

River Oaks
Paso Robles, California



BORKEY AREA SPECIFIC PLAN



River Oaks II Expansion
Stormwater Control
Framework

November 26, 2013

Introduction

This Stormwater Control Framework (SWCF) is a supplement to the application for amendment of the Borkey Area Specific Plan. The amendment does not include the application for tentative map, so this SWCF is intended to address at a planning level the qualitative design strategies for compliance with the new regulations governing stormwater quality and retention on the Central Coast adopted by the Regional Water Quality Control Board (RWQCB) in July of 2013. It serves as a framework for the Post-Construction Stormwater Control Plan (SWCP) to be submitted as part of a tentative map application. Subsequent technical analysis based upon the tentative map configuration will be required to complete a Post-Construction Stormwater Control plan addressing the quantitative water quality, runoff retention, and/or peak management requirements. Standard SA 26 is included in the Borkey Area Specific Plan amendment to address the requirement for the preparation of the full SWCP.

Existing Conditions

The River Oaks II Expansion is located north of the existing River Oaks Community, north of Highway 46, west of Buena Vista Road and east of the Salinas River. The site encompasses approximately 130 acres of level to gently rolling terrain. The site is relatively devoid of any major trees or significant landscape features with the exception of an approximate 7 acre area in the center of the site. This area includes a small lake with landscape and structural improvements. The improvements include the River Oaks Hot Springs Spa, an open pavilion, an amphitheater, and walking paths amidst a large turf event area. The dam creating the lake was built by the Soils Conservation Service in 1960 for water retention for irrigation and recreational purposes.

The site has been dry farmed which involves the tilling and planting of the soil annually. There is very little natural vegetation in the portions of the site identified for development.

Extending west from the lake, the site is relatively flat up to a bluff which then drops down quickly to North River Road and the Salinas River corridor. A portion of drainage from this area flows north, a portion flows back to the lake and a very limited area drains to the bluff.

Extending east from the lake, the terrain is gently rolling, rising away from the lake with slopes ranging from relatively flat to over 10%. In limited areas, slopes of 15% occur. The average cross slope (as defined in City Ordinance 20.08.20) taken across the site in areas to be developed varies depending upon specific location, is less than 10%. The eastern portion of the site drains from both the north and the south into the relative middle of the site then flows westward toward the lake. Stormwater currently leaves the site at two locations on the north side of the Plan Area, both eventually feeding into the same natural drainage course and connecting to the Salinas River.

The proposed project will consist of a total of 271 single family homes. 144 homes will be located in the western portion of the site, which is a relatively flat area. This area is referred to the Traditional Neighborhood District (TN) in the River Oaks II Expansion Design manual. The eastern side of the site, having more topographic relief, is identified as the Rolling Hills District (RH). This area will consist of

approximately 127 homes on lots ranging from 8,000 square feet to over 15,000 square feet. Both of these areas are proposed to be pad graded which will enable more effective control of stormwater runoff. Best management Practices (BMP's) will be employed to ensure compliance with the Regional Water Quality Control Board's newly adopted regulations (see resolution R3-2013-0032).

Section 1.0 Applicable Post-Construction Stormwater Requirements

The Plan Area is located in Watershed Management Zones #1 and #4. Also, the development of the Plan Area will create more than 22,500 square feet of new impervious surface area. Therefore, the project must meet Post –Construction Stormwater Requirements (PCRs) Nos. 1, 2, 3 and 4.

Performance Requirement No.1, Site Design and Runoff Reduction:

The following minimum design strategies are part of PCR #1 and are proposed to be implemented as part of the River Oaks II Expansion (ROII) site development:

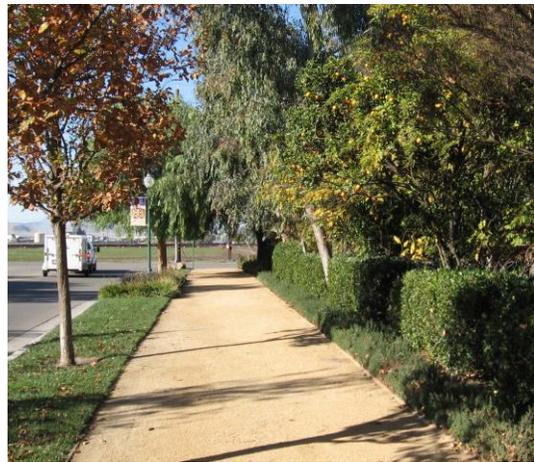
- a. Limit disturbance of creeks and natural drainage features;
- b. Minimize compaction of highly permeable soils;
- c. Limit clearing and grading of native vegetation at the site to the minimum area needed to build the project, allow access, and provide fire protection;
- d. Minimize impervious surfaces by concentrating improvements on the least-sensitive portions of the site, while leaving the remaining land in a natural undisturbed state;
- e. Minimize stormwater runoff by implementing one or more of the following site design measures:

(1) Direct roof runoff onto vegetated areas safely away from building foundations and footings, consistent with California building code;

(2) Direct runoff from sidewalks, walkways, and/or patios onto vegetated areas safely away from building foundations and footings, consistent with California building code;

(3) Direct runoff from driveways and/or uncovered parking lots onto vegetated areas safely away from building foundations and footings, consistent with California building code;

(4) Construct bike lanes, driveways, uncovered parking lots, sidewalks, walkways, and patios with permeable surfaces.



Permeable walkway

Refer also to the River Oaks II Expansion (RO II) Design Manual for additional project concepts. Compliance with these Site Design and Runoff Reduction Performance Requirements will be documented through the tentative tract map, final map and building permit processes by means of appropriate documentation (e.g., check lists) which will accompany said applications for approval.

Performance Requirement no. 2, Water Quality Treatment:

RO II shall be subject to Water Quality Treatment Performance Requirements to treat runoff generated by the project using the onsite measures below as identified in the Regional Water Quality Control Board’s (RWQCB) Resolution R3-2013-0032. These are listed in the order of preference for use (highest to lowest).

- a. Low Impact Development (LID) Treatment Systems – Implement harvesting and use, infiltration, and evapotranspiration Stormwater Control Measures (SCMs) that collectively achieve the following hydraulic sizing criteria for LID systems:

- (1) LID systems shall be designed to retain stormwater runoff equal to the volume of runoff generated by the 85th percentile 24-hour storm event, based on local rainfall data.

- b. Biofiltration Treatment Systems – Implement biofiltration treatment systems using facilities that must be demonstrated to be at least as effective as a biofiltration treatment system with the following design parameters:

- (1) Maximum surface loading rate appropriate to prevent erosion, scour and channeling within the biofiltration treatment system itself and equal to 5 inches per hour, based on the flow of runoff produced from a rain event equal to or at least:

- (i) 0.2 inches per hour intensity; or

- (ii) Two times the 85th percentile hourly rainfall intensity for the applicable area, based on historical records of hourly rainfall depth

- (2) Minimum surface reservoir volume equal to the biofiltration treatment system surface area times a depth of 6 inches.

- (3) Minimum planting medium depth of 24 inches. The planting medium must sustain a minimum infiltration rate of 5 inches per hour throughout the life of the project and must maximize runoff retention and pollutant removal. A mixture of sand (60%-70%) meeting the specifications of American Society for Testing and Materials (ASTM) C33 and compost (30%-40%) may be used. ROII may utilize an alternative planting medium if it demonstrates its planting medium is equal to or more effective at attenuating pollutants than the specified planting medium mixture.

- (4) Proper plant selection.

- (5) Subsurface drainage/storage (gravel) layer with an area equal to the biofiltration treatment system surface area and having a minimum depth of 12 inches.

- (6) Underdrain with discharge elevation at top of gravel layer.

- (7) No compaction of soils beneath the biofiltration facility (ripping/loosening of soils required if compacted).



Example of Bioswale

- (8) No liners or other barriers interfering with infiltration, except for situations where lateral infiltration is not technically feasible.
- c. Non-Retention Based Treatment Systems – Implement Stormwater Control Measures (SCMs) that collectively achieve at least one of the following hydraulic sizing criteria for non-retention based treatment systems:
 - (1) Hydraulic Sizing Criteria for Non-Retention Based Treatment Systems:
 - (a) Volume Hydraulic Design Basis – Treatment systems whose primary mode of action depends on volume capacity shall be designed to treat stormwater runoff equal to the volume of runoff generated by the 85th percentile 24-hour storm event, based on local rainfall data.

These Water Quality Treatment Performance Requirements shall apply to all the runoff on site as runoff from the new and replaced impervious surfaces cannot be separated from the runoff from the existing impervious surfaces. RO II proposes utilizing bio swales extensively throughout the street system and landscape areas to address water quality impacts as well as addressing retention.

Performance Requirement No. 3, Runoff Retention:

RO II shall meet the following Performance Requirements for runoff retention as set forth in RWQCB Resolution R3-2013-0032:

- (1) Retain 95th Percentile Rainfall Event – Prevent offsite discharge from events up to the 95th percentile 24-hour rainfall event as determined from local rainfall data.
- (2) Compliance must be achieved by optimizing infiltration. Compliance for retention of the remaining volume must be achieved via storage, rainwater harvesting and/or evapotranspiration.

In addition, the lake, constructed in the 1960's to "retain water for beneficial use", will serve as primary retention. This structure was designed and installed to provide storage to runoff water for beneficial use. The lake's capacity is over 25.4 ac/ft. which combined with existing and proposed open space areas provides significant opportunity to meet runoff retention requirements.

Performance Requirement No. 4, Peak Management:

ROII shall manage peak stormwater runoff as required by RWQCB requirements (Section B.5.a.i. of R3-2013-0032) which state:

- i) Post-development peak flows, discharged from the site, shall not exceed pre-project peak flows for the 2- through 10-year storm events.

Implementation of the SCMs described for water quality and runoff retention above will help to achieve the requirements for peak flow management as well. Prior to Tentative Tract Map approval, a Stormwater Control Plan providing qualitative analysis of the project will be submitted and approved by the City.

Section 2.0 General Project Data

For General Project data refer to the application and application package for the Borkey Area Specific Plan Amendment, General Plan Amendment and Zone Change. The total site area is approximately 130 acres. Of that, approximately 46% (59 ac) is open space. The developed area is comprised of single family residential. Of the developed area, individual lot coverage will not exceed 50%. Additionally, pervious surface materials will be used on multi modal paths and walkways. Streets will include bioswales and parkway designs that clean and retain surface runoff. The lake and open space area is intended to function as the major retention facility.

The existing development on site is the River Oaks Hot Springs Spa and the surrounding open space area. The existing site is generally undeveloped but has been disturbed for dry farming. Additionally, there is an existing shop, maintenance and storage facility in the central west side of the site.

The SWCP will quantify the existing impervious surface area, the new impervious surface area and calculate net impervious surface area to ensure compliance with RWQCB R3-2013-0032.

Section 3.0 Site Assessment

The ROII site appears to be well suited for effective stormwater management. The site is varying in topography as described in the introduction above. The eastern portion of the site is a rolling topography while the western side is relatively flat. The limited development onsite, includes a lake which is situated centrally, and is part of the existing drainage system. A preliminary soils engineering report was prepared in 2006 by GeoSolutions, inc. It indicates no major concerns with site soils.

Constraints to effective stormwater management are limited to the sites steeper slope areas which reach and exceed 15%. However the occurrence of these steeper slope areas is very limited. Site grading can easily rectify the concern through carefully engineered slopes and drainage facilities (see grading concepts in Chapter 7 of the RO II Design Manual). There appear to be no concerns with high groundwater, geotechnical instability, contaminated soils or existing infrastructure.

Opportunities to achieve effective stormwater management are many. Existing site drainage patterns and site contours can be easily adapted to Post-Construction drainage systems allowing opportunity to utilize the lake facility as a retention and water quality asset for the overall drainage system. The lake facility in previous drainage studies was identified to have sufficient capacity to receive storm water for a majority of the site. This is still the concept with the RO II Expansion. However with rule changes and recently adopted regulations a full analysis will be prepared to ensure the newer requirements can be met. To reduce demand on storage capacity in the lake and elsewhere on site, Low Impact Development (LID) features are included as part of the proposed project. There are bio swales proposed as an integral element in all the streets. Streets will also be lined by landscape parkways with drainage directed to these landscape areas. In addition to the large central open space around the lake, additional open space will be provided and can accommodate facilities for retention and water quality attainment. Along the northern Plan Area boundary is a 35 foot buffer that will be landscaped as a pervious surface to reduce runoff and promote infiltration. Street Trees will be provided in regularly planted intervals along the streets. Multi modal pathways and trails will be constructed of permeable material. Specific area

quantities will be determined and provided as part of the SWCP submitted with the Tentative Tract Map.

Section 4.0 Applied Stormwater Control Measures (SCM)

As discussed in several locations above, RO II proposes extensive use of Stormwater Control Measures (SCMs) to reduce runoff generated by the introduction of impervious surface area to the project site. In concept, the site is divided into two Drainage Management Areas (DMAs). One area is west of the lake and is relatively flat. The other is east of the lake and consists of rolling terrain. Within each of these DMAs there may be further demarcation in response to more refined analysis and project design.

In general, the SCMs are the same for each of the DMAs. These are discussed above in previous sections and include bio swales, use of pervious surfaces for trails and pathways where ever possible. Drainage will be directed to landscaped and open areas to address water quality as well as runoff reduction. Specific SCMs will be quantified in the SWCP.

Section 5.0 Operations and Maintenance Protocols for Structural Stormwater Control Measures

Appropriate type and frequency of maintenance is a critical component in an effective SWCP. Mapping of the specific improvements with identification of operational and maintenance practices for them to function properly will be part of the SWCP. Identification of the responsible party and the financing mechanisms for ongoing maintenance will also be included. The ROII Expansion proposes ownership, operation and maintenance to be the responsibility of the Home Owners' Association (HOA). Estimated costs for operation and maintenance will be outlined with a description of sources of financing to ensure a sustainable system.

The lake facility, as a major component to the overall stormwater management system for the site, must be properly and regularly maintained. The United States Department of Agriculture Natural Resource Conservation Service provides the following recommendations for an ongoing maintenance and operations program:

General Recommendations

- Annually inspect pond for damage from normal use. Inspect the spillways, inlets, outlets and control gates for proper functioning for their ability to maintain the water level to design elevations. At no more than 3 to 6 month intervals open and close gates and valves to assure proper function.
- Immediately remove any blockage or obstructions and repair any damage.
- Inspect inlet, embankments and spillways after heavy rains for possible damage. Promptly repair any damage.

- Annually inspect the downstream toe of the dam. If there are wet areas or seeps, contact the local NRCS office for additional assistance.
- Maintain vigorous growth of vegetative coverings. This includes reseeding, fertilization, and application of herbicides when necessary. Periodic mowing may also be needed to control height.
- Fill rills and gullies that occur on the embankments and/or spillway and re-vegetate.
- Maintain a grass filter strip around the perimeter of the pond to trap sediment.
- Check downstream floodplain at least once every 5 years to assure life or property will not be threatened in the case of a dam failure.
- If fences are installed, they shall be maintained to prevent unauthorized or livestock entry.
- Immediately repair any vandalism, vehicular, or livestock damage to any earthfills, spillways, outlets or other appurtenance.
- Removal of debris that may accumulate at the pond and immediately upstream or downstream from the basin.
- Make sure all structure drains are functional and soil is not being transported through the drainage system. The screens and/or rodent guards shall also be kept in place.
- Repair spells, cracks and weathered areas in concrete surfaces.
- Repair or replace rusted or damaged metal and apply paint as a protective coating.
- Inspect embankments for damage from rodents or burrowing animals. Repair any damage. Take appropriate corrective actions to alleviate further damage.
- Remove woody vegetation from embankments.
- Avoid excessive travel on any portion of the system that will harm or destroy the vegetative cover.

Ongoing maintenance will be the responsibility of the Master Homeowners' Association.

Section 6.0 Post-Construction SWCP Summary and Certification

This section is important in the future SWCP. It will summarize the compliance of the project design with the Performance Requirements of Resolution R3-2013-0032. If onsite compliance cannot be achieved, evaluation of off-site mitigation is an option. In the SWCP, the summary will be expressed in a table format and requires detailed quantitative analysis. Finally, this section of the SWCP will also include the certification of a licensed engineer or landscape architect that the SWCP meets the requirements of the Central Coast Regional Water Quality Control Board.