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August 25, 2025

Ms. Samantha Carver
Ground Water Quality Bureau
New Mexico Environment Department
PO Box 5469
Santa Fe, NM 87502

Dear Ms. Carver:

On behalf of Doña Ana Dairies, Inc., EA Engineering, Science, and Technology, Inc., PBC is submitting this Quarterly Groundwater Monitoring Report for the dairies located in Mesquite, Vado, and Anthony, New Mexico. The report includes the Del Oro Dairy pump and reuse system performance assessment and the quarterly groundwater sampling event conducted to fulfill requirements of the Stage 2 Abatement Plan for Doña Ana Dairies.

Please let me know if you have any questions regarding the information provided in this report.

Sincerely,

Gina Mullen
Project Manager

Jay Snyder, P.E.
Senior Hydrogeologist

Enclosure

Cc: Linda Armstrong, Doña Ana Dairies (electronic)
File

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QUARTERLY GROUNDWATER MONITORING REPORT DOÑA ANA DAIRIES MESQUITE, NEW MEXICO

Prepared for:

Doña Ana Dairies
Mesquite, New Mexico

Prepared by:

EA Engineering, Science,
and Technology, Inc., PBC
320 Gold Avenue SW, Suite 1300
Albuquerque, New Mexico 87102

August 2025

EA Project No. 14641-16-00.02
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Gina Mullen — August 25, 2025
Gina Mullen, Project Manager — Date

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1.0 INTRODUCTION

On behalf of Doña Ana Dairies (Dairies), EA Engineering, Science, and Technology, Inc., PBC (EA) has prepared this Quarterly Monitoring Report for Doña Ana Dairies located south of Las Cruces, New Mexico (Figure 1). The report was completed in accordance with the *Stage 2 Abatement Plan* and the *Sampling and Analysis Plan, Doña Ana Dairies, Doña Ana County, New Mexico* dated November 7, 2013, and August 11, 2008, respectively, and the Conceptual Work Plan (CWP) dated February 1, 2008. All were prepared to satisfy requirements stated in the New Mexico Administrative Code (NMAC), Title 20, Chapter 6, Part 2, Sections 4106 through 4110 (20.6.2.4106 – 20.6.2.4110 NMAC). The Sampling and Analysis Plan was approved by the New Mexico Environment Department (NMED) Ground Water Quality Bureau (GWQB) on September 25, 2008 (NMED 2008). On March 25, 2015, the stipulated agreement to additional requirements to the Dona Ana Dairies Stage 2 Abatement Plan was agreed upon by NMED, the Dairies, and the Rio Valle Concerned Citizens (NMED, Doña Ana Dairies, and Rio Valle Concerned Citizens 2015). The Stage 2 Abatement Plan was approved by NMED by Final Order on April 10, 2015. A Stage 2 Abatement Plan Modification was approved by NMED on April 26, 2022 (NMED 2022). Full document references are provided in Section 5.0.

1.1 Objective and Monitoring Scope

The objectives of this monitoring program are to satisfy the requirements set forth in the Stage 2 Abatement Plan and the Stipulated Agreement and to satisfy the requirements set forth in 20.6.2.4110 NMAC.

The following work was performed to meet the objectives of the monitoring program:

- Representatives from D&H Petroleum and Environmental Services, Inc. (D&H) gauged discharge plan (DP) monitoring wells, abatement plan (AP) monitoring wells, and Anthony Waste Water Treatment Plant (WWTP) wells from May 12, 2025 through May 15, 2025.

- From May 19, 2025 through June 30, 2025, D&H representatives collected groundwater samples from all scheduled and sampleable AP and DP wells. Field parameters including specific conductance, pH, temperature, oxidation reduction potential (ORP), and dissolved oxygen were monitored and recorded on field forms during sampling.

Additionally, a performance assessment was performed on the Del Oro pump and reuse system in compliance with the Stage 2 Abatement Plan Modification Performance Plan for Dona Ana Dairies (EA 2022). The performance assessment is provided in Appendix A.

1.2 Background

In correspondence dated April 7, 2006, NMED required a Stage 1 Abatement Plan for 13 dairies in Doña Ana County, based on analytical results from DP monitoring of on-site compliance monitoring wells that showed concentrations of nitrate, chloride and TDS exceeding ground water standards promulgated in New Mexico Water Quality Control Commission (NMWQCC)

Regulations (20.6.2.3103 NMAC). The 13 dairies that were part of the original consortium are listed below, with those no longer involved in the consortium marked with a strike-through.

1. ~~Organ Dairy (Former Daybreak and Del Norte Dairy)~~
2. Mountain View Dairy
3. ~~Buena Vista I Dairy~~
4. Bright Star Dairy
5. ~~Dominguez 2 (Former D&J Dairy)~~
6. Dominguez Dairy
7. ~~Gonzales Dairy~~
8. ~~Buena Vista Dairy II~~
9. ~~River Valley Dairy~~
10. Big Sky Dairy
11. Sunset Dairy
12. Desert Land Dairy
13. Del Oro Dairy

On October 30, 2006, the 13 original dairies notified NMED that they had reached an agreement to work as a group and submit a joint response to NMED's request (Doña Ana Dairies 2006). Currently, the Doña Ana Dairies (DAD) consortium consists of 8 dairies with the departure from the group by Buena Vista I Dairy in 2011, River Valley Dairy in April 2019, and Gonzalez Dairy in October 2020. Buena Vista Dairy II and Dominguez Dairy 2 left the consortium in May 2024. Organ Dairy left the consortium in February 2025.

The current DAD consortium is organized geographically into the northern area, central area and southern area. The northern area currently consists of Mountain View Dairy, Bright Star Dairy, and Dominguez Dairy. The northern land application is also included in the northern area of DAD. Buena Vista Dairy, Gonzalez Dairy, Organ Dairy, and Dominguez 2 Dairy, though no longer members of the DAD consortium, are located within the northern area. The central area consists of Buena Vista Dairy II, Big Sky Dairy, and Sunset Dairy/Desert Land Dairy. Though no longer a member of the DAD consortium, River Valley Dairy is also located in the central area. The southern area includes only the Del Oro Dairy.

On December 11, 2006, on behalf of the Doña Ana Dairies, Golder Associates Inc. (Golder) submitted a Stage 1 and 2 Abatement Plan Proposal to address impacts to groundwater in the area containing the Dairies (Golder 2006)

The first major deliverable in the Abatement Plan Proposal was an Existing Data Report (EDR), created to combine all existing and historical data and practices of the constituent dairies. The EDR, submitted on February 1, 2008 (Golder 2008a), was intended to satisfy the DAD consortiums' commitment for compilation and submission of existing data identified in the Doña Ana Dairies response (Golder 2006) to the NMED requirement for Stage 1 Abatement Plans. Section 9 of the EDR outlined data gaps identified during the preparation of the report, as well as the actions recommended. To facilitate the discussion of the path forward after the submittal of the EDR and concurrent with the EDR submission, a conceptual work plan (CWP) was prepared (Golder 2008b).

A meeting was held on July 15, 2008, between the DAD consortium, Golder and NMED. During that meeting, plume maps presented in the EDR (Golder 2008a), new monitoring data, and knowledge of monitoring well locations and groundwater chemistry results at adjacent DP-regulated facilities were used to identify data gaps with respect to ground water flow direction

and plume delineation. The agreed upon data gaps yielded monitoring well locations (including contingency monitoring well locations) recorded in the meeting minutes (Golder 2008c) and depicted in the Sampling and Analysis Plan (SAP) dated August 8, 2008 (Golder 2008d). The SAP outlined the details of the field operations to be implemented for completion of data gaps, such that a Site Investigation Report (§4106.C.6 NMAC) and Stage 2 Abatement Plan (§4106.D NMAC) could be prepared.

Between February 2008 and December 2008, quarterly groundwater gauging was conducted concurrent to discussions with NMED at the DAD consortium to determine the current and historical site groundwater gradient.

In May 2009, field work was conducted as outlined in the SAP and ten AP monitoring wells (DAD-01 through DAD-10) were installed. In July 2009, the Site Investigation Report was submitted to the NMED (EA 2009).

On February 9, 2012, the Final Site Investigation Report was submitted to NMED (EA 2012a). The report summarized field activities that occurred from October 10 through October 14, 2011, and November 10 through 18, 2011, during which eleven soil borings were advanced at the site and converted into monitoring wells DAD-12 through DAD-14, DAD-16 through DAD-22, and DP well 177-03A.

On August 16, 2012, soil boring/monitoring well DAD-15 was installed and on August 20, 2012, well DAD-15 was sampled. An addendum to the Final Site Investigation Report was submitted to NMED on September 9, 2012 (EA 2012b), which summarized DAD-15 field activities.

A Stage 2 Abatement Plan was submitted to NMED on March 13, 2013 (EA 2013a). Based on an NMED response in August 2013, a Revision to the Stage 2 Abatement Plan was submitted on November 7, 2013 (EA 2013b).

On March 25, 2015, the stipulated agreement to additional requirements to the Doña Ana Dairies Stage 2 Abatement Plan was agreed to by NMED Doña Ana Dairies, and the Rio Valle Concerned Citizens. On April 10, 2015, the Stage 2 Abatement Plan with the stipulated agreement was approved by NMED by Final Order (NMED 2015).

EA began implementation of the Stage 2 Abatement Plan and stipulated agreement as directed by the Final Order in December 2015. To meet objectives, four monitoring wells were installed (DAD-23 through DAD-26) and Del Oro Dairy discharge plan (DP) well 692-01 was plugged and abandoned. Details on implementation of these tasks are included *Stage 2 Implementation and Quarterly Groundwater Monitoring Report* dated July 2016 (EA 2016).

In accordance with the approved Stage 2 Abatement Plan and stipulated agreement, a baseline compound specific isotope analysis for nitrogen 14 and nitrogen 15 ($^{15}N/^{14}N$ [$\delta^{15}N$]) and total organic carbon (TOC) was completed for 16 monitoring wells in spring of 2016. Additionally, existing conditions concentrations were recalculated for the contaminants of concern. Results of these analyses are presented in the *Stage 2 Implementation and Quarterly Groundwater Monitoring Report* dated July 2016 (EA 2016). A five-year review containing results of repeated

compound specific isotope analysis sampling and recalculated existing conditions concentrations was submitted to NMED in December 2020 (EA 2020a).

Contaminant concentration trend analysis as well as geospatial analysis to evaluate changes in plume behavior are required on an annual basis and are provided in the annual report. Additionally, the results of the annual sampling of irrigation and supply wells and concentration trends of analytes in AP and DP wells are provided in the annual report.

A Stage 2 Abatement Plan Modification proposal was submitted to NMED on August 10, 2018, to address plume instability in the perched aquifer nitrate plume at Del Oro Dairy. Following discussions with NMED, a revised Stage 2 Abatement Plan Modification proposal was submitted on May 1, 2019. A public meeting to discuss the plan was held in Anthony, New Mexico on May 17, 2019. The Stage 2 Abatement Plan Modification proposal was revised based on additional input from NMED and the public and submitted on July 26, 2019 (EA 2019). Public notice for the proposal was initiated on October 23, 2019, and closed on December 31, 2019. An addendum to the Stage 2 Abatement Plan Modification proposal was submitted on July 15, 2020 (EA 2020b). A revised addendum to the Stage 2 Abatement Plan Modification proposal was submitted on July 13, 2021, based on additional comments from the public (EA 2021). An additional virtual townhall meeting was held on December 15, 2021, that presented the current proposal. The performance plan was submitted to NMED on February 15, 2022 (EA 2022). NMED approved the Stage 2 Abatement Plan Modification for Doña Ana Dairies (EA 2019), the accompanying Stage 2 Abatement Plan Addendum for Reuse of Pumped Groundwater at Del Oro Dairy (EA 2021), and the Stage 2 Abatement Plan Modification Performance Plan (EA 2022) on April 26, 2022 (NMED 2022). Implementation is detailed in the Stage 2 Abatement Plan Modification Completion Report (EA 2023). The quarterly performance assessment of the Del Oro Dairy pump and reuse system, as required by Stage 2 Abatement Plan Modification Performance Plan (EA 2022) is provided in Appendix A.

On September 19, 2024, NMED approved a reduction in monitoring frequency from quarterly to semi-annually for select abatement plan wells (NMED 2024). The following wells are sampled semi-annually: DAD-02, DAD-03, DAD-04, DAD-05, DAD-16, DAD-17, and DAD-24. They will be sampled during the August/September and February/March sampling events and water levels will be gauged every quarter.

2.0 GROUNDWATER MONITORING ACTIVITIES

Groundwater monitoring activities included gauging AP monitoring wells, DP monitoring wells for dairies that are a part of the DAD consortium, and the Anthony WWTP monitoring wells. Groundwater samples were collected from scheduled AP monitoring wells and DP monitoring wells for dairies that are a part of the DAD consortium (Section 1.2). Data from DP monitoring wells for Dominguez 2, which is no longer part of the consortium, are also reported. Groundwater samples were analyzed for nitrate, chloride, TDS, and TKN. The resulting data from this groundwater monitoring event are compiled and presented below.

2.1 Monitoring Well Gauging

From May 12, 2025, through May 15, 2025, representatives from D&H gauged DP monitoring wells, AP monitoring wells, and Anthony WWTP wells with an electronic water level indicator. Table 1 provides a summary of the groundwater gauging data collected from the monitoring network. Data obtained during gauging are shown on potentiometric surface maps included as Figures 2, 3, 4, and 5. Well gauging field forms are available in Appendix B.

2.2 Groundwater Sampling

D&H collected groundwater samples from all scheduled and sampleable AP monitoring wells from June 13, 2025, through June 30, 2025. Groundwater sampling from AP wells was accomplished with new, disposable bailers and twine. Three well casing volumes were purged unless the well contained insufficient water.

D&H collected groundwater from the DP wells from May 19, 2025, through June 12, 2025. Prior to sampling, all DP wells were purged of three well casing volumes, if practicable, by (1) hand-bailing with new, disposable bailers and twine, (2) pumping with a submersible pump and new polyethylene tubing, or (3) pumping with a dedicated pump and new polyethylene tubing. Dominguez 2 well 42-08 was purged of less than three well cashing volumes due to the lack of sufficient water volume in the well. Several DP wells could not be sampled. Bright Star well 340-02 and perched Del Oro Dairy well 692-04 were dry. Dominguez 2 well 42-11 was not sampled because of a malfunctioning pump.

The wells were sampled from historically clean to dirty to the extent possible to minimize cross-contamination potential. All non-dedicated or disposable equipment was decontaminated between wells with an Alconox™ solution to further ensure sample quality. All meters were calibrated and/or checked with standards in accordance with the manufacturer's specifications prior to daily use. Purge water was ground-discharged.

When sufficient water was available, field parameters including specific conductance, temperature, pH, ORP, and dissolved oxygen were monitored using a water quality meter and data were recorded on field forms. Dissolved oxygen and ORP were only measured in the first set of readings. Field parameters from August 2015 to present are summarized in Table 2. The sampling field forms are presented in Appendix B.

All groundwater samples were collected immediately after purging. Sampling was either accomplished by carefully pouring groundwater from the bailer into the sample containers or by

pumping groundwater through new polyethylene tubing into the sample container. Sample containers were provided by Eurofins Environment Testing South Central, LLC (Eurofins). Container size, type, sample preservatives, analytical methods, and holding times are specified in Table 3. All samples were preserved in accordance with method requirements, labeled, then immediately cooled to <6°C with ice and delivered under chain-of-custody to Eurofins in Albuquerque, New Mexico. All analytical laboratory reports are provided in Appendix C.

3.0 GROUNDWATER MONITORING RESULTS

3.1 Hydraulic Gradient and Direction of Groundwater Flow

During the past quarter, groundwater was present beneath the site at depths ranging from 13.49 feet below top-of-casing (ft btoc) in Sunset well 257-03 to 138.30 ft btoc in Dominguez 2 well 42-12. Groundwater was encountered at shallower depths near the Mesquite Drain and at greater depths near I-10 where the topographic elevation increases.

AP monitoring well DAD-25 may have been completed in a perched aquifer, as groundwater elevations have consistently measured several feet higher than groundwater elevations in surrounding wells. As a result, groundwater elevation data from this well is not used in contouring for the central area potentiometric surface map. Additionally, vertical delineations wells are not used for contouring.

Potentiometric surface maps of groundwater elevations were completed using monitoring well gauging data for the northern, central, and southern areas (perched and regional aquifers) of the Dairies. Groundwater elevation data are provided in Table 1 and potentiometric surface maps are provided as Figures 2 through 5. Hydrographs were completed for select monitoring wells in each area and are provided in Appendix D.

Although water levels decreased on average in the northern area (0.17 foot), water levels increased in some areas of the northern portion, with levels increasing by nearly a foot in the vicinity of Mountain View Dairy. On average, regional aquifer groundwater elevations decreased in the central area by 0.44 foot. In the southern regional aquifer, water levels decreased by an average of 0.36 foot. However, the groundwater level at Del Oro well 692-02 rose by 0.38 foot. In the southern perched aquifer, groundwater elevations decreased by an average of 0.17 feet. The largest decrease in water level was observed at Del Oro well 692-06, which decreased by 0.82 foot.

During the most recent gauging event, groundwater flow direction of the regional aquifer was generally to the southeast. The exception is a groundwater flow direction to the northwest in the vicinity of Mountain View Dairy and Dominguez Dairy 2 in the northern area. Groundwater flow direction in the southern perched aquifer was to the south-southwest.

The hydraulic gradient across the Dairies in the regional aquifer is 0.001 ft/ft. The hydraulic gradient in the perched aquifer in the southern area was approximately 0.006 ft/ft. The gradient in the southern perched aquifer has increased since last quarter.

3.2 Groundwater Field Parameters

Field parameters from the most recent monitoring event (specific conductance, pH, temperature, ORP, and dissolved oxygen) were recorded on the sampling field forms provided in Appendix B and are summarized in Table 2. Specific conductance, dissolved oxygen, and ORP trends for select wells are presented in Appendix E. Though dissolved oxygen and ORP measurements from wells containing a dedicated pump were recorded, these measurements are not considered representative of aquifer conditions. As noted in Section 2.2, dissolved oxygen and ORP are only recorded in the first set of readings. This is because hand bailing agitates the aquifer and the ORP

and dissolved oxygen measurements are not considered representative once agitation begins.

3.3 Groundwater Analytical Results

Groundwater analytical results from AP wells are presented in Table 4. Groundwater analytical results from DP wells are presented in Table 5. Nitrate, chloride, and TDS concentration trends for the AP wells by area are presented in Appendix F. Analytical data for all sampled wells are plotted on Figures 6 through 9. Analytical laboratory reports are included in Appendix C. Discussions of upgradient/downgradient conditions in the following section are based on groundwater flow directions presented in Section 3.1.

3.3.1 Abatement Plan Monitoring Well Analytical Results

Nitrate concentrations were below the 10 milligrams per liter (mg/L) NMWQCC standard in groundwater collected from 5 of the 20 AP monitoring wells sampled. The seven AP wells that were not sampled this quarter have been historically below the nitrate standard.

Groundwater collected from the following 15 AP wells had nitrate concentrations at or above the standard: DAD-06R, DAD-07, DAD-08, DAD-09, DAD-11 (vertical delineation well), DAD-12 (vertical delineation well), DAD-14, DAD-15, DAD-18 (vertical delineation well), DAD-19 (vertical delineation well), DAD-20, DAD-21, DAD-22, DAD-23, and DAD-25.

Nitrate concentrations decreased or were the same in groundwater collected from AP wells DAD-01, DAD-06R, DAD-07, DAD-08, DAD-10, DAD-11 (vertical delineation), DAD-12 (vertical delineation), DAD-13, DAD-14, DAD-19, DAD-21, DAD-22, DAD-26, and DAD-27 compared to the previous sampling event. The largest decrease in nitrate concentration was observed in well DAD-14, which decreased from 85 mg/L in March 2025 to 79 mg/L in June 2025.

The largest nitrate concentration increase was observed in groundwater collected from well DAD-09. The concentration increased from 18 mg/L in March 2025 to 53 mg/L in June 2025. Nitrate was detected above the standard for the first time in DAD-25 with a concentration of 11 mg/L.

During this sampling event, detected nitrate concentrations in groundwater collected from AP wells ranged from 79 mg/L in well DAD-14 to 2.2 mg/L in well DAD-26. Nitrate concentrations in groundwater collected from wells DAD-06R, DAD-11 (vertical delineation well), and DAD-18 (vertical delineation well) have stabilized.

Both chloride and TDS concentrations equaled or exceeded their respective NMWQCC standards in most AP wells. Exceptions include chloride and TDS groundwater concentrations below their respective standards in central area well DAD-06R. The highest chloride concentration of 1,500 mg/L was detected in groundwater collected from well DAD-25. The highest TDS concentration of 4,300 mg/L was detected in groundwater collected from well DAD-07.

Table 4 and Figures 6 through 9 present the analytical results for AP monitoring wells. Analytical laboratory reports are provided in Appendix C. Nitrate, chloride, and TDS concentration trends for select AP wells are presented by area in Appendix F.

3.3.2 Abatement Plan and Discharge Plan Analytical Results by Area

The following sections discuss AP and DP analytical results in the northern, central, and southern portions of Dona Ana Dairies.

Northern Portion

Groundwater collected from upgradient well 86/340-01 (located north of the abatement area) has been below the nitrate NMWQCC standard of 10 mg/L since February 2018; prior to that time, groundwater concentrations in this well were consistently above the nitrate standard. Northern Land Application Area well 70/86/340-01, located at the northern-most boundary of the abatement area, contained groundwater above the nitrate standard at a concentration of 25 mg/L during this sampling event. The southern extent of the plume is historically defined by AP well DAD-02, which was not scheduled for sampling this quarter. The nearest well, DAD-23, contained a groundwater nitrate concentration of 19 mg/L. Dominguez Dairy 2 well 42-02 (5.2 mg/L) delineates the western edge of the nitrate plume. Historically, the western edge of the nitrate plume was delineated by Dominguez Dairy well 624-02, which contained nitrate at a concentration above the standard at 13 mg/L. The nitrate plume is defined to the east by AP well DAD-01 (7.8 mg/L), AP well DAD-13 (6.4 mg/L), and Dominguez Dairy 2 wells 42-10 (<1.0 mg/L) and 42-12 (<1.0 mg/L). The highest nitrate concentration in the northern portion was observed in groundwater collected from well DAD-14 (79 mg/L); this well is located at the southern boundary of the northern abatement plan area.

The chloride and TDS concentrations in DP wells were at or above standards in all wells sampled within the northern portion of the Dairies. The highest concentration of chloride was observed in northern land application wells 70-03 and 70/86/340-01 at 1,800 mg/L. The highest concentration of TDS was detected in northern land application well 70/86/340-01 at a concentration of 5,600 mg/L.

Central Portion

The northern extent of the central portion nitrate plume is defined by Buena Vista Dairy II well 74-03, where nitrate was not detected above the laboratory reporting limit of <2.0 mg/L. The southern extent is defined by Las Cruces Community Farms (formerly McAnally Enterprises) well MW-4, where nitrate was not detected above the laboratory reporting limit of <1.0 mg/L. Historically, the eastern extent of the plume was defined by wells DAD-06R, DAD-07 and DAD-15. In the most recent sampling event, nitrate concentrations in groundwater collected from these wells exceeded the standard with concentrations of 13 mg/L, 50 mg/L and 27 mg/L, respectively. The western extent is defined by Buena Vista Dairy well 74-02 (8.8 mg/L), Big Sky Dairy well 833-10 (2.6 mg/L), and Sunset Dairy well 257-02 (9.7 mg/L). AP well DAD-16 was not sampled this quarter but is historically a delineating well with nitrate concentrations below standard. The highest nitrate concentration in the central portion was 81 mg/L, observed in Big Sky Dairy well 833-07.

Chloride and TDS concentrations were generally at or above standards in wells within the central portion of the Dairies. Chloride was below the standard in AP well DAD-06R (100 mg/L) and Buena Vista well 74-03 (230 mg/L). TDS was below the standard in AP well DAD-06R (710

mg/L). The highest chloride concentrations were detected at AP well DAD-25 and Las Cruces Community Farms well MW-4 at a concentration of 1,500 mg/L. The highest TDS concentration was observed at Las Cruces Community Farms well MW-4 at a concentration of 4,500 mg/L.

Southern Portion – Regional Aquifer

Wells completed in the regional aquifer in the southern portion of the dairies include AP well DAD-10 and Del Oro wells 692-05 through 692-10 (Figure 8). All of the groundwater collected from wells in the regional aquifer contained nitrate below the NMWQCC standard except for Del Oro well 692-05 (16 mg/L).

Chloride concentrations were detected above the NMWQCC standard and ranged from 390 mg/L in Del Oro well 692-05 to 650 mg/L in Del Oro Dairy well 692-10. TDS concentrations ranged from 1,300 mg/L in AP well DAD-10 to 1,800 mg/L in Del Oro Dairy well 692-10.

Southern Portion – Perched Aquifer

Wells completed in the perched aquifer in the southern portion include wells 692-02, 692-04 (dry), DAD-09, DAD-20, DAD-21, DAD-22, DAD-26, and DAD-27 (Figure 9). Groundwater nitrate concentrations were above the standard in all monitoring wells in the perched aquifer except for DAD-26 (2.2 mg/L) and DAD-27 (4.7 mg/L), which are located downgradient. The highest nitrate concentration was detected at AP well DAD-09 (53 mg/L). The edge of the nitrate plume is delineated to the southwest by AP well DAD-26 with a concentration of 2.2 mg/L.

Chloride concentrations in the perched aquifer monitoring wells ranged from 410 mg/L in AP well DAD-09 to 850 mg/L in AP well DAD-22. TDS in the perched aquifer ranged from 1,400 mg/L in AP well DAD-26 to 2,800 mg/L in AP well DAD-20.

There are multiple influences on analyte concentrations at Del Oro Dairy. A pump and reuse system became operational in April 2023 and is currently running. The system performance assessment is provided in Appendix A. Also influencing the area is the rebound of analyte concentrations after a suspected municipal water line leak. The suspected leak was located at the southwest corner of the Del Oro Dairy. Based on groundwater elevation and groundwater concentration data, it is likely the water line started to leak before May 2019 and may have been repaired during the winter of 2020/2021. Concentrations of analytes decreased with the introduction of municipal water to the perched aquifer, and concentrations increased after the suspected repair. Concentrations were still increasing when the pump and reuse system became operational.

4.0 CONCLUSION AND RECOMMENDATIONS

This groundwater monitoring event included the gauging of all DP and AP wells and sampling of all scheduled and sampleable wells. Based on the data collected, the following conclusions and recommendations are presented:

- The following AP wells were not scheduled for sampling this quarter: DAD-02, DAD-03, DAD-04, DAD-05, DAD-16, DAD-17, and DAD-24. They are sampled semi-annually, with sampling events in February/March and August/September.

- Depth to groundwater ranged from 13.49 ft btoc in Sunset well 257-03 to 138.30 ft btoc in Dominguez 2 well 42-12.

- Although water levels decreased on average in the northern area (0.17 foot), water levels increased in some areas of the northern portion, with levels increasing by nearly a foot in the vicinity of Mountain View Dairy. On average, regional aquifer groundwater elevations decreased in the central area by 0.44 foot. In the southern regional aquifer, water levels decreased by an average of 0.36 foot. In the southern perched aquifer, groundwater elevations decreased by an average of 0.17 feet.

- During the most recent gauging event, groundwater flow direction of the regional aquifer was generally to the southeast. The exception was the northwestern groundwater flow direction in the middle of the northern area. Flow direction in the southern perched aquifer was to the south-southwest.

- The hydraulic gradient across the Dairies in the regional aquifer is 0.001 ft/ft. The hydraulic gradient in the perched aquifer in the southern area was approximately 0.006 ft/ft. The gradient in the southern perched aquifer has increased since last quarter.

- Nitrate concentrations were below the NMWQCC standard of 10 mg/L in 5 of the 20 AP monitoring wells sampled this quarter.

- Chloride and TDS generally remain at or above standards in wells across the site, including upgradient of the northern, central, and southern portions at the Dairies.

5.0 REFERENCES

Doña Ana Dairies. 2006. Letter Regarding Agreement for Joint Stage 1 and Stage 2 Abatement Plan and Storm Water and Wastewater Pond Upgrades. Letter from Mr. Michael Weatherly, Chairman, Doña Ana Dairies, to Mr. William Olson, Chief, Ground Water Quality Bureau. 30 October.

EA. 2009. *Site Investigation Report, Doña Ana Dairies, Mesquite, New Mexico*. 16 July 16.

EA. 2012a. *Final Site Investigation Report, Doña Ana Dairies, Mesquite, New Mexico.* February 9.

EA. 2012b. *Final Site Investigation Report Addendum, Doña Ana Dairies, Mesquite, New Mexico*. September 9.

EA. 2013a. *Stage 2 Abatement Plan, Doña Ana Dairies, Mesquite, New Mexico*. March 13.

EA. 2013b. *Stage 2 Abatement Plan, Revision 01, Doña Ana Dairies, Mesquite, New Mexico*. November 7.

EA. 2016. *Stage 2 Implementation and Quarterly Groundwater Monitoring Report, Doña Ana Dairies, Mesquite, New Mexico*. July 26.

EA. 2019. *Stage 2 Abatement Plan Modification Proposal and DAD-06 Monitoring Well Rehabilitation for Doña Ana Dairies, Doña Ana County, New Mexico, Revision 02*. July 26.

EA. 2020a. *Five-Year Evaluation and Quarterly Groundwater Monitoring Report, Doña Ana Dairies, Mesquite, New Mexico*. December 20.

EA. 2020b. *S2AP Addendum for Reuse of Pumped Groundwater, Revision 01, Del Oro Dairy, Anthony, New Mexico*. July 15.

EA. 2021. *Stage 2 Abatement Plan Addendum for Reuse of Pumped Groundwater, Revision 02, Del Oro Dairy, Anthony, New Mexico*. July.

EA. 2022. *Stage 2 Abatement Plan Modification Performance Plan for Doña Ana Dairies.* February 15.

EA. 2023. *Stage 2 Abatement Plan Modification Completion Report for Doña Ana Dairies (Del Oro Dairy), Anthony, New Mexico*. May 16.

Golder Associates, Inc. (Golder). 2006. *Stage 1 and 2 Abatement Plan Proposal, prepared for New Mexico Environment Department, Remediation Oversight Section, on behalf of Doña Ana Dairies*. December 11.

Golder. 2008a. *Existing Data Report and Conceptual Work Plan, Doña Ana Dairies, Mesquite, New Mexico*. February 1.

Golder. 2008b. Conceptual Work Plan. Doña Ana Dairies, Mesquite, New Mexico. February 1.

Golder. 2008c. Notes for the Meeting Regarding New Monitoring Well Installation. Meeting Participants: Doña Ana Dairy representative, DAD technical representatives, and NMED staff. July 28.

Golder. 2008d. Sampling and Analysis Plan. Doña Ana Dairies, Mesquite, New Mexico. August 11.

New Mexico Environment Department (NMED). 2008. Approval of Sampling and Analysis Plan for the Doña Ana Dairies, Stage 1 Abatement Plan, Doña Ana County, New Mexico. September 25.

NMED. 2015. Approval of Stage 2 Abatement Plan Proposal for Doña Ana Dairies. Final Order from Mr. Ryan Flynn, Secretary, Ground Water Quality Bureau. April 10.

NMED. 2022. Stage 2 Abatement Plan Modification Approval for Dona Ana Dairies. April 26.

NMED. 2024. Proposal Response for Dona Ana Dairies, Monitoring Plan. September 19.

NMED, Doña Ana Dairies, and Rio Valle Concerned Citizens. 2015. Stipulated Agreement, Dona Ana Dairies Stage 2 Abatement Plan. March 25.