

# MEMO

Discussion/Action  
Item #: 7b



Meeting Date: April 19, 2024

To: Board of Directors  
From: Director of Engineering & Compliance, Guy R. Petraborg  
Approved by: General Manager, Felipe Melchor

**Subject: Discuss Proposed Biosolids Tip Fee Increase from \$42 Per Ton to \$50 Per Ton for the Period of July 1st to December 31st of FY2024/25**

**RECOMMENDATION:** Discuss the proposed Biosolids Tip Fee increase from \$42 to \$50 per ton ("wet ton" basis) for the period of July 1st to December 31st of 2024 and provide guidance to staff for the biosolids tip fee rate to be used to prepare the FY2024/25 Preliminary Budget.

## **BACKGROUND**

Between 1968 and 1990, ReGen Monterey (ReGen) accepted most of the liquid wastes (wet sludge, sewage or septage) in Monterey County and managed it in a 200-acre area south of the landfill. Prior to 1990, the Carmel Area Wastewater District (CAWD) began bringing dewatered sludge (aka 'biosolids') to ReGen which was co-disposed with municipal solid wastes (MSW) in the Monterey Peninsula Landfill (MPL). In 1990, the Monterey Regional Water Pollution Control Agency (MRWPCA), now Monterey One Water (M1W), opened the regional treatment plant (RTP) for wastewater treatment on a 100-acre area formerly owned by ReGen and formerly a portion of the area used for liquid waste management. Biosolids from M1W's RTP have been received by ReGen since 1990.

In 1997, CAWD began diverting their biosolids to a land application processing facility located outside of Monterey County (an example of a SB 1383 compliant 'organics' diversion option). Also in 1997, ReGen began diverting some biosolids to their onsite (e.g., on landfill) co-composting with processed yard materials (aka 'green waste' materials) for production of an Alternate Daily Cover (ADC) material, a beneficial reuse activity. Reportedly, charging for the diversion of RTP biosolids to the co-composting operations for ADC production ended around 2013 when M1W declined to accept a higher tip fee rate associated with increasing operations costs of the co-composting of biosolids. The co-composting facility was operated for a couple more years until Fall 2015 when California promulgated the General Order Waste Discharge Requirements (WDR) for Composting Facilities. At that time, ReGen determined that it was unfeasible to permit/design the regulatory controls infrastructure for co-composting operations on a waste mass (e.g., the landfill) in order to comply with the new General Order WDR. Biosolids are not processed at the Compost Facility operated by the Keith Day Company to avoid food safety related issues associated with co-composting of biosolids. Since 2015 the RTP biosolids have been co-disposed

### Physical Address

14201 Del Monte Blvd.  
Salinas, CA 93908

### Mailing Address

P.O. Box 1670  
Marina, CA 93933

### Phone / Fax

831-384-5313 PHONE  
831-384-3567 FAX

### Web / Social

ReGenMonterey.org  
@ReGenMonterey

*Let's not waste this.*



with MSW in the lined areas of the landfill. Refer to Attachments A, B, and C for more information of the history of biosolids at ReGen and historic costs and tip fee rate information.

## **DISCUSSION**

In 2016 California passed Senate Bill (SB) 1383 which represents a statewide effort to reduce emissions of short-lived climate pollutants (SLCP). The goal of the regulations aims to divert 50% of organic waste from landfills below 2014 levels by 2020 and divert at least 75% by 2025. Biosolids are one of the materials defined as “organic wastes” by SB 1383. A gradual implementation of SB 1383’s organics diversion regulations began in January of 2022 and full implementation is scheduled for January 1, 2025. This Board Meeting agenda item solely focuses on the proposed increase to the Biosolids Tip Fee rate for the period in the next fiscal year prior to January 1, 2025 date of full implementation. The following Board Meeting agenda item will be a discussion as to whether to discontinue biosolids disposal services starting on January 1, 2025.

ReGen has been providing M1W biosolids disposal services since 1990. During that period ReGen has been providing what is a reduced pricing approach to the posted Biosolids Tip Fee rate for disposal in the landfill. ReGen’s pricing has been below rate study amounts, below MSW (aka “regular garbage”) posted tip fee rates, and below SF Bay Area market rates for biosolids disposal in landfills. It is known that from time-to-time ReGen’s Board of Directors discussions have conveyed consideration of the potential additional impact of ReGen general disposal tip fee rates increases at times of significant annual price increases by other agencies or utilities. It is also known that the ReGen Board has decided to defer or lower the amount of ReGen’s general disposal tip fee increases in consideration of their additional impact on the rate payer given known significant price increases by other agencies or utilities at those times.

In 2008 a rate study was conducted for biosolids landfill disposal and found that ReGen’s costs for biosolids disposal were about \$38 per ton. The ReGen Board of Directors subsequently adopted a \$30 per ton Biosolids Tip Fee rate to be effective on January 1, 2009. That was a \$5 per ton increase at that time from the then existing 2008 rate of \$25 per ton. Since that time the biosolids disposal tip fee rate increases have generally tracked similar rate increases that ReGen adopted for the main MSW Disposal Tip Fee rate.

Given this approximate 34-year history of the ReGen pricing approach for the Biosolids Tip Fee rate, it is staff’s opinion that ReGen should continue the reduced pricing approach the final 6-month period ending December 31, 2024 prior to the scheduled full implementation of SB 1383 requirements for diversion of at least 75% of organic wastes, inclusive of biosolids, away from landfill disposal. Please note that the SB 1383 requirements are having significant influence on changes to both the solid waste industry and the wastewater industry relative to biosolids management practices. Those industry changes, the practice of biosolids disposal in landfills, and associated future rate setting practices for biosolids will be discussed in a separate agenda item. Those considerations are appropriate for the post-January 1, 2025 date of full implementation of SB 1383 requirements.



## **FINANCIAL IMPACT**

Assuming that 7,500 tons (half of the approximate FY 2022/23 annual amount) of biosolids is received during the six-month period between July 1<sup>st</sup> and December 31<sup>st</sup>, a \$60,000 increase in revenues is anticipated in association with a biosolids tip fee increase of \$8 per ton (from \$42 to \$50 per ton).

## **CONCLUSION**

With the full implementation of SB 1383 requirements scheduled to start on January 1, 2025 and diversion of at least 75% of organics (2014 basis level, inclusive of biosolids) away from landfill disposal, staff recommends that the Board support a proposed Biosolids Tip Fee increase from \$42 to \$50 per ton for the period of July 1st to December 31st of 2024 as guidance to staff for staff's preparation of the FY2024/25 Preliminary Budget. This will provide certainty for that tip fee rate to the end of the calendar year for budget preparation purposes. That is the final period of time when the SB 1383 requirements are not mandatory. As a result, this approach will also maintain the reduced pricing approach that ReGen has taken for the entire 34-year history of receiving RTP biosolids from M1W. For reference, the proposed \$50 per ton Biosolids Disposal Tip Fee rate is 65% of the \$77 per ton MSW Disposal Tip Fee rate proposed for FY 2024/25.

## **ATTACHMENTS:**

Attachment A – September 11, 2008 Board Report – Proposed Tipping Fee Increase for Sludge Diversion/Disposal

Attachment B – November 12, 2008 Board Report – Approval of Tipping Fee Increase for Sludge Diversion/Disposal

Attachment C – November 13, 2009 Board Report – Carollo Engineers Biosolids (Sludge) Handling Evaluation Report – June 2009



# Memorandum

## MONTEREY REGIONAL WASTE MANAGEMENT DISTRICT

Reviewed by Umm Date 9.12.08  
General Manager

DATE: September 11, 2008  
TO: General Manager  
FROM: Senior Engineer  
SUBJECT: Proposed Tipping Fee Increase for Sludge Diversion/Disposal

---

**RECOMMENDATION:** That the Board of Directors schedule a public hearing for October 17, 2008 to consider an increase in the tipping fee for acceptance of wastewater sludge for processing/diversion and/or landfill disposal, from \$23 per ton (average) to \$30 per ton, effective January 1, 2009, with an annual adjustment for inflation.

---

### BACKGROUND

The following background information provides the history regarding the acceptance and handling of liquid waste and dewatered municipal wastewater treatment plant sludge (also known as "biosolids") by the Monterey Regional Waste Management District (MRWMD) at the Monterey Peninsula Landfill (MPL):

1. From 1968 to 1990, the MRWMD received most of the liquid waste generated in Monterey County. These wastes consisted primarily of undewatered (liquid) sludge from local wastewater treatment plants, and septic tank pumpings (septage) from the unsewered areas. The MRWMD also received chemical toilet pumpings and restaurant grease trap pumpings. These liquid wastes were not placed in the MPL, but were land applied by spreading and discing into the 200 acre sand dune deposits at the MRWMD's Marina site. This was done to maximize water evaporation.
2. Prior to 1990, the MRWMD accepted dewatered sludge from the Carmel Area Wastewater District (CAWD). The CAWD sludge was co-disposed with solid waste at the MPL.
3. In 1990, the Monterey Regional Water Pollution Control Agency (MRWPCA) began operations of the new regional wastewater treatment plant, located next to the MPL. At that time, the MRWMD's liquid waste land spreading operation was largely phased out. In August 1990, the land spreading operation was limited to restaurant grease trap pumpings and other non-hazardous commercial liquid waste that were not acceptable for treatment at the MRWPCA's regional treatment plant.
4. During the period of 1990 to 1996, all of the dewatered sludge accepted by the MRWMD from MRWPCA and CAWD were co-disposed with solid waste at the MPL.
5. In June 1996, the MRWMD began receiving dewatered sludge from the South County Regional Wastewater Authority (SCRWA), serving the cities of Gilroy and Morgan Hill. Initially, all of the SCRWA sludge was landfilled, and later, a portion was diverted for beneficial use at the MPL.
6. In May 1997, the CAWD began hauling their dewatered sludge for disposal outside of Monterey County.

7. In 1997, the MRWMD began diverting a portion of the incoming dewatered sludge for beneficial use at the MPL site. Beneficial uses include:
- Co-composting dewatered sludge with yardwaste prior to the application to the vegetative layer of the long-term intermediate and final cover slopes at the MPL. The nutrients in the applied sludge promote vegetative growth which in turn provides increased erosion control at the site.
  - Use of dewatered sludge as an Alternative Daily Cover (ADC) at the MPL.

The enclosed table presents the tonnage of sludge accepted, landfilled and diverted from the Base Year 1990 through 2007. Also included is a table showing a tonnage breakdown as to where the dewatered sludge was generated from 2001 to 2007.

### **SLUDGE MANAGEMENT COST ANALYSIS**

Staff has internally analyzed the current cost of managing sludge at the MPL, and has identified that the current sludge tipping fee does not cover all the costs borne by the MRWMD in handling the sludge. With the renewed emphasis on the financial performance and efficiencies of all MRWMD operations as a result of the MRWMD's current financial status, it is imperative that the rates for services adequately cover the cost for the provision of those services.

The MRWMD currently receives approximately 21,000 tons per year of dewatered sludge from the MRWPCA and approximately 16,000 tons per year from the SCRWA. The last tipping fee increase for MRWPCA sludge was in 2004, when the Belt Press Sludge rate (with a solids content of approximately 25%) was increased from \$15 per ton to \$20 per ton and the Drying Bed Sludge rate (with a solids content of approximately 50%) was increased from \$20 per ton to \$25 per ton. In 2003, the tipping fee for sludge from the SCRWA (with a solids content of approximately 20%) was increased from \$20 to \$25 per ton.

In April 2008, the MRWMD and MRWPCA jointly retained the services of R3 Consulting Group, Inc. to assist with the review of the "reasonableness" of the basis for a proposed tipping fee increase for the District to continue to manage wastewater sludge at the MPL. A draft of R3's report was reviewed and discussed at the August 22, 2008 meeting of the ad hoc Finance Committee. MRWPCA staff has also reviewed the R3 report.

There are currently two management options available to the MRWMD for the handling of the sludge received at the MPL. One option is for diversion with treatment and beneficial use at the landfill site, and another option is for landfill disposal. A discussion of these two sludge management options, along with the cost analysis as included in the R3 report, is provided below.

1. **Diversion and Beneficial Use.** The sludge management option that the MRWMD currently utilizes is diversion and beneficial use by converting the sludge into a stabilized vegetative cover material for use on the long-term intermediate and final cover side slopes at the MPL. This management option is not sustainable over the long-term because staff has determined that the volume of stabilized sludge already stockpiled at the site, estimated at approximately 150,000 cubic yards, exceeds the MRWMD's long-term need for erosion control material on the landfill side slopes. Any additional sludge stockpiled at the site would need to be removed in the future development of the landfill at an additional cost to the MRWMD. Therefore, future sludge accepted by the MRWMD must be exported to some other off-site end use, either through complete composting and use by the landscaping industry, conversion to energy, or co-disposed in a landfill with solid waste.

A separate jointly-funded study, being conducted concurrently by Carollo Engineers, will provide an analysis of the "highest and best use" and "least-cost" alternatives for the future management of the MRWPCA's sludge. The results of this study are not yet available. Staff is recommending that the current sludge stabilization process be terminated within two years, or until the Carollo study recommendations are implemented, whichever occurs first.

For the District's current sludge diversion operation, the costs include the following:

- Cost to provide the sludge bulking agent (green waste/wood waste chips). Bulking agent materials for the sludge processing operation are provided from the MRWMD's on-site Materials Recovery Facility (MRF). Green waste and wood waste from various sources are ground and screened at the MRF prior to delivery to the sludge processing area.
- Cost to process the sludge on the lined Landfill Module 3. Processing costs include blending sludge and chips into windrows, turning windrows, and transporting stabilized sludge to stockpile.
- MRWMD system organizational and administrative overhead costs associated with their respective activities have been assigned to the sludge processing and green waste bulking agent production based on the appropriate methodology.
- Time value of money due to postponing the use of the 1,152,000 tons of remaining airspace/waste capacity of Landfill Module 3, accelerating the expenditure of \$2,000,000 (construction of Module 5 liner) by five years.
- A credit has been assigned for the revenues generated from the green waste tipping fees. This has been calculated based on the tons of bulking agent that is used to create the stabilized composted vegetative cover.

As presented in the draft R3 report, the cost for the MRWMD to convert the sludge into a stabilized vegetative cover material is approximately \$38 per ton. Staff is recommending that the Board approve a sludge handling rate of \$30 per ton, to match the landfill disposal cost (see below).

2. **Disposal (Landfilling) by Direct Burial with Municipal Solid Waste at the MPL.** For the landfill disposal option, the costs include the following:

- Cost to process the sludge for direct burial in lined Landfill Module 3. The dewatered sludge is mixed thoroughly with the solid waste at the working face to take advantage of the absorptive capacity of the relatively dry solid waste. Using a landfill compactor or dozer, the sludge is mixed with the solid waste, then pushed, spread, and compacted up the working face. More solid waste is then spread on top of the sludge/solid waste mixture prior to covering with six inches of soil or alternative daily cover at the end of the day. The Waste Discharge Requirements stipulate that a minimum ratio of 5 parts solid waste to 1 part sludge must be maintained for landfill disposal of the sludge.
- MRWMD system organizational and administrative overhead costs.

Disposal of sludge at the landfill will require significant changes in the landfill operation. Because of the unique nature of the sludge, direct burial in the landfill presents several operational difficulties. Foremost is the requirement to meter and blend the sludge with solid waste at the minimum 5:1 waste-to-sludge ratio. Additionally, the sludge must be buried in a lined landfill module, which would negate the MRWMD's ability to use the disposal capacity of unlined Modules 1 and 2. Further operational difficulties include equipment cleaning, worker exposure, odor, and tracking of material by vehicle traffic.

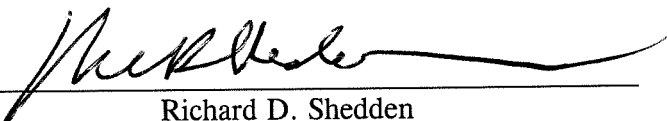
As presented in the draft R3 report, the cost for the MRWMD to bury the sludge in the landfill is approximately \$30 per ton.

### **INCREASED REVENUE**

Implementation of a sludge tipping fee increase to \$30 per ton will result in increased revenue to the MRWMD in the amount of approximately \$230,000 per year. This consists of an increase of \$150,000 per year for the MRWPCA and an increase of \$80,000 per year for the SCRWA. It should be noted that the service areas of the MRWMD and the MRWPCA are not the same. As shown on the attached maps, on the basis of population served, the most significant difference between the two service areas is the fact that MRWPCA serves the City of Salinas, while the MRWMD does not.

### **RECOMMENDATION**

It is therefore recommended that that the Board of Directors receive staff report and schedule a public hearing for October 17, 2008 to consider an increase in the tipping fee for acceptance of wastewater sludge for diversion and/or disposal at the MPL, from the current \$23 per ton (average) to \$30 per ton, effective January 1, 2009, with an annual adjustment for inflation.



---

Richard D. Shedden

Attachment

**Monterey Regional Waste Management District**

**DEWATERED SLUDGE ACCEPTED, LANDFILLED, AND DIVERTED**

<b>Year</b>	<b>Sludge Accepted (tons)</b>	<b>Sludge Landfilled (tons)</b>	<b>Sludge Diverted (tons)</b>	<b>Sludge Diverted (%)</b>
1990 <sup>(1)</sup>	4,398	4,398	0	0.0%
1991	10,825	10,825	0	0.0%
1992	13,540	13,540	0	0.0%
1993	10,760	10,760	0	0.0%
1994	10,809	10,809	0	0.0%
1995	13,415	13,415	0	0.0%
1996	10,767	10,767	0	0.0%
1997	31,305	24,316	6,989	22.3%
1998	27,190	11,599	15,591	57.3%
1999	30,050	13,333	16,717	55.6%
2000	30,443	14,508	15,935	52.3%
2001	36,611	6,164	30,447	83.2%
2002	40,330	5,025	35,305	87.5%
2003	37,305	1,018	36,287	97.3%
2004	41,696	2,342	39,354	94.4%
2005	40,741	2,733	38,008	93.3%
2006	38,150	3,850	34,300	89.9%
2007	40,357	3,920	36,437	90.3%
<b>TOTAL</b>	<b>468,692</b>	<b>163,322</b>	<b>305,370</b>	<b>65.10%</b>

<sup>(1)</sup> Prior to 1990, MRWMD received a small amount of sludge from Carmel Area Wastewater District, all of which was landfilled. In 1990, the MRWMD began receiving sludge from the MRWPCA regional wastewater treatment plant.



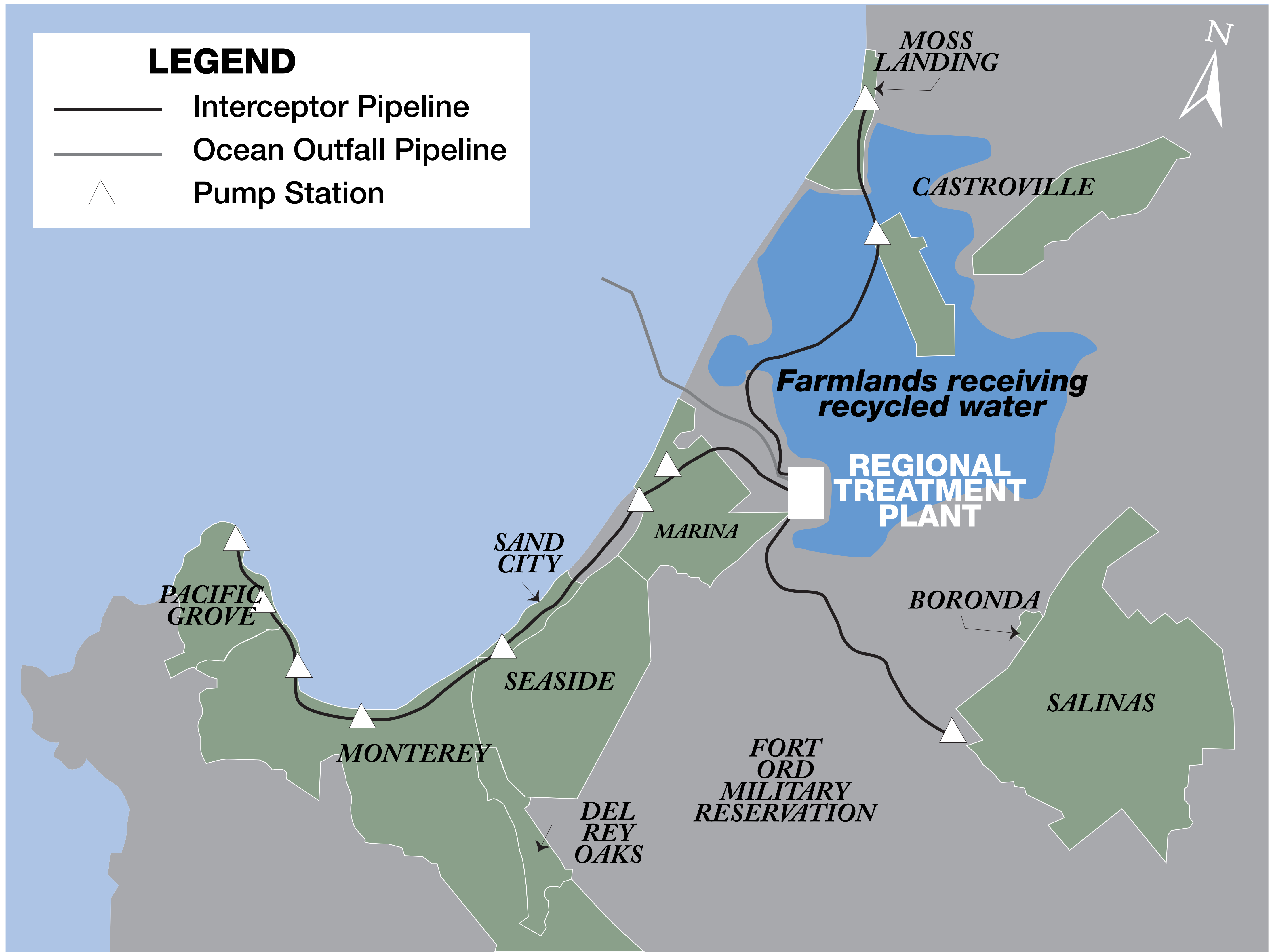
# Monterey Regional Waste Management District

Dewatered Sludge - 2001 thru 2007 Tonnage

2001	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Totals
California Utility Services	0	7	30	23	6	0	69	32	72	0	0	0	240
MRWPCA	1,680	414	228	1,300	2,041	3,581	1,851	917	2,687	2,478	2,761	1,823	21,761
SCRWA	1,346	1,202	1,300	1,174	1,356	1,101	1,106	1,326	1,012	1,312	1,118	1,258	14,610
Totals	3,026	1,623	1,558	2,497	3,403	4,683	3,026	2,275	3,771	3,790	3,878	3,080	36,611
2002	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Totals
Cal. Utility Services/Scotts Valley	43	8	128	23	8	32	92	42	46	20	57	37	536
Carmel Area Waste Water Dist	0	0	0	0	0	0	0	0	0	0	0	138	138
MRWPCA	1,469	1,237	2,289	1,462	1,145	2,568	2,582	1,817	2,157	3,115	3,359	1,641	24,840
SCRWA	1,353	1,190	1,271	1,244	1,315	1,099	1,234	1,209	1,134	1,283	1,138	1,345	14,816
Totals	2,865	2,435	3,688	2,729	2,468	3,699	3,907	3,069	3,337	4,418	4,554	3,160	40,330
2003	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Totals
California Utility Services	28	17	34	31	26	47	40	10	19	5	18	15	289
Carmel Area Waste Water Dist	21	167	46	0	0	0	0	0	0	0	0	0	234
City of Scotts Valley	0	0	0	0	0	0	185	150	167	181	155	181	1,018
MRWPCA	1,117	284	1,694	1,755	1,703	4,594	4,652	2,113	2,811	311	0	58	21,091
SCRWA	1,384	1,113	1,246	1,229	1,237	1,272	1,306	1,115	1,191	1,218	1,145	1,216	14,673
Totals	2,550	1,581	3,020	3,015	2,966	5,913	6,183	3,387	4,187	1,715	1,318	1,470	37,305
2004	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Totals
California Utility Services	29	22	47	34	11	0	4	26	13	13	26	27	252
City of Scotts Valley	173	134	224	195	153	161	168	173	158	175	161	194	2,070
MRWPCA	97	591	2,860	3,625	3,665	3,211	1,933	1,825	1,923	2,020	2,266	1,861	25,877
SCRWA	1,059	1,100	1,291	1,135	1,152	1,218	990	1,172	927	1,074	1,217	1,163	13,497
Totals	1,359	1,846	4,422	4,990	4,980	4,589	3,096	3,195	3,021	3,283	3,670	3,245	41,696
2005	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Totals
California Utility Services	10	41	5	39	5	0	19	14	62	27	74	35	331
City of Scotts Valley	200	180	242	182	188	194	138	175	185	159	187	190	2,220
MRWPCA	1,907	1,953	289	0	508	2,692	1,451	3,625	927	3,054	1,915	693	19,012
SCRWA	1,235	1,073	1,177	1,110	1,207	1,236	1,236	1,254	1,110	1,125	1,327	1,404	14,494
Sunnyslope County Water Dist	0	0	0	0	0	0	0	0	2,222	2,462	0	0	4,684
Totals	3,352	3,247	1,712	1,331	1,908	4,122	2,845	5,068	4,506	6,827	3,503	2,321	40,741
2006	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Totals
California Utility Services	39	36	0	16	36	34	43	17	33	39	31	28	350
City of Scotts Valley	217	192	223	178	222	197	171	197	189	192	199	197	2,375
MRWPCA	0	79	1,476	1,936	3,226	882	1,677	1,287	1,886	2,506	2,834	1,925	19,714
SCRWA	1,304	1,086	1,307	1,284	1,336	1,274	1,120	1,189	1,135	1,286	1,144	1,208	14,674
Other	0	0	0	0	0	0	0	0	0	1,033	0	4	1,037
Totals	1,559	1,393	3,006	3,414	4,820	2,387	3,012	2,691	3,243	5,055	4,208	3,362	38,150
2007	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Totals
California Utility Services	40	34	8	36	26	35	31	22	17	11	86	40	387
City of Scotts Valley	212	172	227	192	213	190	191	198	173	218	194	197	2,377
MRWPCA	2,398	2,206	2,110	0	0	0	1,431	3,212	3,375	2,843	2,225	1,520	21,320
SCRWA	1,333	1,408	1,389	1,463	1,448	1,404	1,349	1,239	1,255	1,326	1,231	1,427	16,272
Totals	3,984	3,820	3,735	1,691	1,687	1,629	3,002	4,671	4,820	4,399	3,735	3,184	40,357

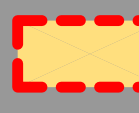

# LEGEND

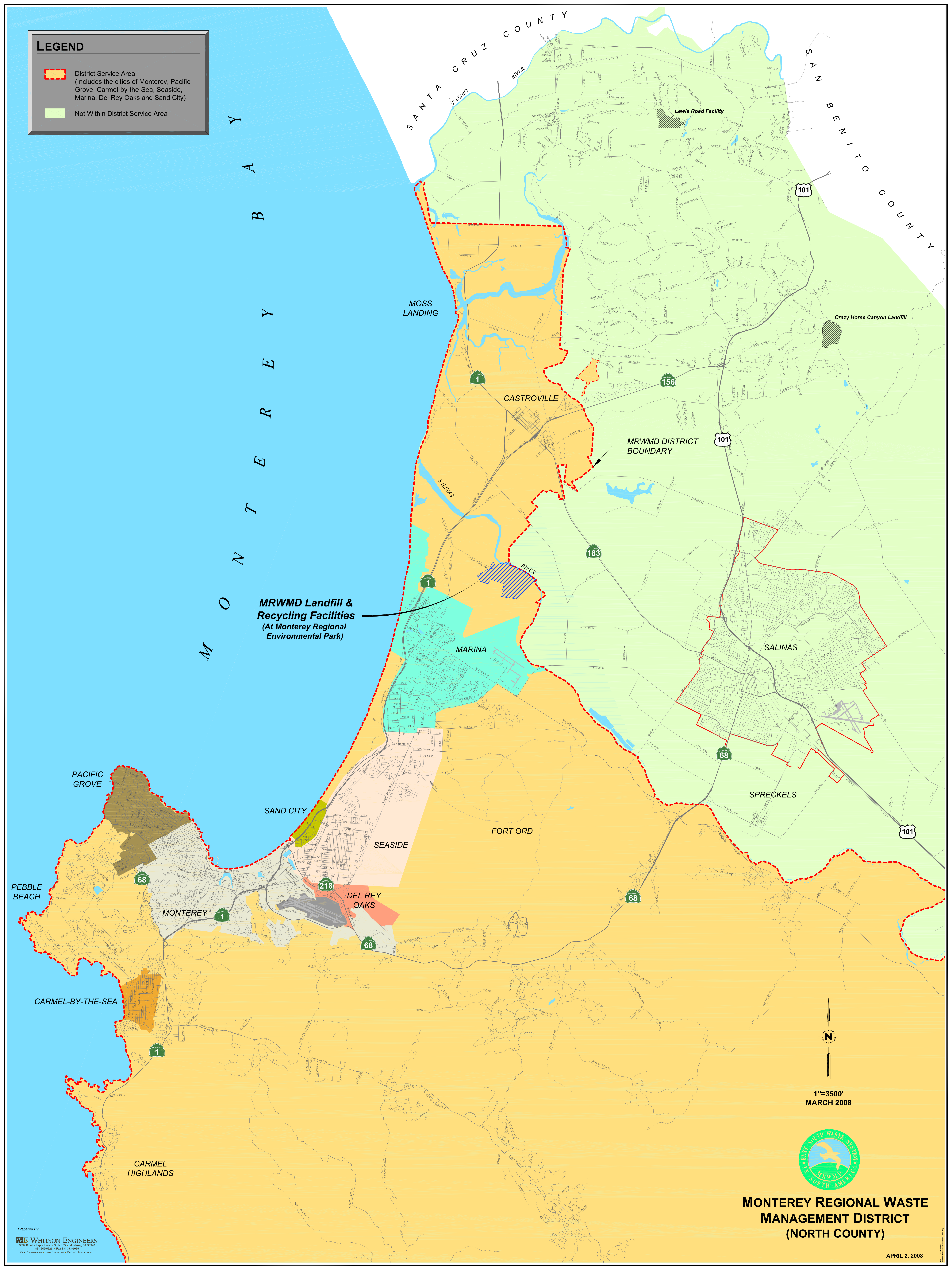
- Interceptor Pipeline
- Ocean Outfall Pipeline
- △ Pump Station





# LEGEND

-  District Service Area  
(Includes the cities of Monterey, Pacific Grove, Carmel-by-the-Sea, Seaside, Marina, Del Rey Oaks and Sand City)
-  Not Within District Service Area



1"=3500'  
MARCH 2008



**MONTEREY REGIONAL WASTE  
MANAGEMENT DISTRICT  
(NORTH COUNTY)**





6

**ATTACHMENT B**  
**Memorandum**  
MONTEREY REGIONAL  
WASTE MANAGEMENT DISTRICT

Reviewed by Wmm Date 11/14/08  
General Manager

DATE: November 12, 2008  
TO: General Manager  
FROM: Assistant General Manager  
SUBJECT: Approval of Tipping Fee Increase for Sludge Diversion/Disposal

---

**RECOMMENDATION:** That the Board of Directors adopt Resolution 2008-13 approving an increase in the tipping fee for acceptance of wastewater sludge for processing/diversion and/or landfill disposal, from \$25 per ton to \$30 per ton, effective January 1, 2009.

---

**BACKGROUND**

Please refer to the attached memo dated September 11, 2008 for a detailed discussion of the historical acceptance and handling of dewatered municipal wastewater treatment plant sludge (also know as "biosolids") by the Monterey Regional Waste Management District (District) at the Monterey Peninsula Landfill (MPL), and a discussion of the current sludge management cost analysis performed in support of the proposed tipping fee increase.

The MRWMD currently receives approximately 21,000 tons per year of dewatered sludge from the Monterey Regional Water Pollution Control Agency (MRWPCA) and approximately 16,000 tons per year from the South County Regional Wastewater Authority (SCRWA), which serves Gilroy/Morgan Hill. The last tipping fee increase for MRWPCA sludge was in 2004, when the Belt Press Sludge rate (with a solids content of approximately 25%) was increased from \$15 per ton to \$20 per ton and the Drying Bed Sludge rate (with a solids content of approximately 50%) was increased from \$20 per ton to \$25 per ton. In 2003, the tipping fee for sludge from the SCRWA (with solids content of approximately 20%) was increased from \$20 to \$25 per ton.

Staff has internally analyzed the current cost of managing sludge at the MPL, and has identified that the current sludge tipping fee does not cover all the costs borne by the District in handling the sludge. With the renewed emphasis on the financial performance and efficiencies of all District operations as a result of the District's current financial status, it is imperative that the rates for services adequately cover the cost for the provision of those services.

**PROPOSED TIPPING FEE INCREASE UPDATE**

In April 2008, the District and MRWPCA jointly retained the services of R3 Consulting Group (R3) to assist with the review of the "reasonableness" of the basis for a proposed tipping fee increase for the District to continue to manage sludge at the MPL. As presented in the R3 Final Letter Report, dated November 11, 2008, R3 has concluded that the proposed rate for the District to convert the sludge into a stabilized vegetative landfill cover material is reasonable at approximately \$38 per ton. MRWPCA staff requested that the R3 report include the cost to dispose of the sludge in the landfill, as they wanted the lowest cost possible. The District has not landfilled sludge for over 10 years. District staff prepared a cost analysis that stated not all costs could be anticipated and if the landfilling of sludge was performed in the future, the costs would have to be trued up to actual expenses. The cost to landfill sludge, as included in the R3 report, is \$30 per ton.

District staff has proposed a sludge tipping fee for either disposal (landfilling) or diversion (producing a vegetative landfill cover) of \$30 per ton, effective January 1, 2009. This is an increase from the posted rate of \$25 per ton, the rate paid by SCRWA. MRWPCA has also received an agreed upon rate of \$20 per ton for their 'belt press' sludge, which has resulted in a "blended rate" of \$23/ton.

At the September 19, 2008 Board Meeting, staff recommended that a Public Hearing be scheduled for October 17, 2008 to consider a sludge diversion/disposal rate increase to \$30 per ton. MRWPCA requested a delay to allow additional time for their staff to review the R3 report on the proposed sludge tipping fee and to meet with District staff. The Board decided to delay the Public Hearing until the November 21<sup>st</sup> Board meeting.

On October 7<sup>th</sup>, District staff met with MRWPCA staff to discuss the proposed rate increase for management of sludge. MRWPCA staff stated that they wanted the lowest cost option and were not concerned with the loss of AB939 diversion credit, which accrues to Monterey County. MRWPCA staff stated that any increase in the sludge disposal fee would result in increased rates for their customers.

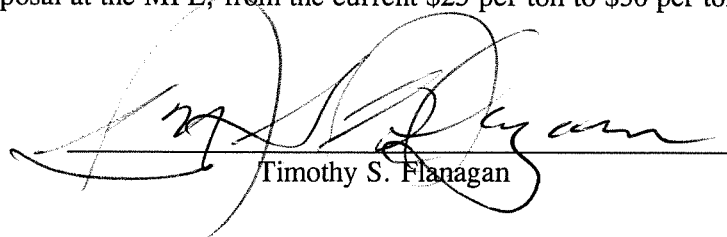
MRWPCA staff contacted Brown and Caldwell (B&C) to review the R3 study. B&C has performed annual rate reviews for MRWPCA. B&C is not known to have solid waste expertise. B&C responded to MRWPCA that using different allocation methods of administrative costs would result in a lower sludge rate. It was agreed that R3 would talk with B&C to discuss the methodology used to allocate the District's Administrative expense to sludge composting and sludge landfilling. R3 does acknowledge that there are other allocation methodologies that could be used, but they cannot recommend a specific allocation factor for Overhead and Administrative expense as being any more appropriate than tons, without a more detailed analysis.

A separate jointly-funded study, being conducted concurrently by Carollo Engineers, will provide an analysis of the "highest and best use" and "least-cost" alternatives for the future management of sludge. The results of this study are not yet available. Staff is recommending that the current sludge stabilization process be terminated within two years, or when the Carollo study recommendations are implemented, whichever occurs first.

On October 27<sup>th</sup>, District staff met with staff from the City of Gilroy to discuss the R3 report and the proposed sludge rate increase to \$30 per ton. Gilroy staff acknowledged that the rate increase appeared reasonable. They noted that it is very important that their sludge continue to be diverted from the landfill. It was pointed out that the R3 report stated that the cost to produce a vegetative landfill cover was \$38 per ton and that based on the results from the Carollo Engineers study, the cost to divert sludge would likely increase in future years.

## **RECOMMENDATION**

It is therefore recommended that that the Board of Directors approve an increase in the tipping fee for acceptance of wastewater sludge for diversion and/or disposal at the MPL, from the current \$25 per ton to \$30 per ton, effective January 1, 2009.



Timothy S. Flanagan



# Memorandum

## MONTEREY REGIONAL WASTE MANAGEMENT DISTRICT

Reviewed by Wmm Date 9.12.08  
General Manager

DATE: September 11, 2008  
TO: General Manager  
FROM: Senior Engineer  
SUBJECT: Proposed Tipping Fee Increase for Sludge Diversion/Disposal

---

**RECOMMENDATION:** That the Board of Directors schedule a public hearing for October 17, 2008 to consider an increase in the tipping fee for acceptance of wastewater sludge for processing/diversion and/or landfill disposal, from \$23 per ton (average) to \$30 per ton, effective January 1, 2009, with an annual adjustment for inflation.

---

### **BACKGROUND**

The following background information provides the history regarding the acceptance and handling of liquid waste and dewatered municipal wastewater treatment plant sludge (also known as "biosolids") by the Monterey Regional Waste Management District (MRWMD) at the Monterey Peninsula Landfill (MPL):

1. From 1968 to 1990, the MRWMD received most of the liquid waste generated in Monterey County. These wastes consisted primarily of undewatered (liquid) sludge from local wastewater treatment plants, and septic tank pumpings (septage) from the unsewered areas. The MRWMD also received chemical toilet pumpings and restaurant grease trap pumpings. These liquid wastes were not placed in the MPL, but were land applied by spreading and discing into the 200 acre sand dune deposits at the MRWMD's Marina site. This was done to maximize water evaporation.
2. Prior to 1990, the MRWMD accepted dewatered sludge from the Carmel Area Wastewater District (CAWD). The CAWD sludge was co-disposed with solid waste at the MPL.
3. In 1990, the Monterey Regional Water Pollution Control Agency (MRWPCA) began operations of the new regional wastewater treatment plant, located next to the MPL. At that time, the MRWMD's liquid waste land spreading operation was largely phased out. In August 1990, the land spreading operation was limited to restaurant grease trap pumpings and other non-hazardous commercial liquid waste that were not acceptable for treatment at the MRWPCA's regional treatment plant.
4. During the period of 1990 to 1996, all of the dewatered sludge accepted by the MRWMD from MRWPCA and CAWD were co-disposed with solid waste at the MPL.
5. In June 1996, the MRWMD began receiving dewatered sludge from the South County Regional Wastewater Authority (SCRWA), serving the cities of Gilroy and Morgan Hill. Initially, all of the SCRWA sludge was landfilled, and later, a portion was diverted for beneficial use at the MPL.
6. In May 1997, the CAWD began hauling their dewatered sludge for disposal outside of Monterey County.

7. In 1997, the MRWMD began diverting a portion of the incoming dewatered sludge for beneficial use at the MPL site. Beneficial uses include:
- Co-composting dewatered sludge with yardwaste prior to the application to the vegetative layer of the long-term intermediate and final cover slopes at the MPL. The nutrients in the applied sludge promote vegetative growth which in turn provides increased erosion control at the site.
  - Use of dewatered sludge as an Alternative Daily Cover (ADC) at the MPL.

The enclosed table presents the tonnage of sludge accepted, landfilled and diverted from the Base Year 1990 through 2007. Also included is a table showing a tonnage breakdown as to where the dewatered sludge was generated from 2001 to 2007.

### **SLUDGE MANAGEMENT COST ANALYSIS**

Staff has internally analyzed the current cost of managing sludge at the MPL, and has identified that the current sludge tipping fee does not cover all the costs borne by the MRWMD in handling the sludge. With the renewed emphasis on the financial performance and efficiencies of all MRWMD operations as a result of the MRWMD's current financial status, it is imperative that the rates for services adequately cover the cost for the provision of those services.

The MRWMD currently receives approximately 21,000 tons per year of dewatered sludge from the MRWPCA and approximately 16,000 tons per year from the SCRWA. The last tipping fee increase for MRWPCA sludge was in 2004, when the Belt Press Sludge rate (with a solids content of approximately 25%) was increased from \$15 per ton to \$20 per ton and the Drying Bed Sludge rate (with a solids content of approximately 50%) was increased from \$20 per ton to \$25 per ton. In 2003, the tipping fee for sludge from the SCRWA (with a solids content of approximately 20%) was increased from \$20 to \$25 per ton.

In April 2008, the MRWMD and MRWPCA jointly retained the services of R3 Consulting Group, Inc. to assist with the review of the "reasonableness" of the basis for a proposed tipping fee increase for the District to continue to manage wastewater sludge at the MPL. A draft of R3's report was reviewed and discussed at the August 22, 2008 meeting of the ad hoc Finance Committee. MRWPCA staff has also reviewed the R3 report.

There are currently two management options available to the MRWMD for the handling of the sludge received at the MPL. One option is for diversion with treatment and beneficial use at the landfill site, and another option is for landfill disposal. A discussion of these two sludge management options, along with the cost analysis as included in the R3 report, is provided below.

1. **Diversion and Beneficial Use.** The sludge management option that the MRWMD currently utilizes is diversion and beneficial use by converting the sludge into a stabilized vegetative cover material for use on the long-term intermediate and final cover side slopes at the MPL. This management option is not sustainable over the long-term because staff has determined that the volume of stabilized sludge already stockpiled at the site, estimated at approximately 150,000 cubic yards, exceeds the MRWMD's long-term need for erosion control material on the landfill side slopes. Any additional sludge stockpiled at the site would need to be removed in the future development of the landfill at an additional cost to the MRWMD. Therefore, future sludge accepted by the MRWMD must be exported to some other off-site end use, either through complete composting and use by the landscaping industry, conversion to energy, or co-disposed in a landfill with solid waste.

A separate jointly-funded study, being conducted concurrently by Carollo Engineers, will provide an analysis of the "highest and best use" and "least-cost" alternatives for the future management of the MRWPCA's sludge. The results of this study are not yet available. Staff is recommending that the current sludge stabilization process be terminated within two years, or until the Carollo study recommendations are implemented, whichever occurs first.

For the District's current sludge diversion operation, the costs include the following:

- Cost to provide the sludge bulking agent (green waste/wood waste chips). Bulking agent materials for the sludge processing operation are provided from the MRWMD's on-site Materials Recovery Facility (MRF). Green waste and wood waste from various sources are ground and screened at the MRF prior to delivery to the sludge processing area.
- Cost to process the sludge on the lined Landfill Module 3. Processing costs include blending sludge and chips into windrows, turning windrows, and transporting stabilized sludge to stockpile.
- MRWMD system organizational and administrative overhead costs associated with their respective activities have been assigned to the sludge processing and green waste bulking agent production based on the appropriate methodology.
- Time value of money due to postponing the use of the 1,152,000 tons of remaining airspace/waste capacity of Landfill Module 3, accelerating the expenditure of \$2,000,000 (construction of Module 5 liner) by five years.
- A credit has been assigned for the revenues generated from the green waste tipping fees. This has been calculated based on the tons of bulking agent that is used to create the stabilized composted vegetative cover.

As presented in the draft R3 report, the cost for the MRWMD to convert the sludge into a stabilized vegetative cover material is approximately \$38 per ton. Staff is recommending that the Board approve a sludge handling rate of \$30 per ton, to match the landfill disposal cost (see below).

2. **Disposal (Landfilling) by Direct Burial with Municipal Solid Waste at the MPL.** For the landfill disposal option, the costs include the following:

- Cost to process the sludge for direct burial in lined Landfill Module 3. The dewatered sludge is mixed thoroughly with the solid waste at the working face to take advantage of the absorptive capacity of the relatively dry solid waste. Using a landfill compactor or dozer, the sludge is mixed with the solid waste, then pushed, spread, and compacted up the working face. More solid waste is then spread on top of the sludge/solid waste mixture prior to covering with six inches of soil or alternative daily cover at the end of the day. The Waste Discharge Requirements stipulate that a minimum ratio of 5 parts solid waste to 1 part sludge must be maintained for landfill disposal of the sludge.
- MRWMD system organizational and administrative overhead costs.

Disposal of sludge at the landfill will require significant changes in the landfill operation. Because of the unique nature of the sludge, direct burial in the landfill presents several operational difficulties. Foremost is the requirement to meter and blend the sludge with solid waste at the minimum 5:1 waste-to-sludge ratio. Additionally, the sludge must be buried in a lined landfill module, which would negate the MRWMD's ability to use the disposal capacity of unlined Modules 1 and 2. Further operational difficulties include equipment cleaning, worker exposure, odor, and tracking of material by vehicle traffic.

As presented in the draft R3 report, the cost for the MRWMD to bury the sludge in the landfill is approximately \$30 per ton.

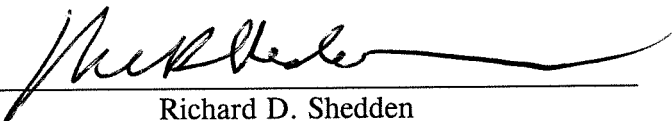


### **INCREASED REVENUE**

Implementation of a sludge tipping fee increase to \$30 per ton will result in increased revenue to the MRWMD in the amount of approximately \$230,000 per year. This consists of an increase of \$150,000 per year for the MRWPCA and an increase of \$80,000 per year for the SCRWA. It should be noted that the service areas of the MRWMD and the MRWPCA are not the same. As shown on the attached maps, on the basis of population served, the most significant difference between the two service areas is the fact that MRWPCA serves the City of Salinas, while the MRWMD does not.

### **RECOMMENDATION**

It is therefore recommended that that the Board of Directors receive staff report and schedule a public hearing for October 17, 2008 to consider an increase in the tipping fee for acceptance of wastewater sludge for diversion and/or disposal at the MPL, from the current \$23 per ton (average) to \$30 per ton, effective January 1, 2009, with an annual adjustment for inflation.



---

Richard D. Shedden

Attachment

**Monterey Regional Waste Management District**

**DEWATERED SLUDGE ACCEPTED, LANDFILLED, AND DIVERTED**

<b>Year</b>	<b>Sludge Accepted (tons)</b>	<b>Sludge Landfilled (tons)</b>	<b>Sludge Diverted (tons)</b>	<b>Sludge Diverted (%)</b>
1990 <sup>(1)</sup>	4,398	4,398	0	0.0%
1991	10,825	10,825	0	0.0%
1992	13,540	13,540	0	0.0%
1993	10,760	10,760	0	0.0%
1994	10,809	10,809	0	0.0%
1995	13,415	13,415	0	0.0%
1996	10,767	10,767	0	0.0%
1997	31,305	24,316	6,989	22.3%
1998	27,190	11,599	15,591	57.3%
1999	30,050	13,333	16,717	55.6%
2000	30,443	14,508	15,935	52.3%
2001	36,611	6,164	30,447	83.2%
2002	40,330	5,025	35,305	87.5%
2003	37,305	1,018	36,287	97.3%
2004	41,696	2,342	39,354	94.4%
2005	40,741	2,733	38,008	93.3%
2006	38,150	3,850	34,300	89.9%
2007	40,357	3,920	36,437	90.3%
<b>TOTAL</b>	<b>468,692</b>	<b>163,322</b>	<b>305,370</b>	<b>65.10%</b>

<sup>(1)</sup> Prior to 1990, MRWMD received a small amount of sludge from Carmel Area Wastewater District, all of which was landfilled. In 1990, the MRWMD began receiving sludge from the MRWPCA regional wastewater treatment plant.

# Monterey Regional Waste Management District

Dewatered Sludge - 2001 thru 2007 Tonnage

## 2001

California Utility Services  
MRWPCA  
SCRWA

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Totals
	0	7	30	23	6	0	69	32	72	0	0	0	240
	1,680	414	228	1,300	2,041	3,581	1,851	917	2,687	2,478	2,761	1,823	21,761
	1,346	1,202	1,300	1,174	1,356	1,101	1,106	1,326	1,012	1,312	1,118	1,258	14,610
<b>Totals</b>	<b>3,026</b>	<b>1,623</b>	<b>1,558</b>	<b>2,497</b>	<b>3,403</b>	<b>4,683</b>	<b>3,026</b>	<b>2,275</b>	<b>3,771</b>	<b>3,790</b>	<b>3,878</b>	<b>3,080</b>	<b>36,611</b>

## 2002

Cal. Utility Services/Scotts Valley  
Carmel Area Waste Water Dist  
MRWPCA  
SCRWA

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Totals
	43	8	128	23	8	32	92	42	46	20	57	37	536
	0	0	0	0	0	0	0	0	0	0	0	138	138
	1,469	1,237	2,289	1,462	1,145	2,568	2,582	1,817	2,157	3,115	3,359	1,641	24,840
	1,353	1,190	1,271	1,244	1,315	1,099	1,234	1,209	1,134	1,283	1,138	1,345	14,816
<b>Totals</b>	<b>2,865</b>	<b>2,435</b>	<b>3,688</b>	<b>2,729</b>	<b>2,468</b>	<b>3,699</b>	<b>3,907</b>	<b>3,069</b>	<b>3,337</b>	<b>4,418</b>	<b>4,554</b>	<b>3,160</b>	<b>40,330</b>

## 2003

California Utility Services  
Carmel Area Waste Water Dist  
City of Scotts Valley  
MRWPCA  
SCRWA

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Totals
	28	17	34	31	26	47	40	10	19	5	18	15	289
	21	167	46	0	0	0	0	0	0	0	0	0	234
	0	0	0	0	0	0	185	150	167	181	155	181	1,018
	1,117	284	1,694	1,755	1,703	4,594	4,652	2,113	2,811	311	0	58	21,091
	1,384	1,113	1,246	1,229	1,237	1,272	1,306	1,115	1,191	1,218	1,145	1,216	14,673
<b>Totals</b>	<b>2,550</b>	<b>1,581</b>	<b>3,020</b>	<b>3,015</b>	<b>2,966</b>	<b>5,913</b>	<b>6,183</b>	<b>3,387</b>	<b>4,187</b>	<b>1,715</b>	<b>1,318</b>	<b>1,470</b>	<b>37,305</b>

## 2004

California Utility Services  
City of Scotts Valley  
MRWPCA  
SCRWA

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Totals
	29	22	47	34	11	0	4	26	13	13	26	27	252
	173	134	224	195	153	161	168	173	158	175	161	194	2,070
	97	591	2,860	3,625	3,665	3,211	1,933	1,825	1,923	2,020	2,266	1,861	25,877
	1,059	1,100	1,291	1,135	1,152	1,218	990	1,172	927	1,074	1,217	1,163	13,497
<b>Totals</b>	<b>1,359</b>	<b>1,846</b>	<b>4,422</b>	<b>4,990</b>	<b>4,980</b>	<b>4,589</b>	<b>3,096</b>	<b>3,195</b>	<b>3,021</b>	<b>3,283</b>	<b>3,670</b>	<b>3,245</b>	<b>41,696</b>

## 2005

California Utility Services  
City of Scotts Valley  
MRWPCA  
SCRWA  
Sunnyslope County Water Dist

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Totals
	10	41	5	39	5	0	19	14	62	27	74	35	331
	200	180	242	182	188	194	138	175	185	159	187	190	2,220
	1,907	1,953	289	0	508	2,692	1,451	3,625	927	3,054	1,915	693	19,012
	1,235	1,073	1,177	1,110	1,207	1,236	1,236	1,254	1,110	1,125	1,327	1,404	14,494
	0	0	0	0	0	0	0	0	2,222	2,462	0	0	4,684
<b>Totals</b>	<b>3,352</b>	<b>3,247</b>	<b>1,712</b>	<b>1,331</b>	<b>1,908</b>	<b>4,122</b>	<b>2,845</b>	<b>5,068</b>	<b>4,506</b>	<b>6,827</b>	<b>3,503</b>	<b>2,321</b>	<b>40,741</b>

## 2006

California Utility Services  
City of Scotts Valley  
MRWPCA  
SCRWA  
Other

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Totals
	39	36	0	16	36	34	43	17	33	39	31	28	350
	217	192	223	178	222	197	171	197	189	192	199	197	2,375
	0	79	1,476	1,936	3,226	882	1,677	1,287	1,886	2,506	2,834	1,925	19,714
	1,304	1,086	1,307	1,284	1,336	1,274	1,120	1,189	1,135	1,286	1,144	1,208	14,674
	0	0	0	0	0	0	0	0	0	1,033	0	4	1,037
<b>Totals</b>	<b>1,559</b>	<b>1,393</b>	<b>3,006</b>	<b>3,414</b>	<b>4,820</b>	<b>2,387</b>	<b>3,012</b>	<b>2,691</b>	<b>3,243</b>	<b>5,055</b>	<b>4,208</b>	<b>3,362</b>	<b>38,150</b>

## 2007

California Utility Services  
City of Scotts Valley  
MRWPCA  
SCRWA

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Totals
	40	34	8	36	26	35	31	22	17	11	86	40	387
	212	172	227	192	213	190	191	198	173	218	194	197	2,377
	2,398	2,206	2,110	0	0	0	1,431	3,212	3,375	2,843	2,225	1,520	21,320
	1,333	1,408	1,389	1,463	1,448	1,404	1,349	1,239	1,255	1,326	1,231	1,427	16,272
<b>Totals</b>	<b>3,984</b>	<b>3,820</b>	<b>3,735</b>	<b>1,691</b>	<b>1,687</b>	<b>1,629</b>	<b>3,002</b>	<b>4,671</b>	<b>4,820</b>	<b>4,399</b>	<b>3,735</b>	<b>3,184</b>	<b>40,357</b>



Consulting Group, Inc.

Resources Respect Responsibility

R3 Consulting Group, Inc  
4811 Chippendale Drive, Suite 708  
Sacramento, CA 95841  
Tel. 916-576-0306  
Fax: 916-331-9600

[www.r3cgi.com](http://www.r3cgi.com)

November 11, 2008

Mr. William Merry, P.E., DEE  
General Manager / District Engineer  
Monterey Regional Waste Management District  
14201 Del Monte Boulevard  
Marina, CA 93933-1670

**Subject:** – Final Letter Report; Review of Proposed Sludge Disposal Cost

Dear Mr. Merry:

R3 Consulting Group, Inc. (R3) was engaged by the Monterey Regional Waste Management District (District) and Monterey Regional Water Pollution Control Agency (Agency) to review the reasonableness of the District's proposed tip fees for composting and landfilling sludge at the District's Monterey Peninsula Landfill (MPL). This Letter Report presents the results of that review.

## Objective

To conduct a high level review of the reasonableness of the District's proposed tip fees for: (1) Sludge Composting; and (2) Landfilling Sludge at the District's MPL.

## Proposed Tip Fees

The District provided support for its proposed tip fees for handling sludge at its MPL for the following two options:

- **Composting (@\$37.76/ton)** - Diversion and beneficial use by converting the sludge into a stabilizing vegetative cover material for use on the long-term intermediate and final cover side slopes at the MPL; and
- **Disposal (Landfilling) (@\$29.68/ton)** - Disposal by direct burial with municipal solid waste at the MPL.

Attachment 1 is a copy of the original Excel workbook that was provided by the District in support of its proposed tip fees, which formed the primary basis for our review. Attachment 2 provides additional supporting information provided by the District.

The District reported that the proposed Sludge Composting tip fee does not account for any additional costs that may be related to handling that sludge in some other manner (e.g.,

R3

transferring to off-site markets) after the next 12-24 months. In addition, the District reported that the proposed tip fee for Sludge Composting does not (directly) account for the following costs:

- Deferred cost to relocate the stabilized sludge stockpiled on south slope of Module 3 to some end use;
- Value of providing land and permits;
- The cost to clean heavy equipment contaminated with sludge prior to maintenance; and
- Analytical laboratory fees for testing of end product (heavy metals, fecal coliform, Salmonella, nutrient content, etc.).

The District also reported that the projected tip fee for Landfilling Sludge does not (directly) account for the following costs:

- Cost to mix with refuse;
- Cost to clean equipment;
- Cost to maintain equipment; and
- Increased safety costs for employees (biohazard)

## Summary Findings

### General

- The District provided support of its proposed tip fees for Sludge Composting and Landfilling Sludge in the form of an Excel workbook that was presented in a logical and consistent manner.
- The analysis prepared by the District was based on fiscal year (FY) 2006/2007 actual expenses.
- We verified the mathematical accuracy of the District's calculations. We did, however, identify two applicable expense items that were omitted from the District's calculations (i.e., the water truck expense for Sludge Composting and the Shop cost allocation for Landfilling Sludge). After accounting for these additional expenses, as well as an updated projection of the Module 3 Opportunity Cost<sup>1</sup>, we find that the revised tip fees for Sludge Composting and Landfilling Sludge are \$37.56 and \$31.93 per ton respectively (versus \$37.76 and \$29.68 as originally projected).
- We noted that the District does not directly track expenses related to its Sludge Composting operation. For purposes of projecting the costs for Sludge Composting and Landfilling Sludge the District directly assigned costs, as applicable. All other applicable costs were allocated on the basis of tons.

---

<sup>1</sup> To reflect the time value of money due to the need to construct a new landfill cell rather than first use the remaining capacity of Landfill Module 3 that contains the Sludge Composting operation.

R3

- The characteristics of sludge are significantly different than municipal solid waste with unique handling requirements and associated costs.
- The District's use of tons to allocate costs to Sludge Composting and Landfilling Sludge that could not be directly assigned represents an objective basis for making such allocations although there may be other factors that provide a more appropriate basis for allocating those costs.

#### Sludge Composting

Table 1 (attached) provides a summary of the District's direct cost assignments and cost allocations for Sludge Composting. As shown, 24% of the total expense attributed to Sludge Composting is based on the direct assignment of Labor and Equipment to the Composting Area. Twenty-five percent (25%) of the total expenses represent Shop and Landfill/Site expenses and Overhead and Organizational Costs that were allocated on the basis of sludge tons landfilled as a percentage of all tons landfilled. Fifty-one percent (51%) of the total expenses represent Material Recovery Facility green waste and wood waste processing (Woodyard) expenses and Overhead and Organizational Costs that were allocated on the basis of green waste tons.

- The use of green waste tons to allocate Woodyard Labor and Equipment expenses and Shop and Material Recovery Facility costs to Sludge Composting represents a reasonable basis for those allocations.
- While the use of sludge tons to allocate Shop and Landfill/Site costs to Sludge Composting represents an objective basis for those allocations there may be other factors that provide a more appropriate basis for allocating those costs. For purposes of testing the reasonableness/results of the use of tons as the basis for the District's allocations:
  - We allocated Shop costs to Sludge Composting based on the percentage of equipment operating hours rather than tons. This reduced the percentage of those costs allocated to Sludge Composting from 17% to 14%, a net per ton cost reduction of \$0.43.
  - We allocated Landfill/Site expenses on the basis of both equipment operating hours and full time equivalent positions. The net per ton cost impact was a \$0.00 and \$0.15 (reduction) respectively.<sup>2</sup>
- The most significant cost component that was allocated on the basis of sludge tons was Overhead and Organizational Costs (i.e., Administration, Public Awareness, Household Hazardous Waste and Scales). For some cost of service studies there are specific alternative allocation factors that we would suggest be used to allocate these expenses rather than tons (e.g., percent of total expenses or full time equivalent employees to allocate Administration expense; percent of total transactions to allocate Scales expense). The nature of sludge and specifically how it is handled onsite, however, does not allow us to recommend a specific allocation factor(s) for Overhead and Organizational Costs that we can support as being any more appropriate than tons without conducting a more detailed review. That is not to say that

---

<sup>2</sup> The use of either equipment operating hours or full time equivalent positions to allocate various line item components of this expense may offer a reasonable alternative to tons depending on the specific cost item.

R3

we would recommend the use of tonnage as an allocation factor in similar circumstances, only that in this instance we have no basis to support the use of an alternative allocation factor at this time. For certain (many) of these Overhead and Organizational Costs, management's estimates may be the most appropriate / accurate basis for attributing costs to Sludge Composting given its unique nature, impacts and handling requirements.

#### Landfilling Sludge

Table 2 (attached) provides a summary of the direct costs assignments and cost allocations used by the District to project the cost for Landfilling Sludge. As shown, 86% of the total costs projected for Landfilling Sludge were allocated on the basis of sludge tons landfilled as a percentage of all tons landfilled.

Given the significant differences in the densities of sludge (1,800 lbs/yd<sup>3</sup>) and municipal solid waste (+/- 750 lbs/cubic yard compacted in a collection vehicle) a case could be made to use volume rather than tonnage as the basis for allocating costs to Landfilling Sludge, all other factors being the same. With that said, consideration must be given to the fact that the properties of sludge are significantly different from municipal solid waste and it has specific handling requirements that result in increased costs (i.e., sludge must be mixed with solid waste at the working face while maintaining a minimum ratio of 5 parts solid waste to 1 part sludge). As such, if volume were used as an initial basis for allocating total landfill costs to Landfilling Sludge, it would seem appropriate to apply a premium to the allocated costs to account for the additional handling requirements. What an appropriate premium would be, however, is beyond the scope of our review and may best be based on management's estimate of the associated additional operating requirements. With that said, as with the allocation of Overhead and Organizational Costs to Sludge Composting above, while we would not necessarily select tonnage as an allocation factor in similar circumstances, we have no basis upon which to recommend an alternative allocation without conducting a more detailed review.

#### Background

The District currently receives dewatered sludge from a number of sources, including the Agency, which it composts at its MPL. The District posted sludge rate is \$25 per ton, which it charges the Agency for sludge from its drying bed. Sludge from the Agency's belt press is charged at the rate of \$20 per ton. Both of these rates have been in place since 2004.

Since 2004 the District has accepted an average of 40,000 tons per year of dewatered sludge. Of this amount, 37,000 tons (92%) has been mixed with approximately 26,500 tons of green waste/wood chips (bulking agent) and composted. The remaining 3,000 tons, consisting of sludge, scum, grit, rags and other screenings) have been landfilled. The green waste/wood waste used as bulking agent constitutes approximately 60% of the total amount of that material handled at the MPL.

The District has been using the majority of the composted sludge on-site as vegetative cover on landfill side slopes and other applications, with minor amounts sent off-site to the Salinas Valley Solid Waste Authority and other parties for their use. Monterey County receives credit for the sludge and green waste/wood waste that is composted and diverted for beneficial use.

The District currently has stockpiled sludge in sufficient quantities to provide for its on-site use

needs for the next 10 to 20 years. The proposed fee increase for Sludge Composting would be effective for the next 12 -24 months, which is the estimated time period the District can continue to stockpile compost on-site. The District has engaged a consulting firm (Corolla Engineers) to evaluate options for off-site use of the composted material.

### Cost Allocation Methods

The District's fiscal year (FY) 2006/2007 actual expenses, which are shown in the following table, served as the basis for its analysis of the costs for Sludge Composting and Landfilling Sludge.

Cost Component	FY 06/07 Actual Expenses
Admin/Organization	\$ 2,685,480
Public Awareness	\$ 312,038
Household Haz. Waste	\$ 440,563
Last Chance Mercantile	\$ 654,854
Landfill Gas Power	\$ 1,692,374
Shop	\$ 975,017
Material Recovery Facility	\$ 4,866,266
Scales	\$ 494,302
Landfill/Site	\$ 4,098,984
<b>Total</b>	<b>\$ 16,219,877</b>

### Sludge Composting

For purposes of projecting the cost for Sludge Composting the District directly assigned Labor and Equipment expenses to Woodyard and Sludge Composting area, as applicable. The directly assigned MRF Labor and Equipment Expenses were then allocated to Sludge Composting based on the percentage of the total Woodyard tons used as bulking agent for the sludge (60%).

The following expenses, which were not directly assigned, were allocated on the basis of tons:

- Shop
- Material Recovery Facility (other than directly assigned Labor and Equipment expenses)
- Landfill/Site (other than directly assigned Labor and Equipment expenses)
- Overhead and Organizational Costs



R3

- Administration/Organization
- Public Awareness
- Household Hazardous Waste
- Scales

The District also applied an "opportunity cost" to reflect the time value of money due to postponing the use of the 1,152,000 tons of remaining capacity of Landfill Module 3 that contains the Sludge Composting operation, and accelerating the expenditure of \$2,000,000 for the construction of Module 5 liner by 5 years. There was no assignment or allocation of costs related to the Last Chance Mercantile and Landfill Gas Power to Sludge Composting. The District's analysis also included a reduction in the projected Sludge Composting expense to account for the tip fee revenue it received for the wood/green waste that was used as a bulking agent for Sludge Composting.

### **Landfilling Sludge**

For purposes of projecting the cost for Landfilling Sludge the District allocated Labor and Equipment expenses assigned to the Landfill/Site to Landfilling Sludge based on the sludge tons landfilled as a percentage of total tons landfilled.

The following expenses were also allocated on the basis of tons:

- Landfill/Site (other than directly assigned Labor and Equipment expenses)
- Overhead and Organizational Costs
  - Administration/Organization
  - Public Awareness
  - Household Hazardous Waste
  - Scales

The District's original analysis did not include an allocation of Shop expenses for Landfilling Sludge. Also, there was no assignment or allocation of costs related to the Last Chance Mercantile and Landfill Gas Power to Landfilling Sludge.

### **Approach**

- The District provided R3 with an Excel workbook on June 9, 2008 that contained various spreadsheets that supported its projected tip fees. We reviewed that information to confirm that:
  - It was mathematically accurate and logically consistent; and
  - The bases used to allocate costs were reasonable.
- We traced the District's FY 06/07 reported expenses by function in its Excel workbook to its FY 06/07 Financial Statements. We identified a number of minor differences for which we received clarification from the District. For purposes of our review we relied on the figures

R3

reported in the District's Excel workbook.

- We performed a high level review of the Material Recovery Facility and Landfill/Site line item expenses that served as the basis for the allocation of costs to Sludge Composting and Landfilling Sludge. We did not, however, review this information in detail and relied on the District's representations as presented in its Excel workbook.
- We conducted a site visit of the District's MRF and Sludge Composting operations on June 27, 2008. The purpose of that site visit was to review general operations and view the flow of material through the District's facilities, particularly the Woodyard and Sludge Composting Area, for purposes of better understanding those operations and assessing the reasonableness of the District's proposed allocation factors.
- We met with District Management following our site visit to review its analysis and discuss, among other things, the District's rationale for various assumptions and methods used to make its projections.
- We issued an Internal Draft Report which we reviewed with District Management.
- The District analysis was subsequently revised to account for the following items and a Draft Report was issued to the District and Agency:
  - An updated projection of the Module 3 Opportunity Cost component of Sludge Composting (Reduced from \$2.0 million to \$1.6 million);
  - The Water Truck Equipment expense component of Sludge Composting; and
  - The allocation of Shop costs for Landfilling Sludge, which were not included in its original analysis.
- We met with the District and Agency to review the Draft Report, which we then finalized.

## Limitations

We conducted a high level review of the information provided by the District in support of its proposed tip fees. While we confirmed that the District used FY 2006-2007 actual expenses as the basis for its analysis we did not review the basis for the District's direct assignment of any of those costs. The main focus of our review was evaluating the reasonableness of the bases used by the District to allocate costs to Sludge Composting and Landfilling Sludge.

\* \* \* \* \*

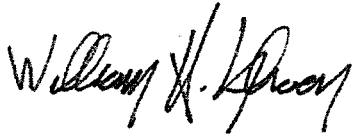
Mr. William Merry  
November 11, 2008  
Page 8 of 8

R3

We appreciate the opportunity to be of service to the District. Please do not hesitate to call me or Ric Hutchinson at (916) 576-0306, or e-mail at [wschoen@r3cgi.com](mailto:wschoen@r3cgi.com) or [rhutchinson@r3cgi.com](mailto:rhutchinson@r3cgi.com) if you have any questions or comments regarding this submittal.

Yours truly,

**R3 CONSULTING GROUP INC.**



William H. Schoen  
Principal

Cc. Ric Hutchinson

Tables

Table 1	Summary of Assignment and Allocation of Sludge Landfilling Expenses
Table 2	Summary of Assignment and Allocation of Sludge Composting Expenses

Attachments:

- Attachment 1 Draft Sludge Composting / Landfilling Cost of Service Analysis
- Attachment 2 Wastewater Sludge Management Cost Analysis

R:\Projects\108012 Monterey RWMD\Reports\Draft Report 072208\Monterey Regional Waste Management District Draft Report 111008.doc



# Memorandum

## MONTEREY REGIONAL WASTE MANAGEMENT DISTRICT

Reviewed by Wmm Date 11/13/09  
General Manager

DATE: November 13, 2009  
TO: General Manager  
FROM: Assistant General Manager  
SUBJECT: Carollo Engineers Biosolids (Sludge) Handling Evaluation Report – June 2009

---

**RECOMMENDATION:** That the Board receive the Final June 2009 Study of Biosolids Handling at the Monterey Regional Waste Management District – Biosolids Handling Evaluation prepared by Carollo Engineers of Sacramento, CA. The recommendations section of the study is attached for your information.

---

### BACKGROUND

For the past two years, District staff has been working on an overall evaluation of the biosolids (sludge) handling processes at the Monterey Peninsula Landfill (MPL). After the District proposed a rate increase, the Monterey Regional Water Pollution Control Agency (MRWPCA) staff requested the District undertake a rate study to verify District costs. Staff analysis and a subsequent audit and analysis of District costs by R3 Consultants in 2008 concluded that the existing costs associated with handling biosolids for diversion purposes (mixing with green waste and used for erosion control) is approximately \$38 per ton. However, the MRWPCA and the District agreed to assess a fee of \$30 per ton pending the review of alternatives from Carollo Engineers. It was also agreed that the District would conduct further study to verify the operational considerations and costs associated with direct mixing of biosolids and refuse and placement in the MPL. District staff also provided the same \$30 rate for the Carmel Area Wastewater District (CAWD). CAWD staff recommended, and their Board approved, a slightly lower cost alternative to a vendor located near Lost Hills in Kings County.

Staff analysis has revealed that the volume of stabilized sludge already stockpiled at the MPL exceeds the District's long-term needs for vegetation cover and erosion control materials. This means that any additional sludge stockpiled at the site (besides the almost 300,000 tons currently in place) would need to be removed in the future development of the MPL at an additional cost to the District. Both the shortfall in cost for sludge handling and the ability to continue to accept and utilize sludge for beneficial use continue to present near term challenges to the District.

Recent groundwater monitoring results have led staff to recommend the following changes to placement and use of biosolids:

1. Reduce the application rate and depth of the amended biosolids on the outside slopes of the landfill.
2. Keep the top of Module 3 clear from biosolids this winter season, to reduce storm water runoff impacts.

The \$50,000 cost of the Carollo evaluation study was shared; \$10,000 from CAWD and the additional amount split between the MRWPCA and the District. The District's share of the study was drawn from \$20,000 previously allocated to a joint gas utilization study with the MRWPCA, which to date has not gone forward.

District staff believes that several fundamental questions need to be answered prior to any further long-term acceptance of biosolids. With the continued overarching emphasis of the financial performance and efficiencies of all District operations as a result of the District's current financial status, it is imperative that the rates for services adequately cover the costs for the provision of those services.

## **DISCUSSION**

Carollo Engineers initiated this evaluation effort in February 2009, and submitted their evaluation for options to the staffs of the wastewater treatment agencies and the District in June 2009. Several options were evaluated with a variety of proposed alternatives. The least expensive alternative was composting at a rate of approximately \$79 per ton and the most expensive alternative was a belt drying and incineration option which would cost approximately \$331 per ton. Please refer to Attachment A, which is a table from the report with those costs identified.

District staff believes that none of the options identified in the Carollo report warrant further review and/or study at this time. MRWPCA and CAWD have both indicated in discussions with staff that costs and long-term viability of the alternatives are their primary concern. District staff would concur with that evaluation. However, District staff has several concerns that need to be considered in light of the determination by CAWD to send their biosolids to Kern County:

1. On-going cost impact of handling sludge at below District current cost of operations.
2. Current stockpile of stabilized sludge at the District's site is sufficient to fulfill operational needs for beneficial and cost effective utilization of this material.
3. Top deck of Module 3, a 17-acre area currently utilized for the sludge stabilization process, is an area that could be used in the near term for landfilling operations, deferring a more than \$2,000,000 Module 5 liner installation cost for several years (Module 5 landfill liner construction is currently scheduled for installation within a three to five year time frame based on current rate of landfilling).

District staff has evaluated the potential for acceptance of sludge for direct landfill disposal from a regulatory and operational framework. With the current incoming tonnage levels of regular refuse (state regulations mandate ratio of 5 to 1 refuse to sludge), the MPL could accept the sludge from the MRWPCA for disposal. However, the coordination and timing for sludge acceptance with refuse deliveries, and the operational difficulties in accepting that large volume of sludge for disposal (equipment cleaning, worker exposure, and queuing and load integration), pose substantial operational challenges for landfill operations. This sludge material accepted for disposal may eventually need to be charged the same rate as regular refuse. Our current arrangement with MRWPCA is to assess a rate of \$30 per ton for this incoming material, whether it is handled for diversion or landfilled. District staff will provide a cost accounting of projected costs for landfilling the biosolids.

Since the MRWPCA regional wastewater treatment plant is located in an unincorporated area of Monterey County, the County receives over 25,000 tons of diversion credits annually, a significant portion (9%) of their AB 939 credits. A conservative estimate as to the value of that diversion credit is \$100 per ton. To try and replace the sludge diversion with some other method of waste diversion is a value to the County of almost \$2.5 million annually. Staff of the MRWPCA, the County, and the District recently met to discuss this significant issue, concluding this question would need to be addressed prior to any significant change in operation. However, given the District's current challenges in revenue development and cost management, this large amount of subsidized diversion is not sustainable for the long-term without program and financial changes, and policy direction from the Board.

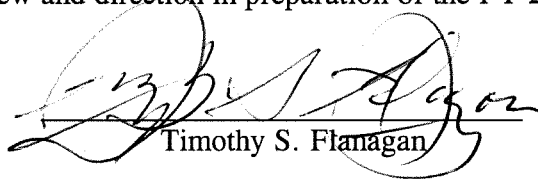
## **SUMMARY**

The major points from the Carollo Study revealed (see recommendations, attached):

1. Landfilling of biosolids should replace the composting operations for the interim.
2. Composting of biosolids is recommended, following a market study and a market pilot program using composted biosolids. Composting utilization may face significant opposition in this county due to agricultural industry concerns over e-coli and food safety matters.
3. That any significant change to the current operating practices of the three agencies would involve substantial increases in costs associated with biosolids management in technologies that are either unproven and/or difficult to site.
4. That the major emphasis of the MRWPCA and the CAWD treatment facilities is environmentally safe handling of biosolids with a significant emphasis on the lowest possible cost.

## **CONCLUSION**

Staff will continue to evaluate and determine the lowest cost alternative for continued management of biosolids from the MRWPCA and other biosolids contributors. Staff will complete their analysis and evaluation of costs for direct landfilling of a mixture of biosolids/refuse. Staff will continue efforts with County staff and propose alternatives to the diversion currently earned from biosolids management and bring those alternatives for diversion and the costs associated to the Board for their review and direction in preparation of the FY 2010/2011 Budget.



Timothy S. Flanagan

Attachments

## 6.0 RECOMMENDATION

This study was funded by and conducted to evaluate biosolids handling alternatives for the Monterey Regional Waste Management District, Monterey Regional Pollution Control Agency and the Carmel Area Wastewater District. The focus was to develop a local biosolids beneficial use strategy in the Monterey area. The MRWMD is currently composting biosolids with green waste and storing the material for use on site. A Review of Proposed Sludge Disposal Cost conducted by R3 Consulting estimated that landfilling biosolids with the regular MSW would cost \$31.93 per ton and the existing composting operation is costing about \$37.56 per ton. The R3 report is provided in the appendix.

Alternatives that were evaluated included either a stand-alone biosolids drying system or a drying system followed by an incinerator with power generation facilities; several composting scenarios and landfilling the biosolids. The costs, including estimating contingencies and transport costs to the site for an average distance of 24 miles, for the drying or drying with incineration and power generation were estimated to range from \$108 to \$331 per wet ton. A new composting facility was also evaluated with an estimated cost of \$79 per wet ton, including estimating contingencies and transport costs. The estimated costs for all the evaluated alternatives are much higher than the current biosolids tipping fees at the MRWMD Landfill.

CAWD has entered into a contract for their biosolids to be composted and land applied in Kings County by a private contractor. The CAWD contracted with Liberty Composting because their cost per ton charge was lower than the cost per ton charge that would have been realized by taking its biosolids to the MRWMD for disposal or composting. In addition, CAWD sees the biosolids operation at Liberty Composting as a sustainable beneficial use of biosolids. CAWD has indicated that they would be interested in reevaluating their biosolids use/disposal options if a regional plan is proposed that considers long term regional impacts including beneficial use, regional economic impacts and long term environmental factors such as greenhouse gas emissions. The CAWD would also be interested in participating in any biosolids pilot program that would support these goals.

The MRWMD has proven that they have the ability to compost biosolids to Class A standards per the 40 CFR 503 regulations, but has not been successful in developing a market for such a product. As such, the compost is not treated to Class A standards and is not used off-site. The compost is used on-site as a landfill cover organic cap, and the MRWMD has a current stockpile that is estimated to last 20 years. Without a viable market, there is no need to modify the biosolids composting operations to produce a marketable Class A product, yet MRWMD cannot continue to stockpile more compost.

Discontinuing the biosolids composting operations and landfilling the biosolids with the MSW is recommended until a biosolids compost market can be developed. Developing the market for a compost product, and then expanding the composting operations to match the market will likely increase the probability of the program's success.

Monterey County's ability to comply with Assembly Bill (AB) 939 and Senate Bill (SB) 1016 will be affected by the decision to landfill the incoming biosolids. It appears that the County will fall below the current state mandate to achieve 50 percent diversion rate of their waste stream in the event the biosolids are landfilled instead of being composted. In order to achieve local use and comply with AB 939 and SB 1016, composting the biosolids is recommended.

To develop a biosolids compost market, a marketing pilot is recommended with the following:

- Market product to non-food chain agriculture
- Small-scale operations generating enough compost for trial users
- Locate the small-scale biosolids composting operation on Module 3 at MRWMD
- Scale operation parallel to product demand
- Share pilot costs among MRWPCA, CAWD, MRWMD, and Monterey County

Landfilling of biosolids should replace the composting operations for the interim until the market for biosolids compost can be developed. The market pilot should be developed over time to eventually use all of the biosolids. Currently, landfilling may be the most feasible option for dealing with the incoming biosolids because of the following:

- Least expensive option compared to all alternatives
- The MRWMD is permitted to dispose of biosolids at the landfill
- Abundant remaining landfill capacity at approximately 40 million tons with an expected life of over 100 years.
- Landfilling biosolids would not add to the biosolids compost stockpile
- Landfilling biosolids will add additional organic material to the landfill and will likely enhance the methane gas production with the waste cell, though it will also likely add some greenhouse gas emissions as methane before the cap is in place.

Implementing the recommendations of this study would encourage the involvement of the County in developing a new biosolids use program to comply with SB 1016.



## Attachment A

(Extracted from Carollo Study dated June 2009)

<b>Table 9 -Combined Capital and Operating Costs for Each Alternative Biosolids Handling Evaluation CAWD/MRWMD/MRWPCA</b>		
<b>Alternative No.</b>	<b>Description</b>	<b>Cost per wet ton<sup>(1)</sup></b>
1A	Belt Drying - 15 dt/day	\$180
1B	Belt Drying - 40 dt/day	\$108
2A	FBR Drying - 15 dt/day	\$188
2B	FBR Drying - 40 dt/day	\$112
3A	Greenhouse Drying - 15 dt/day	\$133
3B	Greenhouse Drying - 40 dt/day	\$128
4A	Belt Drying and Incineration - 15 dt/day	\$331
4B	Belt Drying and Incineration - 40 dt/day	\$169
5A	Greenhouse Drying and Incineration - 15 dt/day	\$330
5B	Greenhouse Drying and Incineration - 40 dt/day	\$201
6A	Composting - 15 dt/day <sup>(2)</sup>	\$79
6B	Composting - 40 dt/day <sup>(3)</sup>	--
<b>Notes:</b> (1) Cost per wet ton in current dollars (November 2008 ENR 20-Cities CCI of 8603). Annual capital cost payment plus annual operating costs for initial year divided by total annual wet tons processed. (2) Based on \$54/wet ton operating cost for composting provided by MRWMD in report entitled Wastewater Sludge Management Cost Analysis, June 9, 2008. Transportation costs and a 10 percent O&M contingency factor were added. (3) Composting 40 dt/day considered infeasible due to spatial constraints at either facility.		