6.0 UTILITIES PLAN

6.1 OVERVIEW OF UTILITIES PLAN

This section of the Valiano Specific Plan addresses the utility systems required to serve the Plan area. Each component of the utility system is designed to ensure adequate infrastructure capacity to serve demand from all land uses at buildout of the Valiano Specific Plan. The following Plan area utilities are discussed in detail below: water, wastewater, stormwater drainage and detention, electricity and natural gas. **Table 6-1** identifies the utility providers for the Plan area.

Table 6-1. Utility Providers

Utility	Provider
Water	Rincon del Diablo Municipal Water District
Sewer	San Diego (County) Sanitation District (preferred option) Valiano Home Owner's Association/Project Owner
Storm Drainage	Valiano Home Owner's Association/Project Owner
Natural Gas	San Diego Gas & Electric
Electricity	San Diego Gas & Electric

6.2 POTABLE WATER SUPPLY

Water service for fire protection and potable residential use will be provided by Rincon del Diablo Municipal Water district. The Plan area is located entirely within the boundaries of the Rincon del Diablo Municipal Water District (Rincon). Rincon serves approximately 30,000 people through nearly 8,000 connections in portions of the cities of Escondido, San Marcos and San Diego.

Specifically, the Plan area will be served by the Improvement District 1 South (ID 1) water system. ID-1 South includes existing development generally south of State Route 78 and west of Interstate 15. The San Diego County Water Authority SDCWA is the sole supplier of water to the ID 1 service area via two connections to the First Aqueduct, near the Hubbard Hill area to the northeast of the Project.

The Plan area is located to the west of the District's current service area and will be served by the 959 Pressure Zone in this area. Potable water service for the Plan area will be primarily provided by connections to existing 14-inch water main along the southern boundary of the Plan area, near Country Club Lane. Secondary sources of water supply are required for the project and a new 12-inch main is recommended to Eden Valley Lane and the backbone 16-inch to the north at Hill Valley Drive so it can be

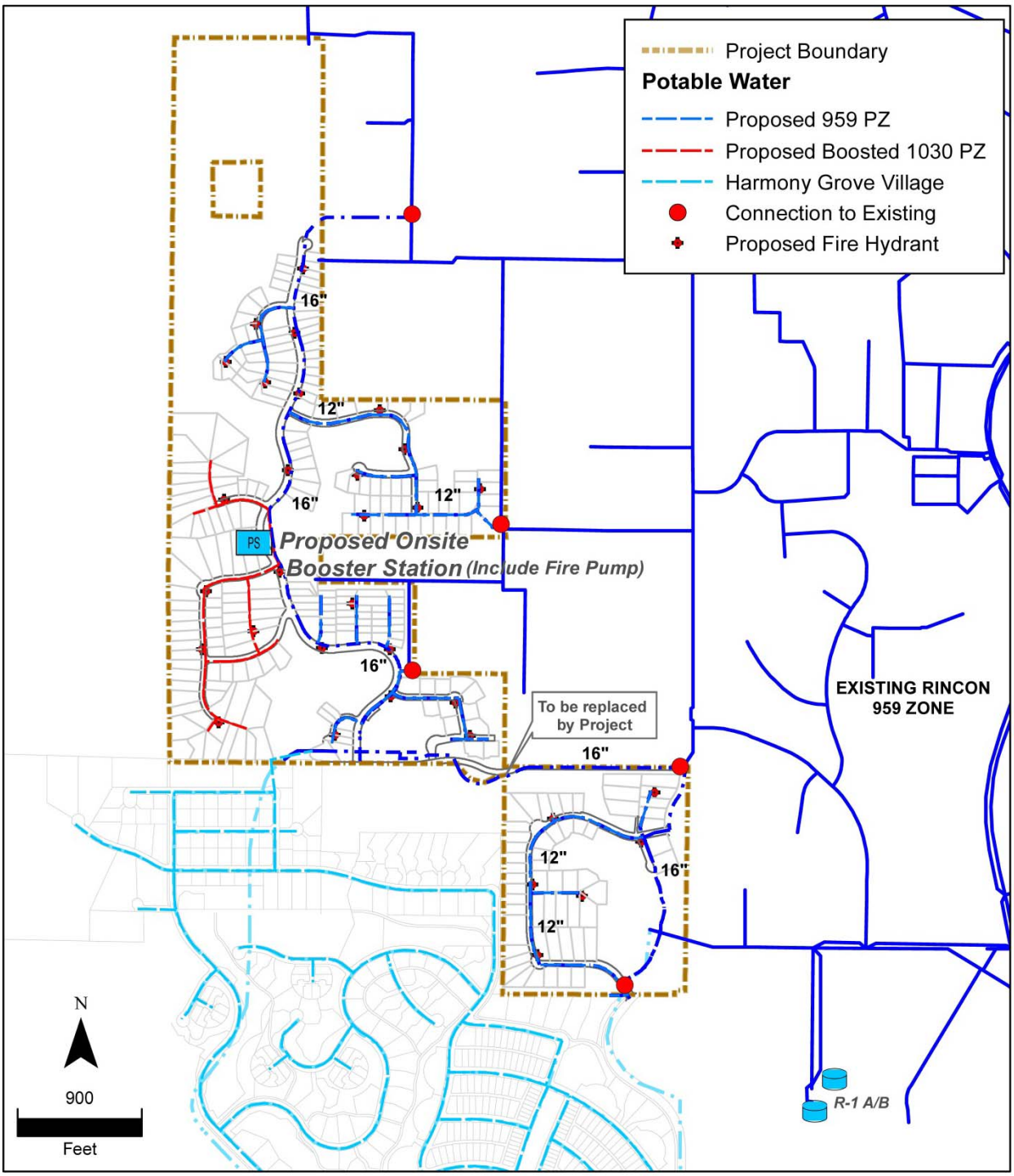
connected in the future to the District's planned reservoir and transmission project. **Figure 6-1** depicts the proposed potable water infrastructure concept.

The 959 Pressure Zone can generally serve lots at elevations of 800 feet or lower; lots with higher elevations may require boosted pressures to meet peak domestic demands and fire flows while maintaining residual pressures in accordance with the District's criteria. A water system analysis will be performed by the District to determine the extent of onsite and any offsite water system requirements. The District has updated its Water Master Plan (June 2014), which identifies facility improvements, potable service extensions, and future capital improvement projects. As part of the Water Master Plan an expansion of the District's recycled water system is also presented, that includes the extension of a recycled water system to the Valiano Project.

Water demand factors and total water demand for the project vary by the type of proposed land use. **Table 6-2** summarizes the anticipated potable water demand for domestic use within the Valiano Specific Plan.

Table 6-2. Potable Water Demand Criteria

Site	Units/Acres	Unit Demand (gpd/unit)	Average Demand		Max Day Demand		Peak Hour Demand
			(gpd)	(gpm)	(gpd)	(gpm)	(gpm)
Condominium Residential (Detached)	49	400	19,600	14	50,960	35	55
Single Family Residential	277	510	141,270	98	365,889	254	382
Total	**326**		**160,870**	**112**	**416,849**	**289**	**437**



Source: Atkins

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County of San Diego

Figure 6-1
Potable Water Concept

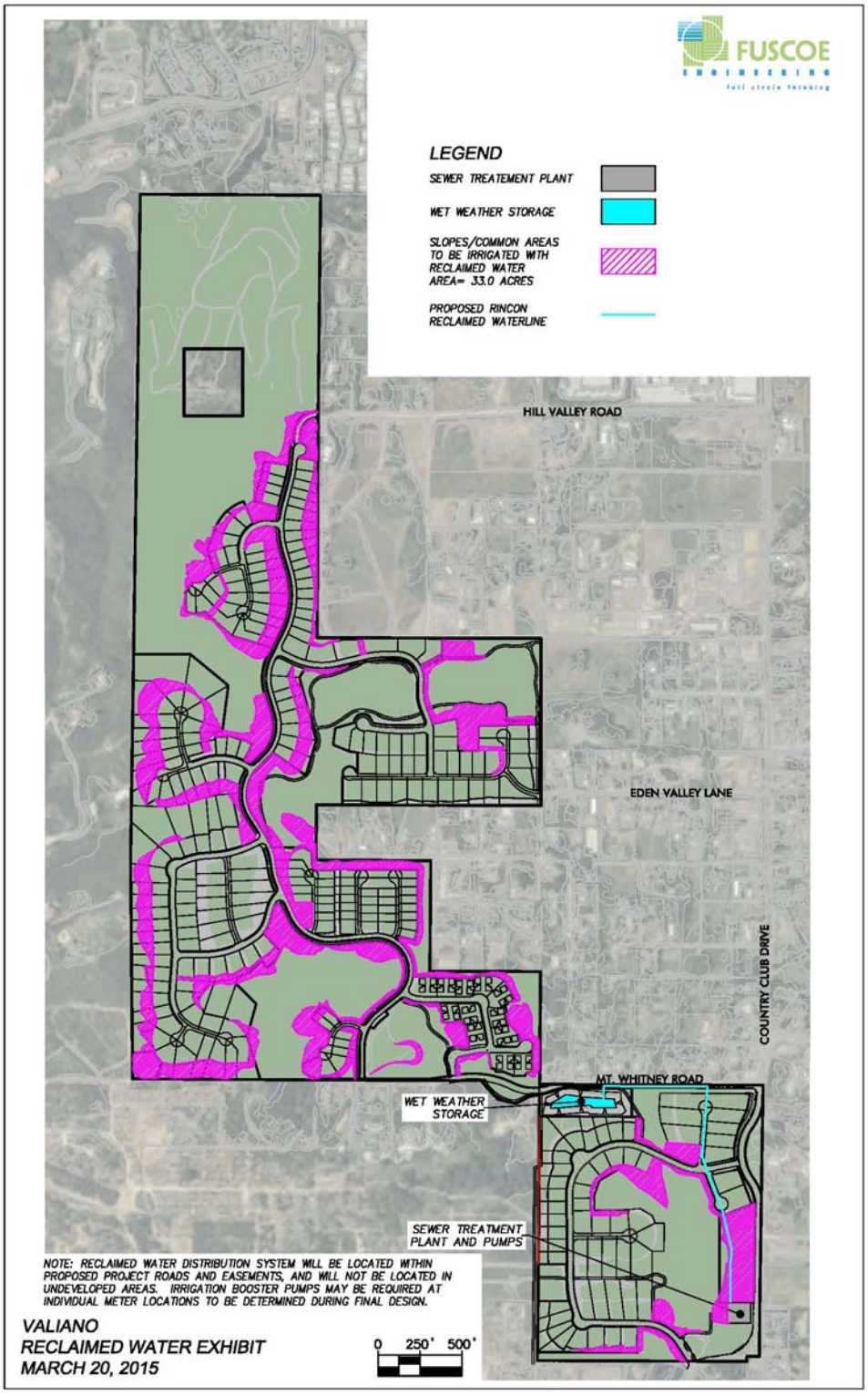
6.3 RECYCLED WATER SUPPLY

The primary source of recycled water for the project will be the on-site wastewater treatment and water reclamation facility (WTWRF) (assumed County owned and operated) located at the southeast corner of the development. The WTWRF will produce recycled water meeting California Title 22 water standards and provide a recycled water supply for on-site irrigation demands. At build-out, the WTWRF is estimated to produce 72,000 gallons per day (gpd) or 50 gallons per minute (gpm) average daily flow.

Parks, open space, parkways and private landscaping within the Plan Area would be irrigated with recycled water. Typical irrigation demands throughout the county range from 2.0 to 3.5 acre-feet per year (AFY) per irrigated acre. The project will develop sufficient on-site irrigation demands to dispose of all effluent generated from the project on an average annual basis. In essence, similar to Harmony Grove Village, the onsite irrigation will serve as a "spray field" for effluent disposal. In concept, approximately 72,000 gpd of irrigation is required. Assuming an average of 3.0 acre-feet per acre per year (2,700 gpd per acre), this equates to about 27 acres of area to be permanently irrigated, which can be developed on site. All preliminary assumptions on yearly irrigation demands for HOA-maintained slopes and common areas will be finalized during future submittals of final landscape construction drawings and must comply with Sections 86.712 (Maximum Applied Water Allowance) and 86.713 (Estimated Total Water Use) of the County's Water Conservation in Landscaping Ordinance.

The proposed recycled water system will originate at the new WTWRF, which will require a dedicated recycled water pump station to serve the distribution system and wet weather storage site. Given the relatively small size of booster pump station, no significant storage is recommended on-site at the WTWRF, since storage will exist in the District's system in the form of the converted existing potable reservoir R-1A (3.1 MG) to recycled water as part of the Harmony Grove Village development. The proposed recycled water pump station would be sized for the maximum day demands and designed to operate in conjunction with the Harmony Grove WRP recycled water pump station. The estimated capacity for the recycled water pump station is about 150 gpm.

The project also includes 6.4 MG of recycled water storage as part of the design of the Valiano WTWRF to satisfy the permit requirements of the San Diego Water Quality Control Board. This study assumes this storage is primarily dedicated to the WTWRF operations during wet weather events. Surplus recycled water generated by the WTWRF during winter months could be stored in the wet weather storage facility for future use by the project. This study recommends that the District coordinate this operation as part of its agreement with the County. Recycled water storage in the wet weather storage



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County of San Diego

Figure 6-2
Reclaimed Water

site will likely need to be retreated or filtered at the WTWRF and this would be properly designed into the WTWRF.

Figure 6-2 presents the proposed recycled water system to serve the proposed irrigated areas and to achieve the minimum 27 acres of irrigated area.

6.4 WASTEWATER

The existing parcels within this Specific Plan Area either have no dwelling units, or are served by existing septic systems. The proposed development will generally be served by a system of public sewer mains and a public treatment facility to be located at the southeasterly corner of the project. **Figure 6-3** shows the proposed wastewater infrastructure for the Plan area. Peak onsite wastewater flows at full buildout of the Plan area will be approximately 286,380 gallons per day (gpd) or 200 gallons per minute (gpm) under peak hour weather condition.

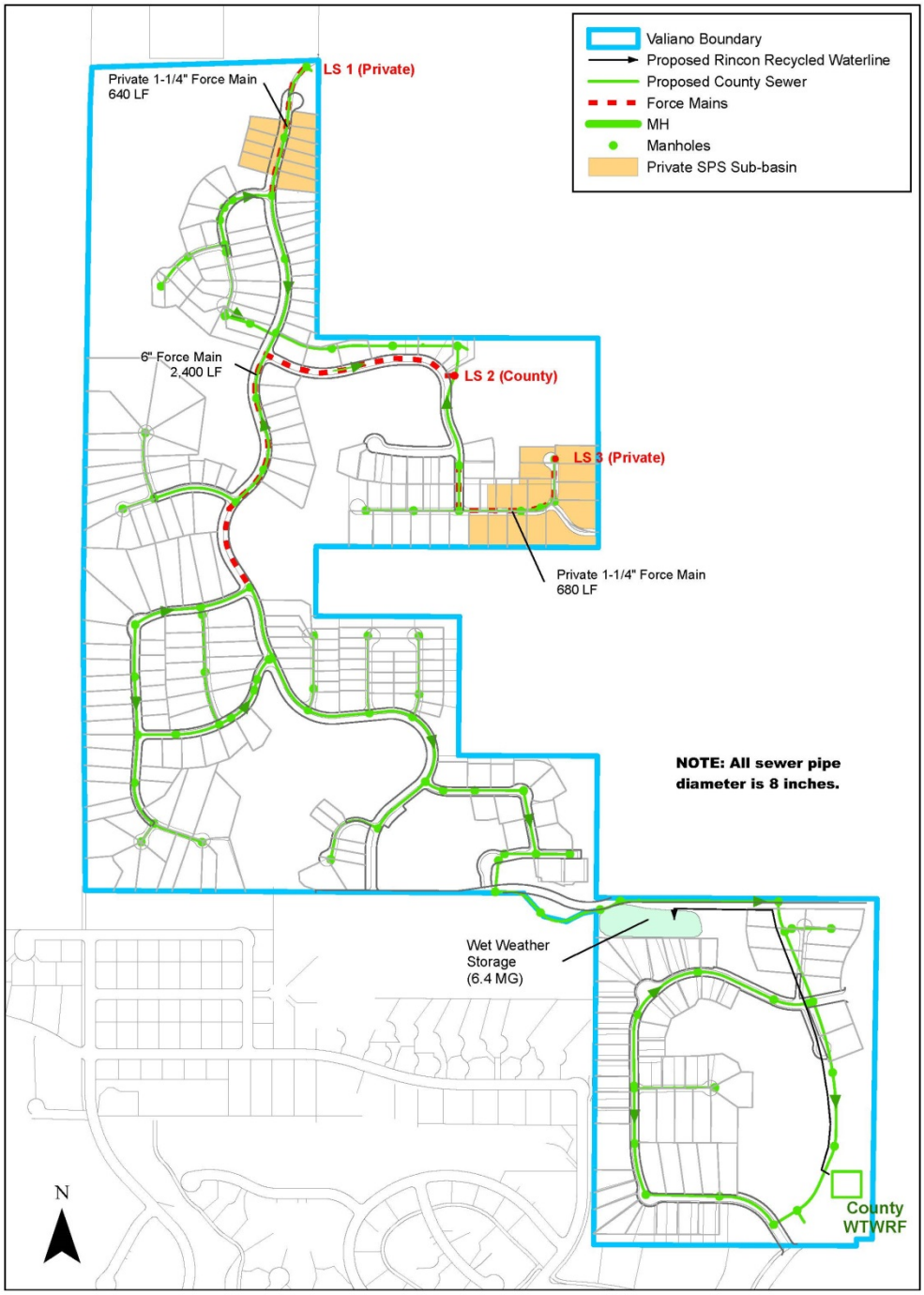
Six scenarios are under consideration for wastewater treatment and disposal for the project site. They are:

- Onsite Water treatment and water reclamation facility (WTWRF) owned and operated by the County
- A re-rated Harmony Grove Water Reclamation Plan (HGWRP) based on actual lower flows and wastewater loading from the proposed Harmony Grove development resulting in excess wastewater treatment plant capacity
- Out-of-service agreement between the County and Escondido for sewer treatment and disposal
- Acquisition of excess sewer capacity by the County from the City of San Diego in the Escondido sewer treatment plant
- Annexation to Vallecitos Water District for sewer service only
- Activation of Rincon MWD latent powers for sewer service and development of new sewer system

A new County WTWRF is the preferred sewer option, although depending on regulatory and institutional changes other sewer options could be implemented. Each of these options is explained in further detail, below.

6.4.1 Onsite WTWRF Facility

A proposed new WTWRF would be located on a 0.4 acre site adjacent to a proposed park site, with a common access driveway at the south end of the park site off Country Club Lane in Neighborhood 5. A proposed storm water detention basin is located to the west, and an existing equestrian area is immediately to the south. The facility would use Aero-mod processing and would be owned and operated by the County of San Diego. Wastewater quality assumptions for development of the 72,000 gpd Aero-Mod WTWRF are based on the wastewater loading rates developed in the Harmony Grove Design Report. Based on the County's comments and review, a similar preliminary design effort would be undertaken for the new WTWRF as part of the design and engineering phase. Wet weather storage would be constructed to meet the Regional Water Quality Control Board's requirement for approximately 90 days of recycled water storage. Therefore, a total of approximately 6.4 million gallons (MG) of storage must be provided. Given the WTWRF site constraints, a wet-weather storage site has been identified on the tentative map, about 1,500 feet to the northwest. An earthen storage basin has been assumed, and its final size would be determined during pre-design of the WTWRF.



Source: Atkins

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Figure 6-3

Proposed On-Site Sewer System

The County as part of the HGWRP design has developed specific design criteria and standards for an "Aero-Mod" WTWRF, a plant process design that is currently being used in the Rancho Santa Fe Community Facilities District. "Aero-Mod" is a company based in Kansas that offers a packaged wastewater treatment plant approach based on the extensive use of "common-wall" construction between basins, performing a version of the extended aeration wastewater treatment process. Extended aeration is an approach to the activated sludge process that relies upon treating the wastewater for an extended period of time (approximately 24-hours on average). Based on the loading and design criteria used in the HGWRP plant design, a smaller version could be constructed to serve the Valiano development. This treatment approach has already gained County approval in the case of the HGWRP. **Figure 6-4** includes a preliminary site lay-out of all required components of an Aero-Mod plant, within the dedicated Plant site of approximately 0.4 acres. A summary of major plant components include:

- **Headworks** providing fine screening of the influent wastewater.

- **Equalization basin** to balance out variations in flow by storing a portion of the peak flows received for treatment in the plant during low-flow periods.

- **Aeration basins and anoxic basins** performing the activated sludge process along with biological nitrogen removal.

- **Clarifier basins** to settle most of the solids out of the wastewater to yield a clarified flow that goes to filters for further turbidity removal.

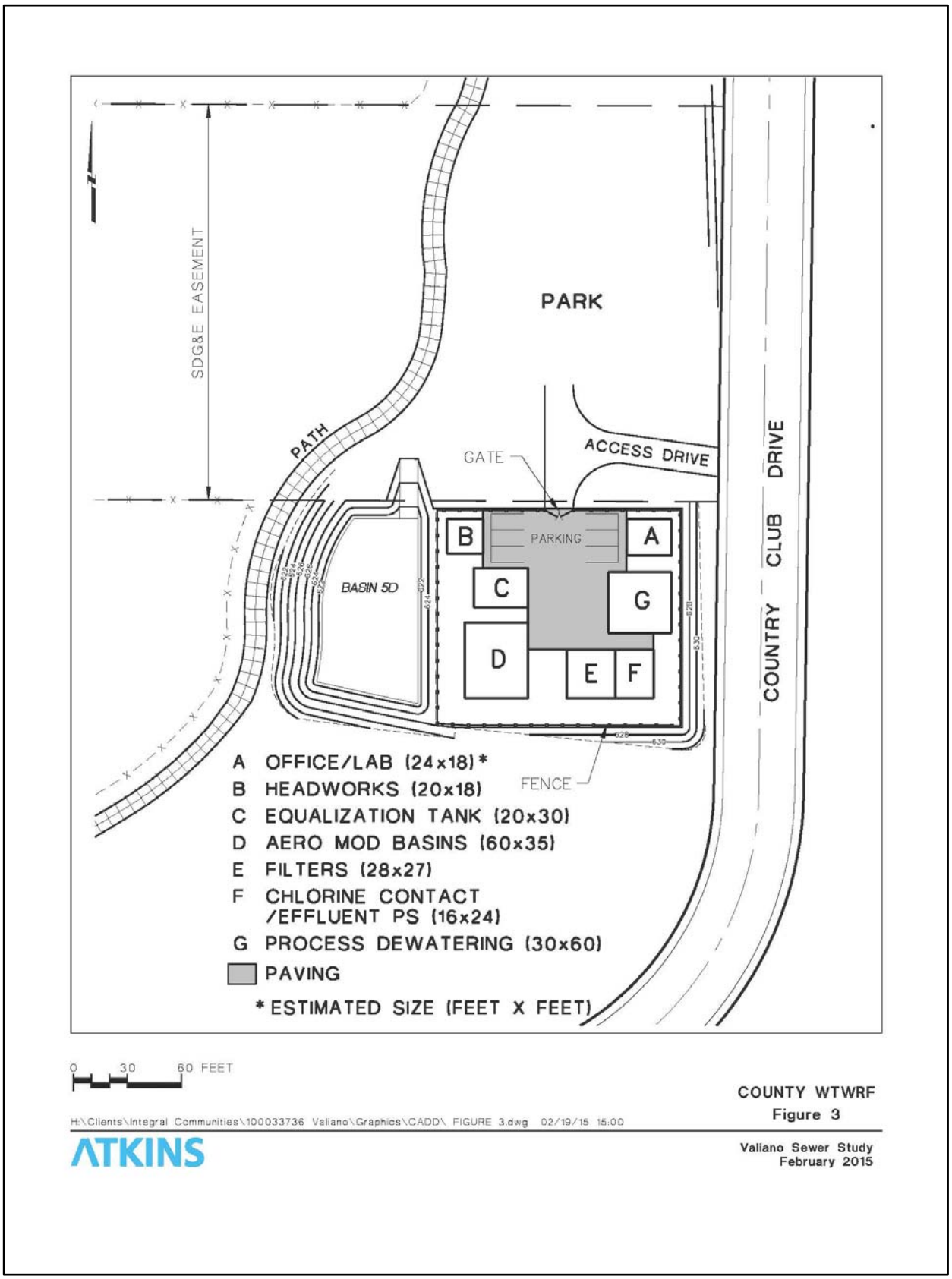

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Figure 6-4

Proposed WTWRF Layout

- **Filters** for further removal of turbidity to produce reclaimed water meeting Title 22 standards for effluent clarity. “Tetra” filters, similar to those found in a drinking water treatment plant would be used at the Valiano WRP.

- **Chlorine contact basins** for disinfection of the reclaimed water by chlorine solution.

- **Residual solids processing**. The Aero-Mod process typically includes digester basins fo**r** further reduction of the settled solids produced by the treatment process. The current design includes handling all solids on site, however, at a plant as small as the Valiano WTWRF it may be more efficient to thicken the solids and transfer them to the HG WRP for further processing, based on the County’s determination of any available processing capacity

- An **operations/laboratory building** providing space for employees to store their personal items, restrooms and showers for employees, some desk space and a small laboratory for use in operational control of the plant, although given the proximity to the HG WRP, the requirements for this building may be minimal.

The architectural design for the WTWRF would be consistent with the rest of the Proposed Project (a small-scale compound reflecting a rural ranch style). The WTWRF buildings, including the control room, would be one-story and no higher than 20 feet. Specific design measures will be required as conditions of the Wastewater Treatment and Water Reclamation Facility (WTWRF) Major Use Permit approval to ensure that park users will not be affected by odors caused by WTWRF operations. Parking for the WTWRF shall not be shared with the public park parking. Under the three off-site sewer options, the on-site housing development would remain the same with the proposed five neighborhoods containing 326 residential units. The onsite Water Treatment and Water Reclamation Facility (WTWRF), approximately 0.4 acre in size, would not be constructed and the site would be used as part of the proposed equestrian center, similar to the previous use. The pump station facilities may also be constructed on the WTWRF site; however the pump station would occupy a smaller footprint. The wet weather storage area, approximately 1.6 acres in size, located in the northern portion of Neighborhood 5, would not be constructed under the connection to VWD facilities off-site sewer option. This area would remain undeveloped and placed in an HOA landscape easement. The other two off-site options would utilize the proposed wet weather storage area for water storage.

6.4.2 Expanded Harmony Grove Water Reclamation Plant (HGWRP) and Service Option

This section describes the merits of potentially expanding capacity of the County's Harmony Grove sewer service area to include the project. Recognizing that is practically impossible to physically expand the HGWRP and influent sewer lift station since they are in construction, there may be opportunities in the future, should average sewer generation rates and assumed wastewater loading be lower than anticipated, that minor modification could be undertaken by the County to re-evaluate treatment process components and re-rate these hydraulically and/or loading wise through an amended permit with the Regional Board for the the HGWRP.

Conveyance to HGWRP

This option assumes the on-site sewer collection system would be constructed and maintained by the County, but instead of treating the wastewater at a new on-site WTWRF, the sewage will be pumped directly to the headworks of the HGWRP, currently under construction. This alternative is depicted in **Figure 6-5**. Approximately 4,500 linear feet of 6-inch force main will be required to convey the sewage to the HGWRP. The force main would be located in existing or proposed County streets, namely Country Club Lane. The Harmony Grove Village development is constructing improvements to Country Club Lane, including sections within Valiano. A new sewer lift station would be located at the on-site WTWRF site, referenced as Lift Station 4 and would be operated and maintained by the County. The lift station will have back-up emergency generator for power failures, have site security, and SCADA system.

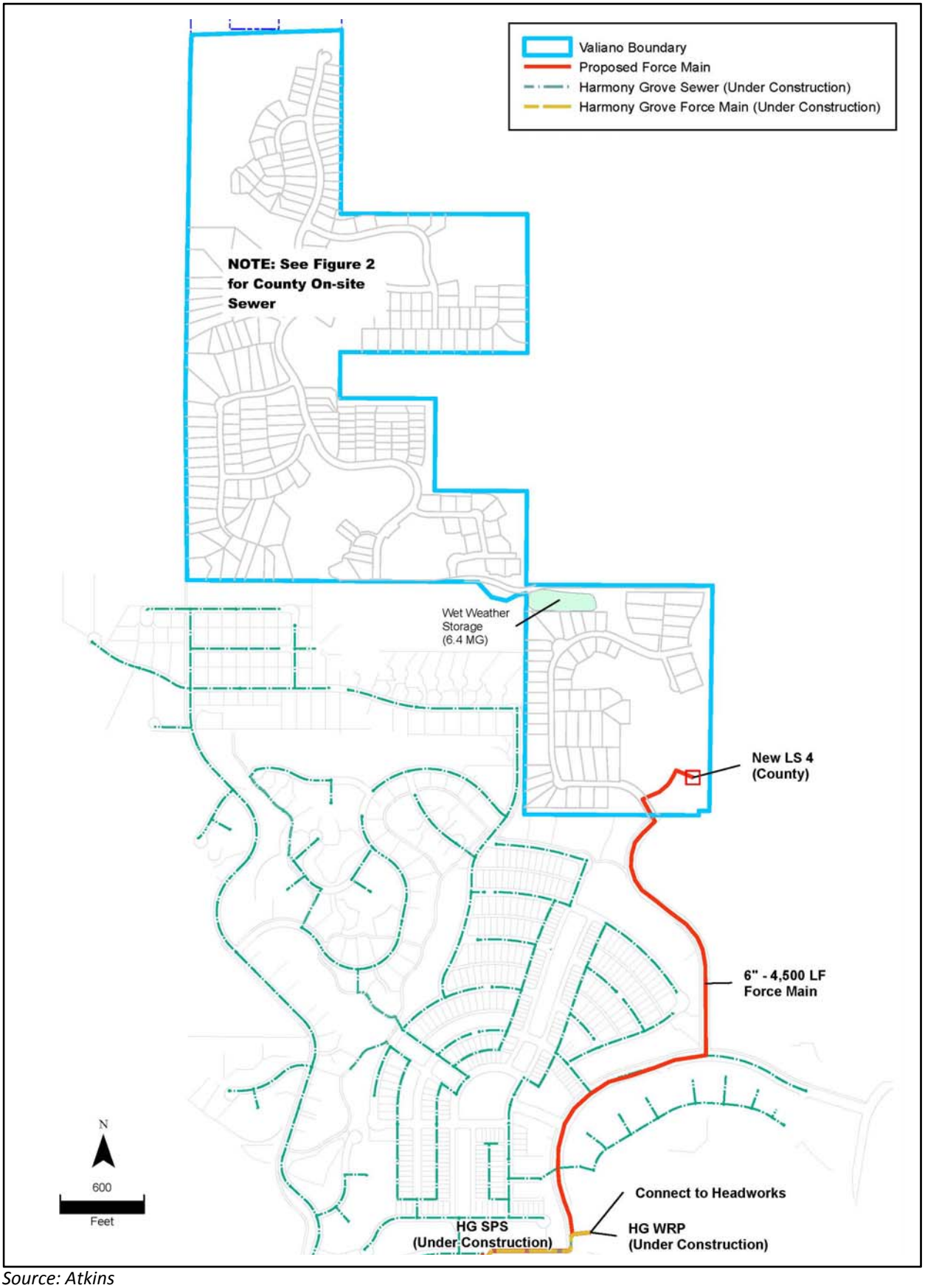
Modification to HGWRP

The HGWRP is currently under construction as a 180,000 gallon per day (gpd) "Aero-Mod" wastewater treatment and water reclamation plant (WRP) that will be owned and operated by the County and only serve the Harmony Grove Village wastewater flows. The best opportunity for sewer service to HGWRP would depend largely on the County experiencing lower flows and reduce wastewater loading during the operation of the Aero-Mod plant, and would re-evaluate the process criteria and capacity to allow more flow to be accepted. In the future, the County, as owners and operators of the plant, could therefore re-analyze increasing connections to the plant. A summary of the possible conditions or changes which may allow more sewer connections include:

- Average sewer flows are 20-30 percent lower than the design flow of 215 gpd/EDU.
- Reduced peaking on the sewer system that allow for more equalization capacity.

- Reduced sewer loading due to lower people per dwelling unit.
- Revisions to plant redundancy criteria to allow use of dedicated standby treatment trains.

This sewer option must be evaluated under the assumption that physically the plant cannot be re-designed at this time and would require changes in assumptions and design criteria once the plant is operating to determine if any opportunity exists to connect to the HGWRP. It should be noted that the on-site wet-weather storage site would be available under this option to meet any increase flows and re-rating at the HGWRP.



Source: Atkins

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Figure 6-5

Expanded HGWRP and Service Option

6.4.3 Out of Service Agreement (Escondido/County)

The City of Escondido owns and operates a wastewater collection, treatment, and disposal system, including the Hale Avenue Resource Recovery Facility (HARRF), a wastewater treatment and recycling plant located approximately 4,200 feet from the Plan area, and currently has excess average dry weather wastewater capacity that can be made available for the project with the recent trends in lower sewer generation rates. Furthermore, Escondido provides sewer service to the Rancho Bernardo area of the City of San Diego, through an out-of service agreement for treatment and disposal. San Diego's sewer flows are reported to be well below agreement capacity.

The Escondido sewer option would include a similar arrangement between the County of San Diego and Escondido for the treatment and disposal of approximately 72,000 gpd. HARRF currently operates on average of about 13 million gallons per day (mgd); Valiano would represent less than 0.6 percent of the total flow. Escondido does experience a peak wet weather capacity constraint on the Escondido land outfall system, which would need to be mitigated. The peak events occur for a very short duration during the rainy season. In consideration for the project's impacts on the Escondido peak wet weather Plant capacity and its land outfall disposal system, the project would provide the wet weather storage facility site for the temporary storage of Title 22 recycled water during peak wet weather storm events. The Escondido sewer option would therefore be based on the following:

- County will own and maintain the on-site gravity system within Valiano.

- A new LS 12 would be constructed at the Valiano WTWRF site and would require approximately 2,700 LF of 12-inch sewer main in Country Club Drive between the abandoned and the new LS 12.

- The Valiano flow plus the Escondido flow (existing connections within the sub-basin for existing LS 12) would be conveyed approximately 1,600 linear feet in an 8-inch force main to the existing gravity main in Kauna Loa Drive.

- The 72,000 gpd of sewage from Valiano would be treated at HARRF.

- Escondido would own the wet weather storage facility at the Valiano site and approximately 950 LF of 12-inch sewer to the gravity main in Country Club Drive.

- Escondido would own the new LS 12, gravity main between the abandoned LS12 and new LS 12 upstream from the abandoned LS 12, the new 8-inch force main, and gravity main between the wet weather storage and the main in Country Club Drive.

- This lift station would be a duplex submersible type with wet well level control, emergency generator, security fencing, flow meter, and SCADA. This system is depicted in **Figure 6-6**.

6.4.4 Sewer Capacity Agreement (Escondido via San Diego and the County)

This scenario is similar to the alternative described in Section 6.4.3, except that the sewer treatment capacity required at Escondido's HAARF facility would be acquired through the City of San Diego by the County of San Diego. The City of San Diego has the treatment and disposal rights to 5.0 MGD of sewer capacity at HAARF to provide sewer service to the north Rancho Bernardo community through an existing sewer agreement. In addition, the City of San Diego has the first rights to an additional 0.3 mgd of treatment capacity at HAARF, if they choose to purchase. The Rancho Bernardo community is essentially a build-out and existing sewer flows to Escondido are reported to be approximately half of the actual agreement flows on an annual basis. In summary, the City of San Diego has excess sewer capacity at HAARF that could be made available to the County of San Diego. The City of San Diego has a similar arrangement with the City of Poway to convey sewer flows to Escondido.

There are two potential scenarios based on the current sewer agreement between San Diego and Escondido:

- County to acquire 72,000 gpd from San Diego via a transportation agreement for treatment and disposal at HAARF. No change would be made in San Diego's agreement with Escondido.

- San Diego would relinquish first rights on its 0.30 mgd excess capacity back to Escondido, who would then sale this capacity to the County. This would like require a modification to the San Diego agreement with Escondido.

Under this scenario all infrastructure projects described in Section 6.4.3 would remain the same to convey Valiano flows to HARRF.

6.4.5 Annexation to VWD

Under this scenario, the on-site sewer system is assumed to be owned and operated by VWD. The on-site gravity system will be modified slightly as shown on **Figure 6-7**. In lieu of the Valiano WTWRF, a new VWD lift station (LS 4) will be required to convey a large portion of the project sewer flows north to LS 1

which will convey the flows to the existing VWD gravity sewer as shown in **Figure 6-8**. Note that LS 2 will also have a different discharge point. The private lift station LS 3 will remain unchanged from previous alternatives. LS 1 will be a much larger lift station than in the previous alternatives because it will convey all project flows through approximately 3,400 linear feet of 6-inch force main to the existing VWD 8-inch gravity main located in the La Moree Mobile Home Estates. It is assumed that the three larger lift stations (LS 1, LS 2, and LS 4) will be owned and operated by Vallecitos WD. LS 1 and LS 2 are assumed to be a duplex submersible type with wet well level control, emergency generator, security fencing, flow meter, and SCADA. LS 3 will be package pump station with security fencing, flow meter, and an automatic transfer switch for a portable generator. LS 4 will be a progressive cavity pump lift station due to the high head. The lift station will also have an upstream grinder, emergency generator, security fencing, flow meter, and Supervisory Control and Data Acquisition (SCADA) system.

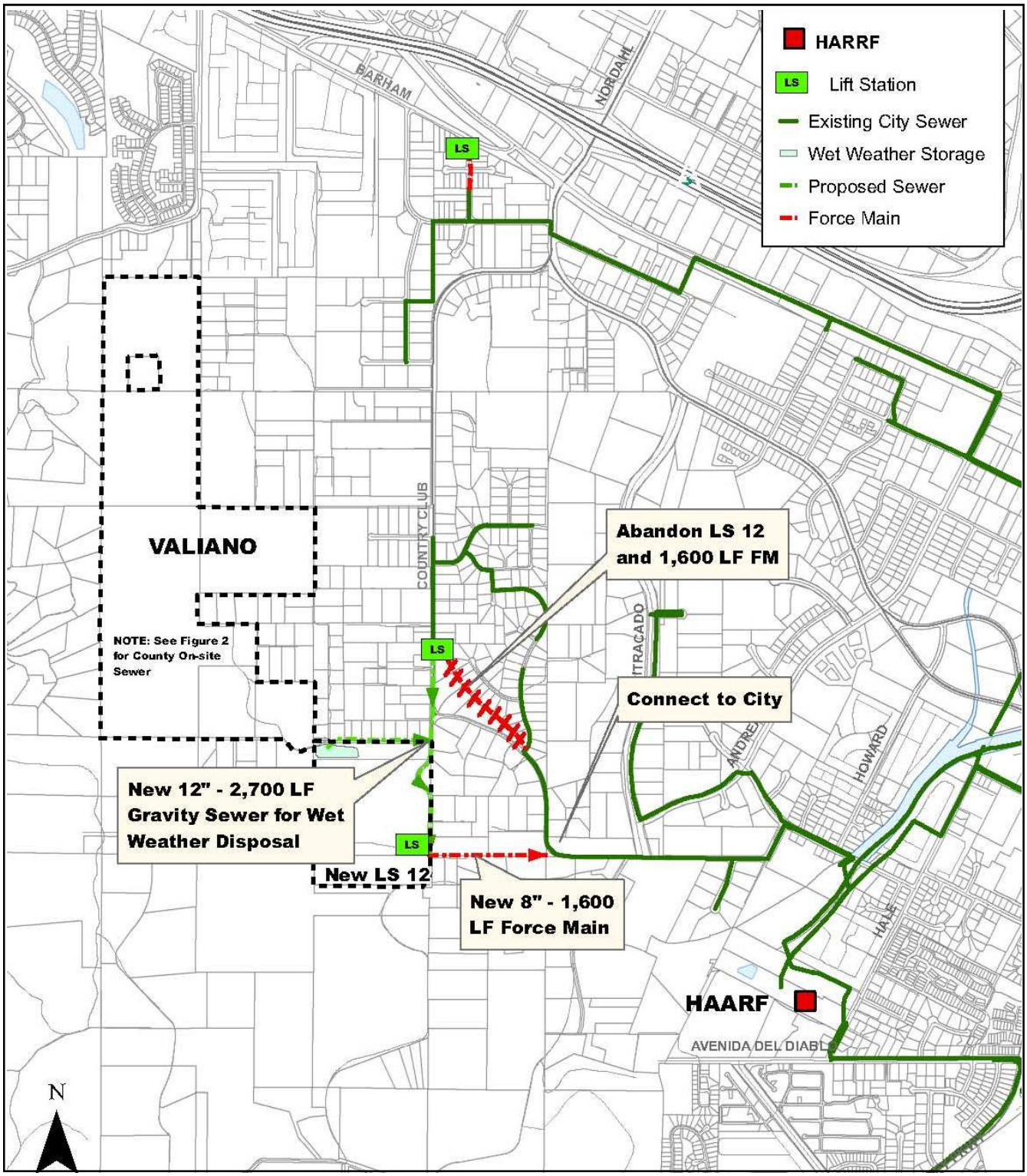
Based on a preliminary review of VWD's Water, Wastewater and Recycled Water Master Plan, this sewer option will potentially require upgrades to the VWD sewer system as follows:

- Approximately 3,200 linear feet of pipeline through the mobile home park and on Barham Drive (from 8-inch to 12-inch)
- Approximately 500 linear feet of pipeline under SR-78 from Barham Drive to Rancheros Drive (from 8-inch to 12-inch)

Additional offsite facilities were reviewed that may require upgrading have been identified in the VWD Masterplan and may be required as a condition of development by VWD or contribution through annexation and connection fees. The VWD Water, Wastewater, and Recycled Water Master Plan Final Program EIR includes the following capital improvement projects:

- SP2 – replace 3,200 linear feet of 21-inch sewer with 39-inch sewer
- SP-11 – replace 1,400 linear feet of 21-inch sewer with 36-inch, and install 800 linear feet of 8-inch sewer
- SP-12 – replace 2,000 linear feet of 21-inch sewer with 36-inch
- Possible improvements to the Land Outfall

As part of the annexation process, VWD would review the project and sphere of influence areas to determine the potential impacts.



Source: Atkins

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Figure 6-6

Escondido Sewer Service Alternative

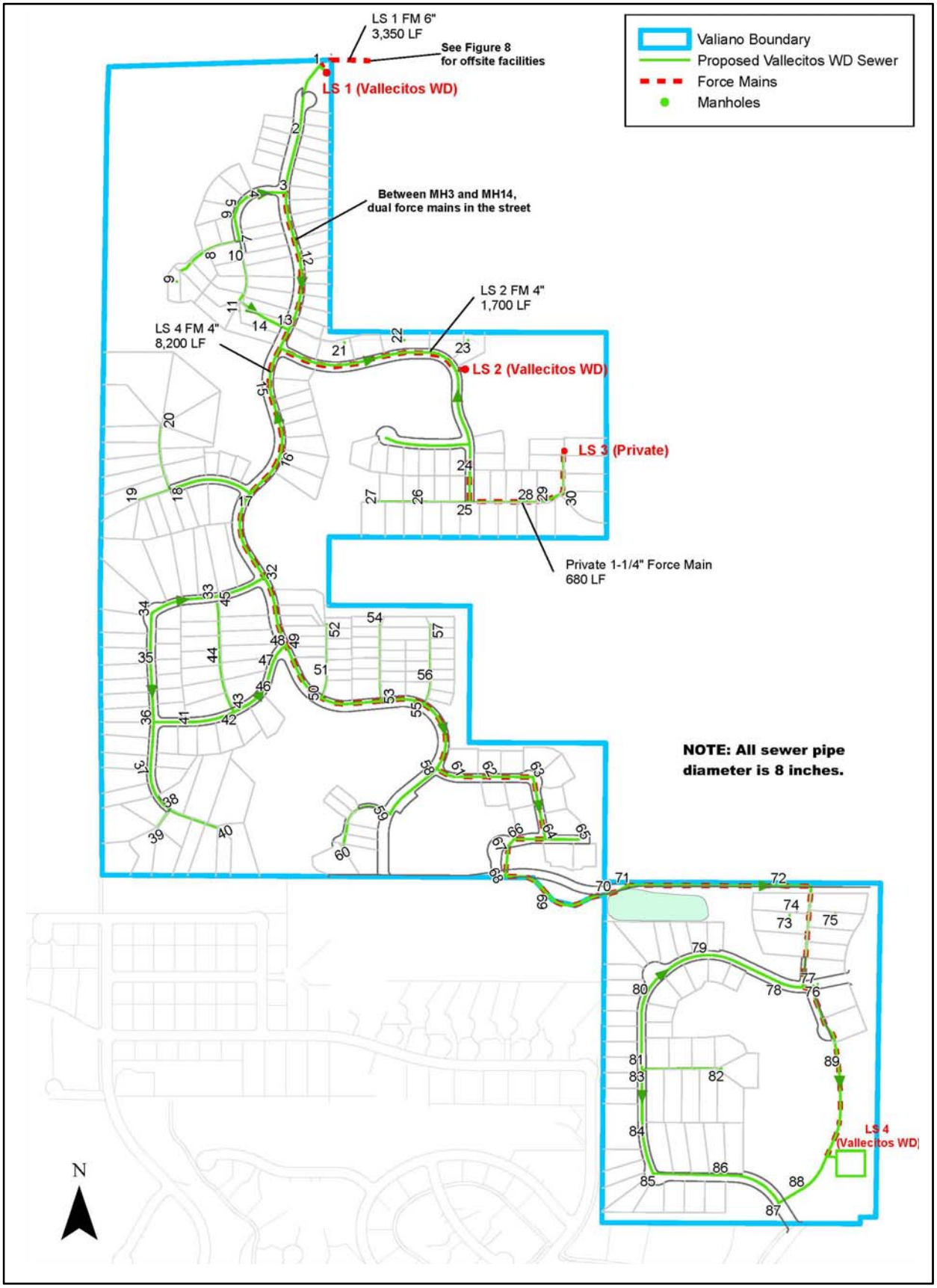

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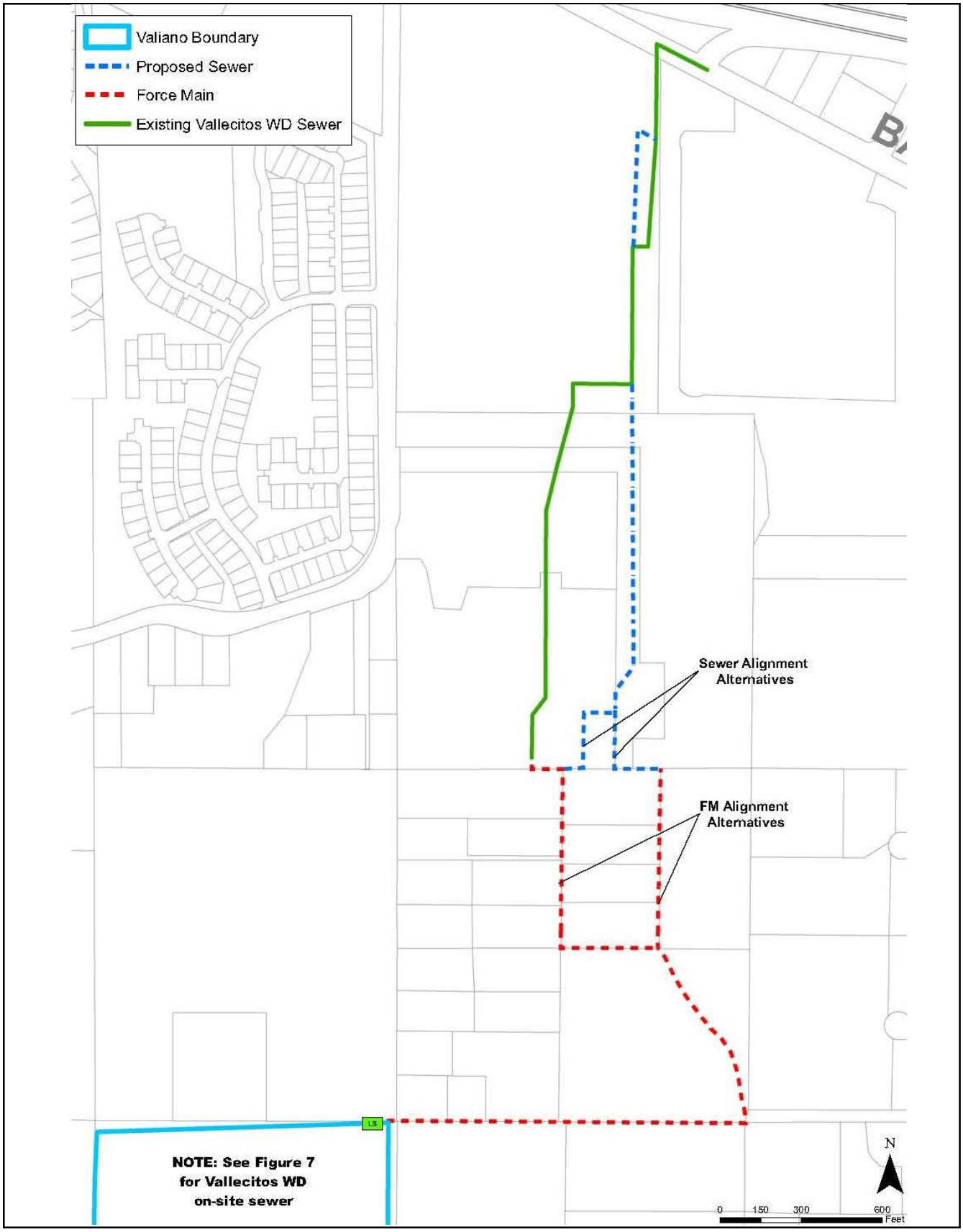
Figure 6-7

VWD Option – Onsite System



Source: Atkins

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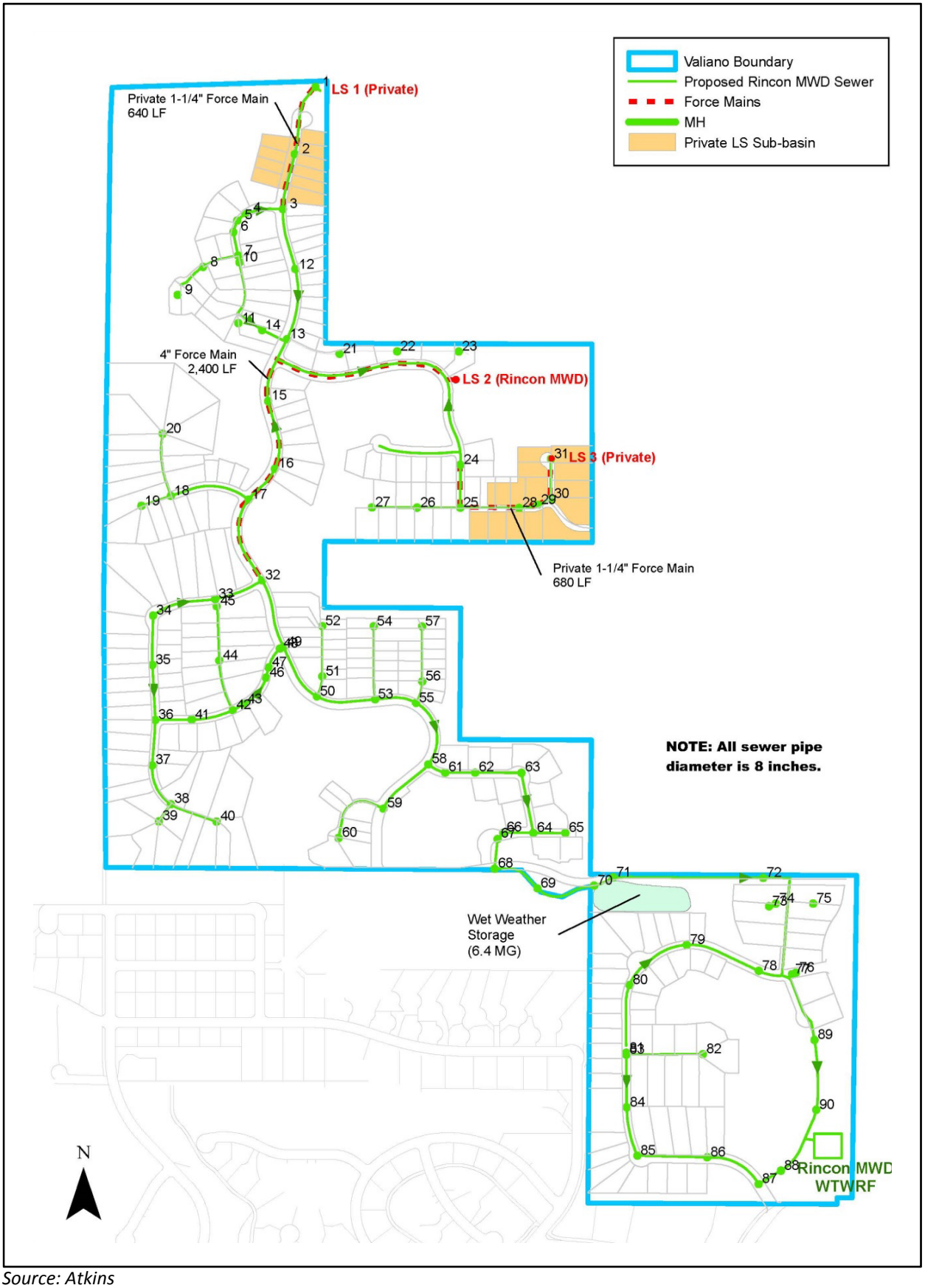
Figure 6-8

VWD Option—Offsite Improvements

6.4.6 Activation of Rincon MWD Latent Powers

The Plan area is located within Rincon MWD sphere of influence for water and recycled water service. Although Rincon MWD does not currently provide sewer service in the project area, there have been previous discussions on sewer service. Moreover, Rincon MWD does maintain latent powers to provide sewer service, and could potentially provide sewer service to unincorporated areas within Rincon MWD. Activation of sewer latent powers would require considerable study and eventual action by the Board of Directors of Rincon MWD and also require a Municipal Service Review by LAFCO.

Under this option, the previously proposed County on-site sewer collection system and the proposed WTWRF would instead be owned and operated by Rincon MWD and is depicted in **Figure 6-9**. One treatment recommendation for this sewer option would be for Rincon MWD to consider the construction of a membrane bio-reactor (MBR) wastewater treatment plant, which could be constructed at a lower capital cost, produce high quality recycled water, and fit better on the small treatment plant site. One of the advantages of the MBR system would be to design the site for additional expansions should additional areas be served sewer by Rincon MWD, especially areas of potentially failing septic tanks. The Title 22 recycled water produced by the Valiano WTWRF (MBR) will have to be fully disposed of on-site through dedicated landscape irrigation and will also require the wet weather storage site.



Source: Atkins

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County of San Diego

Figure 6-9

Rincon MWD Option

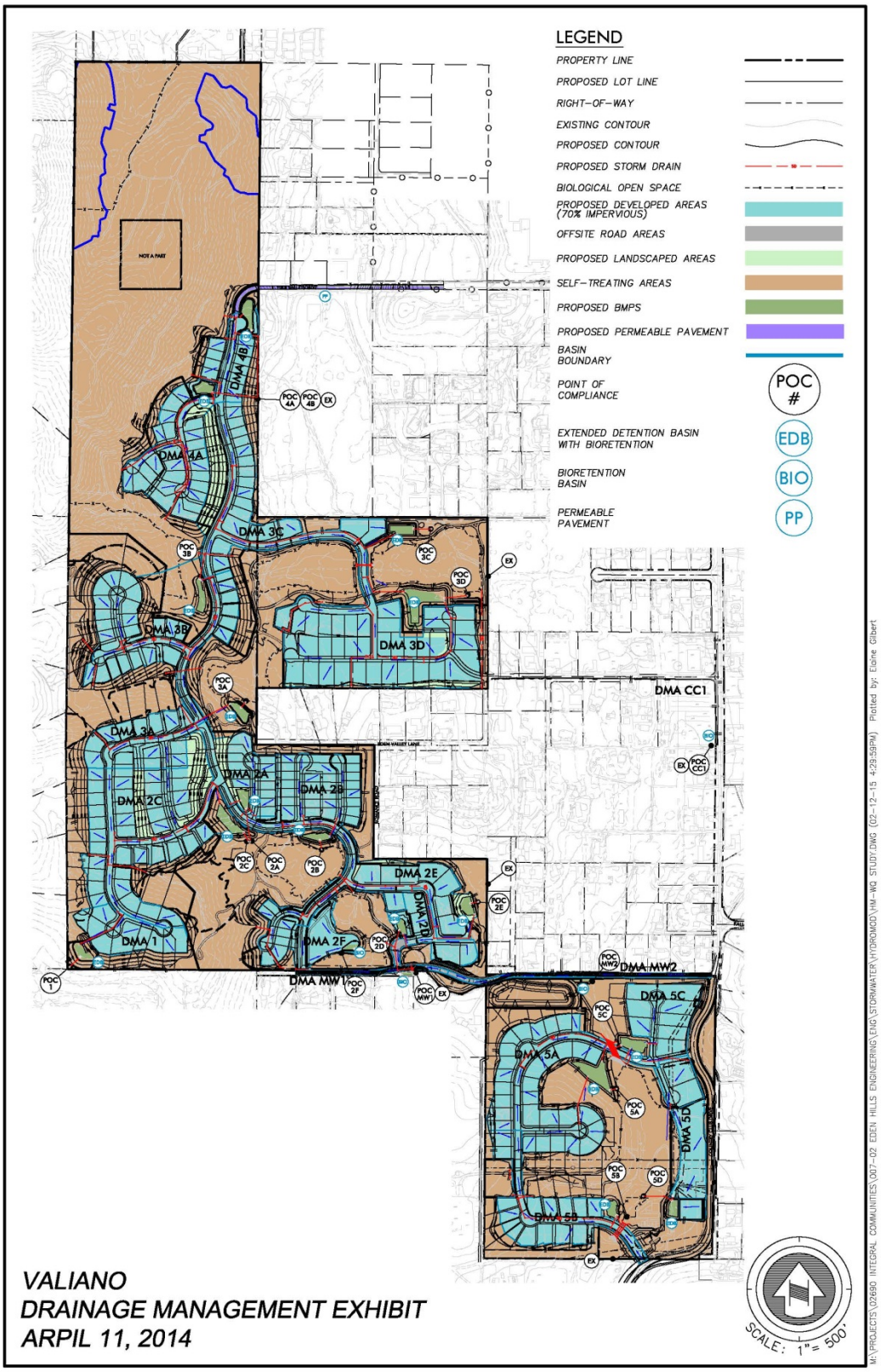
6.5 STORMWATER MANAGEMENT

Due to the hillside nature of the site, runoff from the project site splits into several major drainage basins. The drainage report for the Valiano Specific Plan identifies four major drainages (A through D) that are further divided into Drainage Management Area (DMAs). The drainage management strategy for the project uses multifunction Integrated Management Practice (IMP) to provide water quality treatment, hydromodificaiton mitigation and peak detention for the developed portions of the site. **Figure 6-10** depicts the DMA and management strategies.

Extended detention basins are the primary form of stormwater management for the Plan area because of their small footprint and their ability to function for peak storm detention. Depending on the space available and the detention requirements, the detention basins will have enough depth to meet the County regulations.

Maintenance of the proposed IMP (per the San Diego County 2nd maintenance category), including the extended detention basins and the bioretention basins will be by the Valiano Homeowner's Association (HOA). Until the formation of the HOA, the Eden Hills Project Owner, LLC or the current owner of the property will be responsible for the maintenance. A maintenance agreement shall be recorded with the County of San Diego, clarifying maintenance roles and responsibilities. Maintenance for the extended detention basins requires regular landscape maintenance with monthly inspections during the rainy season to remove sediment, trash and debris and ensure that orifices, overflow inlets and storm drain pipes remain clear of obstructions. Maintenance for the bioretention basins is regular landscape maintenance with semiannual inspections.

Vegetation within the bioretention basins should be left to a minimum six inches height to facilitate pollutant filtrations and removal within the area. Water within the bioretention basins should not be allowed to pond (should drain completely within 72 hours). If ponding is occurring, minor re-grading of the basin may be required. Additionally, soils in the basin may need to be replaced as needed.



Source: Fuscoe Engineering

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Figure 6-10
Drainage Management

6.6 DRY UTILITIES

6.6.1 Electricity

There are existing San Diego Gas & Electric (SDG&E) overhead 12 KV distribution lines within the Plan area. This system will be converted to underground, removed or rearranged to prepare the Plan area for development. There is also an SDG&E transmission easement along the southern portion of the Plan area. Within this easement there are two 230 KV transmission lines, one 138 KV transmission line, one 69 KV transmission line, and one 12 KV distribution circuit. No development is proposed within the easement area and permanent drivable access to these SDGE facilities will be maintained.

SDG&E will provide the electrical distribution system necessary to serve the Plan area. Currently SDG&E facilities are located underground to service the project, the routing of new underground systems within the site to locations requested on each lot.

The developers will be required to hire a contractor to provide all trenching, backfill, substructures, conduits and transformer pads necessary for the work. This may include extra facilities deemed necessary by SDG&E for system reliability. SDG&E will install the necessary cables; connectors and pad mounted equipment as required. All overhead and underground lines in conflict with improvements will need to be converted to underground, removed or rearranged as required. Facilities may also be available from the future Harmony Grove Village site depending on scheduling of project commencement.

6.6.2 Gas

SDG&E maintains a gas distribution system within La Moree Road. The gas lines will be extended through the project site in the same joint trench alignment as the electric, cable and telephone facilities. Facilities may also be available from the future Harmony Grove Village site.