



SCAP
SOUTHERN CALIFORNIA ALLIANCE OF
PUBLICLY OWNED TREATMENT WORKS



**BIOSOLIDS
BIENNIAL TREND
SURVEY
2016-2018**

DECEMBER 2019

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Acronym and Abbreviations List

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

1. Summary

SCAP wishes to thank the 25 member agencies that took the time and effort to assist with the production of this survey. The response has been exceptional, and it is our sincere hope that the information provided will be useful to SCAP 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 | |
|--|--|
| Annual Average Production: | |
| 2016 | 1,485,553 |
| 2017 | 1,467,946 |
| 2018 | 1,465,496 |
| Top Three Biosolids Producers | Los Angeles County Sanitation District Orange County Sanitation District LA Sanitation & Environment |
| Biosolids Program Staffing and Budget | |
| Range of the Number of FTEs for Biosolids | 1 to 40 |
| Range of Biosolids Management Budget | <\$100,000 to \$25,000,000 |
| End Use Options | |
| Top Two End Use Options | Composting and Land application |
| Biosolids Quality | |
| Number of Agencies Class A - EQ | 3 |
| Number of Agencies Class A | 3 |
| Number of Agencies Class B | 20 |
| Number of Agencies Sub Class B | 5 |

Table 1 - General Summary (continued)

| Tipping Fee Average | |
|---|---|
| Alt Daily Cover Landfill | \$46.01 |
| Composting | \$54.49 |
| Deep Well Injection | \$76.00 |
| Direct Burial to Landfill | \$42.60 |
| Fertilizer | \$10.00 |
| Land Application | \$41.82 |
| Mine Reclamation | \$48.00 |
| Soil Blending | \$45.63 |
| Technologies | |
| Common Digestion Technology | Mesophilic Anaerobic Digestion (Staged) |
| Common Dewatering Technology | Centrifuge |
| Challenges | |
| Top Three Challenges | Finding Low Cost Local Biosolids Management Options (most often noted as high priority) |
| | Securing Long-Term Biosolids Management Options |
| | Rising Costs |
| Biosolids Strategic Plans | |
| Number of Agencies with Strategic Plans | 11 |
| Number of Agencies without Strategic Plans | 14 |
| Food Co-Digestion Projects | |
| Number of Agencies Started Co-Digestion | 6 |
| Number of Agencies that are in the Planning and Design Stages of Co-Digestion | 3 |
| Social Media Communication | |
| Top Three Social Media Platforms Used by Agencies | Website |
| | Facebook |
| | Twitter |

2. Annual Biosolids Production

This section provides a snapshot of the annual biosolids production in 2016 through 2018. It is important to note that the information provided is not intended to be a direct comparison of previous SCAP 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 2016-2018.

For the period of 2016 through 2018, the annual biosolids production appears to be a slight decrease of approximately one percent over the three years illustrated in Figure 1 - Annual Biosolids Production 2016-2018. The annual biosolids production went from 1,485,553 wet tons per year (WTPY) in 2016 to 1,465,496 WTPY in 2018.

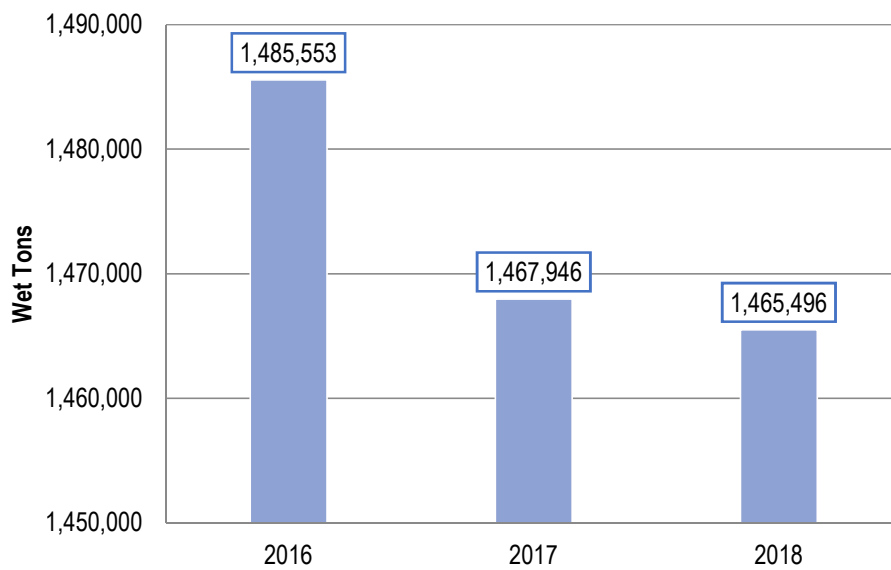


Figure 1 - Annual Biosolids Production 2016-2018

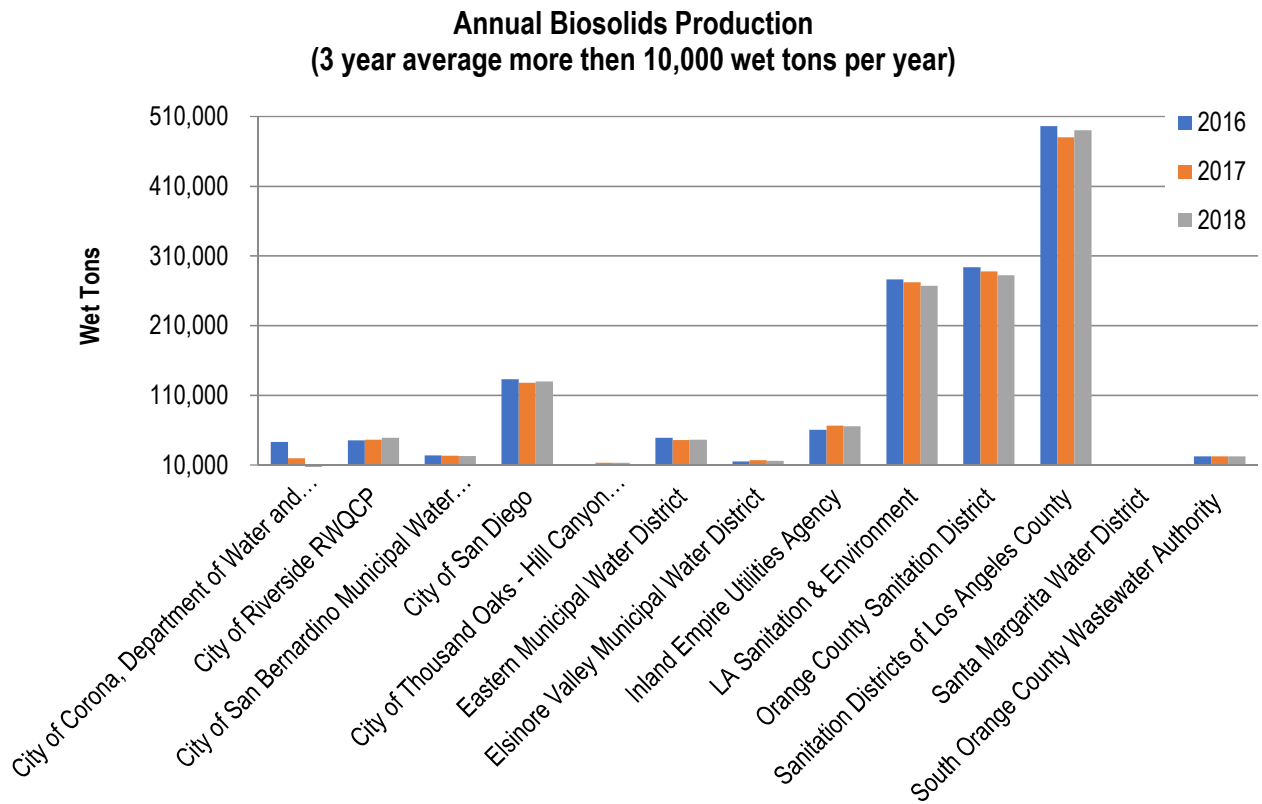
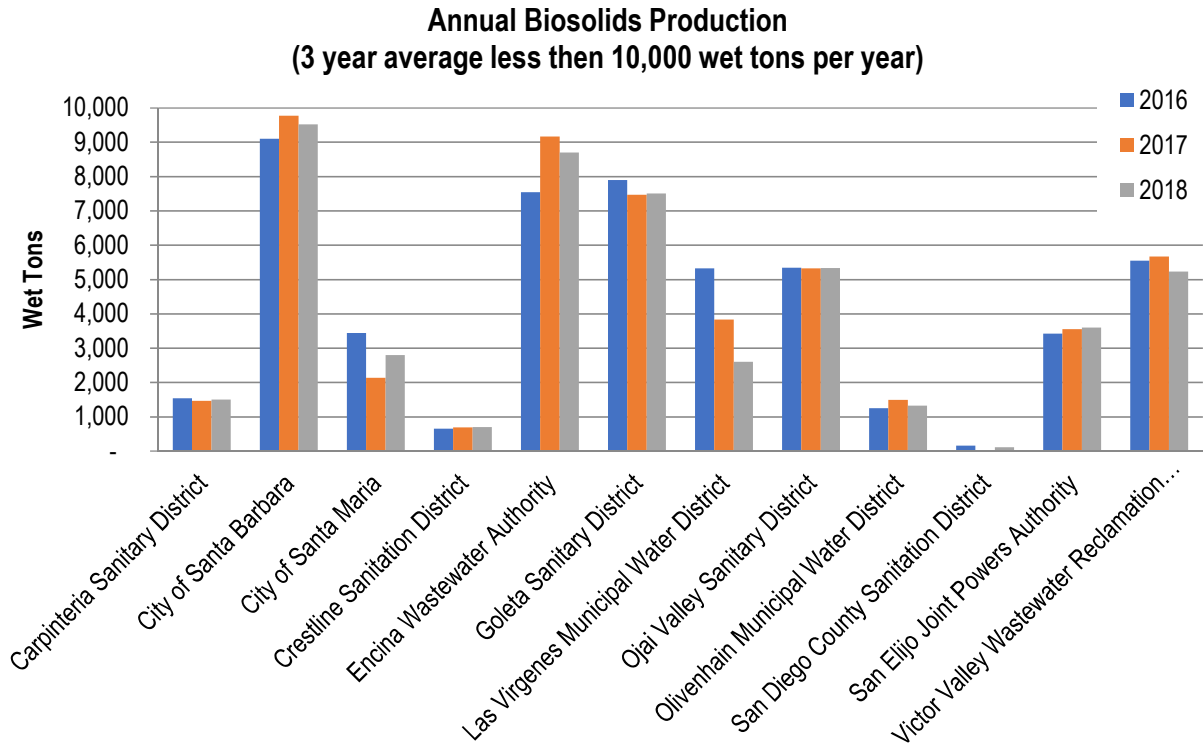


Figure 2 - Annual Biosolids Production

For facilities that produced less than 10,000 WTPY within 2016-2018 as illustrated in Figure 2 - Annual Biosolids Production, the top three biosolids producers are City of Santa Barbara followed by Encina Wastewater Authority and Goleta Sanitary District. For further details, see Appendix A: Agency Information and Budget.

For facilities that produced above 10,000 WTPY within 2016-2018 as illustrated in Figure 2 - Annual Biosolids Production, the top three biosolids producers are Los Angeles County Sanitation District, followed by Orange County Sanitation District and City of Los Angeles. Together these three Publically Owned Treatment Works (POTWs) make up over 70 percent of total annual production. 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 2017 and 2018 from survey respondents.

3.1. Staffing

SCAP members were asked to provide information on the number of staff that have the dedicated responsibility to manage the agency biosolids management program which includes contract management and regulatory compliance. Out of the 25 member agencies that responded, nine agencies have dedicated staff and 16 agencies do not as referenced in Table 2 - Agencies with/without Dedicated Biosolids Staff below.

Table 2 - Agencies with/without Dedicated Biosolids Staff

| Yes, the agency has dedicated biosolids staff | Number of staff members* |
|--|--------------------------|
| City of San Diego | 40 |
| Encina Wastewater Authority | 11 |
| Inland Empire Utilities Agency | 1 |
| LA Sanitation & Environment | 4 |
| Las Virgenes Municipal Water District | 7 |
| Ojai Valley Sanitary District | 4 |
| Orange County Sanitation District | 2 |
| Sanitation Districts of Los Angeles County | 4 |
| Victor Valley Wastewater Reclamation Authority | 4 |
| No, the agency does not have dedicated biosolids staff | |
| Carpinteria Sanitary District | |
| City of Corona, Department of Water and Power | |
| City of Riverside RWQCP | |
| City of San Bernardino Municipal Water Department | |
| City of Santa Barbara | |
| City of Santa Maria | |
| City of Thousand Oaks - Hill Canyon Treatment Plant | |
| Crestline Sanitation District | |
| Eastern Municipal Water District | |
| Elsinore Valley Municipal Water District | |
| Goleta Sanitary District | |
| Olivenhain Municipal Water District | |
| San Diego County Sanitation District | |
| San Elijo Joint Powers Authority | |
| Santa Margarita Water District | |
| South Orange County Wastewater Authority | |

*May include operational staff

3.2. Biosolids Program Management Budget

A large portion of a POTW's annual budget is biosolids management. SCAP members were asked to provide information of their annual budgeted allocated for the management of their biosolids for 2017 and 2018. For ease of illustration, POTWs were grouped by facilities having an annual biosolids management budget of less than \$1 million and the other 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 selects. To more clearly describe management budgets for all survey respondents Figure 3 - Biosolids Management Budget groups together budget above or below \$1 million.

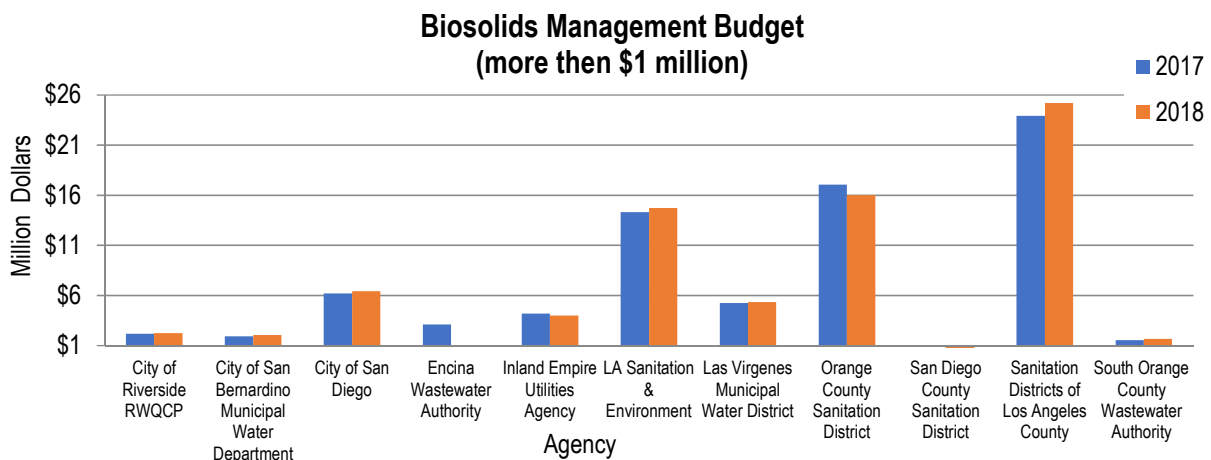
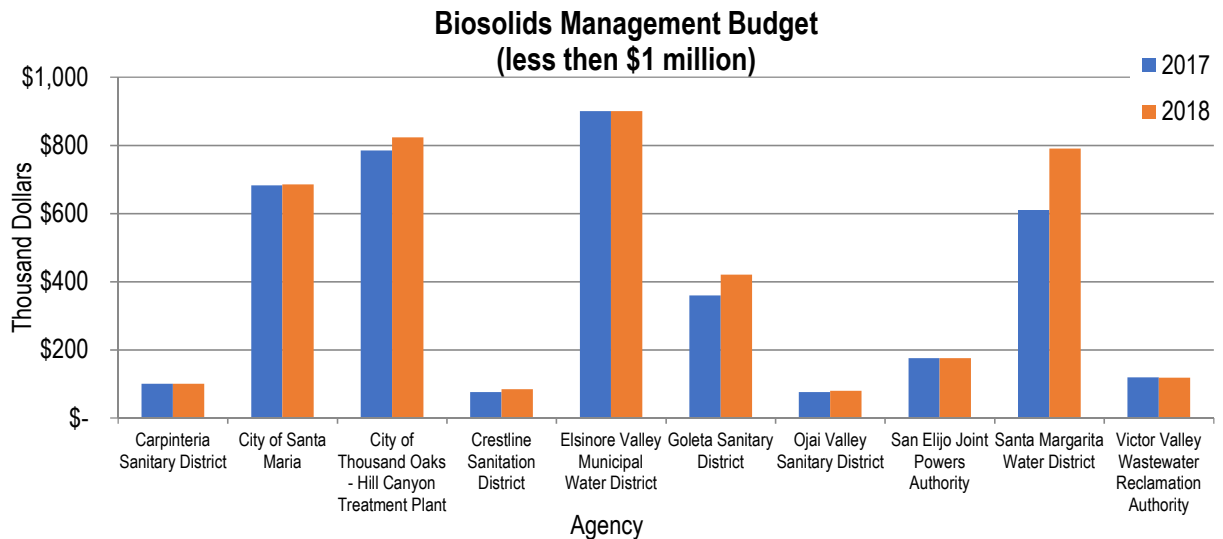


Figure 3 - Biosolids Management Budget

SCAP Biosolids Biennial Trend Survey 2016-2018

It should be noted that City of Santa Barbara, Eastern Municipal Water District, Olivenhain Municipal Water District, and City of Corona, Department of Water and Power do not have a separate budget for biosolids management.

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

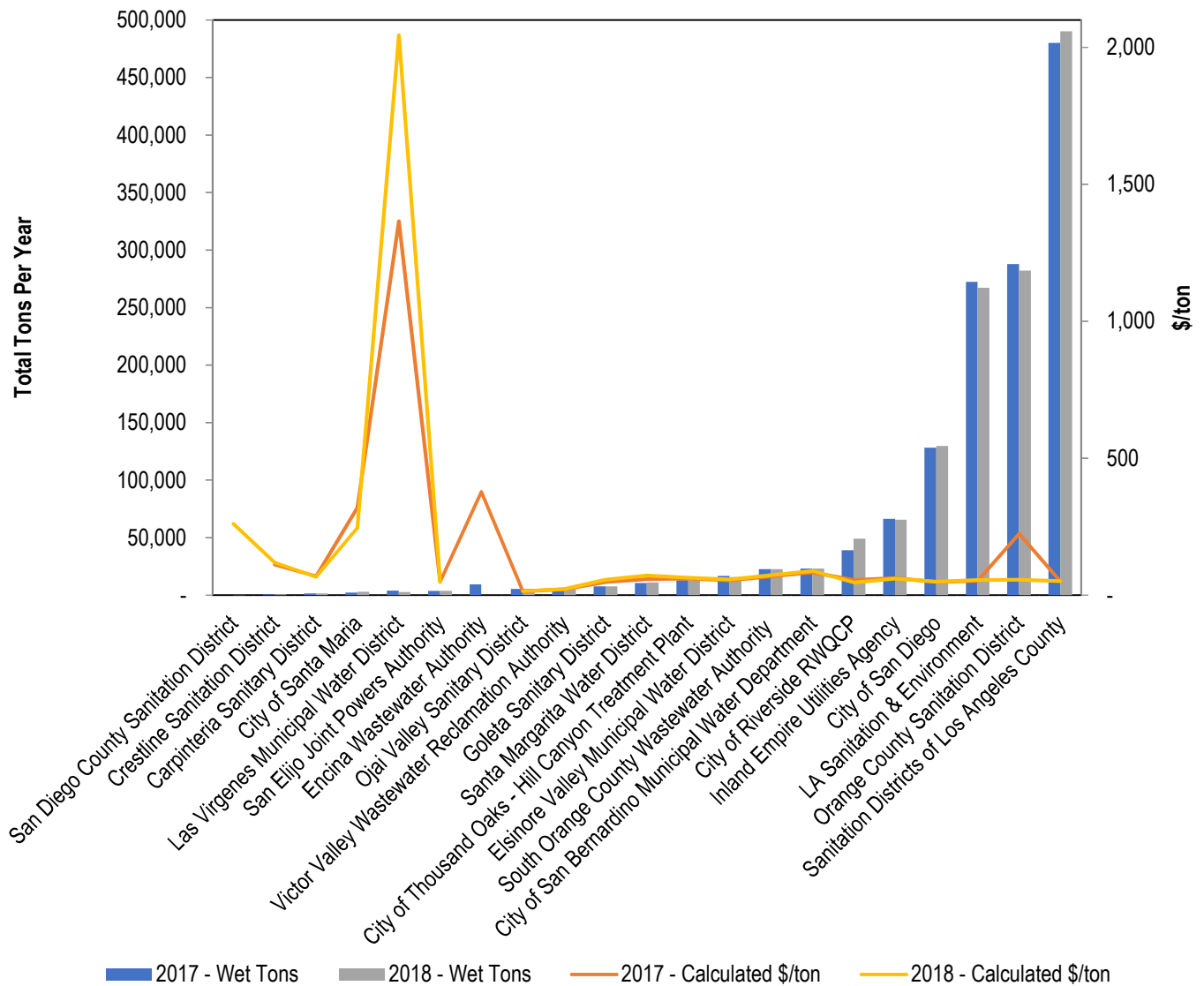


Figure 4 - Annual Biosolids Production and Budget Price per Ton

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 SCAP member agencies that responded to the survey.

4.1. Biosolids Management Options by Agency 2016-2017

Results of the survey pertaining to the types of end use management options utilized by agencies are reported in graphically in Figure 5 - Wet Tons and Number of Agencies per End Use.

The most prevalent end use management option employed by SCAP member agencies that responded to the survey is composting with 15 agencies in 2016 and 13 agencies in 2017. This is followed by land application with nine agencies in 2016 and eight agencies in 2017. Composting and land application represent by far the most prevalent management options. At the time the data was collected 2018 was a projection only and therefore is not included in the following graph.

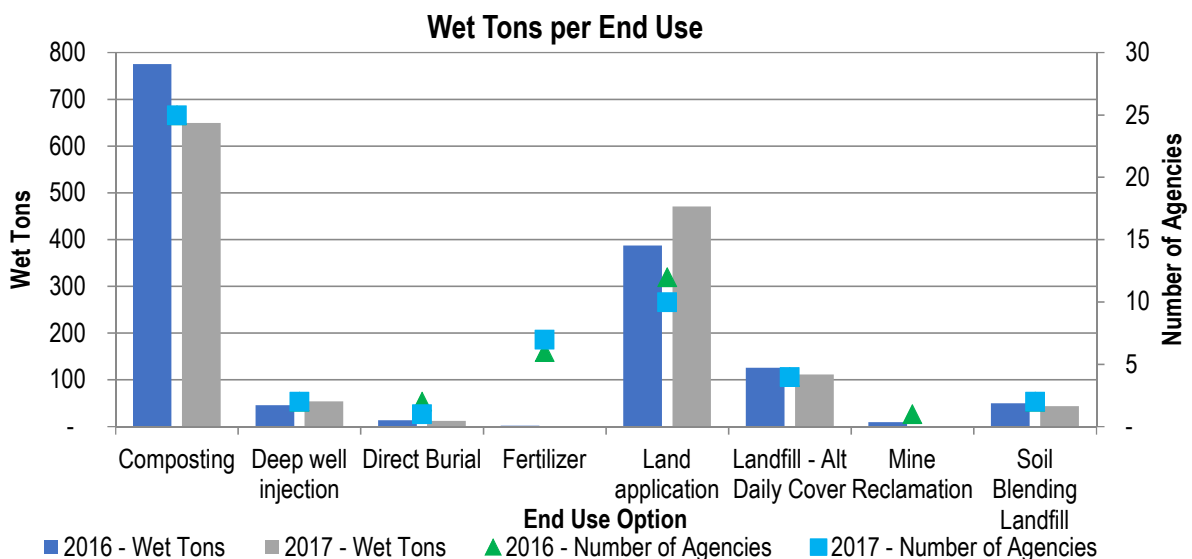


Figure 5 - Wet Tons and Number of Agencies per End Use

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

Among the 25 agencies that responded to the survey, 19 agencies produced Class B biosolids which is shown to be the most common biosolids type. Five (5) agencies produced Class A-EQ and Class A biosolids types.

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

| Agency | 2016 | | | | | 2017 | | | | 2018 | | | |
|---|--------------|---------|-------|---------|-------------|---------|--------------|---------|-------------|---------|--------------|---------|-------------|
| | Class A - EQ | Class A | Other | Class B | Sub Class B | Class A | Class A - EQ | Class B | Sub Class B | Class A | Class A - EQ | Class B | Sub Class B |
| Carpinteria Sanitary District | | | | | 1,538 | | | | 1,461 | | | | 1,500 |
| City of Corona, Department of Water and Power | 39,164 | | | 3,686 | | | 15,971 | 3,577 | | | 2,174 | | |
| City of Riverside RWQCP | | | | 30,466 | 14,777 | | | 38,847 | 7,327 | | | 49,073 | |
| City of San Bernardino Municipal Water Department | | | | 23,650 | | | | 23,115 | | | | 23,000 | |
| City of San Diego | | | | 132,974 | | | | 128,012 | | | | 129,546 | |
| City of Santa Barbara | | | | 9,096 | | | | 9,768 | | | | 9,515 | |
| City of Santa Maria | | | | 3,443 | | | | 2,136 | | | | 2,800 | |
| City of Thousand Oaks - Hill Canyon Treatment Plant | | | | 9,258 | | | | 13,051 | | | | 13,000 | |
| Crestline Sanitation District | | | | 648 | | | | 687 | | | | 700 | |
| Eastern Municipal Water District | | | | 49,131 | | | | 45,948 | | | | 46,000 | |
| Elsinore Valley Municipal Water District | | | | | 15,077 | | | | 16,713 | | | | 15,693 |
| Encina Wastewater Authority | 6,638 | | | 903 | | | 6,212 | 2,950 | | | 8,698 | | |
| Goleta Sanitary District | | | | 7,894 | | | | 7,464 | | | | 7,500 | |

SCAP Biosolids Biennial Trend Survey 2016-2018

| Agency | 2016 | | | | | 2017 | | | | 2018 | | | |
|--|--------------|---------|-------|---------|-------------|---------|--------------|---------|-------------|---------|--------------|---------|-------------|
| | Class A - EQ | Class A | Other | Class B | Sub Class B | Class A | Class A - EQ | Class B | Sub Class B | Class A | Class A - EQ | Class B | Sub Class B |
| Inland Empire Utilities Agency | | | | 60,453 | | | | 66,314 | | | | 65,500 | |
| LA Sanitation & Environment | 276,086 | | | | | | 272,165 | | | | 267,100 | | |
| Las Virgenes Municipal Water District | | 5,326 | | | | 3,830 | | | | 2,600 | | | |
| Ojai Valley Sanitary District | | | | 5,343 | | | | 5,325 | | | | 5,335 | |
| Olivenhain Municipal Water District | | | | 1,245 | | | | 1,488 | | | | 1,322 | |
| Orange County Sanitation District | | | | 293,891 | | | | 287,697 | | | | 282,000 | |
| San Diego County Sanitation District | | | | 153 | | | | 77 | | | | 115 | |
| San Elijo Joint Powers Authority | | | | 3,424 | | | | 3,548 | | | | 3,600 | |
| Sanitation Districts of Los Angeles County | | | | 496,234 | | | | 479,996 | | | | 490,000 | |
| Santa Margarita Water District | | | | 10,300 | | | | 10,400 | | | | 11,000 | |
| South Orange County Wastewater Authority | | | | | 22,500 | | | | 22,500 | | | | 22,500 |
| Victor Valley Wastewater Reclamation Authority | | 5,547 | | | | 5,669 | | | | 5,225 | | | |

4.3. Cost Summary

The following information is a cost range of eight biosolids management types along with average cost. Note that the tipping fee range includes transportation cost. Cost may vary based on number of factors which include but 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

| | Tipping fee (\$/ton) per contractor | | | Transportation cost (\$/ton) per contractor | | |
|-----------------------------------|-------------------------------------|-------|---------|---|-------|---------|
| | Min | Max | Average | Min | Max | Average |
| Composting | 29.41 | 80.62 | 54.49 | 6.00 | 42.13 | 26.90 |
| Deep well injection | 76.00 | 76.00 | 76.00 | 7.53 | 7.74 | 7.64 |
| Direct Burial | 37.49 | 50.95 | 42.60 | | | |
| Fertilizer | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 |
| Land application | 8.50 | 54.50 | 41.82 | 39.00 | 45.00 | 42.00 |
| Landfill - Alt Daily Cover | 37.90 | 61.00 | 46.01 | 13.75 | 13.75 | 13.75 |
| Mine Reclamation | 48.00 | 48.00 | 48.00 | | | |
| Soil Blending Landfill | 44.99 | 46.27 | 45.63 | 8.63 | 8.63 | 8.63 |

5. Travel Range and Description of Biosolids Management Destinations

Hauling can be one of the major factors that may impact the overall biosolids management cost. Travel ranges vary among agencies. In general range is from eight miles to 431 miles (Arizona). The following 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 6 - Map of Biosolids Management

Table 5 - Location of the Various Management Operations

| Management Options | Destination | Management Options | Destination | |
|--------------------|----------------------------|-----------------------------------|-------------------------|---------------------|
| Composting | Calabasas, CA | Direct Burial | Orange County, CA | |
| | Helendale, CA | | San Diego, CA | |
| | Hinkley CA | Fertilizer | Fresno, CA | |
| | Kern County, CA | | Los Angeles, CA | |
| | Kings, CA | | Maricopa, AZ | |
| | La Paz, AZ | | Orange, CA | |
| | Rancho Cucamonga, CA | | Pima, AZ | |
| | San Bernardino County, CA | | San Diego, CA | |
| | Santa Barbara, CA | | San Joaquin, CA | |
| | Santa Maria, CA | | Ventura, CA | |
| | Taft, CA | | Land Application | Kern, CA |
| | Ventura County, CA | | | Maricopa County, AZ |
| | Vicksburg, AZ | Merced, CA | | |
| | Deep well injection | Los Angeles, CA | | Orange County, CA |
| | | Landfill - Alt Daily Cover | Yuma, AZ | |
| | | | San Diego, CA | |
| | | Mine Reclamation | San Juan Capistrano, CA | |
| | | Soil Blending Landfill | Bakersfield, CA | |
| | | | Kern, CA | |
| | | | Santa Barbara, CA | |

5.1. List of Biosolids Management Vendors

The following Table 6 - List of Biosolids Management Vendors provides a list of biosolids management vendors that provide services to SCAP member agencies that have provided information to the survey.

Table 6 - List of Biosolids Management Vendors

| | |
|---|-----------------------------------|
| Composting | Land application |
| Denali Water Solutions, LLC | Ag Tech, LLC |
| Engel and Gray | American Organics |
| GIC Transport | Atlas |
| IERCA | Denali Water Solutions, LLC |
| IERCF | Responsible Biosolids Mgmt |
| Inland Empire Regional Composting Authority | San Diego Landfill System |
| Liberty Compost, Inc. | Solid Green |
| Liberty Farms | Tule Ranch |
| Nursery Products | Landfill - Alt Daily Cover |
| NutrientsPLUS | County of San Diego |
| On-Site composting | Denali Water Solutions, LLC |
| Synagro | Orange County Waste and Recycling |
| Terra Trucking | San Diego Landfill System |
| Tulare Lake Compost | Mine Reclamation |
| Loads hauled by staff | Gabriel I. Cruz Transport |
| Deep well injection | Soil Blending Landfill |
| Denali Water Solutions, LLC | City of Santa Maria |
| GeoEnvironmental Technologies | Holloway Environmental |
| Direct Burial | |
| Orange County Waste and Recycling | |
| San Diego Landfill System | |
| Fertilizer | |
| Ag Tech, LLC | |
| CPS Inc | |
| Denali Water Solutions, LLC | |
| Grownmore | |
| NutrientsPLUS | |

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 over the past three years. First, this section describes the biosolids digestion technologies used by various agencies. The quality and quantity of biosolids produced by these digestion technologies over the past three years, 2016 to 2018, are demonstrated. 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 in a few different methods, generally involving anaerobic digestion. The most common technologies used by SCAP agencies include mesophilic anaerobic digestion (staged) done by eleven agencies, mesophilic anaerobic digestion (acid/gas phased) done by four agencies, and thermophilic anaerobic digestion done by four agencies. Eight agencies used other digestion technologies besides the three 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 a lower odor than those created during mesophilic anaerobic digestion. (<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 (acid/gas phased) | Thermophilic Anaerobic Digestion |
|---|--|
| <ol style="list-style-type: none"> 1. City of Corona, Department of Water and Power 2. Eastern Municipal Water District 3. Encina Wastewater Authority 4. Santa Margarita Water District | <ol style="list-style-type: none"> 1. City of San Diego 2. City of Santa Maria 3. Inland Empire Utilities Agency 4. LA Sanitation & Environment |
| Mesophilic Anaerobic Digestion (staged) | Other |
| <ol style="list-style-type: none"> 1. City of Riverside RWQCP 2. City of San Bernardino Municipal Water Department 3. City of Santa Barbara 4. City of Thousand Oaks - Hill Canyon Treatment Plant 5. Eastern Municipal Water District 6. Goleta Sanitary District 7. Las Virgenes Municipal Water District 8. Orange County Sanitation District 9. San Elijo Joint Powers Authority 10. Sanitation Districts of Los Angeles County 11. Victor Valley Wastewater Reclamation Authority | <ol style="list-style-type: none"> 1. Carpinteria Sanitary District 2. Crestline Sanitation District 3. Elsinore Valley Municipal Water District 4. Inland Empire Utilities Agency 5. Ojai Valley Sanitary District 6. Olivenhain Municipal Water District 7. San Diego County Sanitation District 8. South Orange County Wastewater Authority |

6.2. Biosolids Quality and Volumes 2016-2018

Regulated 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. Local laws and ordinances also impacts availability and options per geographic jurisdiction. With the implementation of new laws and regulations, such as SB 1383 which mandates 50 percent organic waste diversion from landfills (based on 2014 levels) by 2020, the management options of landfill disposal and blending for landfill alternative daily cover will be phased out. Minimal landfill disposal may still occur sporadically in cases of treatment issues or weather conditions.

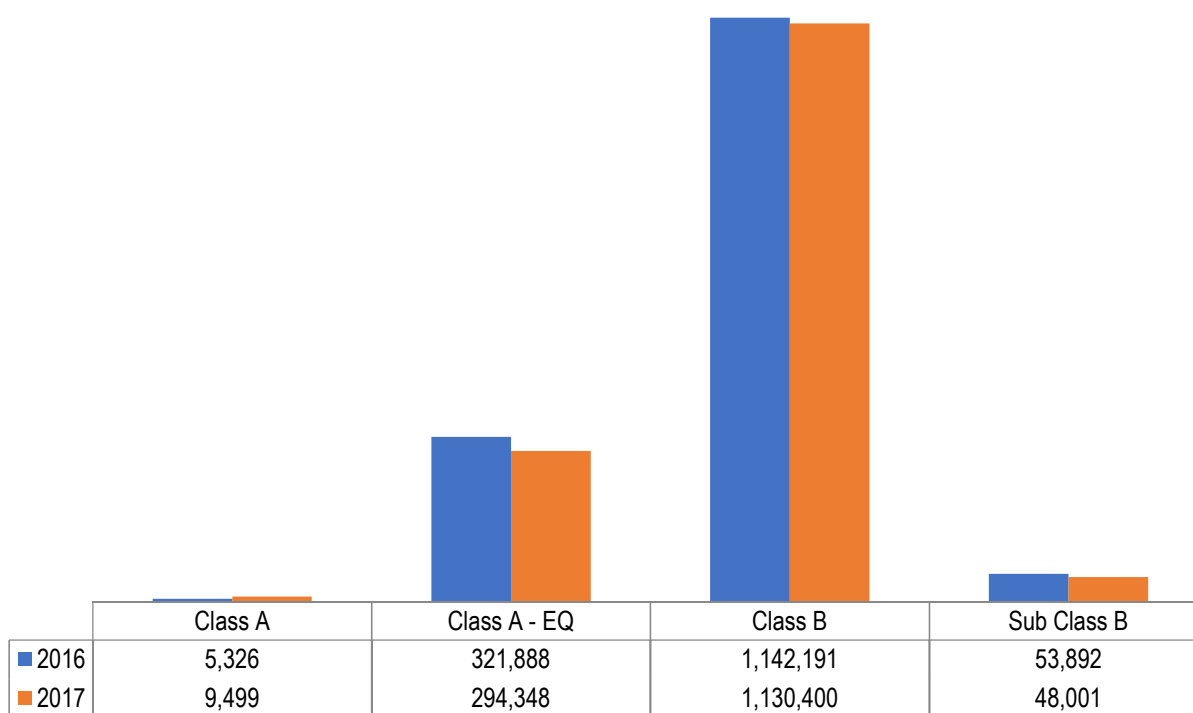


Figure 7 - Amount of Biosolids Generated by Class (Wet Tons)

Figure 7 - Amount of Biosolids Generated by Class (Wet Tons) illustrates the total amount of each class of biosolids generated in 2016 and 2017 by all agencies.

6.3. Biosolids Dewatering Technology

Five Biosolids Dewatering Technologies are primarily used for solids handling including centrifuge, direct dryer, drying bed, filter press, and indirect dryer. A variety of companies manufacture dewatering technologies. Table 8 - Dewatering Technologies shows the products used by different agencies. The agencies utilize many of the same products for their treatment processes. Table 9 - Percent Solids by Agency and Facility demonstrates the breakdown of dewatering technologies used by all SCAP agencies. Centrifuges are the most common dewatering system used by 43 percent of facilities, followed by Filter Presses used by 37 percent. The less common dewatering technologies include drying beds—used by eight percent of facilities, “other” dewatering technologies—used by six percent, and indirect and direct drying dewatering—both used by three percent of facilities.

Table 8 - Dewatering Technologies

| | | | |
|-----------------------|-----------|-----------------------|----------|
| Centrifuge | 18 | Indirect Dryer | 1 |
| Alfa Laval | 7 | Andritz | 1 |
| Andritz | 2 | Other | 2 |
| Centrisys | 5 | FKC | 1 |
| Humboldt | 4 | Huber | 1 |
| Direct Dryer | 1 | | |
| Andritz | 1 | | |
| Filter Press | 13 | | |
| Ashbrook | 9 | | |
| Envirex | 1 | | |
| Huber | 1 | | |
| Rittershaus & Blecher | 1 | | |
| Winkle Press | 1 | | |

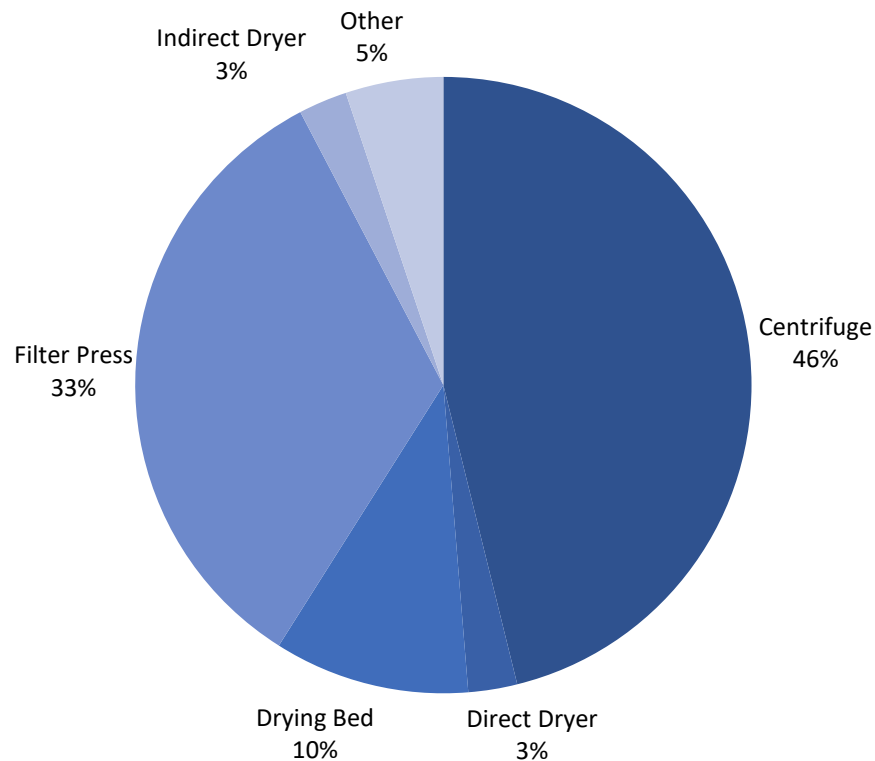


Figure 8 - Dewatering Technologies used by SCAP Agencies

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 and categorized by the Class of biosolids they produce. The percent solids depends on the dewatering method used as well as the requirements needed for the post-

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processing use, such as land application. Class A – EQ 26 – 92 percent solids, Class A ranges from 15 – 95 percent solids, Class B ranges from 6 – 90 percent solid, and Other quality ranges from 17 – 25 percent solids. Based on data collected Class A products created using drying beds in the desert were found to be driest at 95 percent solids. Conversely, the wettest product was found to be a Class B product created using drying beds were at only six percent solids.

Table 9 - Percent Solids by Agency and Facility

| | Class A | | Class A - EQ | | Class B | | Other | |
|---|---------|-----|--------------|-----|---------|-----|-------|-----|
| | Min | Max | Min | Max | Min | Max | Min | Max |
| Centrifuge | | | | | | | | |
| City of Riverside RWQCP | | | | | 16% | 16% | | |
| City of San Bernardino Municipal Water Department | | | | | 22% | 22% | | |
| City of San Diego | | | | | 28% | 28% | | |
| Eastern Municipal Water District | | | | | 21% | 25% | | |
| Encina Wastewater Authority | | | | | 21% | 21% | | |
| Inland Empire Utilities Agency | | | | | 24% | 24% | | |
| LA Sanitation & Environment | | | 26% | 26% | | | | |
| Las Virgenes Municipal Water District | 22% | 26% | | | | | | |
| Sanitation Districts of Los Angeles County | | | | | 17% | 29% | | |
| Santa Margarita Water District | | | | | 22% | 22% | | |
| South Orange County Wastewater Authority | | | | | | | 25% | 25% |
| Direct Dryer | | | | | | | | |
| City of Corona, Department of Water and Power | | | 92% | 92% | | | | |
| Drying Bed | | | | | | | | |
| City of Santa Maria | | | | | 6% | 6% | | |
| San Diego County Sanitation District | | | | | 40% | 90% | | |
| Victor Valley Wastewater Reclamation Authority | 95% | 95% | | | | | | |
| Filter Press | | | | | | | | |
| City of Santa Barbara | | | | | 19% | 19% | | |
| Crestline Sanitation District | | | | | 30% | 30% | | |
| Eastern Municipal Water District | | | | | 20% | 20% | | |
| Elsinore Valley Municipal Water District | | | | | | | 18% | 18% |
| Goleta Sanitary District | | | | | 17% | 17% | | |
| Inland Empire Utilities Agency | | | | | 15% | 15% | | |
| Ojai Valley Sanitary District | 15% | 15% | | | | | | |
| Olivenhain Municipal Water District | | | | | 17% | 17% | | |
| Orange County Sanitation District | | | | | 18% | 20% | | |
| San Elijo Joint Powers Authority | | | | | 20% | 20% | | |
| Sanitation Districts of Los Angeles County | | | | | 20% | 20% | | |
| Carpinteria Sanitary District | | | | | | | 17% | 17% |
| Indirect Dryer | | | | | | | | |
| Encina Wastewater Authority | | | 90% | 90% | | | | |
| Other | | | | | | | | |
| City of Thousand Oaks - Hill Canyon Treatment Plant | | | | | 18% | 18% | | |
| Santa Margarita Water District | | | | | 18% | 18% | | |

7. Challenges

The severity of challenges differs from 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 0 to 5, 0 indicating not applicable, 1 indicates unimportant, and 5 indicates a high priority. Table 10 - Count of Each Rating per Priority Area provides the data on each agency rated each challenge. Overall the challenge that was rated as a high priority most often was “Finding Low Cost Local Biosolids Management Options”. This is the order of prioritization based on the data:

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

Table 10 - Count of Each Rating per Priority Area

| Priority: | Rating (5-most important to 1-unimportant) | | | | | |
|---|---|---|---|---|----|-----|
| | 1 | 2 | 3 | 4 | 5 | n/a |
| Space for Drying Operations | 6 | 5 | 2 | 2 | 2 | 8 |
| Securing Long-Term Biosolids Management Options | 0 | 0 | 3 | 8 | 11 | 3 |
| Finding Low Cost Local Biosolids Management Options | 0 | 2 | 4 | 5 | 12 | 2 |
| Public Perception/Relations | 1 | 4 | 5 | 6 | 7 | 2 |
| Rising Costs | 0 | 3 | 7 | 3 | 10 | 2 |

8. Strategic Planning

Strategic planning is critical to POTWs 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 Master Plans for their biosolids programs, the anticipated biosolids management for the upcoming 2018-2019 FY and the next five years, as well as a look in to what agencies are marketing their biosolids products.

8.1. Number of Agencies that have a Biosolids Master Plan

11 of the SCAP agencies have a Biosolids Master Plan, 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. Agencies with less than ten biosolids committed employees were equally as likely to have a biosolids master plan.

Table 11 - Agencies With or Without Biosolids Master Plan

| Agencies With a Biosolids Master Plan | Agencies Without a Biosolids Master Plan |
|---|--|
| <ol style="list-style-type: none"> 1. City of Riverside RWQCP 2. City of San Diego 3. Eastern Municipal Water District 4. Elsinore Valley Municipal Water District 5. Encina Wastewater Authority 6. Inland Empire Utilities Agency 7. Las Virgenes Municipal Water District 8. Orange County Sanitation District 9. South Orange County Wastewater Authority 10. Victor Valley Wastewater Reclamation Authority 11. Carpinteria Sanitary District | <ol style="list-style-type: none"> 1. City of Corona, Department of Water and Power 2. City of San Bernardino Municipal Water Department 3. City of Santa Barbara 4. City of Santa Maria 5. City of Thousand Oaks - Hill Canyon Treatment Plant 6. Crestline Sanitation District 7. Goleta Sanitary District 8. LA Sanitation & Environment 9. Ojai Valley Sanitary District 10. Olivenhain Municipal Water District 11. San Diego County Sanitation District 12. San Elijo Joint Powers Authority 13. Sanitation Districts of Los Angeles County 14. Santa Margarita Water District |

8.2. Agencies Plan for Biosolids Management 2018-2019 and in Five Years

Agencies reported their expected biosolids management plans for the upcoming 2018-2019 year as well as their management for the next five years. Composting and Land Application are expected to be the most common practices both the 2018-2019 year and the next five years. However, the number of agencies using composting or land application will also be utilized by fewer agencies in the next five years (four agencies, five agencies respectively). This changed could be due to several triggers for example the outcome of regulations for SB 1383 Short Lived Climate Pollutants, ordinances and bans that prohibit certain reuse options, or other financial constraints. It should be noted that due to the way the question was asked the data in Table 12 - Summary of Plans for Biosolids Program might be misleading. The question for what was done in 2018/2019 was clear however the question for future plans did not necessarily require the agency to include the same information. Therefore in order to find out each individual agency's answer to this question please refer to the data in the appendices.

Table 12 - Summary of Plans for Biosolids Program

| | 2018/2019 | Future |
|----------------------------|-----------|--------|
| Compost | 17 | 12 |
| Landfill | 6 | 4 |
| Land Application | 9 | 5 |
| Deep Well Injection | 1 | 1 |

8.3. Number of Agencies Directly Marketing Biosolids Products

Currently, some POTWs generate marketable products. The most popular product created is compost, with three agencies producing compost. One agency produces fertilizer pellets and one does soil blending.

Table 13 - Agencies that Directly Market a Product

| | Compost | Fertilizer pellets | Soil Blending | Renewable Energy Pellets | Biofuels | Biochar | Other |
|---|---------|--------------------|---------------|--------------------------|----------|---------|-------|
| Encina Wastewater Authority | No | Yes | No | No | No | No | No |
| Inland Empire Utilities Agency | Yes | No | Yes | No | No | No | No |
| Las Virgenes Municipal Water District | Yes | No | No | No | No | No | No |
| Sanitation Districts of Los Angeles County | Yes | No | No | No | No | No | No |

8.4. Organics Management

Due to recent pressures regarding waste management, California has introduced new regulations regarding organic diversion and management, such as SB 1383 which calls for a 50 percent reduction in statewide disposal of organic waste from the 2014 level by 2020 and a 75 percent decrease by 2025. As a result, this has led to agencies evolving their current biosolids handling operations, introducing new technology, and updating past practices to meet the standards laid out in the regulations. This might include reduction in use of landfill, 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, oil and grease (FOG), and process waste from breweries and wineries. Many agencies have started or are beginning to incorporate Co-digestion 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 which would improve biogas production that can be used by the agency, used as a low carbon vehicle fuel or sold to power companies.

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

8.5. Agencies Response to Future 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, has quickly approaching deadlines requiring the need for organics diversion from landfills. Many cities are using biosolids as a primary focus for organic diversion, as many agencies are already diverting them if they treat and reuse them beneficially, which counts towards their diversion requirements. If the agencies do not already have diversion programs, agencies have found that biosolids are one of one of the easiest organic products to develop a diversion program for as it is a consistent waste stream that once treated 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 the reusable product, has become a priority for many agencies in California, as it allows agencies to produce more biosolids and biofuels while reducing the amount of waste going to landfills. Three agencies stated that they are in the planning and design stages of co-digestion projects, and six agencies have already started doing co-digestion (Table 14 - Response to Organics Diversion Regulations).

Table 14 - 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) |
|---|--|
| Carpinteria Sanitary District | No |
| City of Corona, Department of Water and Power | No |
| City of San Diego | No |
| City of Santa Barbara | No |
| City of Santa Maria | No |
| City of Thousand Oaks - Hill Canyon Treatment Plant | No |
| Crestline Sanitation District | No |
| Elsinore Valley Municipal Water District | No |
| Las Virgenes Municipal Water District | No |
| Ojai Valley Sanitary District | No |
| Olivenhain Municipal Water District | No |
| San Diego County Sanitation District | No |
| San Elijo Joint Powers Authority | No |
| Santa Margarita Water District | No |
| South Orange County Wastewater Authority | No |
| Victor Valley Wastewater Reclamation Authority | No, we are already excepting food waste which assists in enhancing methane production |
| City of San Bernardino Municipal Water Department | Possibly, SBMWD might consider accepting food waste and grease slurry to increase biogas production. Future Feedstock: FOG, Food waste |
| City of Riverside RWQCP | Yes |
| Eastern Municipal Water District | Yes |
| Encina Wastewater Authority | Yes |
| Goleta Sanitary District | Yes, will evaluate with Lystek pilot project |
| Inland Empire Utilities Agency | Yes, We are exploring the possibility of incorporating clean food waste into one of our POTWs |
| LA Sanitation & Environment | Yes, a centralized food waste processing facility is in the works and expected to send processed waste to Hyperion as early as 2022 for co-digestion. Future Feedstock: FOG, Food waste. |
| Orange County Sanitation District | Yes, in the design phase to construct an organic food waste receiving station for co-digestion. Future Feedstock: Food waste |
| Sanitation Districts of Los Angeles County | Yes, increasing food waste recycling at JWPCP |

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

Six 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 incoming amounts of the various feed stock varied greatly from 44 wet tons to 10,500 wet tons. This wide range of incoming feed stock is most likely due to digester capacity and feed stock availability. Food waste tended to be the smallest feed stock in comparison to FOG and ADM. The tipping costs vary from as little as \$0.04 to \$17.00 per ton.

Table 15 - Agencies Co-Digesting: Volume and Tipping Fee

| Agency, Contractor Feedstock for Organics Diversion | Total Wet Tons | Tipping Fee (\$/tons) |
|---|-------------------|--------------------------|
| City of Riverside RWQCP | | |
| Contractor: SMC | | |
| Feedstock: ADM | 1,515 | |
| Contractor: Burrtec | | |
| Feedstock: Food waste | 44 | |
| City of Santa Barbara | | |
| Contractor: Marborg Industries | | |
| Feedstock: FOG | 3,645 | \$12.00 |
| City of Thousand Oaks - Hill Canyon Treatment Plant | | |
| Contractor: 1 | | |
| Feedstock: Food waste from processing facilities | 100 | \$0.04 |
| Contractor: 5 | | |
| Feedstock: FOG | 260 | \$0.07 |
| Encina Wastewater Authority | | |
| Contractor: Liquid Environmental Solutions | | |
| Feedstock: FOG | 10,500 | \$10.80 |
| Contractor: Stone Brewery | | |
| Feedstock: Brewery waste | 9,793 | \$3.60 |
| Sanitation Districts of Los Angeles County | | |
| Contractors: Waste Management; Insinkerator; Burrtec; Puente Hills MRF | | |
| Feedstock: Food waste | 110 | \$17.00 |
| Victor Valley Wastewater Reclamation Authority | | |
| Contractors: SMC, Co-West | | |
| Feedstock: Food waste | 3,412 | \$0.04 |
| Contractor: Alpha Omega | | |
| Feedstock: FOG | 350 | \$0.04 |

9. Social Media

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 16 - Agencies Using Social Media). Agencies are primarily using Facebook, Twitter, and YouTube (see Figure 9 - Number of Agencies Using Social Media for Biosolids Outreach). A number of agencies do not use social media to promote their biosolids programs but instead use social media for agency programs as a whole. Six agencies were found to use more traditional forms of communication to provide the public on information their biosolids programs for example newspapers or paper media, newsletters, and presenting at community outreach events. Many of the agencies that have started using social media platforms for outreach continue using the more traditional methods of communication as well.

9.1. Number of Agencies Utilize Social Media and What Type

Table 16 - Agencies Using Social Media

| | Community outreach events | Facebook | Newsletter | Newspaper/ Paper Media | Twitter | Website | YouTube |
|--|---------------------------|----------|------------|------------------------|---------|---------|---------|
| City of San Diego | | yes | | | yes | yes | yes |
| City of Santa Barbara | | | | | | yes | |
| City of Thousand Oaks | | | | | | yes | |
| Encina Wastewater Authority | yes | yes | | | | yes | |
| Goleta Sanitary District | yes | | | | | yes | |
| Inland Empire Utilities Agency | | yes | | yes | yes | yes | |
| Las Virgenes Municipal Water District | | yes | | yes | | yes | |
| Ojai Valley Sanitary District | | | yes | | | yes | |
| Orange County Sanitation District | | yes | | | yes | yes | yes |
| Sanitation Districts of Los Angeles County | | yes | | | | | |
| South Orange County Wastewater Authority | | | | | | yes | |
| Victor Valley Wastewater Reclamation Authority | | yes | | yes | | yes | |

Table 16 - Agencies Using Social Media (continued)

| No | Community outreach events | Facebook | Newsletter | Newspaper/Paper Media | Twitter | Website | YouTube |
|---|---------------------------|----------|------------|-----------------------|---------|---------|---------|
| Carpinteria Sanitary District | | yes | | | | yes | |
| City of Corona, Department of Water and Power | | | | | | | |
| City of Riverside RWQCP | | | | | | | |
| City of Santa Maria | | | | | | | |
| Crestline Sanitation District | | | | | | yes | |
| Eastern Municipal Water District | | | | | | yes | |
| Elsinore Valley Municipal Water District | | | | | | | |
| Olivenhain Municipal Water District | | yes | | | yes | yes | yes |
| San Diego County Sanitation District | | | | | | | |
| San Elijo Joint Powers Authority | | | | | | yes | |
| Santa Margarita Water District | | yes | | | yes | yes | yes |
| Grand Total | 2 | 10 | 1 | 3 | 5 | 17 | 4 |

■ Facebook ■ Twitter ■ Website ■ Youtube ■ Instagram ■ None

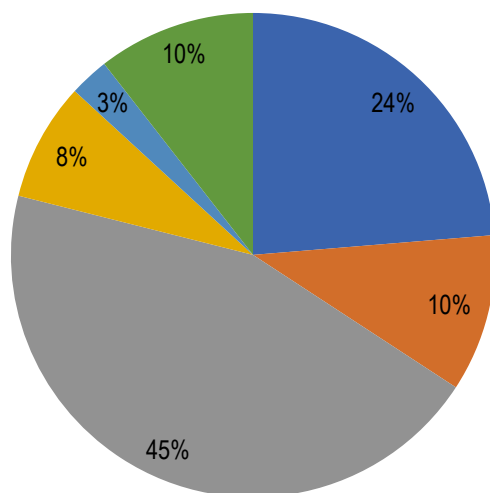


Figure 9 - Number of Agencies Using Social Media for Biosolids Outreach

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Appendix A: Agency Information and Budget

Appendix A: Agency Information and Budget

| Name of Agency | Name of respondent, position title | Year Produced | Wet Tons & Quality | | Dedicated biosolids staff? If yes how many? | Name, title, email and phone number for your agency's designated biosolids contact | Agency Budget | |
|---|---|---------------|--------------------|-----------------------|---|---|--|--|
| | | | Wet Tons Produced | Biosolids quality: | | | 2017 | 2018 |
| Carpinteria Sanitary District | Mark Rogers, Treatment Supervisor markr@carpsan.com | 2016 | 1538.3 | Sub Class B | No | Mark Rogers 1-805-684-7214 x18 | \$100,000.00 | \$100,000.00 |
| | | 2017 | 1461 | Sub Class B | | | | |
| | | 2018 | 1500 | Sub Class B | | | | |
| City of Corona, Department of Water and Power | Melissa Estrada-Maravilla, melissa.estrada-maravilla@coronaca.gov | 2016 | 3685.82 | Class B | No | Melissa Estrada-Maravilla, melissa.estrada-maravilla@coronaca.gov, 951-736-2479 | Biosolids budget is not separate than rest of water reclamation budget | Biosolids budget is not separate than rest of water reclamation budget |
| | | | 39163.5 | Class A - EQ | | | | |
| | | 2017 | 3576.59 | Class B | | | | |
| | | | 15971.4 | Class A - EQ | | | | |
| | | 2018 | 2173.913043 | Class A - EQ, Class B | | | | |
| City of Riverside RWQCP | Bobby Gustafson Wastewater Resource Analyst bgustafson@riversideca.gov | 2016 | 30466.2 | Class B | No | Glibert Perez, WW Operations Manager, giperez@riversideca.gov, 951-288-4516 | \$2,168,987.00 | \$2,241,000.00 |
| | | | 14776.6 | Sub Class B | | | | |
| | | 2017 | 38847.3 | Class B | | | | |
| | | | 7327.3 | Sub Class B | | | | |
| | | 2018 | 49073.26 | Class B, Sub Class B | | | | |
| City of San Bernardino Municipal Water Department | Marissa Flores-Acosta Environmental Supervisor marissa.flores@sbmwd.org | 2016 | 23650 | Class B | No | Joseph Hanford, WR Operations Superintendent, joseph.hanford@sbmwd.org, 909-453-6223 | \$1,924,500.00 | \$2,042,450.00 |
| | | 2017 | 23114.5 | Class B | | | | |
| | | 2018 | 23000 | Class B | | | | |
| City of San Diego | Richard Pitchford, Plant Superintendent Rpitchford@sandiego.gov | 2016 | 132974 | Class B | Yes, 40 | Richard Pitchford, Superintendent, Rpitchford@sandiego.gov 858-614-5509 | \$6,200,000.00 | \$6,400,000.00 |
| | | 2017 | 128012 | Class B | | | | |
| | | 2018 | 129546 | Class B | | | | |
| City of Santa Barbara | Thomas Welche, WWTP Chief Operator twelche@santabarbaraca.gov | 2016 | 9095.5 | Class B | No | Thomas Welche, WWTP Chief Operator, TWelche@SantaBarbaraCA.gov, 805-568-1002 | | |
| | | 2017 | 9768.3 | Class B | | | | |
| | | 2018 | 9514.8 | Class B | | | | |

Appendix A: Agency Information and Budget

| Name of Agency | Name of respondent, position title | Year Produced | Wet Tons & Quality | | Dedicated biosolids staff? If yes how many? | Name, title, email and phone number for your agency's designated biosolids contact | Agency Budget | |
|---|---|---------------|--------------------|-----------------------|--|--|----------------|----------------|
| | | | Wet Tons Produced | Biosolids quality: | | | 2017 | 2018 |
| City of Santa Maria | Shannon Sweeney, Water Resources Managers ssweeney@cityof santamaria.org | 2016 | 3443 | Class B | No | Shannon Sweeney, ssweeney@cityofsantamaria.org, 805-925-0951, x7416 | \$682,487.00 | \$685,288.00 |
| | | 2017 | 2136 | Class B | | | | |
| | | 2018 | 2800 | Class B | | | | |
| City of Thousand Oaks - Hill Canyon Treatment Plant | Santos Marquez, Laboratory Supervisor smarquez@toaks.org | 2016 | 9257.6 | Class B | No | N/A | \$785,000.00 | \$823,469.00 |
| | | 2017 | 13051.4 | Class B | | | | |
| | | 2018 | 13000 | Class B | | | | |
| Crestline Sanitation District | Ron Scriven, Operations Manager rscriven@crestlinesanitation.com | 2016 | 648 | Class B | No | Lewis Curty, Owner, 909-798-1278 | \$76,032.39 | \$83,635.63 |
| | | 2017 | 687 | Class B | | | | |
| | | 2018 | 700 | Class B | | | | |
| Eastern Municipal Water District | Jim Schain, Sr. Environmental Analyst schainj@emwd.org | 2016 | 49131.37 | Class B | No, Biosolids management is a collaborative effort | Jim Schain, Sr. Environmental Analyst, schainj@emwd.org, 951-928-3777 ext. 6202 | N/A | N/A |
| | | 2017 | 45948.13 | Class B | | | | |
| | | 2018 | 46000 | Class B | | | | |
| Elsinore Valley Municipal Water District | Sudhir Mohleji smohleji@evmwd.net | 2016 | 15077 | Sub Class B | No | NA | \$900,000.00 | \$900,000.00 |
| | | 2017 | 16713 | Sub Class B | | | | |
| | | 2018 | 15693 | Sub Class B | | | | |
| Encina Wastewater Authority | Joe Cipollini, Resource Recovery Manager jrcipollini@encinajpa.com | 2016 | 6638 | Class A - EQ | Yes, 11 | Joe Cipollini, Resource Recovery Manager, 760-268-8831 | \$1,454,182.00 | \$1,626,185.00 |
| | | 2016 | 903 | Class B | | | | |
| | | 2017 | 6212 | Class A - EQ | | | | |
| | | 2017 | 2950 | Class B | | | | |
| | | 2018 | 8697.7 | Class A - EQ, Class B | | | | |
| Goleta Sanitary District | Lena Cox, Laboratory Manager lcox@goletasanitary.org | 2016 | 7894 | Class B | No | Steve Wagner, General Manager, swagner@goletasanitary.org 805-967-4519 | \$358,875.00 | \$420,000.00 |
| | | 2017 | 7464 | Class B | | | | |
| | | 2018 | 7500 | Class B | | | | |

Appendix A: Agency Information and Budget

| Name of Agency | Name of respondent, position title | Year Produced | Wet Tons & Quality | | Dedicated biosolids staff? If yes how many? | Dedicated Staff Name, title, email and phone number for your agency's designated biosolids contact | Agency Budget | |
|---------------------------------------|---|---------------|--------------------|--------------------|---|---|----------------------------------|----------------------------------|
| | | | Wet Tons Produced | Biosolids quality: | | | 2017 | 2018 |
| Inland Empire Utilities Agency | Jeff Ziegenbein, Manager of Regional Compost Authority jziegenb@ieua.org | 2016 | 60453 | Class B | Yes, 11 | Jeff Ziegenbein, Manager of Regional Compost Authority jziegenb@ieua.org, 909-993-1981 | \$4,163,812.00 | \$3,971,842.00 |
| | | 2017 | 66314 | Class B | | | | |
| | | 2018 | 65500 | Class B | | | | |
| LA Sanitation & Environment | Stephen Ortega stephen.ortega@lacity.org | 2016 | 276086 | Class A - EQ | Yes, 4 | Emmanuel Alloh, Env. Engineer, emmanuel.alloh@lacity.org, 310-648-5211 | \$14,300,000.00 | \$14,700,000.00 |
| | | 2017 | 272165 | Class A - EQ | | | | |
| | | 2018 | 267100 | Class A - EQ | | | | |
| Las Virgenes Municipal Water District | Veronica Hurtado, Management Analyst llvhurtado@lvmwd.com | 2016 | 5326 | Class A | Yes, 7 | Brett Dingman, Water Reclamation Manager, bdingman@lvmwd.com, 818-251-2330 | \$5,229,907.00 | \$5,315,862.00 |
| | | 2017 | 3830 | Class A | | | | |
| | | 2018 | 2600 | Class A | | | | |
| Ojai Valley Sanitary District | Jeff Palmer jeff.palmer@ojaisan.org | 2016 | 5343 | Class B | Yes, 4 | Bradshaw Pruitt, Plant Supervisor, bradshaw.pruitt@ojaisan.org 805-646-5548 | \$76,000.00 | \$79,000.00 |
| | | 2017 | 5325 | Class B | | | | |
| | | 2018 | 5335 | Class B | | | | |
| Oliivenhain Municipal Water District | Water Reclamation Facilities Supervisor jonkka@olivenhain.com | 2016 | 1244.87 | Class B | No | Gabe Hernandez | No separate budget for Biosolids | No separate budget for Biosolids |
| | | 2017 | 1488.1 | Class B | | | | |
| | | 2018 | 1322.13 | Class B | | | | |
| Orange County Sanitation District | Senior Regulatory Specialist tmeregillano@ocsd.com | 2016 | 293891 | Class B | Yes, 2 | Deirdre Bingman, Principal Env. Specialist, dbingman@ocsd.com, 714-593-7459 | \$17,000,000.00 | \$16,000,000.00 |
| | | 2017 | 287697 | Class B | | | | |
| | | 2018 | 282000 | Class B | | | | |
| San Diego County Sanitation District | Kyehee Kim, DPW Unit Manager kyehee.kim@sdcounty.ca.gov | 2016 | 153 | Class B | No | Jim Dohrer, Facilities Supervisor, 858-204-1648 | \$30,000.00 | \$30,000.00 |
| | | 2017 | 77 | Class B | | | | |
| | | 2018 | 115 | Class B | | | | |

Appendix A: Agency Information and Budget

| Name of Agency | Name of respondent, position title | Wet Tons & Quality | | | Dedicated Staff | Agency Budget | | |
|--|--|--------------------|-------------------|--------------------|---|---|-----------------|-----------------|
| | | Year Produced | Wet Tons Produced | Biosolids quality: | Dedicated biosolids staff? If yes how many? | Name, title, email and phone number for your agency's designated biosolids contact | 2017 | 2018 |
| San Elijo Joint Powers Authority | Christopher Trees, Director of Operations treesc@sejpa.org | 2016 | 3424 | Class B | No | Christopher Trees, Director of Operations, treesc@sejpa.org, 760-753-6203 | \$175,000.00 | \$175,000.00 |
| | | 2017 | 3548 | Class B | | | | |
| | | 2018 | 3600 | Class B | | | | |
| Sanitation Districts of Los Angeles County | Tom C. Fang, senior engineer tfang@lacsds.org | 2016 | 496234 | Class B | Yes, 4 | Matt Bao, supervising engineer, mbao@lacsds.org, 562-908-4288x2824 | \$23,904,767.00 | \$25,189,806.00 |
| | | 2017 | 479996 | Class B | | | | |
| | | 2018 | 490000 | Class B | | | | |
| Santa Margarita Water District | Ron Johnson, Chief Plant Operator ronjohn@smwd.com | 2016 | 10300 | Class B | No | Ron Johnson, CPO, 949-459-6678 | \$610,000.00 | \$790,000.00 |
| | | 2017 | 10400 | Class B | | | | |
| | | 2018 | 11000 | Class B | | | | |
| South Orange County Wastewater Authority | James Leslie Burror, Director of Operations jburror@cox.net | 2016 | 22500 | Sub Class B | No | Jim Burror, Director of Operations, jburror@socwa.com 949-234-5402 | \$1,541,000.00 | \$1,639,000.00 |
| | | 2017 | 22500 | Sub Class B | | | | |
| | | 2018 | 22500 | Sub Class B | | | | |
| Victor Valley Wastewater Reclamation Authority | Operations and Maintenance Manager edavis@vwwra.com | 2016 | 5547 | Class A, Other | Yes, 4 | Miguel Mendoza, Senior Operator (mmendoza@vwwra.com) Eric Schweizer, Senior Operator (eschweizer@vwwra.com) Travis Prine, Operator (tprine@vwwra.com) Charles Trammel, Utility Worker 1 (ctrammel@vwwra.com) | \$119,000.00 | \$118,000.00 |
| | | 2017 | 5669 | Class A | | | | |
| | | 2018 | 5225 | Class A | | | | |

Appendix B: Facility with Dewatering Information per Agency

Appendix B: Facility with Dewatering Information per Agency

| Facility and Dewatering Information | | | | | | |
|---|--|--|--------------------|----------|--------------------|--------------------------------------|
| Name of Agency | Facility name #1 | Solids digestion technology | Biosolids quality: | % solids | Dewatering Process | Dewatering equipment manufacturer(s) |
| Carpinteria Sanitary District | Carpinteria Sanitary District Wastewater Treatment Plant | Other | Other | 17% | Filter Press | Envirex |
| City of Corona, Department of Water and Power | Water Reclamation Facility No. 1 | Mesophilic anaerobic digestion (acid/gas phased) | Class A - EQ | 92% | Direct Dryer | Andritz Belt Press |
| City of Riverside RWQCP | City of Riverside Regional Water Quality Control Plant | Mesophilic anaerobic digestion (staged) | Class B | 16% | Centrifuge | Centrisys |
| City of San Bernardino Municipal Water Department | City of San Bernardino Water Reclamation Facility | Mesophilic anaerobic digestion (staged) | Class B | 22% | Centrifuge | Centrisys Centrifuge Systems |
| City of San Diego | Metro Biosolids Center | Thermophilic anaerobic digestion | Class B | 28% | Centrifuge | Alfa Laval |
| City of Santa Barbara | El Estero WWTP | Mesophilic anaerobic digestion (staged) | Class B | 18.8% | Filter Press | Ashbrook Winklepress |
| City of Santa Maria | City of Santa Maria wastewater treatment plant | Thermophilic anaerobic digestion | Class B | 6% | Drying Bed | N/A |
| City of Thousand Oaks - Hill Canyon Treatment Plant | Hill Canyon Treatment Plant | Mesophilic anaerobic digestion (staged) | Class B | 17.50% | Other | FKC |
| Crestline Sanitation District | Huston Creek WWTP | Other | Class B | 30.00% | Filter Press | Winkle Press |
| Eastern Municipal Water District | San Jacinto Valley | Mesophilic anaerobic digestion (staged) | Class B | 24.99% | Centrifuge | Centrisys |
| | Perris Valley RWRf | Mesophilic anaerobic digestion (staged) | Class B | 20.02% | Filter Press | Ashbrook |
| | Temecula Valley RWRf | Mesophilic anaerobic digestion (staged) | Class B | 20.95% | Centrifuge | Centrisys |
| | Moreno Valley RWRf | Mesophilic anaerobic digestion (acid/gas phased) | Class B | 21.38% | Centrifuge | Centrisys |
| Elsinore Valley Municipal Water District | Regional Water Reclamation Facility | Other | Other | 18.00% | Filter Press | Ashbrook |

Appendix B: Facility with Dewatering Information per Agency

| Facility and Dewatering Information | | | | | | |
|---------------------------------------|--|--|--------------------|----------|--------------------|---------------------------------------|
| Name of Agency | Facility name #1 | Solids digestion technology | Biosolids quality: | % solids | Dewatering Process | Dewatering equipment manufacturer(s) |
| Encina Wastewater Authority | Encina Water Pollution Control Facility | Mesophilic anaerobic digestion (acid/gas phased) | Class A - EQ | 90.00% | Indirect Dryer | Andritz |
| | Encina Water Pollution Control Facility | Mesophilic anaerobic digestion (acid/gas phased) | Class B | 21.00% | Centrifuge | Alfa laval |
| Goleta Sanitary District | Goleta Sanitary District | Mesophilic anaerobic digestion (staged) | Class B | 17.30% | Filter Press | Huber |
| Inland Empire Utilities Agency | RP-1 | Thermophilic anaerobic digestion | Class B | 24.00% | Centrifuge | Alfa Laval |
| | RP-2 | Other | Class B | 15.00% | Filter Press | Ashbrook |
| LA Sanitation & Environment | Hyperion Water Reclamation Plant | Thermophilic anaerobic digestion | Class A - EQ | 26.00% | Centrifuge | Alpha Laval |
| | Terminal Island Water Reclamation Plant | Thermophilic anaerobic digestion | Class A - EQ | | | |
| Las Virgenes Municipal Water District | Tapia Water Reclamation Facility | Mesophilic anaerobic digestion (staged) | Class A | 24.00% | Centrifuge | Alfa LaVal |
| Ojai Valley Sanitary District | Ojai Valley Sanitary District Wastewater Treatment Plant | Other | Class A | 15.00% | Filter Press | Ashbrook |
| Olivenhain Municipal Water District | 4S Water Reclamation Facility | Other | Class B | 17.00% | Filter Press | Ashbrook |
| Orange County Sanitation District | Plant No. 1 Fountain Valley | Mesophilic anaerobic digestion (staged) | Class B | 18.00% | Filter Press | Ashbrook-Simon-Hartley Winkle Presses |
| | Plant No. 2 Huntington Beach | Mesophilic anaerobic digestion (staged) | Class B | 20.00% | Filter Press | Ashbrook-Simon-Hartley Winkle Presses |
| San Diego County Sanitation District | Julian Water Pollution Control Facility | Other | Class B | 65.00% | Drying Bed | N/A |
| San Elijo Joint Powers Authority | San Elijo Water Reclamation Facility | Mesophilic anaerobic digestion (staged) | Class B | 20.00% | Filter Press | Ashbrook |

Appendix B: Facility with Dewatering Information per Agency

| Facility and Dewatering Information | | | | | | |
|--|--|--|--------------------|----------|--------------------|--------------------------------------|
| Name of Agency | Facility name #1 | Solids digestion technology | Biosolids quality: | % solids | Dewatering Process | Dewatering equipment manufacturer(s) |
| Sanitation Districts of Los Angeles County | Joint Water Pollution Control Plant (JWPCP) | Mesophilic anaerobic digestion (staged) | Class B | 29.00% | Centrifuge | Alfa-Laval; Andritz |
| | Valencia Water Reclamation Plant (VWRP) | Mesophilic anaerobic digestion (staged) | Class B | 20.00% | Filter Press | Rittershaus & Blecher |
| | Palmdale Water Reclamation Plant (PWRP) | Mesophilic anaerobic digestion (staged) | Class B | 20.00% | Centrifuge | Humboldt |
| | Lancaster Water Reclamation Plant (LWRP) | Mesophilic anaerobic digestion (staged) | Class B | 19.50% | Centrifuge | Humboldt |
| Santa Margarita Water District | Chiquita Water Reclamation Plant | Mesophilic anaerobic digestion (acid/gas phased) | Class B | 18.00% | Other | Huber |
| | SMWD/MNWD Plant 3A | Mesophilic anaerobic digestion (acid/gas phased) | Class B | 22.00% | Centrifuge | Andritz |
| South Orange County Wastewater Authority | JB Latham | Other | Other | 25.00% | Centrifuge | Andritz |
| Victor Valley Wastewater Reclamation Authority | Victor Valley Wastewater Reclamation Authority | Mesophilic anaerobic digestion (staged) | Class A | 95.00% | Drying Bed | N/A |

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 one-way | Tipping fee (\$/ton) | Transportation cost (\$/ton) |
| Carpinteria Sanitary District | 2017 | Composting | 1,461.00 | Engel and Gray | Santa Maria, CA | 65 | 63.35 | 0.00 |
| City of Corona, Department of Water and Power | 2017 | Land Application | 1,929.90 | Denali ; Solid Green; NutrientsPLUS | AZ; Orange County, CA; Maricopa County, AZ | 244 ; 30 (facility) ; 350 (facility) | 48.99 0 0 | 0 0 0 |
| | | Composting | 3,051.42 | Nursery Products | San Bernardino County, CA | 72 | 49.8 | 0.00 |
| City of Riverside RWQCP | 2016 | Land Application | 17,049.84 | Denali Water Solutions, LLC | Yuma, AZ | 284 | 41.4 | 0.00 |
| | | Composting | 24,646.78 | Denali Water Solutions, LLC | Nursery Products, Hinkley CA | 87 | 39.95 | 0.00 |
| | 2017 | Land Application | 29,720.77 | Denali Water Solutions, LLC | Yuma, AZ | 219 -284 | 41.4 | 0.00 |
| | | Composting | 18,121.96 | Denali Water Solutions, LLC | Nursery Products, Hinkley, CA | 87 | 39.95 | 0.00 |
| City of San Bernardino Municipal Water Department | 2016 | Composting | 23,650.00 | Nursery Products | Helendale, CA (San Bernardino County) | 87.9 | n/a | 42.00 |
| | 2017 | Composting | 23,114.50 | Nursery Products | Helendale, CA (San Bernardino County) | 87.9 | n/a | 42.00 |
| City of San Diego | 2016 | Land Application | 6,493.00 | San Diego Landfill System | Yuma AZ | 250 | 47.79 | 0.00 |
| | 2016 | Direct Burial | 5,608.00 | San Diego Landfill system | San Diego, CA | 30 | 37.49 | 0.00 |

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 one-way | Tipping fee (\$/ton) | Transportation cost (\$/ton) |
| City of San Diego (Continued) | 2016 | Landfill – Alt Daily Cover | 120,873.00 | San Diego Landfill System | San Diego, CA | 30 | 46.7 | 0.00 |
| | 2017 | Land Application | 7,675.00 | San Diego Landfill System | Yuma, AZ | 200 | 47.79 | 0.00 |
| | 2017 | Direct Burial | 12,155.00 | San Diego Landfill System | San Diego, CA | 30 | 39.36 | 0.00 |
| | 2017 | Landfill - Alt Daily Cover | 108,181.00 | San Diego Landfill System | San Diego, CA | 30 | 47.79 | 0.00 |
| City of Santa Barbara | 2016 | Composting | 9,095.50 | Engel & Gray; Liberty Farms | Santa Barbara, CA; Kern, CA | 70; 150 | 46.63; 52 | 0, 0 |
| City of Santa Maria | 2016 | Composting | 2,424.00 | Engel & Gray | Santa Barbara, CA | 0 | 29.41 | 0.00 |
| | 2016 | Soil Blending Landfill | 1,093.00 | City of Santa Maria | Santa Barbara, CA | 8 | 0 | 8.63 |
| | 2017 | Composting | 1,646.00 | Engel & Gray | Santa Barbara, CA | 0 | 29.41 | 0.00 |
| | 2017 | Soil Blending Landfill | 581.00 | City of Santa Maria | Santa Barbara, CA | 8 | 0 | 8.63 |
| City of Thousand Oaks - Hill Canyon Treatment Plant | 2016 | Mine Reclamation | 9,257.60 | Gabriel I. Cruz Transport | Bakersfield, CA | 116 | 48 | 0.00 |
| Crestline Sanitation District | 2016 | Composting | 648.00 | Loads hauled by staff; | One Stop San Bernardino California | 45 | 55 | \$17.50 |
| Eastern Municipal Water District | 2017 | Land Application | 45,948.13 | Tule Ranch/AG Tech | Yuma, AZ | 250 | N/A | \$45/Ton (plus fuel surcharge) |

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 one-way | Tipping fee (\$/ton) | Transportation cost (\$/ton) |
| Elsinore Valley Municipal Water District | 2016 | Composting | 15,076.00 | Synagro; Synagro | Kern County, CA; Kern County, CA | 200; 200 | \$80.62 (2016); \$48.60 (2017) | |
| Encina Wastewater Authority | 2016 | Land Application | 6,042.50 | Denali Water Solution; Agtech LLC | Yuma, AZ | 220 | 52; 8.5 | 0; 39 |
| | 2016 | Fertilizer | 1,498.40 | Agtech LLC; Denali Water Solution; CPS inc; Growmore; Nutrient Plus | CA: San Diego, Los Angeles, Ventura, Orange, San Joaquin, AZ: Maricopa | 53; 305; 75; 130; 27; 400 | \$10; 0; 0; 0; 0; 0 | 0.00 |
| | 2017 | Land Application | 8,430.50 | Agtech LLC | Yuma, AZ | 220 | 8.5 | 39.00 |
| | 2017 | Fertilizer | 734.50 | Agtech, LLC; CPS Incf; Growmore; Nutrient Plus | CA: San Diego, Orange, Fresno, Los Angeles, Ventura, AZ: Maricopa, Pima, | 53; 305; 431; 57; 308; 75; 130 | 10; 0; 0; 0; 0; 0; 0 | |
| Goleta Sanitary District | 2016 | Composting | 7,894.00 | Liberty Composting | Kern, CA | 179 | 30 | 25.00 |
| Inland Empire Utilities Agency | 2016 | Composting | 60,453.00 | Inland Empire Regional Composting Authority | Rancho Cucamonga, CA | 13 | 55 | 6.00 |
| LA Sanitation & Environment | 2016 | Land Application | 162,537.00 | Responsible Biosolids Mgmt; Denali Water Solutions | Kern, CA; Yuma, AZ; Merced, CA | 118; 300; 298 | 43.02; 52.89; 52.89 | 0; 0; 0 |
| | 2016 | Composting | 68,315.00 | Denali Water Solutions; Nursery Products | Kern, CA & San Bernardino, CA; San Bernardino, CA; San Bernardino, CA | 118 & 148; 148; 148 | 60.11 & 74.61; 30.24; 30.24 | 0; 26.45; 42.13 |

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 one-way | Tipping fee (\$/ton) | Transportation cost (\$/ton) |
| LA Sanitation & Environment (Continued) | 2016 | Deep Well Injection | 45,234.00 | Denali Water Solutions; GeoEnvironmental Technologies | Los Angeles, CA; Los Angeles, CA | 23; 0 | 0; 76.00 | 7.53; 0 |
| | 2017 | Land Application | 193,147.00 | Responsible Biosolids Mgmt.; Denali Water Solutions | Kern, CA; Yuma, AZ | 118; 300 | 40.80; 53.75 | 0; 0 |
| | 2017 | Composting | 25,431.00 | Denali Water Solutions | Kern, CA; San Bernardino, CA | 118; 148 | 61.80; 61.80 | 0; 0 |
| | 2017 | Deep Well Injection | 53,587.00 | Denali Water Solutions; GeoEnvironmental Technologies | Los Angeles, CA; Los Angeles, CA | 23; 0 | 0; 76.00 | 7.74; 0 |
| Las Virgenes Municipal Water District | 2016 | Composting | 5,326.00 | Not Applicable | Calabasas, CA (Free compost giveaway to customers of LVMWD) | Not Applicable | Not Applicable (Commercial loading is \$8/yd, compost is free) | Not Applicable |
| | 2017 | Composting | 3,830.00 | Not Applicable | | | | |
| Ojai Valley Sanitary District | 2016 | Composting | 1,854.00 | Liberty Compost, Inc. | Kern County, CA | 169 | 49.94 | 0.00 |
| | 2017 | Composting | 1,856.00 | Liberty Compost, Inc. | Kern County, CA | 169 | 49.94 | 0.00 |
| | 2016 | Composting | 3,489.00 | On-Site Composting | Ventura County, CA | 0 | 0 | 0.00 |
| | 2017 | Composting | 3,469.00 | On-Site composting | Ventura County, CA | 0 | 0 | 0.00 |
| Olivenhain Municipal Water District | 2016 | Land Application | 1,244.87 | Atlas | Yuma, AZ | 200 | 12 | 45.00 |
| Orange County Sanitation District | 2016 | Land Application | 140,828.00 | Tule Ranch | Yuma, AZ | 278 | 54.5 | 0.00 |
| | 2016 | Composting | 145,072.00 | Synagro, Inland Empire Regional Composting Authority, Liberty Compost | Synagro (Kern, CA; La Paz, AZ; San Bernardino, CA); IERCA (San Bernardino); Liberty Compost (Kern, CA) | Synagro(176, 359, 130); IERCA (49); Liberty Compost (199) | Synagro (\$76.40, \$58.80, \$48.90); IERCA (\$72.95); Liberty Compost (\$54.79) | 0.00 |
| | 2016 | Direct Burial | 7,991.00 | Orange County Waste and Recycling | Orange County, CA | 35 | 50.95 | 0.00 |

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 one-way | Tipping fee (\$/ton) | Transportation cost (\$/ton) |
| Orange County Sanitation District (Continued) | 2017 | Composting | 155,408.00 | Synagro, IERCA, Liberty Compost | Synagro (San Bernardino, CA); IERCA (San Bernardino, CA); Liberty Compost (Kern, CA) | Synagro (130); IERCA (49); Liberty Compost (199) | Synagro (\$48.90); IERCA (\$72.95); Liberty Compost (\$54.79) | 0.00 |
| | 2017 | Land Application | 132,289.00 | Tule Ranch | Yuma, AZ | 278 | 54.5 | 0.00 |
| San Diego County Sanitation District | 2016 | Landfill – Alt Daily Cover | 10.00 | County of San Diego | San Diego, CA | 34 | 61 | N/A |
| | 2017 | Landfill – Alt Daily Cover | 5.00 | County of San Diego | San Diego, CA | 34 | 61 | N/A |
| San Elijo Joint Powers Authority | 2016 | Land Application | 3,424.00 | Ag Tech, LLC | Yuma, AZ | 200 | 47.5 | 0.00 |
| Sanitation Districts of Los Angeles County | 2016 | Composting | 401,365.00 | Liberty Composting; | Kern, CA; | 172 (JWCP) 118 (Valencia) | 49.26 (JWCP), 43.61 (Valencia) | 0 |
| | | | | Synagro-SKIC; | Kern, CA; | 144 (JWCP) | 71.15 (JWCP) | 0 |
| | | | | Nursery Products (NP); | San Bernardino, CA; | 144(JWCP), 71(Lancaster), 88 (Palmdale) | 46.76 (JWCP), 42.40 (Lancaster), 42.80 (Palmdale) | 0 |
| | | | | IERCF; | San Bernardino, CA | 61(JWCP) | 54.50 (JWCP) | 12.83 |
| | | | | Tulare Lake Compost (TLC) | Kings, CA | 190(JWCP) | n/a (JWCP) | 34.2 |
| | 2017 | Composting | 385,553.00 | Liberty Composting; | Kern, CA; | 172 (JWCP), 118 (Valencia) | 51.60 (JWCP), 46.07 (Valencia) | 0.00 |
| | | | | Synagro-SKIC; | Kern, CA; | 144 (JWCP) | 56.59 (JWCP) | 0.00 |
| | | | | Denali Water Solutions | Yuma, AZ | 310 | 44.18 | 0.00 |
| | | Soil Blending Landfill | 48,193.00 | Holloway Environmental | Kern, CA | 168 | 44.99 | 0.00 |

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 one-way | Tipping fee (\$/ton) | Transportation cost (\$/ton) | |
| Sanitation Districts of Los Angeles County (Continued) | | | | Synagro-Nursery Products (NP); | San Bernardino, CA; | 144(JWCP), 71(Lancaster), 88 (Palmdale) | 48.21 (JWCP), 45.33 (Lancaster), 44.38 (Palmdale) | 0.00 | |
| | | | | IERCF; | San Bernardino, CA | 61(JWCP) | 56.00 (JWCP) | 12.31 | |
| | | | | Tulare Lake Compost (TLC) | Kings, CA | 190(JWCP) | n/a (JWCP) | 35.26 | |
| | | | | Land Application | Denali Water Solutions | Yuma, AZ | 310 | 49.82 | 0.00 |
| | | | | Soil Blending Landfill | Holloway Environmental | Kern, CA | 168 | 46.27 | 0.00 |
| Santa Margarita Water District (continues on next page) | 2016 | Landfill – Alt Daily Cover | 4,400.00 | OCWR; Denali Trucking | San Juan Capistrano, CA; San Juan Capistrano, CA | 10; 20 | 37.90 37.90 | 13.75 | |
| | | Composting | 6,000.00 | GIC Trucking/South Kern Industrial; Terra Trucking/Nursery Products | South Kern Industrial Taft, CA; Nursery Products Helendale, CA | 175 150 | 78.83 61.00 | 0 0 | |
| Santa Margarita Water District (continued from previous page) | 2017 | Landfill – Alt Daily Cover | 2,800.00 | OCWR; Denali Trucking | San Juan Capistrano, CA; San Juan Capistrano, CA | 10; 20 | 37.90 37.90 | 0 13.75 | |
| | | Composting | 7,700.00 | Terra Trucking; GIC Transport | Helendale, CA; | 150; | 61.00 | 0 | |
| | | | | | Vicksburg, AZ; Taft, CA | 273 175 | 61.00 70.00 | 0 0 | |
| South Orange County Wastewater Authority | 2017 | Composting | 18,600.00 | Synagro | San Bernardino, CA | 150 | 56 | 0.00 | |
| Victor Valley Wastewater Reclamation Authority | 2016 | Land Application | 2,938.00 | American Organics | N/A | N/A | N/A | N/A | |

Appendix D: Agency Challenges and Priorities

Appendix D: Agency Challenges and Priorities

| Rate each challenge based on the priority to your agency | | | | | | | | | | | | | | Planning | | |
|--|--------------|------------------------------|---|---|-----------------------------|---|--|-------|-------------------------|---|---|--|--|----------|--|--|
| Name of Agency | Rising Costs | 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 | Bio-solids master plan? | What does your agency plan to do with their biosolids in 2018 and 2019 | What does your agency plan to do with solids digestion and biosolids in 5 years? | | | | | |
| Carpinteria Sanitary District | 3 | 4 | 5 | 4 | 1 | 3 | 1 | | Yes | Continue as is | Continue as is | | | | | |
| City of Corona, Department of Water and Power | 5 | 4 | 5 | 4 | n/a | 5 | 4 | | No | Our agency plans to continue to do the same as 2017. Dry pellets will be sold/hailed away to be used for land-application or to be blended with other material to be used as fertilizer | Our agency plans to continue to do the same as 2017. Dry pellets will be sold/hailed away to be used for land-application or to be blended with other material to be used as fertilizer | | | | | |
| City of Riverside RWQCP | 5 | 2 | 5 | 5 | 4 | 4 | 1 | | Yes | Same as 2017 | Potential Class A options | | | | | |
| City of San Bernardino Municipal Water Department | 5 | 2 | 3 | 4 | n/a | 4 | n/a | | No | Continue mesophilic anaerobic digestions and utilization of contractor for hauling and composting | Continue current practice | | | | | |
| City of San Diego | 3 | 4 | 3 | 3 | 1 | 5 | 1 | | Yes | Continue with current disposal options | look at new technologies and continue with current methods | | | | | |

Appendix D: Agency Challenges and Priorities

| Name of Agency | Rate each challenge based on the priority to your agency | | | | | | | | | | Planning | |
|---|--|------------------------------|---|---|-----------------------------|---|--|-------|-------------------------|---|--|--|
| | Rising Costs | 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 | Bio-solids master plan? | What does your agency plan to do with their biosolids in 2018 and 2019 | What does your agency plan to do with solids digestion and biosolids in 5 years? | |
| City of Santa Barbara | 3 | 2 | 4 | 4 | n/a | n/a | n/a | | No | Maintain our current biosolids management strategy. | Maintain our current biosolids management strategy. | |
| City of Santa Maria | 2 | 1 | 2 | 4 | 2 | 5 | 3 | | No | same as in previous years | same as in previous years | |
| City of Thousand Oaks - Hill Canyon Treatment Plant | 2 | 4 | 5 | 5 | 2 | 5 | 5 | | No | Continue with current operations while exploring other options and investigating new technologies | Whatever is most fiscally responsible under regulatory framework at that time. | |
| Crestline Sanitation District | 3 | 3 | 4 | 5 | 1 | 3 | 1 | | No | Same | Same | |
| Eastern Municipal Water District | 5 | 5 | 5 | 5 | n/a | 5 | n/a | | Yes | Same as previous years | Same as previous years | |
| Elsinore Valley Municipal Water District | 4 | 4 | 5 | 5 | n/a | 3 | 1 | | Yes | Haul offsite for composting | Haul offsite for composting | |
| Encina Wastewater Authority | 3 | 3 | 3 | 4 | 3 | 3 | 1 | | Yes | Land Application and Fertilizer Use | Same | |
| Goleta Sanitary District | 5 | 5 | 5 | 5 | 5 | 5 | 2 | | No | Same as past along with a Lystek pilot project on site. Evaluating long term management strategy | Currently being evaluated and a master plan is being developed. | |

Appendix D: Agency Challenges and Priorities

| Name of Agency | Rate each challenge based on the priority to your agency | | | | | | | | | | | Planning | |
|---------------------------------------|--|------------------------------|---|---|-----------------------------|---|--|---|-------------------------|--|---|----------|--|
| | Rising Costs | 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 | Bio-solids master plan? | What does your agency plan to do with their biosolids in 2018 and 2019 | What does your agency plan to do with solids digestion and biosolids in 5 years? | | |
| Inland Empire Utilities Agency | 2 | 2 | 2 | n/a | 2 | 3 | 2 | Securing sustainable markets for end product: Compost | Yes | Send to our composting facility | Upgrade to 100% centrifuge and continue to send all to our composting facility | | |
| LA Sanitation & Environment | 4 | 4 | 4 | 4 | 1 | 4 | 1 | | No | LA Sanitation will continue with land application, composting and deep well injection. | Co-digestion is expected to be running at Hyperion by 2022. The current end use options will likely remain unchanged. | | |
| Las Virgenes Municipal Water District | 5 | 3 | 3 | 3 | n/a | 5 | n/a | | Yes | Continue compost operations | Continue compost operations | | |
| Ojai Valley Sanitary District | n/a | n/a | n/a | n/a | n/a | n/a | 4 | | No | Compost On-Site April Thru October and have Biosolids hauled to Liberty Compost Inc. during the winter months. | No solids digestion. Biosolids same as above question | | |
| Olivenhain Municipal Water District | 3 | 3 | 4 | 3 | 1 | 4 | 1 | | No | Continue to send Biosolids to Yuma | Unknown at this point, would like to investigate moving to Class A | | |

Appendix D: Agency Challenges and Priorities

| Name of Agency | Rate each challenge based on the priority to your agency | | | | | | | | | | | Planning | |
|--|--|------------------------------|---|---|-----------------------------|---|--|-------|-------------------------|--|---|----------|--|
| | Rising Costs | 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 | Bio-solids master plan? | What does your agency plan to do with their biosolids in 2018 and 2019 | What does your agency plan to do with solids digestion and biosolids in 5 years? | | |
| Orange County Sanitation District | 5 | 5 | 5 | 5 | 3 | 5 | n/a | | Yes | Continue to utilize composting and land application biosolids management options and begin initial information gathering on soil blending opportunities. | Begin design work on new Temperature Phased Anaerobic Digestion system for Plant No. 1 to produce Class A biosolids. | | |
| San Diego County Sanitation District | n/a | n/a | n/a | n/a | 4 | n/a | 5 | | No | Landfill | Belt Filter Press | | |
| San Elijo Joint Powers Authority | 4 | 5 | 5 | 5 | 2 | 5 | 1 | | No | Produce Class B and truck to Yuma, AZ | Biosolids improvement study is underway. Likely recommendation will be to provide primary sludge thickening and to replace the belt filter presses with either screw presses or centrifuge dewatering equipment | | |
| Sanitation Districts of Los Angeles County | 5 | 5 | 5 | 5 | 2 | 4 | 2 | | No | Maintain and utilize a diversified portfolio of management/reuse providers, both third party and self-owned. | No major change planned. Explore additional technologies and providers (contractors) for composting and land application. | | |

Appendix D: Agency Challenges and Priorities

| Name of Agency | Rate each challenge based on the priority to your agency | | | | | | | | | | | Planning | |
|--|--|------------------------------|---|---|-----------------------------|---|--|-------|-------------------------|--|--|----------|--|
| | Rising Costs | 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 | Bio-solids master plan? | What does your agency plan to do with their biosolids in 2018 and 2019 | What does your agency plan to do with solids digestion and biosolids in 5 years? | | |
| Santa Margarita Water District | 5 | 5 | 4 | 5 | n/a | 3 | n/a | | No | Landfill and compost | Drying and energy recovery | | |
| South Orange County Wastewater Authority | 3 | 3 | 5 | 4 | 1 | 4 | 1 | | Yes | Continue composting and landfilling | No change | | |
| Victor Valley Wastewater Reclamation Authority | 5 | 5 | 5 | 5 | 5 | 5 | 5 | | Yes | Find alternative ways of disposal | Find alternatives to dewatering to increase Drying Bed capacity | | |

Appendix E: Product Marketing

Appendix E: Product Marketing

| Name of Agency | Does your agency directly market biosolids products? | | | | | | | | If Yes where is the product marketed? (County, State) |
|---|--|--------------------|---------------|--------------------------|----------|---------|-------|---|---|
| | Compost | Fertilizer pellets | Soil Blending | Renewable energy pellets | Biofuels | Biochar | Other | | |
| Carpinteria Sanitary District | No | No | No | No | No | No | No | | |
| City of Corona, Department of Water and Power | No | No | No | No | No | No | No | | |
| City of Riverside RWQCP | No | No | No | No | No | No | No | | |
| City of San Bernardino Municipal Water Department | No | No | No | No | No | No | No | | |
| City of San Diego | No | No | No | No | No | No | No | | |
| City of Santa Barbara | No | No | No | No | No | No | No | | |
| City of Santa Maria | No | No | No | No | No | No | No | | |
| City of Thousand Oaks - Hill Canyon Treatment Plant | No | No | No | No | No | No | No | | |
| Crestline Sanitation District | No | No | No | No | No | No | No | | |
| Eastern Municipal Water District | No | No | No | No | No | No | No | | |
| Elsinore Valley Municipal Water District | No | No | No | No | No | No | No | | |
| Encina Wastewater Authority | No | Yes | No | No | No | No | No | San Diego, CA | |
| Goleta Sanitary District | No | No | No | No | No | No | No | | |
| Inland Empire Utilities Agency | Yes | No | Yes | No | No | No | No | CA: San Bernardino, Riverside, Los Angeles, San Diego, Kern, Orange NV: Clark County | |
| LA Sanitation & Environment | No | No | No | No | No | No | No | | |
| Las Virgenes Municipal Water District | Yes | No | No | No | No | No | No | Los Angeles, CA | |
| Ojai Valley Sanitary District | No | No | No | No | No | No | No | | |
| Olivenhain Municipal Water District | No | No | No | No | No | No | No | | |

Appendix E: Product Marketing

| Name of Agency | Does your agency directly market biosolids products? | | | | | | | | If Yes where is the product marketed? (County, State) |
|--|--|--------------------|---------------|--------------------------|----------|---------|-------|----|---|
| | Compost | Fertilizer pellets | Soil Blending | Renewable energy pellets | Biofuels | Biochar | Other | | |
| Orange County Sanitation District | No | No | No | No | No | No | No | No | |
| San Diego County Sanitation District | No | No | No | No | No | No | No | No | |
| San Elijo Joint Powers Authority | No | No | No | No | No | No | No | No | |
| Sanitation Districts of Los Angeles County | Yes | No | No | No | No | No | No | No | TLC= Kings, CA; IERCF= San Bernardino, Riverside, CA |
| Santa Margarita Water District | No | No | No | No | No | No | No | No | |
| South Orange County Wastewater Authority | No | No | No | No | No | No | No | No | |
| Victor Valley Wastewater Reclamation Authority | No | No | No | No | No | No | No | No | |

Appendix F: Organics Diversion

Appendix F: Organics Diversion

| Organics Diversion | | | | | | | | |
|---|--|--|---|-------------------|----------------|----------------------|---|--|
| Name of Agency | Does your agency foresee any changes in your operations based on emerging organic (food waste) diversion regulations (ie AB 1826 or SB 1383) | Is your agency co-digesting high strength organics with solids to enhance methane production? | What type of feedstock for future co-digestion? | Type of feedstock | Total wet tons | Feedstock Contractor | Agency tipping fee (\$/tons) to receive feedstock | if other describe |
| Carpinteria Sanitary District | No foreseen changes due to emerging organic diversion regulations | No the agency is not co-digesting high strength organics with solids to enhance methane production | | | | | | |
| City of Corona, Department of Water and Power | No foreseen changes due to emerging organic diversion regulations | No the agency is not co-digesting high strength organics with solids to enhance methane production | | | | | | |
| City of Riverside RWQCP | Yes there will be changes due to emerging organic diversion regulations | Yes the agency is co-digesting high strength organics with solids to enhance methane production | | ADM Food waste | 1515 43.5 | SMC Burrtec | | Currently under review, ordinance coming in 2019 |
| City of San Bernardino Municipal Water Department | Possibly there might be changes due to emerging organic diversion regulations SBMWD might consider accepting food waste and grease slurry to increase biogas production | Not at this time, but planning to in the future | Future Feedstock: FOG, Food waste | | | | | |
| City of San Diego | No foreseen changes due to emerging organic diversion regulations | No the agency is not co-digesting high strength organics with solids to enhance methane production | | | | | | |
| City of Santa Barbara | No foreseen changes due to emerging organic diversion regulations | Yes the agency is co-digesting high strength organics with solids to enhance methane production | | FOG | 3645 | Marborg Industries | 12.00 | |

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| Organics Diversion | | | | | | | | |
|---|--|--|---|---------------------------------------|----------------|-------------------------------|---|-------------------|
| Name of Agency | Does your agency foresee any changes in your operations based on emerging organic (food waste) diversion regulations (ie AB 1826 or SB 1383) | Is your agency co-digesting high strength organics with solids to enhance methane production? | What type of feedstock for future co-digestion? | Type of feedstock | Total wet tons | Feedstock Contractor | Agency tipping fee (\$/tons) to receive feedstock | if other describe |
| City of Santa Maria | No foreseen changes due to emerging organic diversion regulations | No the agency is not co-digesting high strength organics with solids to enhance methane production | | | | | | |
| City of Thousand Oaks - Hill Canyon Treatment Plant | No foreseen changes due to emerging organic diversion regulations | Yes the agency is co-digesting high strength organics with solids to enhance methane production | | Food waste from processing facilities | 100 | 1 | \$0.04 | N/A |
| | | | | Feedstock: FOG | 260 | 5 | \$0.07 | |
| Crestline Sanitation District | No foreseen changes due to emerging organic diversion regulations | No the agency is not co-digesting high strength organics with solids to enhance methane production | | | | | | |
| Eastern Municipal Water District | Yes there will be changes due to emerging organic diversion regulations | No the agency is not co-digesting high strength organics with solids to enhance methane production | | | | | | |
| Elsinore Valley Municipal Water District | No foreseen changes due to emerging organic diversion regulations | No the agency is not co-digesting high strength organics with solids to enhance methane production | | | | | | |
| Encina Wastewater Authority | Yes there will be changes due to emerging organic diversion regulations | Yes the agency is co-digesting high strength organics with solids to enhance methane production | | FOG | 10500 | Liquid Environmental Solution | \$10.80 | |
| | | | | Brewery waste | 9793 | Stone Brewery | \$3.60 | |

Appendix F: Organics Diversion

| Organics Diversion | | | | | | | | |
|---------------------------------------|--|--|---|-------------------|----------------|----------------------|---|-------------------|
| Name of Agency | Does your agency foresee any changes in your operations based on emerging organic (food waste) diversion regulations (ie AB 1826 or SB 1383) | Is your agency co-digesting high strength organics with solids to enhance methane production? | What type of feedstock for future co-digestion? | Type of feedstock | Total wet tons | Feedstock Contractor | Agency tipping fee (\$/tons) to receive feedstock | if other describe |
| Goleta Sanitary District | Yes there will be changes due to emerging organic diversion regulations will evaluate with Lystek pilot project | No the agency is not co-digesting high strength organics with solids to enhance methane production | | | | | | |
| Inland Empire Utilities Agency | Yes there will be changes due to emerging organic diversion regulations | No the agency is not co-digesting high strength organics with solids to enhance methane production | | | | | | |
| | We are exploring the possibility of incorporating clean foodwaste into one of our POTWs. | | | | | | | |
| LA Sanitation & Environment | Yes there will be changes due to emerging organic diversion regulations | Not at this time, but planning to in the future | Future: FOG, Food waste | | | | | |
| | A centralized food waste processing facility is in the works and expected to send processed waste to Hyperion as early as 2022 for co-digestion. | | | | | | | |
| Las Virgenes Municipal Water District | No foreseen changes due to emerging organic diversion regulations | No the agency is not co-digesting high strength organics with solids to enhance methane production | | | | | | |
| Ojai Valley Sanitary District | No foreseen changes due to emerging organic diversion regulations | No the agency is not co-digesting high strength organics with solids to enhance methane production | | | | | | |

Appendix F: Organics Diversion

| Organics Diversion | | | | | | | | |
|--|--|--|---|-------------------|----------------|---|---|---|
| Name of Agency | Does your agency foresee any changes in your operations based on emerging organic (food waste) diversion regulations (ie AB 1826 or SB 1383) | Is your agency co-digesting high strength organics with solids to enhance methane production? | What type of feedstock for future co-digestion? | Type of feedstock | Total wet tons | Feedstock Contractor | Agency tipping fee (\$/tons) to receive feedstock | if other describe |
| Olivenhain Municipal Water District | No foreseen changes due to emerging organic diversion regulations | No the agency is not co-digesting high strength organics with solids to enhance methane production | | | | | | |
| Orange County Sanitation District | Yes there will be changes due to emerging organic diversion regulations in the design phase to construct an organic food waste receiving station for co-digestion | Not at this time, but planning to in the future | Future Feedstock: Food waste | | | | | |
| San Diego County Sanitation District | No foreseen changes due to emerging organic diversion regulations | No the agency is not co-digesting high strength organics with solids to enhance methane production | | | | | | |
| San Elijo Joint Powers Authority | No foreseen changes due to emerging organic diversion regulations | No the agency is not co-digesting high strength organics with solids to enhance methane production | | | | | | |
| Sanitation Districts of Los Angeles County | Yes there will be changes due to emerging organic diversion regulations increasing food waste recycling at JWPCP | Yes the agency is co-digesting high strength organics with solids to enhance methane production | | Food waste | 110 | Waste Management; Insinkerator; Burrtec; Puente Hills MRF (LACSD) | \$17.00 | 110 tons stated above is diverted tons per day, current |
| Santa Margarita Water District | No foreseen changes due to emerging organic diversion regulations | No the agency is not co-digesting high strength organics with solids to enhance methane production | | | | | | |

Appendix F: Organics Diversion

| Organics Diversion | | | | | | | | |
|--|--|--|---|-------------------|----------------|----------------------|---|-------------------|
| Name of Agency | Does your agency foresee any changes in your operations based on emerging organic (food waste) diversion regulations (ie AB 1826 or SB 1383) | Is your agency co-digesting high strength organics with solids to enhance methane production? | What type of feedstock for future co-digestion? | Type of feedstock | Total wet tons | Feedstock Contractor | Agency tipping fee (\$/tons) to receive feedstock | if other describe |
| South Orange County Wastewater Authority | No foreseen changes due to emerging organic diversion regulations | No the agency is not co-digesting high strength organics with solids to enhance methane production | | | | | | |
| Victor Valley Wastewater Reclamation Authority | No foreseen changes due to emerging organic diversion regulations | Yes the agency is co-digesting high strength organics with solids to enhance methane production | | Food waste | 3412 | SMC, Co-West | \$0.04 | |
| | we are already excepting food waste which assists in enhancing methane production | | | FOG | 350 | Alpha Omega | \$0.04 | |

Appendix G: Social Media

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| Social Media | | | | |
|---|--|---|---|---------------------|
| Name of Agency | Does your agency utilize social media for biosolids outreach/education | Which types of social media does your agency use? (select all that apply) | If your agency does not use social media, how do you publicize your biosolids program? | Additional comments |
| Carpinteria Sanitary District | Yes | Facebook Website | None | |
| City of Corona, Department of Water and Power | We do not publicize our biosolids program | None | We do not publicize our biosolids program | |
| City of Riverside RWQCP | No | None | None | |
| City of San Bernardino Municipal Water Department | | | | |
| City of San Diego | Yes | Facebook Twitter YouTube Website | We do not publicize our biosolids program | |
| City of Santa Barbara | Yes | Website | None | |
| City of Santa Maria | We do not publicize our biosolids program | None | We do not publicize our biosolids program | |
| City of Thousand Oaks - Hill Canyon Treatment Plant | Yes | Website | N/A | |
| Crestline Sanitation District | No | Website | None | |
| Eastern Municipal Water District | We do not publicize our biosolids program | Website | We do not publicize our biosolids program, Biosolids program is mentioned in concept to not actively promoted | |
| Elsinore Valley Municipal Water District | No | None | N/A | |
| Encina Wastewater Authority | Yes | Facebook Website Community outreach events | Community outreach events | |
| Goleta Sanitary District | Yes | Website | Community events and website. | |
| Inland Empire Utilities Agency | Yes | Facebook Twitter Website | Newspaper/Paper Media | |

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| Social Media | | | | |
|--|--|---|--|---|
| Name of Agency | Does your agency utilize social media for biosolids outreach/education | Which types of social media does your agency use? (select all that apply) | If your agency does not use social media, how do you publicize your biosolids program? | Additional comments |
| LA Sanitation & Environment | Yes | Facebook Twitter Website | Community events and website. | |
| Las Virgenes Municipal Water District | Yes | Facebook Website | Newspaper/Paper Media | |
| Ojai Valley Sanitary District | Yes | Website | Newsletter | |
| Olivenhain Municipal Water District | No | Facebook Twitter YouTube Website | None | |
| Orange County Sanitation District | Yes | Facebook Twitter YouTube Website | Yes | |
| San Diego County Sanitation District | No | None | None | Total tons sent to end user in 2016/2017 are based on dry tons, not wet tons. Before sending out to end user, the biosolids produced are dewatered at on-site drying beds to reduce the volume. |
| San Elijo Joint Powers Authority | We do not publicize our biosolids program | Website | We do not publicize our biosolids program | |
| Sanitation Districts of Los Angeles County | Yes | Facebook | We do not publicize our biosolids program | |
| Santa Margarita Water District | We do not publicize our biosolids program | Facebook Twitter YouTube Website | We do not publicize our biosolids program | |

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| Social Media | | | | |
|--|--|---|--|---------------------|
| Name of Agency | Does your agency utilize social media for biosolids outreach/education | Which types of social media does your agency use? (select all that apply) | If your agency does not use social media, how do you publicize your biosolids program? | Additional comments |
| South Orange County Wastewater Authority | Yes | Website | Website | |
| Victor Valley Wastewater Reclamation Authority | Yes | Facebook Website | Newspaper/Paper Media | |