



BIOSOLIDS BIENNIAL TREND SURVEY 2021-2023



August 2024

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Acronym and Abbreviations List

ADM	Anaerobically Digestible Material	POTWs	Publicly Owned Treatment Works
FTE	Full-Time Employee	SCAP	Southern California Alliance of POTWs
FOG	Fats, Oil and Grease	WTPY	Wet Tons Per Year
JWPCP	Joint Water Pollution Control Plant		

1. Summary

Clean Water SoCal (CWSC) wishes to thank the 22 member agencies that took the time and effort to assist with the production of this survey. The response has been exceptional, and it is CWSC's sincere hope that the information provided will be useful to CWSC members for future biosolids management planning and will provide the basis for a comprehensive statewide report.

The intent of this survey is to identify current industry trends for the following elements:

- Biosolids Production
- Dewatering Technologies
- Biosolids Management Technologies and Destinations
- Biosolids Management Costs and Transportation Rates
- Agency Challenges
- Co-digestion and Food Waste Data
- Agencies Future Biosolids Management Plans
- Marketing and Media Practices

The following is a general summary of our findings:

Table 1 - General Summary

Biosolids Production (Wet Tons)	
Annual Average Production:	
2021	1,294,007
2022	1,326,515
2023	1,315,315
Top Three Biosolids Producers	Los Angeles County Sanitation Districts City of Los Angeles Orange County Sanitation District
Biosolids Program Staffing and Budget	
Range of the Number of FTEs for Biosolids	1 to 42
Range of Biosolids Management Budget	\$115,000 to \$24,100,000
End Use Options	
Top Two End-Use Options	Composting and Land Application
Biosolids Quality	
Number of Agencies Class A - EQ	2
Number of Agencies Class A	2
Number of Agencies Class B	18
Number of Agencies Sub Class B	4

Table 1 - General Summary (continued)

Tipping Fee Average (Per Ton)	
Composting	\$45.86
Deep Well Injection	\$7.62
Land Application	\$46.62
Biochar	\$78.80
Landfill	\$78.00
Alternative Daily Cover (ADC)	\$0
Fertilizer	N/A
Dried Pellets	\$94.23
Technologies	
Common Digestion Technology	Mesophilic Anaerobic Digestion (Staged)
Common Dewatering Technology	Centrifuge
Challenges	
Top Three Challenges	Rising Costs
	Regulatory Restrictions & New Regulations
	Finding Low-Cost Local Biosolids Management Options
Biosolids Strategic Plans	
Number of Agencies with Strategic Plans	7
Number of Agencies without Strategic Plans	14
Food Co-Digestion Projects	
Number of Agencies Started Co-Digestion	4
Number of Agencies that are in the Planning and Design Stages of Co-Digestion	2
Social Media Communication	
Top Three Social Media Platforms Used by Agencies	Agency Managed Website
	Facebook
	Other Social Media

2. Annual Biosolids Production

This section provides a snapshot of the annual biosolids production from 2021 through 2023. It is important to note that the information provided is not intended to be a direct comparison of previous CWSC biennial surveys since each survey is based on a reflection of member agencies that provided information at that time period. The following figures illustrate the annual biosolids production for 2021-2023.

For the period of 2021-2023, the annual biosolids production increased approximately 2.5% from the first year to the second year and then slightly decreased by less than 1% from the second year to the third year as illustrated in Figure 1 - Annual Biosolids Production 2021-2023. The annual biosolids production went from 1,294,007 wet tons per year (WTPY) in 2021 to 1,326,515 WTPY in 2022 and to 1,315,315 WTPY in 2023. At the time the data was collected, the 2023 numbers were projections only and therefore may not represent a good sample set, hence the probable decrease in the biosolids production.

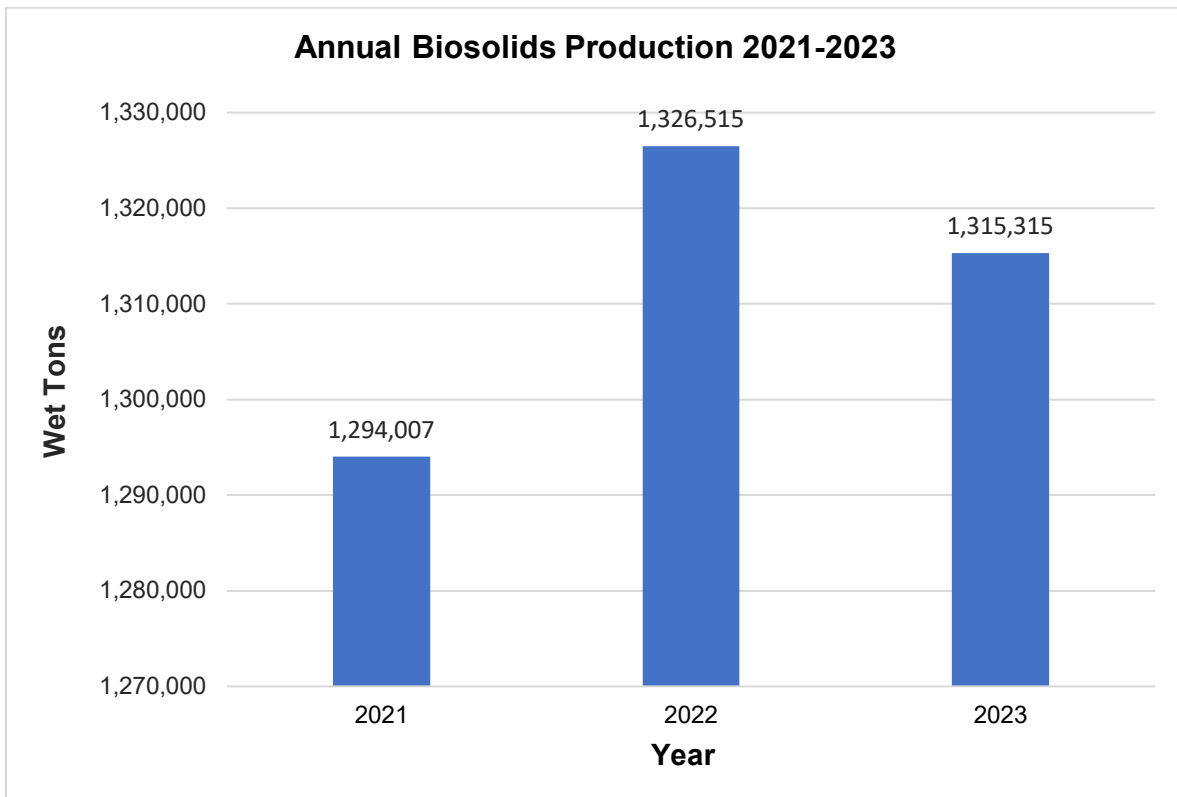


Figure 1 - Annual Biosolids Production 2021-2023

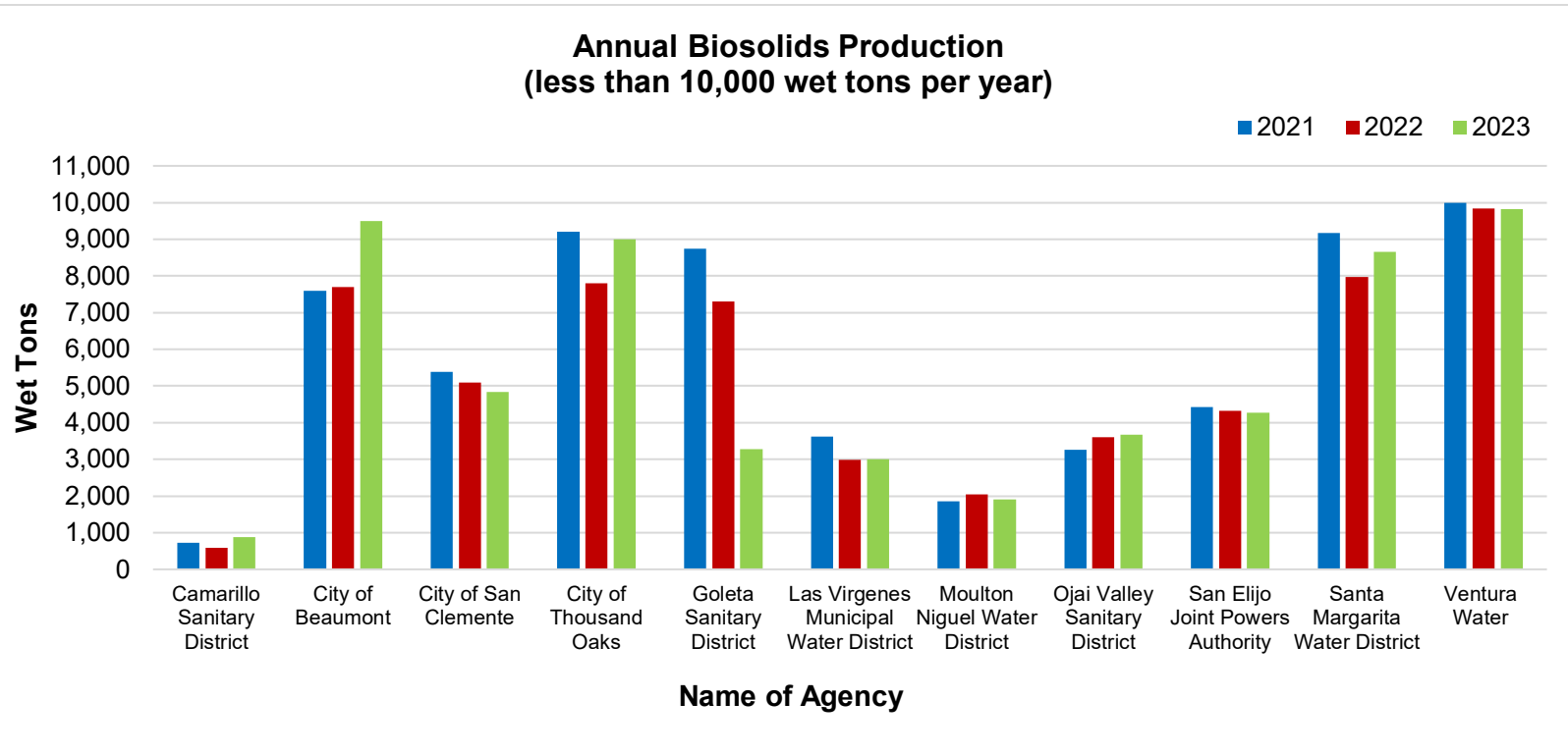


Figure 2a – Agencies with Annual Biosolids Production Less Than 10,000 Wet Tons

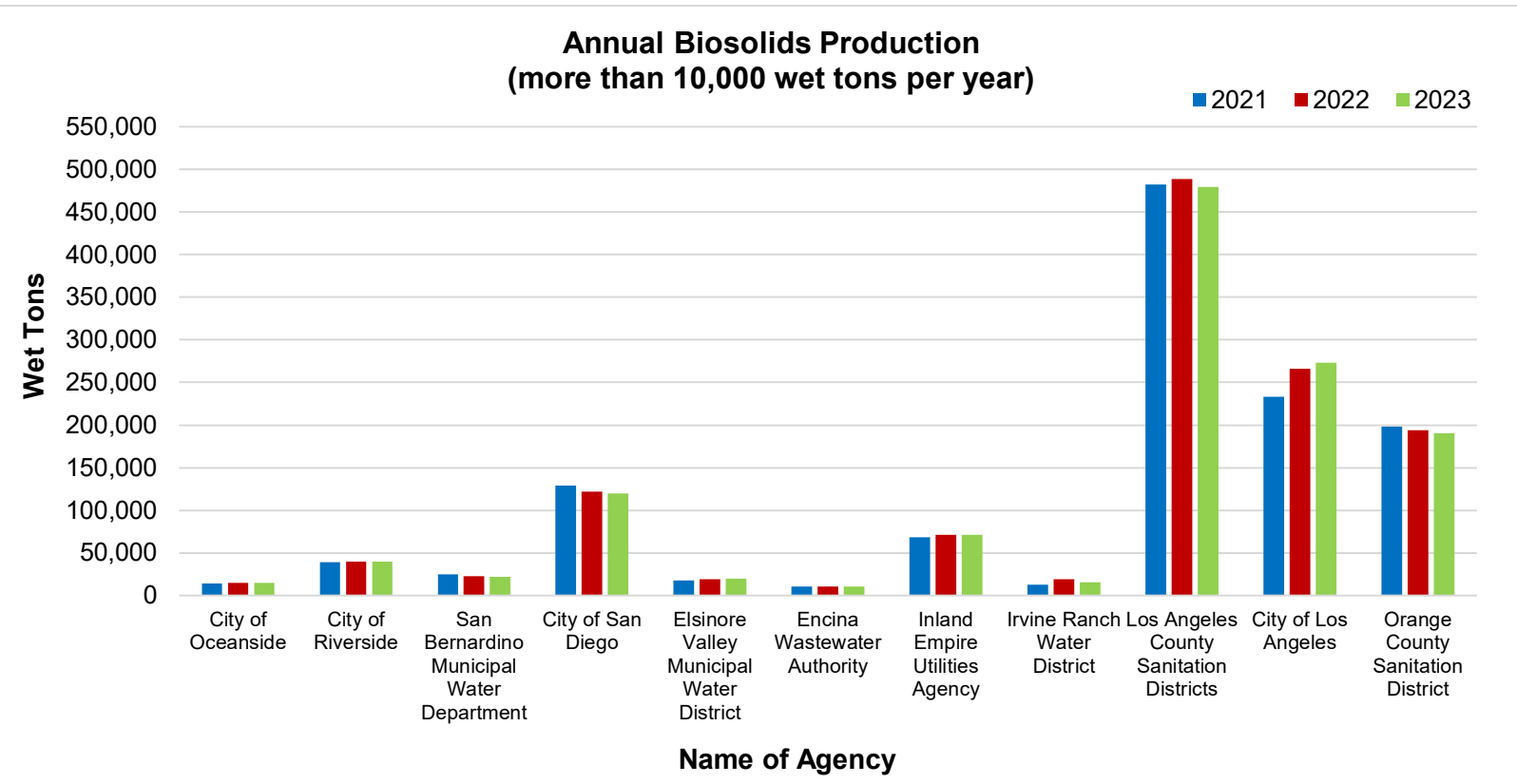


Figure 2b – Agencies with Annual Biosolids Production More Than 10,000 Wet Tons

For facilities that produced less than 10,000 WTPY within 2021-2023 as illustrated in Figure 2a – Agencies with Annual Biosolids Production Less Than 10,000 Wet Tons, the top four biosolids producers were Ventura Water, City of Thousand Oaks, Santa Margarita, and City of Beaumont. For further details, see Appendix A: Agency Information and Budget.

For facilities that produced above 10,000 WTPY within 2021-2023 as illustrated in Figure 2b – Agencies with Annual Biosolids Production More Than 10,000 Wet Tons, the top three biosolids producers were Los Angeles County Sanitation Districts, City of Los Angeles, and Orange County Sanitation District. Together these three Publicly Owned Treatment Works (POTWs) make up over 75% of total annual production of the 22 respondent agencies. For further details, see Appendix A: Agency Information and Budget.

3. Biosolids Program Staffing and Budget

The intent of this section is to capture the staffing levels and the fiscal budgets for 2021-2023 from survey respondents.

3.1. Staffing

CWSC members were asked to provide information on the number of staff that are dedicated to manage each agency’s biosolids management program, which includes contract management and regulatory compliance. Out of the 22 member agencies that responded, 9 agencies have dedicated staff and 13 agencies do not as referenced in Table 2 - Agencies with/without Dedicated Biosolids Staff.

Table 2 - Agencies With/Without Dedicated Biosolids Staff

Yes, the agency has dedicated biosolids staff	Number of staff members
City of San Diego	42
Elsinore Valley Municipal Water District	1
Encina Wastewater Authority	5
Inland Empire Utilities Agency	3
Irvine Ranch Water District	1
Las Virgenes Municipal Water District	7
Los Angeles County Sanitation Districts	4
City of Los Angeles	3
Orange County Sanitation District	2
No, the agency does not have dedicated biosolids staff	
Camarillo Sanitary District	
City of Beaumont	
City of Oceanside	
City of Riverside	
San Bernardino Municipal Water Department	
City of San Clemente	
City of Thousand Oaks	
Goleta Sanitary District	
Moulton Niguel Water District	
Ojai Valley Sanitary District	
San Elijo Joint Powers Authority	
Santa Margarita Water District	
Ventura Water	

3.2. Biosolids Program Management Budget

A large portion of a POTW's annual budget is biosolids management. CWSC members were asked to provide information on their annual budget allocated for the management of their biosolids for 2021 and 2022. For ease of illustration, POTWs were grouped by facilities having an annual biosolids management budget of less than or equal to \$1 million and those with over \$1 million. It is important to note that annual budgets may vary depending on the amount of annual biosolids produced and the type and cost of end-use management options an agency utilizes. To more clearly describe management budgets for all survey respondents, Figure 3a - Biosolids Management Budget Less Than or Equal to \$1M and Figure 3b - Biosolids Management Budget More Than \$1M groups together budgets above or below and equal to \$1 million.

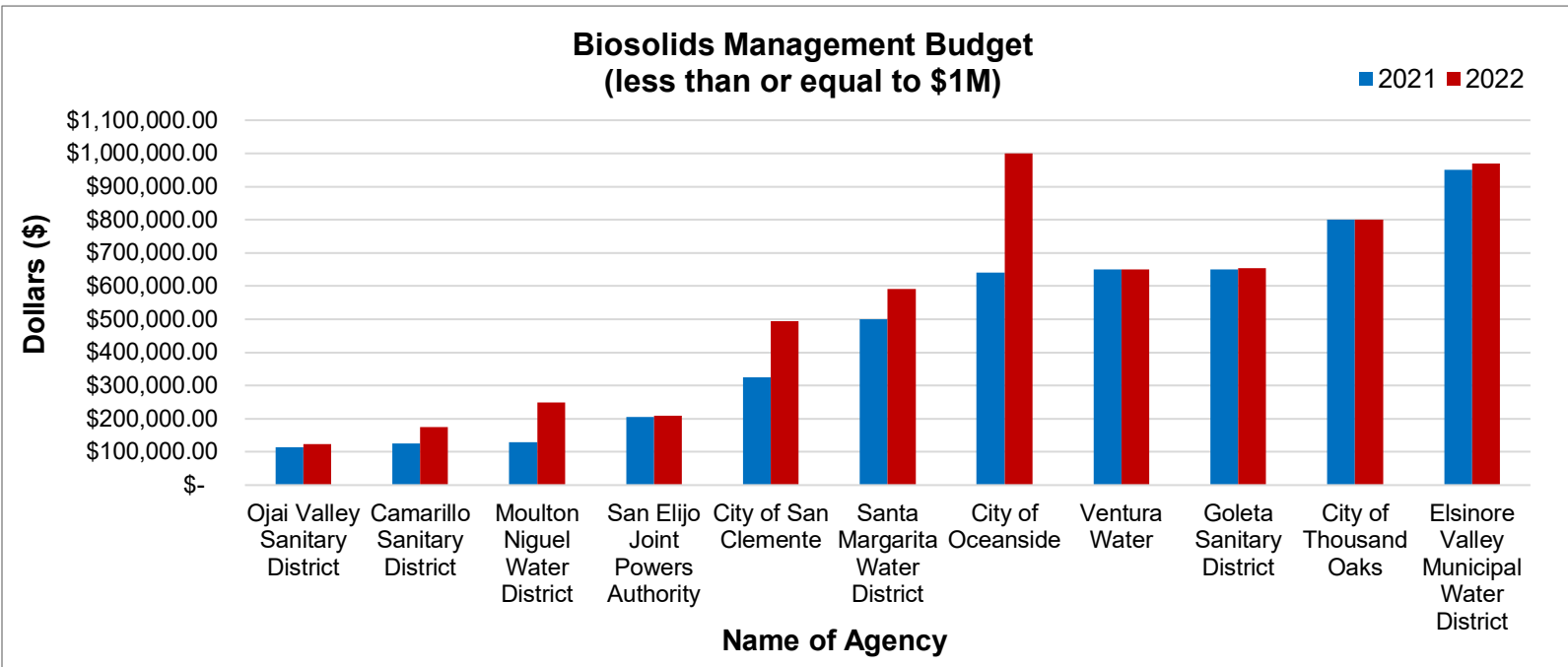


Figure 3a - Biosolids Management Budget Less Than or Equal to \$1M

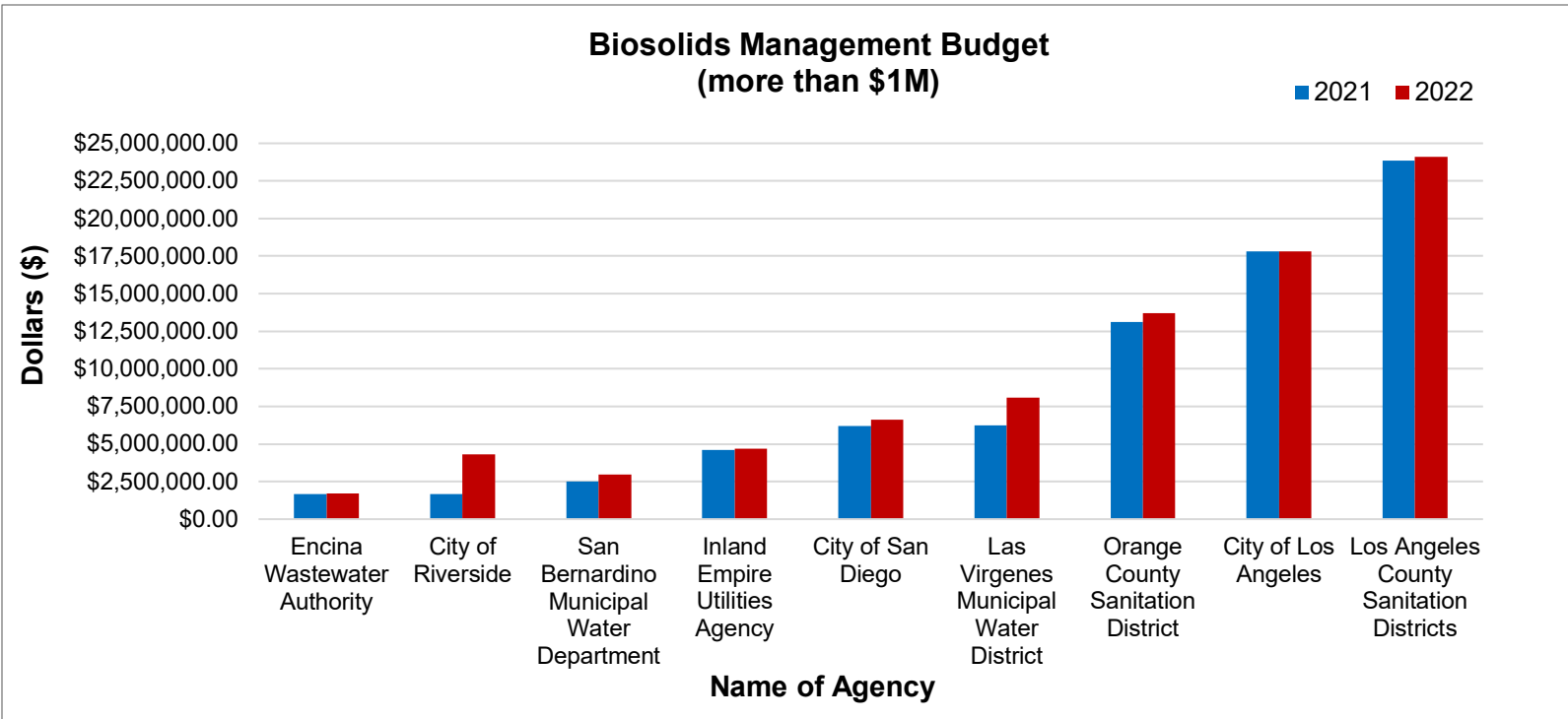


Figure 4b - Biosolids Management Budget More Than \$1M

Note: City of Beaumont and Irvine Ranch Water District's annual biosolids budget were not provided at the time of data collection.

Figure 4 - Annual Biosolids Production and Budget Price per Ton illustrates the relationship between the wet tons of biosolids produced each year and the average cost per ton based on survey responses.

Note: Two (2) agencies (City of Beaumont and IRWD) did not respond to the question on the average cost per ton on this survey, and Las Virgenes Municipal Water District (LVMWD) had a budget of \$1,729.20 per ton in 2021 and \$2,707.89 per ton in 2022. Since LVMWD's budget cost is higher than some agencies, this was not added in the calculation to avoid skewness of the graph.

Average Cost per Ton for Biosolids Management Program in 2021 and 2022

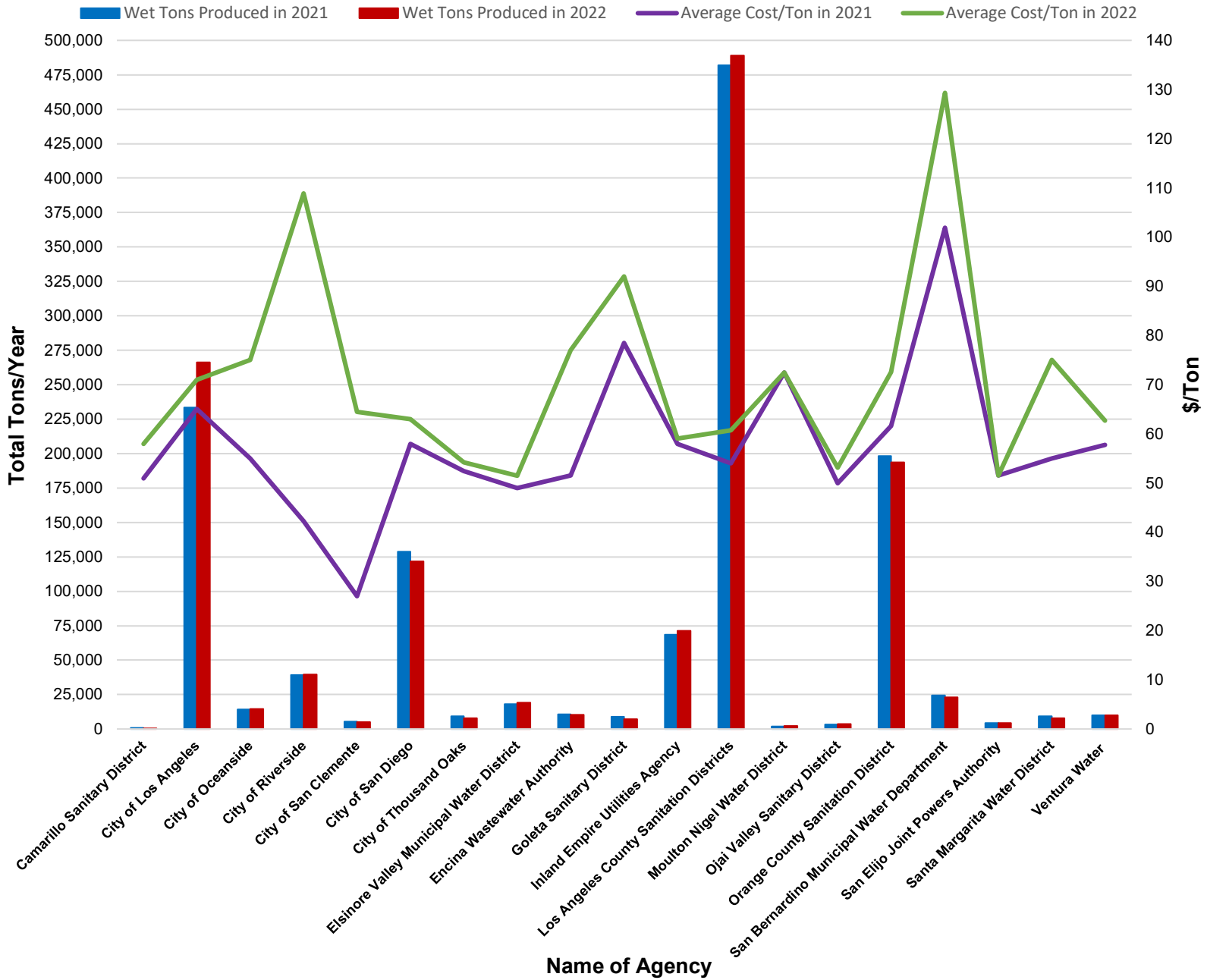


Figure 5 - Annual Biosolids Production and Average Cost per Ton by Agency

4. Biosolids Management Options, Management Cost, and Transportation Cost

This section provides information on the type of biosolids management options utilized, management costs, and associated transportation costs provided by CWSC member agencies that responded to the survey.

4.1. Biosolids Management Options by Agency 2021-2023

Results of the survey pertaining to the types of end use management options utilized by agencies are reported graphically in Figure 6 - Wet Tons and Number of Agencies per End Use.

The most prevalent end use management option employed by CWSC member agencies that responded to the survey is composting with 16 agencies from 2021 to 2023. This was followed by land application with 9 agencies in 2021, 10 agencies in 2022, and 8 agencies in 2023. Composting and land application represent by far the most prevalent management options. At the time of the data collection, some of the numbers from 2023 were projections only and therefore may not be considered an accurate representation of the entire sample set.

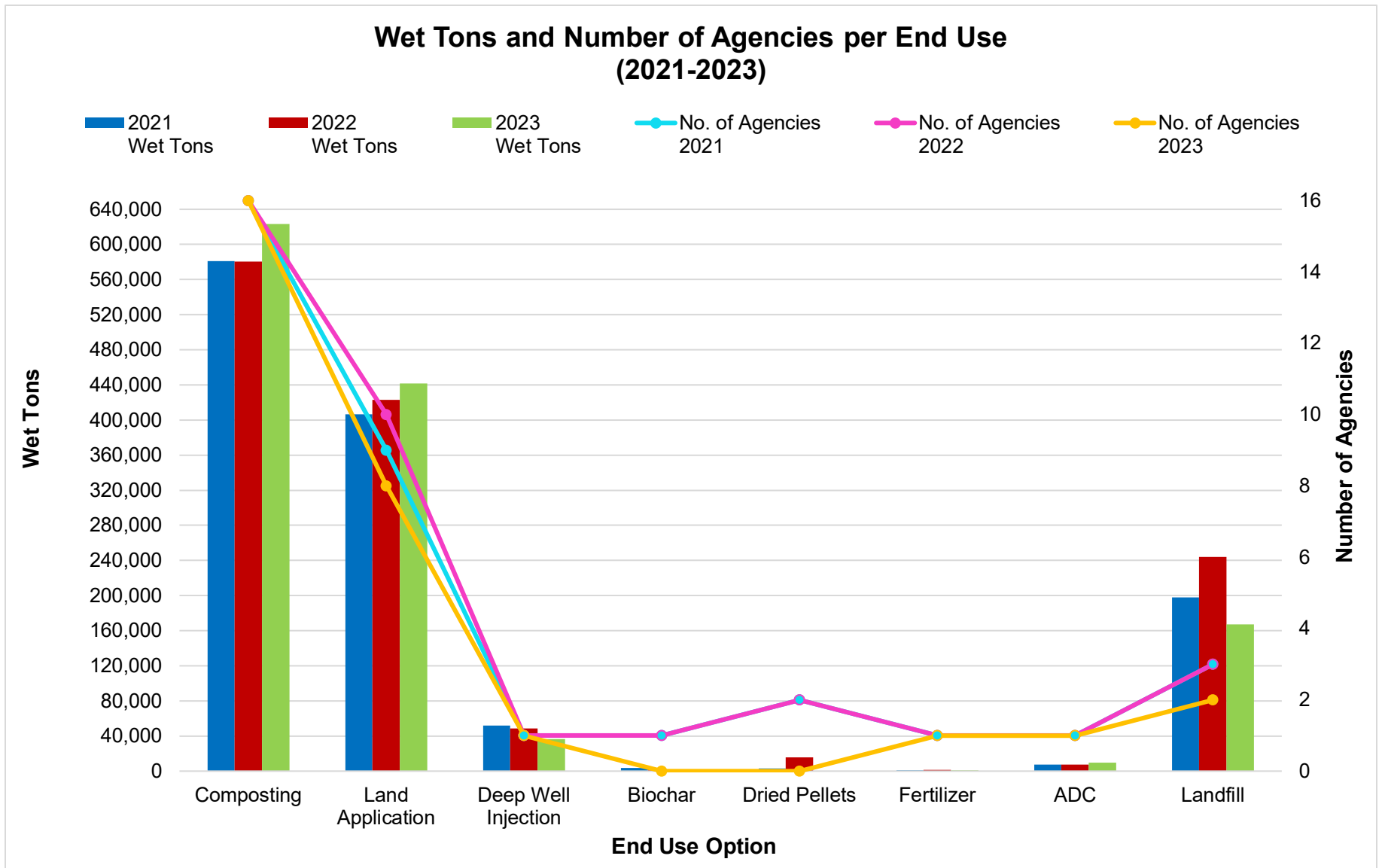


Figure 7 - Wet Tons and Number of Agencies per End Use

4.2. Biosolids Management Options by Agency, Total Volume, and Biosolids Type

Among the 22 agencies that responded to the survey, 16 agencies produced Class B biosolids which is shown to be the most common biosolids type; 3 agencies produced Sub Class B biosolids; one agency produced Class A-EQ, Class A, and Class B biosolids; one agency produced Class A-EQ and Class B biosolids; and one agency only produced Class A biosolids.

Table 3 - Breakdown per Agency and Year of Tons and Quality of Biosolids Produced

Name of Agency	2021				2022				2023			
	Class A - EQ	Class A	Class B	Sub Class B	Class A - EQ	Class A	Class B	Sub Class B	Class A - EQ	Class A	Class B	Sub Class B
Camarillo Sanitary District			718.00				591.00				875.00	
City of Beaumont				7,600.00				7,700.00				9,500.00
City of Los Angeles	123,843.56	73,914.19	35,561.39		171,048.29	73,642.54	21,469.94		178,000.00	70,000.00	25,000.00	
City of Oceanside			14,094.00				14,500.00				14,500.00	
City of Riverside			39,135.85				39,713.48					40,000.00
City of San Clemente				5,377.00				5,087.00				4,842.00
City of San Diego			128,734.00				121,563.00				119,580.00	
City of Thousand Oaks			9,200.00				7,800.00				9,000.00	
Elsinore Valley Municipal Water District				17,916.56				19,224.88				20,039.00
Encina Wastewater Authority	5,851.00		4,930.00		6,684.00		3,626.00		6,671.00		3,680.00	
Goleta Sanitary District			8,740.45				7,296.15				3,275.71	
Inland Empire Utilities Agency			68,582.00				71,408.00				71,200.00	

Clean Water SoCal Biosolids Biennial Trend Survey 2021-2023

Name of Agency	2021				2022				2023			
	Class A - EQ	Class A	Class B	Sub Class B	Class A - EQ	Class A	Class B	Sub Class B	Class A - EQ	Class A	Class B	Sub Class B
Irvine Ranch Water District			12,582.00				18,805.00				15,730.00	
Las Virgenes Municipal District		3,613.00				2,986.00				3,000.00		
Los Angeles County Sanitation Districts			482,103.00				488,929.00				479,700.00	
Moulton Nigel Water District			1,848.36				2,045.68				1,900.00	
Ojai Valley Sanitary District			3,265.00				3,595.00				3,674.00	
Orange County Sanitary District			198,349.00				193,783.00				190,172.00	
San Bernardino Municipal Water Department			24,482.69				22,863.01				23,431.96	
San Elijo Joint Powers Authority			4,416.00				4,328.00					
Santa Margarita Water District			8,661.44				7,963.00				9,167.00	
Ventura Water			9,983.64				9,839.15				9,822.94	
Totals (wet tons)	129,694.56	77,527.19	1,055,386.82	30,893.56	177,732.29	76,628.54	1,040,118.41	32,011.88	184,671.00	73,000.00	980,708.61	74,381.00

4.3. Cost Summary

The following information is a cost range of eight biosolids management types along with the average cost. Cost may vary based on several factors, which include but are not limited to the type of management option, transportation, administration, handling, etc.

Table 4 - Total Tipping Fees for the Management Types Utilized by All Agencies

Management Type	Tipping fee (\$/ton) per contractor			Transportation cost (\$/ton) per contractor		
	Min	Max	Average	Min	Max	Average
Alternative Daily Cover (ADC)	\$0	\$0	\$0	\$60.08	\$63.74	\$61.90
Biochar	\$77.69	\$79.90	\$78.80	\$0	\$0	\$0
Composting	\$24.50	\$72.00	\$45.86	\$6.48	\$86.74	\$32.77
Deep Well Injection	\$7.30	\$8.14	\$7.62	\$62.83	\$69.27	\$65.37
Dried Pellets	\$94.23	\$94.23	\$94.23	\$94.23	\$94.23	\$94.23
Fertilizer	N/A	N/A	N/A	N/A	N/A	N/A
Landfill	\$78.00	\$78.00	\$78.00	\$78.00	\$78.00	\$78.00
Land Application	\$8.50	\$72.00	\$46.62	\$42.70	\$68.15	\$57.61

For ADC, agencies provided transportation costs where tipping fees were included. For biochar, agencies provided tipping fees which already included the transportation cost. For landfill, only one agency provided data that was available at the time of data collection. For both land application and composting, one agency provided a flat fee transportation cost (maximum) of \$1,750/ton, which was not included in calculating the average cost.

5. Travel Range and Description of Biosolids Management Destinations

Hauling is one of the major factors that can impact the overall biosolids management cost. Travel ranges to each biosolids management facility vary among the agencies. In general, the range can be between 9 miles to 300 miles (Arizona) from each agency’s facility(ies). Figure 6 - Map of Biosolids Management and Table 5 - Location of the Various Management Operations provide information of the common hauling destination for the agencies.



Figure 8 - Map of Biosolids Management

Table 5 - Location of the Various Management Operations

Management Options	Destination
Biochar	San Bernardino, CA
	Helendale, CA
	Imperial County, CA
	Kern County, CA
	Kings County, CA
	La Paz County, AZ
	Los Angeles County, CA
	Lost Hills, CA
	Rancho Cucamonga, CA
	Salome, AZ
	San Bernardino County, CA
	Taft, CA
	Vicksburg, AZ
	Ventura County, CA
	Yuma County, AZ
Deep Well Injection	Los Angeles, CA
Alternative Daily Cover (ADC)	Imperial, CA
Fertilizer	California
	Arizona
	Rialto, CA
Dried Pellets	San Bernardino, CA
	Kern County, CA
	Orange County, CA
	Riverside County, CA
	Yuma County, AZ
	Imperial County, CA
	Kern County, CA
	Lost Hills, CA
	Parker, AZ
	San Juan Capistrano, CA

5.1 List of Biosolids Management Vendors

Table 6 - List of Biosolids Management Vendors provides a list of biosolids management vendors that offer services to CWSC member agencies.

Table 6 - List of Biosolids Management Vendors

Composting
Denali Water Solutions
GIC
Holloway Environmental
Inland Empire Regional Composting Authority
SB Industrial Vacuum Services
Synagro/Liberty Composting*
Tulare Lake Compost
Alternative Daily Cover (ADC)
Burrtec
Biochar
Rialto Bioenergy Facility
Deep Well Injection
GeoEnvironment
Denali Water Solutions
Fertilizer
Various
Land Application
Denali Water Solutions
Ecology Auto Parts
Republic Services
SB Industrial Vacuum Services
Responsible Biosolids Management (RBM)
Tule Ranch/AgTech
Dried Pellets
Rialto Bioenergy Facility
Denali Water Solutions
Landfill
Burrtec
Holloway Environmental
La Paz Landfill
Prima Deschecha Landfill

*Note: Synagro/Liberty Composting includes Nursery Products, Arizona Soil, South Kern Compost Manufacturing Facility, and McCarthy Family Farms.

6. Wastewater Treatment Facility – Solids Handling

The following section summarizes the wide variety of technologies utilized by Southern California POTWs in their sludge handling processes and the range in the quality and quantity of the biosolids produced by each agency from 2021 to 2023. This section describes the biosolids digestion technologies used by various agencies. In addition, the quality and quantity of biosolids produced by these digestion technologies from 2021 to 2023 are also included in this section. Finally, dewatering technologies are explored including the brands of dewatering technology purchased, as well as the types of dewatering processes used at each agency and the resulting percent solids produced by these processes.

6.1. Biosolids Digestion Technologies

The digestion process of solids can be done using a few different methods involving anaerobic digestion. The most common technologies used by CWSC agencies include mesophilic anaerobic digestion done by seventeen (17) agencies and thermophilic anaerobic digestion done by three (3) agencies. Three (3) agencies used other digestion technologies besides the two previously mentioned. Agencies often prefer to invest in staged mesophilic anaerobic digestion processes as the digestion phase is broken into steps, and at each stage the conditions can be manipulated to optimize operations including producing higher quality biosolids as well as greater gas production. However, these systems tend to be more expensive to operate and manage than single-staged systems and require more intricate piping requirements. Thermophilic digestion or retrofitting a mesophilic digestion process with a thermophilic stage is preferred as it produces Class A biosolids. In addition to the higher quality biosolids produced, the biosolids have less odors than those created during mesophilic anaerobic digestion.

See below link for U.S. EPA's Biosolids Technology Fact Sheet for Multi-Stage Anaerobic Digestion for additional information:

<https://www.epa.gov/sites/production/files/2018-11/documents/multistage-anaerobic-digestion-factsheet.pdf>

See Table 7- Biosolids Digestion Technologies for more information.

Table 7 - Biosolids Digestion Technologies

Mesophilic Anaerobic Digestion
Camarillo Sanitary District
City of Oceanside
City of Thousand Oaks
City of Riverside
City of San Diego
City of San Clemente
Encina Wastewater Authority
Goleta Sanitary District
Inland Empire Utilities Agency
Las Virgenes Municipal Water District
Los Angeles County Sanitation Districts
Moulton Niguel Water District
Orange County Sanitation District
San Elijo Joint Powers Authority
San Bernardino Municipal Water Department
Santa Margarita Water District
Ventura Water
Thermophilic Anaerobic Digestion
City of Los Angeles
Inland Empire Utilities Agency
Irvine Ranch Water District
Aerobic Digestion
N/A
No Digestion
City of Beaumont
Elsinore Valley Municipal Water District
Ojai Valley Sanitary District

6.2. Biosolids Quality and Volumes 2021-2023

Under 40 CFR Part 503, agencies are regulated to produce biosolids that are classified as either Sub Class B, Class B, Class A, or Class A – Excellent Quality (EQ) based on their level of

treatment. The quality of treatment determines the beneficial uses of these biosolids. Figure 7 demonstrates the amount and class of biosolids generated from 2021 to 2023. Class A-EQ tends to increase while Class B tends to decrease each year between 2021 to 2023, which may relate to the local laws and ordinances that impact availability and options per geographic jurisdiction. In addition, this could be affected by the implementation of new laws and regulations, such as SB 1383, which mandates a 40% reduction in methane emissions with 2013 as the baseline by 2030 and 75 percent organic diversion from landfills (including biosolids) relative to 2014 levels by 2025. It is important to note though that minimal landfill disposal may still occur sporadically in cases of treatment issues or weather conditions.

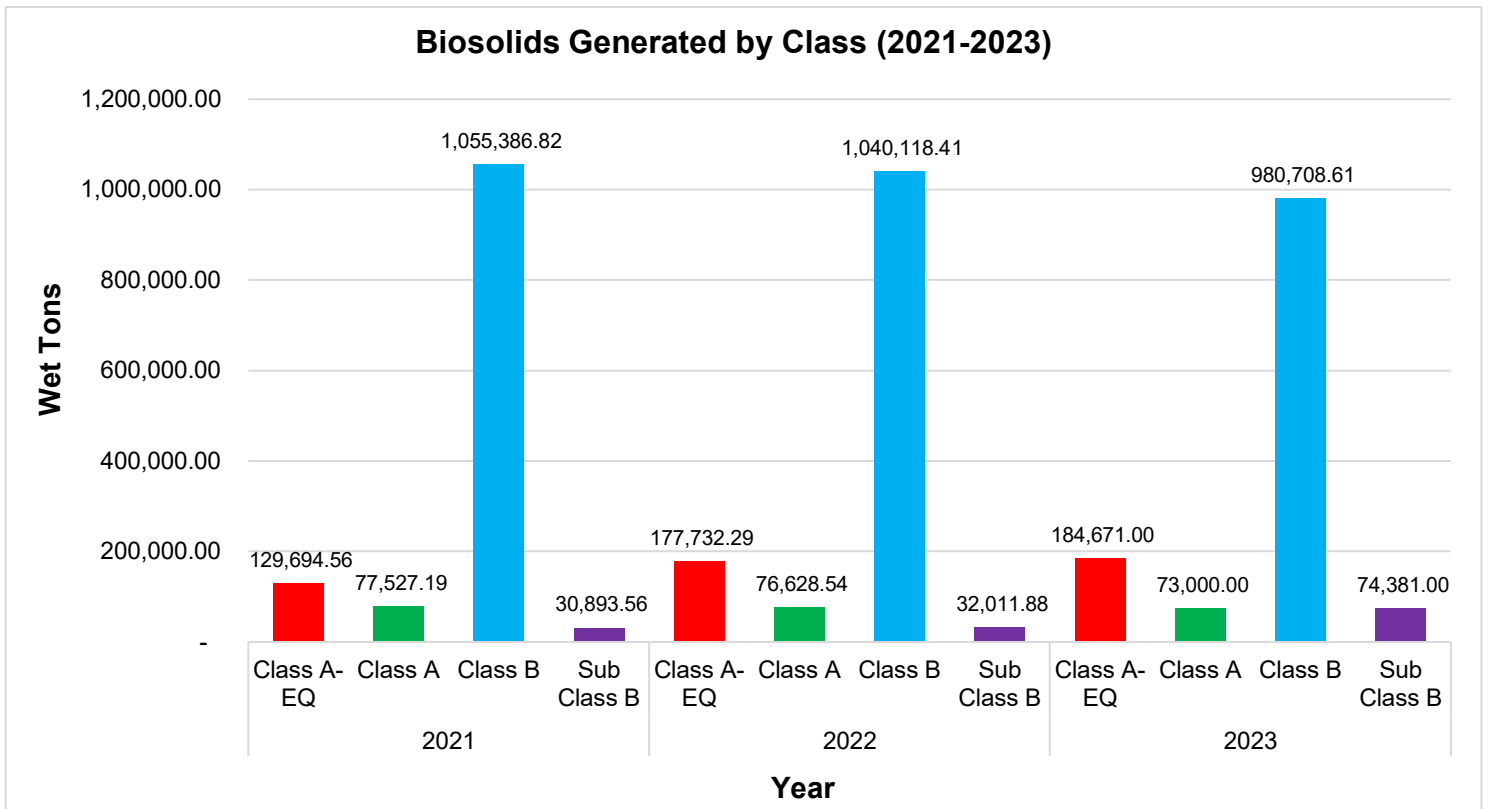


Figure 9 - Amount of Biosolids Generated by Class (Wet Tons)

6.3. Biosolids Dewatering Technology

Three biosolids dewatering technologies are primarily used for solids handling including centrifuge, screw press, and filter press. A variety of companies manufacture dewatering technologies.

Table 8 - Dewatering Technologies highlights the number of products used by each agency. However, most agencies utilize many of the same products for their treatment processes.

Figure 10 - Dewatering Technologies used by CWSC agencies demonstrate the breakdown of dewatering technologies used by all CWSC agencies. In 2021, centrifuges were the most common dewatering system used by 19 to 21 (~60%) facilities, followed by filter presses which were used by 6-7 (~17%) facilities. The less common dewatering technologies include indirect dryers which are used by one (~3%) facility. Dewatering technologies used by CWSC agencies in 2022 and 2023 are also demonstrated in Figure 8.

Table 8 - Dewatering Technologies

Dewatering Technologies	Year		
	2021	2022	2023
Centrifuge	21	21	19
Alfa Laval	10	10	10
Andritz	3	3	2
Centrisys Centrifuge System	3	3	3
GEA Westfalia	3	3	3
Humboldt	2	2	1
Drying Bed	0	0	1
Unknown	0	0	1
Indirect Dryer	1	1	1
Andritz	1	1	1
Belt Press	3	3	3
Ashbrook Corporation/Alfa Laval	2	2	2
Huber	1	1	1
Filter Press	6	7	6
Alfa Laval	2	2	1
Ashbrook Corporation/Alfa Laval	3	3	3
Pwtech	0	1	1
Rittershaus & Blecher	1	1	1
Screw Press	4	4	4
Huber	3	3	3
FKC	1	1	1

**Note: Alfa Laval acquired Ashbrook Corporation.*

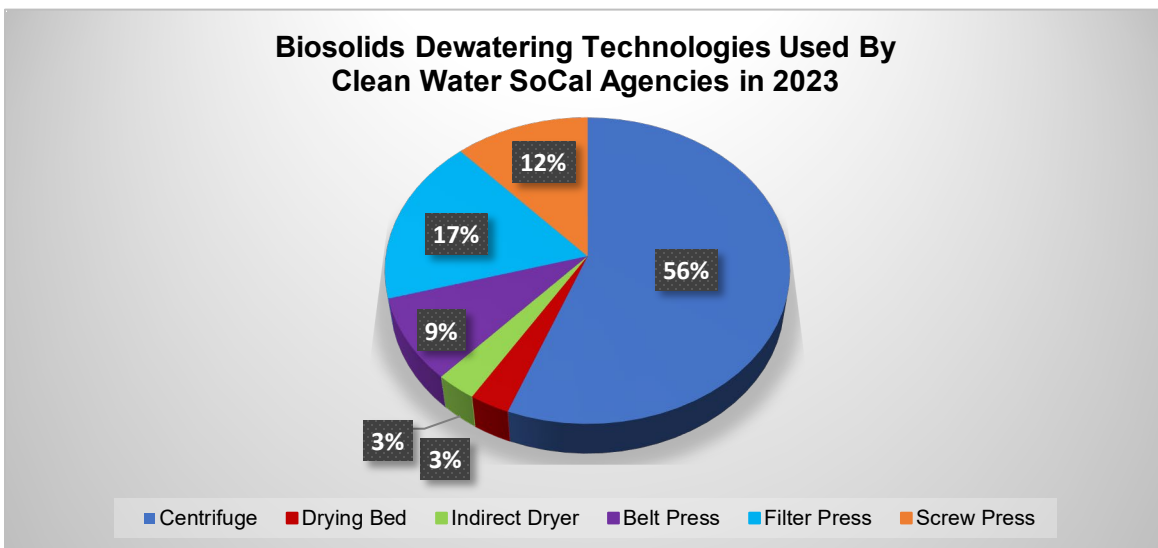
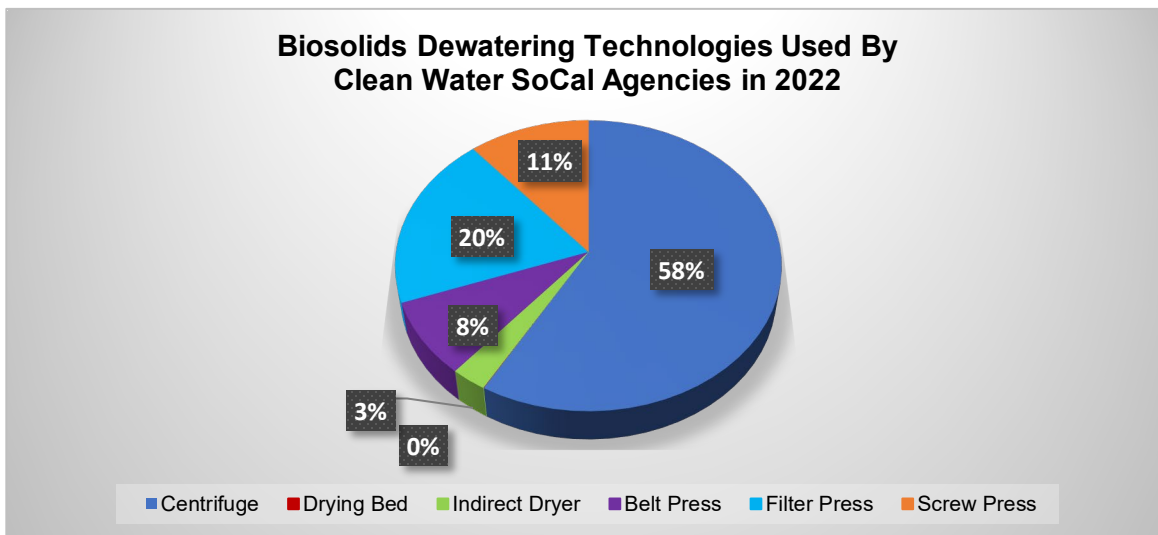
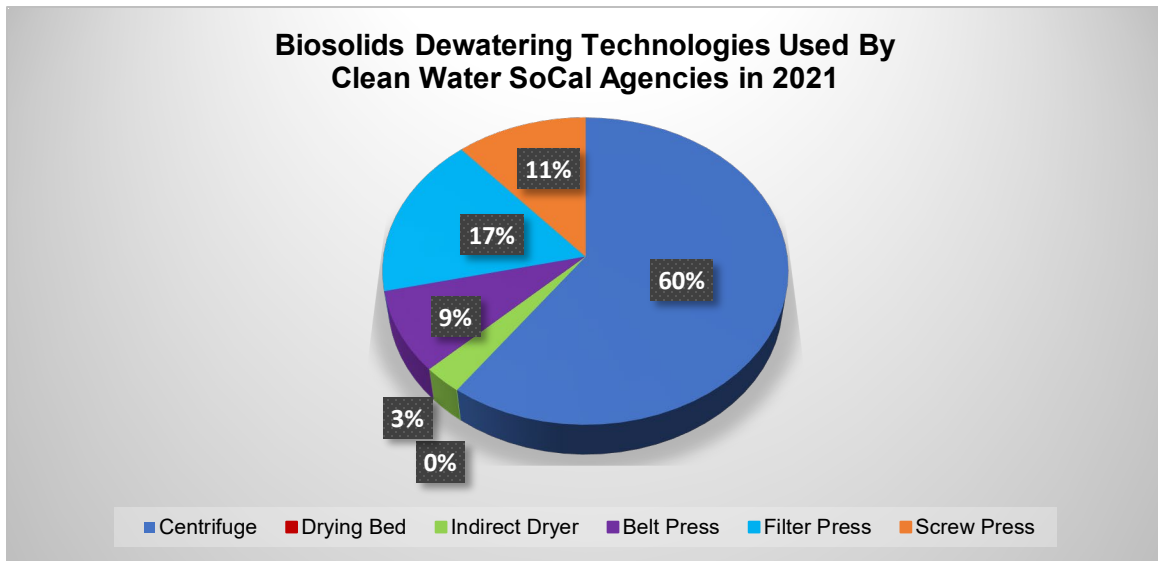


Figure 11 - Dewatering Technologies used by Clean Water SoCal Agencies

6.4. Percent Solids by Facility and Type of Biosolids

Table 9 - Percent Solids by Agency and Facility presents the percent solids produced by each facility, which are categorized by the class of biosolids they produce. The percent solids depend on the dewatering method used as well as the requirements needed for the post-processing use, such as land application. Class A – EQ ranges from 23.2 – 25.6% solids, Class A ranges from 1.3 – 26% solids, Class B ranges from 14 – 84% solids, and Sub Class B ranges from 13.2 – 26% percent solids.

Table 9 - Percent Solids by Agency and Facility

Method	Class A-EQ		Class A		Class B		Sub Class B	
	Min	Max	Min	Max	Min	Max	Min	Max
Centrifuge								
City of Beaumont							17.0%	18.0%
City of Los Angeles	23.2%	25.6%	23.0%	26.0%	23.0%	26.0%		
City of Oceanside					21.8%	22.0%		
City of Riverside					16.0%	16.0%	16.0%	16.0%
City of San Clemente							26.0%	26.0%
City of San Diego					27.6%	28.9%		
Goleta Sanitary District					15.0%	18.0%		
Inland Empire Utilities Agency					23.0%	23.0%		
Irvine Ranch Water District					19.0%	20.0%		
Las Virgenes Municipal Water District			23.0%	23.0%				
Los Angeles County Sanitation Districts					15.8%	29.0%		
Moulton Niguel Water District					21.0%	21.0%		
Orange County Sanitation District					24.0%	28.0%		
San Bernardino Municipal Water Department					22.0%	24.0%		
Ventura Water					20.0%	22.0%		
Filter Press								
Camarillo Sanitary District					79.0%	84.0%		
Elsinore Valley Municipal Water District							13.2%	16.8%
Inland Empire Utilities Agency					15.0%	15.0%		
Los Angeles County Sanitation Districts					17.1%	19.3%		
San Bernardino Municipal Water Department					22.0%	24.0%		
San Elijo Joint Powers Authority					20.0%	20.0%		
Deep Well Injection								
City of Los Angeles			1.3%	7.4%				
Drying Bed								
Camarillo Sanitary District					33.0%	33.0%		
Screw Press								
City of Riverside					16.0%	16.0%	16.0%	16.0%
City of Thousand Oaks					38.3%	50.0%		
Goleta Sanitary District					14.0%	18.0%		
Santa Margarita Water District					16.0%	16.0%		
Belt Press								
City of Oceanside					15.6%	17.2%		
City of Riverside					16.0%	16.0%	16.0%	16.0%
Ojai Valley Sanitary District					14.0%	14.0%		

7. Challenges

The severity of challenges differs with each individual wastewater agency depending on operations and resources available to meet the current and future needs of the plants. This section shows the highest and lowest priority challenges that each agency faces.

7.1. Challenges Based on Priority

The agencies were asked to rank 7 categories of challenges on a scale from high, medium, low, and not a priority. Table 10 - Count of Each Rating per Priority Area provides the data on each agency rating for each challenge. Overall, the challenges that were rated as a high priority most often were “Regulatory Restrictions & New Regulations” and ‘Rising Costs’. This is the order of prioritization based on the data:

1. Regulatory Restrictions & New Regulations (most often noted as high priority)
2. Rising Costs (most often noted as high priority)
3. Finding Low Cost Local Biosolids Management Options
4. Securing Long-Term Biosolids Management Options
5. Public Perception/Relations
6. Wet Weather Impeding Drying Operations (least often noted as high priority)
7. Space for Drying Operations (least often noted as high priority)

Table 10 - Count of Each Rating per Priority Area

Challenge	Priority Rating			
	High	Medium	Low	Not a Priority
Rising Costs	15	5	2	0
Public Perception/Relations	4	11	6	1
Finding Low Cost Local Biosolids Management Options	12	7	3	0
Securing Long-Term Biosolids Management Options	11	9	2	0
Space for Drying Operations	2	1	7	12
Regulatory Restrictions & New Regulations	15	5	2	0
Wet Weather Impeding Drying Operations	2	4	7	9

8. Strategic Planning

Strategic planning is critical to POTW agencies to ensure they are able to maintain the current needs and meet the future needs of their community with regards to treating wastewater and processing solids. The following section summarizes the agencies strategic planning efforts including which agencies have Biosolids Master Plans for their biosolids programs; the anticipated biosolids management for the upcoming fiscal years; as well as a look into how agencies are marketing their biosolids products.

8.1. Number of Agencies that have a Biosolids Master Plan

Seven (7) of the CWSC agencies have a Biosolids Master Plan and fourteen (14) agencies responded with not having a Biosolids Master Plan. Interestingly, the agencies which indicated they did have a Biosolids Master Plan in place were not necessarily those agencies with more biosolids dedicated staff. Three of the agencies which indicated they did have a Biosolids Master Plan in place were agencies that do not have any biosolids dedicated staff.

Table 11 - Agencies With and Without Biosolids Master Plan

Agencies With a Biosolids Master Plan
City of Riverside
Encina Wastewater Authority
Goleta Sanitary District
Inland Empire Utilities Agency
Las Virgenes Municipal Water District
Orange County Sanitation District
San Bernardino Municipal Water Department
Agencies Without a Biosolids Master Plan
Camarillo Sanitary District
City of Beaumont
City of Oceanside
City of San Clemente
City of Thousand Oaks
Elsinore Valley Municipal Water District
Irvine Ranch Water District
Los Angeles County Sanitation Districts
City of Los Angeles
Moulton Niguel Water District
Ojai Valley Sanitary District
San Elijo Joint Powers Authority
Santa Margarita Water District
Ventura Water

8.2. Number of Agencies Directly Marketing Biosolids Products

Currently, some POTWs generate marketable products. The most popular product created is compost, with two agencies producing compost and one agency blending to produce soil amendments.

Table 12 - Agencies that Directly Market a Product

Name of Agency	Compost	Fertilizer Pellets	Soil Blending	Biofuels	Biochar	Renewable Energy Pellets
Inland Empire Utilities Agency	Yes	No	No	No	No	No
Encina Wastewater Authority	No	No	Yes	No	No	No
Las Virgenes Municipal Water District	Yes	No	No	No	No	No

8.3. Organics Management

Due to recent pressures regarding waste management, California has introduced new legislations regarding organic diversion and management, such as SB 1383 which calls for 50% to reduce organic waste disposal by 2020 and 75% by 2025. As a result, this has led to agencies updating their current biosolids handling operations, introducing new technology, and implementing best practices to meet the standards laid out in the law. This might include the reduction in use of landfills or increasing land application and co-digestion both of which might require a change in solids digestion. Co-digestion is an emerging technology that incorporates food waste, fats, oils, and grease (FOG), and process waste from breweries and wineries. Many agencies have started or are beginning to incorporate co-digestion into their treatment process due to SB 1383. Integrating food waste can be an affordable way to divert organic materials from landfills and uses infrastructure already in place to process the materials. In addition, the waste is beneficial to the wastewater agencies as blending solids from the wastewater stream with feedstock improves biogas production, which can be used by the agency as a low carbon vehicle fuel source or be sold to power companies.

The following section discusses what agencies have done and are planning to do in response to these new regulations.

8.4. Agencies Response Due to Current Regulations

New regulations regarding increased and improved recycling and waste management are impacting wastewater agencies and their end use of solids. As mentioned in the previous section, a major piece of legislation, SB 1383 requires the need for organic diversion from landfills. Many cities are using co-digestion with biosolids as a primary focus for organic diversion, which counts towards their diversion requirements. If the agencies do not already have diversion programs, agencies have found that biosolids are one of the easiest organic products to develop a diversion program for, as it is a consistent waste stream that can be utilized in a variety of ways besides being landfilled. In addition, co-digestion, which incorporates food waste and other organic matter into anaerobic digesters to generate a reusable product, has become a priority for many agencies in California since it allows agencies to produce more biosolids and biofuels while reducing the amount of waste going to landfills.

Ten (10) agencies stated that there will be difficulty in securing organic feedstock for co-digestion. Three agencies are in the process of completing contracts for accepting additional organic waste and six agencies are installing additional digestion capacity to facilitate co-digestion. (Table 13 - Response to Organics Diversion Regulations).

Table 13 - Response to Organics Diversion Regulations

Name of Agency	Does your agency foresee any changes in your operations based on emerging organic (food waste) diversion regulations (i.e. AB 1826 or SB 1383)?
Camarillo Sanitary District	Unknown
City of Beaumont	Yes, completing contracts for accepting additional organic waste
City of Los Angeles	Yes, there will be changes due to emerging organic diversion regulations
City of Oceanside	Yes, installing an organics co-digestion receiving facility
City of Riverside	Yes, installing additional digestion capacity to facilitate co-digestion and following regulatory sampling requirements as directed, wait and see strategy
City of San Clemente	No, not for the foreseeable future
City of San Diego	Yes, installing an organics co-digestion receiving facility
City of Thousand Oaks	No
Elsinore Valley Municipal Water District	No, facility does not have primary treatment or digesters
Encina Wastewater Authority	Unknown at this time, there is currently no major local demand for organics digestion
Goleta Sanitary District	Difficulty to secure organic feedstock for co-digestion
Inland Empire Utilities Agency	Yes, installing an organics co-digestion receiving facility
Irvine Ranch Water District	We currently have the facilities to accept organic waste but have yet to accept any
Las Virgenes Municipal Water District	No
Los Angeles County Sanitation Districts	Yes, meeting SB 1383 diversion goals reliably, within cost constraints will be challenging
Moulton Niguel Water District	No
Ojai Valley Sanitary District	No, we do not accept food waste
Orange County Sanitation District	Yes, completing contracts for accepting additional organic waste
San Bernardino Municipal Water Department	Difficulty to secure organic feedstock for co-digestion
San Elijo Joint Powers Authority	No
Santa Margarita Water District	Yes, installing additional digestion capacity to facilitate co-digestion
Ventura Water	Yes, all listed will impact operations (installing an organics co-digestion receiving facility, completing contracts for accepting additional organic waste, difficulty to secure organic feedstock for co-digestion, and installing additional digestion capacity to facilitate co-digestion)

8.5. Agencies Co-Digesting, Tons, Feedstock Contractor, Agency Tipping Fee

Four agencies have integrated co-digestion into their wastewater operations. The feed stock used by these agencies included Anaerobically Digestible Material (ADM), food waste, FOG, brewery waste, or a combination of these feed stocks. The tipping costs vary from as little as \$0.015 per gallon to \$29.00 per ton of feedstock waste. Two agencies also identified their future potential organics diversion.

Table 14 - Agencies Co-Digesting: Feedstock, Contractor, and Tipping Fee

Agency, Feedstock, and Contractor for Organics Diversion	2021	2022	2023	Future Potential Organics Diversion
City of Riverside				
<i>Feedstock</i>	Food Waste, ADM	Food Waste, ADM	Food Waste, ADM	
<i>Contractor</i>	Burrtec, SMC	Burrtec, SMC	Burrtec, SMC	
<i>Tipping Fee (\$/ton)</i>	Experimental	Experimental	Experimental	
City of Thousand Oaks				
<i>Feedstock</i>	FOG	FOG	FOG	
<i>Contractor</i>	Grease Hauling Companies	Grease Hauling Companies	Grease Hauling Companies	
<i>Tipping Fee (\$/ton)</i>	\$0.10/gal	\$0.10/gal	\$0.10/gal	
Encina Wastewater Authority				
<i>Feedstock</i>	FOG, Brewery waste	FOG, Brewery waste	FOG, Brewery waste	
<i>Contractor</i>	Liquid Environmental Solutions, Stone Brewing	Liquid Environmental Solutions, Stone Brewing	Liquid Environmental Solutions, Stone Brewing	
<i>Tipping Fee (\$/ton)</i>	\$0.06/gal screened FOG \$0.10/gal raw FOG \$0.015/gal brewery waste	\$0.06/gal screened FOG \$0.10/gal raw FOG \$0.015/gal brewery waste	\$0.06/gal screened FOG \$0.10/gal raw FOG \$0.015/gal brewery waste	
Los Angeles County Sanitation Districts				
<i>Feedstock</i>	Food Waste	Food Waste	Food Waste	
<i>Contractor</i>	Multiple	Multiple	Multiple	
<i>Tipping Fee (\$/ton)</i>	\$27/ton	\$29/ton	\$29/ton	
City of Oceanside				
<i>Feedstock</i>				Food Waste, HSLW
<i>Contractor</i>				Food Waste - Waste Management, HSLW - Unknown
<i>Tipping Fee (\$/ton)</i>				Unknown
Ojai Valley Sanitary District				
<i>Feedstock</i>				Horse Bedding
<i>Contractor</i>				Local Horse Ranches
<i>Tipping Fee (\$/ton)</i>				N/A
<i>Contractor</i>				Local Horse Ranches
<i>Tipping Fee (\$/ton)</i>				N/A

9. Public Outreach

As social media is becoming a primary form of communication, these platforms are now being utilized by wastewater agencies to provide information to the public regarding their operations and programs such as biosolids (see Table 15 - Agencies Using Social Media). Agencies are primarily using websites and Facebook.

Several agencies do not use social media to promote their biosolids programs but instead use social media for agency programs as a whole. Sixteen (16) agencies were found to use more traditional forms of communication such as an agency managed website as well as newspapers or other print media to provide information to the public about their biosolids programs. Several of the agencies that have started using social media platforms such as Facebook and Instagram for outreach continue using the more traditional methods of communication as well.

9.1. Number of Agencies Utilize Social Media and What Type

Table 15 - Agencies Using Social Media

Name of Agency	Agency Managed Website	Facebook	Instagram	TV or Other Video Media	Newspaper or Other Print Media	Other Social Media
City of Beaumont						
City of Los Angeles	✓				✓	
City of Oceanside						
City of San Clemente	✓					
City of San Diego	✓	✓				✓
City of Thousand Oaks	✓					
Elsinore Valley Municipal Water District	✓	✓	✓		✓	✓
Encina Wastewater Authority	✓					
Goleta Sanitary District	✓	✓				

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Inland Empire Utilities Agency	✓	✓				✓
Irvine Ranch Water District						
Las Virgenes Municipal Water District	✓		✓			
Los Angeles County Sanitation Districts	✓	✓	✓			✓
Moulton Niguel Water District	✓	✓	✓			✓
Ojai Valley Sanitary District	✓					
Orange County Sanitation District	✓					
San Bernardino Municipal Water Department	✓					
San Elijo Joint Powers Authority						✓
Santa Margarita Water District	✓	✓	✓	✓		
Ventura Water	✓	✓	✓	✓		✓

10. COVID-19 Pandemic Challenges

The COVID-19 pandemic has affected several industries including public water systems and POTWs. This section provides more information on how CWSC member agencies have managed to undertake the challenges from the COVID-19 pandemic in managing their biosolids. Although some agencies have had no significant impact in hauling their biosolids, some agencies hired additional haulers, while others relied on their drying bed capacity. See Table 16 for each agencies' complete response on how they managed their biosolids during the pandemic.

Table 16 – Challenges in Hauling of Biosolids

Name of Agency	Was the POTW challenged to secure transportation/hauling during the pandemic, if so, how was this mitigated?	What haulers are the POTW using?
City of Beaumont	No	Burrtec
City of Los Angeles	No	Contractors
City of Oceanside	Not during COVID. In 2022 and 2023, no land to go to.	Denali Water Solutions
City of San Bernardino Municipal Water Department	Yes, hired a second hauler.	Synagro contracted hauler, SB Industrial Vacuum Services
City of Riverside	<p>Due to contracted hauler inefficiencies at the start of 2022, initially RWQCP was forced to store processed biosolids onsite within previously (not operational) onsite drying beds.</p> <p>Mitigation measures taken and explored included: implementing best practices for biosolids onsite storage; reopening RWQCP SCAQMD facility permit to include previously permitted drying beds; curtailing biosolids production as much as possible by operational changes and going from Class B to Sub-Class B; contacting and processing approval applications for landfill disposal at CA and AZ landfills; contacting and attempting to contract non-traditional biosolid trucking companies for hauling to landfills and/or other</p>	<p>The biosolids contract came up for renewal during the period of interruption. Currently, RWQCP is contracted with Synagro for biosolids hauling and processing. All biosolids are currently going to composting, but RWQCP is maintaining Class B requirements and certifications if land application in AZ and CA is necessary.</p>

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Name of Agency	Was the POTW challenged to secure transportation/hauling during the pandemic, if so, how was this mitigated?	What haulers are the POTW using?
	facilities. Ultimately RWQCP contracted with an additional biosolids hauler for disposal at composting facilities located in both CA and AZ.	
City of San Clemente	No	GIC Transport
City of Thousand Oaks	No	None, although we have a contract with Synagro to compost our biosolids. Synagro is responsible for the hauling of our biosolids and contracts with GIC trucking who hauls our biosolids to one of two composting facilities operated by Synagro.
Elsinore Valley Municipal Water District	Less trailers were available than typical. Used on-site drying beds to handle any issues with biosolids haulers, but challenges were minimal.	GIC Transport, contracted with Synagro/Nursery Products
Encina Wastewater Authority	No	Denali Water Solutions
Goleta Sanitary District	No	We were using a hauling company during the pandemic, but since the owner retired, we are now are using Synagro.
Inland Empire Utilities Agency	Yes, contracted haulers struggled to retain and attract drivers to meet demand	RP-1: Denali Water Solutions, Viramontes Express
		RP-5: Denali Water Solutions
Irvine Ranch Water District	No	We only use Synagro for hauling and offsite management currently.
Las Virgenes Municipal Water District	No	New Earth USA
Los Angeles County Sanitation Districts (A.K. Warren Water Resource Facility)	Yes, extra haulers were brought in on short term basis.	Our contracts are mainly combined transport and management, so Holloway, Synagro, and Denali arranged the vast majority of our hauling on their own. TCI, Viramontes Express, and SB Industrial also did some hauling.
Los Angeles County Sanitation Districts (Valencia Water Reclamation Plant)	No	
Los Angeles County Sanitation Districts (Palmdale Water Reclamation Plant)	Yes, relied on drying bed capacity.	
Los Angeles County Sanitation Districts (Lancaster Water Reclamation Plant)	Yes, relied on drying bed capacity.	
Moulton Nigel Water District	No	Holloway Environmental in Lost Hills, CA for biosolids. We also have Athens Services contracted for grit & screenings, they transport to Simi Valley Landfill.

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Name of Agency	Was the POTW challenged to secure transportation/hauling during the pandemic, if so, how was this mitigated?	What haulers are the POTW using?
Ojai Valley Sanitary District	We experienced no hauling issues during the pandemic. The nature of the biosolids truck loading process maintained separation of our staff and the truck drivers.	We have for many years contracted with Liberty Composting (now Synagro) to pick up and haul our biosolids to their composting facility when we are not composting on-site. Synagro coordinates the hauling services and the actual hauler companies change periodically.
Orange County Sanitation District	Multiple haulers/failsafe management options	Denali Water Solutions, Tule Ranch, GIC Transport, BTI, and Holloway Environmental
San Elijo Joint Powers Authority	No	Currently using Denali through June 30, 2024 but bidding next 3-years contract now.
Santa Margarita Water District	No	GIC Transport
Ventura Water	No	Synagro, not sure if they sub out the hauling.

11. Future Capital Projects

CWSC member agencies were also asked about potential biosolids capital projects. Seven (7) agencies currently have no future capital projects at this time but some agencies are in the process of expanding or constructing additional equipment for better handling of solids (See Table 17 for future capital projects for biosolids)

Table 17 – Future Capital Projects

Name of Agency	What are some potential biosolids capital projects that the POTW is pursuing?
Camarillo Sanitary District	Unknown
City of Beaumont	None
City of Los Angeles	None at this time
City of Oceanside	Food & HSLW receiving; +1 Digester; + 1 Centrifuge, CHP
City of Riverside	RWQCP has entered into public-private partnership (P3) for the handling of the biosolids facility and operation. In addition to the biosolids handling element, additional projects include the rehabilitation of a decommissioned digester for future organic/food waste processing and biogas to pipeline injection. Biosolids drying and/or pyrolysis maybe be explored in the future. Partial funding has been secured through CalRecycle grants by both RWQCP and the P3 contractor.
City of San Bernardino Municipal Water Department	Digester replacement; emergency on-site storage; update to strategic plan to explore opportunities to enhance resiliency.
City of San Clemente	Possibly a regional sludge drying system at SMWD Chiquita Plant
City of San Diego	Unknown
City of Thousand Oaks	Currently, we are composting our biosolids off-site with an agreement with Synagro. Nothing besides composting is being considered at this time. We do intend to install a Dissolved Air Flotation (DAF) tank at the screw press to further treat the filtrate that comes from the screw press to further flocculate and “clean up” the filtrate. This will lead to a very slight increase in biosolids, but this project does not classify as a capital project.
Elsinore Valley Municipal Water District	None
Encina Wastewater Authority	Sludge dryer upgrades
Goleta Sanitary District	Over the next two years we are putting in a new digester, sludge drier, centrifuge, and pelletizer.

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Name of Agency	What are some potential biosolids capital projects that the POTW is pursuing?
Inland Empire Utilities Agency	<p>RP-1 Solids Thickening Building & Acid Phase Digesters: SCOPE includes: Construction of the RP-1 Solids Thickening Building to contain 8 rotary drum thickeners, (primary and WAS thickening), 3 acid phase digesters, 1 digester gas boiler, and 9 heat exchangers RP-5 Biosolids Facility: SCOPE includes: Rotary drum thickening building for primary and secondary solids thickening; acid phase digesters, methane digesters, and digested sludge storage; centrifuge dewatering building with biosolids cake storage, and centrate equalization; digester gas treatment, digester gas flaring, and emissions control systems for the existing engines; and food waste receiving station. Upon completion and start-up of the RP-5 Biosolids Facility, RP-2 will be decommissioned.</p>
Irvine Ranch Water District	None, we have the set up to receive food/FOG waste, but have yet to utilize it
Las Virgenes Municipal Water District	There are several planned capital projects that address redundancy and maintenance concerns (i.e. secondary biogas flare for redundancy, equipment replacement, etc.). No new processes or expansion of the composting facility are planned.
Los Angeles County Sanitation Districts (A.K. Warren Water Resource Facility)	N/A
Los Angeles County Sanitation Districts (Valencia Water Reclamation Plant)	N/A
Los Angeles County Sanitation Districts (Palmdale Water Reclamation Plant)	Potential change from centrifuges to filter presses
Los Angeles County Sanitation Districts (Lancaster Water Reclamation Plant)	Installing additional filter press trains and decommissioning remaining centrifuges.
Moulton Niguel Water District	We are in pre-construction on an overhaul of our solids handling facilities. This includes handling equipment, the loadout facility, boilers, flares, and other equipment. This does not include any codigestion plans due to space constraints. / Rehabbing and redesigning solids handling facilities in 2024-2026.
Ojai Valley Sanitary District	No current or planned biosolids capital projects at this time
Orange County Sanitation District	SWCO
San Elijo Joint Powers Authority	Installing centrifuges
Santa Margarita Water District	Additional digester, screw press
Ventura Water	We currently have a CIP for cogen upgrades but to funding issues, it has been postponed.

12. PFAS in Biosolids

Per- and polyfluoroalkyl substances (PFAS) are a group of manufactured chemicals that have been used in industry and consumer products since the 1940s because of their useful properties. There are thousands of different PFAS compounds, some of which have been more widely used and studied than others. PFAS are considered long lasting or “forever” chemicals because they tend to break down very slowly over time. The U.S EPA along with the State Water Resources Control Board continues to take important steps to research, restrict, and remediate PFAS in the environment, including in biosolids.

The U.S EPA is committed to follow the agency’s PFAS Strategic Roadmap, which includes conducting a risk assessment for two PFAS, perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS), in biosolids. The assessment is currently underway and is expected to be published by the end of 2024. This is a necessary first step to determine whether regulation of PFAS in biosolids is warranted under the Clean Water Act. After the risk assessment is complete, EPA will engage in risk management to decide how to manage PFOA and PFOS in biosolids if necessary. EPA will use the results of the risk assessment in addition to consideration of economic factors and technological feasibility in the risk management process.

PFAS topics were not included in CWSC’s Biosolids Trend Survey questionnaire at the time of data collection, but additional PFAS questions will be added on the next trend survey to identify ways to better and more cooperatively mitigate the risks associated with PFAS in biosolids.

Appendix A: Agency Information and Budget

Appendix A: Agency Information and Budget

Agency Info		Wet Tons & Quality			Dedicated Staff		Agency Budget	
Name of Agency	Name of respondent, position title, and email	Year	Wet Tons	Biosolids Quality	Dedicated biosolids staff? If yes, how many?	Name, title, email, and phone number for your agency's designated biosolids contact	2021	2022
Camarillo Sanitary District	Darrin Carter: Water Reclamation Superintendent, dcarter@cityofcamarillo.org	2021	718.00 wet tons	Class B	No	Darrin Carter: dcarter@cityofcamarillo.org, 805-383-5665 Eric Maple: emaple@cityofcamarillo.org, 805-353-5673	\$125,000	\$175,000
		2022	591.00 wet tons	Class B				
		2023	875.00 wet tons	Class B				
City of Beaumont	Thaxton Van Belle: Director of Water Reclamation, tvanbelle@beaumontca.gov	2021	7600.00 wet tons	Sub Class B	Unknown	Unknown	Unknown	Unknown
		2022	7700.00 wet tons	Sub Class B				
		2023	9500.00 wet tons	Sub Class B				
City of Los Angeles	Neel Patel: Env. Inspector neel.patel@lacity.org	2021 (Hyperion)	123843.56 wet tons	Class A-EQ	Yes, 3	Alan Tran: Env. Engineer, alan.tran@lacity.org, 310-648-5211	\$17,822,000	\$17,822,000
		2021 (Hyperion)	61994.19 wet tons	Class A				
		2021 (Hyperion)	35218.54 wet tons	Class B				
		2021 (Terminal Island)	342.85 wet tons	Class B				
		2021 (Terminal Island)	11920.00 wet tons	Class A				
		2022 (Hyperion)	171048.29 wet tons	Class A-EQ				
		2022 (Hyperion)	59063.54 wet tons	Class A				
		2022 (Hyperion)	21469.94 wet tons	Class B				
		2022 (Terminal Island)	14579.00 wet tons	Class A				
		2023 (Projected) (Hyperion)	178000.00 wet tons	Class A-EQ				

Appendix A: Agency Information and Budget

Agency Info		Wet Tons & Quality			Dedicated Staff		Agency Budget	
Name of Agency	Name of respondent, position title, and email	Year	Wet Tons	Biosolids Quality	Dedicated biosolids staff? If yes, how many?	Name, title, email, and phone number for your agency's designated biosolids contact	2021	2022
		2023 (Projected) (Hyperion)	58000.00 wet tons	Class A				
		2023 (Projected) (Hyperion)	25000.00 wet tons	Class B				
		2023 (Projected) (Terminal Island)	12000.00 wet tons	Class A				
City of Oceanside	Rudy Guzman: Water Utilities Division Manager, rguzman@oceansideca.org	2021 (San Luis Rey WRF)	10420.00 wet tons	Class B	No	Ian McDermott: Wastewater Operations Supervisor, imcdermott@oceansideca.org, 760-435-3629	\$640,000	\$1,000,000
		2021 (La Salina WWTP)	3674.00 wet tons	Class B				
		2022 (San Luis Rey WRF)	10730.00 wet tons	Class B				
		2022 (La Salina WWTP)	3770.00 wet tons	Class B				
		2023 (Projected) (San Luis Rey WRF)	10500.00 wet tons	Class B				
		2023 (Projected) (La Salina WWTP)	4000.00 wet tons	Class B				
City of Riverside	Bobby Gustafson: Wastewater Resource Analyst, bgustafson@riversideca.gov	2021	39135.85 wet tons	Class B & Sub Class B	No	Robert Eland: Manager, reland@riversideca.gov, 951-351-6095 Bryan Padilla: Supervisor, bpadilla@riversideca.gov, 951-351-6205	\$1,653,631.53	\$4,324,191.87
		2022	39713.48 wet tons	Class B & Sub Class B				
		2023 (Projected)	40000.00 wet tons	Sub Class B				
City of San Clemente	Allen Balsler: Chief Plant Operator, balsera@sanclemente.org	2021	5377.00 wet tons	Sub Class B	No	Dustin Burnside: Utilities Manager, burnside@sanclemente.org, 949-361-8355	\$326,000	\$495,000
		2022	5087.00 wet tons	Sub Class B				
		2023	4842.00 wet tons	Sub Class B				
City of San Diego		2021	128734.00 wet tons	Class B	Yes, 42	Richard Pitchford: Plant Superintendent,	\$6,200,000	\$6,600,000

Appendix A: Agency Information and Budget

Agency Info		Wet Tons & Quality			Dedicated Staff		Agency Budget	
Name of Agency	Name of respondent, position title, and email	Year	Wet Tons	Biosolids Quality	Dedicated biosolids staff? If yes, how many?	Name, title, email, and phone number for your agency's designated biosolids contact	2021	2022
	Richard Pitchford: Plant Superintendent, rpitchford@sandiego.gov	2022	121563.00 wet tons	Class B		rpitchford@sandiego.gov, 858-614-5509		
		2023 (Projected)	119580.00 wet tons	Class B				
City of Thousand Oaks	Santos Marquez: Laboratory Supervisor, smarquez@toaks.org	2021	9200.00 wet tons	Class B	No	Santos Marquez: Laboratory Supervisor, smarquez@toaks.org, 805-491-8123	\$800,000	\$800,000
		2022	7800.00 wet tons	Class B				
		2023 (Projected)	9000.00 wet tons	Class B				
Elsinore Valley Municipal Water District	Lenai Hunter: Sr. Regulatory Compliance Analyst, lhunter@evmwd.net	2021	17916.56 wet tons	Sub Class B	Yes, 1	Lenai Hunter: Sr. Regulatory Compliance Analyst, lhunter@evmwd.net, 3146 mgutierrez@evmd.net	\$950,000	\$970,000
		2022	19224.88 wet tons	Sub Class B				
		2023 (Projected)	20039 wet tons	Sub Class B				
Encina Wastewater Authority	Joe Cipollini: Resource Recovery Manager, jcipollini@encinajpa.com	2021	5851.00 wet tons	Class A-EQ	Yes, 5 operators plus additional support staff as needed	Joe Cipollini, Resource Recovery Manager jcipollini@encinajpa.com, 760-268-8831 Alicia Appel: Director of Environmental Compliance, aapel@encinajpa.com, 760-268-8881	\$1,650,750	\$1,724,150
		2021	4930.00 wet tons	Class B				
		2022	6684.00 wet tons	Class A-EQ				
		2022	3626.00 wet tons	Class B				
		2023 (Projected)	6671.00 wet tons	Class A-EQ				
		2023 (Projected)	3680.00 wet tons	Class B				
Goleta Sanitary District	Lena Cox: Environmental Services Manager, lcox@goletasanitary.org	2021	8740.45 wet tons	Class B	No	Pete Regis: Operations Manager, pregis@goletasanitary.org, 805-967-4519 Steve Wagner: General Manager, swagner@goletasanitary.org, 805-967-4519	\$650,000	\$654,810
		2022	7296.15 wet tons	Class B				
		2023	3275.71 wet tons	Class B				
Inland Empire Utilities Agency		2021 (RP1)	42143.00 wet tons	Class B	Yes, 3	Jeff Ziegenbein: Acting Director of Operations and	\$4,600,000	\$4,700,000

Appendix A: Agency Information and Budget

Agency Info		Wet Tons & Quality			Dedicated Staff		Agency Budget	
Name of Agency	Name of respondent, position title, and email	Year	Wet Tons	Biosolids Quality	Dedicated biosolids staff? If yes, how many?	Name, title, email, and phone number for your agency's designated biosolids contact	2021	2022
	Arin Bougha: Acting Manager of IERCA, aboughan@ieua.org	2021 (RP2)	26439.00 wet tons	Class B		Maintenance, jziegenb@ieua.org, 909-993-1981 Noah Ball: Operations Supervisor, nball@ieua.org, 909-993-1766 Ivan Cheng: Operations Supervisor, icheng@ieua.org, 909-247-8194		
		2022 (RP1)	42215.00 wet tons	Class B				
		2022 (RP2)	29193.00 wet tons	Class B				
		2023 (Projected) (RP1)	42200.00 wet tons	Class B				
		2023 (Projected) (RP2)	29000.00 wet tons	Class B				
Irvine Ranch Water District	Michelle Breiter: Sr. Regulatory Compliance Admin, breiter@irwd.com	2021	12582.00 wet tons	Class B	Yes, 1	Michelle Breiter: Sr. Reg Compliance Admin, breiter@irwd.com, 949-453-5576	Unknown	Unknown
		2022	18805.00 wet tons	Class B				
		2023 (Projected)	15730.00 wet tons	Class B				
Las Virgenes Municipal Water District	Kourtney Haynie: Management Analyst, khaynie@lvmwd.com	2021	3613.00 wet tons	Class A	Yes, 7	Erik Rabaja: Compost Operations Supervisor, erabaja@lvmwd.com, 818-251-2311	\$6,247,738	\$8,085,745
		2022	2986.00 wet tons	Class A				
		2023 (Projected)	3000.00 wet tons	Class A				
Los Angeles County Sanitation Districts	Matt Hutton: Civil Engineer, matthewhutton@lacsds.org	2021 (A.K. Warren Water Resource Facility)	429848.00 wet tons	Class B	Yes, 4 staff.	Matt Bao: Supervising Engineer, Biosolids Management Group, mbao@lacsds.org, 562-908-4288, ext. 2824 Matt Hutton: Civil Engineer, Biosolids Management Group, matthewhutton@lacsds.org, 562-908-4288, ext. 2838	\$23,850,000	\$24,100,000
		2022 (A.K. Warren Water Resource Facility)	435121.00 wet tons	Class B				
		2023 (A.K. Warren Water Resource Facility)	422735.00 wet tons	Class B				
		2021 (Valencia Water Reclamation Plant)	28922.00 wet tons	Class B				

Appendix A: Agency Information and Budget

Agency Info		Wet Tons & Quality			Dedicated Staff		Agency Budget	
Name of Agency	Name of respondent, position title, and email	Year	Wet Tons	Biosolids Quality	Dedicated biosolids staff? If yes, how many?	Name, title, email, and phone number for your agency's designated biosolids contact	2021	2022
		2022 (Valencia Water Reclamation Plant)	29092.00 wet tons	Class B				
		2023 (Valencia Water Reclamation Plant)	27449.00 wet tons	Class B				
		2021 (Palmdale Water Reclamation Plant)	9472.00 wet tons	Class B				
		2022 (Palmdale Water Reclamation Plant)	10916.00 wet tons	Class B				
		2023 (Palmdale Water Reclamation Plant)	9280.00 wet tons	Class B				
		2021 (Lancaster Water Reclamation Plant)	13861.00 wet tons	Class B				
		2022 (Lancaster Water Reclamation Plant)	13800.00 wet tons	Class B				
		2023 (Lancaster Water Reclamation Plant)	15236.00 wet tons	Class B				
Moulton Niguel Water District	Sara Boyer: Regulatory Compliance Coordinator, sboyer@mnwd.com	2021	1848.36 wet tons	Class B	No	N/A	\$130,000	\$250,000
		2022	2045.68 wet tons	Class B				
		2023 (Projected)	1900.00 wet tons	Class B				
Ojai Valley Sanitary District	Bradshaw Pruitt: Operations Manager, bradshaw.pruitt@ojaisan.org	2021	3265.00 wet tons	Class B	No	Bradshaw Pruitt: Operations Manager,	\$115,000.00	\$123,000.00
		2022	3595.00 wet tons	Class B				

Appendix A: Agency Information and Budget

Agency Info		Wet Tons & Quality			Dedicated Staff		Agency Budget	
Name of Agency	Name of respondent, position title, and email	Year	Wet Tons	Biosolids Quality	Dedicated biosolids staff? If yes, how many?	Name, title, email, and phone number for your agency's designated biosolids contact	2021	2022
		2023	3674.00 wet tons	Class B		bradshaw.pruitt@ojaisan.org, 805-646-5548		
Orange County Sanitation District	Matt Smith: Senior Regulatory Specialist, msmith@ocsan.gov	2021 (Plant No. 1)	138978.00 wet tons	Class B	Yes, 2	Matt Smith: Senior Regulatory Specialist, msmith@ocsan.gov, 714-593-7439	\$13,100,000	\$13,700,000
		2021 (Plant No. 2)	59371.00 wet tons	Class B				
		2022 (Plant No. 1)	125293.00 wet tons	Class B				
		2022 (Plant No. 2)	68490.00 wet tons	Class B				
		2023 (Projected) (Plant No. 1)	127714.00 wet tons	Class B				
		2023 (Projected) (Plant No. 2)	62458.00 wet tons	Class B				
San Bernardino Municipal Water Department	Marissa Flores-Acosta, Environmental Manager marissa.flores@sbmwd.org	2021	24482.69 wet tons	Class B	No	Marissa Flores-Acosta: Environmental Manager, marissa.flores@sbmwd.org, 909-453-6023 Joe Hanford: Water Reclamation Superintendent, joseph.hanford@sbmwd.org, 909-453-6223	\$2,495,100	\$2,957,000
		2022	22863.01 wet tons	Class B				
		2023	23431.96 wet tons	Class B				
San Elijo Joint Powers Authority	Christopher Trees: Director of Operations, treesc@sejpa.org	2021	4416.00 wet tons	Class B	No	Christopher Trees: Director of Operations, treesc@sejpa.org, 760-753-6203	\$205,000	\$209,000
		2022	4328.00 wet tons	Class B				
		2023	4262.00 wet tons	Class B				
Santa Margarita Water District	Ron Johnson: Treatment Manager, ronj@smwd.com	2021	9167.00 wet tons	Class B	No	Ron Johnson: Treatment Manager, ronj@smwd.com, 949-459-6678	\$500,000	\$591,000
		2022	7963.00 wet tons	Class B				
		2023	8661.44 wet tons	Class B				
Ventura Water		2021	9983.64 wet tons	Class B			\$650,000	\$650,000

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Agency Info		Wet Tons & Quality			Dedicated Staff		Agency Budget	
Name of Agency	Name of respondent, position title, and email	Year	Wet Tons	Biosolids Quality	Dedicated biosolids staff? If yes, how many?	Name, title, email, and phone number for your agency's designated biosolids contact	2021	2022
	Vince Ines: Wastewater Utility Supervisor, vines@cityofventura.ca.gov	2022	9839.15 wet tons	Class B	No, operators rotate	Vince Ines: Wastewater Utility Supervisor, vines@cityofventura.ca.gov, 805-677-4133		
		2023	9822.94 wet tons	Class B				

Appendix B: Facility with Dewatering Information per Agency

Appendix B: Facility with Dewatering Information per Agency

Name of Agency	Facility and Dewatering Information						
	Year	Facility Name(s)	Solids Digestion Technology	Biosolids Quality	% Solids	Dewatering Process	Dewatering Equipment Manufacturer(s)
Camarillo Sanitary District	2021	Camarillo Water Reclamation Plant	Mesophilic anaerobic digestion (single stage)	Class B	79%	Filter Press	Alfa Laval
	2022	Camarillo Water Reclamation Plant	Mesophilic anaerobic digestion (single stage)	Class B	84%	Filter Press	Alfa Laval
	2023	Camarillo Water Reclamation Plant	Mesophilic anaerobic digestion (single stage)	Class B	33%	Drying Bed	Unknown
City of Beaumont	2021	WWTP 1	None	Sub Class B	18%	Centrifuge	GEA
	2022	WWTP 1	None	Sub Class B	17%	Centrifuge	GEA
	2023	WWTP 1	None	Sub Class B	17%	Centrifuge	GEA
City of Los Angeles	2021	Hyperion	Thermophilic anaerobic digestion	Class A-EQ	26%	Centrifuge	Alfa Laval
	2021	Hyperion	Thermophilic anaerobic digestion	Class A	26%	Centrifuge	Alfa Laval
	2021	Hyperion	Thermophilic anaerobic digestion	Class B	26%	Centrifuge	Alfa Laval
	2021	Terminal Island	Thermophilic anaerobic digestion	Class B	26%	Centrifuge	Alfa Laval
	2021	Terminal Island	Thermophilic anaerobic digestion	Class A	1%	Deep Well Injection	N/A
	2022	Hyperion	Thermophilic anaerobic digestion	Class A-EQ	24%	Centrifuge	Alfa Laval
	2022	Hyperion	Thermophilic anaerobic digestion	Class A	24%	Centrifuge	Alfa Laval

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Name of Agency	Facility and Dewatering Information						
	Year	Facility Name(s)	Solids Digestion Technology	Biosolids Quality	% Solids	Dewatering Process	Dewatering Equipment Manufacturer(s)
	2022	Hyperion	Thermophilic anaerobic digestion	Class B	24%	Centrifuge	Alfa Laval
	2022	Terminal Island	Thermophilic anaerobic digestion	Class A	7%	Deep Well Injection	N/A
	2023 (Projected)	Hyperion	Thermophilic anaerobic digestion	Class A-EQ	23%	Centrifuge	Alfa Laval
	2023 (Projected)	Hyperion	Thermophilic anaerobic digestion	Class A	23%	Centrifuge	Alfa Laval
	2023 (Projected)	Hyperion	Thermophilic anaerobic digestion	Class B	23%	Centrifuge	Alfa Laval
	2023 (Projected)	Terminal Island	Thermophilic anaerobic digestion	Class A	7%	Deep Well Injection	N/A
City of Oceanside	2021	San Luis Rey WRF	Mesophilic anaerobic digestion (staged)	Class B	22%	Centrifuge	Alfa Laval
	2021	La Salina WWTP	Mesophilic anaerobic digestion (staged)	Class B	16%	Belt Press	Alfa Laval
	2022	San Luis Rey WRF	Mesophilic anaerobic digestion (staged)	Class B	22%	Centrifuge	Alfa Laval
	2022	La Salina WWTP	Mesophilic anaerobic digestion (staged)	Class B	17%	Belt Press	Alfa Laval
	2023 (Projected)	San Luis Rey WRF	Mesophilic anaerobic digestion (staged)	Class B	22%	Centrifuge	Alfa Laval
	2023 (Projected)	La Salina WWTP	Mesophilic anaerobic digestion (staged)	Class B	17%	Belt Press	Alfa Laval
City of Riverside	2021	Regional Water Quality Control Plant	Mesophilic anaerobic digestion (single stage)	Class B & Sub Class B	16%	Centrifuge, Screw, Belt Press	Centrisys, Huber
	2022	Regional Water Quality Control Plant	Mesophilic anaerobic digestion (single stage)	Class B & Sub Class B	16%	Centrifuge, Screw, Belt Press	Centrisys, Huber

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Name of Agency	Facility and Dewatering Information						
	Year	Facility Name(s)	Solids Digestion Technology	Biosolids Quality	% Solids	Dewatering Process	Dewatering Equipment Manufacturer(s)
	2023 (Projected)	Regional Water Quality Control Plant	Mesophilic anaerobic digestion (single stage)	Sub Class B	16%	Centrifuge, Screw, Belt Press	Centrisys, Huber
City of San Clemente	2021	City of San Clemente	Mesophilic anaerobic digestion (acid/gas phased)	Sub Class B	26%	Centrifuge	Alfa Laval
	2022	City of San Clemente	Mesophilic anaerobic digestion (acid/gas phased)	Sub Class B	26%	Centrifuge	Alfa Laval
	2023	City of San Clemente	Mesophilic anaerobic digestion (acid/gas phased)	Sub Class B	26%	Centrifuge	Alfa Laval
City of San Diego	2021	Metro Biosolids Center (MBC)	Mesophilic anaerobic digestion (acid/gas phased)	Class B	28%	Centrifuge	Alfa Laval
	2022	Metro Biosolids Center (MBC)	Mesophilic anaerobic digestion (acid/gas phased)	Class B	28%	Centrifuge	Alfa Laval
	2023 (Projected)	Metro Biosolids Center (MBC)	Mesophilic anaerobic digestion (acid/gas phased)	Class B	29%	Centrifuge	Alfa Laval
City of Thousand Oaks	2021	Hill Canyon Treatment Plant	Mesophilic anaerobic digestion (single stage)	Class B	38.3% (annual avg)	Screw Press	FKC
	2022	Hill Canyon Treatment Plant	Mesophilic anaerobic digestion (single stage)	Class B	50.0% (annual avg)	Screw Press	FKC
	2023 (Projected)	Hill Canyon Treatment Plant	Mesophilic anaerobic digestion (single stage)	Class B	45% (est. annual avg)	Screw Press	FKC
Elsinore Valley Municipal Water District	2021	Regional Water Reclamation Facility	None	Sub Class B	17%	Filter Press	Alfa Laval
	2022	Regional Water Reclamation Facility	None	Sub Class B	14%	Filter Press	Alfa Laval

Appendix B: Facility with Dewatering Information per Agency

Name of Agency	Facility and Dewatering Information						
	Year	Facility Name(s)	Solids Digestion Technology	Biosolids Quality	% Solids	Dewatering Process	Dewatering Equipment Manufacturer(s)
	2023 (Projected)	Regional Water Reclamation Facility	None	Sub Class B	13%	Filter Press	Alfa Laval
Encina Wastewater Authority	2021	Encina WPCF	Mesophilic anaerobic digestion (single stage)	Class A-EQ	Unknown	Indirect Dryer	Andritz
	2021	Encina WPCF	Mesophilic anaerobic digestion (single stage)	Class B	Unknown	Centrifuge	Alfa Laval
	2022	Encina WPCF	Mesophilic anaerobic digestion (single stage)	Class A-EQ	Unknown	Indirect Dryer	Andritz
	2022	Encina WPCF	Mesophilic anaerobic digestion (single stage)	Class B	Unknown	Centrifuge	Alfa Laval
	2023 (Projected)	Encina WPCF	Mesophilic anaerobic digestion (single stage)	Class A-EQ	Unknown	Indirect Dryer	Andritz
	2023 (Projected)	Encina WPCF	Mesophilic anaerobic digestion (single stage)	Class B	Unknown	Centrifuge	Alfa Laval
Goleta Sanitary District	2021	Goleta Sanitary District	Mesophilic anaerobic digestion (single stage)	Class B	18%	Screw Press, Centrifuge	Huber, Andritz
	2022	Goleta Sanitary District	Mesophilic anaerobic digestion (single stage)	Class B	15%	Screw Press, Centrifuge	Huber, Andritz
	2023	Goleta Sanitary District	Mesophilic anaerobic digestion (single stage)	Class B	14%	Screw Press	Huber
Inland Empire Utilities Agency	2021	RP1	Thermophilic anaerobic digestion (single stage)	Class B	23%	Centrifuge	Alfa Laval
	2021	RP2	Mesophilic anaerobic digestion (single stage)	Class B	15%	Filter Press	Alfa Laval
	2022	RP1	Thermophilic anaerobic digestion Thermophilic anaerobic digestion (single stage)	Class B	23%	Centrifuge	Alfa Laval

Appendix B: Facility with Dewatering Information per Agency

Name of Agency	Facility and Dewatering Information						
	Year	Facility Name(s)	Solids Digestion Technology	Biosolids Quality	% Solids	Dewatering Process	Dewatering Equipment Manufacturer(s)
	2022	RP2	Mesophilic anaerobic digestion (single stage)	Class B	15%	Filter Press	Alfa Laval
	2023 (Projected)	RP1	Thermophilic anaerobic digestion (single stage)	Class B	23%	Centrifuge	Alfa Laval
	2023 (Projected)	RP2	Mesophilic anaerobic digestion (single stage)	Class B	15%	Filter Press	Alfa Laval
Irvine Ranch Water District	2021	Michelson Water Recycling Plant	Thermophilic anaerobic digestion	Class B	20%	Centrifuge	GEA
	2022	Michelson Water Recycling Plant	Thermophilic anaerobic digestion	Class B	20%	Centrifuge	GEA
	2023 (Projected)	Michelson Water Recycling Plant	Thermophilic anaerobic digestion	Class B	19%	Centrifuge	GEA
Las Virgenes Municipal Water District	2021	Rancho Las Virgenes	Mesophilic anaerobic digestion (single stage)	Class A	23%	Centrifuge	Alfa Laval
	2022	Rancho Las Virgenes	Mesophilic anaerobic digestion (single stage)	Class A	23%	Centrifuge	Alfa Laval
	2023 (Projected)	Rancho Las Virgenes	Mesophilic anaerobic digestion (single stage)	Class A	23%	Centrifuge	Alfa Laval
Los Angeles County Sanitation Districts	2021	A.K. Warren Water Resource Facility	Mesophilic anaerobic digestion (single stage)	Class B	29%	Centrifuge	Alfa Laval
	2022	A.K. Warren Water Resource Facility	Mesophilic anaerobic digestion (single stage)	Class B	28%	Centrifuge	Alfa Laval
	2023	A.K. Warren Water Resource Facility	Mesophilic anaerobic digestion (single stage)	Class B	29%	Centrifuge	Alfa Laval
	2021	Valencia Water Reclamation Plant	Mesophilic anaerobic digestion (single stage)	Class B	19%	Filter Press	Rittershaus & Blecher
	2022	Valencia Water Reclamation Plant	Mesophilic anaerobic digestion (single stage)	Class B	19%	Filter Press	Rittershaus & Blecher

Appendix B: Facility with Dewatering Information per Agency

Name of Agency	Facility and Dewatering Information						
	Year	Facility Name(s)	Solids Digestion Technology	Biosolids Quality	% Solids	Dewatering Process	Dewatering Equipment Manufacturer(s)
	2023	Valencia Water Reclamation Plant	Mesophilic anaerobic digestion (single stage)	Class B	19%	Filter Press	Rittershaus & Blecher
	2021	Palmdale Water Reclamation Plant	Mesophilic anaerobic digestion (single stage)	Class B	19%	Centrifuge	Humboldt
	2022	Palmdale Water Reclamation Plant	Mesophilic anaerobic digestion (single stage)	Class B	19%	Centrifuge	Humboldt
	2023	Palmdale Water Reclamation Plant	Mesophilic anaerobic digestion (single stage)	Class B	21%	Centrifuge	Humboldt
	2021	Lancaster Water Reclamation Plant	Mesophilic anaerobic digestion (single stage)	Class B	16%	Centrifuge	Humboldt
	2022	Lancaster Water Reclamation Plant	Mesophilic anaerobic digestion (single stage)	Class B	16%	Low speed Humboldt centrifuge began being replaced with PWTech filter presses July 2022. Parallel operation in 2022.	Humboldt, PWTech
	2023	Lancaster Water Reclamation Plant	Mesophilic anaerobic digestion (single stage)	Class B	17%	Filter Press	PWTech
Moulton Niguel Water District	2021	Plant 3A	Mesophilic anaerobic digestion (single stage)	Class B	21.00%	Centrifuge	Andritz
	2022	Plant 3A	Mesophilic anaerobic digestion (staged)	Class B	21%	Centrifuge	Andritz
	2023 (Projected)	Plant 3A	Mesophilic anaerobic digestion (staged)	Class B	21%	Centrifuge	Andritz
Ojai Valley Sanitary District	2021	WWTP	N/A	Class B	14%	Belt Press	Alfa Laval
	2022	WWTP	N/A	Class B	14%	Belt Press	Alfa Laval

Appendix B: Facility with Dewatering Information per Agency

Name of Agency	Facility and Dewatering Information						
	Year	Facility Name(s)	Solids Digestion Technology	Biosolids Quality	% Solids	Dewatering Process	Dewatering Equipment Manufacturer(s)
	2023	WWTP	N/A	Class B	14%	Belt Press	Alfa Laval
Orange County Sanitation District	2021	Plant No. 1	Mesophilic anaerobic digestion (single stage)	Class B	24%	Centrifuge	GEA Westfalia
	2021	Plant No. 2	Mesophilic anaerobic digestion (single stage)	Class B	27%	Centrifuge	Alfa Laval
	2022	Plant No. 1	Mesophilic anaerobic digestion (single stage)	Class B	25%	Centrifuge	GEA Westfalia
	2022	Plant No. 2	Mesophilic anaerobic digestion (single stage)	Class B	28%	Centrifuge	Alfa Laval
	2023 (Projected)	Plant No. 1	Mesophilic anaerobic digestion (single stage)	Class B	24%	Centrifuge	GEA Westfalia
	2023 (Projected)	Plant No. 2	Mesophilic anaerobic digestion (single stage)	Class B	27%	Centrifuge	Alfa Laval
San Bernardino Municipal Water Department	2021	Water Reclamation Plant	Mesophilic anaerobic digestion (single stage)	Class B	24%	Centrifuge, Filter Press	Centrisys, Alfa Laval
	2022	Water Reclamation Plant	Mesophilic anaerobic digestion (single stage)	Class B	22%	Centrifuge, Filter Press	Centrisys, Alfa Laval
	2023	Water Reclamation Plant	Mesophilic anaerobic digestion (single stage)	Class B	22%	Centrifuge, Filter Press	Centrisys, Alfa Laval
San Elijo Joint Powers Authority	2021	San Elijo Water Campus	Mesophilic anaerobic digestion (single stage)	Class B	20%	Filter Press	Alfa Laval
	2022	San Elijo Water Campus	Mesophilic anaerobic digestion (single stage)	Class B	20%	Filter Press	Alfa Laval
	2023	San Elijo Water Campus	Mesophilic anaerobic digestion (single stage)	Class B	20%	Filter Press	Alfa Laval
Santa Margarita Water District	2023	Chiquita Water Reclamation Plant	Mesophilic anaerobic digestion (staged)	Class B	16%	Screw Press	Huber

Appendix B: Facility with Dewatering Information per Agency

Name of Agency	Facility and Dewatering Information						
	Year	Facility Name(s)	Solids Digestion Technology	Biosolids Quality	% Solids	Dewatering Process	Dewatering Equipment Manufacturer(s)
	2022	Chiquita Water Reclamation Plant	Mesophilic anaerobic digestion (staged)	Class B	16%	Screw Press	Huber
	2021	Chiquita Water Reclamation Plant	Mesophilic anaerobic digestion (staged)	Class B	16%	Screw Press	Huber
Ventura Water	2021	Ventura Water Reclamation Facility	Mesophilic anaerobic digestion (single stage)	Class B	20-22%	Centrifuge	Centrisys
	2022	Ventura Water Reclamation Facility	Mesophilic anaerobic digestion (single stage)	Class B	20-22%	Centrifuge	Centrisys
	2023	Ventura Water Reclamation Facility	Mesophilic anaerobic digestion (single stage)	Class B	20-22%	Centrifuge	Centrisys

Appendix C: Management Options and Costs per Agency

Appendix C: Management Options and Costs per Agency

Management Options and Costs per Agency								
Name of Agency	Year Sent	Reuse Option	Wet Tons	Contractors per end use option:	Location/Destination (county and state)	Miles traveled	Tipping fee	Transportation
Camarillo Sanitary District	2021	Composting	718.00	McCarthy Family Farms dba Liberty Composting Inc.	Kern County, CA	148.0	\$51.00 per ton	\$0 per ton
	2022	Composting	591.00	McCarthy Family Farms dba Liberty Composting Inc.	Kern County, CA	148.0	\$51.00 per ton	\$0 per ton
	2023	Composting	875.00	McCarthy Family Farms dba Liberty Composting Inc.	Kern County, CA	148.0	\$51.00 per ton	\$0 per ton
City of Beaumont	2021	Alternative Daily Cover (ADC)	7600.00	Burrtec	Imperial County, CA	85.0	\$0 per ton	\$60.08 per ton
	2022	Alternative Daily Cover (ADC)	7700.00	Burrtec	Imperial County, CA	85.0	\$0 per ton	\$61.88 per ton
	2023	Alternative Daily Cover (ADC)	9500.00	Burrtec	Imperial County, CA	85.0	\$0 per ton	\$63.74 per ton
City of Los Angeles	2021 (Hyperion)	Composting	46986.81	Denali Water Solutions, Nursery Products	Kern County, CA, San Bernardino County, CA	118, 148	\$0 per ton	\$60.15 per ton, \$59.19 per ton
		Land Application	133662.89	Responsible Biosolids Management (RBM), Denali Water Solutions	Kern County, CA, Riverside County, CA, Arizona	118, 250, 270	\$0 per ton	\$45.65 per ton, \$53.84 per ton
		Deep Well Injection	40179.38	Denali, GeoEnvironment	Los Angeles County, CA	23	\$7.30 per ton	\$62.83 per ton

Appendix C: Management Options and Costs per Agency

Management Options and Costs per Agency								
Name of Agency	Year Sent	Reuse Option	Wet Tons	Contractors per end use option:	Location/Destination (county and state)	Miles traveled	Tipping fee	Transportation
		Dried Pellets	227.21	Denali Water Solutions	San Bernardino County, CA	71	\$0 per ton	\$81.16 per ton
	2021 (Terminal Island)	Composting	301.54	Denali Water Solutions	Los Angeles County, CA	0, onsite	\$0 per ton	\$51.19 per ton
		Land Application	41.31	Denali Water Solutions	Arizona	270	\$0 per ton	\$51.19 per ton
		Deep Well Injection	11920.00	GeoEnvironment	Los Angeles County, CA	0	\$0 per ton	\$62.83 per ton
	2022 (Hyperion)	Composting	35856.30	Denali Water Solutions, Nursery Products	Kern County, CA, San Bernardino County, CA	118, 148	\$0 per ton	\$60.15 per ton, \$59.15 per ton
		Land Application	181436.32	Responsible Biosolids Management (RBM), Denali Water Solutions	Kern County, CA, Riverside County, CA, Arizona	118, 250, 270	\$0 per ton	\$45.65 per ton, \$57.21 per ton
		Deep Well Injection	33913.48	Denali, GeoEnvironment	Los Angeles County, CA	23	\$7.42 per ton	\$65.97 per ton
		Dried Pellets	375.67	Denali Water Solutions	San Bernardino County, CA	71	\$0 per ton	\$81.16 per ton
	2022 (Terminal Island)	Deep Well Injection	14579.00	GeoEnvironment	Los Angeles County, CA	0	\$0 per ton	\$65.97 per ton
	2023 Projected (Hyperion)	Composting	33158.64	Denali Water Solutions, Nursery Products	Kern County, CA, San Bernardino County, CA	118, 148	\$0 per ton	\$62.79 per ton, \$72.50 per ton
Land Application		191041.61	Responsible Biosolids Management (RBM), Denali Water Solutions	Kern County, CA, Riverside County, CA, Arizona	118, 250, 270	\$0 per ton	\$45.65 per ton, \$59.98 per ton	

Appendix C: Management Options and Costs per Agency

Management Options and Costs per Agency								
Name of Agency	Year Sent	Reuse Option	Wet Tons	Contractors per end use option:	Location/Destination (county and state)	Miles traveled	Tipping fee	Transportation
		Deep Well Injection	36763.64	Denali, GeoEnvironment	Los Angeles County, CA	23	\$8.14 per ton	\$69.27 per ton
City of Oceanside	2021 (San Luis Rey WRF)	Land Application	10420.00	Denali Water Solutions	Yuma County, AZ	215	\$0 per ton	\$42.70 per ton plus fuel surcharge
	2021 (La Salina WWTP)	Land Application	3674.00	Denali Water Solutions	Yuma County, AZ	215	\$0 per ton	\$42.70 per ton plus fuel surcharge
	2022 (San Luis Rey WRF)	Land Application	10730.00	Denali Water Solutions	Yuma County, AZ	215	\$0 per ton	\$60.00 per ton plus fuel surcharge
	2022 (La Salina WWTP)	Land Application	3770.00	Denali Water Solutions	Yuma County, AZ	215	\$0 per ton	\$60.00 per ton plus fuel surcharge
	2023 (San Luis Rey WRF)	Land Application	10500.00	Denali Water Solutions	Yuma County, AZ	215	\$0 per ton	\$60.00 per ton plus fuel surcharge
	2023 (La Salina WWTP)	Land Application	4000.00	Denali Water Solutions & Ecology Auto Parts	Yuma County, AZ	215	\$0 per ton	\$60.00 per ton plus fuel surcharge
City of Riverside	2021	Composting	24879.70	Denali Water Solutions	San Bernardino County, CA	90	\$0 per ton	\$60.00 per ton
		Land Application	14256.10	Denali Water Solutions	Yuma County, AZ	220	\$0 per ton	\$42.00 per ton
	2022	Composting	36651.11	Denali Water Solutions	San Bernardino County, CA	90	\$0 per ton	\$60.00 per ton
		Land Application	3062.37	Denali Water Solutions	Yuma County, AZ	220	\$0 per ton	\$42.00 per ton
	2023	Composting	40000.00	Synagro	San Bernardino County, CA	90	\$0 per ton	\$72.00 per ton
City of San Bernardino	2021	Composting	24482.69	Synagro	San Bernardino County, CA	68.9	\$47.07 per ton	\$0 per ton

Appendix C: Management Options and Costs per Agency

Management Options and Costs per Agency								
Name of Agency	Year Sent	Reuse Option	Wet Tons	Contractors per end use option:	Location/Destination (county and state)	Miles traveled	Tipping fee	Transportation
Municipal Water Department	2022	Composting	14283.29	Synagro	San Bernardino County, CA	68.9	\$48.92 per ton	\$0 per ton
		Composting	3562.75	Synagro	La Paz County, AZ	217	\$52.71 per ton	\$0 per ton
		Composting	4619.97	Synagro	Kern County, AZ	211	\$52.71 per ton	\$0 per ton
		Land application	397.00	SB Industrial Vacuum Services	Yuma County, AZ	233	\$72.00 per ton or \$500 minimum fee	\$1750 (flat fee)
	2023	Composting	19584.77	Synagro	San Bernardino County, CA	68.9	\$54.10 per ton	\$0
		Composting	175.07	Synagro	Kern County, AZ	211	\$52.71 per ton	\$0
		Composting	964.14	SB Industrial Vacuum Services	Yuma County, AZ	233	\$72.00 per ton or \$600 minimum fee	\$1750 (flat fee)
		Composting	2707.98	SB Industrial Vacuum Services	Imperial County, CA	113	\$75.00 per ton	\$0
City of San Clemente	2021	Composting	5377.00	Synagro	San Bernardino County, CA	135	\$27.00 per ton	\$22.00 per ton
	2022	Composting	5087.00	Synagro	San Bernardino County, CA	135	\$64.50 per ton	Based on fuel price
	2023	Composting	4842.00	Synagro	San Bernardino County, CA	135	\$64.50 per ton	Based on fuel price
City of San Diego	2021	Land Application	128734.00	Republic	Yuma County, AZ	200	\$58.00 per ton	unknown
	2022	Land Application	121563.00	Republic	Yuma County, AZ	200	\$63.00 per ton	unknown
	2023	Land Application	119580.00	Republic	Yuma County, AZ	200	\$67.00 per ton	unknown

Appendix C: Management Options and Costs per Agency

Management Options and Costs per Agency								
Name of Agency	Year Sent	Reuse Option	Wet Tons	Contractors per end use option:	Location/Destination (county and state)	Miles traveled	Tipping fee	Transportation
City of Thousand Oaks	2021	Composting	9200.00	Synagro	1.) South Kern Composting - Kern County, CA or 2.) Nursery Products - San Bernardino County, CA	120, 140	\$64.53 per ton to have the biosolids hauled and composted	N/A
	2022	Composting	7800.00	Synagro	1.) South Kern Composting - Kern County, CA or 2.) Nursery Products - San Bernardino County, CA	120, 140	\$64.53 per ton to have the biosolids hauled and composted	N/A
	2023	Composting	9000.00	Synagro	1.) South Kern Composting - Kern County, CA or 2.) Nursery Products - San Bernardino County, CA	120, 140	\$64.53 per ton to have the biosolids hauled and composted	N/A
Elsinore Valley Municipal Water District	2021	Composting	17916.56	Synagro	La Paz County, AZ	237	\$0 per ton	\$49.00 per ton
	2022	Composting	19224.88	Synagro	La Paz County, AZ	237	\$0 per ton	\$51.49 per ton
	2023 (Projected)	Composting	20039.00	Synagro	La Paz County, AZ	237	\$0 per ton	\$53.00 per ton
Encina Water Authority	2021	Land Application	9803.00	Denali Water Solutions	Yuma County, AZ and Riverside County, CA	240	\$51.50 per ton	included in fee
		Fertilizer	978.00	various	CA, AZ	various	N/A	N/A
	2022	Land Application	9153.00	Denali Water Solutions	Yuma County, AZ and Riverside County, CA	240	\$51.50 per ton	included in fee
		Fertilizer	1157.00	various	CA, AZ	various	N/A	N/A

Appendix C: Management Options and Costs per Agency

Management Options and Costs per Agency								
Name of Agency	Year Sent	Reuse Option	Wet Tons	Contractors per end use option:	Location/Destination (county and state)	Miles traveled	Tipping fee	Transportation
	2023	Land Application	8931.00	Denali Water Solutions	Yuma County, AZ and Riverside County, CA	240	\$77.00 per ton	included in fee
		Fertilizer	1106.00	various	CA, AZ	various	N/A	N/A
Goleta Sanitary District	2021	Composting	8740.45	Synagro	Kern County, AZ	191	\$30.00 per ton	-
	2022	Composting	7296.15	Synagro	Kern County, AZ	191	\$30.00 per ton	-
	2023	Composting	3275.71	Synagro	Kern County, AZ	191	\$83.95 per ton	additional fuel surcharge
Inland Empire Utilities Agency	2021 (RP1)	Composting	42143.00	Inland Empire Regional Composting Authority	San Bernardino County, CA	9.2	\$58.00 per ton	\$6.48 per ton
	2021 (RP2)	Composting	26439.00	Inland Empire Regional Composting Authority	San Bernardino County, CA	19.9	\$58.00 per ton	7.95 per ton
	2022 (RP1)	Composting	42215.00	Inland Empire Regional Composting Authority	San Bernardino County, CA	9.2	\$59.00 per ton	\$6.48 per ton
	2022 (RP2)	Composting	29193.00	Inland Empire Regional Composting Authority	San Bernardino County, CA	19.9	\$59.00 per ton	7.95 per ton
	2023 (RP1)	Composting	42200.00	Inland Empire Regional Composting Authority	San Bernardino County, CA	9.2	\$62.50 per ton	\$6.48 per ton
	2023 (RP2)	Composting	29000.00	Inland Empire Regional Composting Authority	San Bernardino County, CA	19.9	\$62.50 per ton	7.95 per ton

Appendix C: Management Options and Costs per Agency

Management Options and Costs per Agency								
Name of Agency	Year Sent	Reuse Option	Wet Tons	Contractors per end use option:	Location/Destination (county and state)	Miles traveled	Tipping fee	Transportation
Irvine Ranch Water District	2021	Composting	12582.00	South Kern Compost Manufacturing Facility	Kern County, CA	157	\$0 per ton	\$69.97 per ton
	2022	Composting	18805.00	South Kern Compost Manufacturing Facility	Kern County, CA	157	\$0 per ton	\$85.13 per ton
	2023	Composting	15730.00	South Kern Compost Manufacturing Facility	Kern County, CA	157	\$0 per ton	\$86.74 per ton
Las Virgenes Municipal Water District	2021	Composting	3613.00	none	Los Angeles County and Ventura County	0	N/A	\$0 per ton
	2022	Composting	2968.00	Synagro	Kern County, CA	160	N/A	\$70 per ton
	2023	Composting	3000.00	Synagro	Kern County, CA	160	N/A	\$70 per ton
Los Angeles County Sanitation Districts	2021 (A.K. Warren Water Resource Facility)	Biochar	3589.00	Rialto Bioenergy Facility	San Bernardino County, CA	67	\$77.69 per ton	tipping fee includes transport
		Composting	234623.00	Synagro (SKIC), Synagro (Nursery Products), Inland Empire Regional Composting Authority, Tulare Lake Compost	Kern County, CA, San Bernardino County, CA, San Bernardino County, CA, Kings County, CA	126, 111, 58, 189	\$48.53 per ton, \$48.42 per ton, \$75.40 per ton (excludes transport), N/A	tipping fee includes transport
		Land Application	26596.00	Denali Water Solutions	Yuma County, AZ	276	\$57.28 per ton	tipping fee includes transport

Appendix C: Management Options and Costs per Agency

Management Options and Costs per Agency								
Name of Agency	Year Sent	Reuse Option	Wet Tons	Contractors per end use option:	Location/Destination (county and state)	Miles traveled	Tipping fee	Transportation
		Landfill	165067.00	Holloway, Burrtec	Kern County, CA, Imperial County, CA	168, 176	\$49.64 per ton, \$65.54 per ton	tipping fee includes transport
	2021 (Valencia Water Reclamation Plant)	Landfill	28922.00	Holloway	Kern County, CA	115	\$41.74 per ton	tipping fee includes transport
	2021 (Palmdale Water Reclamation Plant)	Composting	9472.00	Synagro (SKIC), Synagro (Nursery Products)	Kern County, CA, San Bernardino County, CA	101, 60	\$49.43 per ton, \$47.32 per ton	tipping fee includes transport
	2021 (Lancaster Water Reclamation Plant)	Composting	13861.00	Synagro (SKIC), Synagro (Nursery Products)	Kern County, CA, San Bernardino County, CA	86, 54	\$49.36 per ton, \$48.48	tipping fee includes transport
		Biochar	2158.00	Rialto Bioenergy Facility	San Bernardino County, CA	67	\$79.90 per ton	tipping fee includes transport
	2022 (A.K. Warren Water Resource Facility)	Composting	202932.00	Synagro (SKIC), Synagro (Nursery Products), Liberty, Synagro (AZ soils) Inland Empire Regional Composting Authority, Tulare Lake Compost	Kern County, CA, San Bernardino County, CA, Kern County, CA, Vicksburg County, AZ, San Bernardino County, CA, Kings County, CA	126, 111, 169, 283, 58, 189	\$52.85 per ton, \$52.69 per ton, \$53.73 per ton, \$86.99 per ton, \$78.54 per ton (excludes transport), N/A	tipping fee includes transport

Appendix C: Management Options and Costs per Agency

Management Options and Costs per Agency								
Name of Agency	Year Sent	Reuse Option	Wet Tons	Contractors per end use option:	Location/Destination (county and state)	Miles traveled	Tipping fee	Transportation
		Land Application	17928.00	Denali Water Solutions	Yuma County, AZ	276	\$65.37 per ton	tipping fee includes transport
		Landfill	212733.00	Holloway, Burrtec	Kern County, CA, Imperial County, CA	168, 176	\$54.26 per ton, \$66.06 per ton	tipping fee includes transport
	2022 (Valencia Water Reclamation Plant)	Landfill	29092.00	Holloway	Kern County, CA	115	\$45.30 per ton	tipping fee includes transport
	2022 (Palmdale Water Reclamation Plant)	Composting	10916.00	Synagro (SKIC), Synagro (Nursery Products), Synagro (Liberty)	Kern County, CA, San Bernardino County, CA, Kern County, CA	101, 60, 176	\$49.43 per ton, \$47.32 per ton	tipping fee includes transport
	2022 (Lancaster Water Reclamation Plant)	Composting	13800.00	Synagro (SKIC), Synagro (Nursery Products), Synagro (Liberty)	Kern County, CA, San Bernardino County, CA, Kern County, CA	101, 60, 196	\$51.39 per ton, \$51.05 per ton, \$51.37 per ton	tipping fee includes transport
	2023 (A.K. Warren Water Resource Facility)	Composting	242852.00	Synagro (SKIC), Synagro (Nursery Products), Liberty, Synagro (AZ soils) Inland Empire Regional Composting Authority, Tulare Lake Compost	Kern County, CA, San Bernardino County, CA, Kern County, CA, Vicksburg County, AZ, San Bernardino County, CA, Kings County, CA	126, 111, 169, 283, 58, 189	\$62.70 per ton, \$60.92 per ton, \$63.39 per ton, \$91.65 per ton, \$84.66 per ton, N/A	tipping fee includes transport

Appendix C: Management Options and Costs per Agency

Management Options and Costs per Agency								
Name of Agency	Year Sent	Reuse Option	Wet Tons	Contractors per end use option:	Location/Destination (county and state)	Miles traveled	Tipping fee	Transportation
		Land Application	19855.00	Denali Water Solutions	Yuma County, AZ	276	\$63.89 per ton	tipping fee includes transport
		Landfill	165028.00	Holloway, Burrtec	Kern County, CA, Imperial County, CA	168, 176	\$58.81 per ton, \$73.54 per ton	tipping fee includes transport
	2023 (Palmdale Water Reclamation Plant)	Composting	9280.00	Synagro (Nursery Products), Synagro (Liberty), Holloway	San Bernardino County, CA, Kern County, CA, Kern County, CA	60, 176, 160	\$53.87 per ton, \$54.27 per ton, \$55.99 per ton	tipping fee includes transport
	2023 (Lancaster Water Reclamation Plant)	Composting	15236.00	Synagro (SKIC), Synagro (Nursery Products), Synagro (Liberty)	Kern County, CA, San Bernardino County, CA, Kern County, CA	101, 60, 196	\$54.15 per ton, \$54.51 per ton	tipping fee includes transport
Moulton Nigel Water District	2021	Landfill	1848.36	Holloway Environmental	Kern County, CA	97	\$0 per ton	\$72.45 per ton
	2022	Landfill	2045.68	Holloway Environmental	Kern County, CA	97	\$0 per ton	\$72.45 per ton
	2023 (estimated)	Landfill	1900.00	Holloway Environmental	Kern County, CA	97	\$0 per ton	\$72.45 per ton
Ojai Valley Sanitary District	2021	Composting	1600.00	Synagro	Kern County, CA	169	\$0 per ton	\$49.94 per ton
		Composting	1665.00	None	Onsite	0	internal costs not tracked	internal costs not tracked
	2022	Composting	2076.00	Synagro	Kern County, CA	169	\$0 per ton	\$53.16 per ton
		Composting	1519.00	None	Onsite	0	internal costs not tracked	internal costs not tracked
	2023	Composting	3674.00	Synagro	Kern County, CA	169	\$0 per ton	\$53.16 per ton

Appendix C: Management Options and Costs per Agency

Management Options and Costs per Agency								
Name of Agency	Year Sent	Reuse Option	Wet Tons	Contractors per end use option:	Location/Destination (county and state)	Miles traveled	Tipping fee	Transportation
Orange County Sanitation District	2021 (Plant No. 1)	Composting	10466.00	Synagro - Nursery Products	Helendale, CA	134	\$28.20 per ton	\$26.09 per ton
		Composting	22984.00	Synagro - South Kern Compost	Taft, CA	147	\$40.64 per ton	\$23.82 per ton
		Composting	32904.00	Synagro	Lost Hills, CA	193	\$26.29 per ton	\$28.50 per ton
		Composting	824.00	Inland Empire Regional Composting, Denali	Rancho Cucamonga, CA	48	\$59.00 per ton	\$15.86 per ton
		Composting	736.00	Synagro - Arizona Soils	Salome, AZ	263	\$24.50	\$39.96
		Land Application	26212.00	Tule Ranch/Ag Tech	Yuma County, AZ	265	\$60.79 per ton	\$60.79 per ton
		Landfill	849.00	La Paz Landfill, AZ	Parker, AZ	259	N/A digester cleaning project subcontractor	N/A digester cleaning project subcontractor
		Dried Pellets	2570.00	Rialto Bioenergy Facility	Rialto, CA	60	\$94.23 per ton	\$94.23 per ton
	2021 (Plant No. 2)	Composting	2635.00	Synagro	Lost Hills, CA	193	\$26.29 per ton	\$28.50 per ton
		Composting	9521.00	Inland Empire Regional Composting, Denali	Rancho Cucamonga, CA	48	\$59.00 per ton	\$15.86 per ton
		Land Application	45614.00	Tule Ranch/Ag Tech	Yuma County, AZ	265	\$60.79 per ton	\$60.79 per ton
		Landfill	1205.00	Holloway Landfill	Holloway, CA	134	N/A digester cleaning project subcontractor	N/A digester cleaning project subcontractor

Appendix C: Management Options and Costs per Agency

Management Options and Costs per Agency								
Name of Agency	Year Sent	Reuse Option	Wet Tons	Contractors per end use option:	Location/Destination (county and state)	Miles traveled	Tipping fee	Transportation
		Landfill	49.00	La Paz Landfill, AZ	Parker, AZ	259	N/A digester cleaning project subcontractor	N/A digester cleaning project subcontractor
		Dried Pellets	100.00	Rialto Bioenergy Facility	Rialto, CA	60	\$94.23 per ton	\$94.23 per ton
	2022 (Plant No. 1)	Composting	22017.00	Synagro - Nursery Products	Helendale, CA	134	\$31.31 per ton	\$28.96 per ton
		Composting	18160.00	Synagro - South Kern Compost	Taft, CA	147	\$41.55 per ton	\$24.36 per ton
		Composting	40440.00	Liberty Composting	Lost Hills, CA	193	\$30.79 per ton	\$30.50 per ton
		Composting	2452.00	Synagro - Arizona Soils	Salome, AZ	263	\$27.20 per ton	\$44.37
		Composting	173.00	Inland Empire Regional Composting, Denali	Rancho Cucamonga, CA	48	\$60.00 per ton	\$18.23 per ton
		Land Application	25825.00	Tule Ranch/Ag Tech	Yuma County, AZ	265	\$68.15 per ton	\$68.15 per ton
		Landfill	119.00	Holloway Landfill	Holloway, CA	134	\$78.00 per ton	\$78.00 per ton
		Landfill	246.00	Prime Deshecha Landfill	San Juan Capistrano, CA	33	\$60.00 per ton	\$18.23 per ton
		Dried Pellets	15387.00	Rialto Bioenergy Facility	Rialto, CA	60	\$94.23 per ton	\$94.23 per ton
		Composting	14097.00	Synagro	Lost Hills, CA	193	\$30.79 per ton	\$30.50 per ton
	2022 (Plant No. 2)	Composting	8366.00	Inland Empire Regional Composting, Denali	Rancho Cucamonga, CA	48	\$60.00 per ton	\$18.23 per ton
		Land Application	42700.00	Tule Ranch/Ag Tech	Yuma County, AZ	265	\$68.15 per ton	\$68.15 per ton

Appendix C: Management Options and Costs per Agency

Management Options and Costs per Agency								
Name of Agency	Year Sent	Reuse Option	Wet Tons	Contractors per end use option:	Location/Destination (county and state)	Miles traveled	Tipping fee	Transportation
		Dried Pellets	146.00	Rialto Bioenergy Facility	Rialto, CA	60	\$94.23 per ton	\$94.23 per ton
	2023 (Plant No. 1)	Composting	16246.26	Synagro - Nursery Products	Helendale, CA	134	\$34.03 per ton	\$36.66 per ton
		Composting	31055.04	Synagro - South Kern Compost	Taft, CA	147	\$41.46 per ton	\$35.37 per ton
		Composting	40807.90	Synagro	Lost Hills, CA	193	\$35.86 per ton	\$42.82 per ton
		Composting	4244.81	Synagro - Arizona Soils	Salome, AZ	263	\$21.97 per ton	\$54.31 per ton
		Composting	1443.48	Inland Empire Regional Composting, Denali	Rancho Cucamonga, CA	48	\$62.00 per ton	\$20.20 per ton
		Land Application	33830.84	Tule Ranch/Ag Tech	Yuma County, AZ	265	\$8.50 per ton	\$67.31 per ton
	2023 (Plant No. 2)	Composting	9339.79	Synagro	Lost Hills, CA	193	\$35.86 per ton	\$42.82 per ton
		Composting	7701.05	Inland Empire Regional Composting, Denali	Rancho Cucamonga, CA	48	\$62.00 per ton	\$20.20 per ton
		Land Application	47879.58	Tule Ranch/Ag Tech	Yuma County, AZ	265	\$8.50 per ton	\$67.31 per ton
San Elijo Joint Powers Authority	2021	Land Application	4416.00	Denali Water Solutions	Yuma County, AZ	300	\$51.50 per ton	included in tipping fee
	2022	Land Application	4328.00	Denali Water Solutions	Yuma County, AZ	300	\$51.50 per ton	included in tipping fee
	2023	Land Application	4262.00	Denali Water Solutions	Yuma County, AZ	300	\$51.50 per ton	included in tipping fee
Santa Margarita Water District	2021	Composting	6090.00	GIC, Synagro	AZ	220	\$27.00 per ton	\$25.00 per ton
		Land Application	3077.00	Agency	Orange County, CA	5	\$41.09 per ton	\$0 per ton
	2022	Composting	5502.00	GIC, Synagro	AZ	220	\$0 per ton	\$74.23 per ton

Appendix C: Management Options and Costs per Agency

Management Options and Costs per Agency								
Name of Agency	Year Sent	Reuse Option	Wet Tons	Contractors per end use option:	Location/Destination (county and state)	Miles traveled	Tipping fee	Transportation
	2023	Land Application	2461.00	Agency	Orange County, CA	5	\$43.04 per ton	\$0 per ton
		Composting	6745.00	GIC, Synagro	AZ	220	\$0 per ton	\$74.23 per ton plus fuel surcharge
		Land Application	1916.00	Agency	Orange County, CA	5	\$46.31 per ton	\$0 per ton
Ventura Water (Ventura Water Reclamation Facility)	2021	Composting	9983.64	Synagro	Kern County, CA	163.9	\$0 per ton	\$57.76 per ton
	2022	Composting	9839.15	Synagro	Kern County, CA	163.9	\$0 per ton	\$62.67 per ton
	2023	Composting	9822.94	Synagro	Kern County, CA	163.9	\$0 per ton	\$61.50 per ton

Appendix D: Agency Challenges and Priorities

Appendix D: Agency Challenges and Priorities

Name of Agency	Rate each challenge based on the priority to your agency								Planning		
	Rising Cost	Public Perception/Relations	Finding Low Cost Local Biosolids Management Options	Securing Long Term Biosolids Management Options	Space for Drying Operations	Regulatory Restrictions & New Regulations	Wet Weather Impeding Drying Operations	Other	Does your agency have biosolids master plan?	Does your agency foresee any changes in your operations based on emerging organic (food waste) diversion regulations (i.e., AB 1826 or SB 1383)?	How is your agency preparing for Chemicals of Emerging Concerns (PFAS, PFOS, Fire Retardants, Microplastics) in biosolids?
Camarillo Sanitary District	High	High	High	High	High	High	High	Meeting future regulatory requirements	No	Unknown	Unknown
City of Beaumont	High	Low	High	Medium	Not a priority	High	Medium	No	No	Completing contracts for accepting additional organic waste	N/A
City of Los Angeles	High	High	High	High	Not a priority	High	Not a priority	No	No	Yes, there will be changes due to emerging organic diversion regulations	We are participating in PFAS studies and will follow EPA guidelines and regulations for PFAS
City of Oceanside	High	High	Medium	Medium	Not a priority	High	Not a priority	Co-digestion and mono-digestion of food waste/high strength liquid waste.	No	Installing an organics co-digestion receiving facility	Not really talking about it now

Appendix D: Agency Challenges and Priorities

Name of Agency	Rate each challenge based on the priority to your agency								Planning		
	Rising Cost	Public Perception/Relations	Finding Low Cost Local Biosolids Management Options	Securing Long Term Biosolids Management Options	Space for Drying Operations	Regulatory Restrictions & New Regulations	Wet Weather Impeding Drying Operations	Other	Does your agency have biosolids master plan?	Does your agency foresee any changes in your operations based on emerging organic (food waste) diversion regulations (i.e., AB 1826 or SB 1383)?	How is your agency preparing for Chemicals of Emerging Concerns (PFAS, PFOS, Fire Retardants, Microplastics) in biosolids?
City of Riverside	High	Low	Medium	High	Not a priority	High	Not a priority	Unknown	Yes	Installing additional digestion capacity to facilitate co-digestion	Following regulatory sampling requirements as directed. Wait and see strategy.
City of San Clemente	High	Low	High	medium	Not a priority	Medium	Not a priority	Unknown	No	No	Closely following regulations and will adjust as needed
City of San Diego	Medium	High	Medium	High	Low	High	Not a priority	Not in regards to biosolids	Unknown	Installing an organics co-digestion receiving facility	Conversion from Class B to Class A biosolids
City of Thousand Oaks	High	Low	High	High	Not a priority	Low	High	No	No	No	Constituents of concern are monitored as directed by the State. The constituents listed are best treated at the source of the pollution.

Appendix D: Agency Challenges and Priorities

Name of Agency	Rate each challenge based on the priority to your agency								Planning		
	Rising Cost	Public Perception/Relations	Finding Low Cost Local Biosolids Management Options	Securing Long Term Biosolids Management Options	Space for Drying Operations	Regulatory Restrictions & New Regulations	Wet Weather Impeding Drying Operations	Other	Does your agency have biosolids master plan?	Does your agency foresee any changes in your operations based on emerging organic (food waste) diversion regulations (i.e., AB 1826 or SB 1383)?	How is your agency preparing for Chemicals of Emerging Concerns (PFAS, PFOS, Fire Retardants, Microplastics) in biosolids?
Elsinore Valley Municipal Water District	High	Medium	High	Medium	Low	Medium	Low	No	No	None - facility does not have primary treatment or digesters	Biosolids produced are Sub-Class B. EVMWD is following the regulations, but does not plan on changing current biosolids processes at this time.
Encina Wastewater Authority	Medium	Low	Low	Medium	Low	High	Not a priority	No	Yes	Unknown at this time. There is currently no major local demand for organic digestion	Our Source Control Program has updated our inventory to ensure we include potential PFAS generators.
Goleta Sanitary District	High	Medium	Medium	High	Low	High	Low	No	Yes	Difficulty to secure organic feedstock for co-digestion	Considering participation in a regional facility

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	Rising Cost	Public Perception/Relations	Finding Low Cost Local Biosolids Management Options	Securing Long Term Biosolids Management Options	Space for Drying Operations	Regulatory Restrictions & New Regulations	Wet Weather Impeding Drying Operations	Other	Does your agency have biosolids master plan?	Does your agency foresee any changes in your operations based on emerging organic (food waste) diversion regulations (i.e., AB 1826 or SB 1383)?	How is your agency preparing for Chemicals of Emerging Concerns (PFAS, PFOS, Fire Retardants, Microplastics) in biosolids?
Inland Empire Utilities Agency	Medium	Medium	Low	Low	Medium	High	Low	We are in active construction for a 22.5 MGD facility including all new solids handling. Additionally, a 44 MGD facility is in active design for a solid expansion.	Yes	Installing an organics co-digestion receiving facility	Staying abreast of proposed regulations to identify potential impacts to disposal requirements
Irvine Ranch Water District	High	Medium	High	Medium	Not a priority	Low	Medium	No	No	We currently have the facilities to accept organic waste but have yet to accept any	No biosolids specific preparations

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	Rising Cost	Public Perception/Relations	Finding Low Cost Local Biosolids Management Options	Securing Long Term Biosolids Management Options	Space for Drying Operations	Regulatory Restrictions & New Regulations	Wet Weather Impeding Drying Operations	Other	Does your agency have biosolids master plan?	Does your agency foresee any changes in your operations based on emerging organic (food waste) diversion regulations (i.e., AB 1826 or SB 1383)?	How is your agency preparing for Chemicals of Emerging Concerns (PFAS, PFOS, Fire Retardants, Microplastics) in biosolids?
Las Virgenes Municipal Water District	High	Medium	High	Low	Not a priority	High	Not a priority	Yes, we are concerned about hiring staff	Yes	No	The District is currently working with consultants on developing an Enhanced Source Control Plan to identify likely sources of CECs, including those listed, and possibly discuss solutions to reduce introduction of those CECs into the sanitary sewer, where they become part of the wastewater and biosolids treatment systems.

Appendix D: Agency Challenges and Priorities

Name of Agency	Rate each challenge based on the priority to your agency								Planning		
	Rising Cost	Public Perception/Relations	Finding Low Cost Local Biosolids Management Options	Securing Long Term Biosolids Management Options	Space for Drying Operations	Regulatory Restrictions & New Regulations	Wet Weather Impeding Drying Operations	Other	Does your agency have biosolids master plan?	Does your agency foresee any changes in your operations based on emerging organic (food waste) diversion regulations (i.e., AB 1826 or SB 1383)?	How is your agency preparing for Chemicals of Emerging Concerns (PFAS, PFOS, Fire Retardants, Microplastics) in biosolids?
Los Angeles County Sanitation Districts	High	Medium	High	High	Low	Medium	Low	Unknown	No, LACSD has a wastewater master plan but not a biosolids master plan	Meeting SB 1383 diversion goals reliably, within cost constraints will be challenging	Participating in research on CECs and engaging with associations and regulators
Moulton Niguel Water District	Medium	Medium	Medium	High	High	High	Medium	No	No	No	Continuously monitoring regulations and participating in regulatory advocacy for wastewater agencies
Ojai Valley Sanitary District	Low	Low	Medium	Medium	Not a priority	Medium	Medium	Time spent in composting operation	No	We do not accept food waste	CECs may prevent future on-site composting operation
Orange County Sanitation District	Low	Medium	High	High	Low	High	Low	Diversification of both hauling and beneficial reuse management options	Yes	Completing contracts for accepting additional organic waste	Conducted an industrial survey to SIUs and placed restrictions on one-time/SPDP

Appendix D: Agency Challenges and Priorities

Name of Agency	Rate each challenge based on the priority to your agency								Planning		
	Rising Cost	Public Perception/Relations	Finding Low Cost Local Biosolids Management Options	Securing Long Term Biosolids Management Options	Space for Drying Operations	Regulatory Restrictions & New Regulations	Wet Weather Impeding Drying Operations	Other	Does your agency have biosolids master plan?	Does your agency foresee any changes in your operations based on emerging organic (food waste) diversion regulations (i.e., AB 1826 or SB 1383)?	How is your agency preparing for Chemicals of Emerging Concerns (PFAS, PFOS, Fire Retardants, Microplastics) in biosolids?
											permits that may discharge PFAS
San Bernardino Municipal Water Department	High	Medium	High	High	Low	High	Low	CECs in biosolids; long-term outlook and reliability of current biosolid haulers	Yes	Difficulty to secure organic feedstock for co-digestion	Presently we are monitoring for CECs and the results will be incorporated in an update to the facility's Biosolids Master Plan.
San Elijo Joint Powers Authority	High	Medium	Low	High	Not a priority	High	Not a priority	New PFAS regulations restricting land application in Arizona	No	No	Waiting for draft regulation changes. Communicating with peers and regulators to understand potential impacts.
Santa Margarita Water District	High	Not a priority	High	Medium	Not a priority	Medium	Not a priority	No	No	Installing an organics co-digestion receiving facility	Investigate alternative disposal, eg. SCWO, incineration

Appendix D: Agency Challenges and Priorities

Name of Agency	Rate each challenge based on the priority to your agency								Planning		
	Rising Cost	Public Perception/Relations	Finding Low Cost Local Biosolids Management Options	Securing Long Term Biosolids Management Options	Space for Drying Operations	Regulatory Restrictions & New Regulations	Wet Weather Impeding Drying Operations	Other	Does your agency have biosolids master plan?	Does your agency foresee any changes in your operations based on emerging organic (food waste) diversion regulations (i.e., AB 1826 or SB 1383)?	How is your agency preparing for Chemicals of Emerging Concerns (PFAS, PFOS, Fire Retardants, Microplastics) in biosolids?
Ventura Water Reclamation Facility	Medium	Medium	Medium	Medium	Not a priority	High	Low	No	No	All listed will impact operations (installing an organics co-digestion receiving facility, completing contracts for accepting additional organic waste, difficulty to secure organic feedstock for co-digestion, installing additional digestion capacity to facilitate co-digestion)	Monitoring pending regulations and thinking of ways our agency will address regulations

Appendix E: Product Marketing

Appendix E: Product Marketing

Product Information										
Name of Agency	Compost	Fertilizer Pellets	Soil Blending	Renewable Energy Pellets	Biofuels	Biochar	Other	Does your agency directly market biosolids products?	If yes, where is the product marketed? (County, State)	If indirectly marketed, where?
Camarillo Sanitary District	Yes	No	No	No	No	No	No	No	N/A	
City of Beaumont	No	No	No	No	No	No	Yes (Alternative Daily Cover - ADC)	No	N/A	
City of Los Angeles	Yes	No	No	No	No	No	No	No	N/A	
City of Oceanside	No	No	No	No	No	No	No	N/A	N/A	
City of Riverside	Yes	No	No	No	No	No	No	No	N/A	
City of San Clemente	Yes	No	No	No	No	No	No	No	N/A	
City of San Diego	Yes	No	No	No	No	No	No	No	N/A	
City of Thousand Oaks	Yes	No	No	No	No	No	No	No, indirectly marketed	N/A	Throughout Arizona, California, Texas, and Florida mainly
Elsinore Valley Municipal Water District	Yes	No	No	No	No	No	No	No	N/A	
Encina Wastewater Authority	No	No	Yes	No	No	No	No	Yes	CA	
Goleta Sanitary District	Yes	No	No	No	No	No	No	No	N/A	

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Product Information										
Name of Agency	Compost	Fertilizer Pellets	Soil Blending	Renewable Energy Pellets	Biofuels	Biochar	Other	Does your agency directly market biosolids products?	If yes, where is the product marketed? (County, State)	If indirectly marketed, where?
Inland Empire Utilities Agency	Yes	No	No	No	No	No	No	Yes	San Bernardino, Riverside, Los Angeles, Orange, and San Diego Counties, CA	
Irvine Ranch Water District	Yes	No	No	No	No	No	No	No	N/A	
Las Virgenes Municipal Water District	Yes	No	No	No	No	No	No	Yes	Los Angeles County, CA	
Los Angeles County Sanitation Districts	Yes	No	No	No	No	No	No	No, indirectly marketed by various compost users	N/A	
Moulton Niguel Water District	No	No	No	No	No	No	No	N/A	N/A	
Ojai Valley Sanitary District	Yes	No	No	No	No	No	No	No, indirectly marketed	N/A	Kern County, CA
Orange County Sanitation District	Yes	Yes	No	No	No	No	Yes (Food, Fiber, Feed Crops)	No, contractor marketed	N/A	Compost: Kern, Kings, Riverside, San Bernardino, Los Angeles, Orange, Madera, Mariposa, Merced, Fresno, Tulare, Ventura, San Diego

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Product Information										
Name of Agency	Compost	Fertilizer Pellets	Soil Blending	Renewable Energy Pellets	Biofuels	Biochar	Other	Does your agency directly market biosolids products?	If yes, where is the product marketed? (County, State)	If indirectly marketed, where?
										Counties and Arizona; Pellets: Arizona and Riverside County, LA; Other: Arizona and California
San Bernadino Municipal Water Department	Yes	No	No	No	No	No	No	No	N/A	
San Elijo Joint Powers Authority	No	No	No	No	No	No	No	No	N/A	
Santa Margarita Water District	Yes	No	No	No	No	No	No	No	N/A	
Ventura Water	Yes	No	No	No	No	No	No	No	N/A	

Appendix F: Organics Diversion

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Organics Diversion						
Name of Agency	Any changes planned to this facility and/or solids digestion?	Is your agency co-digesting high strength organics with solids to enhance methane production?	Type of feedstock	What type of feedstock for future co-digestion?	Feedstock Contractor	Agency tipping fee (\$/tons) to receive feedstock
Camarillo Sanitary District	Continue as is	No	N/A	N/A	N/A	N/A
City of Beaumont	Consideration of further drying processes	No	N/A	N/A	N/A	N/A
City of Los Angeles (Hyperion)	Continue as is	No	N/A	N/A	N/A	N/A
City of Los Angeles (Terminal Island)	Continue as is	No	N/A	N/A	N/A	N/A
City of Oceanside (San Luis Rey WRF)	Add one centrifuge	In the planning stage	None	Food waste and HSLW	Food waste - Waste Management, HSLW - Unknown	Not known
City of Oceanside (La Salina WWTP)	Continue as is	No	None	N/A	N/A	N/A
City of Riverside	Rehabilitation of 5th digester to accommodate increased food waste	Yes	Food waste, ADM	Food waste, ADM	Burrtec, SMC	Currently experimental, tipping fee study completed in DRAFT
City of San Clemente	Continue as is	No	N/A	N/A	N/A	N/A
City of San Diego	Continue as is	No	N/A	N/A	N/A	N/A
City of Thousand Oaks	Continue as is	Yes	FOG	FOG	Grease hauling companies	10 cents per gallon

Appendix F: Organics Diversion

Organics Diversion						
Name of Agency	Any changes planned to this facility and/or solids digestion?	Is your agency co-digesting high strength organics with solids to enhance methane production?	Type of feedstock	What type of feedstock for future co-digestion?	Feedstock Contractor	Agency tipping fee (\$/tons) to receive feedstock
Elsinore Valley Municipal Water District	Currently under construction to expand facility from 8 MGD to 12 MGD	No	N/A	N/A	N/A	N/A
Encina Water Authority	Continue as is	Yes	FOG, brewery waste	FOG, brewery waste	Liquid Environmental Solution, Stone Brewing	\$0.06/gallon screened FOG, \$0/10/gallon raw FOG, \$0.015/gallon brewery waste
Goleta Sanitary District	Yes - over next two years, they are putting in a new digester, sludge driver, centrifuge, and dry pelletizer	No	N/A	N/A	N/A	N/A
Inland Empire Utilities Agency (RP1)	Continue as is	No	N/A	N/A	N/A	N/A
Inland Empire Utilities Agency (RP2)	Yes - active construction to transition to centrifuges	No	N/A	N/A	N/A	N/A
Irvine Ranch Water District	Continue as is	No	None	Food waste	None yet	N/A
Las Virgenes Municipal Water District	Continue as is	No	N/A	N/A	N/A	N/A
Los Angeles County Sanitation Districts (A.K. Warren Water Resource Facility)	Continue as is	Yes	Food waste	Food waste	Multiple	\$27/ton in 2021, \$29/ton in 2022 and 2023
Los Angeles County Sanitation Districts (Valencia Water Reclamation Plant)	Continue as is	No	N/A	N/A	N/A	N/A

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Organics Diversion						
Name of Agency	Any changes planned to this facility and/or solids digestion?	Is your agency co-digesting high strength organics with solids to enhance methane production?	Type of feedstock	What type of feedstock for future co-digestion?	Feedstock Contractor	Agency tipping fee (\$/tons) to receive feedstock
Los Angeles County Sanitation Districts (Palmdale Water Reclamation Plant)	Yes - will send biosolids to new, larger dryer pad for extended drying	No	N/A	N/A	N/A	N/A
Los Angeles County Sanitation Districts (Lancaster Water Reclamation Plant)	Yes - will send biosolids to new, larger dryer pad for extended drying	No	N/A	N/A	N/A	N/A
Moulton Nigel Water District	Yes - MNWD will be overhauling all solids handling facilities at Plant 3A. Design has been completed.	No	N/A	N/A	N/A	N/A
Ojai Valley Sanitary District	Continue as is	No	None	Horse bedding for summer onsite composting	Local horse ranches	N/A
Orange County Sanitation District (Plant No. 1)	Continue as is	No	N/A	N/A	N/A	N/A
Orange County Sanitation District (Plant No. 2)	SWCO pilot testing	No	N/A	N/A	N/A	N/A
San Bernardino Municipal Water Department	Continue as is	No	N/A	N/A	N/A	N/A
San Elijo Joint Powers Authority	Planning to replace 30+ year old BFPs (belt filter presses) with centrifuges	No	N/A	N/A	N/A	N/A
Santa Margarita Water District	Continue as is	No	N/A	N/A	N/A	N/A
Ventura Water	Continue as is	No	N/A	N/A	N/A	N/A

Appendix G: Social Media

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Social Media			
Name of Agency	Does your agency have an overall outreach program?	Which forms of social media does your agency utilize for biosolids outreach/education?	If your agency does not use social media, how do you publicize your biosolids program?
Camarillo Sanitary District	No	Unknown	None
City of Beaumont	No	None	None
City of Los Angeles	No	agency managed website, newspaper or other print media	None
City of Oceanside	Yes	None	None
City of Riverside	No	Unknown	None
City of San Clemente	No	agency managed website	None
City of San Diego	Yes	agency managed website, facebook, other social media	None
City of Thousand Oaks	No	agency managed website	None
Elsinore Valley Municipal Water District	Yes	agency managed website, Facebook, Instagram, other social media, newspaper or other print media	None
Encina Wastewater Authority	Yes	agency managed website	None
Goleta Sanitary District	Yes	agency managed website, Facebook	None

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Name of Agency	Does your agency have an overall outreach program?	Which forms of social media does your agency utilize for biosolids outreach/education?	If your agency does not use social media, how do you publicize your biosolids program?
Inland Empire Utilities Agency	Yes	agency managed website, Facebook, other social media	None
Irvine Ranch Water District	No	None	None
Las Virgenes Municipal Water District	Yes	agency managed website, Instagram	None
Los Angeles County Sanitation Districts	Yes	agency managed website, Facebook, Instagram, other social media	None
Moulton Niguel Water District	Yes	agency managed website, Facebook, Instagram, other social media	None
Ojai Valley Sanitary District	No	agency managed website	None
Orange County Sanitation District	Yes	agency managed website	None
San Bernardino Municipal Water Department	No	agency managed website	None
San Elijo Joint Powers Authority	No	external website	None
Santa Margarita Water District	No	agency managed website, Facebook, Instagram, TV or other video media	None

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Social Media			
Name of Agency	Does your agency have an overall outreach program?	Which forms of social media does your agency utilize for biosolids outreach/education?	If your agency does not use social media, how do you publicize your biosolids program?
Ventura Water	Yes	external website, agency managed website, Facebook, Instagram, TV or other video media, other social media	None