



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.

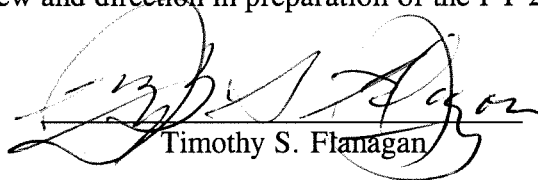
SUMMARY

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)

Table 9 -Combined Capital and Operating Costs for Each Alternative Biosolids Handling Evaluation CAWD/MRWMD/MRWPCA		
Alternative No.	Description	Cost per wet ton⁽¹⁾
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 ⁽²⁾	\$79
6B	Composting - 40 dt/day ⁽³⁾	--

Notes:

(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.