical laboratory analytical data, since the annual monitoring activities began in 2015, is provided in Table 1.

In addition to monitoring for general minerals, cation, and anion constituents, water level measurements from these wells are collected monthly, the data of which are not included in this report. Inactive wells listed are not currently monitored.

A discussion of the monitoring results is provided in Section 4.

3.1.2 Phase 2 – Establishing a Water Quality Monitoring Well Network

Phase 2 of the groundwater monitoring program consists of establishing a network of existing monitoring locations throughout the Twentynine Palms area with appropriate spatial distribution to be able to define the nature and extent of constituents of concern (COCs) related to septic systems discharges. The purpose is to define existing conditions and to collect long-term monitoring data to assess the potential future impacts to the beneficial use of groundwater. The objectives of the monitoring well network include the following:

- Establish background conditions for COCs. The monitoring network should include sufficient wells upgradient of Twentynine Palms to establish COC concentrations relatively unaffected by higher density septic density areas.

- Monitor COC concentrations in high-density areas. The monitoring network should include sufficient wells to establish concentrations for the high-density areas.

- Define downgradient concentrations especially for high-density areas. The monitoring network should include sufficient wells to establish downgradient COC concentrations especially for the high-density areas.

Each of the different groundwater subbasins have separate well networks that can be used to establish the distribution of COCs.

The groundwater monitoring network should preferably consist of wells that have either a sufficient well construction record or have a long-term monitoring history. Currently, groundwater level monitoring is performed by the United States Geological Survey (USGS) primarily associated with the military base (Figure 3) but includes several wells in the Twentynine Palms area. Using wells with a history of groundwater level measurements is highly desirable, as measurements from these facilities provide a means to evaluate water quality in context with overall groundwater basin conditions. Of the recently monitored (within last 5 years) USGS wells, three are in the Indian Cove Subbasin, one is in the Fortynine Palms Subbasin, eight are in the Eastern Subbasin, nineteen are in the Mesquite Lake subbasin, and three are in the Dale Basin. Available information indicates that more than 400 private wells have also been constructed within the District's service area. The District has located and inspected about 250 private wells. See Figure 3 for a schematic of the wells in the Twentynine Palms area. Figure 4 shows existing wells that could potentially be used as groundwater monitoring locations.

The Phase 2 activities will include the collection of water quality samples from a representative number of these wells in the appropriate areas. Coordination with the USGS and private well owners will be required to access these wells for this study.

Initiation of Phase 2 activities would have begun after the Implementation Plan was approved. However, no activities for this phase began in 2020 due to disruptions from the COVID-19 pandemic which delayed incorporating the newly approved requirements of the SNMP into the District's monitoring and reporting practices. Planning discussions for this phase, however, include reaching out to the USGS and investigating the private wells located within the District's service area. Additionally, the City is planning to install three monitoring wells in high density housing areas that are anticipated to become part of the groundwater monitoring network in the future.

3.1.3 Phase 3 – Installation of New Monitoring Wells

Phase 3 consists of a more focused monitoring network located in a limited number of areas where elevated nitrates have been detected. The purpose of Phase 3 is to define the vertical extent of nitrates and evaluate how local geology and vertical mixing within the aquifer may affect COC concentrations. It is also recommended to install a cluster of monitoring wells in key

areas where elevated concentrations of COCs have been detected. The purpose of these monitoring well clusters is to provide more detailed geology, groundwater, and water quality data in these areas.

This data will be used to support additional analysis of the influence of the geology and other factors on the movement and attenuation of COCs in the Twentynine Palms area. For example, the underlying geology includes former lake deposits that may form barriers to vertical flow through the vadose zone and the presence of organics and other constituents may lead to denitrification and losses that may potentially limit the transport of COCs to the groundwater. This could also create stratification within the aquifer so that COCs may be found in the shallow groundwater but not be able to reach deeper portions of the groundwater aquifer. The objective is to collect data to improve our understanding of the fate and transport of COCs through the vadose zone and groundwater aquifers.

Four areas have been identified for further assessment as shown in Figure 4. These include the following:

- Luckie Park is located along Utah Trail in the eastern part of Twentynine Palms. Existing shallow monitoring wells show elevated COC concentrations. This area is located near the former Shortz Playa and may have elevated naturally occurring total dissolved solids (TDS). The purpose is to evaluate vertical and horizontal mixing and the possible influence of geologic layering. Two monitoring well locations are planned with one near the Luckie Park well and another about 1,000 feet downgradient.

- Saddlehorn Drive is located along Utah Trail near the golf course. This area is also near the former Shortz Playa. Elevated COC concentrations were detected in a single well and are attributed to poor well construction. A single cluster of wells is planned to evaluate vertical and horizontal distribution of COCs and the possible influence of geologic layering from lake deposits.

- The District Well #4 has had elevated COC concentrations relative to other District wells. It is unclear if this is a regional or well specific issue. A single cluster of wells is planned to evaluate vertical and horizontal distribution of COCs near Well #4.

- The high-density residential area located near 2 Mile Road and Mesquite Springs Road overlies a thick vadose zone and potentially thin saturated interval of alluvial sediments. Two monitoring well locations are needed, one near the edge of the residential area and a second about 1,000 feet downgradient. The purpose of these two wells is to evaluate the potential for attenuation of COCs in these areas.

Monitoring will require one or more wells at each of the targeted areas. An initial deep pilot borehole will be drilled that will be geologically logged by a California licensed geologist and have a suite of borehole geophysical logs run to provide detailed geologic data for each of these locations. Based on this information, the number of potential monitoring wells in the cluster at each location will be determined. A downgradient monitoring well cluster will be added as appropriate. Downgradient locations are anticipated for the Luckie Park and the 2 Mile Road and Mesquite Springs Road locations. The monitoring wells will be constructed in a manner

consistent with obtaining regular high-quality water quality data. The Sampling Plan detailed in Section 4 for this phase will be implemented once funding is approved for this phase.

When funding opportunities are available (see Section 6 for more details), efforts will be made to acquire access, implement the design, install the wells, and conduct testing at these proposed locations.

3.1.4 Phase 4 – Conduct a One-Time Existing Conditions Sampling Event

Collecting a one-time sample for COCs from as many existing domestic wells as possible will require coordination and outreach to local property owners to obtain water quality samples. It is recommended that a single event sampling program be conducted that will obtain data from a large number of private wells from various parts of the study area to establish what is the areal extent of COCs and any potential impact to beneficial uses.

This sampling event will require coordination and outreach to local property owners to obtain water quality samples. The District will facilitate the procurement of these data, based on local knowledge and receptivity of private landowners to allow their wells to be inspected and sampled for water quality.

In addition, this outreach program would provide a mechanism to evaluate the condition and construction of existing wells. This provides a means to evaluate whether wells are acting as vertical conduits that may allow septage to flow down the well annulus due to poor well construction, causing areas of locally high nitrate and TDS concentrations. Additional details about public participation and educational outreach are provided in Section 5.

Initiation of Phase 4 activities were slowly being developed with the anticipation of the Implementation Plan's approval at some point in 2019. The Plan was approved in December of 2019. However, no progress was made in 2020 due to the significant challenges the District staff and the community faced as a result of the COVID-19 pandemic.

Section 4: Assessment of Implementation Plan Activities

This section provides an assessment of the Phase I activities from the Implementation Plan. It includes a summary of the monitoring and data collection efforts performed during the reporting period and a description of the groundwater conditions in each of the subbasins, as seen in the data collected. Lastly, a discussion is provided on ways to improve the effectiveness of the groundwater monitoring plan, which could include suggestions about the overall monitoring program and the future implementation of Phases 2, 3, and 4.

4.1 Constituents of Concerns

The primary COCs related to septic system discharge are nitrate and salts from the sewage. Salts can be monitored as individual constituents or as TDS. Other secondary COCs are included in the analysis to help identify potential septic system influences from residential and commercial/industrial areas.

Samples from the District's current production wells were collected for analysis of the general minerals, cations, and anions constituents listed in Section 3.1.1, except for bromide, orthophosphate, and total organic carbon (TOC). Temperature measurements were also recorded at the time of collection. The 2020 sampling activities were conducted in February, and with the Implementation Plan having just recently been approved, the District had not yet incorporated the proposed sampling list into their routine monitoring practices. With the challenges and disruptions of the COVID-19 pandemic, no additional efforts were made to correct the sampling protocol for the 2020 monitoring period. Thus, the 2020 monitoring data does not include the additional constituents proposed in the table shown in Section 3.1.1.

A discussion of the results of the key COCs that were analyzed is provided in the subsequent sections.

4.1.1 Nitrates

Anthropogenic groundwater nitrate sources can come from a number of sources but are typically related to agriculture and wastewater. DDW has set the MCL for nitrate in drinking water at 45 mg/L for nitrate as nitrate (as NO_3) or 10 mg/L for nitrate as nitrogen (as N). These values are stoichiometrically equivalent. Nitrate concentrations in public drinking water supplies exceeding the MCL require water system actions to provide safe drinking water.

Nitrate concentrations in the samples collected in 2020 were below the MCL. The concentration in Well 14 (3.2 mg/L) was comparatively higher than the other wells.

4.1.2 General Mineral Analysis

The general mineral analysis provides a means of characterizing the groundwater within each production zone and comparing the groundwater in each of the production zones in which a particular well is screened. A comparison of the data in the wells for 2020 shows an apparent difference in the chemical character makeup in groundwater from the Mesquite Lake Subbasin

compared to the other subbasins, except for the Eastern subbasin since there is no production well in that subbasin. A closer look at the constituents detected in samples from the seven active production wells in 2020 follows:

- Of the minerals and metals analyzed, the following constituents were higher in Well TP-1 than the other five wells:

  - Total alkalinity
  - Bicarbonate
  - Chloride
  - Electrical conductivity
  - Fluoride
  - TDS
  - Sulfate
  - Boron
  - Potassium
  - Sodium
  - Vanadium

- Concentrations of Total Alkalinity, Bicarbonate, Fluoride, TDS, and Sodium were comparatively lower in Well 15 compared to the other wells.

- Concentrations of Arsenic were comparatively higher in Well 11-B compared to the other wells. This well was sampled several months after the other wells and this was the first sample collected from this well since it was installed in 2018. It replaced Well 11 and its arsenic concentrations in 2015 and 2016 were approximately 40% higher than the current levels from Well 11-B.

- Concentrations of Calcium and Manganese were comparatively higher in Well 14 compared to the other wells.

- The concentration of Chromium was comparatively higher in Well 12 compared to the other wells.

4.1.3 Coliforms

Total coliform is a measurement of general coliform bacteria, the presence of which indicates that the water has had contact with plant or animal life. General coliforms are universally present and can be found in soil, animals, insects, etc. At high levels, coliforms indicate the presence of some type of waste which could include pathogens. Fecal coliforms indicate that the water has had contact with mammal or bird feces. The presence of total and fecal coliforms is an indication of human or animal waste; however, this does not conclusively indicate infiltration from septic tanks. For the purposes of this study, the presence of coliforms could indicate septic influence on the groundwater.

Analysis of coliforms is on the proposed analytical list, as shown in Section 3.1.1. As discussed in Section 4.1, the proposed constituents were not included for analysis for the 2020 sampling event.

4.1.4 Natural Constituents

Fluoride (F) naturally occurs in the local groundwater and is a constituent of concern for the water delivery system in the District's service area. The DDW-mandated MCL for fluoride in drinking water is 2.0 mg/L. A discussion of the concentrations found in the seven active production wells in 2020 is provided below:

- Fluoride concentrations are below the MCL in the Indian Cove and Fortynine Palms Subbasins (Wells 11-B, 12 and 14-17).

- Groundwater in the Mesquite Lake Subbasin has a different chemical character with substantially higher fluoride concentrations. Fluoride was measured in Well TP-1 in the Mesquite Lake Subbasin at 5.8 mg/L. A comparison of historical concentrations for this constituent shows a steady trend ranging from 5.7 mg/L to 6.2 mg/L.

Arsenic (As) is a naturally occurring element in groundwater that forms from the erosion and breakdown of geologic deposits; however, arsenic is less commonly associated with contaminant plumes. The primary MCL for arsenic is 10 μg/L. The occurrence of arsenic in the Twentynine Palms area is from natural sources. In 2020, groundwater sampled from Well 11-B had the highest concentration of Arsenic (8.8 mg/L) but was still below the MCL. This sample was collected in November as opposed to February. Future samples are expected to be collected at the beginning of the year with the other wells.

Separate from the Implementation Plan, the District has radiological sampling conducted for all the wells, typically every 3 years. From those testing activities, if the Gross Alpha results exceed 15 picocuries per liter (pCi\L) then Uranium analysis is automatically triggered. Unique to this year, the groundwater sample collected from Well 11-B was also analyzed for Uranium. The result was 7.2 picocuries per liter (pCi\L). District staff expect this is possibly due to interference with the arsenic treatment system.

4.2 Suggested Program Improvements

As the Implementation Plan is conducted each year, part of its successful completion is a reflection on its effectiveness and consideration for improvement. The reflection should consider the success of the overall monitoring program and include suggestions about the future implementation of Phases 2, 3, and 4.

Although the well sampling efforts moved to an annual basis for Phase I, the Implementation Plan had proposed additional constituents be analyzed which have not yet been included. Progress on Phases 2, 3, and 4 has been delayed in large part to the disruption and challenges of the COVID-19 pandemic.

It is anticipated that in 2021, the District's activities will return to a more normal routine. The well sampling protocols should be updated to include the additional constituents to fully implement Phase I. For Phase 2, the USGS can be contacted to inquire about additional well data and the City can install the three monitoring wells in the high-density housing areas. Phases 3 and 4 will likely continue to be delayed pending the needed funds for completion, however, efforts to identify and apply for funding should continue.

Section 5: Public Participation and Educational Outreach

No public participation or educational outreach activities specific to the Implementation Plan were conducted in 2020 due to the disruption and challenges presented by the COVID-19 pandemic. For future reports, this section will discuss the specific tactical approaches that may be utilized to deliver activities, messages, and any recommendations to the public. However, such activities and efforts are dependent on the acquisition of appropriate funds to perform the work.

Section 6: Funding Opportunities

6.1 Proposition 1 Disadvantaged Community Grant Program

In 2016, the District began working with the Mojave Water Agency Integrated Regional Water Management Plan group to access funding made available by the California Department of Water Resources (DWR) for water related projects to assist disadvantaged communities.

In 2018, Mojave Water Agency (Agency) was awarded a grant from the DWR in the amount of $407,000 (Grant Agreement No. 4600012245). Of that grant amount, $50,000 was allocated to the District to assist with the activities necessary to implement Phase 4 of the Implementation Plan.

Quarterly reports have been submitted, through the Agency, to DWR documenting the District's progress on the monitoring activities.

Annual costs submitted to DWR for reimbursement to date, which are mainly grant administration costs, are as follows:

- $900.00 in 2018
- $2,644.01 in 2019
- $6,095.00 in 2020

The cumulative total is $9,639.01.

References

(KJC 2014) Kennedy/Jenks Consultants 2014. *Twentynine Palms Salt and Nutrient Management Plan, Final Report*. City of Twentynine Palms and Twentynine Palms Water District. KJ 1283001.00. 30 June.

(KJC 2017) Kennedy/Jenks Consultants 2017. *Twentynine Palms Water District Groundwater Monitoring Implementation Plan.* Twentynine Palms Water District. KJ 1744007.00. 27 December.

(RWQCB 2019) State of California Colorado River Basin Regional Water Quality Control Board. *Water Quality Control Plan for the Colorado River Basin Region*. 8 January. https://www.waterboards.ca.gov/coloradoriver/water_issues/programs/basin_planning/

Table

Table 1: Historical Groundwater Analytical Data[a]

		Field Sampling		General Physical			General Chemical													
Well ID	Sample Date	Dissolved Oxygen (mg/l)	Temperature °F	Apparent Color (color units)	Odor Threshold (ton)	Turbidity (NTU)	Total Alkalinity (as CaCO3) (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	Langelier Index at Source Temp.	Langelier Index at 60°C	Aggressive Index	Cn (µg/L)	EC (µmhos/cm)	F (mg/l)	Hydroxide (mg/l)	MBAS (mg/l)	NO3-N (mg/l)	NO3-N + NO2-N (mg/l)
Well 9	1/21/2015	N/A	74.0	ND	1	ND	78	95	ND	10.0	-0.3	0.26	11.43	ND	240	**2.1**	ND	ND	2.5	2.5
Well 9[(c)]	1/28/2016	N/A	73.4	NS	NS	NS	84	100	ND	9.9	-0.47	0.14	11.32	ND	260	1.9	ND	ND	2.9	2.9
Well 11	1/21/2015	N/A	74.4	ND	1	ND	100	130	ND	10	-0.08	0.48	11.66	ND	290	**2.3**	ND	ND	2.7	2.8
Well 11[(b)]	1/28/2016	N/A	74.2	NS	NS	NS	100	120	ND	8.1	-0.33	0.28	11.46	ND	290	2.4	ND	ND	2.3	2.4
Well 11	1/18/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 11-B[(b)]	1/17/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 11-B	1/17/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 11-B	11/9/2020[(c)]	N/A	N/A	ND	1	0.1	92	110	ND	12	-0.15	0.45	11.64	ND	330	1.6	ND	ND	2.2	2.2
Well 12	1/21/2015	N/A	73.9	ND	1	ND	76	93	ND	9.3	-0.23	0.33	11.5	ND	220	1.2	ND	ND	1.8	1.8
Well 12	1/28/2016	N/A	74.2	NS	NS	NS	86	100	ND	8.8	-0.38	0.22	11.4	ND	250	1.2	ND	ND	2.0	2.0
Well 12	1/18/2017	N/A	73.8	ND	1	ND	90	110	ND	8.8	0.09	0.65	11.82	ND	240	1.7	ND	ND	2.1	2.1
Well 12	1/17/2018	N/A	74.5	ND	1	0.5	84	100	ND	13	-0.23	0.32	11.50	ND	300	1.0	ND	ND	2.4	2.4
Well 12	1/17/2019	N/A	64.8	ND	1	ND	82	99	ND	14	-0.0003	0.63	11.83	ND	380	1.3	ND	ND	1.7	1.7
Well 12	2/10/2020	N/A	73.8	ND	1	ND	88	110	ND	7.5	-0.08	0.48	11.66	ND	230	1.7	ND	ND	2.1	2.1
Well 14	1/21/2015	N/A	76.1	ND	1	ND	92	110	ND	13	-0.14	0.49	11.58	ND	280	0.74	ND	ND	3.2	3.2
Well 14	1/28/2016	N/A	75.6	NS	NS	NS	89	110	ND	10	-0.36	0.24	11.43	ND	270	0.78	ND	ND	2.7	2.7
Well 14	1/18/2017	N/A	74.9	ND	1	ND	94	120	ND	11	0.07	0.61	11.80	ND	280	0.81	ND	ND	2.7	2.7
Well 14	1/17/2018	N/A	80.3	ND	1	0.1	92	110	ND	14	-0.12	0.38	11.57	ND	300	0.75	ND	ND	3.8	3.8
Well 14	1/17/2019	N/A	69.4	ND	1	ND	80	98	ND	17	-0.03	0.56	11.77	ND	420	0.89	ND	ND	1.9	1.9
Well 14	2/10/2020	N/A	74.6	ND	1	ND	98	120	ND	14	0.36	0.91	12.10	ND	280	0.74	ND	ND	3.2	3.2
Well 15	1/21/2015	N/A	69.1	ND	1	1.4	69	84	ND	8.0	-0.79	-0.19	10.98	ND	210	0.33	ND	ND	2.9	2.9
Well 15	1/28/2016	N/A	70.0	NS	NS	NS	70	86	ND	8.0	-0.87	-0.26	10.91	ND	210	0.32	ND	ND	2.8	2.8
Well 15	1/18/2017	N/A	70.4	ND	1	ND	70	85	ND	7.3	-0.48	0.11	11.27	ND	210	0.35	ND	ND	3.0	3.0
Well 15	1/17/2018	N/A	80.9	ND	1	0.3	64	78	ND	7.7	-0.7	-0.20	10.97	ND	210	0.31	ND	ND	3.0	3.0
Well 15	1/17/2019	N/A	68.0	ND	1	ND	77	94	ND	5.8	-0.53	0.08	11.24	ND	200	0.31	ND	ND	2.8	2.8
Well 15	2/10/2020	N/A	70.0	ND	1	0.2	70	85	ND	6.5	-0.12	0.47	11.63	ND	200	0.35	ND	ND	2.9	2.9
Well 16	1/21/2015	N/A	77.3	ND	1	ND	94	120	ND	11	-0.16	0.37	11.55	ND	290	1.7	ND	ND	1.6	1.6
Well 16	1/28/2016	N/A	74.1	NS	NS	NS	110	130	ND	9.2	-0.39	0.22	11.4	ND	300	1.7	ND	ND	1.6	1.6
Well 16	1/18/2017	N/A	74.4	ND	1	ND	120	150	ND	9.1	0.14	0.69	11.88	ND	290	1.7	ND	ND	1.6	1.6
Well 16	1/17/2018	N/A	72.5	ND	1	0.2	110	130	ND	11	-0.18	0.38	11.57	ND	300	1.8	ND	ND	1.7	1.7
Well 16	1/17/2019	N/A	69.8	ND	1	ND	87	110	ND	17	0.18	0.77	11.97	ND	430	1.5	ND	ND	1.5	1.5
Well 16	2/10/2020	N/A	76.8	ND	1	ND	100	130	ND	9.5	0.39	0.92	12.11	ND	280	1.7	ND	ND	1.6	1.6
Well 17	1/21/2015	N/A	77.1	ND	1	ND	83	100	ND	9.8	-0.3	0.23	11.4	ND	220	0.7	ND	ND	1.9	1.9
Well 17	1/28/2016	N/A	75.4	NS	NS	NS	83	100	ND	8.0	-0.55	0.05	11.23	ND	230	0.75	ND	ND	2.1	2.1
Well 17	1/18/2017	N/A	73.9	ND	1	ND	81	98	ND	9.5	-0.13	0.43	11.61	ND	260	0.83	ND	ND	1.8	1.8
Well 17	1/17/2018	N/A	81.0	ND	1	ND	80	98	ND	8.9	-0.31	0.19	11.36	ND	220	0.7	ND	ND	2.0	2.0
Well 17	1/17/2019	N/A	69.3	ND	1	ND	72	88	ND	20	-0.06	0.54	11.75	ND	480	0.97	ND	ND	1.4	1.4
Well 17	2/10/2020	N/A	77.4	ND	1	ND	82	100	ND	9	0.21	0.74	11.92	ND	220	0.74	ND	ND	2.1	2.1
Well TP1	1/21/2015	N/A	78.4	ND	1	ND	160	190	ND	29	0.32	0.84	12.06	ND	630	6.1	ND	ND	1.1	1.1
Well TP1	1/28/2016	N/A	79.1	NS	NS	NS	160	200	ND	28	0.05	0.66	11.88	ND	640	6.2	ND	ND	1.2	1.2
Well TP1	1/18/2017	N/A	77.7	ND	1	ND	170	200	ND	29	0.44	0.97	12.19	ND	640	5.7	ND	ND	1.3	1.3
Well TP1	1/17/2018	N/A	82.5	ND	1	ND	160	190	ND	31	0.23	0.71	11.94	ND	650	6.1	ND	ND	1.3	1.3
Well TP1	1/17/2019	N/A	71.2	ND	1	ND	160	200	ND	28	0.42	1.00	12.23	ND	610	5.9	ND	ND	1.2	1.2
Well TP1	2/10/2020	N/A	78.8	ND	1	ND	160	200	ND	29	0.57	1.09	12.31	ND	610	5.8	ND	ND	1.2	1.2

Table 1: Historical Groundwater Analytical Data[a]

Kennedy Jenks

General Chemical									Metals																
Well ID	Sample Date	NO2-N	ClO4 (µg/L)	pH std units	SO4 (mg/l)	TDS (mg/l)	Ortho-phosphate (mg/l)	TOC (mg/l)	Al (µg/L)	Sb (µg/L)	As (µg/L)	Ba (µg/L)	Be (µg/L)	B (µg/L)	Br (µg/L)	Cd (µg/L)	Ca (µg/L)	Cr (+6) (µg/L)	Total Cr (µg/L)	Cu (µg/L)	Fe (µg/L)	Pb (µg/L)	Mg (µg/L)	Mn (µg/L)
Well 9	1/21/2015	ND	ND	8.0	11	140	N/A	N/A	ND	ND	9.6	ND	ND	120	N/A	ND	15	NS	ND	ND	ND	ND	1.2	ND
Well 9[c,r]	1/28/2016	ND	ND	7.8	12	140	N/A	N/A	ND	ND	9.8	ND	ND	110	N/A	ND	15	ND	ND	ND	950	ND	1.3	ND
Well 11	1/21/2015	ND	ND	8.1	13	160	N/A	N/A	ND	ND	**15**	ND	ND	110	N/A	ND	15	NS	23	ND	ND	ND	1.8	ND
Well 11[b]	1/28/2016	ND	ND	7.9	12	180	N/A	N/A	ND	ND	15.0	ND	ND	120	N/A	ND	14	NS	13	ND	ND	ND	1.7	33
Well 11	1/18/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 11-B[b]	1/17/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 11-B	1/17/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 11-B	11/9/2020[c,r]	ND	ND	8.0	40	200	N/A	N/A	ND	ND	8.8	ND	ND	120	N/A	ND	20	4.3	ND	ND	ND	ND	2	ND
Well 12	1/21/2015	ND	ND	7.9	9.8	160	N/A	N/A	ND	ND	7	ND	ND	ND	N/A	ND	19	NS	ND	ND	ND	ND	1.8	ND
Well 12	1/28/2016	ND	ND	7.7	11	160	N/A	N/A	ND	ND	6	ND	ND	120	N/A	ND	21	NS	ND	ND	ND	ND	1.9	ND
Well 12	1/18/2017	ND	ND	8.2	9.7	170	N/A	N/A	ND	ND	7.2	ND	ND	ND	N/A	ND	19	9.9	ND	ND	ND	ND	1.6	ND
Well 12	1/17/2018	ND	ND	7.9	30	180	N/A	N/A	ND	ND	4.3	ND	ND	130	N/A	ND	21	4.0	ND	ND	ND	ND	2.9	ND
Well 12	1/17/2019	ND	ND	8.2	72	260	N/A	N/A	ND	ND	4.7	ND	ND	210	N/A	ND	23	5.5	ND	ND	ND	ND	2.6	ND
Well 12	2/10/2020	ND	ND	8.1	10	160	N/A	N/A	ND	ND	6.7	ND	ND	110	N/A	ND	18	9.0	ND	ND	ND	ND	1.5	ND
Well 14	1/21/2015	ND	ND	7.8	15	180	N/A	N/A	ND	ND	2.9	ND	ND	ND	N/A	ND	28	NS	ND	ND	ND	ND	4.9	ND
Well 14	1/28/2016	ND	ND	7.7	13	160	N/A	N/A	ND	ND	ND	ND	ND	130	N/A	ND	25	NS	ND	ND	ND	ND	4.4	ND
Well 14	1/18/2017	ND	ND	8.0	14	170	N/A	N/A	ND	ND	ND	ND	ND	ND	N/A	ND	26	5.2	ND	ND	ND	ND	4.5	ND
Well 14	1/17/2018	ND	ND	7.8	15	170	N/A	N/A	ND	ND	2.5	ND	ND	110	N/A	ND	28	4.6	ND	ND	ND	ND	4.9	ND
Well 14	1/17/2019	ND	ND	8.0	86	290	N/A	N/A	ND	ND	ND	ND	ND	180	N/A	ND	30	5.2	ND	ND	ND	ND	4.9	ND
Well 14	2/10/2020	ND	ND	8.3	13	200	N/A	N/A	ND	ND	2.2	ND	ND	ND	N/A	ND	28	4.2	ND	ND	ND	ND	4.6	ND
Well 15	1/21/2015	ND	ND	7.4	10	120	N/A	N/A	ND	ND	ND	ND	ND	ND	N/A	ND	22	NS	ND	ND	ND	ND	4.3	ND
Well 15	1/28/2016	ND	ND	7.3	9.1	110	N/A	N/A	ND	ND	ND	ND	ND	100	N/A	ND	23	NS	ND	ND	360	ND	4.3	ND
Well 15	1/18/2017	ND	ND	7.7	8.9	120	N/A	N/A	ND	ND	ND	ND	ND	ND	N/A	ND	22	ND	ND	ND	ND	ND	4.1	ND
Well 15	1/17/2018	ND	ND	7.4	9.5	130	N/A	N/A	ND	ND	ND	ND	ND	ND	N/A	ND	21	ND	ND	ND	ND	ND	4.2	ND
Well 15	1/17/2019	ND	ND	7.6	8.1	110	N/A	N/A	ND	ND	ND	ND	ND	110	N/A	ND	23	ND	ND	ND	ND	ND	4.3	ND
Well 15	2/10/2020	ND	ND	8.1	8.1	130	N/A	N/A	ND	ND	ND	ND	ND	ND	N/A	ND	22	ND	ND	ND	ND	ND	3.9	ND
Well 16	1/21/2015	ND	ND	7.8	17	170	N/A	N/A	ND	ND	2.5	ND	ND	ND	N/A	ND	27	NS	ND	ND	ND	ND	4.8	ND
Well 16	1/28/2016	ND	ND	7.5	16	190	N/A	N/A	ND	ND	ND	ND	ND	130	N/A	ND	28	NS	ND	ND	ND	ND	4.8	ND
Well 16	1/18/2017	ND	ND	8.0	16	190	N/A	N/A	ND	ND	ND	ND	ND	ND	N/A	ND	26	5.1	ND	ND	ND	ND	4.6	ND
Well 16	1/17/2018	ND	ND	7.7	17	170	N/A	N/A	ND	ND	2.1	ND	ND	120	N/A	ND	25	4.6	ND	ND	ND	ND	4.4	ND
Well 16	1/17/2019	ND	ND	8.1	87	280	N/A	N/A	ND	ND	ND	ND	ND	200	N/A	ND	36	6.1	ND	ND	ND	ND	5.9	ND
Well 16	2/10/2020	ND	ND	8.3	15	190	N/A	N/A	ND	ND	2.1	ND	ND	130	N/A	ND	26	5.0	ND	ND	ND	ND	4.2	ND
Well 17	1/21/2015	ND	ND	7.8	10	140	N/A	N/A	ND	ND	3.3	ND	ND	ND	N/A	ND	20	NS	ND	ND	ND	ND	3.6	ND
Well 17	1/28/2016	ND	ND	7.6	9.7	140	N/A	N/A	ND	ND	2.3	ND	ND	ND	N/A	ND	20	ND	ND	ND	ND	ND	3.4	ND
Well 17	1/18/2017	ND	ND	8.0	23	180	N/A	N/A	ND	ND	2.1	ND	ND	ND	N/A	ND	21	5.2	ND	ND	ND	ND	3.4	ND
Well 17	1/17/2018	ND	ND	7.8	9.2	130	N/A	N/A	ND	ND	3.2	ND	ND	ND	N/A	ND	19	5.5	10	ND	ND	ND	3.3	ND
Well 17	1/17/2019	ND	ND	8.1	130	330	N/A	N/A	ND	ND	2.1	ND	ND	230	N/A	ND	26	5.2	ND	ND	ND	ND	4.1	ND
Well 17	2/10/2020	ND	ND	8.3	9	160	N/A	N/A	ND	ND	2.6	ND	ND	ND	N/A	ND	21	6.2	ND	ND	ND	ND	3.2	ND
Well TP1	1/21/2015	ND	ND	8.2	85	340	N/A	N/A	ND	ND	5.7	ND	ND	380	N/A	ND	19	NS	ND	ND	ND	ND	4.1	ND
Well TP1	1/28/2016	ND	ND	8.0	89	400	N/A	N/A	ND	ND	4.3	ND	ND	410	N/A	ND	20	ND	ND	ND	ND	ND	4.3	ND
Well TP1	1/18/2017	ND	ND	8.3	90	380	N/A	N/A	ND	ND	4.0	ND	ND	350	N/A	ND	19	6.6	ND	ND	ND	ND	4.2	ND
Well TP1	1/17/2018	ND	ND	8.1	92	390	N/A	N/A	ND	ND	4.5	ND	ND	400	N/A	ND	19	5.3	ND	ND	ND	ND	4.1	ND
Well TP1	1/17/2019	ND	ND	8.3	86	380	N/A	N/A	ND	ND	4.8	ND	ND	400	N/A	ND	21	6.1	ND	ND	ND	ND	4.2	ND
Well TP1	2/10/2020	ND	ND	8.4	87	370	N/A	N/A	ND	ND	4.6	ND	ND	430	N/A	ND	20	6.0	ND	ND	ND	ND	3.8	ND

Table 1: Historical Groundwater Analytical Data[a]

Kennedy Jenks

		Metals									Anion/Cation Balance			Microbiological Analysis		Anthropogenic Analysis					
Well ID	Sample Date	Hg (µg/L)	Ni (µg/L)	K (µg/L)	Se (µg/L)	Ag (µg/L)	Na (µg/L)	Tl (µg/L)	V (µg/L)	Zn (µg/L)	Hardness, Total (as CaCO3) (mg/l)	Total Anions (meq/l)	Total Cations (meq/l)	Total Coliform (MPN/100 ml)	Fecal Coliform (MPN/100 ml)	Sucralose (µg/L)	Caffeine (µg/L)	17B-Estradiol (µg/L)	NDMA (µg/L)	Triclosan (µg/L)	DEET (µg/L)
Well 9	1/21/2015	ND	ND	1.3	ND	ND	37	ND	3.5	ND	41	2.36	2.49	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 9[b,c]	1/28/2016	ND	ND	1.4	ND	ND	45	ND	6.5	ND	42	2.48	2.85	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 11	1/21/2015	ND	ND	1.8	ND	ND	46	ND	6.6	ND	44	3.00	2.95	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 11[b]	1/28/2016	ND	ND	1.7	ND	ND	54	ND	5.9	ND	42	2.73	3.23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 11	1/18/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 11-B[b]	1/17/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 11-B	1/17/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 11-B	11/9/2020[b,c]	ND	ND	1.6	ND	ND	51	ND	5.6	ND	57	3.06	3.42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 12	1/21/2015	ND	ND	1.3	ND	ND	24	ND	5.9	ND	55	2.18	2.18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 12	1/28/2016	ND	ND	1.5	ND	ND	30	ND	4.5	ND	61	2.32	2.55	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 12	1/18/2017	ND	ND	1.5	ND	ND	35	ND	4.7	ND	54	2.34	2.64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 12	1/17/2018	ND	ND	1.7	ND	ND	37	ND	6.0	ND	64	2.68	2.94	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 12	1/17/2019	ND	ND	1.6	ND	ND	54	ND	4.2	ND	67	3.58	3.75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 12	2/10/2020	ND	ND	1.2	5.0	ND	31	ND	5.6	ND	51	2.31	2.40	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 14	1/21/2015	ND	ND	1.5	ND	ND	25	ND	10.0	ND	90	2.75	2.93	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 14	1/28/2016	ND	ND	1.6	ND	ND	25	ND	7.6	ND	80	2.59	2.74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 14	1/18/2017	ND	ND	1.7	ND	ND	28	ND	6.9	ND	84	2.61	2.93	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 14	1/17/2018	ND	ND	1.8	ND	ND	25	ND	8.4	ND	90	2.55	2.94	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 14	1/17/2019	ND	ND	1.8	ND	ND	52	ND	6.3	ND	94	3.92	4.21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 14	2/10/2020	ND	ND	1.6	ND	ND	24	ND	8.1	ND	89	2.67	2.86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 15	1/21/2015	ND	ND	1.4	ND	ND	14	ND	6.7	ND	73	2.04	2.10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 15	1/28/2016	ND	ND	1.4	ND	ND	15	ND	5.1	ND	74	2.04	2.19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 15	1/18/2017	ND	ND	1.5	ND	ND	15	ND	4.5	ND	72	1.8	2.13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 15	1/17/2018	ND	ND	1.7	ND	ND	14	ND	6.1	ND	69	1.71	2.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 15	1/17/2019	ND	ND	1.0	ND	ND	12	ND	5.3	ND	75	1.89	2.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 15	2/10/2020	ND	ND	1.3	ND	ND	13	ND	5.9	ND	72	1.76	2.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 16	1/21/2015	ND	ND	1.9	ND	ND	27	ND	12	ND	89	2.84	2.97	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 16	1/28/2016	ND	ND	2.1	ND	ND	32	ND	9.6	ND	89	2.93	3.24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 16	1/18/2017	ND	ND	2.0	ND	ND	30	ND	9.5	ND	83	3.14	3.03	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 16	1/17/2018	ND	ND	2.1	ND	ND	31	ND	11.0	ND	81	2.89	3.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 16	1/17/2019	ND	ND	2.0	ND	ND	49	ND	8.2	ND	110	4.17	4.47	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 16	2/10/2020	ND	ND	1.9	5.0	ND	28	ND	11	ND	83	2.8	2.91	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 17	1/21/2015	ND	ND	1.4	ND	ND	21	ND	11	ND	64	2.3	2.25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 17	1/28/2016	ND	ND	1.5	ND	ND	24	ND	8.2	ND	63	2.26	2.36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 17	1/18/2017	ND	ND	1.7	ND	ND	31	ND	8.3	ND	67	2.4	2.72	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 17	1/17/2018	ND	ND	1.6	ND	ND	23	ND	9.8	ND	62	2.09	2.26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 17	1/17/2019	ND	ND	1.9	ND	ND	69	ND	7.0	ND	81	4.76	4.69	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well 17	2/10/2020	ND	ND	1.3	ND	ND	22	ND	9.1	ND	65	2.1	2.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well TP1	1/21/2015	ND	ND	2.7	ND	ND	110	ND	24	ND	64	6.10	6.14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well TP1	1/28/2016	ND	ND	2.7	ND	ND	120	ND	23	ND	68	6.33	6.64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well TP1	1/18/2017	ND	ND	2.8	ND	ND	120	ND	19	ND	66	6.27	6.59	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well TP1	1/17/2018	ND	ND	2.7	ND	ND	120	ND	22	ND	65	6.22	6.58	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well TP1	1/17/2019	ND	ND	2.8	ND	ND	100	ND	22	ND	69	6.17	5.82	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well TP1	2/10/2020	ND	ND	2.3	ND	ND	110	ND	22	ND	65	6.21	6.16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Abbreviations:

Ag = Silver
Al = Aluminum
As = Arsenic
B = Boron
Ba = Barium
Be = Beryllium
Br = Bromium
Ca = Calcium
CaCO3 = Calcium Carbonate
Cd = Cadmium
Cl = Chloride
ClO4 = Perchlorate
Cn = Cyanide
CO3 = Carbonate
Cr (+6) = Chromium VI
Total Cr = Total Chromium
DEET = N, N-Diethyl-meta-toluamide
EC = Electrical Conductivity
F = Fluoride
Fe = Iron
HCO3= Bicarbonate
Hg = Mercury
K = Potassium
MBAS = Methylene Blue Active Substance
mg/l = milligrams per liter
MPN/100 ml = Most Probable Number per 100 ml
Mg = Magnesium
Mn = Manganese
pH = Negative logarithm (hydrogen ion concentration), in standard units
Na = Sodium
N/A = Not Analyzed
ND = Not detected above laboratory detection limit
NDMA = N-Nitrosodimethylamine
Ni = Nickel
NS = Not sampled
NTU = Nephelometric Turbidity Units
NO3-N = Nitrate as Nitrogen
NO3-N + NO2-N = Nitrate and Nitrite as Nitrogen
NO2-N = Nitrite as Nitrogen
OH = Hydroxide
Pb = Lead
Sb = Antimony
Se = Selenium
SO4 = Sulfate
TDS = Total Dissolved Solids
Tl = Thallium
TOC = Total Organic Carbon
Total Hardness = (Ca + Mg as $CaCO_3$)
µg/L = micrograms per liter
µmhos/cm = micromhos per centimeter
V = Vanadium
Z = Zinc

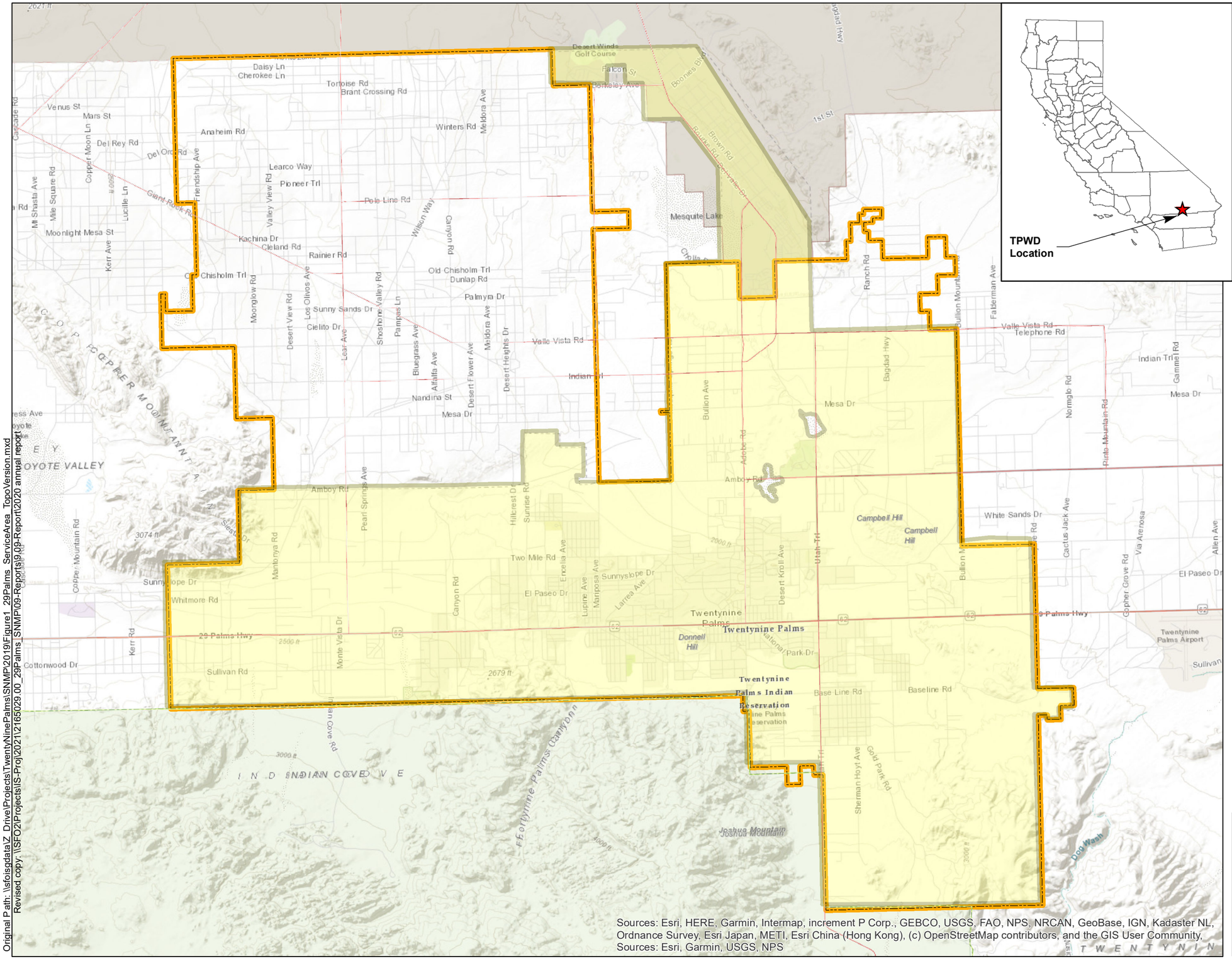
Notes:

(a) Historical analytical results for groundwater monitoring well samples collected within the Twentynine Palms Water District. The general chemical and metal analytical data for the current reporting period can be found in the appendix of the annual report. Temperature values measured in the field.

(b) Well became inactive after 2016 sampling event. Well 11 was replaced in 2018 with Well 11-B in the same location and put into service in 2020.

(c) Uranium analyzed; result = 7.2 picocuries per liter

Figures



Legend

- City of Twentynine Palms
- Twentynine Palms Water District Boundary

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community, Sources: Esri, Garmin, USGS, NPS

Kennedy Jenks

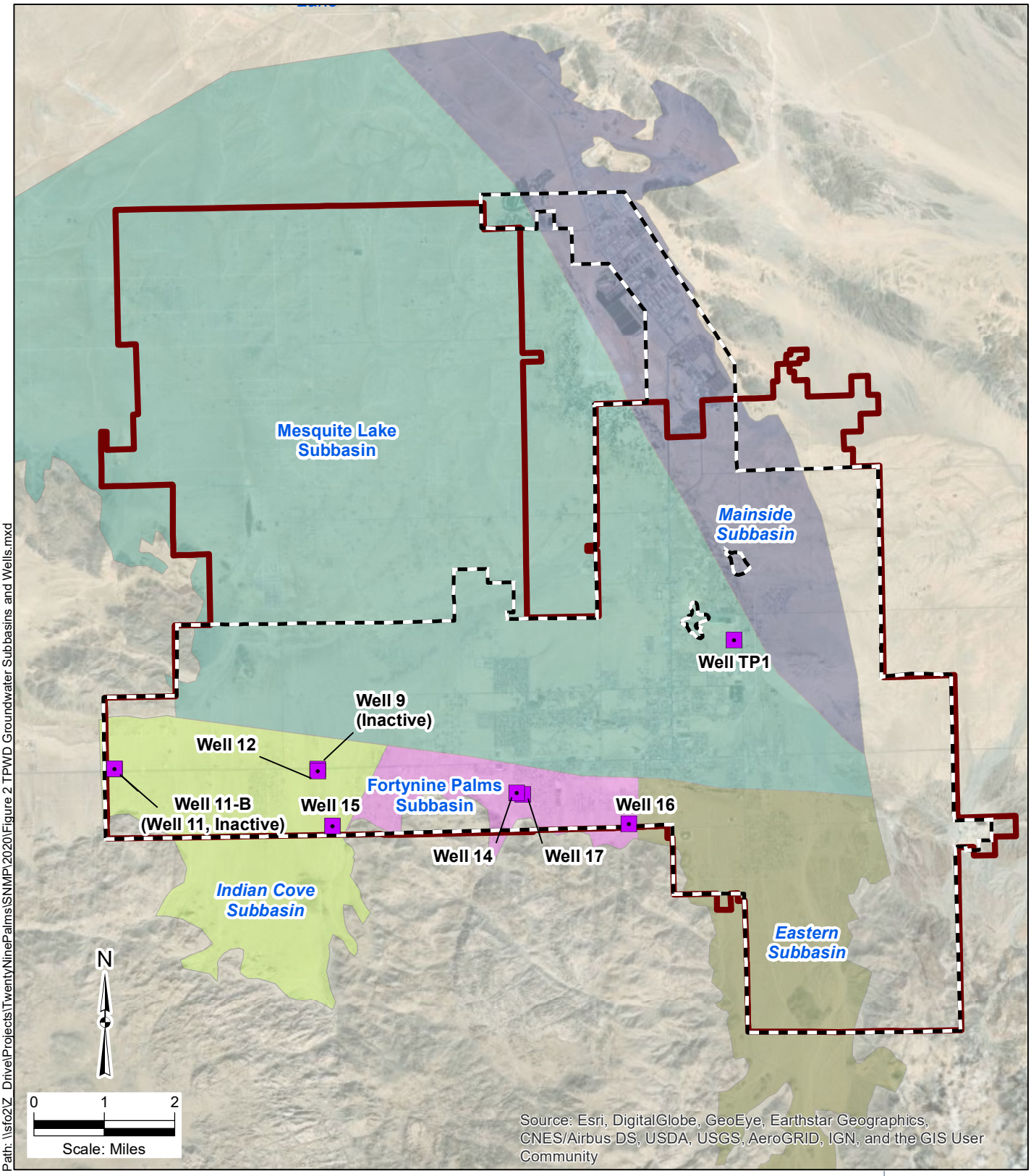
Twentynine Palms Water District
SNMP - 2020 Groundwater Monitoring Report
Twentynine Palms, CA

Twentynine Palms Water District Service Area Boundary

KJ 2165029.00

Figure 1

Original Path: \\sfoisgdata\Z_Drive\Projects\TwentyNinePalms\SNMP\2019\Figure1_29Palms_ServiceArea_TopoVersion.mxd
Revised copy: \\SFO2\Projects\IS-Proj\2021\2165029.00_29Palms_SNMP\09-Reports\9.09-Report\2020 annual report



Path: \\sfo2\Z_Drive\Projects\TwentyNinePalms\SNMP\2020\Figure 2 TPWD Groundwater Subbasins and Wells.mxd

Legend

- TPWD Active Water Supply Well
- City Limit
- Water District Boundary

Note:
1. Wells 9 and 11 became inactive in 2016. Well 11 was replaced with Well 11-B in 2018.

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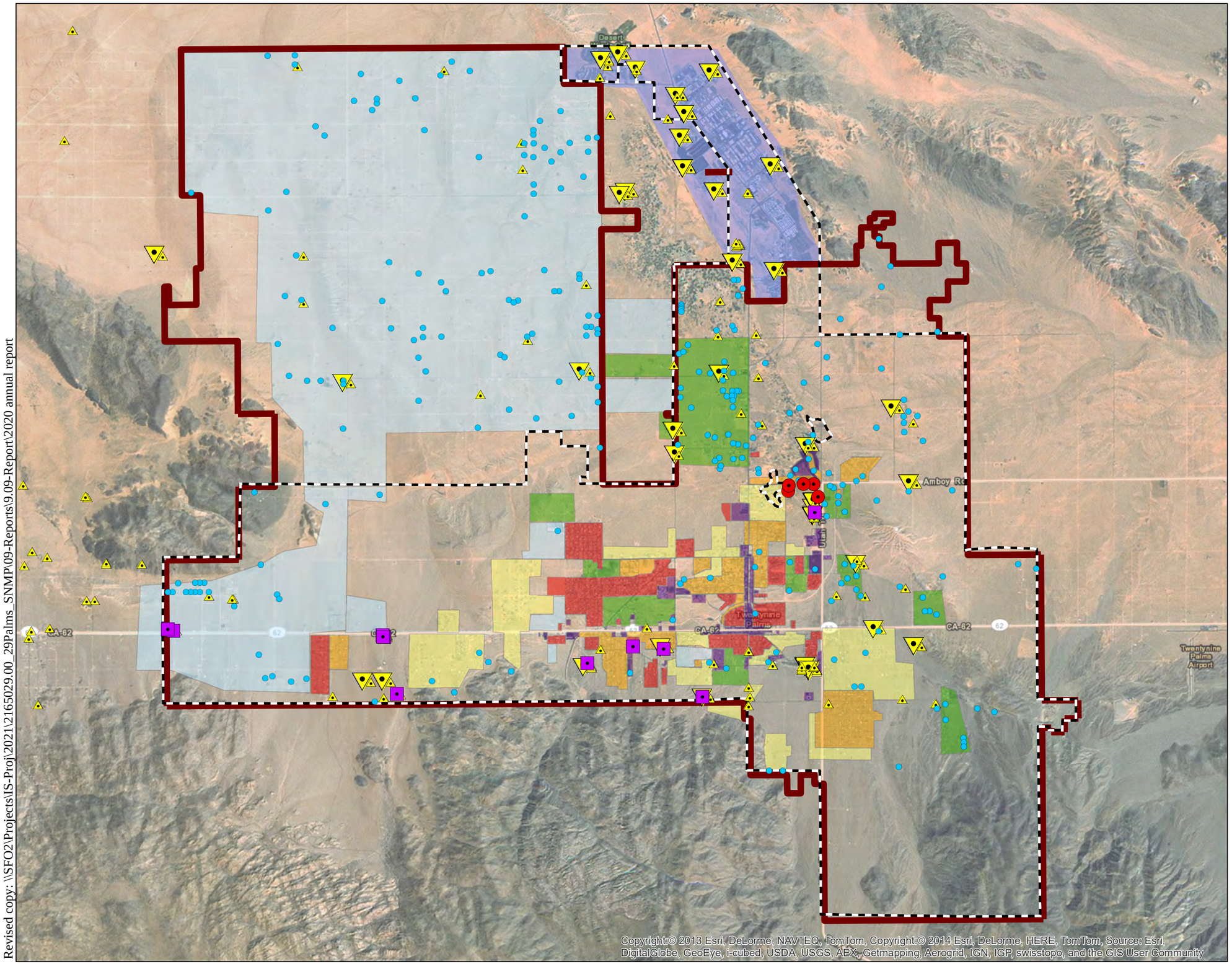
Twentynine Palms Water District
SNMP - 2020 Groundwater Monitoring Report
Twentynine Palms, CA

TPWD Groundwater Subbasins and Wells

K/J 2165029.00

Figure 2



LEGEND

- TPWD Monitoring Well
- TPWD Production Well
- Private Well
- USGS Monitored Well
- Current USGS Monitored Well
- City Limit
- Water District Boundary

Current Land Use

- Zone A
- Zone B
- Zone C
- Zone D
- Zone E
- Commercial Area
- Military Base

Zone A = High Density Residential (> 2 du/acre)
Zone B = High Density Residential (1 - 2 du/acre)
Zone C = Moderate Density Residential (0.5 - 1 du/acre)
Zone D = Low Density Residential (0.1 - 0.5 de/acre)
Zone E = Low Density Residential (< 0.1 du/acre)

Note: Data compiled from 2012 air photo anaysis

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Twentynine Palms Water District
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Twentynine Palms, California

Wells in the Twentynine Palms Area

KJ 2165029*00

Figure 3

Revised copy: \\SFO2\Projects\IS-Proj\2021\2165029.00_29Palms_SNMP\09-Reports\9.09-Report\2020 annual report

Original Path: \\sfoisgdata\Z_Drive\Projects\TwentyNinePalms\SNMP\2019\Figure 4 Potential Groundwater Monitoring Locations.mxd
Revised copy: \\SFO2\Projects\IS-Proj\2021\2165029.00_29Palms_SNMP\09-Reports\09.09-Report\2020 annual report

Golf Course

TPWD Treatment Plant Area

Luckie Park

Twentynine Palms

Twenty Nine Palms Reservation

Indian Trl

Two Mile Rd

29 Palms Hwy

Twentynine Palms Hwy

Esri, HERE, Garmin, (c) OpenStreetMap contributors, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

LEGEND

- TPWD Monitoring Well
- TPWD Production Well
- Private Well
- USGS Monitored Well
- Current USGS Monitored Well
- City Limit
- Groundwater Basin Boundary
- Water District Boundary

Note:

1. The well locations shown on this figure are potential groundwater monitoring locations that the District could consider for Phase 4 of the Groundwater Implementation Plan.

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Twentynine Palms Water District
SNMP - 2020 Groundwater Monitoring Report
Twentynine Palms, CA

Potential Groundwater Monitoring Locations

KJ 2165029.00

Figure 4

Appendix A

Active Production Well Sample Laboratory Reports - 2020

Twentynine Palms Water District	Project: General Mineral & Inorganic Analysis	Work Order: 20B0691
P.O Box 1735	Sub Project: Compliance Sampling	Received: 02/10/20 18:00
Twentynine Palms CA, 92277	Project Manager: Ray Kolisz	Reported: 02/20/20

Well 12 **20B0691-01 (Water)** **Sample Date:** 02/10/20 8:40 **Sampler:** Russell Frechette

Analyte	Method	Result	Rep. Limit	MCL	Units	Prepared	Analyzed	Batch	Qualifier
Field Analyses									
Temperature (Field)	Field	**23.2**			°C	02/10/20	02/10/20	2007034	
General Physical Analyses									
Apparent Color	SM 2120BM	ND	3.0	15	Color Units	02/10/20	02/10/20	2007052	
Odor Threshold	EPA 140.1-M	**1**	1	3	TON	02/10/20	02/10/20	2007052	
Turbidity	EPA 180.1	ND	0.1	5	NTU	02/10/20	02/10/20	2007052	
General Chemical Analyses									
Alkalinity, Total (as CaCO3)	SM 2320 B	**88**	5.0		mg/L	02/12/20	02/12/20	2007034	
Bicarbonate (HCO3)	SM 2320 B	**110**	5.0		mg/L	02/12/20	02/12/20	2007034	
Carbonate (CO3)	SM 2320B	ND	5.0		mg/L	02/12/20	02/12/20	2007034	
Chloride (Cl)	EPA 300.0	**7.5**	1.0	500	mg/L	02/11/20	02/11/20	2007042	
Langelier Index at Source Tmp	SM 203	**-0.08**				02/10/20	02/10/20	2007034	
Langelier Index at 60 C	SM 203	**0.48**				02/10/20	02/10/20	2007034	
Aggressive Index	SM 203	**11.66**				02/10/20	02/10/20	2007034	
Cyanide (CN)	SM4500CNF	ND	100	150	ug/L	02/14/20	02/14/20	2007166	
Specific Conductance (E.C.)	SM 2510B	**230**	2.0	1600	umhos/cm	02/11/20	02/11/20	2007034	
Fluoride (F)	EPA 300.0	**1.7**	0.10	2	mg/L	02/11/20	02/11/20	2007042	
Hydroxide (OH)	SM 2320B	ND	5.0		mg/L	02/12/20	02/12/20	2007034	
MBAS (LAS Mole. Wt 340.0)	SM 5540C	ND	0.10	0.5	mg/L	02/11/20	02/11/20	2007036	
Nitrate as N (NO3-N)	EPA 300.0	**2.1**	0.40	10	mg/L	02/11/20	02/11/20	2007042	
Nitrate + Nitrite (as N)	EPA 300.0	**2.1**	0.40	10	mg/L	02/11/20	02/11/20	2007042	
Nitrite as N (NO2-N)	EPA 300.0	ND	0.40	1	mg/L	02/11/20	02/11/20	2007042	
Perchlorate (ClO4)	EPA 314.0	ND	4.0	6	ug/L	02/14/20	02/14/20	2007177	
pH (Lab)	SM 4500HB	**8.1**			pH Units	02/11/20	02/11/20	2007034	
Sulfate (SO4)	EPA 300.0	**10**	0.50	500	mg/L	02/11/20	02/11/20	2007042	
Total Filterable Residue/TDS	SM 2540C	**160**	5.0	1000	mg/L	02/11/20	02/12/20	2007037	
Metals									
Aluminum (Al)	EPA 200.7	ND	50	200	ug/L	02/14/20	02/14/20	2007165	
Antimony (Sb)	EPA 200.8	ND	6.0	6	ug/L	02/19/20	02/19/20	2008051	
Arsenic (As)	EPA 200.8	**6.7**	2.0	10	ug/L	02/19/20	02/19/20	2008051	
Barium (Ba)	EPA 200.7	ND	100	1000	ug/L	02/14/20	02/14/20	2007165	
Beryllium (Be)	EPA 200.8	ND	1.0	4	ug/L	02/19/20	02/19/20	2008051	
Boron (B)	EPA 200.7	**110**	100		ug/L	02/14/20	02/14/20	2007165	
Cadmium (Cd)	EPA 200.8	ND	1.0	5	ug/L	02/19/20	02/19/20	2008051	
Calcium (Ca)	EPA 200.7	**18**	1.0		mg/L	02/13/20	02/13/20	2007125	

Stu Styles
Client Services Manager

Post Office Box 329 San Bernardino, CA 92402 (909) 825-7693 Fax (909) 825-7696 ELAP Number 1088

Twentynine Palms Water District	Project: General Mineral & Inorganic Analysis	Work Order: 20B0691
P.O Box 1735	Sub Project: Compliance Sampling	Received: 02/10/20 18:00
Twentynine Palms CA, 92277	Project Manager: Ray Kolisz	Reported: 02/20/20

Well 12 **20B0691-01 (Water)** **Sample Date:** 02/10/20 8:40 **Sampler:** Russell Frechette

Analyte	Method	Result	Rep. Limit	MCL	Units	Prepared	Analyzed	Batch	Qualifier
Metals									
Chromium (+6)	EPA 218.6	**9.0**	1.0		ug/L	02/10/20	02/14/20	2006183	
Chromium (Total Cr)	EPA 200.8	ND	10	50	ug/L	02/19/20	02/19/20	2008051	
Copper (Cu)	EPA 200.7	ND	50	1000	ug/L	02/14/20	02/14/20	2007165	
Iron (Fe)	EPA 200.7	ND	100	300	ug/L	02/14/20	02/14/20	2007165	
Lead (Pb)	EPA 200.8	ND	5.0		ug/L	02/19/20	02/19/20	2008051	
Magnesium (Mg)	EPA 200.7	**1.5**	1.0		mg/L	02/13/20	02/13/20	2007125	
Manganese (Mn)	EPA 200.7	ND	20	50	ug/L	02/14/20	02/14/20	2007165	
Mercury (Hg)	EPA 200.8	ND	1.0	2	ug/L	02/13/20	02/13/20	2007123	
Nickel (Ni)	EPA 200.8	ND	10	100	ug/L	02/19/20	02/19/20	2008051	
Potassium (K)	EPA 200.7	**1.2**	1.0		mg/L	02/13/20	02/13/20	2007125	
Selenium (Se)	EPA 200.8	**5.0**	5.0	50	ug/L	02/19/20	02/19/20	2008051	
Silver (Ag)	EPA 200.8	ND	10	100	ug/L	02/19/20	02/19/20	2008051	
Sodium (Na)	EPA 200.7	**31**	1.0		mg/L	02/13/20	02/13/20	2007125	
Thallium (Tl)	EPA 200.8	ND	1.0	2	ug/L	02/19/20	02/19/20	2008051	
Vanadium (V)	EPA 200.8	**5.6**	3.0		ug/L	02/19/20	02/19/20	2008051	
Zinc (Zn)	EPA 200.7	ND	50	5000	ug/L	02/14/20	02/14/20	2007165	
Anion / Cation Balance									
Hardness, Total (as CaCO3)	Calculated	**51**			mg/L	02/13/20	02/13/20	[CALC]	
Total Anions	Calculated	**2.31**			meq/L	02/13/20	02/12/20	[CALC]	
Total Cations	Calculated	**2.4**			meq/L	02/13/20	02/13/20	[CALC]	
% difference	Calculated	**3.8**				02/13/20	02/12/20	[CALC]	

Stu Styles
Client Services Manager

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Twentynine Palms Water District	Project: General Mineral & Inorganic Analysis	Work Order: 20B0691
P.O Box 1735	Sub Project: Compliance Sampling	Received: 02/10/20 18:00
Twentynine Palms CA, 92277	Project Manager: Ray Kolisz	Reported: 02/20/20

Well 14 **20B0691-02 (Water)** **Sample Date:** 02/10/20 8:05 **Sampler:** Russell Frechette

Analyte	Method	Result	Rep. Limit	MCL	Units	Prepared	Analyzed	Batch	Qualifier
Field Analyses									
Temperature (Field)	Field	**23.7**			°C	02/10/20	02/10/20	2007034	
General Physical Analyses									
Apparent Color	SM 2120BM	ND	3.0	15	Color Units	02/10/20	02/10/20	2007052	
Odor Threshold	EPA 140.1-M	**1**	1	3	TON	02/10/20	02/10/20	2007052	
Turbidity	EPA 180.1	ND	0.1	5	NTU	02/10/20	02/10/20	2007052	
General Chemical Analyses									
Alkalinity, Total (as CaCO3)	SM 2320 B	**98**	5.0		mg/L	02/12/20	02/12/20	2007034	
Bicarbonate (HCO3)	SM 2320 B	**120**	5.0		mg/L	02/12/20	02/12/20	2007034	
Carbonate (CO3)	SM 2320B	ND	5.0		mg/L	02/12/20	02/12/20	2007034	
Chloride (Cl)	EPA 300.0	**14**	1.0	500	mg/L	02/11/20	02/11/20	2007042	
Langelier Index at Source Tmp	SM 203	**0.36**				02/10/20	02/10/20	2007034	
Langelier Index at 60 C	SM 203	**0.91**				02/10/20	02/10/20	2007034	
Aggressive Index	SM 203	**12.10**				02/10/20	02/10/20	2007034	
Cyanide (CN)	SM4500CNF	ND	100	150	ug/L	02/14/20	02/14/20	2007166	
Specific Conductance (E.C.)	SM 2510B	**280**	2.0	1600	umhos/cm	02/11/20	02/11/20	2007034	
Fluoride (F)	EPA 300.0	**0.74**	0.10	2	mg/L	02/11/20	02/11/20	2007042	
Hydroxide (OH)	SM 2320B	ND	5.0		mg/L	02/12/20	02/12/20	2007034	
MBAS (LAS Mole. Wt 340.0)	SM 5540C	ND	0.10	0.5	mg/L	02/11/20	02/11/20	2007036	
Nitrate as N (NO3-N)	EPA 300.0	**3.2**	0.40	10	mg/L	02/11/20	02/11/20	2007042	
Nitrate + Nitrite (as N)	EPA 300.0	**3.2**	0.40	10	mg/L	02/11/20	02/11/20	2007042	
Nitrite as N (NO2-N)	EPA 300.0	ND	0.40	1	mg/L	02/11/20	02/11/20	2007042	
Perchlorate (ClO4)	EPA 314.0	ND	4.0	6	ug/L	02/14/20	02/14/20	2007177	
pH (Lab)	SM 4500HB	**8.3**			pH Units	02/11/20	02/11/20	2007034	
Sulfate (SO4)	EPA 300.0	**13**	0.50	500	mg/L	02/11/20	02/11/20	2007042	
Total Filterable Residue/TDS	SM 2540C	**200**	5.0	1000	mg/L	02/11/20	02/12/20	2007037	
Metals									
Aluminum (Al)	EPA 200.7	ND	50	200	ug/L	02/14/20	02/14/20	2007165	
Antimony (Sb)	EPA 200.8	ND	6.0	6	ug/L	02/19/20	02/19/20	2008051	
Arsenic (As)	EPA 200.8	**2.2**	2.0	10	ug/L	02/19/20	02/19/20	2008051	
Barium (Ba)	EPA 200.7	ND	100	1000	ug/L	02/14/20	02/14/20	2007165	
Beryllium (Be)	EPA 200.8	ND	1.0	4	ug/L	02/19/20	02/19/20	2008051	
Boron (B)	EPA 200.7	ND	100		ug/L	02/14/20	02/14/20	2007165	
Cadmium (Cd)	EPA 200.8	ND	1.0	5	ug/L	02/19/20	02/19/20	2008051	
Calcium (Ca)	EPA 200.7	**28**	1.0		mg/L	02/13/20	02/13/20	2007125	

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Client Services Manager

Post Office Box 329 San Bernardino, CA 92402 (909) 825-7693 Fax (909) 825-7696 ELAP Number 1088

Twentynine Palms Water District	Project: General Mineral & Inorganic Analysis	Work Order: 20B0691
P.O Box 1735	Sub Project: Compliance Sampling	Received: 02/10/20 18:00
Twentynine Palms CA, 92277	Project Manager: Ray Kolisz	Reported: 02/20/20

Well 14 **20B0691-02 (Water)** **Sample Date:** 02/10/20 8:05 **Sampler:** Russell Frechette

Analyte	Method	Result	Rep. Limit	MCL	Units	Prepared	Analyzed	Batch	Qualifier
Metals									
Chromium (+6)	EPA 218.6	**4.2**	1.0		ug/L	02/10/20	02/14/20	2006183	
Chromium (Total Cr)	EPA 200.8	ND	10	50	ug/L	02/19/20	02/19/20	2008051	
Copper (Cu)	EPA 200.7	ND	50	1000	ug/L	02/14/20	02/14/20	2007165	
Iron (Fe)	EPA 200.7	ND	100	300	ug/L	02/14/20	02/14/20	2007165	
Lead (Pb)	EPA 200.8	ND	5.0		ug/L	02/19/20	02/19/20	2008051	
Magnesium (Mg)	EPA 200.7	**4.6**	1.0		mg/L	02/13/20	02/13/20	2007125	
Manganese (Mn)	EPA 200.7	ND	20	50	ug/L	02/14/20	02/14/20	2007165	
Mercury (Hg)	EPA 200.8	ND	1.0	2	ug/L	02/13/20	02/13/20	2007123	
Nickel (Ni)	EPA 200.8	ND	10	100	ug/L	02/19/20	02/19/20	2008051	
Potassium (K)	EPA 200.7	**1.6**	1.0		mg/L	02/13/20	02/13/20	2007125	
Selenium (Se)	EPA 200.8	ND	5.0	50	ug/L	02/19/20	02/19/20	2008051	
Silver (Ag)	EPA 200.8	ND	10	100	ug/L	02/19/20	02/19/20	2008051	
Sodium (Na)	EPA 200.7	**24**	1.0		mg/L	02/13/20	02/13/20	2007125	
Thallium (Tl)	EPA 200.8	ND	1.0	2	ug/L	02/19/20	02/19/20	2008051	
Vanadium (V)	EPA 200.8	**8.1**	3.0		ug/L	02/19/20	02/19/20	2008051	
Zinc (Zn)	EPA 200.7	ND	50	5000	ug/L	02/14/20	02/14/20	2007165	
Anion / Cation Balance									
Hardness, Total (as CaCO3)	Calculated	**89**			mg/L	02/13/20	02/13/20	[CALC]	
Total Anions	Calculated	**2.67**			meq/L	02/13/20	02/12/20	[CALC]	
Total Cations	Calculated	**2.86**			meq/L	02/13/20	02/13/20	[CALC]	
% difference	Calculated	**6.9**				02/13/20	02/12/20	[CALC]	

Stu Styles
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Twentynine Palms Water District	Project: General Mineral & Inorganic Analysis	Work Order: 20B0691
P.O Box 1735	Sub Project: Compliance Sampling	Received: 02/10/20 18:00
Twentynine Palms CA, 92277	Project Manager: Ray Kolisz	Reported: 02/20/20

Well 15 **20B0691-03 (Water)** **Sample Date:** 02/10/20 8:25 **Sampler:** Russell Frechette

Analyte	Method	Result	Rep. Limit	MCL	Units	Prepared	Analyzed	Batch	Qualifier
Field Analyses									
Temperature (Field)	Field	**21.1**			°C	02/10/20	02/10/20	2007034	
General Physical Analyses									
Apparent Color	SM 2120BM	ND	3.0	15	Color Units	02/10/20	02/10/20	2007052	
Odor Threshold	EPA 140.1-M	**1**	1	3	TON	02/10/20	02/10/20	2007052	
Turbidity	EPA 180.1	**0.2**	0.1	5	NTU	02/10/20	02/10/20	2007052	
General Chemical Analyses									
Alkalinity, Total (as CaCO3)	SM 2320 B	**70**	5.0		mg/L	02/12/20	02/12/20	2007034	
Bicarbonate (HCO3)	SM 2320 B	**85**	5.0		mg/L	02/12/20	02/12/20	2007034	
Carbonate (CO3)	SM 2320B	ND	5.0		mg/L	02/12/20	02/12/20	2007034	
Chloride (Cl)	EPA 300.0	**6.5**	1.0	500	mg/L	02/11/20	02/11/20	2007042	
Langelier Index at Source Tmp	SM 203	**-0.12**				02/10/20	02/10/20	2007034	
Langelier Index at 60 C	SM 203	**0.47**				02/10/20	02/10/20	2007034	
Aggressive Index	SM 203	**11.63**				02/10/20	02/10/20	2007034	
Cyanide (CN)	SM4500CNF	ND	100	150	ug/L	02/14/20	02/14/20	2007166	
Specific Conductance (E.C.)	SM 2510B	**200**	2.0	1600	umhos/cm	02/11/20	02/11/20	2007034	
Fluoride (F)	EPA 300.0	**0.35**	0.10	2	mg/L	02/11/20	02/11/20	2007042	
Hydroxide (OH)	SM 2320B	ND	5.0		mg/L	02/12/20	02/12/20	2007034	
MBAS (LAS Mole. Wt 340.0)	SM 5540C	ND	0.10	0.5	mg/L	02/11/20	02/11/20	2007036	
Nitrate as N (NO3-N)	EPA 300.0	**2.9**	0.40	10	mg/L	02/11/20	02/11/20	2007042	
Nitrate + Nitrite (as N)	EPA 300.0	**2.9**	0.40	10	mg/L	02/11/20	02/11/20	2007042	
Nitrite as N (NO2-N)	EPA 300.0	ND	0.40	1	mg/L	02/11/20	02/11/20	2007042	
Perchlorate (ClO4)	EPA 314.0	ND	4.0	6	ug/L	02/14/20	02/14/20	2007177	
pH (Lab)	SM 4500HB	**8.1**			pH Units	02/11/20	02/11/20	2007034	
Sulfate (SO4)	EPA 300.0	**8.1**	0.50	500	mg/L	02/11/20	02/11/20	2007042	
Total Filterable Residue/TDS	SM 2540C	**130**	5.0	1000	mg/L	02/11/20	02/12/20	2007037	
Metals									
Aluminum (Al)	EPA 200.7	ND	50	200	ug/L	02/14/20	02/14/20	2007165	
Antimony (Sb)	EPA 200.8	ND	6.0	6	ug/L	02/19/20	02/19/20	2008051	
Arsenic (As)	EPA 200.8	ND	2.0	10	ug/L	02/19/20	02/19/20	2008051	
Barium (Ba)	EPA 200.7	ND	100	1000	ug/L	02/14/20	02/14/20	2007165	
Beryllium (Be)	EPA 200.8	ND	1.0	4	ug/L	02/19/20	02/19/20	2008051	
Boron (B)	EPA 200.7	ND	100		ug/L	02/14/20	02/14/20	2007165	
Cadmium (Cd)	EPA 200.8	ND	1.0	5	ug/L	02/19/20	02/19/20	2008051	
Calcium (Ca)	EPA 200.7	**22**	1.0		mg/L	02/13/20	02/13/20	2007125	

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Twentynine Palms Water District	Project: General Mineral & Inorganic Analysis	Work Order: 20B0691
P.O Box 1735	Sub Project: Compliance Sampling	Received: 02/10/20 18:00
Twentynine Palms CA, 92277	Project Manager: Ray Kolisz	Reported: 02/20/20

Well 15 **20B0691-03 (Water)** **Sample Date:** 02/10/20 8:25 **Sampler:** Russell Frechette

Analyte	Method	Result	Rep. Limit	MCL	Units	Prepared	Analyzed	Batch	Qualifier
Metals									
Chromium (+6)	EPA 218.6	ND	1.0		ug/L	02/10/20	02/14/20	2006183	
Chromium (Total Cr)	EPA 200.8	ND	10	50	ug/L	02/19/20	02/19/20	2008051	
Copper (Cu)	EPA 200.7	ND	50	1000	ug/L	02/14/20	02/14/20	2007165	
Iron (Fe)	EPA 200.7	ND	100	300	ug/L	02/14/20	02/14/20	2007165	
Lead (Pb)	EPA 200.8	ND	5.0		ug/L	02/19/20	02/19/20	2008051	
Magnesium (Mg)	EPA 200.7	**3.9**	1.0		mg/L	02/13/20	02/13/20	2007125	
Manganese (Mn)	EPA 200.7	ND	20	50	ug/L	02/14/20	02/14/20	2007165	
Mercury (Hg)	EPA 200.8	ND	1.0	2	ug/L	02/13/20	02/13/20	2007123	
Nickel (Ni)	EPA 200.8	ND	10	100	ug/L	02/19/20	02/19/20	2008051	
Potassium (K)	EPA 200.7	**1.3**	1.0		mg/L	02/13/20	02/13/20	2007125	
Selenium (Se)	EPA 200.8	ND	5.0	50	ug/L	02/19/20	02/19/20	2008051	
Silver (Ag)	EPA 200.8	ND	10	100	ug/L	02/19/20	02/19/20	2008051	
Sodium (Na)	EPA 200.7	**13**	1.0		mg/L	02/13/20	02/13/20	2007125	
Thallium (Tl)	EPA 200.8	ND	1.0	2	ug/L	02/19/20	02/19/20	2008051	
Vanadium (V)	EPA 200.8	**5.9**	3.0		ug/L	02/19/20	02/19/20	2008051	
Zinc (Zn)	EPA 200.7	ND	50	5000	ug/L	02/14/20	02/14/20	2007165	
Anion / Cation Balance									
Hardness, Total (as CaCO3)	Calculated	**72**			mg/L	02/13/20	02/13/20	[CALC]	
Total Anions	Calculated	**1.76**			meq/L	02/13/20	02/12/20	[CALC]	
Total Cations	Calculated	**2.02**			meq/L	02/13/20	02/13/20	[CALC]	
% difference	Calculated	**14**				02/13/20	02/12/20	[CALC]	

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Twentynine Palms Water District	Project: General Mineral & Inorganic Analysis	Work Order: 20B0691
P.O Box 1735	Sub Project: Compliance Sampling	Received: 02/10/20 18:00
Twentynine Palms CA, 92277	Project Manager: Ray Kolisz	Reported: 02/20/20

Well 16 **20B0691-04 (Water)** **Sample Date:** 02/10/20 7:45 **Sampler:** Russell Frechette

Analyte	Method	Result	Rep. Limit	MCL	Units	Prepared	Analyzed	Batch	Qualifier
Field Analyses									
Temperature (Field)	Field	**24.9**			°C	02/10/20	02/10/20	2007034	
General Physical Analyses									
Apparent Color	SM 2120BM	ND	3.0	15	Color Units	02/10/20	02/10/20	2007052	
Odor Threshold	EPA 140.1-M	**1**	1	3	TON	02/10/20	02/10/20	2007052	
Turbidity	EPA 180.1	ND	0.1	5	NTU	02/10/20	02/10/20	2007052	
General Chemical Analyses									
Alkalinity, Total (as CaCO3)	SM 2320 B	**100**	5.0		mg/L	02/12/20	02/12/20	2007034	
Bicarbonate (HCO3)	SM 2320 B	**130**	5.0		mg/L	02/12/20	02/12/20	2007034	
Carbonate (CO3)	SM 2320B	ND	5.0		mg/L	02/12/20	02/12/20	2007034	
Chloride (Cl)	EPA 300.0	**9.5**	1.0	500	mg/L	02/11/20	02/11/20	2007042	
Langelier Index at Source Tmp	SM 203	**0.39**				02/10/20	02/10/20	2007034	
Langelier Index at 60 C	SM 203	**0.92**				02/10/20	02/10/20	2007034	
Aggressive Index	SM 203	**12.11**				02/10/20	02/10/20	2007034	
Cyanide (CN)	SM4500CNF	ND	100	150	ug/L	02/14/20	02/14/20	2007166	
Specific Conductance (E.C.)	SM 2510B	**280**	2.0	1600	umhos/cm	02/11/20	02/11/20	2007034	
Fluoride (F)	EPA 300.0	**1.7**	0.10	2	mg/L	02/11/20	02/11/20	2007042	
Hydroxide (OH)	SM 2320B	ND	5.0		mg/L	02/12/20	02/12/20	2007034	
MBAS (LAS Mole. Wt 340.0)	SM 5540C	ND	0.10	0.5	mg/L	02/11/20	02/11/20	2007036	
Nitrate as N (NO3-N)	EPA 300.0	**1.6**	0.40	10	mg/L	02/11/20	02/11/20	2007042	
Nitrate + Nitrite (as N)	EPA 300.0	**1.6**	0.40	10	mg/L	02/11/20	02/11/20	2007042	
Nitrite as N (NO2-N)	EPA 300.0	ND	0.40	1	mg/L	02/11/20	02/11/20	2007042	
Perchlorate (ClO4)	EPA 314.0	ND	4.0	6	ug/L	02/14/20	02/14/20	2007177	
pH (Lab)	SM 4500HB	**8.3**			pH Units	02/11/20	02/11/20	2007034	
Sulfate (SO4)	EPA 300.0	**15**	0.50	500	mg/L	02/11/20	02/11/20	2007042	
Total Filterable Residue/TDS	SM 2540C	**190**	5.0	1000	mg/L	02/11/20	02/12/20	2007037	
Metals									
Aluminum (Al)	EPA 200.7	ND	50	200	ug/L	02/14/20	02/14/20	2007165	
Antimony (Sb)	EPA 200.8	ND	6.0	6	ug/L	02/19/20	02/19/20	2008051	
Arsenic (As)	EPA 200.8	**2.1**	2.0	10	ug/L	02/19/20	02/19/20	2008051	
Barium (Ba)	EPA 200.7	ND	100	1000	ug/L	02/14/20	02/14/20	2007165	
Beryllium (Be)	EPA 200.8	ND	1.0	4	ug/L	02/19/20	02/19/20	2008051	
Boron (B)	EPA 200.7	**130**	100		ug/L	02/14/20	02/14/20	2007165	
Cadmium (Cd)	EPA 200.8	ND	1.0	5	ug/L	02/19/20	02/19/20	2008051	
Calcium (Ca)	EPA 200.7	**26**	1.0		mg/L	02/13/20	02/13/20	2007125	

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Twentynine Palms Water District	Project: General Mineral & Inorganic Analysis	Work Order: 20B0691
P.O Box 1735	Sub Project: Compliance Sampling	Received: 02/10/20 18:00
Twentynine Palms CA, 92277	Project Manager: Ray Kolisz	Reported: 02/20/20

Well 16 **20B0691-04 (Water)** **Sample Date:** 02/10/20 7:45 **Sampler:** Russell Frechette

Analyte	Method	Result	Rep. Limit	MCL	Units	Prepared	Analyzed	Batch	Qualifier
Metals									
Chromium (+6)	EPA 218.6	**5.0**	1.0		ug/L	02/10/20	02/14/20	2006183	
Chromium (Total Cr)	EPA 200.8	ND	10	50	ug/L	02/19/20	02/19/20	2008051	
Copper (Cu)	EPA 200.7	ND	50	1000	ug/L	02/14/20	02/14/20	2007165	
Iron (Fe)	EPA 200.7	ND	100	300	ug/L	02/14/20	02/14/20	2007165	
Lead (Pb)	EPA 200.8	ND	5.0		ug/L	02/19/20	02/19/20	2008051	
Magnesium (Mg)	EPA 200.7	**4.2**	1.0		mg/L	02/13/20	02/13/20	2007125	
Manganese (Mn)	EPA 200.7	ND	20	50	ug/L	02/14/20	02/14/20	2007165	
Mercury (Hg)	EPA 200.8	ND	1.0	2	ug/L	02/13/20	02/13/20	2007123	
Nickel (Ni)	EPA 200.8	ND	10	100	ug/L	02/19/20	02/19/20	2008051	
Potassium (K)	EPA 200.7	**1.9**	1.0		mg/L	02/13/20	02/13/20	2007125	
Selenium (Se)	EPA 200.8	**5.0**	5.0	50	ug/L	02/19/20	02/19/20	2008051	
Silver (Ag)	EPA 200.8	ND	10	100	ug/L	02/19/20	02/19/20	2008051	
Sodium (Na)	EPA 200.7	**28**	1.0		mg/L	02/13/20	02/13/20	2007125	
Thallium (Tl)	EPA 200.8	ND	1.0	2	ug/L	02/19/20	02/19/20	2008051	
Vanadium (V)	EPA 200.8	**11**	3.0		ug/L	02/19/20	02/19/20	2008051	
Zinc (Zn)	EPA 200.7	ND	50	5000	ug/L	02/14/20	02/14/20	2007165	
Anion / Cation Balance									
Hardness, Total (as CaCO3)	Calculated	**83**			mg/L	02/13/20	02/13/20	[CALC]	
Total Anions	Calculated	**2.8**			meq/L	02/13/20	02/12/20	[CALC]	
Total Cations	Calculated	**2.91**			meq/L	02/13/20	02/13/20	[CALC]	
% difference	Calculated	**3.9**				02/13/20	02/12/20	[CALC]	

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Twentynine Palms Water District	Project: General Mineral & Inorganic Analysis	Work Order: 20B0691
P.O Box 1735	Sub Project: Compliance Sampling	Received: 02/10/20 18:00
Twentynine Palms CA, 92277	Project Manager: Ray Kolisz	Reported: 02/20/20

Well 17 **20B0691-05 (Water)** **Sample Date:** 02/10/20 8:15 **Sampler:** Russell Frechette

Analyte	Method	Result	Rep. Limit	MCL	Units	Prepared	Analyzed	Batch	Qualifier
Field Analyses									
Temperature (Field)	Field	**25.2**			°C	02/10/20	02/10/20	2007034	
General Physical Analyses									
Apparent Color	SM 2120BM	ND	3.0	15	Color Units	02/10/20	02/10/20	2007052	
Odor Threshold	EPA 140.1-M	**1**	1	3	TON	02/10/20	02/10/20	2007052	
Turbidity	EPA 180.1	ND	0.1	5	NTU	02/10/20	02/10/20	2007052	
General Chemical Analyses									
Alkalinity, Total (as CaCO3)	SM 2320 B	**82**	5.0		mg/L	02/12/20	02/12/20	2007034	
Bicarbonate (HCO3)	SM 2320 B	**100**	5.0		mg/L	02/12/20	02/12/20	2007034	
Carbonate (CO3)	SM 2320B	ND	5.0		mg/L	02/12/20	02/12/20	2007034	
Chloride (Cl)	EPA 300.0	**8.6**	1.0	500	mg/L	02/11/20	02/11/20	2007042	
Langelier Index at Source Tmp	SM 203	**0.21**				02/10/20	02/10/20	2007034	
Langelier Index at 60 C	SM 203	**0.74**				02/10/20	02/10/20	2007034	
Aggressive Index	SM 203	**11.92**				02/10/20	02/10/20	2007034	
Cyanide (CN)	SM4500CNF	ND	100	150	ug/L	02/14/20	02/14/20	2007166	
Specific Conductance (E.C.)	SM 2510B	**220**	2.0	1600	umhos/cm	02/11/20	02/11/20	2007034	
Fluoride (F)	EPA 300.0	**0.74**	0.10	2	mg/L	02/11/20	02/11/20	2007042	
Hydroxide (OH)	SM 2320B	ND	5.0		mg/L	02/12/20	02/12/20	2007034	
MBAS (LAS Mole. Wt 340.0)	SM 5540C	ND	0.10	0.5	mg/L	02/11/20	02/11/20	2007036	
Nitrate as N (NO3-N)	EPA 300.0	**2.1**	0.40	10	mg/L	02/11/20	02/11/20	2007042	
Nitrate + Nitrite (as N)	EPA 300.0	**2.1**	0.40	10	mg/L	02/11/20	02/11/20	2007042	
Nitrite as N (NO2-N)	EPA 300.0	ND	0.40	1	mg/L	02/11/20	02/11/20	2007042	
Perchlorate (ClO4)	EPA 314.0	ND	4.0	6	ug/L	02/14/20	02/14/20	2007177	
pH (Lab)	SM 4500HB	**8.3**			pH Units	02/11/20	02/11/20	2007034	
Sulfate (SO4)	EPA 300.0	**8.7**	0.50	500	mg/L	02/11/20	02/11/20	2007042	
Total Filterable Residue/TDS	SM 2540C	**160**	5.0	1000	mg/L	02/11/20	02/12/20	2007037	
Metals									
Aluminum (Al)	EPA 200.7	ND	50	200	ug/L	02/14/20	02/14/20	2007165	
Antimony (Sb)	EPA 200.8	ND	6.0	6	ug/L	02/19/20	02/19/20	2008051	
Arsenic (As)	EPA 200.8	**2.6**	2.0	10	ug/L	02/19/20	02/19/20	2008051	
Barium (Ba)	EPA 200.7	ND	100	1000	ug/L	02/14/20	02/14/20	2007165	
Beryllium (Be)	EPA 200.8	ND	1.0	4	ug/L	02/19/20	02/19/20	2008051	
Boron (B)	EPA 200.7	ND	100		ug/L	02/14/20	02/14/20	2007165	
Cadmium (Cd)	EPA 200.8	ND	1.0	5	ug/L	02/19/20	02/19/20	2008051	
Calcium (Ca)	EPA 200.7	**21**	1.0		mg/L	02/13/20	02/13/20	2007125	

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Twentynine Palms Water District	Project: General Mineral & Inorganic Analysis	Work Order: 20B0691
P.O Box 1735	Sub Project: Compliance Sampling	Received: 02/10/20 18:00
Twentynine Palms CA, 92277	Project Manager: Ray Kolisz	Reported: 02/20/20

Well 17 **20B0691-05 (Water)** **Sample Date:** 02/10/20 8:15 **Sampler:** Russell Frechette

Analyte	Method	Result	Rep. Limit	MCL	Units	Prepared	Analyzed	Batch	Qualifier
Metals									
Chromium (+6)	EPA 218.6	**6.2**	1.0		ug/L	02/10/20	02/14/20	2006183	
Chromium (Total Cr)	EPA 200.8	ND	10	50	ug/L	02/19/20	02/19/20	2008051	
Copper (Cu)	EPA 200.7	ND	50	1000	ug/L	02/14/20	02/14/20	2007165	
Iron (Fe)	EPA 200.7	ND	100	300	ug/L	02/14/20	02/14/20	2007165	
Lead (Pb)	EPA 200.8	ND	5.0		ug/L	02/19/20	02/19/20	2008051	
Magnesium (Mg)	EPA 200.7	**3.2**	1.0		mg/L	02/13/20	02/13/20	2007125	
Manganese (Mn)	EPA 200.7	ND	20	50	ug/L	02/14/20	02/14/20	2007165	
Mercury (Hg)	EPA 200.8	ND	1.0	2	ug/L	02/13/20	02/13/20	2007123	
Nickel (Ni)	EPA 200.8	ND	10	100	ug/L	02/19/20	02/19/20	2008051	
Potassium (K)	EPA 200.7	**1.3**	1.0		mg/L	02/13/20	02/13/20	2007125	
Selenium (Se)	EPA 200.8	ND	5.0	50	ug/L	02/19/20	02/19/20	2008051	
Silver (Ag)	EPA 200.8	ND	10	100	ug/L	02/19/20	02/19/20	2008051	
Sodium (Na)	EPA 200.7	**22**	1.0		mg/L	02/13/20	02/13/20	2007125	
Thallium (Tl)	EPA 200.8	ND	1.0	2	ug/L	02/19/20	02/19/20	2008051	
Vanadium (V)	EPA 200.8	**9.1**	3.0		ug/L	02/19/20	02/19/20	2008051	
Zinc (Zn)	EPA 200.7	ND	50	5000	ug/L	02/14/20	02/14/20	2007165	
Anion / Cation Balance									
Hardness, Total (as CaCO3)	Calculated	**65**			mg/L	02/13/20	02/13/20	[CALC]	
Total Anions	Calculated	**2.1**			meq/L	02/13/20	02/12/20	[CALC]	
Total Cations	Calculated	**2.3**			meq/L	02/13/20	02/13/20	[CALC]	
% difference	Calculated	**9.1**				02/13/20	02/12/20	[CALC]	

Stu Styles
Client Services Manager

Post Office Box 329 San Bernardino, CA 92402 (909) 825-7693 Fax (909) 825-7696 ELAP Number 1088

Twentynine Palms Water District	Project: General Mineral & Inorganic Analysis	Work Order: 20B0691
P.O Box 1735	Sub Project: Compliance Sampling	Received: 02/10/20 18:00
Twentynine Palms CA, 92277	Project Manager: Ray Kolisz	Reported: 02/20/20

Well TP1 **20B0691-06 (Water)** **Sample Date:** 02/10/20 7:30 **Sampler:** Russell Frechette

Analyte	Method	Result	Rep. Limit	MCL	Units	Prepared	Analyzed	Batch	Qualifier
Field Analyses									
Temperature (Field)	Field	**26.0**			°C	02/10/20	02/10/20	2007034	
General Physical Analyses									
Apparent Color	SM 2120BM	ND	3.0	15	Color Units	02/10/20	02/10/20	2007052	
Odor Threshold	EPA 140.1-M	**1**	1	3	TON	02/10/20	02/10/20	2007052	
Turbidity	EPA 180.1	ND	0.1	5	NTU	02/10/20	02/10/20	2007052	
General Chemical Analyses									
Alkalinity, Total (as CaCO3)	SM 2320 B	**160**	5.0		mg/L	02/12/20	02/12/20	2007034	
Bicarbonate (HCO3)	SM 2320 B	**200**	5.0		mg/L	02/12/20	02/12/20	2007034	
Carbonate (CO3)	SM 2320B	ND	5.0		mg/L	02/12/20	02/12/20	2007034	
Chloride (Cl)	EPA 300.0	**29**	1.0	500	mg/L	02/11/20	02/11/20	2007042	
Langelier Index at Source Tmp	SM 203	**0.57**				02/10/20	02/10/20	2007034	
Langelier Index at 60 C	SM 203	**1.09**				02/10/20	02/10/20	2007034	
Aggressive Index	SM 203	**12.31**				02/10/20	02/10/20	2007034	
Cyanide (CN)	SM4500CNF	ND	100	150	ug/L	02/14/20	02/14/20	2007166	
Specific Conductance (E.C.)	SM 2510B	**610**	2.0	1600	umhos/cm	02/11/20	02/11/20	2007034	
Fluoride (F)	EPA 300.0	**5.8**	0.40	2	mg/L	02/12/20	02/12/20	2007080	
Hydroxide (OH)	SM 2320B	ND	5.0		mg/L	02/12/20	02/12/20	2007034	
MBAS (LAS Mole. Wt 340.0)	SM 5540C	ND	0.10	0.5	mg/L	02/11/20	02/11/20	2007036	
Nitrate as N (NO3-N)	EPA 300.0	**1.2**	0.40	10	mg/L	02/11/20	02/11/20	2007042	
Nitrate + Nitrite (as N)	EPA 300.0	**1.2**	0.40	10	mg/L	02/11/20	02/11/20	2007042	
Nitrite as N (NO2-N)	EPA 300.0	ND	0.40	1	mg/L	02/11/20	02/11/20	2007042	
Perchlorate (ClO4)	EPA 314.0	ND	4.0	6	ug/L	02/14/20	02/14/20	2007177	
pH (Lab)	SM 4500HB	**8.4**			pH Units	02/11/20	02/11/20	2007034	
Sulfate (SO4)	EPA 300.0	**87**	0.50	500	mg/L	02/11/20	02/11/20	2007042	
Total Filterable Residue/TDS	SM 2540C	**370**	5.0	1000	mg/L	02/11/20	02/12/20	2007037	
Metals									
Aluminum (Al)	EPA 200.7	ND	50	200	ug/L	02/14/20	02/14/20	2007165	
Antimony (Sb)	EPA 200.8	ND	6.0	6	ug/L	02/19/20	02/19/20	2008051	
Arsenic (As)	EPA 200.8	**4.6**	2.0	10	ug/L	02/19/20	02/19/20	2008051	
Barium (Ba)	EPA 200.7	ND	100	1000	ug/L	02/14/20	02/14/20	2007165	
Beryllium (Be)	EPA 200.8	ND	1.0	4	ug/L	02/19/20	02/19/20	2008051	
Boron (B)	EPA 200.7	**430**	100		ug/L	02/14/20	02/14/20	2007165	
Cadmium (Cd)	EPA 200.8	ND	1.0	5	ug/L	02/19/20	02/19/20	2008051	
Calcium (Ca)	EPA 200.7	**20**	1.0		mg/L	02/13/20	02/13/20	2007125	

Stu Styles
Client Services Manager

Post Office Box 329 San Bernardino, CA 92402 (909) 825-7693 Fax (909) 825-7696 ELAP Number 1088

Twentynine Palms Water District	Project: General Mineral & Inorganic Analysis	Work Order: 20B0691
P.O Box 1735	Sub Project: Compliance Sampling	Received: 02/10/20 18:00
Twentynine Palms CA, 92277	Project Manager: Ray Kolisz	Reported: 02/20/20

Well TP1 **20B0691-06 (Water)** **Sample Date:** 02/10/20 7:30 **Sampler:** Russell Frechette

Analyte	Method	Result	Rep. Limit	MCL	Units	Prepared	Analyzed	Batch	Qualifier
Metals									
Chromium (+6)	EPA 218.6	**6.0**	1.0		ug/L	02/10/20	02/14/20	2006183	
Chromium (Total Cr)	EPA 200.8	ND	10	50	ug/L	02/19/20	02/19/20	2008051	
Copper (Cu)	EPA 200.7	ND	50	1000	ug/L	02/14/20	02/14/20	2007165	
Iron (Fe)	EPA 200.7	ND	100	300	ug/L	02/14/20	02/14/20	2007165	
Lead (Pb)	EPA 200.8	ND	5.0		ug/L	02/19/20	02/19/20	2008051	
Magnesium (Mg)	EPA 200.7	**3.8**	1.0		mg/L	02/13/20	02/13/20	2007125	
Manganese (Mn)	EPA 200.7	ND	20	50	ug/L	02/14/20	02/14/20	2007165	
Mercury (Hg)	EPA 200.8	ND	1.0	2	ug/L	02/13/20	02/13/20	2007123	
Nickel (Ni)	EPA 200.8	ND	10	100	ug/L	02/19/20	02/19/20	2008051	
Potassium (K)	EPA 200.7	**2.3**	1.0		mg/L	02/13/20	02/13/20	2007125	
Selenium (Se)	EPA 200.8	ND	5.0	50	ug/L	02/19/20	02/19/20	2008051	
Silver (Ag)	EPA 200.8	ND	10	100	ug/L	02/19/20	02/19/20	2008051	
Sodium (Na)	EPA 200.7	**110**	5.0		mg/L	02/17/20	02/17/20	2008016	
Thallium (Tl)	EPA 200.8	ND	1.0	2	ug/L	02/19/20	02/19/20	2008051	
Vanadium (V)	EPA 200.8	**22**	3.0		ug/L	02/19/20	02/19/20	2008051	
Zinc (Zn)	EPA 200.7	ND	50	5000	ug/L	02/14/20	02/14/20	2007165	
Anion / Cation Balance									
Hardness, Total (as CaCO3)	Calculated	**65**			mg/L	02/17/20	02/13/20	[CALC]	
Total Anions	Calculated	**6.21**			meq/L	02/17/20	02/12/20	[CALC]	
Total Cations	Calculated	**6.16**			meq/L	02/17/20	02/17/20	[CALC]	
% difference	Calculated	**0.9**				02/17/20	02/12/20	[CALC]	

QCNoteb Result is within 40% of 5ppb

pH (Lab) was analyzed ASAP but received and analyzed past the 15 minute hold time.

ND Analyte NOT DETECTED at or above the reporting limit

Stu Styles
Client Services Manager

Post Office Box 329 San Bernardino, CA 92402 (909) 825-7693 Fax (909) 825-7696 ELAP Number 1088

Clinical Laboratory of San Bernardino, Inc.

EDT Transfer Confirmation 1

Work Order: 20B0691
Report Date: 02/20/2020
Analyzing Lab: Clinical Laboratory of San Bernardino, Inc. ELAP 1088

TWENTYNINE PALMS WATER DISTRICT User ID: TAN System: 3610049

WELL 12 Station No.: 3610049-012 Sampled: 200210 08:40

COLOR	Result: ND	Units: UNITS	Entry No.: 00081	Analyzed: 200210
ODOR THRESHOLD @ 60 C	Result: 1	Units: TON	Entry No.: 00086	Analyzed: 200210
SPECIFIC CONDUCTANCE	Result: 230	Units:	Entry No.: 00095	Analyzed: 200211
PH (LABORATORY)	Result: 8.1	Units:	Entry No.: 00403	Analyzed: 200211
TOTAL ALKALINITY (AS CACO3)	Result: 88	Units: MG/L	Entry No.: 00410	Analyzed: 200212
BICARBONATE ALKALINITY	Result: 110	Units: MG/L	Entry No.: 00440	Analyzed: 200212
CARBONATE ALKALINITY	Result: ND	Units: MG/L	Entry No.: 00445	Analyzed: 200212
NITRATE (AS N)	Result: 2.1	Units: MG/L	Entry No.: 00618	Analyzed: 200211
NITRITE (N)	Result: ND	Units: MG/L	Entry No.: 00620	Analyzed: 200211
TOTAL HARDNESS (AS CACO3)	Result: 51	Units: MG/L	Entry No.: 00900	Analyzed: 200213
CALCIUM	Result: 18	Units: MG/L	Entry No.: 00916	Analyzed: 200213
MAGNESIUM	Result: 1.5	Units: MG/L	Entry No.: 00927	Analyzed: 200213
SODIUM	Result: 31	Units: MG/L	Entry No.: 00929	Analyzed: 200213
POTASSIUM	Result: 1.2	Units: MG/L	Entry No.: 00937	Analyzed: 200213
CHLORIDE	Result: 7.5	Units: MG/L	Entry No.: 00940	Analyzed: 200211
SULFATE	Result: 10	Units: MG/L	Entry No.: 00945	Analyzed: 200211
FLUORIDE (F) NATURAL - SOURCE	Result: 1.7	Units: MG/L	Entry No.: 00951	Analyzed: 200211
ARSENIC	Result: 6.7	Units: UG/L	Entry No.: 01002	Analyzed: 200219
BARIUM	Result: ND	Units: UG/L	Entry No.: 01007	Analyzed: 200214
BERYLLIUM	Result: ND	Units: UG/L	Entry No.: 01012	Analyzed: 200219
BORON	Result: 110	Units: UG/L	Entry No.: 01020	Analyzed: 200214
CADMIUM	Result: ND	Units: UG/L	Entry No.: 01027	Analyzed: 200219
CHROMIUM (HEXAVALENT)	Result: 9.0	Units: UG/L	Entry No.: 01032	Analyzed: 200214
CHROMIUM (TOTAL)	Result: ND	Units: UG/L	Entry No.: 01034	Analyzed: 200219
COPPER	Result: ND	Units: UG/L	Entry No.: 01042	Analyzed: 200214
IRON	Result: ND	Units: UG/L	Entry No.: 01045	Analyzed: 200214
LEAD	Result: ND	Units: UG/L	Entry No.: 01051	Analyzed: 200219
MANGANESE	Result: ND	Units: UG/L	Entry No.: 01055	Analyzed: 200214
THALLIUM	Result: ND	Units: UG/L	Entry No.: 01059	Analyzed: 200219
NICKEL	Result: ND	Units: UG/L	Entry No.: 01067	Analyzed: 200219
SILVER	Result: ND	Units: UG/L	Entry No.: 01077	Analyzed: 200219
VANADIUM	Result: 5.6	Units: UG/L	Entry No.: 01087	Analyzed: 200219
ZINC	Result: ND	Units: UG/L	Entry No.: 01092	Analyzed: 200214
ANTIMONY	Result: ND	Units: UG/L	Entry No.: 01097	Analyzed: 200219
ALUMINUM	Result: ND	Units: UG/L	Entry No.: 01105	Analyzed: 200214
SELENIUM	Result: 5.0	Units: UG/L	Entry No.: 01147	Analyzed: 200219
CYANIDE	Result: ND	Units: UG/L	Entry No.: 01291	Analyzed: 200214
FOAMING AGENTS (MBAS)	Result: ND	Units: MG/L	Entry No.: 38260	Analyzed: 200211
TOTAL DISSOLVED SOLIDS	Result: 160	Units: MG/L	Entry No.: 70300	Analyzed: 200212
LANGELIER INDEX @ 60 C	Result: 0.48	Units:	Entry No.: 71813	Analyzed: 200210
LANGELIER INDEX @ SOURCE TEMP.	Result: - 0.08	Units:	Entry No.: 71814	Analyzed: 200210
HYDROXIDE ALKALINITY	Result: ND	Units: MG/L	Entry No.: 71830	Analyzed: 200212
MERCURY	Result: ND	Units: UG/L	Entry No.: 71900	Analyzed: 200213
TURBIDITY (LAB)	Result: ND	Units: NTU	Entry No.: 82079	Analyzed: 200210
AGRESSIVENESS INDEX	Result: 11.66	Units:	Entry No.: 82383	Analyzed: 200210
NITRATE + NITRITE AS N	Result: 2.1	Units: MG/L	Entry No.: A-029	Analyzed: 200211
PERCHLORATE	Result: ND	Units: UG/L	Entry No.: A-031	Analyzed: 200214

Post Office Box 329 San Bernardino, CA 92402 (909) 825-7693 Fax (909) 825-7696 ELAP Number 1088

WELL 15			Station No.: 3610049-014		Sampled: 200210 08:25
COLOR	Result: ND	Units: UNITS	Entry No.: 00081	Analyzed: 200210	
ODOR THRESHOLD @ 60 C	Result: 1	Units: TON	Entry No.: 00086	Analyzed: 200210	
SPECIFIC CONDUCTANCE	Result: 200	Units:	Entry No.: 00095	Analyzed: 200211	
PH (LABORATORY)	Result: 8.1	Units:	Entry No.: 00403	Analyzed: 200211	
TOTAL ALKALINITY (AS CACO3)	Result: 70	Units: MG/L	Entry No.: 00410	Analyzed: 200212	
BICARBONATE ALKALINITY	Result: 85	Units: MG/L	Entry No.: 00440	Analyzed: 200212	
CARBONATE ALKALINITY	Result: ND	Units: MG/L	Entry No.: 00445	Analyzed: 200212	
NITRATE (AS N)	Result: 2.9	Units: MG/L	Entry No.: 00618	Analyzed: 200211	
NITRITE (N)	Result: ND	Units: MG/L	Entry No.: 00620	Analyzed: 200211	
TOTAL HARDNESS (AS CACO3)	Result: 72	Units: MG/L	Entry No.: 00900	Analyzed: 200213	
CALCIUM	Result: 22	Units: MG/L	Entry No.: 00916	Analyzed: 200213	
MAGNESIUM	Result: 3.9	Units: MG/L	Entry No.: 00927	Analyzed: 200213	
SODIUM	Result: 13	Units: MG/L	Entry No.: 00929	Analyzed: 200213	
POTASSIUM	Result: 1.3	Units: MG/L	Entry No.: 00937	Analyzed: 200213	
CHLORIDE	Result: 6.5	Units: MG/L	Entry No.: 00940	Analyzed: 200211	
SULFATE	Result: 8.1	Units: MG/L	Entry No.: 00945	Analyzed: 200211	
FLUORIDE (F) NATURAL - SOURCE	Result: 0.35	Units: MG/L	Entry No.: 00951	Analyzed: 200211	
ARSENIC	Result: ND	Units: UG/L	Entry No.: 01002	Analyzed: 200219	
BARIUM	Result: ND	Units: UG/L	Entry No.: 01007	Analyzed: 200214	
BERYLLIUM	Result: ND	Units: UG/L	Entry No.: 01012	Analyzed: 200219	
BORON	Result: ND	Units: UG/L	Entry No.: 01020	Analyzed: 200214	
CADMIUM	Result: ND	Units: UG/L	Entry No.: 01027	Analyzed: 200219	
CHROMIUM (HEXAVALENT)	Result: ND	Units: UG/L	Entry No.: 01032	Analyzed: 200214	
CHROMIUM (TOTAL)	Result: ND	Units: UG/L	Entry No.: 01034	Analyzed: 200219	
COPPER	Result: ND	Units: UG/L	Entry No.: 01042	Analyzed: 200214	
IRON	Result: ND	Units: UG/L	Entry No.: 01045	Analyzed: 200214	
LEAD	Result: ND	Units: UG/L	Entry No.: 01051	Analyzed: 200219	
MANGANESE	Result: ND	Units: UG/L	Entry No.: 01055	Analyzed: 200214	
THALLIUM	Result: ND	Units: UG/L	Entry No.: 01059	Analyzed: 200219	
NICKEL	Result: ND	Units: UG/L	Entry No.: 01067	Analyzed: 200219	
SILVER	Result: ND	Units: UG/L	Entry No.: 01077	Analyzed: 200219	
VANADIUM	Result: 5.9	Units: UG/L	Entry No.: 01087	Analyzed: 200219	
ZINC	Result: ND	Units: UG/L	Entry No.: 01092	Analyzed: 200214	
ANTIMONY	Result: ND	Units: UG/L	Entry No.: 01097	Analyzed: 200219	
ALUMINUM	Result: ND	Units: UG/L	Entry No.: 01105	Analyzed: 200214	
SELENIUM	Result: ND	Units: UG/L	Entry No.: 01147	Analyzed: 200219	
CYANIDE	Result: ND	Units: UG/L	Entry No.: 01291	Analyzed: 200214	
FOAMING AGENTS (MBAS)	Result: ND	Units: MG/L	Entry No.: 38260	Analyzed: 200211	
TOTAL DISSOLVED SOLIDS	Result: 130	Units: MG/L	Entry No.: 70300	Analyzed: 200212	
LANGELIER INDEX @ 60 C	Result: 0.47	Units:	Entry No.: 71813	Analyzed: 200210	
LANGELIER INDEX @ SOURCE TEMP.	Result: - 0.12	Units:	Entry No.: 71814	Analyzed: 200210	
HYDROXIDE ALKALINITY	Result: ND	Units: MG/L	Entry No.: 71830	Analyzed: 200212	
MERCURY	Result: ND	Units: UG/L	Entry No.: 71900	Analyzed: 200213	
TURBIDITY (LAB)	Result: 0.2	Units: NTU	Entry No.: 82079	Analyzed: 200210	
AGRESSIVENESS INDEX	Result: 11.63	Units:	Entry No.: 82383	Analyzed: 200210	
NITRATE + NITRITE AS N	Result: 2.9	Units: MG/L	Entry No.: A-029	Analyzed: 200211	
PERCHLORATE	Result: ND	Units: UG/L	Entry No.: A-031	Analyzed: 200214	
WELL 16			Station No.: 3610049-015		Sampled: 200210 07:45
COLOR	Result: ND	Units: UNITS	Entry No.: 00081	Analyzed: 200210	

Post Office Box 329 San Bernardino, CA 92402 (909) 825-7693 Fax (909) 825-7696 ELAP Number 1088

ODOR THRESHOLD @ 60 C	Result: 1	Units: TON	Entry No.: 00086	Analyzed: 200210
SPECIFIC CONDUCTANCE	Result: 280	Units:	Entry No.: 00095	Analyzed: 200211
PH (LABORATORY)	Result: 8.3	Units:	Entry No.: 00403	Analyzed: 200211
TOTAL ALKALINITY (AS CACO3)	Result: 100	Units: MG/L	Entry No.: 00410	Analyzed: 200212
BICARBONATE ALKALINITY	Result: 130	Units: MG/L	Entry No.: 00440	Analyzed: 200212
CARBONATE ALKALINITY	Result: ND	Units: MG/L	Entry No.: 00445	Analyzed: 200212
NITRATE (AS N)	Result: 1.6	Units: MG/L	Entry No.: 00618	Analyzed: 200211
NITRITE (N)	Result: ND	Units: MG/L	Entry No.: 00620	Analyzed: 200211
TOTAL HARDNESS (AS CACO3)	Result: 83	Units: MG/L	Entry No.: 00900	Analyzed: 200213
CALCIUM	Result: 26	Units: MG/L	Entry No.: 00916	Analyzed: 200213
MAGNESIUM	Result: 4.2	Units: MG/L	Entry No.: 00927	Analyzed: 200213
SODIUM	Result: 28	Units: MG/L	Entry No.: 00929	Analyzed: 200213
POTASSIUM	Result: 1.9	Units: MG/L	Entry No.: 00937	Analyzed: 200213
CHLORIDE	Result: 9.5	Units: MG/L	Entry No.: 00940	Analyzed: 200211
SULFATE	Result: 15	Units: MG/L	Entry No.: 00945	Analyzed: 200211
FLUORIDE (F) NATURAL - SOURCE	Result: 1.7	Units: MG/L	Entry No.: 00951	Analyzed: 200211
ARSENIC	Result: 2.1	Units: UG/L	Entry No.: 01002	Analyzed: 200219
BARIUM	Result: ND	Units: UG/L	Entry No.: 01007	Analyzed: 200214
BERYLLIUM	Result: ND	Units: UG/L	Entry No.: 01012	Analyzed: 200219
BORON	Result: 130	Units: UG/L	Entry No.: 01020	Analyzed: 200214
CADMIUM	Result: ND	Units: UG/L	Entry No.: 01027	Analyzed: 200219
CHROMIUM (HEXAVALENT)	Result: 5.0	Units: UG/L	Entry No.: 01032	Analyzed: 200214
CHROMIUM (TOTAL)	Result: ND	Units: UG/L	Entry No.: 01034	Analyzed: 200219
COPPER	Result: ND	Units: UG/L	Entry No.: 01042	Analyzed: 200214
IRON	Result: ND	Units: UG/L	Entry No.: 01045	Analyzed: 200214
LEAD	Result: ND	Units: UG/L	Entry No.: 01051	Analyzed: 200219
MANGANESE	Result: ND	Units: UG/L	Entry No.: 01055	Analyzed: 200214
THALLIUM	Result: ND	Units: UG/L	Entry No.: 01059	Analyzed: 200219
NICKEL	Result: ND	Units: UG/L	Entry No.: 01067	Analyzed: 200219
SILVER	Result: ND	Units: UG/L	Entry No.: 01077	Analyzed: 200219
VANADIUM	Result: 11	Units: UG/L	Entry No.: 01087	Analyzed: 200219
ZINC	Result: ND	Units: UG/L	Entry No.: 01092	Analyzed: 200214
ANTIMONY	Result: ND	Units: UG/L	Entry No.: 01097	Analyzed: 200219
ALUMINUM	Result: ND	Units: UG/L	Entry No.: 01105	Analyzed: 200214
SELENIUM	Result: 5.0	Units: UG/L	Entry No.: 01147	Analyzed: 200219
CYANIDE	Result: ND	Units: UG/L	Entry No.: 01291	Analyzed: 200214
FOAMING AGENTS (MBAS)	Result: ND	Units: MG/L	Entry No.: 38260	Analyzed: 200211
TOTAL DISSOLVED SOLIDS	Result: 190	Units: MG/L	Entry No.: 70300	Analyzed: 200212
LANGELIER INDEX @ 60 C	Result: 0.92	Units:	Entry No.: 71813	Analyzed: 200210
LANGELIER INDEX @ SOURCE TEMP.	Result: 0.39	Units:	Entry No.: 71814	Analyzed: 200210
HYDROXIDE ALKALINITY	Result: ND	Units: MG/L	Entry No.: 71830	Analyzed: 200212
MERCURY	Result: ND	Units: UG/L	Entry No.: 71900	Analyzed: 200213
TURBIDITY (LAB)	Result: ND	Units: NTU	Entry No.: 82079	Analyzed: 200210
AGRESSIVENESS INDEX	Result: 12.11	Units:	Entry No.: 82383	Analyzed: 200210
NITRATE + NITRITE AS N	Result: 1.6	Units: MG/L	Entry No.: A-029	Analyzed: 200211
PERCHLORATE	Result: ND	Units: UG/L	Entry No.: A-031	Analyzed: 200214

WELL 14 Station No.: 3610049-016 Sampled: 200210 08:05

COLOR	Result: ND	Units: UNITS	Entry No.: 00081	Analyzed: 200210
ODOR THRESHOLD @ 60 C	Result: 1	Units: TON	Entry No.: 00086	Analyzed: 200210
SPECIFIC CONDUCTANCE	Result: 280	Units:	Entry No.: 00095	Analyzed: 200211

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PH (LABORATORY)	Result: 8.3	Units:	Entry No.: 00403	Analyzed: 200211
TOTAL ALKALINITY (AS CACO3)	Result: 98	Units: MG/L	Entry No.: 00410	Analyzed: 200212
BICARBONATE ALKALINITY	Result: 120	Units: MG/L	Entry No.: 00440	Analyzed: 200212
CARBONATE ALKALINITY	Result: ND	Units: MG/L	Entry No.: 00445	Analyzed: 200212
NITRATE (AS N)	Result: 3.2	Units: MG/L	Entry No.: 00618	Analyzed: 200211
NITRITE (N)	Result: ND	Units: MG/L	Entry No.: 00620	Analyzed: 200211
TOTAL HARDNESS (AS CACO3)	Result: 89	Units: MG/L	Entry No.: 00900	Analyzed: 200213
CALCIUM	Result: 28	Units: MG/L	Entry No.: 00916	Analyzed: 200213
MAGNESIUM	Result: 4.6	Units: MG/L	Entry No.: 00927	Analyzed: 200213
SODIUM	Result: 24	Units: MG/L	Entry No.: 00929	Analyzed: 200213
POTASSIUM	Result: 1.6	Units: MG/L	Entry No.: 00937	Analyzed: 200213
CHLORIDE	Result: 14	Units: MG/L	Entry No.: 00940	Analyzed: 200211
SULFATE	Result: 13	Units: MG/L	Entry No.: 00945	Analyzed: 200211
FLUORIDE (F) NATURAL - SOURCE	Result: 0.74	Units: MG/L	Entry No.: 00951	Analyzed: 200211
ARSENIC	Result: 2.2	Units: UG/L	Entry No.: 01002	Analyzed: 200219
BARIUM	Result: ND	Units: UG/L	Entry No.: 01007	Analyzed: 200214
BERYLLIUM	Result: ND	Units: UG/L	Entry No.: 01012	Analyzed: 200219
BORON	Result: ND	Units: UG/L	Entry No.: 01020	Analyzed: 200214
CADMIUM	Result: ND	Units: UG/L	Entry No.: 01027	Analyzed: 200219
CHROMIUM (HEXAVALENT)	Result: 4.2	Units: UG/L	Entry No.: 01032	Analyzed: 200214
CHROMIUM (TOTAL)	Result: ND	Units: UG/L	Entry No.: 01034	Analyzed: 200219
COPPER	Result: ND	Units: UG/L	Entry No.: 01042	Analyzed: 200214
IRON	Result: ND	Units: UG/L	Entry No.: 01045	Analyzed: 200214
LEAD	Result: ND	Units: UG/L	Entry No.: 01051	Analyzed: 200219
MANGANESE	Result: ND	Units: UG/L	Entry No.: 01055	Analyzed: 200214
THALLIUM	Result: ND	Units: UG/L	Entry No.: 01059	Analyzed: 200219
NICKEL	Result: ND	Units: UG/L	Entry No.: 01067	Analyzed: 200219
SILVER	Result: ND	Units: UG/L	Entry No.: 01077	Analyzed: 200219
VANADIUM	Result: 8.1	Units: UG/L	Entry No.: 01087	Analyzed: 200219
ZINC	Result: ND	Units: UG/L	Entry No.: 01092	Analyzed: 200214
ANTIMONY	Result: ND	Units: UG/L	Entry No.: 01097	Analyzed: 200219
ALUMINUM	Result: ND	Units: UG/L	Entry No.: 01105	Analyzed: 200214
SELENIUM	Result: ND	Units: UG/L	Entry No.: 01147	Analyzed: 200219
CYANIDE	Result: ND	Units: UG/L	Entry No.: 01291	Analyzed: 200214
FOAMING AGENTS (MBAS)	Result: ND	Units: MG/L	Entry No.: 38260	Analyzed: 200211
TOTAL DISSOLVED SOLIDS	Result: 200	Units: MG/L	Entry No.: 70300	Analyzed: 200212
LANGELIER INDEX @ 60 C	Result: 0.91	Units:	Entry No.: 71813	Analyzed: 200210
LANGELIER INDEX @ SOURCE TEMP.	Result: 0.36	Units:	Entry No.: 71814	Analyzed: 200210
HYDROXIDE ALKALINITY	Result: ND	Units: MG/L	Entry No.: 71830	Analyzed: 200212
MERCURY	Result: ND	Units: UG/L	Entry No.: 71900	Analyzed: 200213
TURBIDITY (LAB)	Result: ND	Units: NTU	Entry No.: 82079	Analyzed: 200210
AGRESSIVENESS INDEX	Result: 12.10	Units:	Entry No.: 82383	Analyzed: 200210
NITRATE + NITRITE AS N	Result: 3.2	Units: MG/L	Entry No.: A-029	Analyzed: 200211
PERCHLORATE	Result: ND	Units: UG/L	Entry No.: A-031	Analyzed: 200214

WELL WTP-1 Station No.: 3610049-018 Sampled: 200210 07:30

COLOR	Result: ND	Units: UNITS	Entry No.: 00081	Analyzed: 200210
ODOR THRESHOLD @ 60 C	Result: 1	Units: TON	Entry No.: 00086	Analyzed: 200210
SPECIFIC CONDUCTANCE	Result: 610	Units:	Entry No.: 00095	Analyzed: 200211
PH (LABORATORY)	Result: 8.4	Units:	Entry No.: 00403	Analyzed: 200211
TOTAL ALKALINITY (AS CACO3)	Result: 160	Units: MG/L	Entry No.: 00410	Analyzed: 200212

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BICARBONATE ALKALINITY	Result: 200	Units: MG/L	Entry No.: 00440	Analyzed: 200212
CARBONATE ALKALINITY	Result: ND	Units: MG/L	Entry No.: 00445	Analyzed: 200212
NITRATE (AS N)	Result: 1.2	Units: MG/L	Entry No.: 00618	Analyzed: 200211
NITRITE (N)	Result: ND	Units: MG/L	Entry No.: 00620	Analyzed: 200211
TOTAL HARDNESS (AS CACO3)	Result: 65	Units: MG/L	Entry No.: 00900	Analyzed: 200213
CALCIUM	Result: 20	Units: MG/L	Entry No.: 00916	Analyzed: 200213
MAGNESIUM	Result: 3.8	Units: MG/L	Entry No.: 00927	Analyzed: 200213
SODIUM	Result: 110	Units: MG/L	Entry No.: 00929	Analyzed: 200217
POTASSIUM	Result: 2.3	Units: MG/L	Entry No.: 00937	Analyzed: 200213
CHLORIDE	Result: 29	Units: MG/L	Entry No.: 00940	Analyzed: 200211
SULFATE	Result: 87	Units: MG/L	Entry No.: 00945	Analyzed: 200211
FLUORIDE (F) NATURAL - SOURCE	Result: 5.8	Units: MG/L	Entry No.: 00951	Analyzed: 200212
ARSENIC	Result: 4.6	Units: UG/L	Entry No.: 01002	Analyzed: 200219
BARIUM	Result: ND	Units: UG/L	Entry No.: 01007	Analyzed: 200214
BERYLLIUM	Result: ND	Units: UG/L	Entry No.: 01012	Analyzed: 200219
BORON	Result: 430	Units: UG/L	Entry No.: 01020	Analyzed: 200214
CADMIUM	Result: ND	Units: UG/L	Entry No.: 01027	Analyzed: 200219
CHROMIUM (HEXAVALENT)	Result: 6.0	Units: UG/L	Entry No.: 01032	Analyzed: 200214
CHROMIUM (TOTAL)	Result: ND	Units: UG/L	Entry No.: 01034	Analyzed: 200219
COPPER	Result: ND	Units: UG/L	Entry No.: 01042	Analyzed: 200214
IRON	Result: ND	Units: UG/L	Entry No.: 01045	Analyzed: 200214
LEAD	Result: ND	Units: UG/L	Entry No.: 01051	Analyzed: 200219
MANGANESE	Result: ND	Units: UG/L	Entry No.: 01055	Analyzed: 200214
THALLIUM	Result: ND	Units: UG/L	Entry No.: 01059	Analyzed: 200219
NICKEL	Result: ND	Units: UG/L	Entry No.: 01067	Analyzed: 200219
SILVER	Result: ND	Units: UG/L	Entry No.: 01077	Analyzed: 200219
VANADIUM	Result: 22	Units: UG/L	Entry No.: 01087	Analyzed: 200219
ZINC	Result: ND	Units: UG/L	Entry No.: 01092	Analyzed: 200214
ANTIMONY	Result: ND	Units: UG/L	Entry No.: 01097	Analyzed: 200219
ALUMINUM	Result: ND	Units: UG/L	Entry No.: 01105	Analyzed: 200214
SELENIUM	Result: ND	Units: UG/L	Entry No.: 01147	Analyzed: 200219
CYANIDE	Result: ND	Units: UG/L	Entry No.: 01291	Analyzed: 200214
FOAMING AGENTS (MBAS)	Result: ND	Units: MG/L	Entry No.: 38260	Analyzed: 200211
TOTAL DISSOLVED SOLIDS	Result: 370	Units: MG/L	Entry No.: 70300	Analyzed: 200212
LANGELIER INDEX @ 60 C	Result: 1.09	Units:	Entry No.: 71813	Analyzed: 200210
LANGELIER INDEX @ SOURCE TEMP.	Result: 0.57	Units:	Entry No.: 71814	Analyzed: 200210
HYDROXIDE ALKALINITY	Result: ND	Units: MG/L	Entry No.: 71830	Analyzed: 200212
MERCURY	Result: ND	Units: UG/L	Entry No.: 71900	Analyzed: 200213
TURBIDITY (LAB)	Result: ND	Units: NTU	Entry No.: 82079	Analyzed: 200210
AGRESSIVENESS INDEX	Result: 12.31	Units:	Entry No.: 82383	Analyzed: 200210
NITRATE + NITRITE AS N	Result: 1.2	Units: MG/L	Entry No.: A-029	Analyzed: 200211
PERCHLORATE	Result: ND	Units: UG/L	Entry No.: A-031	Analyzed: 200214

WELL 17 Station No.: 3610049-021 Sampled: 200210 08:15

COLOR	Result: ND	Units: UNITS	Entry No.: 00081	Analyzed: 200210
ODOR THRESHOLD @ 60 C	Result: 1	Units: TON	Entry No.: 00086	Analyzed: 200210
SPECIFIC CONDUCTANCE	Result: 220	Units:	Entry No.: 00095	Analyzed: 200211
PH (LABORATORY)	Result: 8.3	Units:	Entry No.: 00403	Analyzed: 200211
TOTAL ALKALINITY (AS CACO3)	Result: 82	Units: MG/L	Entry No.: 00410	Analyzed: 200212
BICARBONATE ALKALINITY	Result: 100	Units: MG/L	Entry No.: 00440	Analyzed: 200212
CARBONATE ALKALINITY	Result: ND	Units: MG/L	Entry No.: 00445	Analyzed: 200212

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NITRATE (AS N)	Result: 2.1	Units: MG/L	Entry No.: 00618	Analyzed: 200211
NITRITE (N)	Result: ND	Units: MG/L	Entry No.: 00620	Analyzed: 200211
TOTAL HARDNESS (AS CACO3)	Result: 65	Units: MG/L	Entry No.: 00900	Analyzed: 200213
CALCIUM	Result: 21	Units: MG/L	Entry No.: 00916	Analyzed: 200213
MAGNESIUM	Result: 3.2	Units: MG/L	Entry No.: 00927	Analyzed: 200213
SODIUM	Result: 22	Units: MG/L	Entry No.: 00929	Analyzed: 200213
POTASSIUM	Result: 1.3	Units: MG/L	Entry No.: 00937	Analyzed: 200213
CHLORIDE	Result: 8.6	Units: MG/L	Entry No.: 00940	Analyzed: 200211
SULFATE	Result: 8.7	Units: MG/L	Entry No.: 00945	Analyzed: 200211
FLUORIDE (F) NATURAL - SOURCE	Result: 0.74	Units: MG/L	Entry No.: 00951	Analyzed: 200211
ARSENIC	Result: 2.6	Units: UG/L	Entry No.: 01002	Analyzed: 200219
BARIUM	Result: ND	Units: UG/L	Entry No.: 01007	Analyzed: 200214
BERYLLIUM	Result: ND	Units: UG/L	Entry No.: 01012	Analyzed: 200219
BORON	Result: ND	Units: UG/L	Entry No.: 01020	Analyzed: 200214
CADMIUM	Result: ND	Units: UG/L	Entry No.: 01027	Analyzed: 200219
CHROMIUM (HEXAVALENT)	Result: 6.2	Units: UG/L	Entry No.: 01032	Analyzed: 200214
CHROMIUM (TOTAL)	Result: ND	Units: UG/L	Entry No.: 01034	Analyzed: 200219
COPPER	Result: ND	Units: UG/L	Entry No.: 01042	Analyzed: 200214
IRON	Result: ND	Units: UG/L	Entry No.: 01045	Analyzed: 200214
LEAD	Result: ND	Units: UG/L	Entry No.: 01051	Analyzed: 200219
MANGANESE	Result: ND	Units: UG/L	Entry No.: 01055	Analyzed: 200214
THALLIUM	Result: ND	Units: UG/L	Entry No.: 01059	Analyzed: 200219
NICKEL	Result: ND	Units: UG/L	Entry No.: 01067	Analyzed: 200219
SILVER	Result: ND	Units: UG/L	Entry No.: 01077	Analyzed: 200219
VANADIUM	Result: 9.1	Units: UG/L	Entry No.: 01087	Analyzed: 200219
ZINC	Result: ND	Units: UG/L	Entry No.: 01092	Analyzed: 200214
ANTIMONY	Result: ND	Units: UG/L	Entry No.: 01097	Analyzed: 200219
ALUMINUM	Result: ND	Units: UG/L	Entry No.: 01105	Analyzed: 200214
SELENIUM	Result: ND	Units: UG/L	Entry No.: 01147	Analyzed: 200219
CYANIDE	Result: ND	Units: UG/L	Entry No.: 01291	Analyzed: 200214
FOAMING AGENTS (MBAS)	Result: ND	Units: MG/L	Entry No.: 38260	Analyzed: 200211
TOTAL DISSOLVED SOLIDS	Result: 160	Units: MG/L	Entry No.: 70300	Analyzed: 200212
LANGELIER INDEX @ 60 C	Result: 0.74	Units:	Entry No.: 71813	Analyzed: 200210
LANGELIER INDEX @ SOURCE TEMP.	Result: 0.21	Units:	Entry No.: 71814	Analyzed: 200210
HYDROXIDE ALKALINITY	Result: ND	Units: MG/L	Entry No.: 71830	Analyzed: 200212
MERCURY	Result: ND	Units: UG/L	Entry No.: 71900	Analyzed: 200213
TURBIDITY (LAB)	Result: ND	Units: NTU	Entry No.: 82079	Analyzed: 200210
AGRESSIVENESS INDEX	Result: 11.92	Units:	Entry No.: 82383	Analyzed: 200210
NITRATE + NITRITE AS N	Result: 2.1	Units: MG/L	Entry No.: A-029	Analyzed: 200211
PERCHLORATE	Result: ND	Units: UG/L	Entry No.: A-031	Analyzed: 200214

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06/5

20BC691

Clinical Laboratory of San Bernardino, Inc.

Chain of Custody

Client	**Twentynine Palms Water District**	**System Number**	
Address	**72401 Hatch Road**	**3610049**	
	Twentynine Palms, CA 92277		
Phone #	**(760) 367-7546**	**Destination Laboratory**	
Fax #	**(760) 361-9523**	**Clinical Laboratory**	
Project	***Inorganic***	**CDHP Compliance**	
Sub Project	**Compliance Sampling**	**Yes**	
		ELAP #	
Sampled by	Russell Frechette	**1088**	

Date	Time	Sample Identification	Matrix	Bottle Number	Total/Free Chlorine	Temp F/C	INORGANIC	GENERAL MINERAL	GENERAL PHYSICAL	CORROSIVITY	Comments
2/10/20	8:40	Well 12 (3610049-012)	GW	I12		73.8°F	X	X	X	X	
2/10/20	8:05	Well 14 (3610049-016)	GW	I14		74.6°F	X	X	X	X	
2/10/20	8:25	Well 15 (3610049-014)	GW	I15		70.0°F	X	X	X	X	
2/10/20	7:45	Well 16 (3610049-015)	GW	I16		76.8°F	X	X	X	X	
2/10/20	8:15	Well 17 (3610049-021)	GW	I17		77.4°F	X	X	X	X	
2/10/20	7:30	Well TP1 (3610049-018)	GW	ITP1		78.8°F	X	X	X	X	

Preservatives: (1) $Na_2S_2O_3$ (2) HCl (3) HNO_3 (4) NH_4Cl (5) H_2SO_4 (6) Na_2SO_3 (7) Cold (8) Other:

Matrix: DW-Drinking Water, WW-Waste Water, SW-Storm Water, GW- Ground Water, S- Solid

Relinquished By (Sign)	*Print Name / Company*	*Date / Time*	*Received By (Sign)*	*Print Name / Company*
	Russell Frechette TPWD	2/10/20 2:51	M. Salazar	MKES/CLSB
M. Salazar	MKES/CLSB	6:00		
				Rebecca McLaurin/CLSB

Comments:

Samples received: (X) On ice (X) Intact ( ) Custody seals Temp_____ ( ) F ( ) C

Shipped Via [ ] *Fed X* [ ] *Golden State* [ ] *UPS* [ ] *Client* [ ] *Other* _____ *Page 1 of 1*

5.0°C

Clinical Laboratory of San Bernardino, Inc.

Celebrating 50 Years of Analytical Service 1967-2017

Twentynine Palms Water District	Project: Standard Analysis	Work Order: 20K0752
P.O Box 1735	Sub Project: Inorganic - Compiance Sampling	Received: 11/09/20 17:00
Twentynine Palms CA, 92277	Project Manager: Ray Kolisz	Reported: 11/19/20

Well 11-B Raw **20K0752-01 (Water)** **Sample Date:** 11/09/20 8:17 **Sampler:** Kenny Moore

Analyte	Method	Result	Rep. Limit	MCL	Units	Prepared	Analyzed	Batch	Qualifier
Field Analyses									
Temperature (Field)	Field	**20.0**			°C	11/09/20	11/09/20	2046029	
General Physical Analyses									
Apparent Color	SM 2120BM	ND	3.0	15	Color Units	11/09/20	11/09/20	2046065	
Odor Threshold	EPA 140.1-M	**1**	1	3	TON	11/09/20	11/09/20	2046065	
Turbidity	EPA 180.1	**0.1**	0.1	5	NTU	11/09/20	11/09/20	2046065	
General Chemical Analyses									
Alkalinity, Total (as CaCO3)	SM 2320 B	**92**	5.0		mg/L	11/16/20	11/16/20	2046029	
Bicarbonate (HCO3)	SM 2320 B	**110**	5.0		mg/L	11/16/20	11/16/20	2046029	
Carbonate (CO3)	SM 2320B	ND	5.0		mg/L	11/16/20	11/16/20	2046029	
Chloride (Cl)	EPA 300.0	**12**	1.0	500	mg/L	11/10/20	11/10/20	2046038	
Langelier Index at Source Tmp	SM 203	**-0.15**				11/09/20	11/09/20	2046029	
Langelier Index at 60 C	SM 203	**0.45**				11/09/20	11/09/20	2046029	
Aggressive Index	SM 203	**11.64**				11/09/20	11/09/20	2046029	
Cyanide (CN)	SM4500CNF	ND	100	150	ug/L	11/12/20	11/12/20	2047040	
Specific Conductance (E.C.)	SM 2510B	**330**	2.0	1600	umhos/cm	11/10/20	11/10/20	2046029	
Fluoride (F)	EPA 300.0	**1.6**	0.10	2	mg/L	11/10/20	11/10/20	2046038	
Hydroxide (OH)	SM 2320B	ND	5.0		mg/L	11/16/20	11/16/20	2046029	
MBAS (LAS Mole. Wt 340.0)	SM 5540C	ND	0.10	0.5	mg/L	11/10/20	11/10/20	2046041	
Nitrate as N (NO3-N)	EPA 300.0	**2.2**	0.40	10	mg/L	11/10/20	11/10/20	2046038	
Nitrate + Nitrite (as N)	EPA 300.0	**2.2**	0.40	10	mg/L	11/10/20	11/10/20	2046038	
Nitrite as N (NO2-N)	EPA 300.0	ND	0.40	1	mg/L	11/10/20	11/10/20	2046038	
Perchlorate (ClO4)	EPA 314.0	ND	4.0	6	ug/L	11/17/20	11/17/20	2047036	
pH (Lab)	SM 4500HB	**8.0**			pH Units	11/10/20	11/10/20	2046029	
Sulfate (SO4)	EPA 300.0	**40**	0.50	500	mg/L	11/10/20	11/10/20	2046038	
Total Filterable Residue/TDS	SM 2540C	**200**	5.0	1000	mg/L	11/11/20	11/12/20	2046066	
Metals									
Aluminum (Al)	EPA 200.7	ND	50	200	ug/L	11/13/20	11/13/20	2046157	
Antimony (Sb)	EPA 200.8	ND	6.0	6	ug/L	11/13/20	11/13/20	2046152	
Arsenic (As)	EPA 200.8	**8.8**	2.0	10	ug/L	11/16/20	11/16/20	2047004	
Barium (Ba)	EPA 200.7	ND	100	1000	ug/L	11/13/20	11/13/20	2046157	
Beryllium (Be)	EPA 200.8	ND	1.0	4	ug/L	11/13/20	11/13/20	2046152	
Boron (B)	EPA 200.7	**120**	100		ug/L	11/13/20	11/13/20	2046157	
Cadmium (Cd)	EPA 200.8	ND	1.0	5	ug/L	11/13/20	11/13/20	2046152	
Calcium (Ca)	EPA 200.7	**20**	1.0		mg/L	11/12/20	11/12/20	2046120	

Stu Styles
Client Services Manager

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Twentynine Palms Water District	Project: Standard Analysis	Work Order: 20K0752
P.O Box 1735	Sub Project: Inorganic - Compiance Sampling	Received: 11/09/20 17:00
Twentynine Palms CA, 92277	Project Manager: Ray Kolisz	Reported: 11/19/20

Well 11-B Raw **20K0752-01 (Water)** **Sample Date:** 11/09/20 8:17 **Sampler:** Kenny Moore

Analyte	Method	Result	Rep. Limit	MCL	Units	Prepared	Analyzed	Batch	Qualifier
Metals									
Chromium (+6)	EPA 218.6	**4.3**	1.0		ug/L	11/09/20	11/11/20	2045162	
Chromium (Total Cr)	EPA 200.8	ND	10	50	ug/L	11/13/20	11/13/20	2046152	
Copper (Cu)	EPA 200.7	ND	50	1000	ug/L	11/13/20	11/13/20	2046157	
Iron (Fe)	EPA 200.7	ND	100	300	ug/L	11/13/20	11/13/20	2046157	
Lead (Pb)	EPA 200.8	ND	5.0		ug/L	11/13/20	11/13/20	2046152	
Magnesium (Mg)	EPA 200.7	**2.0**	1.0		mg/L	11/12/20	11/12/20	2046120	
Manganese (Mn)	EPA 200.7	ND	20	50	ug/L	11/13/20	11/13/20	2046157	
Mercury (Hg)	EPA 200.8	ND	1.0	2	ug/L	11/17/20	11/17/20	2047024	
Nickel (Ni)	EPA 200.8	ND	10	100	ug/L	11/13/20	11/13/20	2046152	
Potassium (K)	EPA 200.7	**1.6**	1.0		mg/L	11/12/20	11/12/20	2046120	
Selenium (Se)	EPA 200.8	ND	5.0	50	ug/L	11/13/20	11/13/20	2046152	
Silver (Ag)	EPA 200.8	ND	10	100	ug/L	11/13/20	11/13/20	2046152	
Sodium (Na)	EPA 200.7	**51**	1.0		mg/L	11/12/20	11/12/20	2046120	
Thallium (Tl)	EPA 200.8	ND	1.0	2	ug/L	11/13/20	11/13/20	2046152	
Vanadium (V)	EPA 200.8	**5.6**	3.0		ug/L	11/13/20	11/13/20	2046152	
Zinc (Zn)	EPA 200.7	ND	50	5000	ug/L	11/13/20	11/13/20	2046157	
Anion / Cation Balance									
Hardness, Total (as CaCO3)	Calculated	**57**			mg/L	11/12/20	11/12/20	[CALC]	
Total Anions	Calculated	**3.06**			meq/L	11/12/20	11/16/20	[CALC]	
Total Cations	Calculated	**3.42**			meq/L	11/12/20	11/12/20	[CALC]	
% difference	Calculated	**11**				11/12/20	11/16/20	[CALC]	
Radiochemistry Analyses									
Uranium	EPA 200.8	**7.2**	1.0	20	pCi/L	11/16/20	11/16/20	2047006	

pH (Lab) was analyzed ASAP but received and analyzed past the 15 minute hold time.

ND Analyte NOT DETECTED at or above the reporting limit

Stu Styles
Client Services Manager

Post Office Box 329 San Bernardino, CA 92402 (909) 825-7693 Fax (909) 825-7696 ELAP Number 1088

Clinical Laboratory of San Bernardino, Inc.

EDT Transfer Confirmation 1

Work Order: 20K0752
Report Date: 11/19/2020
Analyzing Lab: Clinical Laboratory of San Bernardino, Inc. ELAP 1088

TWENTYNINE PALMS WATER DISTRICT User ID: TAN System: 3610049

WELL 11-B Station No.: 3610049-022 Sampled: 201109 08:17

COLOR	Result: ND	Units: UNITS	Entry No.: 00081	Analyzed: 201109
ODOR THRESHOLD @ 60 C	Result: 1	Units: TON	Entry No.: 00086	Analyzed: 201109
SPECIFIC CONDUCTANCE	Result: 330	Units:	Entry No.: 00095	Analyzed: 201110
PH (LABORATORY)	Result: 8.0	Units:	Entry No.: 00403	Analyzed: 201110
TOTAL ALKALINITY (AS CACO3)	Result: 92	Units: MG/L	Entry No.: 00410	Analyzed: 201116
BICARBONATE ALKALINITY	Result: 110	Units: MG/L	Entry No.: 00440	Analyzed: 201116
CARBONATE ALKALINITY	Result: ND	Units: MG/L	Entry No.: 00445	Analyzed: 201116
NITRATE (AS N)	Result: 2.2	Units: MG/L	Entry No.: 00618	Analyzed: 201110
NITRITE (N)	Result: ND	Units: MG/L	Entry No.: 00620	Analyzed: 201110
TOTAL HARDNESS (AS CACO3)	Result: 57	Units: MG/L	Entry No.: 00900	Analyzed: 201112
CALCIUM	Result: 20	Units: MG/L	Entry No.: 00916	Analyzed: 201112
MAGNESIUM	Result: 2.0	Units: MG/L	Entry No.: 00927	Analyzed: 201112
SODIUM	Result: 51	Units: MG/L	Entry No.: 00929	Analyzed: 201112
POTASSIUM	Result: 1.6	Units: MG/L	Entry No.: 00937	Analyzed: 201112
CHLORIDE	Result: 12	Units: MG/L	Entry No.: 00940	Analyzed: 201110
SULFATE	Result: 40	Units: MG/L	Entry No.: 00945	Analyzed: 201110
FLUORIDE (F) NATURAL - SOURCE	Result: 1.6	Units: MG/L	Entry No.: 00951	Analyzed: 201110
ARSENIC	Result: 8.8	Units: UG/L	Entry No.: 01002	Analyzed: 201116
BARIUM	Result: ND	Units: UG/L	Entry No.: 01007	Analyzed: 201113
BERYLLIUM	Result: ND	Units: UG/L	Entry No.: 01012	Analyzed: 201113
BORON	Result: 120	Units: UG/L	Entry No.: 01020	Analyzed: 201113
CADMIUM	Result: ND	Units: UG/L	Entry No.: 01027	Analyzed: 201113
CHROMIUM (HEXAVALENT)	Result: 4.3	Units: UG/L	Entry No.: 01032	Analyzed: 201111
CHROMIUM (TOTAL)	Result: ND	Units: UG/L	Entry No.: 01034	Analyzed: 201113
COPPER	Result: ND	Units: UG/L	Entry No.: 01042	Analyzed: 201113
IRON	Result: ND	Units: UG/L	Entry No.: 01045	Analyzed: 201113
LEAD	Result: ND	Units: UG/L	Entry No.: 01051	Analyzed: 201113
MANGANESE	Result: ND	Units: UG/L	Entry No.: 01055	Analyzed: 201113
THALLIUM	Result: ND	Units: UG/L	Entry No.: 01059	Analyzed: 201113
NICKEL	Result: ND	Units: UG/L	Entry No.: 01067	Analyzed: 201113
SILVER	Result: ND	Units: UG/L	Entry No.: 01077	Analyzed: 201113
VANADIUM	Result: 5.6	Units: UG/L	Entry No.: 01087	Analyzed: 201113
ZINC	Result: ND	Units: UG/L	Entry No.: 01092	Analyzed: 201113
ANTIMONY	Result: ND	Units: UG/L	Entry No.: 01097	Analyzed: 201113
ALUMINUM	Result: ND	Units: UG/L	Entry No.: 01105	Analyzed: 201113
SELENIUM	Result: ND	Units: UG/L	Entry No.: 01147	Analyzed: 201113
CYANIDE	Result: ND	Units: UG/L	Entry No.: 01291	Analyzed: 201112
URANIUM	Result: 7.2	Units: PCI/L	Entry No.: 28012	Analyzed: 201116
FOAMING AGENTS (MBAS)	Result: ND	Units: MG/L	Entry No.: 38260	Analyzed: 201110
TOTAL DISSOLVED SOLIDS	Result: 200	Units: MG/L	Entry No.: 70300	Analyzed: 201112
LANGELIER INDEX @ 60 C	Result: 0.45	Units:	Entry No.: 71813	Analyzed: 201109
LANGELIER INDEX @ SOURCE TEMP.	Result: - 0.15	Units:	Entry No.: 71814	Analyzed: 201109
HYDROXIDE ALKALINITY	Result: ND	Units: MG/L	Entry No.: 71830	Analyzed: 201116
MERCURY	Result: ND	Units: UG/L	Entry No.: 71900	Analyzed: 201117
TURBIDITY (LAB)	Result: 0.1	Units: NTU	Entry No.: 82079	Analyzed: 201109
AGRESSIVENESS INDEX	Result: 11.64	Units:	Entry No.: 82383	Analyzed: 201109
NITRATE + NITRITE AS N	Result: 2.2	Units: MG/L	Entry No.: A-029	Analyzed: 201110

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PERCHLORATE	Result: ND	Units: UG/L	Entry No.: A-031	Analyzed: 201117

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0/1/12

10K0752

Clinical Laboratory of San Bernardino, Inc.

Chain of Custody

Client	Twentynine Palms Water District	System Number	Analysis Requested
Address	72401 Hatch Road	3610049	
	Twentynine Palms, CA 92277		
Phone #	(760) 367-7546	Destination Laboratory	
Fax #	(760) 361-9523	Clinical Laboratory	
Project	*Inorganic*	CDHP Compliance	
Sub Project	Compiance Sampling	Yes	
		ELAP #	
Sampled by	Kenny Moore	1088	

Date	Time	Sample Idenitification	Matrix	Bottle Number	Total/Free Chlorine	Temp F/C	Inorganics	General Minerals	General Physical	Corrosivity	Uranium						
																	Ran to atmosphere
VVJ 11/9/20	8:17	Well 11-B (3610049-022) Raw	GW	11-B			X	X	X	X	X						Raw Water

Preservatives: (1) $Na_2S_2O_3$ (2) HCl (3) HNO3 (4) NH4Cl (5) H2SO4 (6) Na2SO3 (7) Cold (8) Other:

Matrix: DW-Drinking Water, WW-Waste Water, SW-Storm Water, GW- Ground Water, S- Solid

Relinquished By (Sign)	Print Name / Company	Date / Time	Received By (Sign)	Print Name / Company
Kenny Moore	Kenny Moore I.P.W.D	11/9/20 9:38	M. Salgar	MikeS/CLSB
M. Salgar	MikeS/CLSB	5:00 / 12:34	HF / BJ	Bob Glaubs / CLSB

Comments:

Samples received: (X) On ice (X) Intact ( ) Custody seals Temp_____ ( ) F ( ) C

Shipped Via [ ] *Fed X* [ ] *Golden State* [ ] *UPS* [ ] *Client* [ ] *Other*

5.9 °C