APPENDIX J-1

Stormwater Control Plan for 780 and 790 Derr Street

STORM WATER CONTROL PLAN

FOR

VALLEJO MARINE TERMINAL

780 & 790 DERR STREET

VALLEJO, CA

Printing date: January 18, 2016

Prepared in conjunction with the instructions, criteria, and minimum requirements in the Contra Costa Clean Water Program *Stormwater C.3 Guidebook, 6th Edition.*

Check the Contra Costa Clean Water Program website at www.cccleanwater.org/c3.html for information and updates to the Guidebook.

Prepared for:

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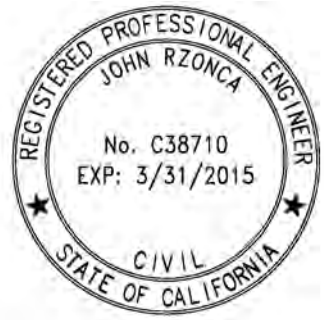

Job No. 04-39-10

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NOTE: Printed copies of this report will contain full-size (24" x 36") copies of Figures A, B and C. If you received an electronic report the figures will be included as pdfs. If you need or are unable to print full-size versions, please contact Tom Bomben (tom@meridianassociatesinc.com) at Meridian Associates, Inc. (925-691-7300), to obtain full-size copies as needed.

I. PROJECT DATA

Table 1. Project Data

Subdivision and Project Name	Vallejo Marine Terminal
Assessor's Parcel Numbers	APNs 0061-160-220, -230; 0061-111-030; 0061-010-110, -130, -180; & 0061-020-010, -020, -030, -040
Application Submittal Date	(to be verified by municipal staff)
Project Location	790 & 800 Derr Street, Vallejo, CA
Developer	Vallejo Marine Terminal
Project Phase No.	Two Phases
Project Type and Description	Docks and Storage Yard
Project Watershed	Mare Island Strait
Total Project Site Area (acres)	9.0 ac (Existing) 9.3 ac (Phase 1) 10.9 ac (Phase 2)
Total Area of Land Disturbed (acres)	10.9 ac
Total New Impervious Surface Area (sq. ft.)	101,500 (asphalt) 307,600 (gravel)
Total Replaced Impervious Surface Area	101,500 (asphalt) 42,400 (gravel)
Total Pre-Project Impervious Surface Area	6.52 ac (bldg & asphalt) 0.97 ac (gravel)
Total Post-Project Impervious Surface Area	2.33 ac (asphalt) 7.06 ac (gravel)
50% Rule (*)	Applies
Project Density	Industrial
Applicable Special Project Categories (complete even if all treatment is LID)	none
Percent LID and non LID treatment	100% LID
HMP Compliance (†)	Option 2 - IMP

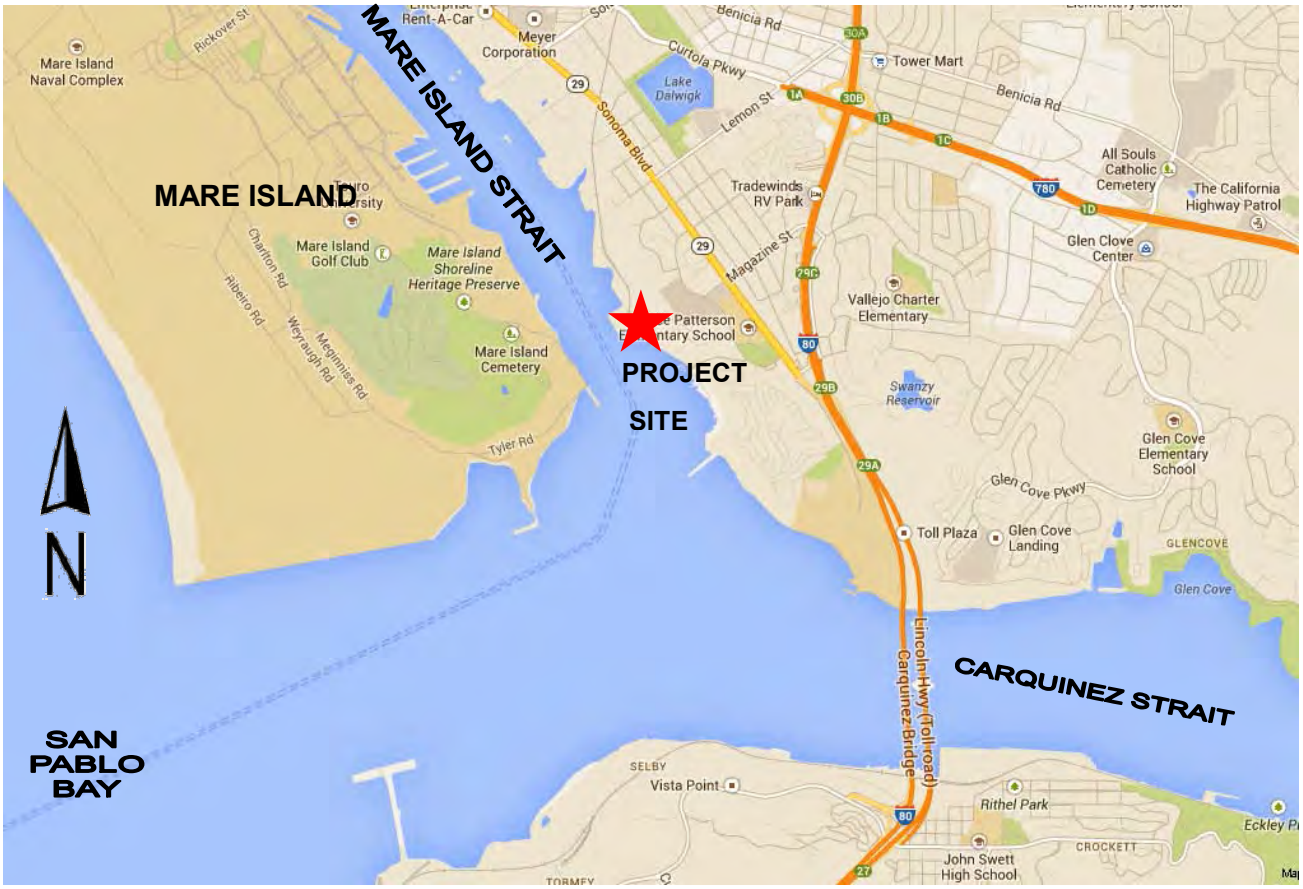
* 50% rule applies if: Total Replaced Impervious Surface Area > 0.5 x Pre-Project Impervious Surface Area

† HMP applies if: (Total New Impervious Surface Area + Total Replaced Impervious Surface Area ≥ 1 acre

II. SETTING

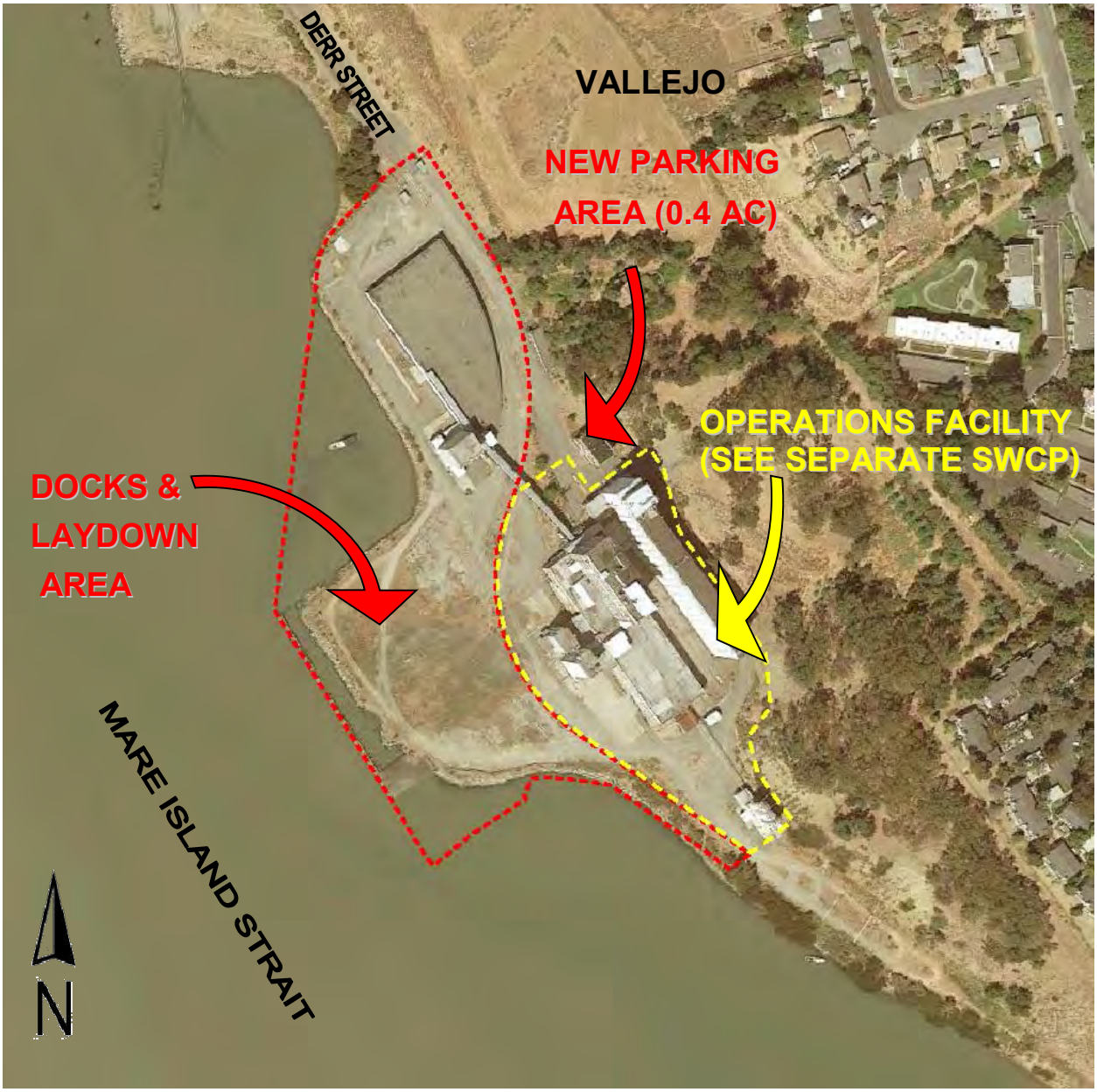
II.A. Project Location and Description

The Vallejo Marine Terminal is a proposed production plant facility located at 780 & 790 Derr Street in the City of Vallejo. The site is separated by an access road into two distinct areas: 1) The operations facility (northeast of the road) and 2) the dock/laydown area, which includes the access road and the areas southwest of the road. The SWCP for the operations facility is a separate document. This SWCP addresses the dock/laydown area, which along with the engineered fill to be placed for the docks. The site as it exists comprises 9.0 acres, with 0.3 acres of fill proposes to be added in Phase 1, and 1.3 acres of fill proposed to be added in Phase 2, for a total of 10.9 acres. A vicinity map and site map are shown below.



VICINITY MAP – VALLEJO MARINE TERMINAL, VALLEJO, CA

NOT TO SCALE



SITE MAP – VALLEJO MARINE TERMINAL, VALLEJO, CA

NOT TO SCALE Photo Date: 9-1-2012

II.B. Existing Site Features and Conditions

The site is the former General Mills plant fronting the Mare Island Strait at the end of Derr Street, and is bounded by undeveloped, vegetated slopes. To the northeast (beyond the slope) are residential homes and a school. Site topography ranges from elevation 117 at the top of the slope near the school, to elevation 18 at the northeast limit of the Operations area. From there the ground slopes southeasterly to the Strait at elevation 11, with surface slopes ranging from 1% to 7%. At the Strait's edge, the ground slopes from 10% to 60% to the water surface at elevation 4.2± (low tide).

The site has undergone some building, pavement and rail removals. Surface vegetation (in gravel areas) consists of a moderate growth of grasses and weeds. Paved access roads and parking areas exist on the site in varying degrees of thickness and disrepair. There are some pervious landscape areas and trees on the site. The existing land area of the dock/laydown area is approximately 9 acres. Engineered fill for Phase 1 and Phase 2 docks will add approximately 1.9 acres to the dock/laydown area, for a total site surface area of 10.9 acres. An "Exiting Site Conditions Exhibit" is attached as Figure G.

Gravel areas are considered 40% impervious. Note that the Contra Costa County IMP sizing calculator uses a factor of 0.1 for crushed aggregate surfaces when sizing for treatment and flow. Site impermeability is calculated as follows (based on the 10.9 acre project site):

Parameter	**Impervious Factor**	**Pre-Development Condition**	**Post-Development Condition**
Area		10.9 acres	10.9 acres
Impervious (Buildings and roads)	0.9	59.6% (6.5 ac)	21.1% (2.3 ac)
Semi-Pervious (Gravel & dock areas)	0.6	9.2% (1.0 ac)	65.1% (7.1 ac)
Landscape (Basin, swales, open, water)	0.1	31.2% (3.4 ac)	13.8% (1.5 ac)
Weighted Impermeability Factor		0.62	0.59

II.B.1. Pre and Post Development Runoff

Peak runoff from the existing site will be reduced by a combination of factors: 1) The existing site asphalt and building area will be reduced from 6.5 acres to 2.3 acres, including the removal of the existing warehouse building at the site entry; 2) Most of the removed asphalt areas will be replaced with gravel, which allows for infiltration; and 3) a decrease in the weighted site impermeability factor from 0.62 to 0.59. A 10-year storm event is expected to produce runoff of 8.2 cfs at its peak. When fill is placed for the Phase 2 dock area (1.9 acres), a 2.9 cfs increase to the peak flow will occur, for a total Q_{10} of 11.1 cfs. The bio-basin has been sized for 13.0 cfs (without consideration for infiltration). In the pre-development condition, sheet runoff flows directly over the banks into the Mare Island Strait. In the post-development condition, all on-site runoff is directed to vegetated swales, storm drain inlets, and the bio-basin for detention and filtration.

II.B.2. Stormwater Conveyance Systems

A series of coordinated Best Management Practices (BMPs) will be used to remove pollutants, slow runoff, and contain runoff prior to its release into the Mare Island Strait.

Storm Water control design is focused on filtering of runoff as it flows across the site. Runoff from roofs and paved areas is directed to the storm drain system, or to a vegetated swales prior to entering the storm drain system. The downstream end of the storm drain system flows into the bio-basin for retention and filtration before discharging to the Mare Island Strait. In addition, there will be areas of landscaping and or vegetation

where site operations are not subject to truck traffic. Since the layout of operations (truck routes, stockpiles, conveyor systems) may change from time to time, these landscape areas are not deducted from the required treatment area of the site.

The bio-basin has several overflow inlets in the event of a severe storm. The overflow inlets allow ponded runoff to enter the subdrain system instead of overflowing the banks of the basin. In less severe storms, the basin will drain through infiltration into the subdrain system at a rate no less than 5" per hour. It is expected that the basin will drain completely within 48 hours of the end of any storm event.

II.C. Opportunities and Constraints for Stormwater Control

The main constraints for Storm Water controls include relatively shallow groundwater (4 to 9 feet below the existing surface) and the flexibility required for unloading, trucking, stockpiling, and storage of materials. In addition, the moderately expansive soils somewhat prohibits the use of permeable pavements on highly traveled roadways, such as the main entrance roads and expected routes for truck traffic.

The main opportunities for Storm Water controls are the site topography and site layout, which includes proposed vegetated swales, a storm drain system, and a bio-basin. The fairly flat laydown area lends itself to effective control of runoff in vegetated swales, or as sheet flow, which is directed to the storm drain system and the bio-basin for retention and filtration.

Phase 1 site development will include the construction of a new pier, adding approximately 13,100 square feet (0.3 ac) of surface area, placed as fill along the bank of the Mare Island Strait. The Phase 2 dock will add approximately 69,700 square feet (1.6 ac) of surface area, also as fill in the Mare Island Strait. The finished grade at both docks (Elevation 11.5) is designed to carry runoff away from the Strait for collection and filtration instead of directly discharging into the Strait. In this way, debris and pollutants from unloading and/or vehicle operations can be adequately filtered prior to discharge. Minor landscape areas not affected by stockpiling or truck traffic also present an opportunity for storm runoff filtration.

Access to the site is gated at the main entry from Derr Avenue. Since the site is private, the access roads are designed with a straight cross-slope (rather than crowned), which will direct runoff to the storm drain system, and in some cases, vegetated swales at the road edge. All road runoff is directed to the bio-basin for filtration prior to draining into the Mare Island Strait.

III. LOW IMPACT DEVELOPMENT DESIGN STRATEGIES

III.A. Optimization of Site Layout

III.A.1. Limitation of development envelope

There are no streams or other significant hydrological features on the site. All adjacent properties are separated from the site by fences and/or existing topographical features. This Operations Area SWCP is a separate document concerned with the Laydown Areas as shown on Figure A and described in Section 1.1

The project is a redevelopment of the existing manufacturing plant. The following layout characteristics have been selected to reduce impervious areas:

- The existing warehouse building at the site entry will be removed. The area will be paved or topped with gravel and used for truck/rail traffic and for stockpile of materials and/or equipment.
- A bio-basin and vegetated swales will be added to the site to provide treatment and flow control. Vegetated swales will be installed along paved road edges, where possible, avoiding areas of heavy truck traffic and/or stockpiled materials.

- Existing trees and landscape areas are to be preserved where possible.

III.A.2. Preservation of natural drainage features

Existing vegetation consists of moderate growth of grasses and weeds. The site currently drains directly into the Mare Island Strait. The ultimate outfall will still be into the Strait, but surface drainage will be captured and/or directed to the bio-retention basin for settlement and filtration prior to discharge.

III.A.3. Setbacks from creeks, wetlands, and riparian habitats

There are no streams, wetlands, riparian habitats or other significant hydrological features on the site.

III.A.4. Minimization of imperviousness

To reduce the proposed impervious area, no new buildings are proposed. The majority of the site is for storage and transport of materials, which will be surfaced with gravel (instead of pavement), allowing for some infiltration.

III.A.5. Use of drainage as a design element

The existing flow pattern (northeast to southwest) will be preserved, although some underground re-routing will occur in the storm drain system. All surface flow (and pipe discharge) enters the bio-retention basin. Runoff adjacent to the banks of the Strait will be sent northerly to drainage swales, rather than overflowing the bank.

III.B. Use of Permeable Pavements

Conventional concrete and asphaltic concrete are used throughout the site where truck traffic and loading/ unloading of rail traffic occur. Stockpile areas are gravel of sufficient thickness to support truck/equipment loads. Over time, vegetation may grow on the unused portions of the gravel, while heavily travelled areas may need a top dressing of additional gravel.

Concrete strip style drives (as opposed to a full concrete/asphalt roadway), and/or paving stones/bricks, are not considered appropriate due to traffic loading and the possibility of differential movement/settlement between the strips and/or stone/brick components.

III.C. Dispersal of Runoff to Pervious Areas

Self-treating areas on the site are not proposed. but there will likely be small ponds (less than 3" deep) in landscaped areas where runoff may collect and infiltrate, and gravel areas not subject to truck traffic may have similar temporary ponds with vegetation. Along paved roadways, runoff will drain towards a vegetated swale, to capture sediments and pollutants, and then discharge into the storm drain system for conveyance to the bio-basin. A typical vegetated swale is shown in Appendix A, Figure B. A total of 3,700 square feet of vegetated swale is shown on the Storm Water Control Plan, however, site conditions may require elimination or relocation of some swales due to truck/equipment traffic and or operational procedures. The vegetated swales (since they are landscape filters only) are included as a "landscape" item in the calculations for required basin size and volume.

All site runoff is directed to the bio-basin, which filters runoff (through infiltration) before discharge to the Mare Island Strait. The storm drain system discharges to the bottom surface of the bio-basin for both treatment and flow control purposes. A bio-retention basin cross section is shown in Appendix A, Figure B.

III.D. Feasibility Assessment of Harvesting and Use for Treatment and Flow-Control

III.D.1. Permeability of Site Soils

The geotechnical report by ENGEO, dated April 29, 2008, finds the site to consist of colluvial and clayey soils. These materials generally have low permeability, and are categorized as NRCS Hydrological Soil Group "D".

III.D.2. Potential Opportunities for Harvesting and Use

There are no plans to collect runoff (in cisterns, drywells, etc.) for landscaping or other purposes, and no project-wide harvesting of runoff is proposed based on the calculations below.

III.D.3. Harvesting and Use Feasibility Calculations

Table 2. *Harvesting and Use Feasibility*

A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*
Building or other Impervious Area Description	*Square feet of impervious surface*	*Acres*	*Uses and User Units (assume 10.acre)*	*Toilet and Urinal Water Usage (gal/day)*	*Water Use per Acre (gal/day/acre)*	*Required demand (gal/day/acre).*	*Is Projected Use > Required Demand? (F > G?)*	*Can runoff be piped to an irrigated area 2.5x the impervious area (B)?*	*Other consistent, reliable demand for the quantity in G?*
Roofs Only	0	0.00	0	5.4	0	5900 (Martinez)	no	no	no
Total site (Streets & gravel)	474900	10.9	109	5.4	588	5900 (Martinez)	no	no	no

III.E. Integrated Management Practices

Integrated management practices (IMPs) on the site will be vegetated swales and a bioretention basin.

Vegetated swales (VS) are a minimum of 5' wide, and consist of grasses, groundcovers, and other plants, and may incorporate landscape materials such as river-rock, and decorative borders. Installation and location of the swales is subject to temporary removal and/or relocation based on site operations (ie. truck crossings). The swales are used as a "first capture" of sediments and pollutants from paved roadways, and are included as "landscape areas" in basin sizing requirements. Maintenance will consist of replanting, trimming, and debris removal, and may require repairs to any adjacent drainage system and/or irrigation system.

The bioretention basin (Basin A) is a filtration and retention area that removes pollutants. The basin has a ponding area, a vegetated surface, a soil mix layer (sandy loam, organic material and mulch), a storage layer, and a subdrain system. The runoff velocity is reduced by even distribution across the basin and interaction with the soil media, vegetation, and soil microbes, before passing through to the storage layer. Exfiltration of the stored water from the storage layer into the subdrain system occurs over a period of days (after significant storm events). The soil mix layer is underlain with gravel for additional required storage. The gravel storage layer collects filtered runoff into a subdrain prior to discharge from the basin. It consists of ¾-inch diameter crushed rock with a geotextile filter fabric (Mirafi 140N, or equivalent) to separate it from the sandy loam soil above. A 6-inch diameter perforated subdrain pipe runs through the gravel layer to convey water to the discharge point. An impermeable membrane is at the bottom of the gravel layer to minimize infiltration to the underlying soil and into the groundwater. A bio-basin detail is in Appendix A, Figure B.

In addition, the project incorporates (at a minimum) the following additional LID measures:

• Tree planting	Applicable to any tree planting on site
• Landscaping Soil Quality	Applicable to landscape areas
• Landscaping that minimizes irrigation and runoff	Applicable to any new or refurbished irrigation
• Efficient irrigation systems	Applicable to any new or refurbished irrigation
• Storm drain inlet stenciling	"No Dumping – Drains to Bay"

IV. DOCUMENTATION OF DRAINAGE DESIGN

IV.A. Descriptions of each Drainage Management Area

IV.A.1. ***Table 3*** *Drainage Management Areas*

DMA Name	*Surface Type*	*Area (square feet)*
VS	**VEGETATED SWALES (USED ALONG ROADWAYS FOR FILTRATION OF SEDIMENTS AND OTHER POLLUTANTS)** (counted as "landscape area" in sizing calculations)	**3,700**
A1	**ASPHALT/CONCRETE AREAS (INCLUDES MAIN ROADWAY AND OTHER IMPERVIOUS AREAS**	**101,500**
A2	**AGGREGATE LAYDOWN AREAS (STORAGE AREAS, TRUCK TRAFFIC AND EQUIPMENT OPERATIONS)**	**307,600**

IV.A.2. Drainage Management Area Descriptions

DMA VS : Drains to a vegetated swales: 3,700 square feet.

Collects runoff from streets and other paved areas for filtration of sediments and pollutants. Swales discharge to the storm drain system and/or into the basin. Although the runoff is treated and will infiltrate to some degree, these amounts are not subtracted for the basin sizing calculations. The basin includes these areas as landscape areas for treatment and flow calculations

DMA A1 : Drains to the bio-retention basin: 101,500 square feet.

Runoff from streets, paved areas, and vegetated swales is collected at inlets and conveyed to the basin in storm drain pipes (or on the surface adjacent to the basin).

DMA A2 : Drains to a bio-retention basin: 307,600 square feet.

Collects runoff from all site aggregate laydown areas (and vegetated swales, if any) into the storm drain system and/or into the basin.

IV.B. Tabulation and Sizing Calculations

IV.B.1. Information Summary for IMP Design

Total Project Area (Square Feet)	474,900
Mean Annual Precipitation	19
IMPs Designed For:	Treatment and Flow: Basin A

IV.B.2. Self-Treating Areas

There may be places in the gravel laydown area where shallow ponding (less than 3" deep) occurs and infiltrates. However, such ponding, while encouraged for treatment/filtration, are not considered part of the project mitigation, and are not included or subtracted from any required calculations.

IV.B.3. Self-Retaining Areas

There may be areas on the site where shallow ponding (less than 3" deep) occurs and infiltrates or becomes trapped until evaporating. However, such ponds, while encouraged for treatment/filtration/evaporation, are not considered part of the project mitigation, and are not included or subtracted from any required calculations.

IV.B.4. Areas Draining to Self-Retaining Areas

No off-site runoff or flow will discharge into a self-retaining areas, other than that which may occur as described in IV.B.3.

IV.B.5. ***Table 4*** *Areas Draining to IMPs and Sizing Calculations*

Basin A is sized for treatment and flow. Note that sizing includes both phases. Phase 1 will add 0.3± acres of new land, and Phase 2 will add 1.6± acres. Should Phase 2 be eliminated from the project, the calculations may be adjusted accordingly.

Project Name: Vallejo Marine Terminal
Project Type: Treatment and Flow Control
APN: 061-160-220 061-0160-230
Drainage Area: 422,200
Mean Annual Precipitation: 19.0

IV. Areas Draining to IMPs

IMP Name: Basin A
IMP Type: Bioretention Facility
Soil Group: Basin A

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
Roadway	101,500	Concrete or Asphalt	1.00	101,500
Laydown	307,600	Crushed Aggregate	0.10	30,760
Veg Swale	3,700	Landscape	0.70	2,590
			Total	134,850

IMP Sizing	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
Area	0.050	1.053	7,099	9,400
Surface Volume	0.042	1.053	5,963	7,900
Subsurface Volume	0.055	1.053	7,808	7,900
Maximum Underdrain Flow (cfs)				0.70
Orifice Diameter (in)				5.41

IV.B.6. Areas Draining to Non-LID Treatment

There are no Non-LID Treatment areas on this project.

V. SOURCE CONTROL MEASURES

V.A. Site activities and potential sources of pollutants

The project is designated for manufacturing. Potential sources of pollutants may be present in day-to-day manufacturing procedures, such as loading and unloading of materials, stockpiles, landscaping, vehicle and equipment maintenance, and other pollutant sources. In general, any potential pollutants likely to be present will be treated by a combination of the vegetated swales and the bio-basin as described in the previous section. Table 5 below summarizes the potential pollutant sources and controls.

V.B. Source Control Table

TABLE 5 POTENTIAL POLLUTANT SOURCES AND CONTROLS

Potential Source of Pollutant Runoff	Permanent BMP'S	Operational BMP's
On-Site Storm Drain Inlets	Storm drain inlets will be marked with the words "No Dumping! Drains to Creeks and Bay"	1) Inlet markings will be periodically maintained. 2) Stormwater pollution prevention information will be provided to new homeowners as part of a new homeowner package
Need for Future Indoor & Structural Pest Control	General building practices will be designed to minimize the potential for pest intrusion	Integrated pest management information will be provided to new homeowners as part of a new homeowner package
Refuse areas	Refuse areas on-site should be located away from high-traffic areas, and away from the bioretention basin and vegetated swales, or other areas where receptacle runoff will bypass the basins and/or vegetated swales.	Provide adequate number of receptacles and inspect receptacles regularly. Repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs at receptacle area and/or on the receptacles. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available onsite.
Landscaping/Outdoor Pesticide Use	Landscaping will be designed in order to minimize irrigation and runoff requirements	Homeowners will be provided with information regarding general stormwater pollution prevention information, including pesticide and fertilizer use
Vehicle Washing	Vehicle washing, if performed on-site, should be in garages, or other contained or landscaped areas where runoff, if any, will not flow to streets or bio-retention areas.	Washwater from vehicle washing shall not be discharged to the storm drain system. As part of the new homeowner package, homeowners will be provided with information discouraging on-site vehicle washing due to potentially polluted runoff.

V.C. Features, Materials, and Methods of Construction of Source Control BMPs

Site personnel need to be familiar with the purpose and function of each BMP, whether it serves to divert, filter or detain runoff, allow for infiltration, or provide for settlement of pollutants and debris. Attention shall be taken to ensure runoff flows in the intended direction and to the intended area. Where the details on the project plans do not clearly indicate the intent, contact the designer for an explanation of the related details. The Stormwater C.3 Guidebook, 6th Edition from Contra Costa County is available at www.ccleanwater.org/c3.html for general information, but keep in mind that project specific details will take precedence. All BMPs on this site will initially be installed by the Developer from the project plans. Any future reconstruction of any BMP will require approval by the responsible parties.

VI. STORMWATER FACILITY MAINTENANCE

VI.A. Ownership and Responsibility for Maintenance in Perpetuity

Upon completion of construction activities, BMP maintenance will be transferred to the site owner. In general, maintenance of all BMPs are the responsibility of the owner, along with the right to maintain or repair any BMP essential to the function of the pollutant and sediment removal system, such as vegetated swales, private drains, and the bio-basin. The City of Vallejo reserves the right to inspect, maintain and repair (or request repair) of any items deemed deficient.

VI.B. Summary of Maintenance Requirements for Each Stormwater Facility

The main Storm Water controls are incorporated into the Storm Water drainage and conveyance system, particularly the vegetated swales, the bioretention basin and the storm drain system,

VI.B.1 Landscaped Areas (including vegetated swales)

Operation and maintenance of any landscaping will be the responsibility of the Owner. The typical routine maintenance for the landscaped areas will include the following:

- Inspect for erosion and exposure of soil. Remove any accumulated sediment and repair exposed areas;
- Vegetation should be examined periodically to ensure that it is healthy and dense enough to capture sediments and pollutants and to prevent erosion. Damaged or dead plants should be replaced in kind;
- Inlets and curb sleeves (if any) should be checked for debris and blockages. Drain rock should be flushed, cleaned or replaced as needed when sediment collection occurs;
- No additional impervious areas shall be created in landscaped areas except those initially installed by the Owner.
- Irrigation should be evaluated so as not to be excessive, but to maintain healthy vegetation; and
- For vector control activities, any holes or depressions in the landscaping or other areas where water could pond for more than 48 hours should be backfilled or repaired. If any mosquito larvae are present and persistent, the Contra Costa Mosquito and Vector Control District should be contacted for information and advice. The use of larvicides and other pesticides should be kept to an absolute minimum and applied only when necessary by a licensed individual or contractor.

VI.B.2 Bioretention-basin

TAKEN DIRECTLY FROM THE CONTRA COSTA COUNTY STORMWATER FACILITY OPERATION AND MAINTENANCE FACT SHEET

Bioretention Areas

These facilities remove pollutants primarily by filtering runoff slowly through an active layer of soil. Routine maintenance is needed to ensure that flow is unobstructed, that erosion is prevented, and that soils are held together by plant roots and are biologically active. Typical maintenance consists of the following:

- Inspect **inlets** for channels, exposure of soils, or other evidence of erosion. Clear any obstructions and remove any accumulation of sediment. Examine rock or other material used as a splash pad and replenish if necessary.
- Inspect **outlets** for erosion or plugging.
- Inspect **side slopes** for evidence of instability or erosion and correct as necessary.
- Observe soil at the bottom of the swale or filter for uniform **percolation** throughout. If portions of the swale or filter do not drain within 48 hours after the end of a storm, the soil should be tilled and replanted. Remove any debris or accumulations of sediment.
- Confirm that **check dams** and **flow spreaders** are in place and level and that channelization within the swale or filter is effectively prevented.
- Examine the **vegetation** to ensure that it is healthy and dense enough to provide filtering and to protect soils from erosion. Replenish mulch as necessary, remove fallen leaves and debris, prune large shrubs or trees, and mow turf areas. When mowing, remove no more than 1/3 height of grasses. Confirm that irrigation is adequate and not excessive. Replace dead plants and remove noxious and invasive vegetation.
- Abate any potential **vectors** by filling holes in the ground in and around the swale and by insuring that there are no areas where water stands longer than 48 hours following a storm. If mosquito larvae are present and persistent, contact the Contra Costa Mosquito and Vector Control District for information and advice. Mosquito larvicides should be applied only when absolutely necessary and then only by a licensed individual or contractor.

- - - - - - END OF COUNTY FACT SHEET EXCERPT

In addition, maintenance shall include::

- Examine inlets and other structures to ensure that the piping is intact and not plugged. Remove accumulated sediment or debris near the inlet and/or structure
- Examine overflow structure(s) and remove any debris or sediment. Identify and correct any sources of sediment and debris.
- Check rocks (rip-rap) or other armoring at inlets and outlets and replace as necessary.
- Confirm that any fencing or other barrier around the facility are continuous and secure

Typical *non-routine* maintenance includes the following:

- Dredge accumulated sediment. This may be required every 5 to 15 years, and more frequently if there are excess sources of sediment. Dredging is usually a major project requiring mechanized equipment. The work will include an initial survey of depths and elevations; sediment sampling and testing; removal, transport and disposal of accumulate sediment and re-establishment of original design grades and sections.
- Remove invasive plants. Depending on the success of the design and rate of sedimentation, ponds may be subject to excessive growth of rooted macrophytes, which reduce the effective area of the pond and create quiescent surface water that supports mosquito larvae. Removal may require a level of effort similar to dredging.

VI.B.3 General Storm Drain System Maintenance

Routine maintenance of the storm drain system will generally involve the removal of any accumulated sediments and debris at catch basins, inlets and/or within the pipes. Maintenance of the storm drain system will be performed under the direction of the Owner, with the City of Vallejo reserving the right to inspect and require maintenance and/or repairs. The maintenance requirements are anticipated to be low.

VII. CONSTRUCTION PLAN C.3 CHECKLIST

The following table describes the stormwater control BMP's:

TABLE 6 CONSTRUCTION PLAN CHECKLIST

Stormwater Control Plan Reference	BMP Description	Details or Appendix A Figure
Section IV.B.2 Section IV.B.3	Self-treating and self-retaining areas may occur but are not intended as part of the project design for the laydown area or landscaped areas. Ponds more than 3" deep should be filled or re-graded to be no greater than 3" deep. Overflow of any ponds shall be directed to a vegetated swale, the basin, or an inlet.	Project Landscape Plans Project Grading Plans Storm Water Control Plan
Section VI.B.1	Drywell and curb sleeve. Sediment is trapped in the landscaping and drain rock (drywell) during low-flow events. Higher volume events release the runoff to the street through a curb sleeve.	Project Plot Plans Figures D, E and F
Section III.E	Vegetated swales are landscaped to provide filtering. They are intended to remove sediments and pollutants adjacent to roads and other paved areas.	Project Landscape Plans Figure B
Section III.E	The Bio-basin is a bioretention area with filtering soil and subdrains, located on the west portion of the site. It serves to filter runoff as well as to meter outfall flow to less than historic (pre-project) levels.	Figure C

Stormwater Control Plan Reference	BMP Description	Details or Appendix A Figure
Section III.E	On-site drain inlets will be marked "No Dumping – Drains to River"	Project Plans – Storm Drain Chart
Section VI	The Owner shall provide education regarding pest control, landscaping, vehicle washing, refuse areas, and general Storm Water pollution prevention requirements; including plant selection to minimize water, fertilizer and pesticide requirements.	Project Landscape Plans Storm Water Control Plan
Section VI	Drainage areas and descriptions as delineated in the Storm Water Control Plan (SWCP) will be incorporated into the Final Grading Plans. This includes routing of runoff to intended areas as described in the SWCP, and locations of vegetated swales along impervious areas.	Project Grading Plans Project Landscape Plans Storm Water Control Plan

VIII. CERTIFICATIONS

The selection, sizing, and preliminary design of Storm Water treatment BMPs and other control measures in this plan meet the requirements of the Regional Water Quality Control Board (RWQCB).

If there is a discrepancy between a requirement and detail as described herein, or in the project plans, and the requirements of the City of Vallejo, the RWQCB, or other agencies, the more stringent requirement shall apply, unless indicted differently in writing by the affected regulatory agency. The Owner, or its representative, may propose alternate and/or additional BMP for use on this site, subject to the review and approval of the RWQCB, or other appropriate agency.

John Rzonca
MERIDIAN ASSOCIATES, INC
RCE C38710
Expires 3/31/17

date

OWNERS CERTIFICATION

I, the undersigned, certify that all land clearing, construction and development shall be done pursuant to the approved plan.