



THE CITY OF SAN DIEGO
REPORT TO THE CITY COUNCIL

DATE ISSUED: September 10, 2012 REPORT NO: 12-108
ATTENTION: Natural Resources and Culture Committee
SUBJECT: Long-Term Resource Management Options – Phase II Report
REFERENCE: Natural Resources and Culture Committee Meeting-June 24, 2009

SUMMARY:

THIS IS AN INFORMATION ITEM ONLY. NO ACTION IS REQUIRED ON THE PART OF THE COMMITTEE OR CITY COUNCIL.

BACKGROUND:

In April 2007, the City Council approved a Consulting Agreement with Bryan A. Stirrat and Associates for development of a Long-Term Resource Management Options (LTRMO) Strategic Plan to assist the Environmental Services Department (ESD) in addressing the solid waste disposal needs of the residents and businesses in the City of San Diego through 2030. The first phase of this project was completed and presented to the Natural Resources and Culture Committee and subsequently to the City Council in October and November 2009 respectively. The second phase is now complete, and the LTRMO Strategic Plan Phase II Report has been prepared.

SUMMARY:

The LTRMO Strategic Plan is a three phase planning process that included in Phase I a system analysis; regional demand and landfill capacity analysis; and identification and screening of options for solid waste reduction, recycling, reuse, and disposal to meet future demands. Phase II further evaluated the options preliminarily screened in Phase I, including an update of disposal demand and landfill capacity, establishment of potential system configurations for the future, a financial analysis, and development of implementation plan strategies. Phase III is the implementation phase of the LTRMO Strategic Plan to be carried out by ESD.

The goals of the LTRMO Strategic Plan were initially developed in Phase I and subsequently modified in Phase II. The goals identified in Phase I were:

- Develop a long-term resource management plan to address solid waste generation and disposal up to 2030.

- Anticipate the projected closure of West Miramar Landfill in 2021 and evaluate options for solid waste reduction, recycling, reuse, conversion and in-county and out-of-county disposal options.
- Evaluate opportunities to promote and expand zero waste programs.
- Consider technically and economically feasible options that protect public health and the environment.
- Sustain the economic viability of ESD collection, disposal, energy conservation, waste reduction, environmental protection, and sustainability and resource management services.
- Seek stakeholder input in developing recommendations for the LTRMO Strategic Plan.
- Provide recommendations to address the City's projected resource management needs.

In Phase II the goals were modified to include:

- Expand the time line for the plan to 2045 when the Miramar Landfill lease ends.
- Evaluate solid waste diversion and disposal solutions to address the City's future resource management needs.
- Evaluate what roles the City should perform in those solutions based on cost, social, legal, and environmental efficiency.

The Phase II work included forecasting disposal demand and landfill capacity analysis, evaluating potential solutions to meet demand, combining these potential solutions into a number of system configurations, and forecasting the impact of these system configurations on regional landfill capacity and on the City's funds. The following paragraphs summarize this process.

Disposal Demand and Landfill Capacity Analysis for the City of San Diego and the Region

The City and the region's projected solid waste disposal tonnages were developed using the most recent San Diego Association of Governments (SANDAG) population forecasts. Landfill capacity was then determined using current and permitted capacity for the landfills in San Diego County. The demand and capacity projections were updated in Phase II taking into account the West Miramar height increase approved in 2008, the proposed Sycamore Landfill expansion and the diversion that has occurred from the implementation of the City's mandatory recycling and Construction and Demolition (C&D) ordinances.

Based on currently permitted capacities, the City's West Miramar Landfill is currently projected to reach capacity in 2021 and the region's landfills are anticipated to reach capacity in 2025. Republic Services, Inc. is proposing an increase in the capacity at Sycamore Landfill, and if approved, the Sycamore Landfill is projected to provide regional capacity to 2037. If the proposed Gregory Canyon Landfill opens, it could provide an additional 30.8 million tons of capacity and provide additional regional landfill capacity for approximately 30 years. However, given its northern San Diego location, it is not likely that the City's waste would be landfilled there while Sycamore Landfill has capacity.

Potential Solutions to Meet Demand

Over 100 options were identified during Phase I to meet the City's short and long term needs. These options included various zero waste programs and policies, zero waste infrastructure, conversion technologies, waste-to-energy, landfill optimization and in-county and out-of-county

landfill disposal options including rail haul. Forty (40) options were selected with medium to high feasibility for further review in Phase II. The major categories included:

- **Zero Waste Programs** - The City's existing zero waste programs, such as the Mandatory Recycling Ordinance, Construction and Demolition (C&D) Recycling, and the Miramar Greenery operations are robust and have resulted in increasing the diversion rate 13% from 55% in 2006, to 68% in 2010. Sixteen additional programs and policies are identified for consideration for future implementation. These include:
 1. Implement rigid plastic recycling at curbside
 2. Establish ban on single use polystyrene food containers
 3. Require extended producer/manufacture responsibility
 4. Recycle plastic bags using blue bins
 5. Establish future "MRF First" - Municipal solid waste to be processed through a material recovery facility if available
 6. Increase green waste pickup from bi-weekly to weekly
 7. Create a cost incentive for business participation in a food discards program as markets become available
 8. Establish restaurant food waste collection and composting requirements
 9. Provide business tax credits/incentives for certified Green Businesses
 10. Modify City procurement policy – return usable shipping containers
 11. Establish on-call bulky item pick-up for single family, multi-family, and businesses
 12. Develop/promote e-newsletters to schools
 13. Educate restaurants about source reduction
 14. Establish Re-create art contest and exhibitions for youth
 15. Coordinate large retailer drop-off locations for specific wastes
 16. Allow inclusion of certain residential food waste in the green can

ESD has already taken the initiative to fully or partially implement several of these programs. In 2010, rigid plastics were accepted in the curbside recycling program and a ban was implemented on using City funds to purchase polystyrene food containers at City facilities. ESD staff have conducted extensive and ongoing outreach and trainings with haulers and food waste generators to increase the amount of food waste diverted, the number of food waste participants increasing from nine large generators in 2010 to 13 large generators and 35 participants on food waste collection routes in 2012, ESD has also continued to coordinate with San Diego Unified School District to provide outreach and conduct recycling pilots, as well as establishing an art contest and exhibition of recycled art for youths through our contract with the San Diego County Office of Education.

- **Resource Recovery Center (RRC)** - Involves developing a comprehensive recycling facility at the entrance to the Miramar Landfill whereby all self-haul vehicles would participate in recycling and separating materials in their loads. This facility would eliminate self-haul vehicles from the working face of the landfill and divert recyclable

materials from disposal. It is estimated that 20 years of operation could result in at least one additional year of capacity.

- **Conversion Technology (CT)** - CTs include a wide array of thermal, biological, chemical, and mechanical technologies capable of converting municipal solid waste into energy such as steam, electricity, fuels and other useful products. CTs are currently used in Europe, Japan and Asia. Several jurisdictions in California are in the process of developing pilot CT projects; however these facilities are much smaller and process less volume than what the City's current waste stream. The costs and tipping fees for these types of facilities are very high relative to disposal fees. Typical tipping fees range from \$60 - \$150 per ton; hence this option is not currently economically feasible, and we are awaiting the pilot project results.
- **Waste to Energy (WTE)** - These facilities are considered "combustion" facilities and not conversion facilities and any diversion credits allowed are for existing facilities only. Proposition H, approved by voters in 1987, places stringent conditions on the development of WTE facilities of 500 tons per day (tpd) or larger in the City. Facilities under 500 tpd have a higher tipping fee ranging from \$85 - \$100 per ton, making it a costly alternative and not currently economically feasible.
- **Material Recovery Facility (MRF)/Transfer Station** - During Phase I of the LTRMO Strategic Plan a MRF capable of processing between 200 and 400 tpd and a Transfer Station capable of processing 5,000 tons per day tpd was considered. After further analysis, it was determined that processing capabilities for the City's existing and future source separated recyclables already exist through contracts ESD has with the Alan Company and IMS Recycling Services who currently handle these materials.
- **Transfer Station** - This 5,000 tpd facility would include a multi-scale entrance and scale house facility with tipping, waste handling and load out operations space. A conceptual design of this facility utilizing land on the Miramar Landfill leasehold has been developed. The City will need a Transfer Station on-line before the ultimate capacity of Miramar is reached in order to minimize transportation and disposal costs to other landfill facilities.
- **North Miramar Reclamation** - North Miramar Landfill was operated between 1973 and 1982. The potential of removing approximately 2.8 to 6 million cubic yards (cyds) of existing soil cover, excavating and potentially recycling over 9 million cyds of the buried waste, and overexcavating below the bottom of the waste was analyzed to determine the feasibility for gaining additional landfill capacity. The analysis found that the reclamation is only viable if the waste were excavated at a very fast rate, the material was not processed but was directly relocated into a landfill and that there was sufficient landfill space and time (approximately 14 years) to complete the reclamation prior to permitting the site as a new landfill. Given these requirements, it was determined that reclamation of the North Miramar Landfill was not currently feasible.

- **North Miramar Vertical Expansion** – The North Miramar Landfill is an unlined landfill that has not received waste since 1982 and is classified as an inactive landfill. This option would require new landfill permits in order to receive waste and place the material over the existing landfill. It is not known what type of barrier (either soil or a Subtitle D synthetic liner) will be required to be placed under the new landfill. The vertical expansion would include removal of the existing 2.8 to 6 million cyds of cover soils. Any additional height increase would require the approval of the Department of the Navy. Two scenarios for final elevations were considered. The first scenario with a height increase up to the existing permitted elevation of West Miramar at 485 mean sea level (msl) could result in 3.5 to 7 years of additional landfill capacity. The second scenario with an additional height increase of 40 feet, to an elevation of 525 msl, could result in 7 to 8.5 years of additional landfill capacity.
- **West Miramar Landfill Lateral Expansion** – There is a potential to further extend the West Miramar Landfill to the west within the existing limitations within the Lease Agreement. Alternative A would extend the landfill over an additional 26 acres to the west up to an existing utility corridor, and could result in 2 years of additional landfill capacity. Alternative B would extend the landfill over an additional 77 acres to the west and would require the utility corridor containing two high pressure gas/oil lines and transmission power lines be relocated. Alternative B could result in 9.7 years of additional landfill capacity.

System Configurations

The viable options identified from the potential solutions were then grouped into five (5) system configurations. Key steps associated with system configurations are presented in the report to account for permitting and development processes. The system configurations are described below:

Configuration 1 – Baseline, Status Quo

- Continue existing Zero Waste programs;
- Continue Recycling and C&D Ordinances;
- Continue current landfill operations;
- Direct transport waste to Sycamore or Otay landfills after Miramar Landfill's closure.

Configuration 2 – Zero Waste

- Configuration 1 plus:
- New Zero Waste programs;
- Resource Recovery Center at Miramar Landfill;
- Evaluation of Conversion Technology;
- Transfer Station at Miramar Landfill;
- Transfer waste to expanded Sycamore Landfill after Miramar Landfill closure;
- Transfer waste out-of-county after Sycamore Landfill closure.

Configuration 3 – Miramar Landfill Vertical Height Increase

- Configuration 2 plus:
- North Miramar Landfill Vertical Increase; and/or

- Additional West Miramar Landfill Vertical Increase.

Configuration 4 – West Miramar Landfill Lateral Expansion

- Configuration 2 plus:
- West Miramar Landfill Lateral Expansion A (Smaller)
- West Miramar Landfill Lateral Expansion B (Larger)

Configuration 5 – Combination of Configurations 3 and 4

A summary of the options included in Configuration 5, including cost estimates, potential landfill capacity gained and a proposed implementation schedule is included as Attachment 1.

Financial Analysis

The study spent considerable effort modeling the projected impacts of the system configurations on the Refuse Disposal Fund and the Recycling Fund.

Refuse Disposal Fund

A comprehensive analysis of financial and tonnage projections was performed. Even though Configuration 1 (Status Quo) has the lowest net cumulative expenditures, it has the highest net expenditures per ton at \$24/ton by 2045 versus \$15 to \$17/ton by 2045 for Configurations 2 through 5. All else being equal, the configuration with the lowest net expenditures per ton would be the optimal configuration. However, all else is not equal. While Configurations 2 – 4 have slightly better net expenditures per ton values than Configuration 5, Miramar Landfill closes sooner and out of county transport and disposal of waste commences sooner than in Configuration 5. This means that Configuration 5 would result in the lowest cost increase to the General Fund and other stakeholders through 2045.

Recycling Fund

Sixty-nine percent (69%) (\$12.6M) of the Recycling Fund's \$18.4M annual revenue comes from AB 939 fees collected either as part of the tipping fee at Miramar Landfill or collected via quarterly invoicing of the City's Collections Division and franchised waste haulers for all waste collected within the City of San Diego, regardless of the final destination of the material. At the time Miramar Landfill reaches its full capacity and no longer accepts waste, the Recycling Fund will only receive AB 939 fee revenues on City-collected materials and commercial franchisee-collected materials. This will result in a loss of approximately 16% (\$2M) of annual AB 939 fee revenues.

Assuming no increase in AB 939 fees at Miramar Landfill, under all configurations the Recycling Fund would have a cumulative net loss from operations in the near (5 years), intermediate (10 years) and long term (more than 10 years), ranging from \$176.9M (Configuration 5) to \$247.5M (Configuration 2). Configuration 5 has the least cumulative net loss through 2045. The AB939 fees paid by the General Fund, once Miramar Landfill closes, will not increase as a result of directly hauling waste to other local, but private sector landfills.

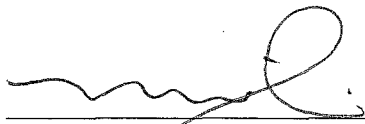
The study also looked at several fee increase scenarios to determine the least impact to the City's General Fund. The cost to the General Fund will increase significantly once Miramar Landfill closes due to the transport and tipping fees of private sector landfills. The General Fund

currently pays \$21/ton at Miramar. Once Miramar Landfill closes, General Fund costs for transport and disposal to Sycamore Landfill are projected to increase to \$71/ton, and once Sycamore Landfill closes, costs are projected to increase to \$142/ton. The least impact to the General Fund would be implementing Configuration 5 and extending the life of Miramar Landfill as long as possible.

CONCLUSION


System configuration 1 (Status Quo) would have the greatest negative impact on the General Fund due to transport costs increasing when Miramar Landfill closes in 2021. The General Fund will experience dramatic cost increases once Sycamore Landfill closes, due to longer transport costs and significantly higher out-of-County tipping fees.

Given the City's goal of sustainability and minimizing costs for residents and businesses in the City of San Diego, implementing the options included in Configuration 5 will provide the most cost effective method to control these impacts and costs. Configuration 5 will maximize the capacity at Miramar Landfill, extend its useful life by approximately 24 additional years, and provide revenue streams for the longest period of time.



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Attachment 1: Configuration 5

ATTACHMENT 1
LTRMO - Configuration 5

		Description	Additional years of capacity	Cost	Start/completion of development, permitting and construction	Providing Disposal Capacity or processing materials through
A	Existing Miramar Landfill					2021
B	Existing and New Zero Waste Programs	See Tables 3-1 and 3-2 of LTRMO Report			2012	2021
C	Resource Recovery Center at Miramar	A comprehensive recycling facility that would require all self-haul vehicles to participate in recycling and separating the materials in their loads. This facility would eliminate self haul vehicles from disposing their waste at the working face of the landfill.	Diverted materials: 25 – 50K tons (2-5 % of current waste stream). If operational for 20 years, could result in excess of 1 year of landfill capacity gained.	Capital Cost: \$6 – 7 Mil	2012 -2014	2014 -2045
D	North Miramar Vertical Expansion <i>Height of 485 MSL</i>	A new Landfill permit to allow a vertical expansion of the closed North Miramar landfill. Additional capacity would also be gained by removing the existing 6 million cyds of cover material. Increasing the height to 485 msl, the current height for W. Miramar, would provide capacity 6.1 million tons of additional capacity.	Additional capacity of 5.1 years, based on an average of 1.2 million tons of waste inflow per year.	Cost estimates vary depending if an interim soil cover or a subtitle D liner system is required. Development Cost with an interim soil cover: \$37.5 Mil. Development Cost with a Subtitle D liner: \$ 58 Mil.	2012-2021	2021-2026

	<i>Height of 525 MSL</i>	Increasing the height to 525 msl would provide 10.2 million tons of additional capacity.	Additional capacity of 8.5 years based on an average of 1.2 million tons of waste inflow	Development Cost with an interim soil cover: \$29 Mil. Development Cost with a Subtitle D liner: \$59 Mil.	2012 - 2021	2021-2029
E	West Miramar Lateral Expansion <i>Alternative A</i>	A western expansion encompassing approximately 26 acres	Additional capacity of 2 years	Development Cost: \$15 Mil.	2025 - 2026	2026-2028
	<i>Alternative B</i>	A western expansion consisting of approximately 77 acres and requiring the relocation of a utility corridor that includes transmission power lines and two buried high pressure gas /oil lines.	Additional Capacity of 9.7 years	Development Costs, including relocation of utilities: \$48 Mil.	2025 - 2026	2026-2035
F	Develop Transfer Station at Miramar	Proposes to utilize 12.5 acres of the 19 acre site on S. Miramar. The conceptual design proposed a 75K – 80K sq ft building for a 5,000 tpd facility for tipping, waste handling and load-out operation.		Capital Cost: \$25 - 27Mil.	2028 - 2034	
	<i>Transfer and Transport to Sycamore Landfill</i>	Waste will be processed through this transfer facility and transported to another landfill.		Annual Operating Cost for the transfer station is estimated at \$17/ton and transport cost of \$4/ton to Sycamore.		2035-2043
	<i>Transfer and transport to El Sobrante</i>	Waste will be processed through this transfer facility and transported to another landfill.		Annual Operating Cost for the transfer station is estimated at \$17/ton and transport cost of \$37/ton to El Sobrante.		2043 -