4.6 HYDROLOGY and WATER QUALITY

This section analyzes the proposed project's potential to adversely affect hydrology and water quality. This discussion is based in part on a Crestridge Project Drainage Study prepared by RBF Consulting in February 2012, a Preliminary Urban Stormwater Mitigation Plan (SUSMP) prepared by RBF Consulting in April 2012, and a Conceptual NPDES Review approved by John L. Hunter and Associates, Inc. These reports are contained in their entirety in Appendix D.

4.6.1 Setting

a. Hydrology and Storm Drain System. The project site is located on the Palos Verdes Peninsula. Since the Rancho Palos Verdes Peninsula is a single hill formation, a central ridge disperses drainage in a number of small watershed systems. However, no major watershed systems are completely confined within the boundaries of Rancho Palos Verdes. All surface waters originate from precipitation that falls on the peninsula (Rancho Palos Verdes General Plan, 1975). The drainage pattern flows in several directions as a result of the central ridge. The majority of the runoff flows directly south into the Pacific Ocean. The remaining runoff flows east through San Pedro, north through Rolling Hills and Rolling Hills Estates, or west through Palos Verdes Estates. All runoff, however, eventually flows into the Pacific Ocean.

The historic drainage patterns for the project site follow north down the natural slope to Indian Peak Road, south to existing catch basins on Crestridge Road and northeast toward Crenshaw Boulevard. In the vicinity of the project site, runoff is conveyed via sheet flow into existing drainage courses and storm drains.

The project site is located within the Dominguez Channel Watershed in Los Angeles County. The maximum elevation differential of the site is approximately 150 feet (from elevation approximately 1,200 feet at the northwest boundary to approximately 1,050 feet at Crenshaw Boulevard and Indian Peak road intersection). Runoff is currently conveyed by surface flow across the undeveloped site. The existing site is split into two drainage areas. The southern portion of the site drains to Crestridge Drive and the existing storm drain, Watershed A. Watershed B drains via the natural slope to the north and Indian Peak Road. Based on the City of Rancho Palos Verdes Master Plan of Drainage, there is an existing 30" RCP on Crestridge Drive. The Master Plan has identified the facility as being deficient. The local storm drain system eventually conveys the runoff to the Pacific Ocean via Dominguez Channel and Los Angeles Harbor, at San Pedro Bay.

b. Flood Hazard Zones. The Federal Emergency Management Agency (FEMA) has defined the 100-year flood hazard areas through the publication of Flood Insurance Rate Maps (FIRM). The FIRM for the project site (Map ID 06037C1940F) indicates that the site is within Zone X. Zone X designates an area with a minimal risk of flooding (not within the 100-year flood zone).

c. Water Quality Regulations.

Federal, State and County Regulations. Direct discharges of pollutants into waters of the United States[1] are not allowed, except in accordance with the National Pollutant Discharge Elimination System (NPDES) program established in Section 402 of the Clean Water Act (CWA). The foremost purpose of the NPDES program is to protect human health and the environment by protecting the quality of water. California's primary statute governing water quality and water pollution is the Porter-Cologne Water Quality Control Act of 1970 (Porter-Cologne Act). The Porter-Cologne Act grants the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Board (RWQCB) broad powers to protect water quality and is the primary vehicle for implementation of California's responsibility under the federal CWA. The Porter- Cologne Act grants the SWRCB and RWQCBs the authority and responsibility to adopt plans and policies, to regulate discharges to surface and groundwater, to regulate waste disposal sites, and to require clean-up of discharges of hazardous materials and other pollutants.

The protection of water quality in the watercourses within Rancho Palos Verdes is under the jurisdiction of the Los Angeles RWQCB (SWRCB District 4). The RWQCB establishes requirements prescribing discharge limits and establishes water quality objectives through the "Waste Discharge Requirements for Municipal Storm Water and Urban Runoff Discharges Within the County of Los Angeles, and the Incorporated Cities Therein, Except the City of Long Beach" for which the City of Rancho Palos Verdes is a co-permittee (Order No. 01-182), NPDES MS4 Permit No. CAS004001, dated December 13, 2001 and amended most recently in April 2011, issued by the California Regional Water Quality Control Board – Los Angeles Region, which also serves as a NPDES permit under the Federal Clean Water Act. As a co-permittee, the City is required to implement procedures with respect to the entry of non-storm water discharges into the municipal storm water system. The Rancho Palos Verdes Municipal Code (Chapter 13.10) addresses specific storm water pollution requirements for new developments in accordance with the NPDES Permit, as discussed further below.

The NPDES MS4 permit issued by the RWQCB, of which the City is a co-permittee (Order No. 01-182) specifies that all new development and redevelopment projects that fall under specific priority project categories must complete a Standard Urban Storm Water Mitigation Plan (SUSMP) (March 2000). These categories of development are considered "priority" because the RWQCB determined that they have the greatest potential to degrade water quality. If applicable, structural or treatment control BMPs for a project (including, as applicable, post-construction treatment control BMPs) set forth in project plans would be required to meet the design standards set forth in the SUSMP and the current Municipal NPDES Permit.

One of the "priority" project categories is residential projects with 10 or more units (includes single family homes, multifamily homes, condominiums, and apartments). The proposed project would include 60 attached residential units; therefore, it would be considered a "priority" project, and a SUSMP would be required in conjunction with development of the project.

[1] The term "waters of the U.S." incorporates deep-water aquatic habitats and special aquatic sites, including wetlands. Waters of the U.S. includes essentially all surface waters such as all navigable waters and their tributaries, all interstate waters and their tributaries, all wetlands adjacent to these waters, and all impoundments of these waters.

The SUSMP requires that 14 categories be addressed by the project to the extent applicable, including the following: peak storm water runoff discharge rates, conserve natural areas, minimize storm water pollutants of concern, protect slopes and channels, provide storm drain system stenciling and signage, properly design outdoor material storage areas, properly design trash storage areas, provide proof of ongoing BMP maintenance, design standards for structural or treatment control BMPs, individual priority project categories (discussed above), waiver, mitigation funding, limitation of use of infiltration BMPs, and alternative certification for storm water treatment mitigation.

The SUSMP is required to show that the post-project peak storm water runoff discharge rates do not exceed the pre-project rate for developments where the increased peak storm water discharge rate estimated will result in increased potential for downstream erosion. The SUSMP also requires a discussion of potential design strategies to conserve natural areas. Additionally, the project applicant would be required to design and implement post-construction treatment controls to mitigate storm water pollution.

While the current Los Angeles County MS4 permit does not specifically require addressing hydromodification effects and Low Impact Development (LID) principles, an interim clarification letter sent in 2006 to the County of Los Angeles and its co-permittees specifically discussed shortcomings in the current MS4 Permit that required attention. The County of Los Angeles and City of Los Angeles have since adopted ordinances or policies that specifically address LID and hydromodification requirements. The County's Low Impact Development Ordinance adopted in January 2009 requires that impacts due to development be treated at the source.

Because the proposed project would involve construction on more than one acre, the applicant would be required to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) pursuant to the California Construction General Permit (CGP) (Permit 2009-0009-DWQ as amended by 2010-0014-DWQ September 2, 2009 and modified on November 16, 2010). A SWPPP identifies structural and non-structural controls that will be put in place to minimize potential environmental impacts caused by storm water discharges. The purpose of a SWPPP is to minimize erosion and run-off of pollutants and sediment. A SWPPP establishes procedures, including Best Management Practices (BMPs), which prevent pollutants from negatively affecting downstream water bodies from a construction site.

City of Rancho Palos Verdes. In accordance with Rancho Palos Verdes Municipal Code Chapter 13.10.050, owners and occupants of property within the city must comply with the following requirement:

> *B. Use of Water. Runoff of water used for irrigation purposes shall be minimized to the maximum extent practicable. Runoff of water from the permitted washing down of paved areas shall be minimized to the maximum extent practicable. Sweeping and collection of debris is encouraged for trash disposal.*

The Palos Verdes General Plan (1975) includes the following policies related to drainage and water quality:

7. *Prohibit activities that create excessive silt, pollutant runoff, increase canyon wall erosion, or potential for landslide, within Resource Management Districts containing Hydrologic Factors (RM 6).*

11. *Stringently regulate irrigation, natural drainage, and other water-related considerations, in both new development and existing uses affecting existing or potential slide areas.*

15. *Require a master landscape plan for any proposed development showing the retention/enhancement of natural vegetation proposed, new complementing vegetation, and all efforts involving retention/enhancement/protection of hydrologic factors, vegetation and wildlife factors.*

The Palos Verdes General Plan (1975) includes the following policy for infrastructure:

5. *Require that all flood control/natural water source interfaces and systems be treated so that erosion will be held to a minimum.*

4.6.2 Impact Analysis

a. Methodology and Significance Thresholds.

Impacts would be considered potentially significant if the proposed project would:

- *Violate any water quality standards or waste discharge requirements*
- *Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering or the local groundwater table level*
- *Substantially alter the existing drainage pattern of the area such that substantial erosion or siltation occurs*
- *Substantially alter the existing drainage pattern or substantially increase the rate or amount of surface runoff in a manner which results in flooding*
- *Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff*
- *Otherwise substantially degrade water quality*
- *Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map*
- *Place within a 100-year flood hazard area structures which would impede or redirect flood flows*
- *Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam*
- *Expose people or structures to a significant risk of loss, injury, or death as a result of inundation by seiche, tsunami, or mudflow*

The hydrologic calculations to determine the 25-year and 50-year peak flow rates that are discussed in the Crestridge Project Drainage Study prepared by RBF Consulting in a report dated February 2012 were performed using the Los Angeles County Hydrology Manual. The Rational Method is an empirical computation procedure for developing a peak runoff rate (discharge) for storms of a specific recurrence interval. Rational Method equations are based on the assumption that the peak flowrate is directly proportional to the drainage area, rainfall intensity, and a loss coefficient, which describes the effects of land use and soil type. The design discharges were computed by generating a hydrologic "link-node" model, which divides the area into drainage subareas. These subareas are tributary to a concentration point or hydrologic "node" point determined by the existing terrain and street layout. The following assumptions/guidelines were applied for use of the Rational Method:

1. The Rational Method hydrology includes the effects of infiltration caused by soil surface characteristics. The soils map from the Los Angeles County Hydrology Manual indicates that the study area consists of soil types "004."
2. The infiltration rate is also affected by the type of vegetation or ground cover and percentage of impervious surfaces. The proposed project is Homes for the elderly with a proportion impervious value of 55%.
3. The onsite flows are conveyed in an assumed storm drain and street flow systems.
4. Standard Intensity-Duration Curve data was obtained from the Los Angeles County Hydrology Manual.

As discussed in the Initial Study prepared for the proposed project (Appendix A), the Federal Emergency Management Agency (FEMA) has defined the 100-year flood hazard areas through the publication of Flood Insurance Rate Maps (FIRM). The FIRM for the project site (Map ID 06037C1940F) indicates that the site is within Zone X. Zone X designates an area with a minimal risk of flooding (not within the 100-year flood zone). No dams or levees are located in the vicinity of the project site. In addition, the project site does not lay within any known dam inundation zones (City of Rancho Palos Verdes General Plan Safety Element, 1975). The project site is approximately two miles from the Pacific Ocean at an elevation of approximately 1,167 feet above sea level. In addition, according to the Department of Conservation Tsunami Inundation Map for the Redondo Beach (South) Quadrangle, the project site is located outside a tsunami inundation area (DOC, March 2009). Therefore, as discussed in the Initial Study (Appendix A), impacts related to flooding as a result of the failure of a levee or dam and inundation by seiche, tsunami, or mudflow would be less than significant and are not discussed further in this section.

b. Project Impacts and Mitigation Measures.

Impact HWQ-1 During grading for and construction of the proposed project, the soil surface would be subject to erosion and the downstream watershed, including the Pacific Ocean, could be subject to temporary sedimentation and discharges of various pollutants. However, with implementation of NPDES requirements, impacts related to the potential for discharge of various pollutants, including sediment, would be Class III, *less than significant*.

The proposed project would include 60 attached residential units and associated landscaping and hardscape. Site preparation would involve excavation of approximately 145,000 cubic yards of material (soil and rock) and placement of approximately 2,000 cubic yards of fill material. Excavation and grading could result in erosion of soils and sedimentation, which could cause temporary impacts to surface water quality and therefore violate water quality standards or contribute additional sources of polluted runoff. Project development would likely require temporary onsite storage of excavated soils (stockpiling). During grading and soil storage, there is the potential for soil migration offsite via wind entrainment and/or water erosion. In addition, there is potential for erosion from tires of construction vehicles and equipment.

As discussed above in the *Setting*, the project applicant would be required to prepare a SWPPP, which would require implementation of appropriate Best Management Practices (BMPs). The purpose of BMP implementation is to prevent erosion and sediment loss, and the discharge of construction wastes. Examples of BMPs that may be implemented during construction include the use of geotextiles and mats, temporary drains and swales, silt fences and sediments traps. Erosion control practices may include the use of drainage controls such as down drains, detention ponds, filter berms, or infiltration pits; removal of any sediment tracked offsite within the same day that it is tracked; containment of polluted runoff onsite; use of plastic covering to minimize erosion from exposed areas; and restrictions on the washing of construction equipment. SWPPP BMPs may include the following measures:

- *Erosion Control. Eroded sediments from areas disturbed by construction and from stockpiles of soil will be retained on site to minimize sediment transport from the site to streets, drainage facilities or adjacent properties via runoff, vehicle tracking or wind.*
- *Erosion control techniques will be utilized, such as soil stabilizers, covering soil during construction, wind blocking devices, cease grading during high winds, use of soil binders (watering graded soils should be avoided), filtration devices, and stabilizing ingress/egress points.*
- *Fugitive dust will be reduced to the maximum extent practicable.*
- *Erosion from slopes and channels will be controlled by implementing an effective combination of BMPs (as approved in Regional Board Resolution No. 99-03), such as the limiting of grading schedule during the wet season; inspecting graded areas during rain events; planting and maintenance of vegetation on slopes; and covering erosion susceptible slopes.*
- *Pollutant Detainment Methods. Downstream drainages will be protected from escaping pollutants by capturing materials carried in runoff and preventing transport from the site. Examples of detainment methods that retard movement of water and separate sediment and other contaminants are silt fences, hay bales, sand bags, berms, silt and debris basins.*
- *Construction Materials Control. Construction related materials, wastes, spills or residues will be retained on site to minimize transport from the site to streets, drainage facilities or adjoining properties by wind or runoff. Runoff from equipment and vehicle washing will be contained at the construction site unless treated to remove sediment and pollutants. Non-Stormwater runoff from equipment and vehicle washing and any other activity will be contained at the project site.*
- *Recycling/Disposal. Maintain a clean site. This includes proper recycling of construction-related materials and equipment fluids.*

- *Cleanup and dispose of small construction wastes (i.e., dry concrete) appropriately.*

With required implementation of a SWPPP pursuant to the NPDES General Construction Permit, temporary impacts from construction activities would be reduced to the extent feasible. Therefore, impacts during construction would be less than significant.

Mitigation Measures. Impacts would be less than significant without implementation of mitigation.

Significance After Mitigation. Impacts would be less than significant.

Impact HWQ-2 Development of the proposed senior housing project would increase the amount of impermeable surfaces on the project site, and would also generate various urban pollutants such as oil, herbicides and pesticides, which could adversely affect surface water quality. Increased impermeable surfaces on the site could also increase the flow rate of stormwater off the site compared to existing conditions resulting in increased erosion in downstream drainage channels. However, with implementation of NPDES requirements and the proposed onsite stormwater detention facilities, impacts related to surface water quality would be Class III, *less than significant*.

The proposed project would involve development of 60 senior housing units. The project would include hardscaping such as rooftops and parking lots, which would increase the amount of impervious surface on the site compared to existing conditions. It is estimated that the project would increase impervious surfacing onsite by approximately 99%. The addition of 60 residential units would increase the number of vehicles and the amount of pesticides used on the project site compared to existing conditions. Impermeable surfaces such as driveways would accumulate deposits of oil, grease, and other vehicle fluids and hydrocarbons. In addition, maintenance of new landscaping could introduce chemical inputs such as pesticides and herbicides. During storms, these deposits could be washed into and through the drainage systems and to the Pacific Ocean. The addition of fertilizers, pesticides and other chemicals to new landscaping has the potential to include higher than natural concentrations of trace metals, biodegradable wastes (which affect dissolved oxygen levels), and excessive major nutrients such as nitrogen and phosphorus.

Urban runoff can have a variety of deleterious effects. Oil and grease contain a number of hydrocarbon compounds, some of which are toxic to aquatic organisms at low concentrations. Heavy metals such as lead, cadmium, and copper are the most common metals found in urban storm water runoff. These metals can be toxic to aquatic organisms, and have the potential to contaminate drinking water supplies. Nutrients from fertilizers, including nitrogen and phosphorous, can result in excessive or accelerated growth of vegetation or algae, resulting in oxygen depletion and additional impaired uses of water. Therefore, the increased impervious surface area, vehicular activity and use of pesticides for landscaping onsite, could increase the amount of pollutants in onsite runoff, which could adversely affect the water quality of receiving waters including the Pacific Ocean.

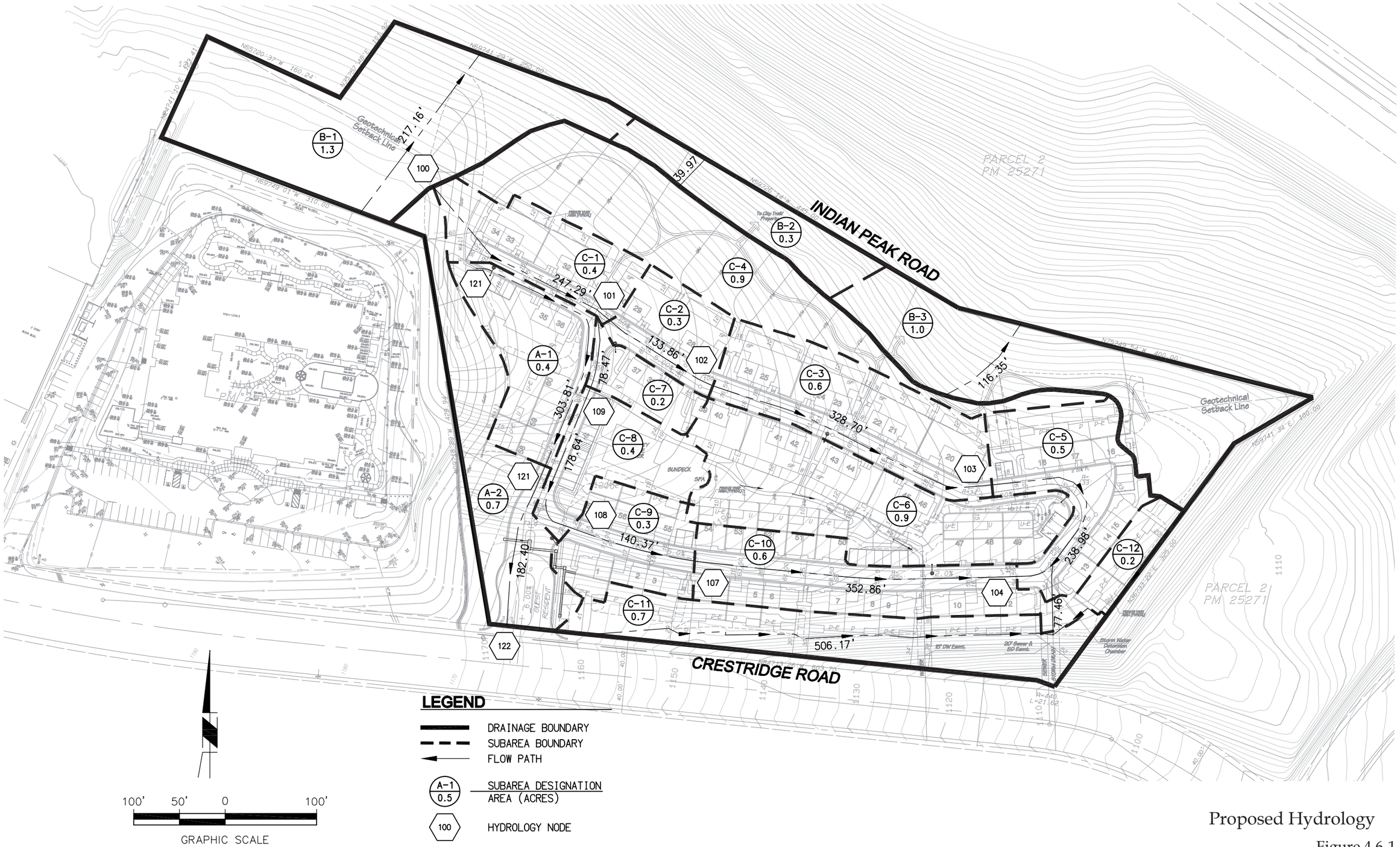
The nearly 99% increase in impervious surfacing on the project site would incrementally increase the amount of pollutants that could be contained in runoff from the area. Additionally, the increase in impervious surfacing onsite would increase peak flows from the site to offsite drainages. This has the potential to create flooding and drainage problems if the existing drainage system is inadequate to handle additional flow.

As discussed above under *Setting*, in accordance with Rancho Palos Verdes Municipal Code Chapter 13.10.050, owners and occupants of property within the city are required to minimize the runoff of water used for irrigation purposes to the maximum extent practicable. Runoff of water from washing down paved areas is required to be minimized to the maximum extent practicable. Sweeping and collection of debris is encouraged for trash disposal. In addition, the project applicant would be required to adhere to the Municipal Code requirements related to the NPDES permit. Pursuant to NPDES requirements, a SUSMP would be required for the project site. The SUSMP is required to show that 100% of rainfall from the site would flow either into/onto the source control BMPs or onto areas of undisturbed natural vegetation. The preliminary SUSMP was prepared by RBF Consulting in April 12, 2012. This report is contained in its entirety in Appendix D.

As described in the SUSMP prepared for the project site, which proposes how runoff would be handled and treated for the project, the post-construction site would be broken into three watersheds that include Filterra biorentention units, pervious pavers, and an underground detention system (Watershed A, B, and C described below). A graphic of the proposed hydrology of the site post-construction is shown in Figure 4.6-1. The Filterra units and pervious pavers were designed to treat runoff from an 85th percentile storm. Runoff would be treated by Filterra units prior to entering the subsurface detention system and include bypasses for larger events. The subsurface detention system onsite would be designed to mitigate the difference in the 50-year flows between pre- and postconstruction conditions. The detention system would control the water onsite by means of a hydraulic control structure, which would remove particulate pollutants, and reduce maximum runoff values to pre-development levels.

Watershed A covers the eastern portion of the site (1.1 acres). It is sloped from east to west and its runoff would be captured by a catch basin and treated by a Filterra unit. Drainage area A-2 is approximately 0.7 acres. The southern portion of this area (0.15 acres) is located south of the proposed catch basin and Filterra unit within drainage area A-2 (See BMP Map in Appendix A of the Drainage Report in Appendix D), which makes up the entrance/exit access for the development, would not be treated by the proposed Filterra unit. Pervious pavers have been proposed to mitigate the 85th percentile storm runoff in this area of the project site.

Additional pervious pavers would be included beyond that of the BMP calculations used for the site. This was done to add a factor of safety in case the site soils have less infiltration potential than estimated, and so that under-drains would not be required. During large storm events, runoff that is not infiltrated through the pervious pavers would flow to Crestridge Drive and to the east, entering the existing storm drain system.



Source: RFB, February 17, 2012

Proposed Hydrology

Figure 4.6-1

Watershed B covers the northern portion of the site shown as B-1, B-2, and B-3 in the Hydrology Map on Figure 4.6-1 (2.6 acres). These areas of the site are proposed as open space and would drain by sheet flow to the north over the vegetated land before reaching Indian Peak Road, consistent with existing conditions.

Watershed C encompasses the remainder of the site (6 acres), which drains from east to west to the two catch basins and four Filterra units that would be located at the southeastern corner of the site. Here, the Filterra units would pretreat the water before entering the subsurface detention system.

The impervious portion of the site for the proposed condition would drain by street flow to the designated catch basins, Filterra units and the detention system. The small portion of the site that makes up the southern tip of Drainage Area A-2 would drain to pervious pavers. This process would reduce the increase in post-construction runoff by treating and detaining the runoff prior to discharge to the storm drain system while releasing the water at predevelopment rates. The subsurface detention system would be required to ensure that downstream receiving water bodies are not adversely affected by the increased post-development runoff.

In addition to the treatment devices described above, natural areas onsite would be conserved where possible, and portions of the proposed landscaping would consist of native, drought tolerant vegetation. The developed portion of the site would be gradually sloped with average slopes of about 4%; however, there is an elevation change across the site as the maximum elevation differential is 150 feet. Therefore, all steeper slopes proposed, primarily along the north and east boundaries, would be vegetated.

The following non-structural BMPs would be implemented to reduce or eliminate the off-site discharge of pollutants:

- Routine landscape maintenance (weekly), including proper pick up and disposal of trash throughout the site, sediment and green waste.
- Proper fertilizer and pesticide management (minimizing use, not applying before predicted rain, proper disposal of unused/excess product).
- Automatic irrigation to minimize excess runoff.
- Public education through the use of storm drain stencils.

The parking area would be designed as follows:

- Reduce impervious land coverage of parking area by providing planter strips between parking bays.
- Infiltrate runoff into landscape areas before it reaches the storm drain system.
- Treat runoff on-site before it reaches the street and storm drain system.
- Treat to remove oil and petroleum hydrocarbons at parking lots that are heavily used.
- Ensure adequate operation and maintenance of treatment systems particularly sludge and oil removal, and system fouling and plugging prevention control

Additionally, property owners at the site would be required to use covered trash containers. Additionally, drainage features from adjoining roofs and pavement would divert runoff around trash containers.

Table 4.6-1 provides a comparison of the existing and unmitigated proposed hydrology for the 25 and 50-year storm events.

Table 4.6-1
Flowrate Comparison Table

Tributary to	Area (acres)			25-year Flow			50-year Flow		
	Existing	Proposed	Change	Existing	Proposed	Change	Existing	Proposed	Change
Watershed A/C Crenshaw Storm Drain	4.2	7.1	+2.9	6.9	11.6	+4.7	8.6	13.7	+5.1
Watershed B Natural Slope Indian Peak Rd	5.5	2.6	-2.9	9.6	4.9	-4.7	11.6	5.7	-5.9

Source: Crestridge Project Drainage Study, Table 3, RBF Consulting, April 2012.

Due to the change in the drainage area discharging to the Crenshaw storm drain (Watershed A/C), onsite detention is required. Preliminary engineering estimates indicate that the proposed condition flowrate tributary to the Crenshaw storm drain can be reduced to the existing flowrates (6.8 cfs for the 25-year storm and 7.9 cfs for the 50-year storm) by constructing an underground detention basin within the development street right-of-way. For preliminary estimates, Figure 4.6-1 shows an 8′ wide by 5′ high Reinforced Concrete box that would be approximately 385 feet long with a 12-inch outlet. Final proposed flowrates (after the detention basins) are 6.8 cfs for the 25-year and 7.9 cfs for the 100-year (See Appendix B of the Crestridge Project Drainage Study in Appendix D). Therefore, with the onsite detention system, post-construction flowrates from the site into the Crenshaw Storm Drain would be similar to, or in the case of the 50-year flow less than, existing surface water flowrates. In addition, as shown in Table 4.6-1, flowrates onto the natural slope above Indian Peak Road (Watershed B) would be reduced from existing conditions due to the decrease in the size of this watershed. Because flowrates from the site would not increase above existing levels, there would be no increase in erosion in drainage channels downstream from the site.

As discussed in the *Setting*, based on the City of Rancho Palos Verdes Master Plan of Drainage, there is a deficient existing 30″ RCP on Crestridge Drive. However, since the project would retain 100% of rainfall from the site either into source control BMPs or onto undisturbed natural vegetation, this deficient RCP on Crestridge Drive would not be affected by the proposed project.

Implementation of the NPDES required SUSMP, which is required to demonstrate that 100% of rainfall from the site would flow either into/onto the source control BMPs or onto areas of undisturbed natural vegetation, would reduce impacts that could occur from pollutants onsite or increase in storm flows on or off-site. Therefore, impacts would be less than significant.

Mitigation Measures. Impacts would be less than significant without mitigation.

Significance After Mitigation. Impacts would be less than significant.

c. Cumulative Impacts. Cumulative development in the City and surrounding areas would include approximately 89,436 square feet of commercial/retail, 53,617 square feet of office uses, 1,778 residential dwelling units, and 187,666 square feet of institutional uses, as shown in Table 3-1 and 3-2 in Section 3.0, *Environmental Setting*. Planned and pending development in the general vicinity could increase impermeable surface area, thereby potentially increasing peak flood flows and overall runoff volumes. However, with implementation of NPDES requirements for construction and operation similar to the proposed project, the post development peak discharges would not substantially increase peak flood flows or increase flooding. Similar to the project, a SUSMP for a cumulative project in the vicinity of the project site would be required to show that 100% of rainfall from the site would flow either into/onto the source control BMPs or onto areas of undisturbed natural vegetation. Consequently, the project would not contribute materially to any potential cumulative increases in peak runoff or associated flooding impacts.

With respect to surface water quality, construction activity associated with cumulative development would temporarily increase sedimentation due to grading and construction activities. In addition, new development would increase the generation of urban pollutants that may adversely affect water quality in the long term. However, like the proposed project, all future development would be subject to implementation of appropriate Best Management Practices in accordance with City, State and Federal requirements. Furthermore, all qualifying projects are subject to the requirements of the NPDES Permit, which is specifically designed to develop, achieve, and implement a timely, comprehensive, and cost-effective storm water pollution control program. As with the project, cumulative projects that disturb more than one acre of soil would be required to compile and implement a SWPPP, which would include appropriate BMPs.

Thus, implementation of applicable requirements on development in the area would reduce cumulative impacts to a less than significant level. As discussed above, with implementation of NPDES requirements, the project's contribution to increased pollutant loads in area surface water would be reduced to a less than significant level and thus would not be cumulatively considerable.

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