CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Memorandum

TO: HONORABLE MAYOR AND CITY COUNCIL

FROM: Kerrie Romanow

SUBJECT: SEE BELOW

DATE: May 5, 2021

Approved D.DSyL

Date **5/6/2021**

SUBJECT: DEWATERED BIOSOLIDS MANAGEMENT STRATEGY FOR THE SAN JOSE-SANTA CLARA REGIONAL WASTEWATER FACILITY

RECOMMENDATION

Approve the dewatered biosolids management strategy to be implemented in stages in the next five to ten years, which includes off-site disposition service contracts, an on-site fertilizer partnership facility, and land application on local natural and working lands.

OUTCOME

Approval of the proposed strategy to manage dewatered biosolids would allow staff to proceed with the procurement of beneficial use service contracts and the evaluation of options for the development of an on-site fertilizer facility within the operational area of the San José-Santa Clara Regional Wastewater Facility (RWF). The proposed biosolids strategy will be part of a long-term plan to increase resource recovery, optimize energy use, and include the use of alternative energy sources at the RWF.

BACKGROUND

Current Biosolids Treatment and Management

At the RWF, wastewater sludge currently undergoes mesophilic anaerobic digestion to reduce the volume of organic material and generate methane gas. The digested material (biosolids) is then pumped to open-air lagoons where it stabilizes for approximately three years before it is dried by the sun for approximately six months in open-air drying beds. All the sundried biosolids are then hauled to the adjacent Newby Island Landfill and used as alternative daily cover. Due to the very dry state of the resulting biosolids, there are few other uses. This process consistently results in around 3,000 truck trips. In 2020, the RWF disposed of nearly 60,000 tons of biosolids.

RWF Odor Control Implementation Plan

In October 2015, the Treatment Plant Advisory Committee (TPAC) and San José City Council approved the Odor Control Implementation Plan for the RWF, which consists of a phased approach for achieving the odor goal and odor fence line adopted in late 2014. In order to minimize the odor potential from the RWF's active lagoons and drying beds, the first phase of the plan includes the completion of four capital projects: Digester and Thickener Facilities Upgrade (currently in commissioning), New Headworks (under construction), Digested Sludge Dewatering Facility (in design), and East Primary Clarifiers Rehabilitation (to be started). Completion of these four projects and decommissioning of the lagoons and drying beds is required to meet the previously approved odor goal and odor fence line.

Future Biosolids Treatment and Management

Changes to the current biosolids treatment process have been presented to the TPAC and City Council in several previous meetings. Key actions to date that have impacted the RWF's future biosolids treatment and management include the decision in 2010 to incorporate the Milpitas Guiding Principles into guiding principles for the Plant Master Plan (PMP), which was adopted by the City of San José and the City of Santa Clara in 2013.

The approval of the Biosolids Transition Strategy in 2015 included the decision to proceed with a new dewatering facility, retirement of the lagoons and drying beds, and deferral of on-site thermal and solar drying facilities. A comprehensive biosolids disposition market assessment was completed in 2014, and then updated in 2019, to identify potential beneficial disposition options for biosolids, including market availability, interest for partnerships, and current and future capacity from providers. Previous information memos presented to Council in the past are included as Attachment A of this memorandum.

Changes to the current biosolids treatment include the upgrades of existing mesophilic anaerobic digester tanks to enable a temperature-phased anaerobic digestion (TPAD) process. These modifications are currently under construction as part of the Digester and Thickener Facilities Upgrade project and, once completed, will also provide the flexibility to consider the addition of other digestible sources to increase biogas production such as fat, oils and grease (FOG). After digestion, the resulting biosolids will be pumped from the RWF's main operational area across Zanker Road to a new dewatering facility where enclosed mechanical equipment will help separate water from the biosolids to reduce the amount of material requiring transport. This facility is currently under design as part of the progressive design-build project for the Digested Sludge Dewatering Facility.

The future mechanical dewatering process is estimated to result in approximately 120,000 tons of biosolids, requiring 5,300-5,500 truck trips per year, or about 15 per day, to haul off-site. The larger number of truck trips and amount of biosolids, when compared with the current operation, is due to the higher water content in the dewatered biosolids as opposed to very dry biosolids produced as a result of the three-and-a-half-year treatment process. There are more options to

beneficially use biosolids with a higher moisture content. For example, dewatered biosolids can be directly land applied or used as feed for compost and fertilizer manufacturing operations. Based on the most recent schedule for the project, the dewatering facility is anticipated to be fully operational by 2025.

The updated 2019 biosolids market assessment confirmed that application of biosolids on rangeland and agricultural land continues to be the most popular non-landfill management option in California and is second to composting in the Bay Area. Biosolids are also commonly used to produce soil amendments, such as compost and fertilizers, because they contain nutrients essential for plant growth (e.g., nitrogen, phosphorous, and potassium). The market assessment also found that there is limited capacity around the San Francisco Bay Area to manage biosolids and that prices for all types of beneficial use have increased significantly in the last few years. The RWF will have to rely on a combination of providers to be able to handle all the material that will be produced once the new dewatering facility start operations. Both the limited capacity and rising prices can be attributed to all wastewater agencies seeking to diversify away from landfills for their biosolids disposition, partly in response to recent legislation targeting the reduction of organics to landfills but also in recognition of the value of biosolids as a resource.

Peer agencies in the Bay Area are increasingly diverting biosolids from landfills, with the San Francisco Public Utilities Commission having the goal of zero percent of biosolids to landfills and the East Bay Municipal Utility District seeking to reduce as much as 25% of their current landfill use. Many large Southern California wastewater agencies, such as Los Angeles County Sanitation Districts and Orange County Sanitation District, tend to rely on landfills as only a backup option and primarily land apply or send their biosolids to regional composting facilities.

Senate Bill 1383

In 2016, Senate Bill (SB) 1383 directed the State's Department of Resources Recycling and Recovery (CalRecycle) to develop regulations that reduce the emission of short-lived climate pollutants, such as methane, resulting from the landfill disposal of organic material. SB 1383 set statewide targets to reduce 50% of organics going to landfill by 2020, and a 75% reduction by 2025. Up to CalRecycle's second formal draft of the regulations, which was released in June 2019, staff expected requirements for biosolids management to be more stringent, specifically requiring them to be fully diverted from the landfill. The final version of the regulations only includes biosolids as part of the broader "organic waste" definition, along with food waste, paper products, green waste, organic textiles, lumber, wood, digestate and manure. The regulations were finalized in November 2020 and become effective on January 1, 2022.

The final regulations require local jurisdictions to implement specific actions to help the State meet these targets. Biosolids diversion from landfills, in conjunction with solid waste management strategies for other organics, will help the City and County to meet the reduction requirements established by the final SB 1383 regulations. The diversion of biosolids from the RWF will also proportionally benefit contributing tributary agencies.

The final regulations also require jurisdictions to procure a set amount of recovered organic waste products annually where the target is based on a jurisdiction's population. Using or giving away products made from recovered organic waste (e.g., compost made from biosolids) could fulfill a jurisdiction's procurement requirements. It is important to note that the procurement requirements apply to all cities and counties that provide solid waste collection services to its residents. Therefore, it is each jurisdiction's responsibility to document its compliance with the various SB 1383 regulatory requirements, including procurement targets (e.g., using contracts, invoices and/or similar records).

Future/Potential Air Regulations

The Bay Area Air Quality Management District (BAAQMD) has regulations and initiatives to reduce odors and emissions from industrial sources, including the RWF. For example, during the annual hauling period of the RWF's biosolids from the drying beds to Newby Island Landfill, BAAQMD typically sends inspectors to monitor the process. Also, BAAQMD has commissioned an odor study to evaluate odorous emissions from local facilities, including the RWF. Results of BAAQMD's study will be used in future rulemaking and enforcement actions.

In late 2018, BAAQMD began the rulemaking process for Regulation 13: Climate Pollutants. Regulation 13 currently consists of five rules, each targeting different sectors (e.g., organic material handling facilities, composting facilities, wastewater plants, and refineries), with a focus on regulating emissions of methane and nitrous oxide with secondary goals of reducing the emission of organic compounds and odors. The lagoons and the RWF have the potential to emit methane and could be impacted by the final regulations. The development of the rules has been temporarily suspended due to the pandemic.

ANALYSIS

Proposed Biosolids Management Strategy and Implementation Timing

In accordance with the 2015 direction to proceed with the Biosolids Transition Strategy and Odor Control Implementation Plan, which was reinforced with subsequent actions such as the initiation of the Digested Sludge Dewatering Facility project, staff continues to work to sunset the current open-air processes and implement alternate disposition practices. Furthermore, with the market assessment findings and potential regulatory changes in mind, staff has developed a dewatered biosolids management program that is consistent with the PMP's Guiding Principles, seeking to balance risks and costs, reduce odors, maximize environmental benefits/minimize environmental impacts, and address the RWF's short and long term needs for biosolids management. This strategy will be integrated with other efforts and projects being completed as part of the RWF's Capital Improvement Program (CIP) that will increase the potential for resource recovery from the wastewater treatment process, including nutrients to be used for agricultural and soil amendment purposes (recovered from biosolids) and energy (from biogas recovered from anaerobic digestion of sludge and potentially other feedstocks).

The proposed dewatered biosolids management strategy includes a combination of short and long-term initiatives, including off-site disposition contracts, an on-site fertilizer partner facility, and new land application sites. Staff proposes to initially procure interim (short term) contracts for off-site beneficial use of the RWF's dewatered biosolids. The initial set of these contracts will provide the City with the flexibility required to implement two, longer-term aspects of the proposed dewatered biosolids management strategy—the development of an on-site fertilizer facility and increased land application on local natural and working lands.

Off-Site Disposition Service Contracts

In consideration of the 2019 biosolids disposition market assessment's finding that no single provider currently has sufficient capacity to manage all the RWF's dewatered biosolids, staff plans to procure an initial set of at least two contracts for the transport and beneficial use of the RWF's dewatered biosolids to ensure adequate capacity is secured and provide some operational flexibility. The beneficial use services may consist of land application, temporary wet season storage, and/or further processing to create a product (e.g., compost or fertilizer) that is then applied to land. The cost for the beneficial use services are expected to range from $20 to $85 per ton (not including transport), with the cost for direct land application anticipated to be the lowest and the costs for composting and fertilizer production anticipated to be the higher due to the need for additional off-site processing. The initial set of contracts should be in place no later than the start-up and commissioning of the dewatering facility. It is anticipated that all the RWF's dewatered biosolids will be managed using these contracts for at least the first two to three years of the dewatering facility's operation. The contracts will include options to extend their term if more time is needed to complete an on-site partner facility and/or permit new land application sites closer to the RWF. The City may also periodically procure subsequent off-site disposition service contracts to manage the remainder of the RWF's dewatered biosolids not managed on-site or locally. Once the implementation of the longer-term aspects of the proposed strategy for the RWF's biosolids management program are completed, the reliance on the off-site disposition service contracts should decrease.

On-Site Fertilizer Partner Facility

During the 2019 biosolids disposition market assessment, several companies providing beneficial use services expressed interest in establishing a public-private partnership with San José to develop a new facility that would further process the RWF's biosolids. The development of a facility requires a long-term commitment (usually at least 15 years) to make it attractive to private entities that usually fund, build, and operate such facilities as they are challenging and, therefore, expensive to site. Staff would seek to structure a partnership in which the City's main contribution would be a land lease for a portion of the RWF.

There are several benefits to developing a facility that further processes dewatered biosolids at the RWF. Emissions from the transport of the RWF's dewatered biosolids to a distant location would be avoided as would the emissions from the production of synthetic fertilizer. Another

benefit would be operational and economic stability from having a long-term contract. There would be price certainty over several years as the RWF would not be exposed to significant cost increases recently experienced by several peer wastewater agencies procuring new off-site disposition service contracts, thereby helping stabilize the cost for RWF ratepayers. There should also be less aversion/reluctance to beneficially use the RWF's biosolids as they would be further processed and marketed as fertilizer-type product.

If approved to proceed with the planning and evaluation of options for an on-site facility, staff, with support from consultants, will conduct additional analyses to determine the specific location, confirm the allowable processing technologies, determine the preferred partnership type(s), and the appropriate form for the procurement documents. Some parameters staff is considering for the partner facility include: sizing it to be able to manage at least 50% but up to 100% of the RWF's biosolids; requiring the production of a Class A fertilizer (e.g., in liquid, pellet, or granular form); requiring the partner to be fully responsible for the marketing, selling, and distribution of the product; requiring operations to be fully enclosed to comply with the RWF's regulatory requirements, odor goal and odor fence line; and requiring robust contingency plans should issues arise during the facility's operation.

Staff will also engage with the City's Planning, Building, and Code Enforcement Department to determine the environmental review that will need to be conducted. Depending on the type of document determined to be appropriate, it may take six to 13 months after gathering the necessary project-level information to complete the California Environmental Quality Act (CEQA) process for the partner facility. Staff estimates that it will take at least five years from now to implement an on-site fertilizer partner facility due to the time needed to complete the necessary procurement, permitting, design, and construction processes. Staff will return in 2022 to provide a progress update on the partner facility.

Land Application on Natural and Working Lands

Nationwide, land application of dewatered biosolids is the most common management practice. According to the U.S. Environmental Protection Agency (EPA), 51% of biosolids were land applied in 2019. In contrast, the biosolids disposition market assessment found that approximately only 25% of the biosolids produced within the Bay Area's nine counties were land applied in 2017. When applied to land, biosolids boost crop yields, improve soil structure, increase the water holding capacity, and help sequester carbon. Prior to land application, at a minimum, biosolids must comply with federal regulations established by EPA in 1993, which set pollutant limits, as well as pathogen and vector attraction reduction, monitoring, and reporting requirements. In 2004, the State Water Resources Control Board established requirements mostly based on the EPA's framework. Abiding by the EPA's and State's regulations ensures that no water quality or public health issues will arise from the use of biosolids.

Land application of biosolids currently does not occur in Santa Clara County. The closest permitted land application sites are at least 80 miles away from the RWF, in the counties of Solano and Merced. The greenhouse gas emissions from the future transport of the RWF's

dewatered biosolids could be reduced if additional land application sites that are closer to the RWF are identified and permitted to receive biosolids. Areas that could receive biosolids include forests, grasslands, rangelands, and farms (i.e., natural and working lands).

More work is required to identify and permit sites closer to the RWF to receive biosolids. While some counties have no ordinance concerning biosolids, such as Santa Clara County, others have ordinances that require conditional use permits or ban the use of some or all biosolids. It is expected that some of the restrictive ordinances will be modified or lifted once SB 1383 regulations go into effect in 2022 as the regulations do not allow jurisdictions to prohibit or unreasonably limit the processing of diverted organic waste.

With that in mind, staff sees value in maximizing the amount of dewatered biosolids and biosolids-based products that could be land applied locally, ideally within Santa Clara County. Santa Clara County has nearly 450,000 acres of farmland and rangeland[1], and staff estimates that up to 26,000 acres would be needed to manage all the RWF's biosolids. Considering that the strategy includes land applying only a portion of the RWF's annual amount, staff considers local land application to be feasible and recommends including it as part of the overall biosolids management strategy. With time, the amount of biosolids applied to local lands could increase as public acceptance of biosolids increases.

If approved, staff will proceed to engage with the County of Santa Clara to determine if additional local requirements would apply, environmental organizations like the Santa Clara Valley Open Space Authority to increase awareness and garner support of biosolids land application, and property owners to permit new sites to receive the RWF's biosolids. Staff will also continue to collaborate with organizations like the Bay Area Biosolids Coalition and California Association of Sanitation Agencies, which the City of San José is a member of, to expand biosolids land application as they also recognize the various benefits of using biosolids.

Resource Recovery at RWF

The options presented in this memorandum for beneficial use of biosolids will be integrated with other efforts being planned to increase resource recovery at the RWF. As part of current planning efforts for future CIP projects, staff is looking into options for potentially increasing energy recovery on-site. These options include the co-digestion of FOG to increase biogas production, use of landfill gas as an additional fuel source for the recently completed Cogeneration Facility, and inclusion of solar energy that could increase the portfolio of renewable energy at RWF.

[1] County of Santa Clara and Santa Clara Valley Open Space Authority. (2018, January 3). *Santa Clara Valley Agricultural Plan: Investing in our working lands for regional resilience*. Retrieved from https://www.openspaceauthority.org/system/user_files/Documents/Grids/current_projects/SCV_ActionPlan_010318.pdf.

CONCLUSION

Staff recommends managing the RWF's dewatered biosolids by procuring off-site disposition service contracts, developing a fertilizer partner facility at the RWF, and collaborating with organizations to expand biosolids land application on local natural and working lands. Initially, having multiple off-site disposition service contracts will provide operational reliability should there be issues with any of the RWF's service providers or delays implementing other aspects of the dewatered biosolids management strategy. Establishing a fertilizer facility will provide financial stability and flexibility to respond to regulatory and market changes. Permitting sites closer to the RWF to receive dewatered biosolids will reduce emissions resulting from their transport and help improve the health of local soils. Staff will continue to prepare the necessary procurement and environmental review documents for the off-site disposition service contracts. Staff will begin planning and evaluating options for the on-site partner facility. Staff will also continue to engage with others to expand nearby opportunities for biosolids land application and will coordinate future energy strategies to maximize potential benefits from this program to support compliance with upcoming requirements, such as those from the SB 1383 regulations.

EVALUATION AND FOLLOW-UP

Staff plans to return to TPAC and San José City Council with a recommendation to award the initial set of biosolids disposition service contracts in late 2021. Staff also plans to return to TPAC and San José City Council in 2022 to provide an update on the partner facility.

CLIMATE SMART SAN JOSE

The recommendation in this memo aligns with one or more Climate Smart San José energy, water, or mobility goals.

POLICY ALTERNATIVES

Alternative #1: Manage the dewatered biosolids solely using off-site disposition contracts
Pros: Achieves the PMP's objective of diversification and does not require any other area of the RWF to be used for biosolids processing
Cons: Might result in significant cost increases after each procurement and greater greenhouse gas emissions from the transportation of dewatered biosolids, particularly if new land application or processing facilities aren't developed closer to the RWF.
Reason for not recommending: Service providers offer less favorable prices for short-term contracts as those contracts don't provide enough of a financial security for the service providers to be able to improve and/or expand their operations. Furthermore, as more wastewater agencies divert biosolids from landfills, the already limited capacity at beneficial use sites/processing facilities is expected to be further constrained, resulting in higher biosolids management costs.

The RWF can influence and stabilize its biosolids management costs by entering a long-term contract for the development and operation of a partner facility that generates a fertilizer-type product that can be used more broadly.

Alternative #2: Continue with the RWF's current biosolids treatment and management practices
Pros: Practices are economical as few improvements are required, and the City has a long-term contract that allows continued use Newby Island Landfill while in operation (currently permitted through 2040)
Cons: Does not align with existing policy direction, including the PMP (which also incorporated the Milpitas Guiding Principles), Biosolids Transition Strategy, and RWF Odor Control Implementation Plan. Prevents the RWF from being able to achieve its odor goal and odor fence line. Dismisses resources expended to date and progress made on the Digested Sludge Dewatering Facility project, and likely increases future RWF capital costs. Does not allow the decommissioning of any active lagoons, which are a source of greenhouse gas emissions, and could make it difficult to comply with new regulations concerning climate pollutants in the future (e.g., Regulation 13). Does not reduce the inherent risk from having a single biosolids disposition outlet or service provider. Could increase the risk of having fewer or no beneficial use options geographically close to RWF, thereby increasing operating costs for managing dewatered biosolids in the future. There are limited beneficial use options for the sundried biosolids because the RWF's multi-year treatment process results in low moisture biosolids.
Reason for not recommending: Continuing with the RWF's current biosolids treatment and management practices does not align with past decisions made by the San José City Council and TPAC. Implementing this alternative may hinder the RWF's ability to respond to future regulatory or market changes concerning disposal, greenhouse gas emissions, and odors. Staff anticipates continued and increasing pressure to reduce emissions as state, regional, and local permit agencies enact requirements to combat climate change. Also, there will be no significant net cost savings in the long run, since potential operational cost savings will be offset by higher future capital costs. The RWF would still need to identify another disposition outlet or service provider for the sundried biosolids as Newby Island Landfill's closure approaches.

PUBLIC OUTREACH

This memorandum will be heard at the May 20, 2021, TPAC meeting and will be posted on the City's Council Agenda website for the June 8, 2021 Council Meeting.

COORDINATION

This memorandum was prepared in coordination with the Office of the City Attorney.

COMMISSION RECOMMENDATION/INPUT

This memorandum is scheduled to be heard at the TPAC meeting on May 20, 2021. A supplemental memo with TPAC's recommendation will be included in the amended June 8, 2021, City Council meeting agenda.

FISCAL/POLICY ALIGNMENT

This strategy is consistent with the Council-approved focus on rehabilitating aging RWF infrastructure, improving efficiency, and reducing operating costs. It is also consistent with the budget strategy principle of focusing on protecting our vital core services.

CEQA

Not a Project, File No. PP17-007, Preliminary direction to staff and eventual action requires approval from decision-making body.

/s/
KERRIE ROMANOW
Director, Environmental Services

For questions, please contact Mariana Chavez-Vazquez, RWF Capital Improvement Program Deputy Director, at (408) 635-4008.

Attachment A –Information Memos dated 9/3/19 on the Biosolids Disposition Market Assessment Information Memo and dated 3/2/18 on the Biosolids Transition

Attachment A

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Memorandum

TO: TREATMENT PLANT ADVISORY COMMITTEE

FROM: Kerrie Romanow

SUBJECT: **SEE BELOW**

DATE: September 3, 2019

Approved [signature] Date 9-3-19

INFORMATION

SUBJECT: UPDATE ON BIOSOLIDS DISPOSITION MARKET ASSESSMENT FOR THE SAN JOSE-SANTA CLARA REGIONAL WASTEWATER FACILITY

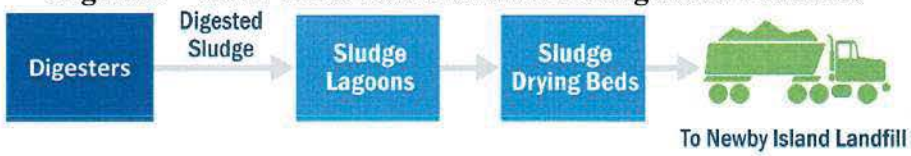
At the Treatment Plant Advisory Committee (TPAC) meeting on April 11, 2019, TPAC members inquired how dewatered biosolids will be managed upon completion of the Digested Sludge Dewatering Facility project. This memo provides a progress update on the biosolids management transition since the information memo dated March 2, 2018 (Attachment 1), by summarizing information from a recently completed biosolids disposition market assessment.

BACKGROUND

Current Biosolids Management Practices

At the San José-Santa Clara Regional Wastewater Facility (RWF), solids currently undergo anaerobic digestion to reduce the volume of solid organic material and generate methane gas. The digested material (sludge) is then pumped to open-air lagoons where it stabilizes for approximately three years before it is solar dried for approximately six months in open-air drying beds. All the solar dried materials (biosolids) are then hauled to the adjacent Newby Island Landfill and used as alternative daily cover (ADC). In 2018, this process resulted in the disposal of a total of 45,315 wet tons of biosolids comprised of 77 percent total solids.

Figure 1 – RWF's Current Biosolids Management Practices



Plant Master Plan

In November 2013, TPAC recommended and San José City Council approved the adoption of the Plant Master Plan (PMP) and certified its Environmental Impact Report. In December 2013, Santa Clara City Council took similar actions. This was the culmination of several years of an extensive community engagement process that was used to develop the PMP's overarching environmental, economic, social, and operation goals for the RWF. The PMP's goals with respect to biosolids were to:

- Reduce odors in the community;
- Position the RWF to have multiple and diversified disposition options;
- Reduce the footprint of the biosolids processing area to enable other land uses; and
- Create flexibility to respond to regulatory changes governing the disposal of biosolids as well as market changes related to the beneficial use of biosolids.

The overarching goals also incorporated the Milpitas Guiding Principles approved by TPAC on December 9, 2010, and subsequently by San José City Council on December 14, 2010.

The PMP acknowledged that the current biosolids treatment process generates odors and is very land intensive. The PMP also anticipated the closure of the Newby Island Landfill in 2025. For these reasons, the PMP recommended modifying the current biosolids treatment process to include a mechanical dewatering facility for all biosolids and allow the decommissioning of the existing open-air lagoons and drying beds. Adding a mechanical dewatering facility would also facilitate diversification by increasing the number of biosolids disposition options available to the RWF.

Biosolids Transition Strategy

On May 14, 2015, TPAC approved the Biosolids Transition Strategy that focused on how to meet the PMP's goals. Recommendations in the Biosolids Transition Strategy included:

- Proceeding with the design and construction of a new mechanical dewatering facility, since it would be required for on-site processing or off-site disposition service contracts, and the retirement of the RWF's lagoons and drying beds;
- Entering into service contracts for a variety of off-site disposition options, such as land application and composting, to manage the dewatered biosolids; and
- Deferring on-site thermal and greenhouse drying facilities to further process biosolids due to costs until regulatory or market conditions require a drier and/or different product (both facilities had been recommended as part of the PMP).

The Biosolids Transition Strategy concluded that, although diversification via land application and off-site composting service contracts would help achieve the PMP's diversification goal, changing the RWF's biosolids management practices would result in higher operational costs. Therefore, the Biosolids Transition Strategy also recommended that a portion of the RWF's biosolids be sent to landfills accepting dewatered biosolids to mitigate the higher costs of the other disposition options.

During the preparation of the Biosolids Transition Strategy, in 2014, staff issued a Request for Information (RFI) to gauge the private sector's interest in providing disposition services for the RWF's dewatered biosolids. Eleven companies responded to the RFI; however, only four companies offered to provide off-site biosolids disposition services (see Table 1).

Table 1 – Off-Site Biosolids Disposition Service Providers

2014 RFI Respondent	Services Offered
Liberty Composting	• Composting
Lystek	• Liquid Fertilizer Production
Synagro	• Composting • Land Application • ADC
Terra Renewal West [1]	• Land Application • ADC

[1] Terra Renewal West has been acquired and rebranded. It is now known as Denali Water Solutions.

Odor Control Implementation Plan

On October 8, 2015, TPAC approved the Odor Control Implementation Plan for the RWF, which consists of a phased approach for achieving the odor goal TPAC had adopted on October 13, 2014. Each phase has a corresponding odor fence line (see Figure 2). The first phase includes the completion of four capital projects, including the Digester and Thickener Facilities Upgrade project and Digested Sludge Dewatering Facility project. Phases 2 and 3 consist of odor control improvements that may be implemented after Phase 1 is completed and the adoption of a modified odor fence line if San José decides to make RWF lands no longer needed for treatment operations available for development, recreational use, or other purposes.

As part of the modeling conducted for the Odor Control Implementation Plan, it was concluded that decommissioning of the RWF's lagoons and drying beds is needed to meet the Phase 1 odor fence line.

Figure 2 – RWF Odor Fence Lines

Regulatory Changes

In September 2016, California enacted Senate Bill (SB) 1383 to reduce emissions of short-lived climate pollutants, such as methane, that result from the landfill disposal of organic material. The targets set by SB 1383 are a 50% reduction in the statewide disposal of organic waste by 2020, and a 75% reduction in the statewide disposal of organic waste by 2025. The bill requires CalRecycle to develop regulations that will reduce the amount of organic waste sent to landfills. CalRecycle's latest draft regulatory text includes biosolids in the definition of organic waste and states that disposition of organic waste at a landfill, even if it is used as ADC, constitutes landfill disposal. The latest regulatory text also sets a compliance date of January 1, 2022. Therefore, San José will be required to curtail its use of Newby Island Landfill for biosolids disposition in the near future.

In summary, despite changes in some of the original regulatory assumptions that supported the decision to transition from the current biosolids management practices, proceeding with the development of a mechanical dewatering facility is still necessary to meet the RWF's odor goals, shrink the land area used for biosolids management, and reduce the inherent risk that results from having a single biosolids disposition outlet or service provider. There are more disposition options for dewatered biosolids than there are for the solar dried biosolids currently produced by the RWF.

ANALYSIS

San José recently completed a biosolids disposition market assessment, which included interviews of wastewater agencies and service providers, to evaluate changes in capacity and costs for the available biosolids disposition options since the 2014 RFI and to better understand how other Bay Area and Southern California wastewater agencies manage their biosolids. Based on the market assessment, San José is developing a strategy to procure near-term beneficial use services to manage the RWF's dewatered and solar dried biosolids. San José will develop a longer term biosolids management strategy after implementing the near-term procurement strategy. The longer term biosolids management strategy may include partnering with a service provider to develop a new facility. Companies providing composting, fertilizer production, and storage services expressed interest in partnering during the 2019 market assessment.

Market Changes

Sixteen biosolids disposition service providers were interviewed as part of the 2019 market assessment, including four that responded to the 2014 RFI (which also included the three largest beneficial use service providers currently in the Bay Area—Synagro, Denali Water Solutions, and Lystek). Based on these interviews, the market assessment concluded that adequate capacity still exists to manage the estimated 122,000 wet tons (at approximately 22 percent total solids) the RWF's dewatering facility will produce; however, no single service provider currently has sufficient capacity to manage all of the RWF's dewatered biosolids (see Table 2). The limited capacity is a result of increasing demand for beneficial use services as wastewater agencies, particularly those in the Bay Area, seek to diversify away from landfills for their biosolids disposition, particularly in anticipation of regulatory changes (e.g., SB 1383).

Table 2 – Estimated Cumulative Capacity Available Among Interviewed Service Providers

Beneficial Use Service	Available Capacity [1]	
	2014	2019
Land Application	280,000	Unknown [2]
Composting	295,000	145,000
Liquid Fertilizer Production	0 [3]	100,000

[1] Expressed in wet tons per year.

[2] Synagro and Denali Water Solutions were unwilling to disclose their available capacity; however, both noted that they had land application capacity currently available or were confident that they could permit additional acreage to manage the RWF's biosolids during dry weather.

[3] Lystek's facility at the Fairfield-Suisun Sewer District was not operational in 2014.

The increasing demand has also resulted in price increases for the beneficial use services offered by the interviewed service providers. Prices have increased by at least $15 per wet ton (without hauling) for most disposition options since 2014 (see Table 3). In comparison, the price to dispose of the RWF's biosolids at Newby Island Landfill has increased by less than $3. The per ton cost was $23.30 in fiscal year 2014-2015 and is $25.41 in fiscal year 2019-2020.

Table 3 – Pricing for Off-Site Beneficial Use Service Options [1]

Beneficial Use Service	2014		2019	
	Low End	High End	Low End	High End
Land Application (dry season)	$20 [2]	$40 [2]	$20	$40
Land Application (wet season)			$35	$60
Composting	$20	$50	$37	$66
Liquid Fertilizer Production	$50	$60	$65	$85

[1] Prices are per wet ton rates and do not account for hauling costs.
[2] The 2014 Biosolids Transition Strategy did not evaluate whether there were price differences between the dry and wet weather seasons.

The market assessment also confirmed that application of biosolids on rangeland and agricultural land continues to be the most popular non-landfill beneficial use option in California, including the Bay Area. Biosolids are also commonly used to produce soil amendments, such as compost and fertilizers, because they contain nutrients essential for plant growth (e.g., nitrogen, phosphorous, and potassium). Beneficial use alternatives to land application are most popular during wet weather when land application capacity is most limited, particularly in Northern California. Capacity for wet weather land application is very limited due to federal, state, and some local regulations that attempt to prevent runoff from these sites from entering water bodies and impacting their water quality. For example, the counties of Solano and Merced have restricted biosolids land application to the dry weather season (i.e., April 15 to October 15 and April through November, respectively), regardless of the actual weather conditions.

Other Wastewater Agencies' Biosolids Management Practices

In general, Bay Area and Southern California wastewater agencies manage biosolids quite differently. Many Bay Area wastewater agencies land apply biosolids during the dry weather season and send biosolids to landfills during the wet weather season. In contrast, Southern California wastewater agencies tend to rely on landfills only as a backup option. Many Southern California wastewater agencies land apply their biosolids, send their biosolids to regional composting facilities, or do both year-round. For example, the City of Los Angeles, Sanitation Districts of Los Angeles County, and Orange County Sanitation District have all established a portfolio of several non-landfill beneficial use options to manage their biosolids. The City of Los Angeles' portfolio includes land application (off-site by contractors and at a city-owned farm by in-house staff), composting (by contractors and in-house staff), and deep well injection. The Sanitation Districts of Los Angeles County has collaborated with other wastewater agencies and service providers to develop regional composting facilities.

Additionally, the Sanitation Districts of Los Angeles County has contracts with several companies for land application and composting services. Their biosolids management practices entail a diversified program that utilizes various technologies, locations, haulers, and a mixture of public and private options to provide long-term stability and reliability. The Orange County Sanitation District has a diversified management portfolio that consists of contracts for composting and land application services in California and Arizona. In the future, the Orange

County Sanitation District plans to explore other options, such as soil blending and bioenergy, to diversify away from agricultural end uses. Their biosolids management practices balance costs with environmental and societal considerations such as reusing biosolids locally, reducing hauling distances, and increasing diversity of the portfolio.

Procurement Strategy for Dewatered Biosolids

In consideration of the market assessment's conclusion that no single service provider currently has sufficient capacity to manage all of the RWF's dewatered biosolids and consistent with PMP goals and the risk management practices of other large wastewater agencies, San José plans to implement a biosolids management program that will attempt to manage risks and cost.

The approach would be to procure multiple service contracts with various beneficial use service providers. Staff will be seeking to procure a set of service contracts that balances operational costs with the local management of biosolids to maximize environmental benefits/minimize environmental impacts. The amount, duration, and key terms of these service contracts have not yet been finalized as San José is developing a strategy on how to best procure the beneficial use services needed to manage the RWF's dewatered biosolids; however, it is anticipated that San José will procure at least two off-site biosolids disposition service contracts each for at least three years with a few options to extend. San José plans to finalize the procurement strategy in late 2019, and will then proceed to prepare the necessary documents for early procurement of the beneficial use services. Staff will recommend a final strategy to TPAC and San José City Council in early 2020, prior to the finalization and advertisement of the procurement documents.

Although the non-landfill beneficial use services might not be needed until SB 1383 regulations take effect in 2022, San José plans to solicit proposals for off-site disposition services by the summer of 2020 (see Table 4). The RWF will be competing with other Bay Area wastewater agencies, particularly the larger ones, such as the San Francisco Public Utilities Commission and East Bay Municipal Utilities District, also seeking to secure services and capacity for the limited beneficial use options. San José will be seeking service providers that have experience providing hauling and non-landfill beneficial use biosolids disposition services, are capable/permitted to handle a large amount of biosolids, and have backup facilities/sites, among other criteria. Thus, early procurement of these services may help keep costs low and/or incentivize service providers to increase the capacity of the limited beneficial use services.

Table 4 –Timeline for Procuring Near-Term Off-Site Biosolids Disposition Services

Activity	Date
Finalize Procurement Strategy	Late 2019
Recommend Final Procurement Strategy & Prepare Procurement Documents	Early 2020
Solicit Services	Summer 2020
Negotiate Service Contracts	Late 2020
Recommend Award of Service Contracts	Spring 2021
SB 1383 Regulations Take Effect	January 1, 2022

Activity	Date
Start Using Off-Site Disposition Services / Commission Digested Sludge Dewatering Facility	Spring 2023

Future Management of Solar Dried Biosolids

The RWF will produce both dewatered biosolids and solar dried biosolids for at least four years after the startup of the Digested Sludge Dewatering Facility but might need to curtail sending the solar dried biosolids to Newby Island Landfill after SB 1383 regulations take effect. As such, San José is also evaluating non-landfill beneficial use options for the RWF's solar dried biosolids. There are limited beneficial use options for the solar dried biosolids because the RWF's multi-year treatment process results in low moisture biosolids significantly devoid of organic content, especially when compared to mechanically dewatered biosolids. Soil blending is the most promising option; however, it is uncommon for a large wastewater agency to blend all of its annual biosolids production. Thus, staff is evaluating how to establish and ramp up an on-site soil blending operation, which may require extending the years the RWF's lagoons and drying beds are in use and the procurement of third-party services to develop, market, and distribute the soil blends. In early 2020, staff will also recommend a plan for managing the solar dried biosolids after SB 1383 regulations take effect to TPAC and San José City Council.

EVALUATION AND FOLLOW-UP

Staff plans to return to TPAC and San José City Council with a recommendation on the final the procurement strategy in early 2020.

COORDINATION

This memo has been coordinated with the Office of the City Attorney.

/s/
KERRIE ROMANOW
Director, Environmental Services

For questions, please contact Napp Fukuda, Assistant Director of Environmental Services, at (408) 793-5353.

Attachment 1 – Information Memo on Biosolids Transition at the San José-Santa Clara Regional Wastewater Facility dated March 2, 2018

Attachment 1

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Memorandum

TO: TREATMENT PLANT ADVISORY COMMITTEE

FROM: Kerrie Romanow

SUBJECT: SEE BELOW

DATE: February 28, 2018

Approved D. DSyL Date 3/2/18

INFORMATION

SUBJECT: INFORMATION MEMO ON BIOSOLIDS TRANSITION AT THE SAN JOSÉ-SANTA CLARA REGIONAL WASTEWATER FACILITY

BACKGROUND

At the November 9, 2017 meeting, the Treatment Plant Advisory Committee (TPAC) requested staff to agendize the biosolids transition at the San José-Santa Clara Regional Wastewater Facility[1] (RWF) for discussion at a future TPAC meeting. TPAC inquired about the purpose of the Dewatering Facility Project and implementation timing, especially considering a recent decision by the City of San Jose's Planning Commission to allow the Newby Island Landfill to increase its height and continue operating through 2041. One of the drivers for the biosolids transition as identified in the Plant Master Plan (PMP) was the anticipated closure of the Newby Island Landfill by 2025, along with other considerations such as positioning the RWF to have multiple disposition options for its biosolids and to be able to respond to future regulatory requirements.

This memo provides information on the biosolids transition including a review of the current solids treatment process; key milestones leading up to approval of the Biosolids Transition Strategy by TPAC and Council in May and June 2015, respectively; and a discussion on changes that have occurred since approval of the Biosolids Transition Strategy, including the Newby Island Landfill operating extension and recent developments related to solid waste regulations that may limit and/or remove the ability of wastewater agencies to continue sending biosolids to landfills within the State of California.

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[1] *The legal, official name of the facility remains San José-Santa Clara Water Pollution Control Plant, but beginning in early 2013, the facility was approved to use a new common name, the San José-Santa Clara Regional Wastewater Facility.*

Description of Current Solids Treatment Process and Biosolids Management Practices

Wastewater treatment at the RWF is accomplished by using a series of physical, biological, and chemical processes to treat the liquids stream and the solids stream. The current treatment process generates approximately 85 tons of biosolids per day, which must be disposed of or beneficially reused. Biosolids resulting from the current solids treatment process are beneficially reused as alternate daily cover (ADC) at the Newby Island Landfill. In addition, methane gas, a by-product of the solids digestion process, is captured and used in internal combination engines to generate electrical power and heat for daily RWF operations.

Separated solids (or sludge) is thickened and processed through anaerobic digesters for 15 to 30 days to reduce pathogen content, sludge volume, and create biogas for beneficial reuse. The digested sludge is then pumped to open air lagoons and drying beds for further sludge volume reduction, treatment, and stabilization over a four-year cycle. On an annual basis, a portion of the dried biosolids are hauled off-site to the Newby Island landfill for use as ADC. This operation uses more than 750 acres of land and the treatment process takes approximately four years to complete from start to finish to achieve Class A biosolids. Because the lagoons and drying beds make up a large, uncovered footprint, the process has the potential for odor generation – this was confirmed through an odor study completed in 2015 which showed odor impacts to the adjacent Milpitas community based on the adopted odor goal of 5 dilution to threshold (5 D/T) at the established fence line.

Key Factors and Milestones Leading Up to Approval of the Biosolids Transition Strategy

Plant Master Plan (2008 -2013)

In 2008, the Environmental Serviced Department (ESD) embarked on a master planning process to rehabilitate and upgrade the wastewater treatment facilities at the RWF, to explore potential process changes, and guide compatible uses for the Plant buffer lands. The PMP incorporated guiding principles prepared by the City of Milpitas (Milpitas Guiding Principles[2]) and considered input from the City of Santa Clara, Tributary Agencies, community stakeholder groups, and the public. Extensive community engagement process was used to develop overarching environmental, economic, social, and operational goals for the RWF. In November 2013, TPAC recommended and Council approved the adoption of PMP and certified the final Environmental Impact Report. In December 2013, Santa Clara's City Council took similar actions.
One area of focus for the master planning process was biosolids management since treating wastewater at the RWF produces about 85 dry tons of solids each day. This current system is land-intensive and has historically been linked to odors in the area. Because of these issues and the anticipated closure of Newby Island Landfill in 2025, the adopted PMP recommended a new Biosolids Management Program (BMP) involving a variety of enclosed, odor controlled treatment processes with the resulting treated biosolids to be hauled off-site for processing and

[2] Link to the Milpitas Guiding Principles http://www.ci.milpitas.ca.gov/_pdfs/council/2011/011811/item_09.pdf

various beneficial reuse applications. The BMP also assumed a mix of Class A and Class B biosolids. Class A and Class B designations for biosolids relate to the level of pathogen reduction in the end product. Class B biosolids are considered stabilized sufficiently to reduce odors and attraction of vectors that could transmit pathogens and diseases. Class A biosolids are essentially pathogen free.

Recommendations related to the Biosolids Management Program per the adopted PMP include:

- Rehabilitation of the existing thickening facilities and mesophilic digesters and an evaluation of whether a different type of digestion process should be implemented
- Mechanical dewatering for all biosolids in an enclosed, odor-controlled facility to concentrate digested biosolids which reduces the volume and weight of material requiring transport to off-site processing and beneficial re-use locations
- Drying a portion of the dewatered biosolids using both thermal drying in an enclosed facility (20% of the biosolids) utilizing waste heat from a planned cogeneration facility and solar drying in enclosed greenhouses (10% of the biosolids)
- Decommissioning the existing open sludge lagoons and drying beds
- Additional processing and beneficial re-use at off-site composting facilities, land application sites and landfills

The adopted PMP also specified the following goals for the biosolids transition:

- Reduce odors in the community
- Position the RWF to have multiple and diversified disposition options
- Reduce the footprint of the biosolids processing area from 750 acres to about 160 acres to enable other land uses
- Create flexibility to respond to future regulatory changes governing the disposal of treated biosolids at landfills as well as changing market conditions related to beneficial reuse of treated biosolids.

Implementation of the BMP as envisioned by the adopted PMP assumed using a phased approach to implement new mechanical dewatering facilities, thermal drying facilities, and greenhouse drying facilities by 2023 and 2033, respectively; and to retire the lagoons and drying beds by 2025 (which included an assumption to use contract dewatering).

2011 Council Direction to Accelerate the Biosolids Transition

In response to community and stakeholder concerns (including those identified in Milpitas Guiding Principles) about odors emanating from the lagoons and drying beds, TPAC recommended (in May 2011) and Council directed (in September 2011) staff to accelerate the biosolids transition effort specifically calling for the RWF to cease discharging biosolids to the lagoons by 2018 followed by emptying of the lagoons and drying beds by 2024. This direction assumed the use of alternative project delivery methods (i.e., design-build and/or design-build-

operate) to achieve schedule acceleration, contract dewatering resulting in significant operating cost to the RWF, and foregoing field verification of dewatering process technologies.

After receiving this direction, staff retained Brown and Caldwell to initiate an in-depth study and implementation strategy for the biosolids transition, including conducting market surveys to assess the demand for biosolids, market interest and available capacities for accepting the large volume of biosolids generated by the RWF, cost paid by other agencies for off-site processing and disposition of biosolids, and private interest in the development of off-site biosolids processing facilities. Several other concurrent activities ensued during development of the Biosolids Transition Strategy, including a validation of the PMP projects, adoption of an Odor Control Strategy, completion of an Odor and Corrosion Control Study and Odor Implementation Plan for the RWF. These items are further discussed below.

2014 PMP Validation

In early 2014, the City completed a detailed project validation review process of all projects recommended in the adopted PMP, including those projects associated with the biosolids transition:

- Co-thickening of various sludge streams to increase digester feed concentration and include covers, ventilation, and odor control facilities for the system
- Addition of fine screening of sludge to reduce the maintenance effort required for all downstream biosolids treatment processes
- Rehabilitation of up to 10 anaerobic digesters, including upgrades to the gas mixing system, gas piping system, etc.
- Mechanical dewatering for all biosolids in an enclosed, odor-controlled facility
- Drying a portion of the dewatered biosolids using both thermal drying and solar drying in enclosed greenhouses
- Decommissioning of the existing open-air sludge lagoons and solar drying beds
- Pursuing multiple disposition options for beneficial re-use of biosolids at off-site facilities (i.e., composting, land application, soil amendment, ADC)
- Providing 180-day sludge lagoon storage

With the exception of one project, the validation effort confirmed the need to implement all of the projects recommended by the adopted PMP as related to the biosolids transition. The exception was to replace the PMP recommendation to build in 180-day sludge lagoon storage with a recommendation to build an enclosed four-day storage facility, which is more in line with best practices at other wastewater facilities.

Biosolids Transition Strategy, Odor Control Strategy and Implementation Plan (2014 - 2015)

On April 10, 2014, staff presented preliminary information on the Biosolids Transition Strategy to TPAC at a Biosolids Study Session. The Study Session provided an opportunity for TPAC and other stakeholders to provide input on the transition strategy. Discussion topics included a

summary of recommendations from the adopted PMP, an overview of biosolids management approaches, and various disposition options including potential options specific to the RWF. Staff also outlined steps to solicit interest from the open market and the methodology for conducting business case evaluations in order to bring back recommendations to TPAC and Council in fall 2014. Feedback from TPAC at the Study Session included consideration of odor impacts, expandability of the facility in the future, possibility of producing Class A biosolids instead of Class B biosolids, and impact on operation and maintenance costs.

Following the April 10, 2014 Study Session, staff returned to present a status update on the Biosolids Transition Strategy to the Transportation & Environment Committee (T&E), TPAC (special meeting), and Council on October 22, 2014, November 20, 2014, and December 2, 2014, respectively.

The outcome of these meetings included approval to proceed with temperature phased anaerobic digestion (TPAD) upgrades and deferral of thermal and greenhouse drying facilities, and direction to staff to return with additional odor and cost information for transitioning out of the lagoons and drying beds to help inform decision making on both the incremental cost benefit for various alternatives and timing of the biosolids transition, particularly with regards to then pending actions by the San Jose Planning Commission to allow the Newby Island Landfill to extend its height and continue operations beyond 2025 to 2041. Staff also recommended performing additional analysis on other potential siting locations for the new Dewatering Facility within the RWF's main operational footprint. Staff was also asked to bring back potential alternatives, if any, that would retain the use of the current lagoon and drying bed process and still meet the desired odor goal. Staff was directed by Council to perform the additional analyses and to bring back the remaining recommendations in spring 2015.

The staff report can be found at: http://sanjoseca.gov/DocumentCenter/View/37716

On May 14, 2015 and June 2, 2015, TPAC recommended and Council and approved the final Biosolids Transition Strategy Report. The approved biosolids transition strategy recommendations include:

- Proceed with implementation of the Digested Sludge Dewatering Facility and the Lagoon and Drying Bed Retirement projects
- Locate the Digested Sludge Dewatering Facility at a selected site across Zanker Road
- Direct staff to bring back recommendations on the size and makeup of the Biosolids Management Team (BMT) for City Council consideration as part of the annual budget process for 2016-2017
- Implement any future on-site processing facilities considering conditions at the time including starting small with pilots, demonstrations, and phasing and potentially participating in regional facilities and emerging technologies

In conjunction with making a recommendation to proceed with constructing a new dewatering facility sized to process 100 percent of sludge volume generated by the digestion process and decommissioning of the lagoons and drying beds, staff also recommended a new timeline for implementation these projects to allow for proper planning, environmental clearance, permitting,

procurement, design, construction, start-up and commissioning. The revised schedule, which was recommended by TPAC and approved by Council, shows a completion date of 2022 for the new dewatering facility and decommissioning of the existing lagoons and drying beds by 2027. In comparison, the adopted PMP assumed a completion timeline of 2023 for the first phase of the dewatering facility, and 2025 for decommissioning of the lagoons and drying beds.

The staff report can be found at:
http://sanjose.granicus.com/MetaViewer.php?view_id=&event_id=732&meta_id=516437

In parallel, an Odor Control Strategy was developed to establish an odor fence line and odor goals for the RWF. The Odor Control Strategy for the RWF was presented at the November 20, 2014 TPAC special meeting. TPAC recommended and Council approved the Odor Control Strategy at the December 2, 2014 City Council meeting. The staff report can be found at: http://sanjoseca.gov/DocumentCenter/View/37729.

After this, an Odor Implementation Plan was presented at the October 8, 2015 TPAC meeting. TPAC recommended and Council approved the Odor Implementation Plan at the October 27, 2015 City Council meeting. The staff report can be found at:
http://sanjose.granicus.com/MetaViewer.php?view_id=&event_id=1470&meta_id=539026

As part of the approval of the Odor Control Implementation Plan, staff was directed to defer odor control improvements for the Digested Sludge Dewatering Facility project because it was not necessary to mitigate on-site impacts at the southern odor fence line. However, for construction efficiency, ductwork elements necessary for building ventilation and the future odor control system would be included as part of the new dewatering facility. Construction of the actual odor scrubber system would be deferred until funding for this improvement could be identified, possibly as part of future development. The estimated capital cost related to odor control improvements for the dewatering facility is $6.59 M (2015 dollars), of which the odor control scrubber technology is the majority portion.

ANALYSIS

This section provides an update on the key biosolids transition projects (Digester and Thickener Facilities Upgrades Project, Digested Sludge Dewatering Facility Project, Lagoons and Drying Bed Decommissioning Project, and implementation of the Biosolids Management Team) since the June 2015 City Council direction. In addition, it summarizes changes and updates to existing conditions as well as current and future legislation that may affect the biosolids transition.

Updates on Key Biosolids Transition Projects

Digester and Thickener Facilities Upgrade Project (2013 to present)

The Digesters and Thickener Facilities Upgrade Project is currently under construction and expected to be substantially complete by fall 2020. This project will improve the anaerobic

digestion, digester gas conveyance system, and dissolved air flotation thickening systems. It also includes the construction of a new primary sludge screening facility. Based on the recommendations of the Biosolids Transition Strategy, this project will rehabilitate four existing mesophilic digesters facilities to operate as a TPAD system for improved biogas production and pathogen destruction as well as position the RWF to produce Class A biosolids (with the addition of batch tanks in the future) when there is increased market demand for Class A biosolids.

Digested Sludge Dewatering Facility Project (2015 to present)

Per the June 2015 Council direction, staff initiated the Digested Sludge Dewatering Facility Project, which will be delivered using a progressive design-build delivery method. The staff memo for this delivery method selection can be found in Attachment B.

In 2016, the City selected Brown and Caldwell to serve as the Owner's Advisor (OA). The staff report can be found at:
http://sanjose.granicus.com/MetaViewer.php?view_id=&event_id=2159&meta_id=597108

The OA has prepared technical memoranda evaluating alternatives and is preparing a Project Definition Report and CEQA documents. Staff is also currently preparing a Request for Qualifications for procurement of a Design Build (DB) entity, and anticipates advertising in spring 2018. Staff anticipates bringing forward a recommendation for selection of a DB entity to Council for approval in early 2019, followed by beginning of design phase. Construction is anticipated to begin in mid-2020, and substantial completion is expected by late 2022.

Lagoons and Drying Bed Decommissioning Project (2015 to present)

After Council approval in June 2015, staff conducted project scoping for the lagoon and drying beds decommissioning project, and recommended that O&M perform sludge removal and land maintenance of the decommissioned lagoon and drying beds until a future land use has been identified for that area. Future land use considerations will be looked at as part of the next major update to the PMP, which is anticipated to initiate in the 2023-2024 timeframe. Staff also recommended reducing the capital improvement scope to only construction of access ramps for lagoons. This re-scoping effort is anticipated to substantially reduce the project construction cost and annual O&M cost. Decommissioning of the lagoons and drying beds is expected to be completed by 2027.

Implementation of Biosolids Management Team (2016 to present)

After Council approval in June 2015, staff conducted surveys of six other peer large municipal agencies on the roles and responsibilities, makeup, and qualifications of their BMTs, as well as identified types and durations of typical biosolids contracts at these agencies. Staff has submitted a budget proposal to add an Environmental Service Program Manager position in FY 2018-19 to develop and lead the BMT; additional support positions be recommended in future years. This position add was initially planned for FY 2016-17, but was deferred to FY 2018-19 based upon the updated implementation schedule.

Over the next few months, staff will be further refining the implementation plan for the biosolids transition including developing a comprehensive contracting strategy and updating the previously identified dispositions options and market analysis in light of recently passed legislation related to biosolids disposition (discussed in the following section).

Changes to Existing Conditions and Future Regulations affecting Biosolids Transition

Extension of Newby Island Landfill Operation (2016 to present)

The City's contract with Newby Island Landfill expires in December 2020. During the development of the PMP and the Biosolids Transition Strategy, the potential closure of the adjacent Newby Island Landfill in 2025 was one of the drivers of the biosolids transition. In December 2016, the City of San José Planning Commission approved a plan to allow the landfill to increase in height and continue operation through 2041. A synopsis of the Planning Commission's action items can be found at:
http://www.sanjoseca.gov/DocumentCenter/View/63168

While the Newby Island Landfill operation has been extended, recent legislation could potentially limit the disposal of biosolids (considered an organic) to landfills (further discussed below).

Increased Focus on RWF Odors by BAAQMD (2015 to present)

The Bay Area Air Quality Management District (BAAQMD) has increased its focus on monitoring odors from the RWF biosolids operation, and is working closely with RWF staff when biosolids are hauled to Newby Island Landfill. BAAQMD has also placed strict requirements on other RWF Projects including Iron Salt Feed Station, Cogeneration Facility, and Digester and Thickener Facility Upgrades for fugitive emissions, particulates, and hydrogen sulfide emissions.

Regulatory Drivers affecting Biosolids Disposition (2016 to present)

Legislation recently enacted in California has introduced uncertainty for Publicly Owned Treatment Works (POTWs), including the RWF, on the long-term viability of disposition of biosolids as ADC at landfills which is, at present, the sole biosolids disposition practiced at the RWF. The key legislation impacting the disposition of biosolids at RWF is Senate Bill SB 1383 (2016) that sets a goal of diverting 50% of organic waste from landfills by 2020, and mandates diverting 75% of organic waste from landfills by 2025. Biosolids, such as those produced at the RWF, are included within the definition of organics to be diverted from landfills.

The text for Senate Bill 1383 can be found here:
https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=2t01520160SB1383

CalRecyle and California Air Resources Board (CARB) have developed draft regulatory text to enact this legislation, and are considering the complete diversion of biosolids from landfills (including ADC) to reduce organic waste to landfills. Once finalized, this legislation could preclude the RWF from continuing to dispose of its biosolids at Newby Island Landfill (or any other California landfill) as soon as 2020. Regardless of the Newby Island Landfill extension, there is no guarantee that Newby Island Landfill will continue to accept the RWF's biosolids once the regulation is enacted.

Construction of the new Digested Sludge Dewatering Facility will position the RWF to have diversified and multiple disposition options for its biosolids. Dewatered cake is a desirable end-product based on previously completed market surveys and will ensure that the RWF has biosolids disposition options in compliance with the pending SB 1383 regulations. It is noted that the dewatering facility is not slated be operational until 2022, with the lagoon and drying bed sludge disposition continuing through 2027.

In November 2017, CalRecycle and CARB recently sought informal input from stakeholders, and the City provided comments to seek a waiver for RWF biosolids from being considered as organic material due to their low moisture and organic content and low potential to generate SLCPs. The intent of seeking this waiver is to allow the RWF sufficient time to come into compliance with the new regulations while the new dewatering facility is being constructed. Formal regulatory review on SB 1383 is expected to take place throughout 2018, with adoption of regulation in early 2019 and implementation in early 2020. The City is actively providing input to CalRecycle and CARB on this draft regulatory text.

Conclusion

This biosolids transition is driven by goals identified in the previously approved Biosolids Transition Strategy and the adopted Plant Master Plan. These include reducing odors in the community; positioning the RWF to have multiple and diversified disposition options for its biosolids with the potential closure of Newby Island Landfill; reducing the footprint of the biosolids processing area and enabling other land uses; and creating flexibility to respond to future regulatory changes governing the disposal of treated biosolids at landfills as well as changing market conditions related to beneficial reuse of treated biosolids.

While the Newby Island Landfill operation has been extended to 2041, it is still prudent for the RWF to have multiple diversified disposition options for biosolids. Reducing odors and enabling other land uses for the lagoon and drying bed area are still valid goals for the RWF. Furthermore, with imminent future regulation based on SB 1383, it is possible that the current biosolids disposition practiced at the RWF would not be in compliance as early as 2020.

The current RWF biosolids have a very limited disposition market due to its low moisture content. The adopted PMP had previously identified only one non-landfill disposition option (i.e., land application) for the RWF's dried biosolids; however, this option was deemed not viable due to limited receiving capacity and the need for special permits. Other possibilities, such

as hauling sludge directly from the digesters would require third-party contract dewatering and hauling, which is very cost-prohibitive due to the large volume of sludge generated by the RWF. A biosolids end-product with 20 to 30 percent moisture content, which can be achieved through dewatering, is most suitable for the biosolids disposition options allowable under SB 1383 (land application, composting, etc.).

Furthermore, the sites with allowable biosolids disposition (composting, land application etc.) under SB 1383 for future dewatered cake have limited capacity in the San Francisco bay area, and there is a potential for increased competition for this capacity from other POTWs. The RWF would benefit from continued implementation of the BMT at the earliest to allow for planning and negotiation of disposition contracts with these sites.

In summary, although the drivers for the biosolids transition may have changed slightly, they still remain valid and provide a rationale for continuing to implement the biosolids transition plan.

COORDINATION

This memorandum has been coordinated with the Office of the City Attorney and City Manager's Budget Office.

/s/
KERRIE ROMANOW
Director, Environmental Services

For questions please contact Ashwini Kantak, Assistant Director of the Environmental Services Department at (408) 975-2553.

Attachments:

- Attachment A: Summary of items related to Biosolids Transition and Odor brought to TPAC and San José City Council
- Attachment B: Staff report on Decision to use Progressive Design-Build delivery method for the Digested Sludge Dewatering Facility Project

Attachment 1

Attachment A: Summary of items related to Biosolids Transition and Odor brought to TPAC and San José City Council

Item	Date presented to TPAC	Date presented to City Council
Review of the Milpitas Guiding Principles for Plant Master Plan Reconstruction and Land Use Alternatives	December 9, 2010	December 14, 2010
Presentation of Preferred Alternative for the Plant Master Plan including biosolids transition	April 7, 2011	April 19, 2011
Preliminary information regarding odors and planned regional odor assessment study and accelerating schedule for biosolids projects. Supplemental Memo to Council to provide status update on working with stakeholders (City of Milpitas, McCarthy Ranch) in response to TPAC direction	May 19, 2011, August 11, 2011	September 13, 2011
Presentation of a packaged delivery approach for CIP and proposed timeline for Biosolids Transition Program	December 13, 2012	-
Update on packaged delivery approach for CIP and proposed timeline for Biosolids Transition	February 9, 2012	February 14, 2012
Adoption of Plant Master Plan	November 14, 2013	November 19, 2013
Presentation of RWF Odor Control Strategy	November 20, 2014	December 2, 2014
Biosolids Study Session	April 10, 2014	-
Biosolids Transition Strategy	November 20, 2014	December 2, 2014
Updated Biosolids Transition Strategy	May 14, 2015	June 2, 2015
RWF Odor Control Implementation Plan	October 8, 2015	October 27, 2015
Delivery Method for Digested Sludge Dewatering Facility Project	Information Memorandum dated January 19, 2016	Information Memorandum dated January 19, 2016
Approval of Master Consultant Agreement With Brown And Caldwell as Owner's Advisor for Digested Sludge Dewatering Facility Project	October 13, 2016	October 25, 2016