

**WASTEWATER MANAGEMENT
ALTERNATIVES
FOR THE
LILAC HILLS RANCH COMMUNITY**

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CHAPTER 1

INTRODUCTION

This report provides information and analysis for municipal wastewater management for the Lilac Hills Ranch Community. Sewer service for the Lilac Hills Ranch Community will be provided by the Valley Center Municipal Water District (District) which will own and operate any necessary facilities. Alternatives considered in this report including (1) construction of a full Water Reclamation Facility that would treat all wastewater and solids generated by the project, (2) construction of a scalping plant on-site that would provide reclaimed water for on-site uses but send solids to Moosa WRF for treatment, (3) sending all wastewater to the existing Lower Moosa Canyon Reclamation Facility (Moosa WRF) via a forcemain, (4) construction of a scalping plant on-site to serve the northern portion of the project with the southern portion sent to Moosa WRF, and. Should a full Water Reclamation Facility be constructed, it may be done in phases. Should treatment of wastewater or solids at the existing Moosa WRF be selected, this report shows three possible routes for the necessary piping to convey wastewater to the existing plant.

Should on-site treatment be the selected alternative, (without initial service at the Moosa WRF) the initial development within the Lilac Hills Ranch Community may be temporarily provided sewer service by means of trucking sewage from a collection point on-site to an existing wastewater treatment plant. This would be a temporary approach to allow sufficient wastewater flows to accumulate prior to the operation of a treatment plant.

Wet weather storage may be needed by the District for increased wastewater flows from the project and other areas of the District. The District will ultimately decide which combination of options and alternatives will be used to provide wastewater disposal services.

PROJECT OVERVIEW

The proposed Lilac Hills Ranch Community is approximately 608 acres and is comprised of approximately 59 contiguous properties. The project is located in northern unincorporated San Diego County approximately 3/4 of a mile east of the Interstate 15 corridor. Access to the property is off of the Old Highway 395 Interchange at West Lilac Road. The project site is located to the south and west of West Lilac Road with State Route 76 to the north, downtown Valley Center 10 miles to the east, Escondido is seven miles to the south, and Interstate 15 and Old Highway 395 to the west.

The Lilac Hills Ranch Community is located entirely in the Escondido zip code 92026 and is situated primarily within the westernmost portion of the Valley Center Community Planning Area (CPA) and the eastern most portion of the Bonsall Subregional Plan Area. From the northwest project corner, West Lilac Road serves as the northern and eastern boundary of the project site, while Circle R Drive is less than 1/2 mile south of the project boundary. From the southwest project corner, the western boundary of the project runs along Shirey Road and extends to Standel Lane, which serves as the northwestern project boundary.

The project is within Township 10 South, Range 3 West, Section 24, and Township 10 South, Range 2 West, Sections 19 and 30, on the USGS 7.5' Pala and Bonsall quadrangles.

DEVELOPMENT PLAN

The Lilac Hills Ranch Community proposes the development of a new mixed use master planned community. The proposed Specific Plan includes a maximum of 1,746 homes with varying lot sizes, a neighborhood-serving commercial village center, an active park/village green, retail uses, and a school site. A Rezone is proposed to implement the Specific Plan by changing the existing Use Regulations, Development Regulations, and Special Residential Land Use Designation and the A70 (Limited Agricultural) Zoning. The project would also include the submittal of a Master Tentative Map, Implementing Tentative Map, Site Plan(s), and/or Major Use Permit(s).

The developers of the Lilac Hills Ranch Community will also provide wastewater capacity for 16 existing homesites within the Community and six parcels along the perimeter of the Community.

Purpose of Study

The purpose of the study is to describe the facilities required to manage, treat, and reuse wastewater (sewage) generated by the proposed Lilac Hills Ranch Community to assist with County processing of the proposed development plan. Additional studies will need to be done for the District.

Regulatory Considerations

A Waste Discharge Permit or Master Reclamation Permit will need to be issued for an on-site water reclamation facility by the San Diego Regional Water Quality Control Board. The Moosa WRF has an existing permit.

The Lilac Hills Ranch Community also must comply with State and County Department of Public Health requirements for the use of recycled water, including the California Code of Regulations, Title 22 requirements for unrestricted reuse, unless otherwise limited by State Law.

CHAPTER 2

PLANNING AND DESIGN CRITERIA

This chapter provides the planning and design criteria and estimates the daily volume of wastewater to be generated by the Lilac Hills Ranch Community, the existing homesites, and the perimeter parcels for which the project will provide capacity.

WASTEWATER FLOW GENERATION FACTORS

The District wastewater flow generation factors were used to estimate wastewater flows. Table 2-1 summarizes the projected wastewater flows and recycled water generation. The total projected 24 hour peak flow is 353,474 gpd. Note that the projected 24 hour peak flow shown in Table 2-1 represents the peak flow seen on a typical day (i.e. an average day and represents a flow basis of approximately 200 gpd/EDU). For facility design purposes, an additional 2.0 peaking factor will be applied to the peak 24 hour flows, when appropriate.

TABLE 2-1 ESTIMATED WASTEWATER GENERATION ¹						
Land Use	Acres	Units	Peak 24 hr Sewage Generation		Avg 24 hr Sewage/Recycled	
			Factor	gpd	Factor	gpd
Single Family Detached *	165.4	928	200 gpd/unit	185,600	150 gpd/unit	139,200
Single Family Senior	75.9	468	125 gpd/unit	58,500	90 gpd/unit	42,120
Single Family Attached	7.9	164	180 gpd/unit	29,520	130 gpd/unit	21,320
Commercial/Mixed Use	15.3	211	1900 gpd/ac	28,994	1340 gpd/ac	20,448
Water Reclamation	2.4	-	1000 gpd/ac	2,400	700 gpd/ac	1,680
Recycled Facility/Trail Head	0.6	-	1000 gpd/ac	600	700 gpd/ac	420
Detention Basin	5.5	-	0 gpd/ac	-	0 gpd/ac	-
School	12.0	-	1000 gpd/ac	12,000	700 gpd/ac	8,400
Private Recreation	2.0	-	1000 gpd/ac	2,000	700 gpd/ac	1,400
Group Residential/Care	6.5	-	1000 gpd/ac	6,500	700 gpd/ac	4,550
Institutional	10.7	-	1000 gpd/ac	10,700	700 gpd/ac	7,490
Park	23.8	-	700 gpd/ac	16,660	500 gpd/ac	11,900
Biological Open Space	102.7	-	0 gpd/ac	-	0 gpd/ac	-
Non-Circulating Road	45.7	-	0 gpd/ac	-	0 gpd/ac	-
Circulating Road	37.6	-	0 gpd/ac	-	0 gpd/ac	-
Common Areas/Ag	18.8	-	0 gpd/ac	-	0 gpd/ac	-
Manufactured Slopes	75.2	-	0 gpd/ac	-	0 gpd/ac	-
TOTAL	608.0	1,771		353,474		258,928
TOTAL, afy				396		290

¹ Appendix A provides a summary of Water, Recycled Water, and Wastewater demands for the project.

* Includes 903 proposed units plus 25 EDUs

EXTERIOR WATER SUPPLY

The water supply assessment for the Lilac Hills Ranch Community split the water needs for the project into various categories. These categories included interior demand for potable water, exterior demand for potable water, and non-potable water exterior demand. The Lilac Hills Ranch Community is looking at four sources of water to meet the exterior demands for the project. These water types include ground water, rain water harvesting, grey water, and reclaimed water. Each of these sources and their possible uses will be described below.

The water supply assessment for the Lilac Hills Ranch Community estimated the total water need for the project to be 967 AFY. 289 AFY of this use was interior/potable demand, 169 AFY was exterior potable demand, and 510 AFY was exterior non-potable demand. The current total water need is estimated to be 920 AFY. 286 AFY is interior/potable demand, 160 AFY is exterior potable demand, and 474 AFY is exterior non-potable demand.

Ground Water

Nine (9) private existing ground water production wells are operating within the Lilac Hills Ranch Community area at the present time. Six (6) of these wells have been in production for more than 5 years. Based on analysis by the project's hydrogeologist, a minimum available ground water supply of 191 AFY will be available. This water could be used to meet both exterior potable demand or exterior non-potable demand.

Rain Water Harvesting

Cisterns and roof collection systems could be utilized on single family dwellings to allow for the storing and irrigation use of rain water on single family homes. This supply could be used to offset potable exterior demands. It is estimated that up to 34 AFY of rain water could be harvested by single family homes in this project.

Grey Water

A grey water system could also be used to offset the potable exterior demand for residential units. Approximately 91 AFY of grey water could be utilized to offset the potable exterior demand. The source of this grey water (91 AFY or 81,270 gpd) assumes that grey water

systems are installed on the 903 proposed single family detached homes within the project to collect shower and washing machine water. Sinks, toilets, and dishwashers would not be part of the grey water system.

Reclaimed Water

Approximately 286 AFY of recycled water could be generated by the project (290 AF including the existing homesites and perimeter parcels). This amount would be reduced by 91 AFY if a grey water system was installed. Up to an additional 400 AFY of recycled water could be made available to the project through utilization of water from the Moosa WRF. The Moosa WRF currently does not have tertiary facilities and thus, does not produce recycled water. All water from this plant is disposed of through a percolation pond. Thus a total of up to 686 AF of reclaimed water could be made available for non-potable water supply for the project. The reclaimed water could only be used for non-potable exterior uses as defined in the water supply assessment.

CHAPTER 3

WASTEWATER COLLECTION

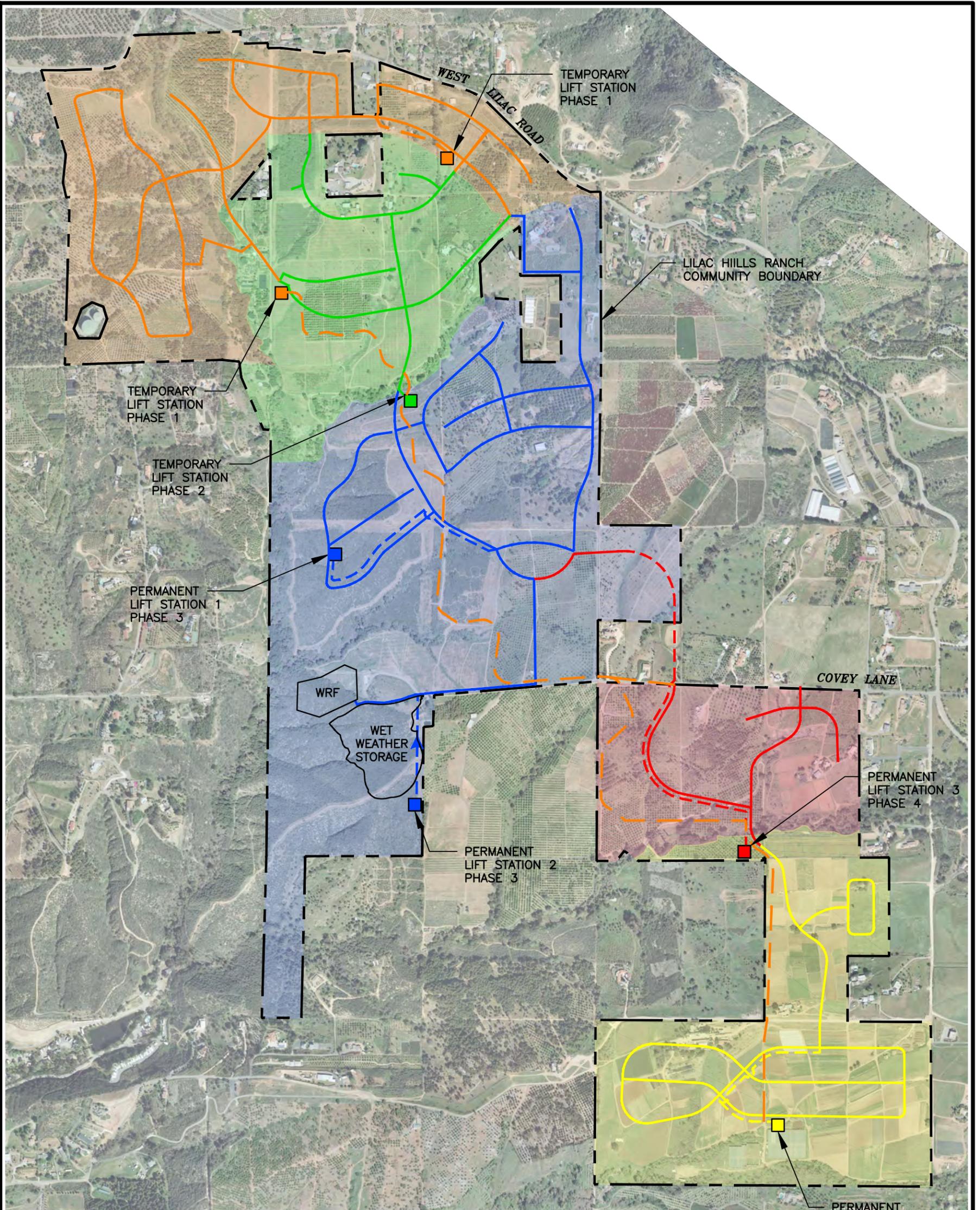
The on-site wastewater collection system will be similar for all wastewater treatment options. An off-site forcemain will be required for wastewater or solids treatment at the Moosa WRF. In this chapter, we will describe the on-site, off-site and phasing of the collection system for the proposed project.

ON-SITE COLLECTION SYSTEM

Figures 3-1, 3-2, and 3-3 show the proposed on-site collection system. Figure 3-1 shows the system with on-site treatment, Figure 3-2 shows the system with off-site treatment, and Figure 3-3 shows the system with the combination of on-site and off-site treatment. In order to collect all of the sewage to a single spot, four permanent on-site pump stations will be needed. If all treatment for the project is provided at the Moosa WRF, then the four on-site lift stations will pump into a common forcemain. All of the on-site facilities are described below.

Piping System

Figures 3-1 through 3-3 show the gravity piping system and forcemains needed to serve the project. As can be seen on these figures, four permanent pump stations are required on the project to convey the sewage to a central point. The piping system must be able to accommodate the various treatment alternatives proposed at this time. Initially, it is thought that all wastewater would be pumped from the project site to the Moosa WRF for treatment and disposal. However, as the Moosa WRF reaches its capacity it may be necessary to build an on-site treatment plant to treat all or a portion of the wastewater generated by the project to provide additional capacity for the District. In order to accommodate these options, the pump stations and on-site collection system will be set up that so that wastewater could either be transferred to the Moosa WRF or transferred to the on-site location.



LEGEND

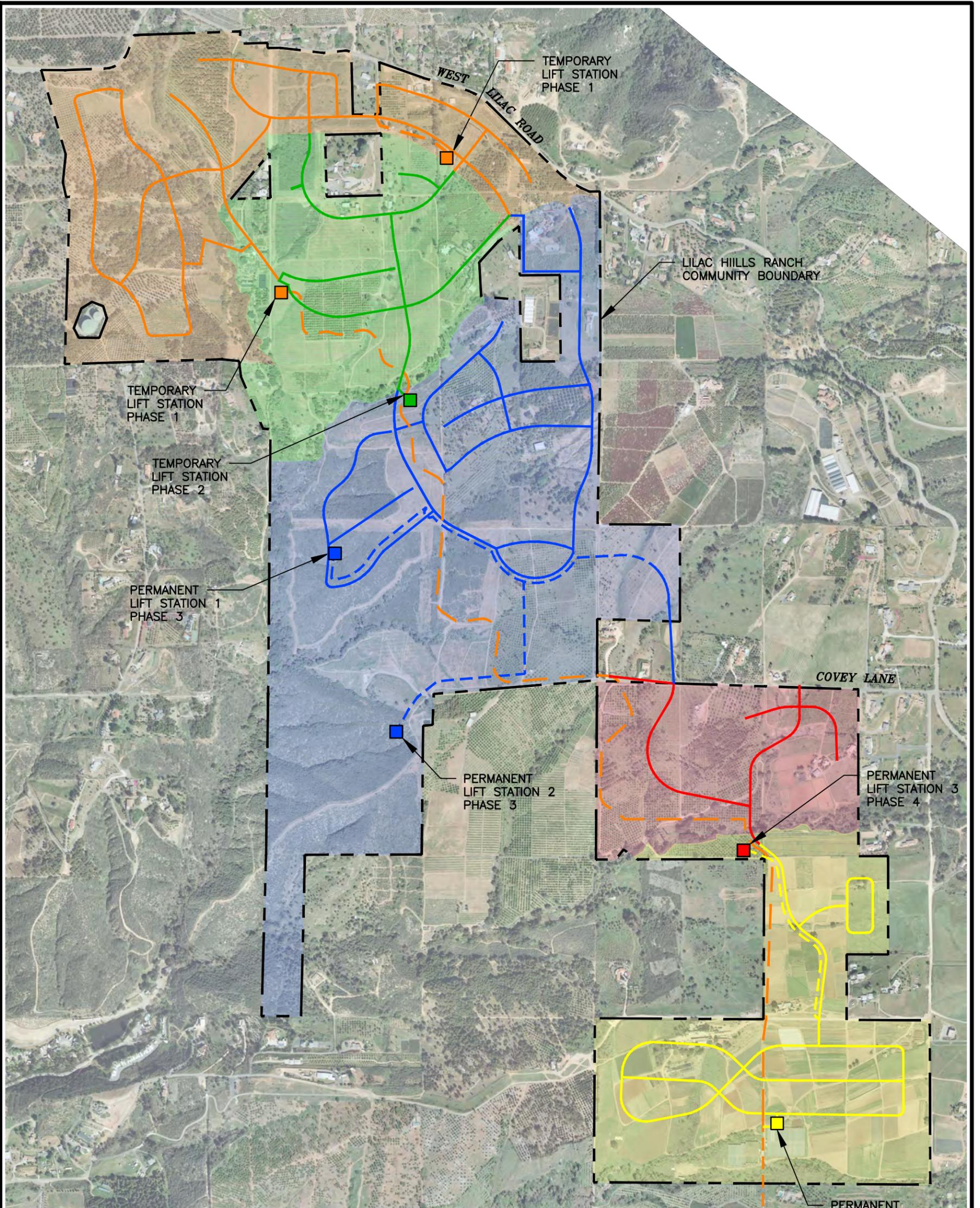
- PHASE 1** GRAVITY SEWER
FORCE MAIN
TEMPORARY FORCE MAIN
- PHASE 2** GRAVITY SEWER
FORCE MAIN
- PHASE 3** GRAVITY SEWER
FORCE MAIN
- PHASE 4** GRAVITY SEWER
FORCE MAIN
- PHASE 5** GRAVITY SEWER
FORCE MAIN
- LIFT STATION**



SCALE: 1" = 800'

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FIGURE 3-1
PHASES 1-5
SEWER SYSTEM WITH
ON SITE TREATMENT
LILAC HILLS RANCH COMMUNITY



LEGEND

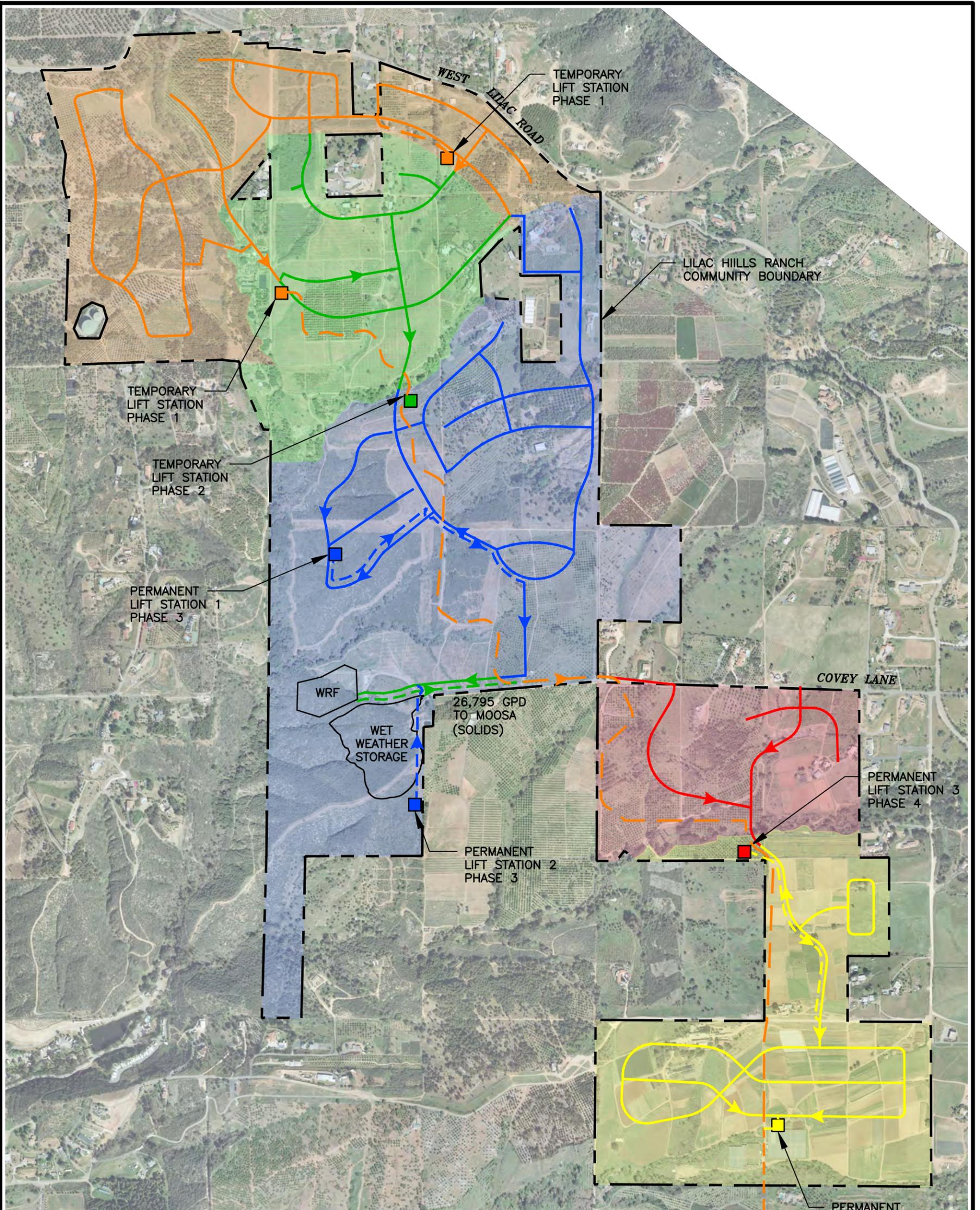
- | | | |
|--|--------------|----------------------|
| | PHASE 1 | GRAVITY SEWER |
| | | FORCE MAIN |
| | | TEMPORARY FORCE MAIN |
| | PHASE 2 | GRAVITY SEWER |
| | | FORCE MAIN |
| | PHASE 3 | GRAVITY SEWER |
| | | FORCE MAIN |
| | PHASE 4 | GRAVITY SEWER |
| | | FORCE MAIN |
| | PHASE 5 | GRAVITY SEWER |
| | | FORCE MAIN |
| | LIFT STATION | |



SCALE: 1" = 800'

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FIGURE 3-2
PHASES 1-5
SEWER SYSTEM WITH
OFFSITE TREATMENT
LILAC HILLS RANCH COMMUNITY



LEGEND

- | | |
|--|-----------------------|
| | PHASE 1 GRAVITY SEWER |
| | FORCE MAIN |
| | TEMPORARY FORCE MAIN |
| | PHASE 2 GRAVITY SEWER |
| | FORCE MAIN |
| | PHASE 3 GRAVITY SEWER |
| | FORCE MAIN |
| | PHASE 4 GRAVITY SEWER |
| | FORCE MAIN |
| | PHASE 5 GRAVITY SEWER |
| | FORCE MAIN |
| | LIFT STATION |
| | ABANDONED FORCE MAIN |

SCALE: 1" = 800'

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107,315 GPD TO MOOSA
• 30,465, PHASE 4
• 50,055, PHASE 5
• 26,795, SOLIDS

FIGURE 3-3
SEWER SYSTEM WITH
ONSITE & OFFSITE TREATMENT
LILAC HILLS RANCH COMMUNITY

Phasing

Figures 3-1 and 3-2 also show the project phasing. Generally, the project will phase from north to south, however, Phases 4 and 5 may be constructed prior to Phases 2 and 3. Since the existing sewer treatment disposal facilities are south of the project, a temporary forcemain will be needed through the project to make a connection to the Moosa WRF. If the Moosa WRF is not used for the initial phases of the project, this temporary forcemain will need to feed the on-site treatment plant location. In order to accommodate the phasing for the project, two temporary pump stations will also be required. Table 3-1 provides a summary of the anticipated wastewater flows from each phase of the project.

TABLE 3-1 LILAC HILLS RANCH WASTEWATER GENERATION PHASING SUMMARY				
Phase	Peak 24 hr Sewage Generation		Avg 24 hr Sewage/ Recycled	
	By Phase	Cumulative	By Phase	Cumulative
1	72,240	72,240	54,100	54,100
2	79,664	151,904	58,132	112,232
3	116,050	267,954	85,350	197,582
4	30,465	298,419	21,790	219,372
5	50,055	348,474	35,806	255,178
TOTAL	348,474	-	255,178	-
gpd/EDU	200		146	

Table 3-2 includes the existing homesite and perimeter parcels in addition to the Lilac Hills Ranch Community.

TABLE 3-2 LILAC HILLS RANCH WASTEWATER GENERATION PHASING SUMMARY				
Phase	Peak 24 hr Sewage Generation		Avg 24 hr Sewage/ Recycled	
	By Phase	Cumulative	By Phase	Cumulative
1	74,040	74,040	55,450	55,450
2	81,064	155,104	59,182	114,632
3	117,450	272,554	86,400	201,032
4	30,665	303,219	21,790	222,972
5	50,255	353,474	35,956	258,928
TOTAL	353,474	-	258,928	-
gpd/EDU	200		146	

Pump Stations

The requirements for temporary and permanent pump stations are slightly different. In this section, we will discuss the design parameters for the permanent and temporary pump station locations.

Permanent Pump Stations. All permanent pump stations will be equipped with two pumps. Each pump will be able to handle the peak estimated flows for its service area. Emergency storage of six hours of average flow will be provided. Emergency power will also be provided at each location with an automatic transfer switch. Telemetry will be used to tie the pump station into the District's alarm system.

Temporary Pump Stations. All temporary pump stations will be equipped with two pumps. Either pump will be able to handle the expected peak flows from the service area. Six hours of average flow will be provided for emergency storage. This emergency storage will generally be provided in the collection system through oversizing of piping and manholes. Emergency power generation will be provided with a portable unit. The portable unit will be equipped with an automatic transfer switch. It is anticipated that the portable unit will be sized for the ultimate need and for the initial phases will be oversized.

OFF-SITE COLLECTION SYSTEM

Figure 3-3 shows the three alternatives for an off-site force main and gravity system to connect to the Moosa WRF. Each of these alternatives will be discussed below:

Alternative 1

Provides a gravity and pump system which generally flows west from the project to the Old Hwy 395 freeway. The system then flows generally south following Old Hwy 395 to the Moosa WRF.

Alternative 2

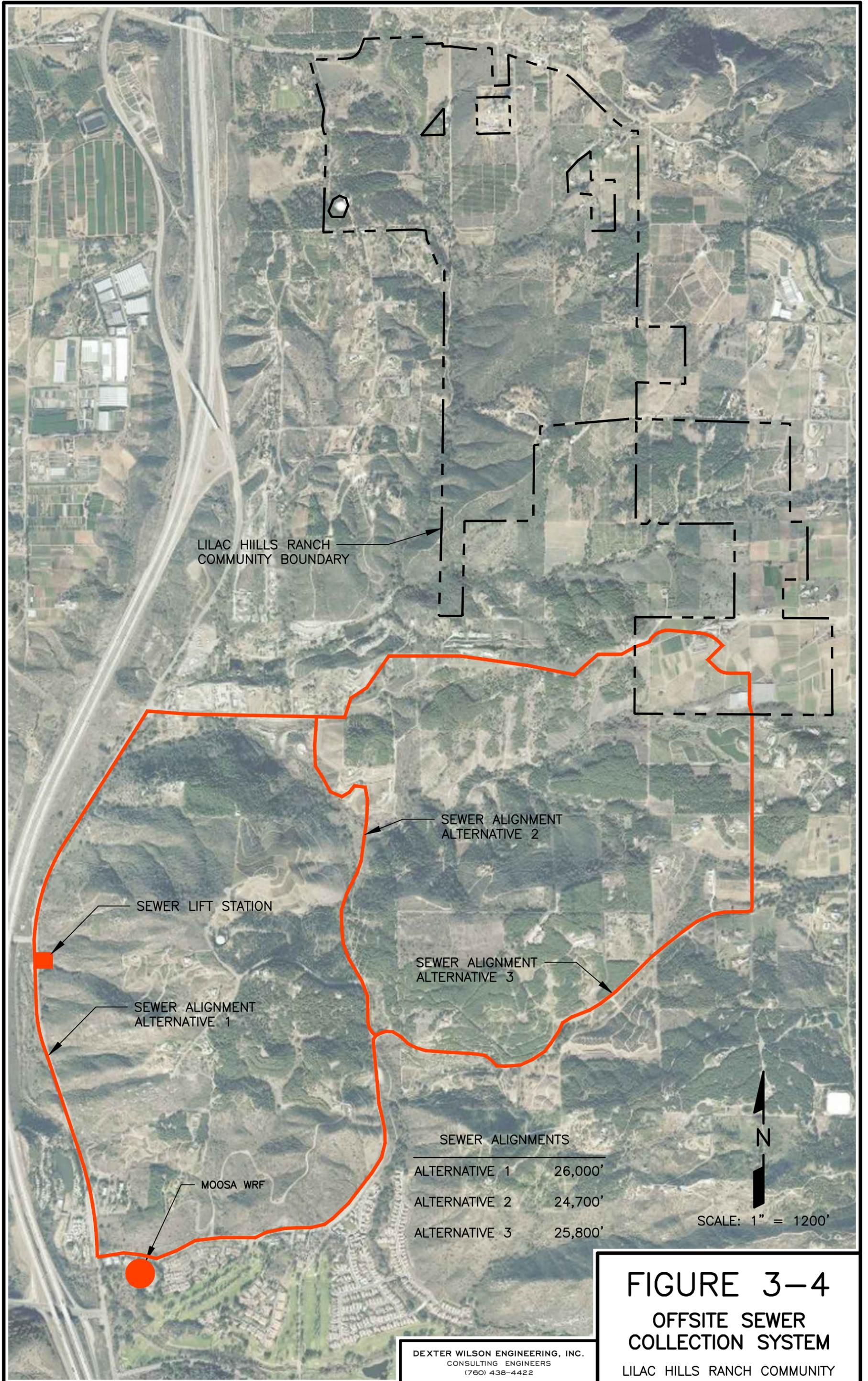
This alternative flows west from the site and then turns south before turning west again. This alternative generally follows Shadow Lake Road in the middle and Circle R Drive in the south.

Alternative 3

This alternative flows south from the site along Mountain Ridge Road. Where Mountain Ridge Road connects with Circle R Drive the alignment turns to the west following Circle R Drive to the Moosa WRF.

Preferred Alternative.

The preferred off-site alternative is Alternative 3. This alternative is in existing off-site roadways. This leads to fewer environmental issues with the alignment. This alignment is also less expensive. It is anticipated that this off-site alternative will be 8 to 12 inches in diameter and constructed of heat-welded polyethylene pipe. This alignment will be used for Options 2, 3, and 4 of the treatment plant alternatives found in the next chapter as each requires a connection to the Moosa WRF.



CHAPTER 4

WASTEWATER MANAGEMENT

In this chapter, four permanent wastewater treatment scenarios will be described which could serve the Lilac Hills Ranch Community. Any of these four scenarios could be implemented at the discretion of the District. Chapter 5 will provide more detail on the proposed wastewater reuse options.

If an on-site plant is used, the initial development within the Lilac Hills Ranch Community may be temporarily provided sewer service by trucking of sewage from a collection point on-site to an existing wastewater treatment plant. This is temporarily necessary due to the fact that a minimum flow is needed to operate a water reclamation facility. This will only be used for on-site treatment alternatives. It is estimated that sewage generated by up to 100 homes may be trucked off-site prior to operation of a permanent facility (requiring approximately three truck trips per day). If a small interim phase is built for the water reclamation facility, this number may be reduced to as few as 25 homes.

Disposal of excess effluent would be at the discretion of the District which could use the reclaimed water system to connect to the Moosa WRF disposal system (reclaimed or percolation pond) or could send the reclaimed water to an appropriately sized storage facility.

PERMANENT WASTEWATER TREATMENT

Four wastewater treatment alternatives are being considered for this project. The first two alternatives include the construction of an on-site water reclamation plant, the third would utilize the Moosa WRF, and the fourth option is a combination of on-site and off-site treatment.

The on-site water reclamation plant has two alternatives, one with solids treatment and one without.

Grey Water System Alternative

Each of the single family homes could be built with a grey water reuse system for individual lot irrigation. These systems are allowed under Appendix G of the California Plumbing Code.

Grey water systems do not disinfect or monitor the water quality. The advantage of using grey water systems is that they do allow wastewater reuse on single-family lots without overly restrictive regulatory oversight.

One of the drawbacks to grey water systems for the Lilac Hills Ranch Community would be duplication of costs. Grey water storage systems for Lilac Hills Ranch Community would be designed to overflow to the sewer system when they were full. Thus, the water reclamation plant would have to be designed to treat flows from the grey water system. The grey water system should only be considered if reuse of water on single-family lots is wanted or needed and regulatory approvals for the reuse of higher quality tertiary recycled water cannot be obtained. A grey water system could be used for all alternatives. The alternatives are analyzed without the grey water system.

Option 1 - Description of On-site Water Recycling Plant with Solids Treatment

The process flow schematic for the proposed on-site water reclamation facility is shown in Figure 4-1. Table 4-1 provides sizing of major facilities. The extended aeration activated sludge process has been chosen for the facility. All treatment processes will be located in concrete tanks. The plant will be designed to meet the reliability requirements in accordance with Title 22 of the California Code of Regulations. The plant will be designed to produce disinfected tertiary recycled water meeting the requirements of Section 60304(a) of Title 22 of the California Code of Regulations. Exhibit A shows the layout of this facility on the 2.4 acre water reclamation facility site which is shown on the Specific Plan Map. An MUP application is included in the package of permits and permissions being sought for this project.

Influent Screening. Influent screening will be utilized prior to the activated sludge process. The forcemain from an influent pump station will discharge directly into one of two stainless steel screens. Each screen will be designed for full plant flow. The screenings from both screens will drop into a bin located at-grade.

Extended Aeration Activated Sludge Process. Aeromod has been selected to provide the equipment for secondary treatment. The process will contain a selector tank, two aeration zones, and clarifiers. The tank volumes and recirculation have been sized for nitrogen removal to 10 mg/l as N. The process will be designed to operate with any tank or piece of equipment out of service. At buildout, four process trains will be provided.

**TABLE 4-1
LILAC HILLS ON-SITE
WATER RECYCLING PLANT
WITH SOLIDS TREATMENT
MAJOR PROCESS SIZING**

Item	Buildout
Plant Flow	
Peak 24 hour Flow, gpd	354,000
Preliminary Treatment	
Screening	
Number	2
Hydraulic capacity gpd	708,000
Secondary Treatment, Aero-Mod	
Tankage	
Selector Tanks	
Number	2
Volume each, gallons	13,000
Total Volume, gallons	26,000
Aeration tanks	
Number of Trains	4
Volume Each, gallons	88,500
Total Volume, gallons	354,000
Detention Time (ADF)	
All trains in service, hours	24
3 Trains in service	18
Clarifiers	
Number	4
Surface Area, Each, ft ²	336
Overflow Rate, ADF, gal/day/ft ²	
4 Units	263
3 Units	352
Filters	
Number	4
Area, each, ft ²	33
Capacity, each @ 5 gpd/sf, gpd	235,000
Total Capacity with 3 in Service, gpd	704,000
Total Capacity with 4 in Service, gpd	939,000

**TABLE 4-1
LILAC HILLS ON-SITE
WATER RECYCLING PLANT
WITH SOLIDS TREATMENT
MAJOR PROCESS SIZING**

Item	Buildout
Digesters	
Number	4
Volume Each, gallons	45,000
Total Volume, gallons	180,000
Solids Dewatering	
Centrifuge	
Number	1
Off Quality Effluent Storage Tank	
Number	1
Volume, gallons	354,000
Chlorine Contact	
Number	1
Volume, gallons	24,000

Selector Tanks. Screened sewage will be combined with return activated sludge from the clarifiers in the selector tanks. The selector tanks also serve to split flows between the first stage aeration tanks.

First Stage Aeration Tank. The first stage aeration tank is designed to provide nitrification and BOD removal. The entire length of the tank is aerated. Mixed liquor from the first stage aeration tank is also wasted to the aerobic digester.

Second Stage Aeration Tanks. The second stage aeration tanks will be used to denitrify the wastewater flow. Flow from the first stage tanks will enter the second stage tanks. The air flow to the second stage tank will be periodically turned on and then off to allow denitrification to occur within the tanks. This system of denitrification will allow the total nitrate levels to be reduced to less than 10 mg/l as N. The denitrification will also reduce overall oxygen requirements and reclaim alkalinity.

Clarifiers. The last stage of the Aeromod process is clarification. The clarifiers have no moving parts below the water surface. All parts are constructed of stainless steel, fiberglass, or PVC with the exception of the grating and hand rails which are aluminum. Sludge is collected in hoppers at the bottom of the tank and removed via stationary hydraulic hoods. The sludge is removed from the clarifiers and sent to the selector tanks. Airlift pumps provide the suction needed for the hydraulic hoods. Clarified effluent is removed from the clarifiers through submerged weirs.

Tertiary Filters. Continuous backward, up flow, granular media filters will be used to provide tertiary treatment. The filters will be equipped with influent and effluent turbidity monitors and non-compliant effluent will be automatically diverted to the non-compliant effluent storage. The filters will be limited to a surface loading rate of 5 gpm/ft².

Chlorine Contact Tank. Disinfection at the plant will be accomplished through the use of sodium hypochlorite and a chlorine contact tank. The tank will be designed to meet the requirements of the State of California Department of Public Health. Health Department certification will be required prior to sending treated effluent out of the plant for reuse.

Emergency Generator. A diesel emergency generator sized to operate the entire plant will be provided. Fuel storage will be provided with sufficient capacity to operate the generator at maximum load for 24 hours.

Plant Drain Pump Station. A plant drainage system will be provided to allow all of the process units to be drained. A submersible pump station will be provided to pump the drainage to the influent force main. The drains from the restrooms in the operations building will be conveyed to the pump station.

Non-Compliant Effluent Storage Tank. Twenty-four hours of storage will be provided for non-compliant effluent. The plant flow will automatically divert to this storage based on effluent turbidity. All plant overflows will be directed to this storage. The non-compliant effluent storage will have a high level overflow to the wet weather storage pond. The non-compliant effluent storage will have pumps to pump tank contents back to the secondary treatment process. The spill containment area will also overflow to the non-compliant effluent storage tank.

Aerobic Digestion and Dewatering. Solids from the Aeromod process will be aerobically digested and dewatered.

Aerobic Digestion. Solids from the activated sludge process will be wasted from the first stage aeration tanks into aerobic digesters. The aerobic digesters will provide stabilization of the solids prior to dewatering. The digester equipment will be provided as part of the Aeromod process equipment.

Dewatering. Solids from the aerobic digester will be dewatered through a belt filter press or centrifuge. After the solids have been dewatered they will be placed in a truck or bin and taken to a landfill. The dewatering equipment will be in an enclosed building.

Spill Containment System. The process area of the treatment plant contains piping, equipment and tankage. In order to prevent overflows, pipe breaks or equipment failures, and contain potential spills to prevent them from exiting the site, the process area will drain to a single location. This location will have a normally closed valved connection to the storm drain. Water accumulating in this area will normally flow to the non-compliant effluent storage tank. If it rains, the valve can be opened to direct the runoff to the storm drain.

Option 2 - Description of On-Site Scalping Water Recycling Plant without Solids Treatment

A scalping plant would have fewer facilities and smaller buildings than an on-site plant with solids treatment. The major advantage of a scalping plant is consolidation of all solids treatment at one plant. This lowers capital and operational costs.

Table 4-2 provides sizing of major facilities. The process flow schematic for this option is shown in Figure 4-2. Exhibit A shows the layout of this facility on the 2.4 acre water reclamation facility site.

Description of Treatment Process. This description of this water recycling plant is the same as Option 1 but the dewatering has been eliminated and all solids will be pumped to Moosa WRF for treatment and disposal. The start-up for this plant will also be different. The sludge line will be constructed in the initial phase and used to convey sewage to Moosa WRF for the first homes.

PEAK 24 HOUR FLOW SCENARIO

354,000 gpd

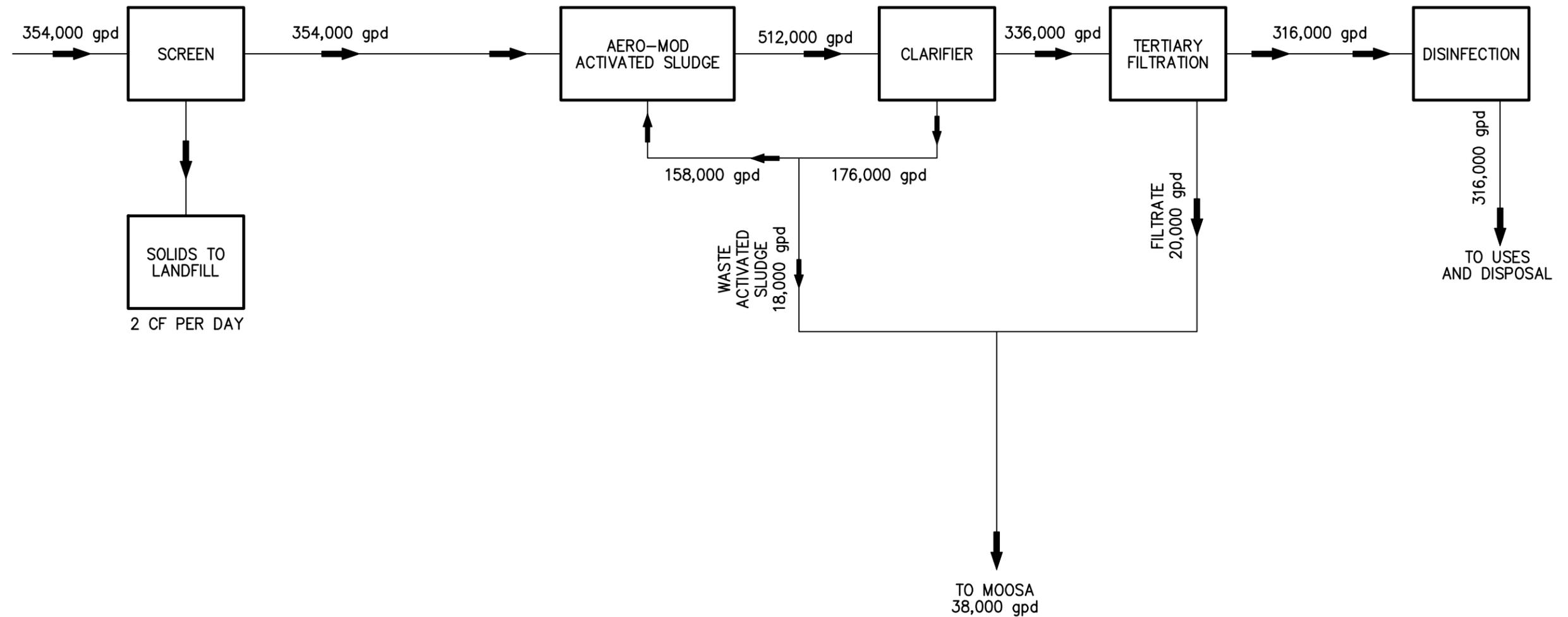


FIGURE 4-2
ON-SITE WATER RECYCLING
PLANT WITHOUT SOLIDS
TREATMENT
PROPOSED LILAC HILLS RANCH
WATER RECLAMATION FACILITY

**TABLE 4-2
LILAC HILLS ON-SITE
WATER RECYCLING PLANT
WITHOUT SOLIDS TREATMENT
MAJOR PROCESS SIZING**

Item	Buildout
Plant Flow	
Peak 24 hour Flow, gpd	354,000
Preliminary Treatment	
Screening	
Number	2
Hydraulic capacity gpd	708,000
Secondary Treatment, Aero-Mod	
Tankage	
Selector Tanks	
Number	2
Volume each, gallons	13,000
Total Volume, gallons	26,000
Aeration tanks	
Number of Trains	4
Volume Each, gallons	88,500
Total Volume, gallons	354,000
Detention Time (ADF)	
All trains in service, hours	24
3 Trains in service	18
Clarifiers	
Number	4
Surface Area, each, ft ²	336
Overflow Rate, ADF, gal/day/ft ²	
4 Units	263
3 Units	352
Filters	
Number	4
Area, each, ft ²	33
Capacity, each @ 5 gpd/sf, gpd	235,000
Total Capacity with 3 in Service, gpd	704,000
Total Capacity with 4 in Service, gpd	939,000
Off Quality Effluent Storage Tank	
Number	1

**TABLE 4-2
LILAC HILLS ON-SITE
WATER RECYCLING PLANT
WITHOUT SOLIDS TREATMENT
MAJOR PROCESS SIZING**

Item	Buildout
Volume, gallons	354,000
Chlorine Contact	
Number	1
Volume gallons	24,000

Off-site Improvements. A sludge line will need to be constructed to Moosa WRF for this alternative.

Option 3 - Description of Lower Moosa WRF Alternative

The Moosa WRF is located at the southeast corner of the intersection of Old Hwy 395 and Circle R Drive in the northwest area of the District. The Moosa WRF serves the east Interstate 15 corridor from Circle R Drive at the north end to the Lawrence Welk Resort area at the south.

The Moosa WRF provides secondary treatment of wastewater. The 1996 MUP modification allows for up to 1.0 mgd of capacity. The plant has a rated capacity of 0.5 mgd; its discharge permit limits the total plant flow to 0.44 mgd. This is the capacity of the existing percolation ponds. Presently the average sewage flow to this treatment facility is approximately 0.35 mgd. Before the plant flows exceed 0.44 mgd the District will have to increase treated water disposal capacity. This could be done by installing tertiary treatment facilities and developing a piping system for recycling the tertiary treated effluent.

Treated effluent from the Moosa WRF is disposed of by way of ground water percolation. The percolation ponds are situated along Lower Moosa Canyon Creek west of Interstate 15 and north of Camino Del Rey. The treated effluent is pumped from the Moosa WRF to the disposal site and distributed into percolation basins where it is allowed to seep into the ground water. At some point in time, given growth throughout the District, it is likely that the Moosa WRF will reach capacity. The District can address this in a variety of ways including construction of a facility in West Lilac Hills, construction of facilities at other locations in the District, or expansion of the existing Moosa WRF. In order to ensure that adequate wastewater treatment

services are available, the Lilac Hills Ranch Community will pay its fair share contribution in fees or other means as determined by the District

Off-site Improvements. An off-site pipeline will need to be constructed to Moosa WRF for this alternative. Treatment facilities would be constructed at Moosa WRF including a recycled water pump station to transfer recycled water back to the community. The recycled water forcemain would be in the same trench as the off-site wastewater pipeline.

Option 4 – Description of On-site Water Recycling Plant without Solids Treatment for a Portion of the Project

A scalping plant could be constructed to recycle wastewater from a portion of the Lilac Hills Ranch Community. The remaining portion of the project would be treated at the Moosa WRF. All of the project solids would be treated at the Moosa WRF. The initial phases of the project could be served at the Moosa WRF. Then in the future, the scalping plant size would be dictated by the availability of capacity at the Moosa WRF and the treatment needs of the later project phases.

Off-site Improvements. An off-site pipeline will need to be constructed to Moosa WRF for this alternative. Treatment facilities would be constructed at Moosa WRF including a recycled water pump station to transfer recycled water back to the community. The recycled water forcemain would be in the same trench as the off-site wastewater pipeline.

COMPARISON OF ALTERNATIVES

This section compares the on-site treatment alternatives, Options 1, 2, and 4. The costs for the alternatives will be developed and then ranked and a preferred alternative will be selected. Option 3 was eliminated from further consideration since the existing site is too small to accommodate this project.

Costs

The costs for treatment, off-site conveyance, and operations will be developed for the alternatives. The estimated onsite cost for the gravity conveyance system (\$6,793,400) and

onsite recycled water system (\$2,031,000) are excluded from these analyses since it is assumed to be the same for all options.

Option 1 – On-site Water Recycling Plant with Solids Treatment

Table 4-3 provides an estimate for cost of this option. The comparative cost for this option is \$29,515,000.

TABLE 4-3 COMPARATIVE COST FOR ON-SITE TREATMENT WITH SOLIDS TREATMENT	
Item	Cost
Sewer Pump Stations and Forcemains	\$10,380,000
Treatment Plant	
375,000 gpd @ \$30 gallon	\$11,250,000
Start-up Costs	\$1,500,000
Present Worth of 20 years of O&M at 50,000 per year use 5% discount rate (12.77 factor)	\$6,385,000
Subtotal	\$19,135,000
TOTAL	\$29,515,000

Option 2 - On-site Water Recycling Plant without Solids Treatment

Table 4-4 provides an estimate of costs for this alternative. The comparative cost for this alternative is \$26,038,000.

TABLE 4-4 COMPARATIVE COST FOR ON-SITE TREATMENT WITHOUT SOLIDS TREATMENT	
Item	Cost
Sewer Pump Stations and Forcemains	\$10,380,000
Treatment Plant	
375,000 gpd @ \$15 gallon	\$5,675,000
Present Worth of 20 years of O&M at \$250,000 per year	\$3,192,500
Subtotal	\$8,867,500

TABLE 4-4 COMPARATIVE COST FOR ON-SITE TREATMENT WITHOUT SOLIDS TREATMENT	
Item	Cost
Solids Conveyance System	
Pump Station	\$1,000,000
Piping	\$2,000,000
Present Worth of 20 years of O&M at \$50,000 per year	\$638,500
Subtotal	\$3,638,500
Moosa WRF Improvements	
Solids 375,000 gpd @ \$5 gallon	\$1,875,000
Present Worth of 20 years of O&M at \$100,000 per year	\$1,277,000
Subtotal	\$3,152,000
TOTAL	\$26,038,000

Option 4 – On-site Water Recycling Plant without Solids Treatment for a Portion of the Project

Table 4-5 provides an estimate of costs for this alternative. The comparative cost for this alternative is \$27,538,000. Note that this cost does not include the cost of a recycled water pump station at Moosa WRF to return recycled water to the project.

TABLE 4-5 COMPARATIVE COST FOR ON-SITE TREATMENT WITHOUT SOLIDS TREATMENT FOR A PORTION OF THE PROJECT	
Item	Cost
Sewer Pump Stations and Forcemains	
\$10,380,000	
Treatment Plant	
375,000 gpd @ \$15 gallon	\$5,675,000
Present Worth of 20 years of O&M at \$250,000 per year	\$3,192,500
Subtotal	\$8,867,500
Solids Conveyance System	
Pump Station	\$1,000,000
Piping	\$2,000,000

TABLE 4-5 COMPARATIVE COST FOR ON-SITE TREATMENT WITHOUT SOLIDS TREATMENT FOR A PORTION OF THE PROJECT	
Item	Cost
Present Worth of 20 years of O&M at \$50,000 per year	\$638,500
Subtotal	\$3,638,500
Moosa WRF Improvements	
Liquids 100,000 gpd @ \$15 gallon	\$1,500,000
Solids 375,000 gpd @ \$5 gallon	\$1,875,000
Present Worth of 20 years of O&M at \$100,000 per year	\$1,277,000
Subtotal	\$4,652,000
TOTAL	\$27,538,000

Ranking of Options

Table 4-6 ranks both options based on costs, odor potential on-site, visual impacts on-site and ease of operation.

TABLE 4-6 COMPARISON OF OPTIONS			
Description	Rank		
	Option 1 On-Site Treatment With Solids Treatment	Option 2 On-Site Treatment Without Solids Treatment	Option 4 Some On-Site Treatment Without Solids Treatment
Cost	3	1	2
Odor Potential Reduced	3	1	1
Visual Impact Reduced	3	2	1
Operation Simplified	3	1	1
TOTAL	11	5	5

CHAPTER 5

RECYCLED WATER

This chapter will discuss recycled water, its beneficial reuse, and required facilities.

RECYCLED WATER GENERATION

All wastewater generated by the project will be treated to a tertiary level and recycled. To allow for a conservative planning analysis, the quantity of recycled water estimated to be produced is based on a recycled water generation rate of 180 gpd/EDU. Thus, the recycled water generated by 1,771 units is estimated to be 357 ac-ft/yr (318,780 gpd).

BENEFICIAL REUSE

The annual recycled water need estimated for the Lilac Hills Ranch Community is 300 AFY. Thus approximately 57 AFY is available for beneficial reuse in locations outside of the project. Table 5-1 provides irrigated acreage within the project and offsite which could benefit from the recycled water produced based on varying application rates of the recycled water.

TABLE 5-1 POTENTIAL ACREAGE TO BENEFIT FROM RECYCLED WATER		
Irrigation Application Rates	Lilac Hills Ranch Acreage (based on 300 AFY)	Additional Acreage (based on 57 AFY)
at 3 feet per acre	99.9 acres	19.1 acres
at 3.5 feet per acre	85.7 acres	16.4 acres
at 4 feet per acre	74.9 acres	14.3 acres

WET WEATHER STORAGE

Wet weather storage is required to impound recycled water during periods of time when irrigation is not needed (e.g., wet winter months). The wet weather storage requirement for

the Lilac Hills Ranch Community is based on providing 84 days of storage for the recycled water produced. Based on the recycled water generation rate of 318,780 gpd (which includes the existing homesites and perimeter parcels) approximately 82 acre-feet of wet weather storage is required. Table 5-2 presents an annual wet weather storage analysis which illustrates that approximately 58 acre-feet of storage could be sufficient when considering seasonal demands and other impacts (e.g., rainfall, evaporation) to the wet weather storage. Note that these analysis do not consider the use of grey water harvesting by the project (which would reduce the quantity of recycled water generated).

RECYCLED WATER FACILITIES

The project will construct recycled water facilities to convey the tertiary treated effluent to the appropriate on-site use locations. Recycled water would be distributed to the Lilac Hills Ranch Community from pumping facilities at the on-site WRF, the wet weather storage, and/or the Moosa WRF. If recycled water originates from the Moosa WRF, a force main from the Moosa WRF to the project would have to be constructed. The District has indicated that this pipeline could be constructed within the same trench as the wastewater pipeline which will carry wastewater and solids from the project to the Lower Moosa WRF as shown on Figure 3-3.

**TABLE 5-2
LILAC HILLS RANCH WATER IRRIGATION USE AND STORAGE SUMMARY - WATER YEAR 2005**

Month	Effluent Produced (AF/Mo)	Irrigation Need						Rainfall Added to Storage Basin (AF)	Amount Evap. from Storage Basin (AF)	Increase (+) Decrease (-) (AF)	Amount in Storage at End of Month (AF)	Maximum Amount in Storage During Month (AF)	Supplemental Irrigation Need (AF)
		Monthly Irrigation Need (AF)	Rainfall (in)	Available Rainfall (AF)	Net Irrigation Need (AF)	Irrigation Efficiency Factor	Total Irrigation Need (AF)						
October	30.3	25.9	4.73	2.4	22.1	0.8	27.6	2.4	1.0	4.01	5.71	5.92	1.03
November	29.3	20.6	0.50	0.3	20.4	0.8	25.5	0.3	0.8	3.31	9.01	9.01	0.00
December	30.3	15.9	3.19	1.6	13.7	0.8	17.1	1.6	0.6	14.16	23.17	23.17	0.00
January	30.3	17.5	7.64	3.8	13.2	0.8	16.5	3.8	0.7	16.92	40.08	40.08	0.00
February	27.4	17.2	7.06	3.5	11.1	0.8	13.9	3.5	0.7	16.29	56.37	56.37	0.00
March	30.3	23.5	1.67	0.8	22.7	0.8	28.4	0.8	0.9	1.82	58.20	58.26	0.00
April	29.3	33.1	0.98	0.5	32.6	0.8	40.7	0.5	1.3	-12.22	45.97	57.75	0.00
May	30.3	38.0	0.05	0.0	38.0	0.8	47.5	0.0	1.5	-18.64	27.33	45.37	0.00
June	29.3	43.4	0.02	0.0	43.4	0.8	54.3	0.0	1.7	-26.64	0.69	26.44	0.00
July	30.3	44.1	0.00	0.0	44.1	0.8	55.1	0.0	1.8	-26.57	0.00	0.00	24.11
August	30.3	42.5	0.00	0.0	42.5	0.8	53.2	0.0	1.7	-24.56	0.00	0.00	22.86
September	29.3	35.3	0.00	0.0	35.3	0.8	44.1	0.0	1.4	-16.22	0.00	0.00	14.80
Total	357.0	357.1	25.84	12.9	339.2		424.0	12.9	14.3	-68.36			62.8

Note: Water Year 2005 was selected due to the significant rainfall which occurred in this year.

Storage Volume Needed	58.26 AF 19.0 MG 59.6 days
Storage Depth Needed	19.4 feet
Supplemental Irrigation Need	62.8 AF 20.5 MG

APPENDIX A

WATER, RECYCLED WATER AND WASTEWATER DEMANDS

Estimated Water Demands Without Conservation						
Land Use	Acres	Units	Water Use Based on Demand Factors			
			Factor	Use, gpm	Use, gpd	
Single Family Detached	165.4	903	500	gpd/DU	313.54	451,500
Single Family Senior	75.9	468	300	gpd/DU	97.50	140,400
Single Family Attached	7.9	164	433	gpd/DU	49.31	71,012
Commercial/Mixed Use	15.3	211	4,500	gpd/ac	47.69	68,670
Water Reclamation	2.4	-	2,333	gpd/ac	3.89	5,599
Recycled Facility/Trail H	0.6	-	1,667	gpd/ac	0.69	1,000
Detention Basin	5.5	-	1,667	gpd/ac	6.37	9,169
School	12.0	-	2,333	gpd/ac	19.44	27,996
Private Recreation	2.0	-	2,333	gpd/ac	3.24	4,666
Group Residential/Care	6.5	-	2,333	gpd/ac	10.53	15,165
Institutional	10.7	-	2,333	gpd/ac	17.34	24,963
Park	23.8	-	1,667	gpd/ac	27.55	39,675
Biological Open Space	102.7	-	-	-	-	-
Non-Circulating Road	45.7	-	-	-	-	-
Circulating Road	37.6	-	-	-	-	-
Common Areas/Ag	18.8	-	2,500	gpd/ac	32.64	47,000
Manufactured Slopes	75.2	-	2,500	gpd/ac	130.56	188,000
Total, gpd	608.0	1,746			760.29	1,094,814
Total, afy						1,226

Estimated Water Demands With Conservation						
Land Use	Acres	Units	Water Use Based on Demand Factors			
			Factor	Use, gpm	Use, gpd	
Single Family Detached	165.4	903	500	gpd/DU	235.16	338,625
Single Family Senior	75.9	468	300	gpd/DU	73.13	105,300
Single Family Attached	7.9	164	433	gpd/DU	36.99	53,259
Commercial/Mixed Use	15.3	211	4,500	gpd/ac	35.77	51,503
Water Reclamation	2.4	-	2,333	gpd/ac	2.92	4,199
Recycled Facility/Trail Head	0.6	-	1,667	gpd/ac	0.52	750
Detention Basin	5.5	-	1,667	gpd/ac	4.78	6,876
School	12.0	-	2,333	gpd/ac	14.58	20,997
Private Recreation	2.0	-	2,333	gpd/ac	2.43	3,500
Group Residential/Care	6.5	-	2,333	gpd/ac	7.90	11,373
Institutional	10.7	-	2,333	gpd/ac	13.00	18,722
Park	23.8	-	1,667	gpd/ac	20.66	29,756
Biological Open Space	102.7	-	-	-	-	-
Non-Circulating Road	45.7	-	-	-	-	-
Circulating Road	37.6	-	-	-	-	-
Common Areas/Ag	18.8	-	2,500	gpd/ac	24.48	35,250
Manufactured Slopes	75.2	-	2,500	gpd/ac	97.92	141,000
Total, gpd	608.0	1,746			570.22	821,111
Total, afy						920

Estimated Water Demands With Conservation, Phase 1				
Land Use	Acres	Units	Water Use Based on Demand	
			Use, gpm	Use, gpd
Single Family Detached	62.6	350.0	91.15	131,250
Single Family Senior	-	-	-	-
Single Family Attached	-	-	-	-
Commercial/Mixed Use	-	-	-	-
Water Reclamation	-	-	-	-
Recycled Facility/Trail Head	-	-	-	-
Detention Basin	-	-	-	-
School	-	-	-	-
Private Recreation	-	-	-	-
Group Residential/Care	-	-	-	-
Institutional	-	-	-	-
Park	3.2	-	2.78	4,001
Biological Open Space	13.1	-	-	-
Non-Circulating Road	13.7	-	-	-
Circulating Road	7.7	-	-	-
Common Areas/Ag	6.3	-	8.20	11,813
Manufactured Slopes	15.0	-	19.53	28,125
Total, gpd	121.6	350	121.66	175,188
Total, afy				196

Estimated Water Demands With Conservation, Phase 2				
Land Use	Acres	Units	Water Use Based on Demand Factors	
			Use, gpm	Use, gpd
Single Family Detached	18.3	196.0	51.04	73,500
Single Family Senior	-	-	-	-
Single Family Attached	3.6	59.0	13.31	19,160
Commercial/Mixed Use	14.4	211.0	33.66	48,465
Water Reclamation	-	-	-	-
Recycled Facility/Trail Hea	0.6	-	0.52	750
Detention Basin	-	-	-	-
School	-	-	-	-
Private Recreation	-	-	-	-
Group Residential/Care	-	-	-	-
Institutional	-	-	-	-
Park	2.8	-	2.43	3,501
Biological Open Space	12.5	-	-	-
Non-Circulating Road	8.0	-	-	-
Circulating Road	13.6	-	-	-
Common Areas/Ag	0.5	-	0.65	938
Manufactured Slopes	10.8	-	14.06	20,250
Total, gpd	85.1	466	115.67	166,564
Total, afy				187

Estimated Water Demands With Conservation, Phase 3				
Land Use	Acres	Units	Water Use Based on Demand Factors	
			Use, gpm	Use, gpd
Single Family Detached	84.5	357.0	92.97	133,875
Single Family Senior	-	-	-	-
Single Family Attached	4.3	105.0	23.68	34,099
Commercial/Mixed Use	0.5	-	1.17	1,688
Water Reclamation	2.4	-	2.92	4,199
Recycled Facility/Trail Hea	-	-	-	-
Detention Basin	4.5	-	3.91	5,626
School	12.0	-	14.58	20,997
Private Recreation	2.0	-	2.43	3,500
Group Residential/Care	-	-	-	-
Institutional	-	-	-	-
Park	12.0	-	10.42	15,003
Biological Open Space	50.7	-	-	-
Non-Circulating Road	8.2	-	-	-
Circulating Road	8.7	-	-	-
Common Areas/Ag	1.0	-	1.30	1,875
Manufactured Slopes	35.0	-	45.57	65,625
Total, gpd	225.8	462	198.95	286,486
Total, afy				321

Estimated Water Demands With Conservation, Phase 4				
Land Use	Acres	Units	Water Use Based on Demand	
			Use, gpm	Use, gpd
Single Family Detached	-	-	-	-
Single Family Senior	29.9	171.0	26.72	38,475
Single Family Attached	-	-	-	-
Commercial/Mixed Use	-	-	-	-
Water Reclamation	-	-	-	-
Recycled Facility/Trail Head	-	-	-	-
Detention Basin	0.4	-	0.35	500
School	-	-	-	-
Private Recreation	-	-	-	-
Group Residential/Care	6.5	-	7.90	11,373
Institutional	-	-	-	-
Park	3.7	-	3.21	4,626
Biological Open Space	7.3	-	-	-
Non-Circulating Road	2.8	-	-	-
Circulating Road	3.0	-	-	-
Common Areas/Ag	1.3	-	1.69	2,438
Manufactured Slopes	5.4	-	7.03	10,125
Total, gpd	60.3	171	46.90	67,537
Total, afy				76

Estimated Water Demands With Conservation, Phase 5				
Land Use	Acres	Units	Water Use Based on Demand	
			Use, gpm	Use, gpd
Single Family Detached	-	-	-	-
Single Family Senior	46.0	297.0	46.41	66,825
Single Family Attached	-	-	-	-
Commercial/Mixed Use	0.4	-	0.94	1,350
Water Reclamation	-	-	-	-
Recycled Facility/Trail Head	-	-	-	-
Detention Basin	0.6	-	0.52	750
School	-	-	-	-
Private Recreation	-	-	-	-
Group Residential/Care	-	-	-	-
Institutional	10.7	-	13.00	18,722
Park	2.1	-	1.82	2,626
Biological Open Space	19.1	-	-	-
Non-Circulating Road	13.0	-	-	-
Circulating Road	4.6	-	-	-
Common Areas/Ag	9.7	-	12.63	18,188
Manufactured Slopes	9.0	-	11.72	16,875
Total, gpd	115.2	297	87.04	125,336
Total, afy				140

Lilac Hills Ranch Potable and Non-Potable Water Use With Conservation										
Land Use	Pre-Conservation Water Use	Water Use With Conservation of 25%	Interior Demand %	Potable Water Demand	Exterior Demand %	Potable Water Demand	Non-Potable Water Demand	Total Potable Demand	Total Non-Potable Demand	Project Total Demand
Single Family Detached	451,500	338,625	40	135,450	60	101,588	101,588 *	237,038	101,588	338,625
Single Family Senior	140,400	105,300	40	42,120	60	31,590	31,590 *	73,710	31,590	105,300
Single Family Attached	71,012	53,259	40	21,304	60	9,587	22,369 *	30,890	22,369	53,259
Commercial/Mixed Use	68,670	51,503	40	20,601	60	-	30,902	20,601	30,902	51,503
Water Reclamation	5,599	4,199	40	1,680	60	-	2,520	1,680	2,520	4,199
Recycled Facility/Trail Head	1,000	750	40	300	60	-	450	300	450	750
Detention Basin	9,169	6,876	0	-	100	-	6,876	-	6,876	6,876
School	27,996	20,997	40	8,399	60	-	12,598	8,399	12,598	20,997
Private Recreation	4,666	3,500	40	1,400	60	-	2,100	1,400	2,100	3,500
Group Residential/Care	15,165	11,373	40	4,549	60	-	6,824	4,549	6,824	11,373
Institutional	24,963	18,722	40	7,489	60	-	11,233	7,489	11,233	18,722
Park	39,675	29,756	40	11,902	60	-	17,854	11,902	17,854	29,756
Biological Open Space	-	-	0	-	100	-	-	-	-	-
Non-Circulating Road	-	-	0.0	-	0.0	-	-	-	-	-
Circulating Road	-	-	0.0	-	0.0	-	-	-	-	-
Common Areas/Ag	47,000	35,250	0.0	-	100.0	-	35,250	-	35,250	35,250
Manufactured Slopes	188,000	141,000	0.0	-	100.0	-	141,000	-	141,000	141,000
Total, gpd	1,094,814	821,111	-	255,194	-	142,764	423,153	397,958	423,153	821,111
Total, afy	1,226	920	-	286	-	160	474	446	474	920

* Non-potable water demand will be part of Common Area Irrigation

Note - Single Family Detached exterior potable water use could be reduced by 34 AFY via rain water harvesting.

	gpd	afy	Phasing Check
Supplied by RW	267,606	299.71	299.71
Supplied by GW	155,546	174.21	174.21

Lilac Hills Ranch Potable and Non-Potable Water Use by Phase										
Construction Phase	Project Phase	Potable Demand		Non-Potable Demand					Total	
				Groundwater		Recycled Water		RW Irrigated		
		gpd	afy	gpd	afy	gpd	afy	Acreage *	gpd	afy
1	1	93,475	105	39,375	44	42,338	47	16	175,188	196
2	4	33,332	37	11,543	13	22,662	25	8	67,537	76
3	5	55,857	63	20,048	22	49,431	55	18	125,336	140
4	2	83,649	94	30,097	34	52,817	59	20	166,564	187
5	3	131,644	147	54,484	61	100,358	112	37	286,486	321
Total		397,958	446	155,546	174	267,606	300	100	821,111	920

* Based upon 3 acre feet per acre per year

This scenario assumes all groundwater is used only on single family homes.

Lilac Hills Ranch Potable and Non-Potable Water Use With Conservation, Phase 1									
Land Use	Demand	Interior Demand %	Potable Water Demand	Exterior Demand %	Potable Water Demand	Non-Potable Water Demand	Total Potable Demand	Total Non-Potable Demand	Project Total Demand
Single Family Detached	131,250	40	52,500	60	39,375	39,375 *	91,875	39,375	131,250
Single Family Senior	-	40	-	60	-	- *	-	-	-
Single Family Attached	-	40	-	60	-	- *	-	-	-
Commercial/Mixed Use	-	40	-	60	-	-	-	-	-
Water Reclamation	-	40	-	60	-	-	-	-	-
Recycled Facility/Trail Head	-	40	-	60	-	-	-	-	-
Detention Basin	-	0	-	100	-	-	-	-	-
School	-	40	-	60	-	-	-	-	-
Private Recreation	-	40	-	60	-	-	-	-	-
Group Residential/Care	-	40	-	60	-	-	-	-	-
Institutional	-	40	-	60	-	-	-	-	-
Park	4,001	40	1,600	60	-	2,400	1,600	2,400	4,001
Biological Open Space	-	0	-	100	-	-	-	-	-
Non-Circulating Road	-	0.0	-	0.0	-	-	-	-	-
Circulating Road	-	0.0	-	0.0	-	-	-	-	-
Common Areas/Ag	11,813	0.0	-	100.0	-	11,813	-	11,813	11,813
Manufactured Slopes	28,125	0.0	-	100.0	-	28,125	-	28,125	28,125
Total, gpd	175,188	-	54,100	-	39,375	81,713	93,475	81,713	175,188
Total, afy	196	-	61	-	44	92	105	92	196

* Non-potable water demand will be part of Common Area Irrigation

Note - Single Family Detached exterior potable water use could be reduced by 34 AFY via rain water harvesting.

	gpd	afy
Supplied by RW	42,338	47.42
Supplied by GW	39,375	44.10

Lilac Hills Ranch Potable and Non-Potable Water Use With Conservation, Phase 2									
Land Use	Demand	Interior Demand %	Potable Water Demand	Exterior Demand %	Potable Water Demand	Non-Potable Water Demand	Total Potable Demand	Total Non-Potable Demand	Project Total Demand
Single Family Detached	73,500	40	29,400	60	22,050	22,050 *	51,450	22,050	73,500
Single Family Senior	-	40	-	60	-	- *	-	-	-
Single Family Attached	19,160	40	7,664	60	3,449	8,047 *	11,113	8,047	19,160
Commercial/Mixed Use	48,465	40	19,386	60	-	29,079	19,386	29,079	48,465
Water Reclamation	-	40	-	60	-	-	-	-	-
Recycled Facility/Trail He	750	40	300	60	-	450	300	450	750
Detention Basin	-	0	-	100	-	-	-	-	-
School	-	40	-	60	-	-	-	-	-
Private Recreation	-	40	-	60	-	-	-	-	-
Group Residential/Care	-	40	-	60	-	-	-	-	-
Institutional	-	40	-	60	-	-	-	-	-
Park	3,501	40	1,400	60	-	2,100	1,400	2,100	3,501
Biological Open Space	-	0	-	100	-	-	-	-	-
Non-Circulating Road	-	0.0	-	0.0	-	-	-	-	-
Circulating Road	-	0.0	-	0.0	-	-	-	-	-
Common Areas/Ag	938	0.0	-	100.0	-	938	-	938	938
Manufactured Slopes	20,250	0.0	-	100.0	-	20,250	-	20,250	20,250
Total, gpd	166,564	-	58,150	-	25,499	82,914	83,649	82,914	166,564
Total, afy	187	-	65	-	29	93	94	93	187

* Non-potable water demand will be part of Common Area Irrigation

Note - Single Family Detached exterior potable water use could be reduced by 34 AFY via rain water harvesting. gpd afy

Supplied by RW	52,817	59.15
Supplied by GW	30,097	33.71

Lilac Hills Ranch Potable and Non-Potable Water Use With Conservation, Phase 3									
Land Use	Demand	Interior Demand %	Potable Water Demand	Exterior Demand %	Potable Water Demand	Non-Potable Water Demand	Total Potable Demand	Total Non-Potable Demand	Project Total Demand
Single Family Detached	133,875	40	53,550	60	40,163	40,163 *	93,713	40,163	133,875
Single Family Senior	-	40	-	60	-	- *	-	-	-
Single Family Attached	34,099	40	13,640	60	6,138	14,321 *	19,777	14,321	34,099
Commercial/Mixed Use	1,688	40	675	60	-	1,013	675	1,013	1,688
Water Reclamation	4,199	40	1,680	60	-	2,520	1,680	2,520	4,199
Recycled Facility/Trail Head	-	40	-	60	-	-	-	-	-
Detention Basin	5,626	0	-	100	-	5,626	-	5,626	5,626
School	20,997	40	8,399	60	-	12,598	8,399	12,598	20,997
Private Recreation	3,500	40	1,400	60	-	2,100	1,400	2,100	3,500
Group Residential/Care	-	40	-	60	-	-	-	-	-
Institutional	-	40	-	60	-	-	-	-	-
Park	15,003	40	6,001	60	-	9,002	6,001	9,002	15,003
Biological Open Space	-	0	-	100	-	-	-	-	-
Non-Circulating Road	-	0.0	-	0.0	-	-	-	-	-
Circulating Road	-	0.0	-	0.0	-	-	-	-	-
Common Areas/Ag	1,875	0.0	-	100.0	-	1,875	-	1,875	1,875
Manufactured Slopes	65,625	0.0	-	100.0	-	65,625	-	65,625	65,625
Total, gpd	286,486	-	85,344	-	46,300	154,842	131,644	154,842	286,486
Total, afy	321	-	96	-	52	173	147	173	321

* Non-potable water demand will be part of Common Area Irrigation

Note - Single Family Detached exterior potable water use could be reduced by 34 AFY via rain water harvesting.

	gpd	afy
Supplied by RW	100,358	112.40
Supplied by GW	54,484	61.02

Lilac Hills Ranch Potable and Non-Potable Water Use With Conservation, Phase 4									
Land Use	Demand	Interior Demand %	Potable Water Demand	Exterior Demand %	Potable Water Demand	Non-Potable Water Demand	Total Potable Demand	Total Non-Potable	Project Total Demand
Single Family Detached	-	40	-	60	-	- *	-	-	-
Single Family Senior	38,475	40	15,390	60	11,543	11,543 *	26,933	11,543	38,475
Single Family Attached	-	40	-	60	-	- *	-	-	-
Commercial/Mixed Use	-	40	-	60	-	-	-	-	-
Water Reclamation	-	40	-	60	-	-	-	-	-
Recycled Facility/Trail Hea	-	40	-	60	-	-	-	-	-
Detention Basin	500	0	-	100	-	500	-	500	500
School	-	40	-	60	-	-	-	-	-
Private Recreation	-	40	-	60	-	-	-	-	-
Group Residential/Care	11,373	40	4,549	60	-	6,824	4,549	6,824	11,373
Institutional	-	40	-	60	-	-	-	-	-
Park	4,626	40	1,850	60	-	2,776	1,850	2,776	4,626
Biological Open Space	-	0	-	100	-	-	-	-	-
Non-Circulating Road	-	0.0	-	0.0	-	-	-	-	-
Circulating Road	-	0.0	-	0.0	-	-	-	-	-
Common Areas/Ag	2,438	0.0	-	100.0	-	2,438	-	2,438	2,438
Manufactured Slopes	10,125	0.0	-	100.0	-	10,125	-	10,125	10,125
Total, gpd	67,537	-	21,790	-	11,543	34,205	33,332	34,205	67,537
Total, afy	76	-	24	-	13	38	37	38	76

* Non-potable water demand will be part of Common Area Irrigation

Note - Single Family Detached exterior potable water use could be reduced by 34 AFY via rain water harvesting.

	gpd	afy
Supplied by RW	22,662	25.38
Supplied by GW	11,543	12.93

Lilac Hills Ranch Potable and Non-Potable Water Use With Conservation, Phase 5									
Land Use	Demand	Interior Demand %	Potable Water Demand	Exterior Demand %	Potable Water Demand	Non-Potable Water Demand	Total Potable Demand	Total Non-Potable	Project Total Demand
Single Family Detached	-	40	-	60	-	- *	-	-	-
Single Family Senior	66,825	40	26,730	60	20,048	20,048 *	46,778	20,048	66,825
Single Family Attached	-	40	-	60	-	- *	-	-	-
Commercial/Mixed Use	1,350	40	540	60	-	810	540	810	1,350
Water Reclamation	-	40	-	60	-	-	-	-	-
Recycled Facility/Trail Hea	-	40	-	60	-	-	-	-	-
Detention Basin	750	0	-	100	-	750	-	750	750
School	-	40	-	60	-	-	-	-	-
Private Recreation	-	40	-	60	-	-	-	-	-
Group Residential/Care	-	40	-	60	-	-	-	-	-
Institutional	18,722	40	7,489	60	-	11,233	7,489	11,233	18,722
Park	2,626	40	1,050	60	-	1,575	1,050	1,575	2,626
Biological Open Space	-	0	-	100	-	-	-	-	-
Non-Circulating Road	-	0.0	-	0.0	-	-	-	-	-
Circulating Road	-	0.0	-	0.0	-	-	-	-	-
Common Areas/Ag	18,188	0.0	-	100.0	-	18,188	-	18,188	18,188
Manufactured Slopes	16,875	0.0	-	100.0	-	16,875	-	16,875	16,875
Total, gpd	125,336	-	35,809	-	20,048	69,479	55,857	69,479	125,336
Total, afy	140	-	40	-	22	78	63	78	140

* Non-potable water demand will be part of Common Area Irrigation

Note - Single Family Detached exterior potable water use could be reduced by 34 AFY via rain water harvesting.

	gpd	afy
Supplied by RW	49,431	55.36
Supplied by GW	20,048	22.45

Lilac Hills Ranch Wastewater Generation						
Land Use	Acres	Units	Peak 24 hr Sewage Generation		Avg 24 hr Sewage/Recycled	
			Factor	gpd	Factor	gpd
Single Family Detached*	165.4	928	200 gpd/unit	185,600	150 gpd/unit	139,200
Single Family Senior	75.9	468	125 gpd/unit	58,500	90 gpd/unit	42,120
Single Family Attached	7.9	164	180 gpd/unit	29,520	130 gpd/unit	21,320
Commercial/Mixed Use	15.3	211	1900 gpd/ac	28,994	1340 gpd/ac	20,448
Water Reclamation	2.4	-	1000 gpd/ac	2,400	700 gpd/ac	1,680
Recycled Facility/Trail Head	0.6	-	1000 gpd/ac	600	700 gpd/ac	420
Detention Basin	5.5	-	0 gpd/ac	-	0 gpd/ac	-
School	12.0	-	1000 gpd/ac	12,000	700 gpd/ac	8,400
Private Recreation	2.0	-	1000 gpd/ac	2,000	700 gpd/ac	1,400
Group Residential/Care	6.5	-	1000 gpd/ac	6,500	700 gpd/ac	4,550
Institutional	10.7	-	1000 gpd/ac	10,700	700 gpd/ac	7,490
Park	23.8	-	700 gpd/ac	16,660	500 gpd/ac	11,900
Biological Open Space	102.7	-	0 gpd/ac	-	0 gpd/ac	-
Non-Circulating Road	45.7	-	0 gpd/ac	-	0 gpd/ac	-
Circulating Road	37.6	-	0 gpd/ac	-	0 gpd/ac	-
Common Areas/Ag	18.8	-	0 gpd/ac	-	0 gpd/ac	-
Manufactured Slopes	75.2	-	0 gpd/ac	-	0 gpd/ac	-
Total	608.0	1,771		353,474		258,928
Total, afy				396		290

* Includes 25 EDUs for existing homesites and perimeter parcels.

gpd/EDU

200

146.20

Lilac Hills Ranch Wastewater Generation Phasing Summary				
Phase	Peak 24 hr Sewage Generation		Avg 24 hr Sewage/ Recycled	
	By Phase	Cumulative	By Phase	Cumulative
1	74,040	74,040	55,450	55,450
2	81,064	155,104	59,182	114,632
3	117,450	272,554	86,400	201,032
4	30,665	303,219	21,940	222,972
5	50,255	353,474	35,956	258,928
TOTAL	353,474	-	258,928	-
gpd/EDU	200		146	

Includes 25 EDUs for existing homesites and perimeter parcels.

Phase 1 Lilac Hills Ranch Wastewater Generation						
Land Use	Acres	Units	Peak 24 hr Sewage Generation		Avg 24 hr Sewage/Recycled	
			Factor	gpd	Factor	gpd
Single Family Detached*	62.6	359	200 gpd/unit	71,800	150 gpd/unit	53,850
Single Family Senior	-	-	125 gpd/unit	-	90 gpd/unit	-
Single Family Attached	-	-	180 gpd/unit	-	130 gpd/unit	-
Commercial/Mixed Use	-	-	1900 gpd/ac	-	1340 gpd/ac	-
Water Reclamation	-	-	1000 gpd/ac	-	700 gpd/ac	-
Recycled Facility/Trail Head	-	-	1000 gpd/ac	-	700 gpd/ac	-
Detention Basin	-	-	0 gpd/ac	-	0 gpd/ac	-
School	-	-	1000 gpd/ac	-	700 gpd/ac	-
Private Recreation	-	-	1000 gpd/ac	-	700 gpd/ac	-
Group Residential/Care	-	-	1000 gpd/ac	-	700 gpd/ac	-
Institutional	-	-	1000 gpd/ac	-	700 gpd/ac	-
Park	3.2	-	700 gpd/ac	2,240	500 gpd/ac	1,600
Biological Open Space	13.1	-	0 gpd/ac	-	0 gpd/ac	-
Non-Circulating Road	13.7	-	0 gpd/ac	-	0 gpd/ac	-
Circulating Road	7.7	-	0 gpd/ac	-	0 gpd/ac	-
Common Areas/Ag	6.3	-	0 gpd/ac	-	0 gpd/ac	-
Manufactured Slopes	15.0	-	0 gpd/ac	-	0 gpd/ac	-
Total	121.6	359		74,040		55,450
Total, afy				83		62

* Includes EDUs for existing homesites and perimeter parcels.

Phase 2 Lilac Hills Ranch Wastewater Generation						
Land Use	Acres	Units	Peak 24 hr Sewage Generation		Avg 24 hr Sewage/Recycled	
			Factor	gpd	Factor	gpd
Single Family Detached*	18.3	203	200 gpd/unit	40,600	150 gpd/unit	30,450
Single Family Senior	-	-	125 gpd/unit	-	90 gpd/unit	-
Single Family Attached	3.6	59	180 gpd/unit	10,620	130 gpd/unit	7,670
Commercial/Mixed Use	14.4	211	1900 gpd/ac	27,284	1340 gpd/ac	19,242
Water Reclamation	-	-	1000 gpd/ac	-	700 gpd/ac	-
Recycled Facility/Trail Head	0.6	-	1000 gpd/ac	600	700 gpd/ac	420
Detention Basin	-	-	0 gpd/ac	-	0 gpd/ac	-
School	-	-	1000 gpd/ac	-	700 gpd/ac	-
Private Recreation	-	-	1000 gpd/ac	-	700 gpd/ac	-
Group Residential/Care	-	-	1000 gpd/ac	-	700 gpd/ac	-
Institutional	-	-	1000 gpd/ac	-	700 gpd/ac	-
Park	2.8	-	700 gpd/ac	1,960	500 gpd/ac	1,400
Biological Open Space	12.5	-	0 gpd/ac	-	0 gpd/ac	-
Non-Circulating Road	8.0	-	0 gpd/ac	-	0 gpd/ac	-
Circulating Road	13.6	-	0 gpd/ac	-	0 gpd/ac	-
Common Areas/Ag	0.5	-	0 gpd/ac	-	0 gpd/ac	-
Manufactured Slopes	10.8	-	0 gpd/ac	-	0 gpd/ac	-
Total	85.1	473		81,064		59,182
Total, afy				91		66

* Includes EDUs for existing homesites and perimeter parcels.

Phase 3 Lilac Hills Ranch Wastewater Generation						
Land Use	Acres	Units	Peak 24 hr Sewage Generation		Avg 24 hr Sewage/Recycled	
			Factor	gpd	Factor	gpd
Single Family Detached*	84.5	364	200 gpd/unit	72,800	150 gpd/unit	54,600
Single Family Senior	-	-	125 gpd/unit	-	90 gpd/unit	-
Single Family Attached	4.3	105	180 gpd/unit	18,900	130 gpd/unit	13,650
Commercial/Mixed Use	0.5	-	1900 gpd/ac	950	1340 gpd/ac	670
Water Reclamation	2.4	-	1000 gpd/ac	2,400	700 gpd/ac	1,680
Recycled Facility/Trail Head	-	-	1000 gpd/ac	-	700 gpd/ac	-
Detention Basin	4.5	-	0 gpd/ac	-	0 gpd/ac	-
School	12.0	-	1000 gpd/ac	12,000	700 gpd/ac	8,400
Private Recreation	2.0	-	1000 gpd/ac	2,000	700 gpd/ac	1,400
Group Residential/Care	-	-	1000 gpd/ac	-	700 gpd/ac	-
Institutional	-	-	1000 gpd/ac	-	700 gpd/ac	-
Park	12.0	-	700 gpd/ac	8,400	500 gpd/ac	6,000
Biological Open Space	50.7	-	0 gpd/ac	-	0 gpd/ac	-
Non-Circulating Road	8.2	-	0 gpd/ac	-	0 gpd/ac	-
Circulating Road	8.7	-	0 gpd/ac	-	0 gpd/ac	-
Common Areas/Ag	1.0	-	0 gpd/ac	-	0 gpd/ac	-
Manufactured Slopes	35.0	-	0 gpd/ac	-	0 gpd/ac	-
Total	225.8	469		117,450		86,400
Total, afy				132		97

* Includes EDUs for existing homesites and perimeter parcels.

Phase 4 Lilac Hills Ranch Wastewater Generation						
Land Use	Acres	Units	Peak 24 hr Sewage Generation		Avg 24 hr Sewage/Recycled	
			Factor	gpd	Factor	gpd
Single Family Detached*	-	1	200 gpd/unit	200	150 gpd/unit	150
Single Family Senior	29.9	171	125 gpd/unit	21,375	90 gpd/unit	15,390
Single Family Attached	-	-	180 gpd/unit	-	130 gpd/unit	-
Commercial/Mixed Use	-	-	1900 gpd/ac	-	1340 gpd/ac	-
Water Reclamation	-	-	1000 gpd/ac	-	700 gpd/ac	-
Recycled Facility/Trail Head	-	-	1000 gpd/ac	-	700 gpd/ac	-
Detention Basin	0.4	-	0 gpd/ac	-	0 gpd/ac	-
School	-	-	1000 gpd/ac	-	700 gpd/ac	-
Private Recreation	-	-	1000 gpd/ac	-	700 gpd/ac	-
Group Residential/Care	6.5	-	1000 gpd/ac	6,500	700 gpd/ac	4,550
Institutional	-	-	1000 gpd/ac	-	700 gpd/ac	-
Park	3.7	-	700 gpd/ac	2,590	500 gpd/ac	1,850
Biological Open Space	7.3	-	0 gpd/ac	-	0 gpd/ac	-
Non-Circulating Road	2.8	-	0 gpd/ac	-	0 gpd/ac	-
Circulating Road	3.0	-	0 gpd/ac	-	0 gpd/ac	-
Common Areas/Ag	1.3	-	0 gpd/ac	-	0 gpd/ac	-
Manufactured Slopes	5.4	-	0 gpd/ac	-	0 gpd/ac	-
Total	60.3	172		30,665		21,940
Total, afy				34		25

* Includes EDUs for existing homesites and perimeter parcels.

Phase 5 Lilac Hills Ranch Wastewater Generation						
Land Use	Acres	Units	Peak 24 hr Sewage Generation		Avg 24 hr Sewage/Recycled	
			Factor	gpd	Factor	gpd
Single Family Detached*	-	1	200 gpd/unit	200	150 gpd/unit	150
Single Family Senior	46.0	297	125 gpd/unit	37,125	90 gpd/unit	26,730
Single Family Attached	-	-	180 gpd/unit	-	130 gpd/unit	-
Commercial/Mixed Use	0.4	-	1900 gpd/ac	760	1340 gpd/ac	536
Water Reclamation	-	-	1000 gpd/ac	-	700 gpd/ac	-
Recycled Facility/Trail Head	-	-	1000 gpd/ac	-	700 gpd/ac	-
Detention Basin	0.6	-	0 gpd/ac	-	0 gpd/ac	-
School	-	-	1000 gpd/ac	-	700 gpd/ac	-
Private Recreation	-	-	1000 gpd/ac	-	700 gpd/ac	-
Group Residential/Care	-	-	1000 gpd/ac	-	700 gpd/ac	-
Institutional	10.7	-	1000 gpd/ac	10,700	700 gpd/ac	7,490
Park	2.1	-	700 gpd/ac	1,470	500 gpd/ac	1,050
Biological Open Space	19.1	-	0 gpd/ac	-	0 gpd/ac	-
Non-Circulating Road	13.0	-	0 gpd/ac	-	0 gpd/ac	-
Circulating Road	4.6	-	0 gpd/ac	-	0 gpd/ac	-
Common Areas/Ag	9.7	-	0 gpd/ac	-	0 gpd/ac	-
Manufactured Slopes	9.0	-	0 gpd/ac	-	0 gpd/ac	-
Total	115.2	298		50,255		35,956
Total, afy				56		40

* Includes EDUs for existing homesites and perimeter parcels.

APPENDIX B

EXISTING HOMESITES AND PERIMETER PARCELS

**TABLE 1
LILAC HILLS RANCH COMMUNITY**

Land Use	Planning Areas	Net Acreage	Dwelling Units/Square Feet (SF)	Zoning
Single-Family Detached	SFD 1-8	165.4	903	RU
Single-Family Detached - Senior Citizen Community (Age-Restricted Units)	SFS 1-6	75.9	468	RU
Single-Family Attached	SFA 1-3	7.9	164	C34
Group Residential/Care (200 beds)	GR	6.5	N/A	RU
Commercial and Mixed-Use	C1-5	14.1	161/ 130,000 sf	C34
Country Inn	C1	1.2	50	C34
Senior Center	P11	3.3	N/A	RU
K-8 School Site	S	12.0	N/A	RU
Institutional Use	I	10.7	N/A	RU
Public Park	P10	12.0	N/A	RU
Private Parks	P 1-9 and within the Senior Citizen Neighborhood P-12 – 15	11.8	N/A	RU
Private Recreation	PR	2.0	N/A	C34
Biological Open Space	OS	102.7	N/A	RU
Common Areas and	--	18.8	N/A	RU
Manufactured Slopes	--	75.2	N/A	RU
Roads	--	83.3	N/A	RU
Water Reclamation Facility	WR	2.4	N/A	RU
Recycling Facility/Trail Head/Staging Area	RF	0.6	N/A	C34
Detention Basins	DB	5.5	N/A	RU
SUBTOTAL		608	1,746	
Existing Dwelling Units to Remain				
APN	Address	Acreage	EDU	Zoning
128-280-27	9151 W. Lilac Rd.	-	1	SR-4
128-290-07	9153 W. Lilac Rd.	-	1	SR-4
128-440-02	32444 Birdsong Dr	-	1	SR-4
128-290-74	32236 Shirey Rd.	-	1	SR-10
128-280-42	9007 West Lilac Road	-	1	SR-4
128-290-69	9419 West Lilac Road	-	1	SR-4
128-440-14	9553 Lilac Walk	-	1	SR-4
128-440-06	9383 West Lilac Road	-	1	SR-4
128-280-37	9307 West Lilac Road	-	1	SR-4
128-440-05	9381 West Lilac Road	-	1	SR-4
128-440-22	9435 West Lilac Road	-	1	SR-4
128-280-10	9167 West Lilac Road	-	1	SR-4
127-072-38	8709 West Lilac Road	-	1	SR-10
128-290-09	9431 West Lilac Road	-	1	SR-4
129-010-68	9883 West Lilac Road	-	1	SR-4
129-300-09	00000 Rodriguez Road	-	1	SR-4
SUBTOTAL EXISTING HOMESITES	-	-	16	
TOTAL	-	608	1,762	

SR-4 is 1 unit per 4 acres, SR-10 is 1 units per 10 acres

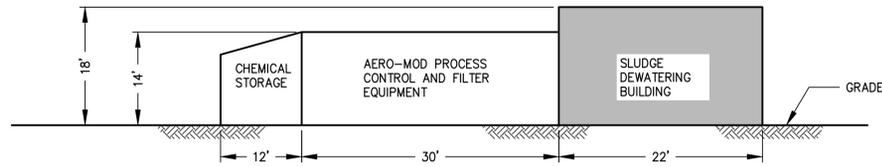
**TABLE 2
EXISTING PARCELS WITHIN PROJECT PERIMETER**

APN	Owner	Acreage	EDU	Zoning
128-440-07	Sheffer	3.27	1	SR-4
128-440-11	Mariscal	5.00	1	SR-4
128-280-56	Salm	5.57	1	SR-4
128-280-28	State of California – CALFIRE	1.90	4	Public
128-280-43	Hernandez	0.56	1	SR-4
128-280-44	Gomez	0.76	1	SR-4
TOTAL	-	17.06	9	-

SR-4 is 1 unit per 4 acres

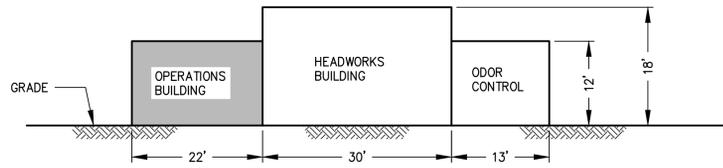
**TABLE 3
LILAC HILLS RANCH SERVICE AREA**

Grouping	Acreage	EDUs
Lilac Hills Ranch Community		
New Development	-	1,746
Existing Homesites to Remain	-	16
Subtotal	608	1,762
Perimeter Parcels	17.06	9
TOTAL	625.06	1,771



PROCESS CONTROL AND DEWATERING BUILDING

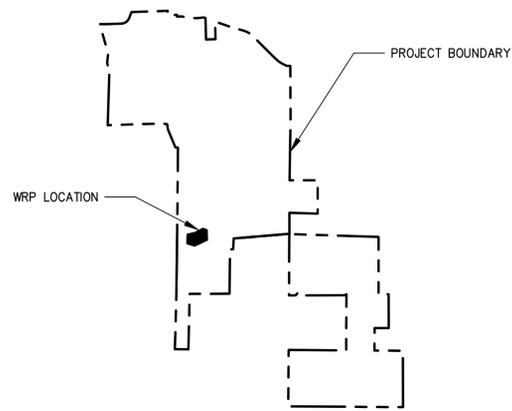
NOT TO SCALE



OPERATIONS/HEADWORKS/ODOR CONTROL BUILDING

NOT TO SCALE

NOT NEEDED FOR SCALPING PLANT

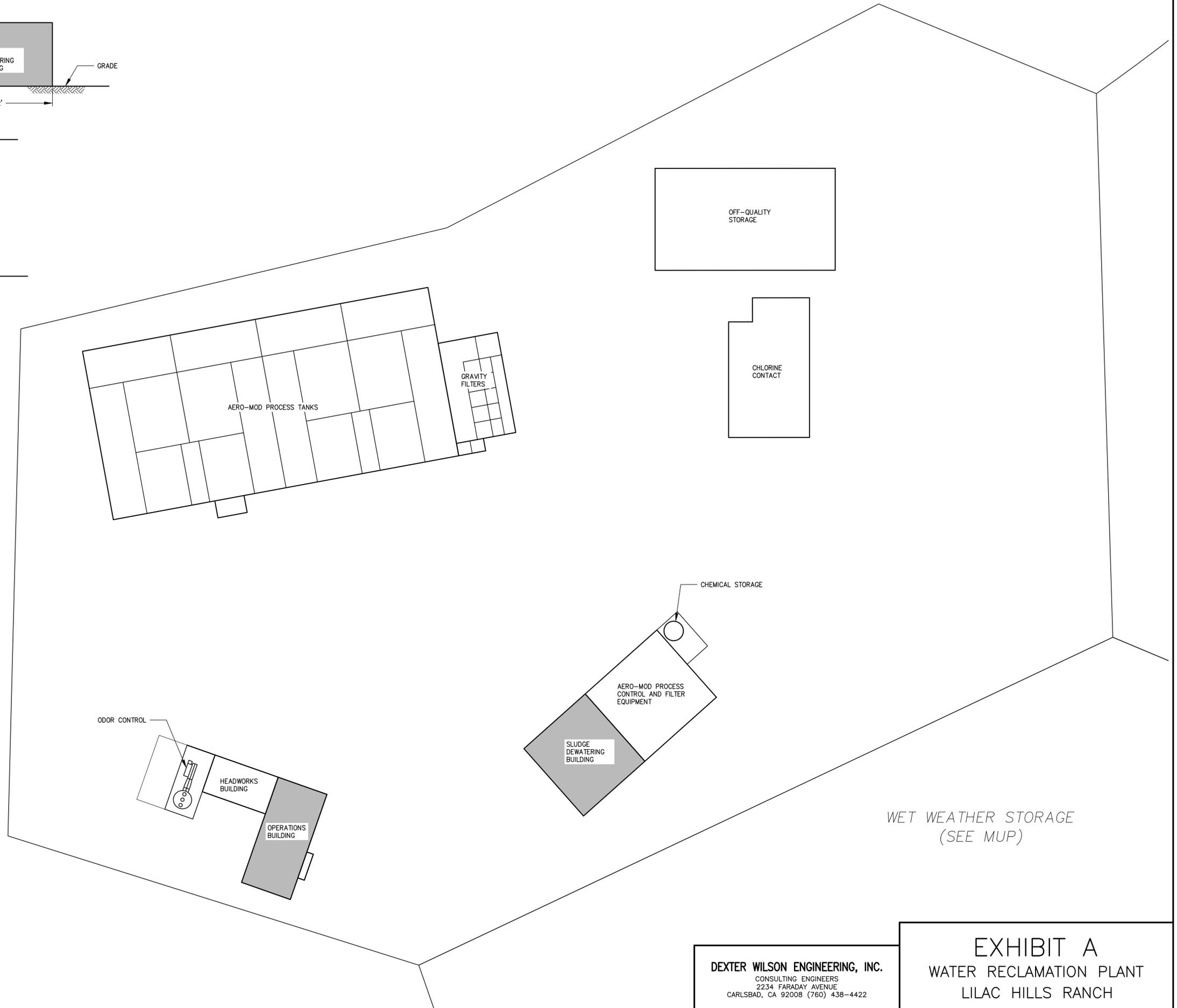


SITE LOCATION MAP

NOT TO SCALE



SCALE: 1" = 20'



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EXHIBIT A
 WATER RECLAMATION PLANT
 LILAC HILLS RANCH