

CHAPTER THIRTEEN: WASTEWATER COLLECTION AND TREATMENT

13.1	INTRODUCTION	13.1
13.2	WASTEWATER GENERATION	13.1
13.3	WASTEWATER COLLECTION SYSTEM	13.2
13.4	WASTEWATER TREATMENT PLANT	13.3
13.5	NON RESIDENTIAL DISCHARGES	13.10
13.6	SLUDGE DISPOSAL	13.11
13.7	CAPITAL FACILITY COST AND PHASING	13.12

LIST OF FIGURES

FIGURE 13.1: SII Wastewater Facilities	13.7
FIGURE 13.2: Potential Receiving Fields for Reclaimed Water	13.8

LIST OF TABLES

TABLE 13.1: SII Wastewater Generation	13.5
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CHAPTER THIRTEEN: WASTEWATER COLLECTION AND TREATMENT

13.1 INTRODUCTION

This chapter summarizes Master Plan provisions related to wastewater collection, treatment and disposal, and states the Specific Plan II Plan Descriptions and Implementation Measures. The treatment facilities will include aerated lagoons, preliminary treatment, activated sludge, filtration, disinfection, effluent storage, and if necessary, interim farmland irrigation. Approximately 80% of the service area will drain by gravity through a backbone collection system to the treatment plant. The remaining 20% of the service area must be pumped to the treatment plant through lift stations and force mains. The permitted capacity of the treatment facility and all related components will be 5.4 MGD (average annual flow) at build out. The treatment processes and facilities will be built in stages appropriate to serve one or more neighborhoods and a balanced amount of industrial/commercial and public uses.

Standards and design factors from comparable cities and community within the vicinity, and most recently the MHCSD Development Standards have been used to provide conceptual planning estimates for the Mountain House community.

13.2 WASTEWATER GENERATION

Master Plan Summary

The Master Plan provides calculations of the sewage generated from the community with and without conservation. The calculation of sewage generated with the use of conservation techniques is believed to be conservative and should be verified as the community is developed. The permitted capacity of the treatment facilities and all related components will be 5.4 mgd at buildout.

All Specific Plans except Specific Plan I will include an evaluation/assessment of actual wastewater generation compared to Master Plan assumptions. In addition, monitoring of sewage generation figures will be carried out by the MHCSD on a routine basis. Both of these evaluations will be used to determine whether adjustments to treatment and collection facilities need to be made and how this impacts the schedule of wastewater improvements and sizing.

If wastewater generation specified in the Master Plan is exceeded for a previous Specific Plan, subsequent Specific Plans will specify additional actions that would be implemented to achieve reduced wastewater generation. In addition, the Master Plan will be revised, if necessary, prior to approval of a Specific Plan to reflect new projected wastewater generation and revised infrastructure facilities to permit increased wastewater generation and disposal.

Plan Description

The Master Plan required an evaluation of actual wastewater generation compared to Master Plan assumptions. At the time of writing of this Specific Plan, there is insufficient data to support modification of Master Plan assumptions. To date, there are approximately three hundred residents at Mountain House, most of whom have resided there for only a few months. Additionally, wastewater discharges associated with construction are being directed to the treatment plant, artificially skewing the amount of flow being experienced.

Because the MHCS D does not yet have one adequate year's data, they plan to continue to use the factors utilized by the adopted Master Plan and MHCS D Infrastructure Master Plans.

The exception to this is a modification, based on widely documented data, to modify the wastewater generation rates for the age-restricted Neighborhoods I and J. SP II proposes land uses that are generally consistent with the land uses, densities and intensities of the land uses adopted by the Master Plan for SP II lands. Modifications to land uses proposed within SP II mostly center around the proposal to convert Neighborhoods I and J to age-restricted housing, and the related deletion of two of the prior proposed K-8 Schools within these neighborhoods. Additionally, residential land use designations will likely generate less wastewater than what was anticipated in the Master Specific Plan. This analysis was performed as part of the environmental review process for SP II, and is summarized in Table 13.1: SP II Wastewater Generation, which shows that the overall wastewater generation expected with the development of SP II is generally consistent with the amounts envisioned in the Master Plan for these areas.

Figure 13.1 illustrates the wastewater facilities for SP II.

SP II Implementation Measures

1. **MHCS D Generation, Design and Monitoring Requirements. All implementing projects shall comply with the MHCS D Development Standards (Section 5: Sanitary Sewer System Design Standards).**

13.3 WASTEWATER COLLECTION SYSTEM

Master Plan Summary

The Master Plan limits the area to be served by the wastewater trunk collection system to the proposed Mountain House community. The system is intended to transport wastewater from all areas within the community to the treatment plant and avoid any adverse impacts on public health and safety. Wastewater will be conveyed to the treatment plant through a pipe network system in a fast and efficient manner. The collection facilities will be designed and constructed in such a manner that the health and safety of inhabitants of the community are not adversely affected.

Each Specific Plan will indicate which portion of the trunk pipeline system must be installed to adequately serve the specific plan development and what additional facilities are needed to efficiently serve future "upstream" developments. In no case will future developments be forced to install trunkline extensions through completed developments in order to secure service.

Plan Description

SP II proposes a system of wastewater collection backbone infrastructure that is consistent with the design requirements contained in the MHCS D Master Sanitary Sewer Collection System. Specific alignments of many of the backbone lines located north of Byron Road have been modified from the original Master Plan to align with the new arterial roadway utility corridors, as depicted on Figures 3.1: SP II Land Use and Figure 9.1: SP II Roadway

System. The backbone network will be phased according to the service and over sizing requirements of the MHCSD, and will expand upon the backbone network constructed as part of Specific Plan I.

As part of the preparation of SP11, the MHCSD has performed a confirmation analysis of the MHCSD Master Sanitary Sewer Collection System based on the proposed SP11 Land Use Plan to address any possible modifications and variations required to provide the same level of service as described in the MHCSD's Plan. This analysis has resulted in some minor modifications to the specific alignments and sizing of some of the backbone facilities north of Byron Road, but no modifications south of Byron Road. These modifications, as proposed by SP11, serve to maintain the same level of service but do not represent an increase in service from the Master Plan or the MHCSD Master Sanitary Sewer Collection System.

Implementation of SP11 will involve the incremental phasing of these backbone facilities to correspond to the specific phasing determined as part of implementing projects within the SP11 Area, as determined by the MHCSD, consistent with their requirements and standards.

SP11 Implementation Measures

1. **MHCSD Design and Construction Requirements.** All implementing projects shall comply with the applicable provisions of the MHCSD Development Standards (Section 5: Sanitary Sewer System Design Standards), Backbone Sewer Master Plan and Design Manual (Chapter Fourteen: Public Works Facilities).
2. **MHCSD Sewer System Piping Requirement.** To minimize the loading of heavy metal deposits in the MHCSD sewer treatment system, the MHCSD shall require that all water systems throughout the community, including all habitable structures, shall exclusively prohibit the use of metallic piping for all potable water conveyance and distribution systems on public and private properties and within structures. Exceptions can only be granted in instances where such use impossible or infeasible, as determined by the MHCSD.

13.4 WASTEWATER TREATMENT PLANT

Master Plan Summary

The Master Plan requires that expansion of the Wastewater Treatment Plant be constructed and completed before development exceeds the existing capacity.

For Specific Plan I, the initial level of treatment was allowed to be secondary level treatment aerated lagoons or other higher level treatment processes approved by the regulatory agencies.

No later than at the buildout of Specific Plan I, a high-volume activated sludge or equivalent treatment process will be constructed in phases to serve all future community wastewater treatment needs. The aerated lagoons will be replaced by the new facilities. The decommissioned aerated lagoons will serve as storage reservoirs for the ultimate treatment process.

The Master Plan also requires that the feasibility of using reclaimed water for irrigation of the golf course(s) and other public open space areas such as parks be reevaluated as

changes in wastewater treatment technology occur and will be considered to the extent economically feasible by the CSD.

Plan Description

The first phase of the Wastewater Treatment Plant was constructed as part of the implementation of Specific Plan I, as permitted under the existing Use Permit granted by the County. This Use Permit was approved to address the entire buildout, in phases, of the Wastewater Treatment Plant facility and includes all requirements for the facility contained in the Community Approvals. Phased expansion of this facility will be required to serve the SPII lands within the community. Specific phases, as a function of the phasing of development within SPII, will be determined by the MHCSD.

MOUNTAIN HOUSE SPECIFIC PLAN II

**Table 13.1
SII Wastewater Generation**

LAND USE		Dwelling Units - DU	Acres AC	GRP / DU	GRP / AC	With Conservation		TOTAL GPD
						GRP / DU	GRP / AC	
NEIGHBORHOOD C								
RVL	Residential/Very Low (1-2)	8		312		268		2,144
RL	Residential/Low (3.75-4.5)	531		312		268		142,308
RM	Residential/Medium (5.7-7.0)	474		270		232		109,968
RMH	Residential/Medium High (12-14)	147		200		172		25,284
RH	Residential/High (18-20)	120		200		172		20,640
SUBTOTAL:		1,280						300,344
NEIGHBORHOOD D								
RL	Residential/Low (3.75-4.5)	198		312		268		53,064
RM	Residential/Medium (5.7-7.0)	432		270		232		100,224
RMH	Residential/Medium High (12-14)	190		200		172		32,680
SUBTOTAL:		820						185,968
NEIGHBORHOOD H								
RL	Residential/Low (3.75-4.5)	432		312		268		115,776
RM	Residential/Medium (5.7-7.0)	645		270		232		149,640
RMH	Residential/Medium High (12-14)	203		200		172		34,916
RMH	Senior Housing Residential/Mixed Use (12-14)	70		200		172		12,040
RH	Senior Housing Residential/High (18-20)	230		200		172		39,560
SUBTOTAL:		1,580						351,932
NEIGHBORHOOD I								
RVL	Residential/Very Low (1-2)	10		312		268		2,680
RL	Residential/Low (3.75-4.5)	654		180*		155*		101,370
RM	Residential/Medium (5.7-7.0)	547		180*		155*		84,785
RMH	Residential/Medium High (12-14)	216		180*		155*		33,480
SUBTOTAL:		1,427						222,315
NEIGHBORHOOD J								
RL	Residential/Low (3.75-4.5)	504		180*		155*		78,120
RM	Residential/Medium (5.7-7.0)	518		180*		155*		80,290
RMH	Residential/Medium High (12-14)	175		180*		155*		27,125
SUBTOTAL:		1,197						185,535
NEIGHBORHOOD K								
RL	Residential/Low (3.75-4.5)	401		312		268		107,468
RM	Residential/Medium (5.7-7.0)	415		270		232		96,280
RMH	Residential/Medium High (12-14)	280		200		172		48,160
RH	Residential/High (18-20)	80		200		172		13,760
SUBTOTAL:		1,176						265,668
NEIGHBORHOOD L								
RL	Residential/Low (3.75-4.5)	467		312		268		125,156
RM	Residential/Medium (5.7-7.0)	295		270		232		68,440
RMH	Residential/Medium High (12-14)	462		200		172		79,464
RH	Residential/High (18-20)	124		200		172		21,328
SUBTOTAL:		1,348						294,388

MOUNTAIN HOUSE SPECIFIC PLAN II

**Table 13.1
SII Wastewater Generation**

LAND USE		Dwelling Units - DU	Acres AC	GRP / DU	GRP / AC	With Conservation		TOTAL GPD
						GRP / DU	GRP / AC	
OTHER LAND USES								
CN	Neighborhood Commercial		5.7		2,000		1,720	9,804
CC	Community Commercial		81.5		2,000		1,720	140,180
CG	General Commercial		29.2		2,000		1,720	50,224
CO	Office		4.0		2,000		1,720	6,880
MX	Mixed Use (Town Center)		39.1		2,000		1,720	67,252
MX	Mixed Use Old River Center)		14.0		2,000		1,720	24,080
IL	Limited Industrial (N. of Bryon)		6.4		1,600		1,376	8,806
CR	Rec./Activity Center		23.0		2,000		1,720	39,560
NP	Neighborhood Park		37.9					
CP	Community Park		56.5					
CP	MH Creek Community Park		31.7					
RP	Regional Park		82.0					
OS	Golf Course		199.2					
	OS (Lake)		104.0					
	Dry Creek		13.0					
OS	Water Quality/Detention Basin		17.2					
OS	Wetlands / Other OS		17.2					
OS	OS Buffer Areas		8.3					
	K-8		80.0		3,000		2,580	206,400
P	Transit		5.0		2,000		1,720	8,600
P	Public Facilities		16.5		2,000		1,720	28,380
	SUBTOTAL:		871.4					590,166
TOTALS		8,828	871.4					2,396,316

MOUNTAIN HOUSE SPECIFIC PLAN II

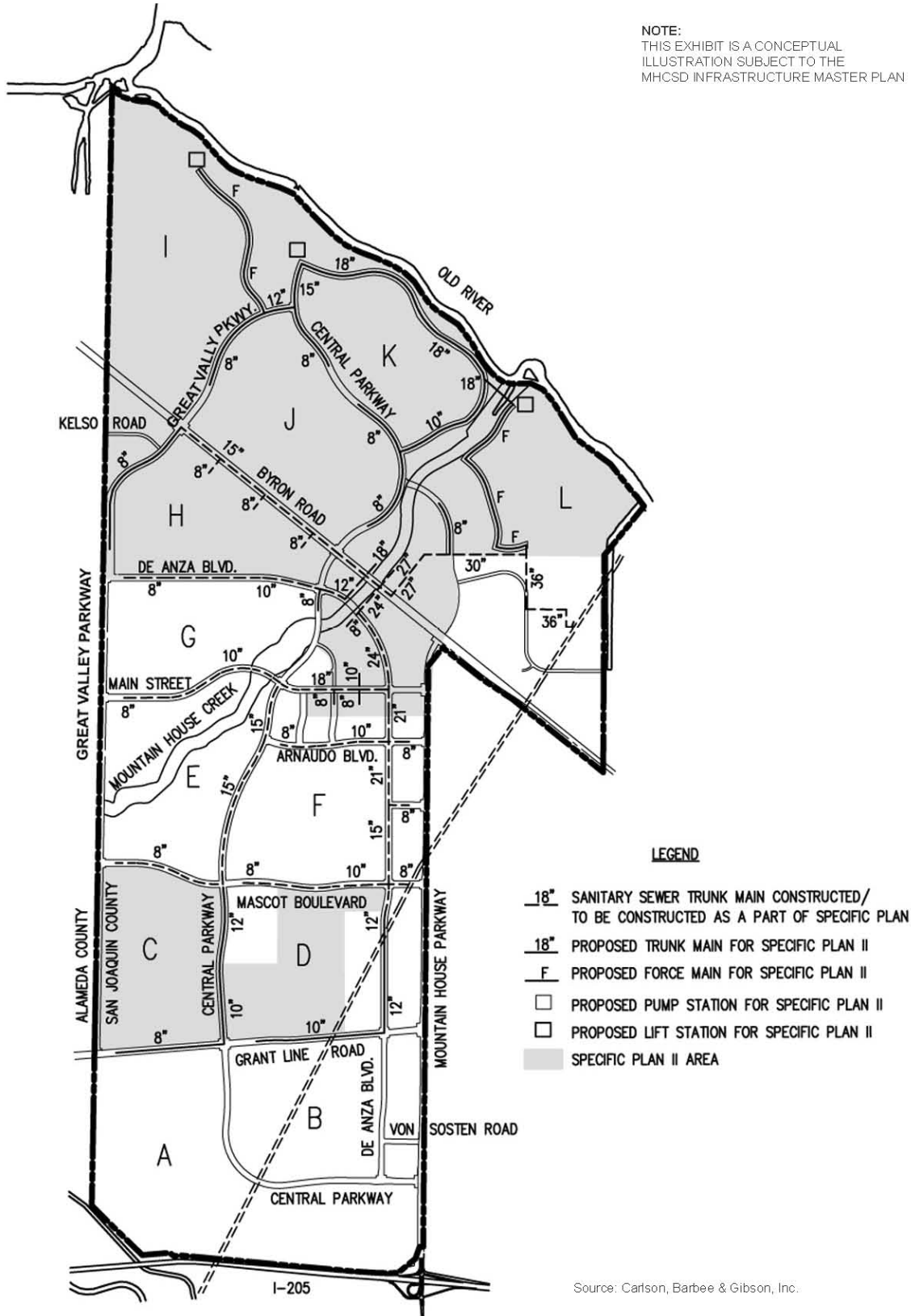


FIGURE 13.1 – SPII WASTEWATER FACILITIES



FIGURE 13.2 – POTENTIAL RECEIVING FIELDS FOR RECLAIMED WATER

As anticipated and described in the Master Plan, the first 0.5 MGD phase of the wastewater treatment facility has been constructed as a tertiary level treatment facility through implementation of Specific Plan I. The second phase that expanded the capacity of the existing plant to 3.0 MGD, also constructed as part of the implementation of Specific Plan I, was expanded to serve portion of SPII, so that initial expansion of the facility will not be needed for the first phases of implementation of lands contained within SPII. However, subject to the phasing requirements of the MHCS D, a third expansion of the facility will be required during the implementation of SPII to provide treatment capacity for the balance of land contained within SPII.

As permitted under existing Discharge Permits granted by the CVRWQCB, either land discharge, Old River Discharge, or a combination of both will be utilized during the implementation of SPII. Such specific discharge strategies will be determined in accordance with CVRWQCB Permit requirements as may be necessary to facilitate the development of all lands contained within SPII. In addition, off-site storage and reclamation sites may be utilized, subject to agreements with landowners and the affected irrigation districts, and approvals from RWQCB and other affected agencies. These potential sites are indicated on Figure 13.2.

SPII and related environmental analysis recognizes and by reference incorporates the findings, approvals and conditions of the East Altamont Energy Center (EAEC) by the California Energy Commission (CEC), including the CEC's requirements of the EAEC to construct conveyance pipelines and pumping facilities to connect the facility with the Mountain House Wastewater Treatment Plant, and the EAEC's requirement to convey and utilize Mountain House treated effluent for the EAEC's cooling and non-potable uses. This provision was specifically analyzed as part of the CEC's environmental review and approval process. In addition to the land and Old River Discharges allowed under CVRWQCB Discharge Permits, treated effluent from the Mountain House Wastewater Treatment Plant may be discharged to the EAEC facility as allowed for under the CEC's permit. Specific discharge options will be determined by the MHCS D during the phasing and implementation of SPII.

SPII Implementation Measures

1. **Disposition of MHCS D Wastewater. Subject to the terms of the Master Plan Development Agreement between San Joaquin County and the Master Developer, and the Master Acquisition and Reimbursement Agreement between the MHCS D and the Master Developer, treated effluent may be discharged through a variety of options including, but not limited to one of or a combination of the following:**
 - **The total treated wastewater generated by Specific Plan II may be discharged year-round into Old River, subject to the adopted standards of CVRWQCB Order 98-192 as amended.**
 - **Land reclamation, consistent with the adopted standards of the CVRWQCB Order 98-109 as amended.**
 - **Land reclamation on MHCS D parks and open space and the golf course area, subject to the adopted standards of CVRWQCB.**

- The total treated wastewater generated by the entire community may be discharged to users outside the limits of the MHCSD as may be allowed by separate permit and environmental analysis, including the discharge and conveyance to the East Altamont Energy Facility in Alameda County.
2. **County Use Permit Requirements.** All applicable implementing projects shall comply with the existing San Joaquin County Use Permit for the Wastewater Treatment Plan.
 3. **MHCSD Design and Construction Requirements.** All implementing public improvement projects shall comply with the applicable provisions of the MHCSD Development Standards (Section 5: Sanitary Sewer System Design Standards) treatment plant design criteria, and Design Manual (Chapter Fourteen: Public Works Facilities).

13.5 NON RESIDENTIAL DISCHARGES

Master Plan Summary

In order to ensure that raw wastewaters discharged to the treatment facilities do not limit treated effluent disposal or reuse options, the Master Plan requires that nonresidential wastewater discharged to the treatment facilities will have characteristics similar to residential wastewater.

Plan Description

SP11 proposes non-residential uses as described in Table 3.2: SP11 Land Use by Neighborhood and Figure 3.1: SP11 Land Use.

SP11 Implementation Measures

1. **MHCSD Discharge Requirements.** All implementing projects shall comply with the MHCSD Sewer Ordinance and applicable MHCSD-enforced Covenants, Conditions and Restrictions.
2. **MHCSD Discharge Standards.** Sewer discharge and pretreatment standards shall be implemented by the MHCSD to regulate wastewater discharges to the plant prior to the issuance of a building permit to a user with discharges.
3. **Discharge Permit.** A permit-to-discharge shall be required by the MHCSD for certain categories of nonresidential dischargers. The criteria for such permits shall be established prior to the issuance of a building permit for a user with non-residential type discharges.
4. **Discharge Limitations.** Discharge limitations shall be established, and pretreatment shall be required by the MHCSD of dischargers who otherwise would not meet these limits.
5. **Public Education.** A public outreach and education program shall be implemented by the MHCSD to inform dischargers of what is allowed for discharge to the sewer, and to emphasize waste minimization concepts and techniques.

13.6 SLUDGE DISPOSAL

Master Plan Summary

The Master Plan requires that, for all Specific Plans where wastewater treatment sludge requires disposal, the Specific Plans will identify the proposed method(s) of sludge disposal for the duration of the plans.

Plan Description

The phased expansions of the wastewater treatment plant incorporated sludge treatment facilities, in accordance with the County Use Permit requirements approved for the plant. The MHCSD is currently in the process of developing a Sludge Management and Disposal Plan to comply with all applicable requirements, as part of the future expansion plans for the wastewater treatment plant. This Plan needs to address the most economically and beneficial manner to dispose of the treated sludge. It will be developed in accordance with all applicable regulations and will be implemented as part of the implementation of SP11.

SP11 Implementation Measures

1. **Initial Sludge Disposal.** Sludge disposal options shall be evaluated by the MHCSD as early as possible, not later than one year after the startup of the permanent secondary treatment process, to allow for early identification of disposal options. Evaluation shall include sludge characterization, survey of potential sites where sludge may be used as a soil amendment, and assessment of viability of the compost market.
2. **Initial Wastewater Sludge Disposal Plan.** Within one year after the startup of the permanent secondary treatment process, the Community Service District shall submit an Initial Wastewater Sludge Disposal Plan to the County and other appropriate agencies for review and approval. The Plan shall document the sludge characterization findings, a detailed impact/benefit analysis of sludge disposal options, and a proposed sludge disposal method for the duration of the current Specific Plan.
3. **Interim Disposal.** Until sludge is classified, the sludge shall be disposed of by the MHCSD in the Foothill or another acceptable landfill. Sludge shall meet non-hazardous classification and be dried for disposal in a landfill.
4. **Classification.** As soon as sludge is available to obtain representative samples, the sludge shall be assessed by the MHCSD for waste classification and the alternatives of land application, dedicated land disposal and composting, shall be analyzed based on such factors as current regulations, sludge constituents, land availability, demand for compost and cost to implement.
5. **Evaluation.** Sludge disposal alternatives shall be evaluated and selected by the MHCSD at least six months before disposal is required.

6. **Other Sludge Disposal Options.** The MHCS D may subsequently adopt other sludge disposal options providing the new method(s) will achieve an equivalent or higher degree of environmental and public health protection, and meets all applicable regulatory requirements. The County shall be notified of the proposed change in disposal method at least six months prior to implementation.

13.7 CAPITAL FACILITY COST AND PHASING

Master Plan Summary

The Master Plan required that initial aerated lagoons and pumps be sized to satisfy the demands of the first neighborhood. They will be replaced with a higher volume treatment facility upon commencement of the second Specific Plan, and will be expandable to accommodate future development phases. All line sizing will be engineered to handle through flows from successive neighborhoods in accordance with the Master Plan. Cost and phasing assumptions are discussed in more detail in the Public Financing Plan (PFP).

Plan Description

SPII will be developed in accordance with all Community Approvals which govern the provision, operation, and financing of all wastewater collection, conveyance, treatment and disposal systems. The financing and construction mechanisms for all such facilities have already been created and are currently being implemented by the MHCS D as part of development of the Mountain House Community. SPII will also be subject to these same requirements and mechanisms.

SPII Implementation Measures

1. **Costs and Phasing.** All implementing projects shall comply with the applicable requirements of the Public Financing Plan and Technical Report, Master Acquisition and Reimbursement Agreement between the MHCS D and Trimark Communities, Master Plan Development Agreement between San Joaquin County and the Master Developer, MHCS D Capital Improvement Program, and applicable development fee Ordinances.