

ANNUAL REPORT to the SOLANO COUNTY BOARD OF SUPERVISORS

LAND APPLICATION of BIOSOLIDS in SOLANO COUNTY



*Photo Credit: Bay Area Biosolids Coalition,
Robin Scheswohl*



**B A C W A
BAY AREA
CLEAN WATER
AGENCIES**



Prepared by the BACWA Biosolids Committee
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Introduction

With the 2023 application season recently completed, the Bay Area Clean Water Agencies (BACWA) Biosolids Committee is pleased to present its annual summary report on land application of biosolids in Solano County. BACWA wishes to express its sincere appreciation to the staff of the Environmental Health Services Division of the Department of Resource Management for the continuing support of the biosolids land application program. This program allows for the effective use of biosolids as an agricultural soil amendment in the County. We believe this partnership provides a valuable resource to Solano County agriculture and provides many Bay Area agencies with an opportunity to ensure their biosolids are put to their highest and best use by making a positive impact on the environment.

This report provides information on trends in the use of biosolids resources in California and the Bay Area, an update on regional biosolids programs, and specific information on projects from individual agencies currently applying biosolids in the County. It highlights each agency's compliance with the requirement in Solano County Code, Sec. 25-400¹ that "Class B biosolids may only be land applied provided that the generator of the Class B biosolids is individually or as part of a consortium having a portion of their biosolids produced as Class A Exceptional Quality biosolids, converting biosolids to energy, or otherwise diverting Class B biosolids away from land spreading or landfilling (as waste or as alternative daily cover)."

This report is intended as supplemental information to the report submitted by the County Department of Resource Management staff and by Synagro, a contract hauler and applier of biosolids. It has been prepared for the Solano County Board of Supervisors in response to the Board's request for an annual update on agency activities and progress towards compliance with the goals set forth in County Code, Chapter 25. The affected agencies have coordinated the required reporting through BACWA to produce a single report for the Board.

¹ Source: *Solano County Code*. Available online at <https://www.codepublishing.com/CA/SolanoCounty/#!/SolanoCounty2500.html#25-400>. Accessed November 28, 2023.

We would like to acknowledge the assistance of your staff in working with BACWA member agencies throughout the year, including Edmond “Trey” Strickland (Program Manager), Jeffrey Bell (Supervisor), Anthony Endow (Senior Inspector), Robert Liu (Civil Engineer), Ashley Feigel (Inspector), and Nailah Souder (Inspector).

Municipal Agencies Applying Biosolids in Solano County

The use of biosolids as an amendment supplies valuable plant nutrients, organic matter, and carbon to soils, enhancing the productivity and financial resilience of local farms. Each agency that applies biosolids must meet strict standards and provides a report annually to the United States Environmental Protection Agency (USEPA) to demonstrate compliance. In 2023, seven Northern California agencies transported biosolids to agricultural land in Solano County through a contract with Synagro:

- City of Calistoga
- Central Marin Sanitation Agency (San Rafael, Ross Valley, Larkspur, Corte Madera)
- Delta Diablo (Antioch, Pittsburg, Bay Point)
- City of Petaluma
- San Francisco Public Utilities Commission, Southeast and Oceanside Water Pollution Control Plants
- Union Sanitary District (Union City, Newark, Fremont)
- Town of Windsor

A total of 2,613 dry tons were land applied on agricultural sites in Solano County in 2023. The portion from each agency is shown below in **Figure 1**.

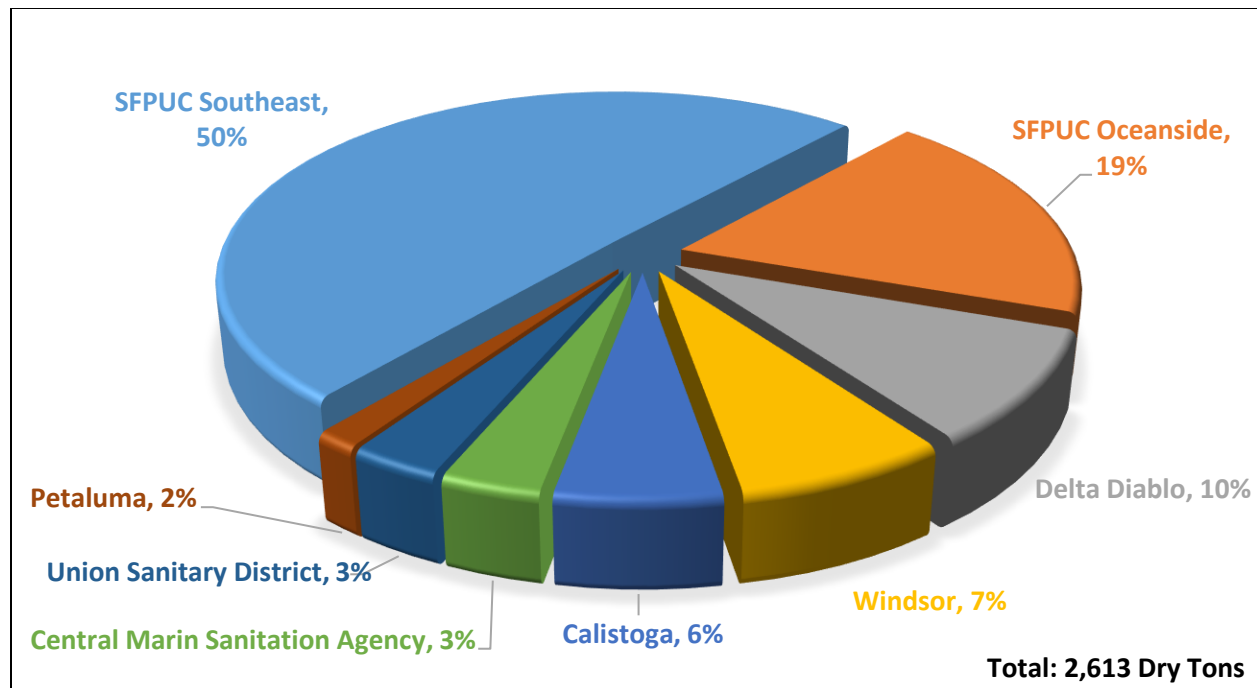


Figure 1. Biosolids (Dry Tons) Land Applied in Solano County by Each Agency, 2023
Data provided by Synagro

The annual quantities of biosolids applied to agricultural land in Solano County since 2011 is shown in **Figure 2**. The quantity of biosolids land applied in Solano County in 2023 was significantly lower than historic levels (about 1/3 of the previous year), in part because some property owners elected against allowing land application on newly acquired properties.

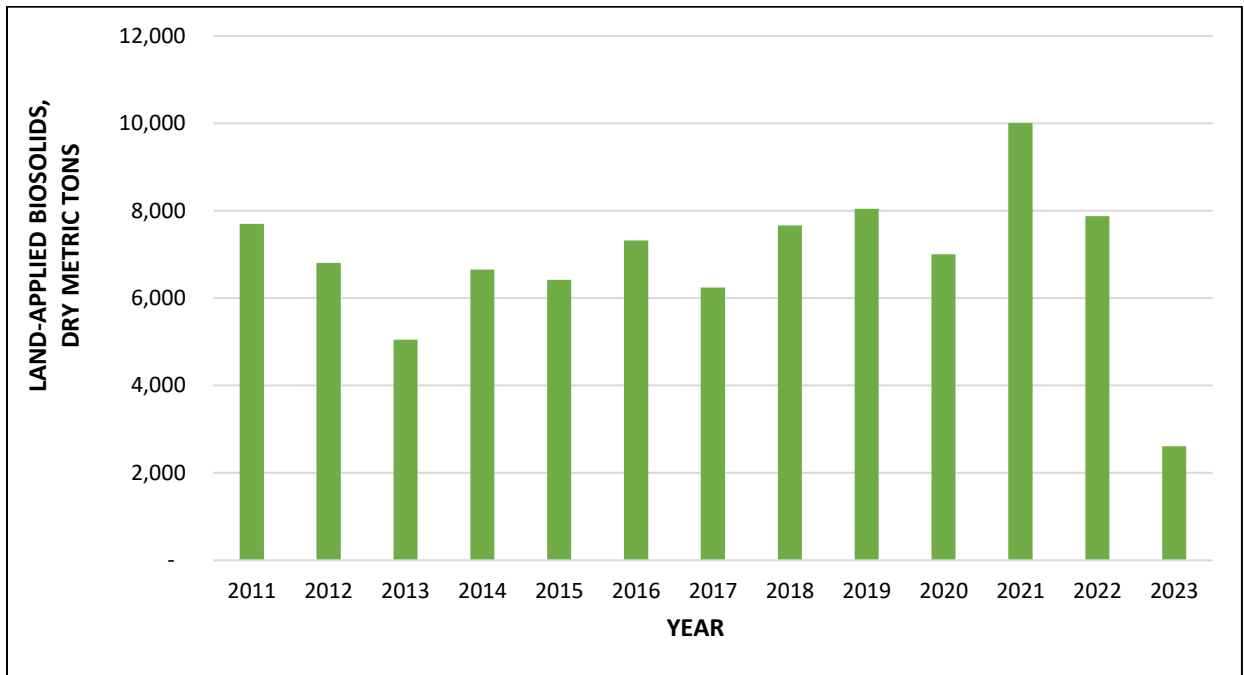


Figure 2. Total Annual Biosolids (Dry Tons) Land Applied in Solano County, 2011-2023
Data provided by Synagro

Trends in Biosolids Usage in California

Wastewater agencies in California are continuing to identify and evaluate new options for biosolids beneficial use and recycling, including emerging technologies as well as established practices such as composting and heat drying.

Overall California Use Summary. The use of biosolids in California for calendar years 2009 through 2022 is summarized in **Figure 3**. Statewide data for 2023 are not yet available and will be included in the 2024 report. The number one use statewide continues to be land application for agriculture in the form of compost, Class B biosolids and Class A biosolids, which together accounted for 59% of biosolids uses in 2022. Biosolids have proven to be a safe, reliable, and nutrient-rich soil amendment that offers a more cost-effective alternative to chemical fertilizers, which are energy intensive and increasingly expensive to produce.

Landfill disposal and the beneficial use of biosolids at landfills (primarily for use as alternative daily cover) are also common management practices for biosolids in California, together accounting for 33% of statewide biosolids use. In recent years, biosolids have also been used for backfilling of the H.M. Holloway gypsum mine in Kern County. In 2022, about 1% of all biosolids generated in California went to this purpose. This use is tracked as “landfill beneficial use” in Figure 3.

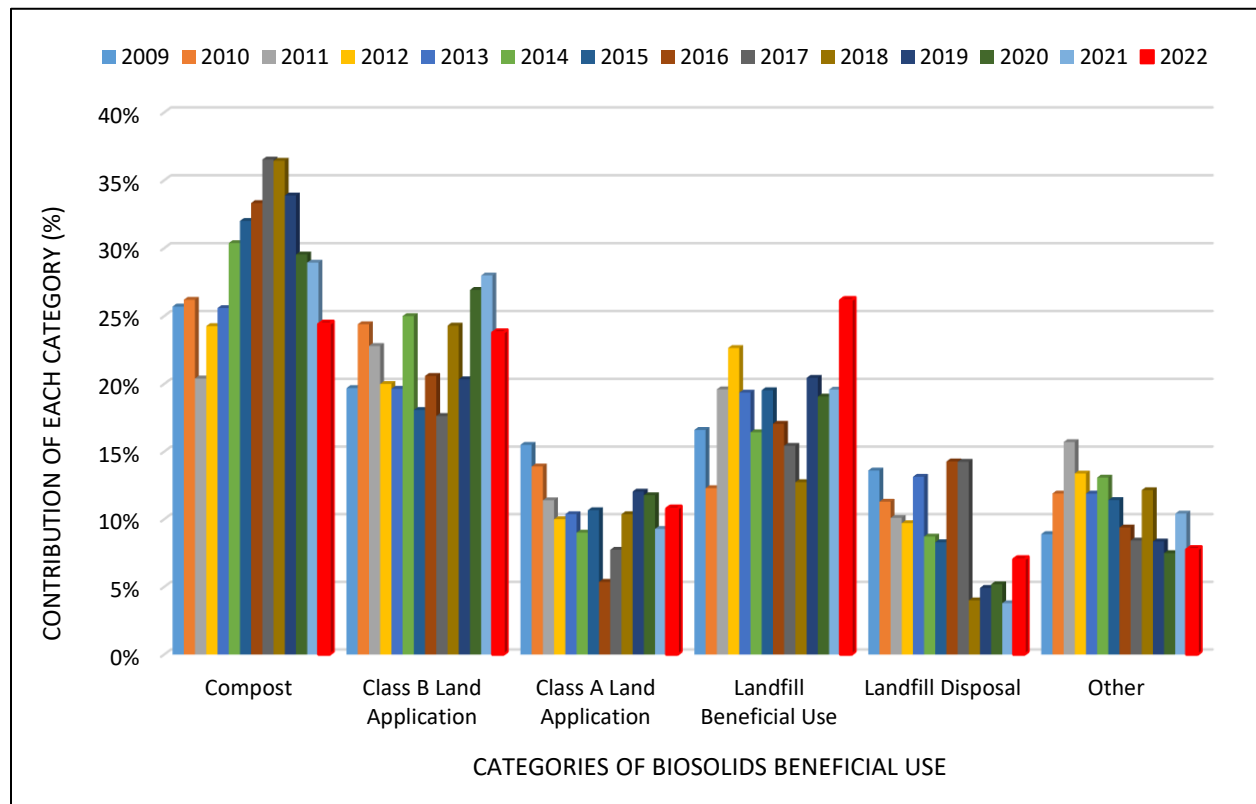


Figure 3. California Trends in Biosolids Uses, 2009-2022

Data provided by USEPA Region 9

Bay Area Trends. Looking solely at the nine-county Bay Area, **Figure 4** illustrates end uses of biosolids in 2022. The primary uses continue to be landfill beneficial use (as alternative daily cover), land application, and incineration, which together account for 84% of biosolids end uses in the Bay Area. Compost (5%) and surface disposal levels (2%) also remained similar to past years.

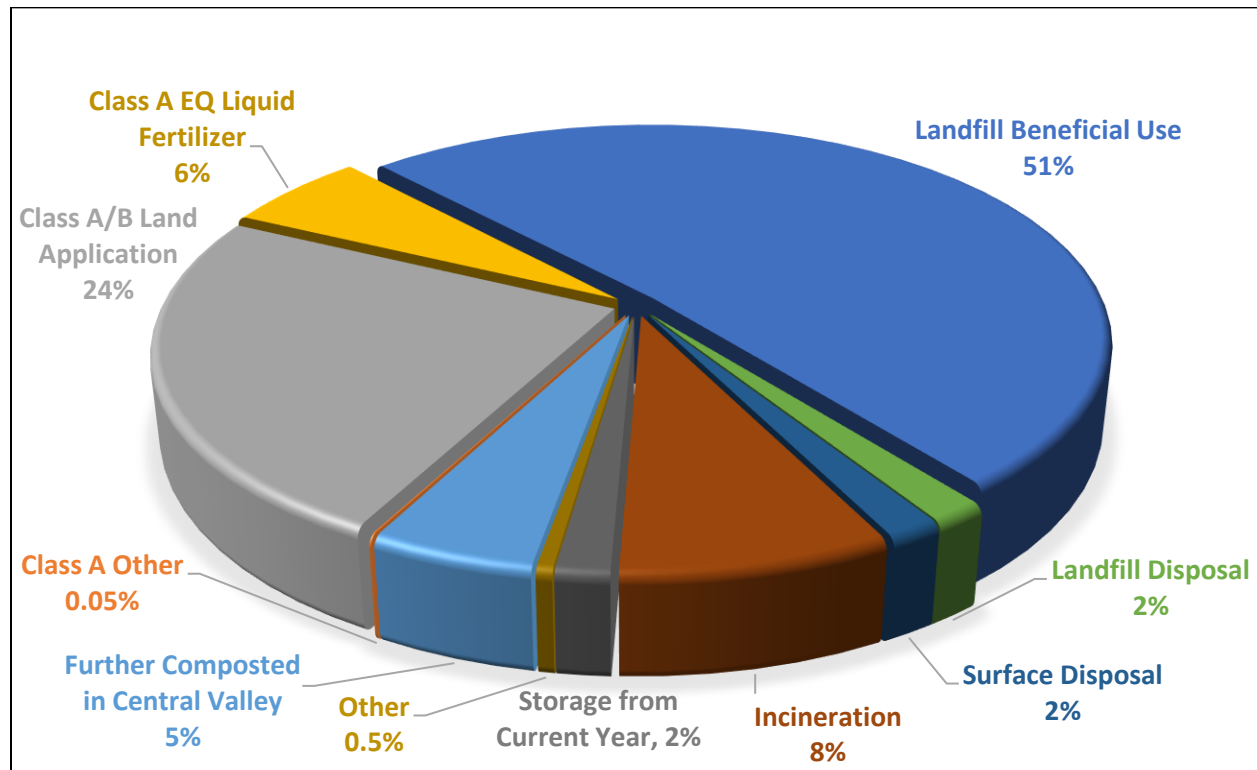


Figure 4. Bay Area Usage of Biosolids, 2022

Data from USEPA Region 9

Tonnage for biosolids conveyed to the Lystek Organic Materials Recovery Center (OMRC) in Fairfield is categorized as Class A liquid fertilizer and represented 6% of biosolids end uses in 2022. The OMRC conducts further biosolids processing by utilizing LysteGro technology to create a Class A product. Lystek’s hydrolysis process uses high speed shearing, low pressure steam and alkali addition in an enclosed reactor to transform organic residuals and biosolids into a liquid fertilizer. Lystek’s fertilizer program in Solano County began in spring 2017. Thirteen Bay Area agencies and one industrial generator sent material to Lystek in 2023:

- Benicia, City of
- Budweiser Brewery of Fairfield
- Central Marin Sanitation Agency
- Central Contra Costa Sanitary District
- Delta Diablo
- East Bay Municipal Utility District
- Fairfield-Suisun Sewer District

- Mt. View Sanitary District
- Palo Alto Regional Water Quality Control Plant
- Petaluma, City of
- San Francisco Public Utilities Commission
- Sanitary District No. 5 of Marin County
- Santa Rosa, City of
- Vallejo Flood & Wastewater District

LysteGro is used primarily in Solano County, and the product is registered as a fertilizer with the California Department of Food and Agriculture. As a Class A product, LysteGro can be used with no restrictions, and is not subject to the Solano County biosolids ordinance (Solano County Code, Sec. 25-400). Use of LysteGro is classified as “Class A Land Application” in **Figure 3**. LysteGro is also an approved commercial fertilizer for use in Colusa, Contra Costa, and Yolo Counties.

Counties where biosolids are land applied. Biosolids were predominantly applied to agricultural land in three Northern California counties in 2022 – Sacramento, Merced, and Solano – with Solano County ranking third. **Figure 5** illustrates the distribution of land-applied biosolids among counties in Northern California. Smaller amounts were also land applied in Sonoma, Stanislaus, and Napa counties, typically by agencies that operate their own land application programs.

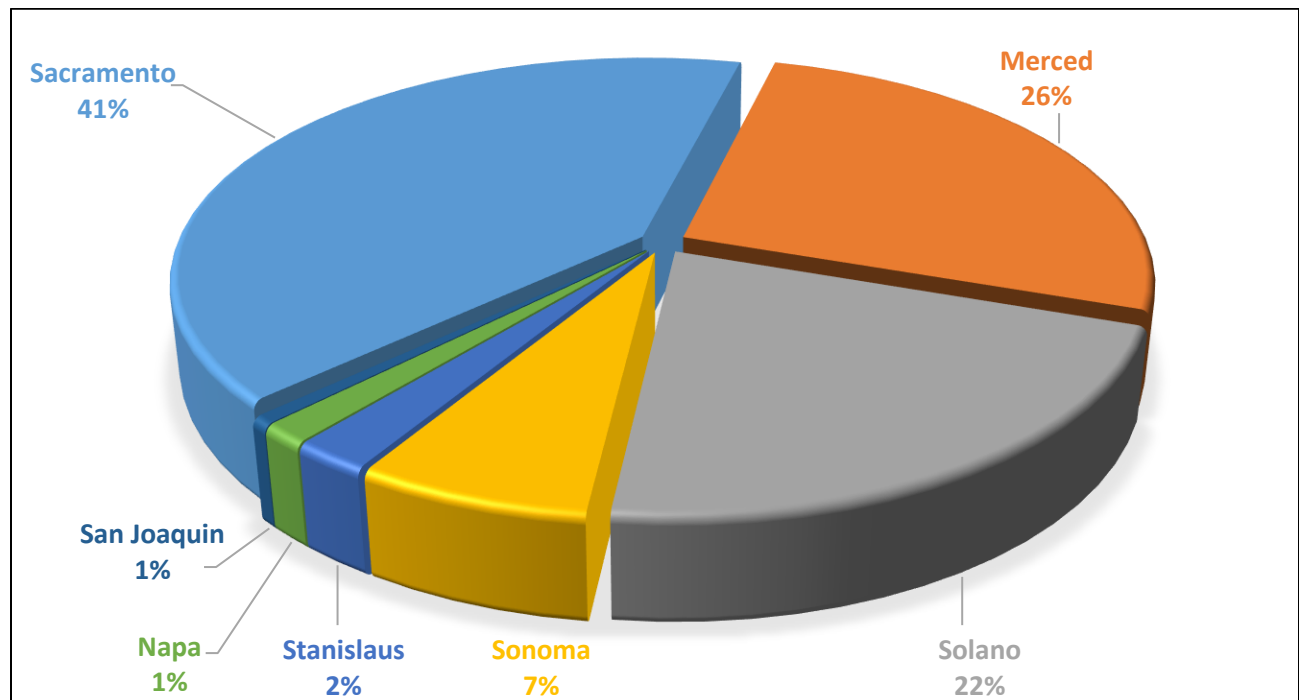


Figure 5. Distribution of Biosolids Land Application among Northern California Counties, 2022

Data provided by USEPA Region 9 and ECHO Database

Bay Area Regional Efforts

BACWA Biosolids Committee. The mission of the BACWA Biosolids Committee (The Committee) is to support the development and maintenance of cost-effective, sustainable biosolids management options for the approximately 150,000 dry metric tons of biosolids produced in the Bay Area annually. The Committee was formed to provide proactive support and information sharing to member agencies on regional biosolids issues, projects, and proposed regulations and legislation.

In 2021, the Committee completed the 2020 Biosolids Trends Survey Report, which is available at <https://bacwa.org/wp-content/uploads/2021/12/BACWA-2021-Biosolids-Trends-Survey-Report.pdf>. The survey will be updated in 2024.

Because of member agencies' level of engagement in the Bay Area Biosolids Coalition at the current time (see below), the Biosolids Committee was placed on hiatus in 2019. The email distribution list continues to be maintained so that the Committee can meet again when there is interest. For example, committee members convened in November 2023 to discuss biosolids-related projects at their respective agencies. While regular meetings are on hiatus, the Committee will continue to produce this Annual BACWA Report to Solano County, as well as the BACWA Biosolids Trends Survey.

Bay Area Biosolids Coalition. The members of the Bay Area Biosolids Coalition, originally formed in 2004, work together to advance research, expand land application and share new opportunities and information on biosolids. The Coalition is pursuing a multi-pronged approach that includes:

- Educating the public on biosolids management issues in California through public outreach efforts, including the creation of a public website and securing media coverage.
- Advancing the industry and legislative state of knowledge on biosolids as a valuable resource.
- Investigating viable, year-long (weather resilient) alternatives to land application that look beyond "biosolids to energy" and seek to responsibly recycle back value-added products of biosolids to the environment.
- Serving as a technology incubator - particularly for pre-commercial technologies.
- Supporting land application in the Bay Area by seeking to create more capacity for biosolids in the Bay Area marketplace.

The Coalition has established the following goals in support of achieving the above-mentioned objectives, for which associated strategies and key outcomes have been defined that will be pursued over the next one to two years:

- Communicate the value of biosolids for the purposes of increasing understanding, support, and market demand for biosolids.
- Advance independent scientific research on the safety and efficacy of biosolids to inform science-based regulations, guidelines and best management practices.
- Support and expand biosolids land application in the Bay Area.
- Support the development of diverse, cost-effective, and reliable all-weather biosolids projects for the San Francisco Bay Area.

Current Coalition members include the following public agencies:

Central Marin Sanitation Agency	East Bay Municipal Utility District
City of Millbrae	Ironhouse Sanitary District
City of Petaluma	North San Mateo County Sanitation District
City of San José	San Francisco Public Utilities Commission
City of Santa Rosa	Union Sanitary District
Delta Diablo	Vallejo Flood & Wastewater District
Dublin San Ramon Services District	West County Wastewater District

Individual Agency Programs. Individual BACWA agencies are responsible for their own biosolids management programs, and each develops its own plan in addition to participating in regional programs. Below are program descriptions from all agencies which sent biosolids to Solano County for agricultural use via land application. All agencies described below produce biosolids according to 40 CFR regulations.

All seven agencies that land applied Class B biosolids in Solano County in 2023 converted a portion of their biosolids to Class A, either through their own means or at a 3rd party conversion facility (e.g., compost facility or Lystek OMRC).

City of Calistoga. At the City's Dunawael Wastewater Treatment Facility, solids are processed by the treatment methods of thickening and application to drying beds. The material is picked up and land applied to various fields in Solano County by Synagro, and a portion of this material is diverted to produce Class A Biosolids at Synagro's Central Valley Compost site.

Central Marin Sanitation Agency. The Central Marin Sanitation Agency (CMSA) has a contract with Synagro for land application of its biosolids during the dry weather season in Solano County. CMSA also has contracts in place for sending the biosolids to Redwood Landfill for landfill beneficial use and to Lystek International for further processing to produce Class A (EQ) liquid fertilizer. CMSA is a member of the Bay Area Biosolids Coalition.

Delta Diablo. Diablo produces Class B biosolids and contracts with Synagro for biosolids management. In 2022, 92% of the biosolids were land applied in Solano, Sacramento, or Merced Counties. The remaining biosolids are either sent to Synagro's Central Valley Compost facility or to the Lystek facility at Fairfield Suisun Sewer District for further processing to Class A standards (2 truckloads per month for the first half of 2023 and 4 truckloads per month for the

second half of 2023). Delta Diablo is a member of the Bay Area Biosolids Coalition and continues to explore additional and alternative biosolids management options.

City of Petaluma. The City of Petaluma's Ellis Creek Water Recycling Facility produces Class B biosolids. Biosolids produced at Ellis Creek are applied to agricultural land in Solano and Sacramento Counties, or transferred to the Lystek OMRC for production of and subsequent reuse as Class A biosolids. The City of Petaluma is a member of the Bay Area Biosolids Coalition.

San Francisco Public Utilities Commission (Southeast and Oceanside Facilities). The San Francisco Public Utilities Commission (SFPUC) produces Class B biosolids at its two facilities. In addition to sending biosolids to Solano County for use as a fertilizer, the SFPUC also contracts with Synagro to use Class B biosolids as a fertilizer in Sacramento County and to produce compost in Merced County and contracts with Lystek to produce a Class A EQ liquid fertilizer. The SFPUC's biosolids are now used as either a fertilizer or compost and are no longer used for alternative daily cover in landfills. The SFPUC is an active participant in the Bay Area Biosolids Coalition.

Town of Windsor. The Town of Windsor Water Reclamation Facility contracts with Synagro to land apply biosolids to farmland in Solano and Sacramento Counties. As part of the Synagro contract, Synagro diverts a portion of its biosolids to its Merced County facility for composting. The Town of Windsor continues to investigate feasible and cost-effective Class A biosolids treatment and process options. The Town is currently at 30% design for a biosolids handling facility, including biodrying and pyrolysis.

Union Sanitary District. Union Sanitary District (USD) beneficially used most of its biosolids in 2023 and met all USEPA regulations for the 30th consecutive year. USD continues to contract with Synagro for its biosolids management. The majority of USD's biosolids are land applied to farmland in Sacramento, Merced and Solano Counties. The remainder are delivered to Synagro for producing Class A compost. USD is a member of the Bay Area Biosolids Coalition.