

CHAPTER 1 - EXECUTIVE SUMMARY

1.1 Background

In 1987, the City of San Diego established the Clean Water Program (CWP), a massive construction program with the goal to bring the City into compliance with the federal Clean Water Act. Through a hired Program Manager, CWP Alternative IV Plan, was selected among 6 recommended alternative plans to upgrade existing City facilities, and build new water reclamation plants, sludge processing facilities, and several sewage pumping stations. It also provided for sewage and reclaimed water conveyance and processing of biosolids through Year 2050. Two of the projects identified in the CWP Alternative IV Plan were the Fiesta Island Replacement Project (FIRP) and the Northern Sludge Processing Facilities (NSPF). The goals of these two facilities were to provide treatment and processing of all digested biosolids from the Point Loma Wastewater Treatment Plant (PLWTP) and all raw biosolids from the Northern Areas Water Reclamation Plants (NWRP) respectively.

In 1992, the City opted to implement a more economical alternative construction program called the Consumer's Alternative. This alternative program retained the FIRP and NSPF facilities among other planned facilities for implementation and was conceived to be completed in two construction phases: Phase 1 to provide capacity through Year 2010; and Phase 2 through Year 2050. The City created and tasked the Metropolitan Wastewater Department (MWWD) with the responsibility for meeting the goals of the Clean Water Program and the Consumer's Alternative Plan.

After extensive investigations, the City decided to jointly locate the FIRP and NSPF facilities in a formerly Navy-owned site south of the old Miramar Naval Air Station. This combined facility was later to be called the Metropolitan Biosolids Center (MBC). The Metropolitan Wastewater System is shown on Figure 1-1 and a site plan of the MBC facility is shown on Figure 1-2. Only two of the 5 water reclamation plants planned in the Alternative IV Plan were included in the Consumer's Alternative Plan. The North City Water Reclamation Plant (NCWRP), the first of these 2 plants, started construction in 1994 and was completed in 1996. It became fully operational in 1997. NCWRP is the only north county reclamation plant built to date that is being served by MBC's NSPF. The Fiesta Island biosolids processing facilities for treating PLWTP digested biosolids were relocated to the FIRP facility in MBC in pursuant to a California Coastal Commission directive. Construction of MBC was started in 1995 and completed in 1998. The FIRP and NSPF facilities became operational in 1998 and 1999 respectively.

1.2 Purpose/Objectives

In 1995, MWWD issued the first Metropolitan Wastewater Plan (MWP) which presented recommended improvements to the Consumer's Alternative Plan including updates on wastewater flow and load projections and further water reclamation developments. One of the

highlights of the 1995 MWP was the proposed construction of a secondary treatment facility in the South San Diego area sooner than originally planned in the Consumer's Alternative Plan.

Not until 2003 was a review of the 1995 MWP started. Based upon revisions in the SANDAG projections, and reevaluation of current regulatory requirements, a new 2005 MWP was drafted describing proposed new major facilities. The draft 2005 MWP (currently under review for final adoption) provides a planning horizon up to the year 2050. With the recent construction of the South Bay Water Reclamation Plant in 2002, the draft 2005 MWP recommends delaying any additional treatment capacity until 2025. Based on revised flow and load projections, a 21 mgd South Bay Wastewater Treatment Plant (SBWTP) and Southern Sludge Processing Facility (SSPF) will have to be operational by 2025. These will be required in order for PLWTP to continue to meet its current NPDES (National Pollution Discharge Elimination System) permit requirement of a projected mass emission rate (MER) of 13,599 metric tons per year (mt/yr) beginning 2006. The Mission Valley Wastewater Treatment Plant (MVWTP) and NCWRP-Phase II are targeted to be operational in 2030 and 2045 respectively to continue providing the needed MER relief further in the 2050s.

The draft 2005 MWP's recommended schedule of construction for the new MWWD facilities is shown in Table 1-1 below:

<p align="center">TABLE 1-1 Draft 2005 MWP's Recommended New MWWD Facilities</p>		
Proposed Facility	Capacity	On-Line by Year
Wet Weather Storage Facility- Phase 1	7 MG	2011
Wet Weather Storage Facility- Phase 2	14 MG	2016
South Bay Wastewater Treatment Plant- Phase 1	21 MGD	2025
Southern Sludge Processing Facility	1 MGD	2025
South Bay Pump Station- Phase 1	21 MGD	2025
South Bay Conveyance System- Phase 1	103 MGD ¹	2025
Wet Weather Storage Facility- Phase 3	14 MG	2021
Point Loma Tunnel Outfall	162 MGD ¹	2040
Mission Valley Wastewater Treatment Plant	15 MGD ¹	2030
Mission Valley Effluent Pipeline	24 MGD	2030
Mission Valley Sludge Pipeline	2.1 MGD	2030
North City Water Reclamation Plant- Phase 2	10 MGD ²	2045
East Mission Bay Pipeline	90 MGD ²	2045
North City Effluent Pipeline	90 MGD ²	2045
Point Loma Parallel Outfall	TBD ³	TBD ³
<p>Note: The planning horizon for 2005 MWP is 2050. 1-Pump stations and pipelines are designed to carry build-out peak wet weather flows. 2-This facility will be built as a secondary treatment plant with option to upgrade to water reclamation plant. 3-The need for this facility will be revised every 5 years as inspection of Point Loma tunnel outfall is being conducted.</p>		

As the end of Phase I of the Consumer's Alternative Plan is closely approaching and due to the need to reassess the original planned improvements for the Phase II in light of the 2005 MWP recommendations, MWWD is preparing a master plan for MBC for years 2005 to 2030. The master plan effort presented in this report was divided into two phases. Phase I prepared an assessment report of current conditions of process facilities and their operations at the Metro Biosolids Center and how these impacted its biosolids processing capability for the projected flows and loads. Based on these issues, recommendations for improvement projects were made.

The Phase II planning effort estimated the year when certain MBC processes must be expanded or upgraded to accommodate the increase in solids load resulting from population growth projected for the MWWD service area. A hydraulic and solids mass balance model currently being used for master planning of MWWD facilities was modified for this MBC solids evaluation study.

These Phase I and II planning efforts became the basis for the recommendation of a number of expansion and/or upgrade projects for the existing MBC facilities as the primary objective of this Capacity, Condition and Operation Assessment Report and Master Plan (CAMP) for 2005-2030.

1.3 Flow, Condition and Operation Assessment

Phase I Assessment

Based on the condition/operation assessment conducted, significant operational difficulties exist that hamper success in meeting daily biosolids processing requirements. Three major factors contribute to these operational difficulties.

1. *Low peaking factor:* A low 1.38 (versus 2.0 or higher used for PLWTP and NCWRP flows) design peaking factor was used for flows to the MBC dewatering and biosolids storage facilities.
2. *Complexity of processes/control strategies and O&M procedures:* Highly complex processes and equipment control strategies have necessitated a significant effort to operate and maintain the facility.
3. *Inadequacies in design and poor as-built drawings:* Design flaws coupled with inaccurate and incomplete as-built drawings have further contributed to operational difficulties. System upgrades are made more difficult and more costly because of as-built drawing shortcomings.

In addition, special equipment construction, incorrect control strategies, premature equipment/material failures, and/or extended repair times have collectively resulted in system production reduction and even failures or shutdowns. Some of these operational difficulties are considered as "capacity limiters" or "constraints" as they have critically affected the entire process and reduced MBC's overall biosolids processing capacity.

Phase II Assessment

The current average and peak hydraulic and solids daily loadings from PLWTP and NCWRP are below the average loads projected for Phase 1 (year 2010) of the Consumer's Alternative Plan. Likewise, MBC's dewatered biosolids production figures are also below the Consumer's Alternative Plan 2010 projections. The mass balance model prepared for this Phase II Assessment indicates the following:

1. Facility expansion/upgrades for the dewatering centrifuges are adequate until year 2025.
2. Based on the facility's design strategy of operating 6 silos with 2 silos in standby while also providing capability to store 3 days of solids produced without truck loadout (on long weekends), the current biosolids silo capacity is exceeded. In order to maintain this operating strategy until year 2025, two new additional silos are needed to be built as soon as funds are available.
3. The truck loadout facility's strategy of operating 5 days per week and 8 hours per day is adequate until year 2013. To maintain this operation, additional loadout stations (1 or 2) are needed in 2014. However, operating on more hours per day or more days per week will allow the existing loadout facility to handle current and future biosolids cake production until year 2025, but will result in more work for the O/M staff and an increase in operating costs.

1.4 Class "A" Biosolids

Though Metcalf & Eddy has made provisions in its design of the present MBC facility, this master plan does not address the issue of the conversion of the related MBC process facilities from Class "B" to Class "A" biosolids production as may be required by future regulations on disposal and beneficial use of biosolids (40 CFR, Part 503). Presently, Class "B" has been determined as the minimum acceptable level of treatment for the MBC biosolids. In light of this and although the construction of the South Bay Wastewater Treatment Plant (SBWTP) and a Southern Sludge Processing Facility (SSPF) in 2025 may result in reduced volume of biosolids sent to MBC, a comprehensive study to look into this very important issue and for facilities planning purposes will have to be conducted separately by MWWD at the earliest.

1.5 Summary of Recommendations

Each of the improvement or upgrade projects identified and listed in this report were justified on the basis of four criteria: 1) how it impacts the biosolids processing capacity of MBC; 2) how it affects operations and/or maintenance procedures; 3) how it affects the operator's and/or public's safety; and 4) how it impacts federal, state or city regulatory permitting requirements. Table A-1 of Appendix A presents all the recommended improvement projects identified from the Phase I condition and operation assessment.

Based on the condition and operational assessment performed and presented in this report, the major projects (each with an estimated total construction cost of \$0.5 Million or more) recommended for implementation within 2005-2030 are shown in the following Table 1-2.

TABLE 1-2 Major Upgrade Projects for MBC					
Project No.	Project Name	C.I.P. No.	Projected Construction Start (FY)	Projected Completion (FY)	Estimated Total Cost (\$ Million)
P-9.3	Dewatering Transfer Pumps Upgrade	42-915.9	2005	2006	0.7
P-10.1	Standby Centrifuge Sludge Feed and Polymer Feed Pumps Installation	45-981.0	2007	2010	1.5
P-10.2	Centrate Collection Piping Upgrades –Phases 2 and 3	45-982.0	2012	2016	2.0
P-10.6	Replace 4 Dewatering Centrifuges with Larger Capacity Units	45-983.0	2009	2014	6.0
P-11.1	Additional Biosolids Storage Silos	45-984.0	2007	2014	8.0
P-11.3	Valve Access Platforms Installation In Biosolids Storage Building	45-985.0	2017	2019	4.5
P-11.5	Emergency Direct Pipeline Loadout Station	45-986.0	2007	2009	0.7
P-11.6	New Biosolids Truck Loadout Facility	TBA	2024	2030	20.0
N-1	Wastewater Pump Station Upgrade and Forcemain Extension	45-988.0	2007	2010	1.2
N-2	Odor Control Facility Upgrades & Dampers Access Platforms Installation	45-989.0	2007	2009	5.0
N-6.1 N-6.2	Storm Water Drainage System Improvements	45-990.0	2013	2016	3.0
E-6.2	Emergency Electric Generating Units Installation	45-991.0	2013	2016	2.0
				TOTAL	\$54.6
TBA - To be assigned later					

After a review of the projects by the Engineering and Program Management Division and the Operations and Maintenance Division, a package of projects are proposed for fund allocation in the next 10 fiscal years (2007-2016). These projects are presented in Chapter 6-Implementation Plan.

