APPENDIX G – DRAINAGE ASSESSMENT

Preliminary
Stormwater Control Plan

1600 Loveridge Road

APN 073-200-013
CITY OF PITTSBURG, CONTRA COSTA COUNTY, CALIFORNIA

October 1, 2014

Prepared For:

1600 Loveridge, LLC.
P.O. Box 5397
Concord, CA 94524

Prepared By:

Carlson, Barbee & Gibson, Inc.
CIVIL ENGINEERS • SURVEYORS • PLANNERS

2633 CAMINO RAMON, SUITE 350 • SAN RAMON, CALIFORNIA 94583 • (925) 866-0322 • www.cbandg.com

TABLE OF CONTENTS

APPENDIX

EXHIBITS

I. PROJECT SETTING

A. Project Name, Location and Description

The 1600 Loveridge Road project site (APN 073-200-013) is located in the City of Pittsburg, Contra Costa County, California. The proposed project site is approximately 3.6 acres, consisting of an existing building, a truck maintenance facility, a truck wash area as well as a fueling station and associated parking. This project also includes a 30' access road connecting to the existing Mount Diablo Recycling Center entrance road. As shown in Exhibit 1, a portion of Kirker Creek lies within the project boundary. However, the existing drainage easement area, including Kirker Creek, will not be disturbed.

B. Existing Site Conditions

The site is zoned for General Industrial (IG) per the City of Pittsburg Zoning Ordinance. It is bound by Loveridge Road to the east, Pittsburg-Antioch Highway to the south, USS POSCO to the west, and the Mount Diablo Recycling Center to the north. This site was previously occupied by GWF Power Plant that has since been demolished. This site currently consists of existing building, existing foundation and pavement areas as well as an operational pump station. Asphalt and concrete cover the majority of the site. The site is nearly completely covered by impervious materials. The project site contains 119,547 square feet of impervious areas and 37,320 square feet of pervious areas. Exhibit 1 depicts existing site conditions.

The 1600 Loveridge Road project site is located within the moderate climate of the San Francisco Bay Area Region. Annual temperature patterns are typical of coastal areas. Mean annual precipitation is approximately 13 inches. Precipitation is evenly distributed throughout the fall, winter, and spring but is very low in the summer.

The site generally slopes from the north to the south with elevations ranging from 34 feet to 38 feet. According to the USGS Web Soil Survey, the site contains Hydrologic Group C soils. These soils have low infiltration rates.

This project lies within the Kirker Creek watershed. The proposed redevelopment of this site will improve this watershed. Existing conditions at the site are mostly impervious with no

stormwater quality management improvements or treatment practices in place. With the redevelopment of the project site, stormwater quality treatment measures and flow control facilities will be implemented, improving the quality of the stormwater that has historically drained from the site to Kirker Creek.

The project site is within the existing FEMA Flood Zone A, an area that is determined to be within the 100-year floodplain, as depicted on the FEMA Flood Insurance Rate Map Community Panel 06013C0138F, dated June 16, 2009.

C. Compliance with Municipal Regional Permit (MRP) C.3 Guidelines

The proposed project includes the redevelopment of a previously developed site. The proposed project will result in a slight increase in the amount of impervious area. Exhibit 2 depicts the proposed site conditions. See Table 1 for a summary of the project data.

Table 1 – Project Data

Project Name / Number	1600 Loveridge Road
Application Submittal Date	August 2014
Project Location	1600 Loveridge Road
Name of Developer	1600 Loveridge Road, LLC
Project Phase No.	N/A
Project Type and Description	Redevelopment of a demolished existing power plant with a proposed truck maintenance facility
Project Watershed	Kirker Creek
Total Project Site Area (Acres)	3.60 Acres
Total Area of Land Disturbed (Acres)	3.60 Acres
Total New Impervious Surface Area (SF)	10,721 SF
Total Impervious Surface Area to Remain	3,780 SF
Total Replaced Impervious Surface Area	115,767 SF

Total Pre-Project Impervious Surface Area	119,547 SF
Total Post-Project Impervious Surface Area	134,048 SF
50% Rule*	Apply
Project Density	N/A
Applicable Special Project Categories	None
Percent LID and Non-LID Treatment	100% LID
HMP Compliance	Option 1 & 2

The project is subject to compliance with both the treatment and flow control guidelines within the MRP C.3 requirements, as follows:

1. **Treatment**

   The proposed project will alter more than 50% of the existing impervious surfaces. Therefore, per Table 1.1 of the County's Guidebook, this project is required to include treatment measures for the entire site.

2. **Flow Control**

   The proposed project increases the amount of impervious area by 14,501 square feet. Also, the project has impervious areas that are larger than one acre. Therefore, the project is subject to the hydrograph modification management (i.e., flow control) requirements of the MRP. Pursuant to the MRP, the existing developed site conditions will be used as a baseline for the determination of the pre- and post-project runoff conditions and to define the required volume of the flow control facilities. Appendix C is the March 10, 2009 Contra Costa Clean Water Program – C.3 Implementation Work Group memorandum entitled "Guidance on Flow Control for Development Projects on Sites that are Already Partially Developed". The Flow Control memorandum outlines the approach for compliance for projects involving sites similar to the 1600 Loveridge Road.

D. Constraints and Opportunities for Stormwater Control

The following are the site-specific underlying constraints affecting the selection of treatment and flow control facilities for the project as well as underlying constraints that serve to limit opportunities to reduce imperviousness and incorporate facilities into the site and landscape design.

1. Constraints

a. *Rain Cycle* – Opportunities for storage and reuse of storm water are hindered by the rain cycle of the Bay Area. The time periods between the rain season and the dry season are long enough to make storage of rain water for reuse infeasible.

b. *Low Impermeable Soils* – The project site is underlain by soils classified as Hydrologic Soil Group C. Group C soils have low natural percolation rates with limited potential for direct infiltration of storm water.

c. *Heavy Vehicular Traffic* – The project site is located within Mount Diablo Resource Recovery Park Facility. The area includes various processing facilities which generate heavy vehicular traffic. With the amount of trucks driving in and out of the site an adequate amount of truck parking must be provided along with proper turning radii to allow the trucks to drive throughout the site. This limits the area that can be used for landscape and treatment areas.

2. Opportunities

a. *Existing Storm Drain System* – Currently there are two existing storm drain systems that outfall into Kirker Creek. The project grading and storm drainage design directs the stormwater to these two outfalls. This allows the water to be treated in the integrated management practices (IMP) before entering the Kirker Creek.

b. *Disconnected Impervious Areas* – As part of optimizing the site layout, impervious areas have been disconnected where possible to allow for reduced levels of concentrated runoff.

c. *Existing Site Topography* – The project site is relatively flat. Sloping at approximately 1% from the north to the south. The existing drainage pattern will be maintained and the relative flatness of the site will improve efficiency and performance of treatment facilities.

II. LOW IMPACT DEVELOPMENT DESIGN STRATEGIES

A. Optimization of Site Layout

1. Minimization of Imperviousness

As part of an industrial facility there are few opportunities to minimize impervious area. However, a number of design principles were used. Truck parking stalls have been minimized to reduce the need for impervious area. The drive lanes were also optimized to allow trucks to safely drive through the site, but still allow for additional landscape. Car parking stall dimensions were reduced to the smallest standard allowed by the City of Pittsburg.

2. Using Drainage as a Design Element

The proposed grading allows for five Integrated Management Practice (IMP) areas on site. These areas were optimized and located at low points to collect the maximum amount of runoff. These IMP's will not only meet the stormwater demand, but also increase the aesthetics of an industrial site.

B. Direct Runoff to Integrated Management Practices

The site layout for the proposed project includes a site grading and storm drainage scheme designed to maximize the amount of site runoff directed to landscaped areas which will be designed as IMP's. The roof drainage will be routed via down spouts to valley gutters and directed to low points via gravity flow. The runoff from parking surfaces will be captured and conveyed to the landscape areas via sloped pavement, gutters and curb openings into the IMP's.

C. Assessment of Infiltration/Rainwater Harvesting and Re-Use Feasibility

The following outlines the rainwater harvesting and re-use feasibility necessary to comply with the MRP C.3 requirements.

Building or other Impervious Area Description	Square Feet or Impervious Surface	Acres	Uses and User Units	Toilet and Urinal Water Usage (gal/day)	Water Uses per Acre (gal/day/acre)	Required Demand (gal/day/acre)	Is Project Use > Required Demand	Can runoff be piped to an irrigation area 2.5x the impervious area	Is there any consistent, reliable demand for the required demand?
Roof Area	9,044	0.208	Industrial Uses	5.4	25.96	4,200	No	No	No
Impervious Surface Area	31,342	0.720	Industrial Uses	5.4	7.51	4,200	No	No	No
Roof Area	5,240	0.120	Industrial Uses	5.4	45.00	4,200	No	No	No
Impervious Surface Area	12,686	0.291	Industrial Uses	5.4	18.54	4,200	No	No	No
Roof Area	3,800	0.087	Industrial Uses	5.4	62.06	4,200	No	No	No
Impervious Surface Area	16,092	0.369	Industrial Uses	5.4	14.62	4,200	No	No	No
Impervious Surface Area	47,625	1.094	Industrial Uses	5.4	4.94	4,200	No	No	No
Impervious Surface Area	8,219	0.187	Industrial Uses	5.4	28.62	4,200	No	No	No

By these standards, it is deemed that infiltration and rainwater harvesting are not feasible on this site.

III. DOCUMENTATION OF DRAINAGE DESIGN

The following outlines the stormwater management facilities within the project site necessary to comply with the applicable C.3 guidelines.

The proposed stormwater management plan outlined below is reflective of input secured through that review. The plan balances the constraints of the site, the land use planning objectives for the site, and the MRP C.3 requirements.

The stormwater management plan for compliance with treatment and flow control requirements is described below:

A. Treatment

The proposed project will integrate bioretention areas into the site plan which will be designed as water quality treatment basins. Drainage Management Areas (DMA) 1, 2, 3 & 5 are located where there will be no net increase in impervious area. With no net increase in impervious area, Option 1 can be used to satisfy the Hydrograph Modification Management Plan (HMP) of the C.3 Guidebook for these DMA's. Exhibit 3 depicts the proposed locations of the IMP's. The treatment only IMPs will provide an area 3,536 square feet of bioretention area. Calculations for the individual IMP areas were performed using the Contra Costa Clean Water Program Integrated Management Practices Calculator Version 1.3.1.0, the results have been provided in Appendix A for review.

B. Flow Control

Since this project proposes more than one acre of impervious area, the proposed project must comply with the flow control requirements of the C.3 Guidebook. The proposed project would increase total impervious area by 14,501 square feet. The existing site conditions are to be used as the baseline when estimating pre-project storm drainage flow peaks and durations. The project proposes to implement a consistent approach to compliance with flow control requirements as those outlined in the Contra Costa Clean Water Program C.3 Implementation Work Group

memorandum entitled "Guidance on Flow Control for Development Projects on Sites that are Already Partially Developed". This memo is enclosed as Appendix C.

For the pervious portion of the existing site where impervious surfaces are proposed, HMP Option 2 applies. The additional impervious areas of 14,501 square feet must be mitigated with flow control facilities. The project will provide the necessary storm water storage capacity to match pre-project peaks and durations by constructing bioretention basins with adequate surface area and sub-surface storage capacity. DMA 4 encompasses the area of the site where the impervious area is proposed to increase. IMP 4 has adequate volume to control the flow of runoff through the basin before it enters the proposed storm drain system. These calculations can be found in Appendix B, demonstrating the required volume of the flow control facility will be accomplished in this bioretention basin. Exhibit 3 depicts the proposed basin location within the site.

IV. SOURCE CONTROL MEASURES

The proposed project will create few potential sources of stormwater pollution. Sources to be controlled include but are not limited to:

SOURCES AND SOURCE CONTROL BMP'S

Potential Source of Runoff Pollutants	Permanent Source Control BMP's	Operational Source Control BMP's
Onsite storm drain inlets	Mark all accessible onsite inlets with the words "No Dumping! Flows to Creek" or approved equivalent language. Detail location of all onsite storm drain inlets on Stormwater Control Plan Drawings.	Maintain and periodically replace inlet markings as needed. Provide stormwater pollution prevention information to new site owners, lessees, or operators. Include the following in lease agreement "Tenant shall not discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."
Fuel Dispensing Areas		The property owner shall dry sweep the fueling area routinely

Potential Source of Runoff Pollutants	Permanent Source Control BMP's	Operational Source Control BMP's
Landscape/outdoor pesticide use	Final project landscape plans shall reflect the following: Design that minimizes need for irrigation; minimizes runoff; promotes surface infiltration where appropriate; and details the use of planting material that minimizes the amount of fertilizers and pesticides that are needed. Where landscaped areas are used to retain or detain stormwater, project landscape plans shall specify the use of plants that are tolerant of saturated soil conditions. Project landscape plans shall detail use of plantings appropriate to site soils, slopes, climate, sun, land use, air movement, ecological consistency, and plant interactions. Detail locations of stormwater treatment and hydrograph modification management BMPs on Stormwater Control Plan Drawings.	Maintain landscaping using minimum or no pesticides. Provide Integrated Pest Management information to new owners, lessees and operators. See applicable BMPs in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks www.babmphandbooks.com

Potential Source of Runoff Pollutants	Permanent Source Control BMP's	Operational Source Control BMP's
Refuse areas	State how site refuse will be handled and provide supporting detail to what is shown on plans. Install and maintain signs posted on, or near, dumpsters with the words "Do not dump hazardous materials here" or approved equivalent language. Document that the number, type and size of project trash and recycling bins have been determined adequate by the solid waste purveyor.	State how the following will be implemented: • Provide adequate number of receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit / prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. • Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site.
Roofing, gutters, and trim.	Do not utilize roofing, gutter, or architectural trim materials made of copper or other unprotected metals that would leach into the storm water runoff.	

Potential Source of Runoff Pollutants	Permanent Source Control BMP's	Operational Source Control BMP's
Truck Wash	Train personnel on chemical use, safety and waste disposal practices.	Solids and other debris should be properly disposed to prevent storm water contamination. Minimize the amount of wastewater created by using high pressure, low volume washing techniques and equipment. Surface cleaning shall be conducted by a BASMAA certified surface cleaner or employees shall obtain BASMAA certification for surface cleaning. Power washing without recovery of wash water is prohibited.

V. FACILITIES MAINTENANCE REQUIREMENTS

A. Ownership and Responsibility for Maintenance in Perpetually

As part of the C.3 stormwater requirements, municipalities must verify stormwater treatment and flow-control facilities are functional and are maintained to perform as intended by their intended design.

1600 Loveridge, LLC. shall submit, with the application for building permits, a draft Stormwater Facilities Operation and Maintenance Plan including detailed maintenance requirements and a maintenance and replacement schedule. An operations and maintenance agreement acceptable to the Pittsburg Engineering Division amongst all members of 1600 Loveridge LLC. shall be recorded. This agreement shall clearly state the requirements of inspecting and maintaining the stormwater treatment and storage facilities and insure all costs associated with the perpetual inspection, operation and maintenance, administration, and reporting of these facilities are paid for by 1600 Loveridge LLC.

B. Summary of Maintenance Requirements for Each Stormwater Facility

Treatment IMPs require routine maintenance to prevent a diminishment in their rates of infiltration, insure unobstructed flow, prevent erosion, and keep plants healthy and the engineered soil biologically active. Flow control vaults, such as underground pipelines, require routine maintenance to insure unobstructed flow through the orifice and to remove trash and silt deposited over time by stormwater entering the system.

Typical maintenance requirements of stormwater facilities include:

- Inspection of inlets for channels, exposure of soils, and other evidence of erosion.
- Replenishment of all erosion control measures necessary.
- Inspect outlets to ensure that planter has not clogged or that excessive erosion has not inhibited flow.
- Inspection of facility side slopes for evidence of erosion.

- Observe percolation in treatment areas to verify design percolation rates are met (i.e., whether a 48 hour percolation window is exceeded).
- Till or replace engineered soil in treatment areas where design percolation rates are not met.
- Examine all vegetation to insure it is healthy and dense enough to provide filtering. Replenish mulch as necessary, remove fallen leaves and debris and prune large shrubs and trees. Replace dead plants and remove noxious and invasive vegetation.
- Prune, mow, remove fallen leaves and replenish mulch as necessary.
- Confirm irrigation is adequate but not excessive.
- Remove any invasive plants that might be present.
- Abate any potential vectors by filling holes in the ground in infiltration planters and insuring 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 shall be applied only when absolutely necessary and then, only by a licensed individual or contractor.

VI. CERTIFICATION

The selection, sizing, and preliminary design of stormwater treatment BMPs and other control measures in this plan meet the requirements of Regional Water Quality Control Board Orders R2-2009-0074, R2-2011-0083 and subsequent amendments.

Angelo Obertello, P.E.
RCE# 64345

Date

Appendix A
Treatment Area Calculations

ea ft)	Project Surface Type	Runoff Factor	x Runoff Factor
44	Conventional Roof	1.00	9,044
42	Concrete or Asphalt	1.00	31,342
57	Landscape	0.10	356
		Total	40,742
		Area	

IMP Sizing			
IMP Sizing Factor	Rain Adjust-ment Factor	Minimum Area or Volume	Proposed Area or Volume
0.040	1.000	1,630	1,631

ne: IMP2 (Soil Type: C)

oretention Facility

IA ea ft)	Post-Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
40	Conventional Roof	1.00	5,240
86	Concrete or Asphalt	1.00	12,686
94	Landscape	0.10	219
		Total	18,145
		Area	

IMP Sizing			
IMP Sizing Factor	Rain Adjust-ment Factor	Minimum Area or Volume	Proposed Area or Volume
0.040	1.000	726	737

ne: IMP3 (Soil Type: C)

oretention Facility

IA ea ft)	Post-Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
00	Conventional Roof	1.00	3,800
92	Conventional Roof	1.00	16,092
31	Landscape	0.10	553
		Total	20,445
		Area	

IMP Sizing			
IMP Sizing Factor	Rain Adjust-ment Factor	Minimum Area or Volume	Proposed Area or Volume
0.040	1.000	818	829

ne: IMP4 (Soil Type: C)

oretention Facility

IA ea ft)	Post-Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
25	Concrete or Asphalt	1.00	47,625
55	Landscape	0.10	716
		Total	48,341
		Area	

IMP Sizing			
IMP Sizing Factor	Rain Adjust-ment Factor	Minimum Area or Volume	Proposed Area or Volume
0.040	1.000	1,934	2,529

ne: IMP5 (Soil Type: C)

oretention Facility

IA ea ft)	Post-Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
19	Concrete or Asphalt	1.00	8,219
22	Landscape	0.10	102
		Total	8,321
		Area	

IMP Sizing			
IMP Sizing Factor	Rain Adjust-ment Factor	Minimum Area or Volume	Proposed Area or Volume
0.040	1.000	333	334

e Tool Warnings

ings to report.

Appendix B
Flow Control Volume Calculations

Project Name: 1600 Loveridge Road
Project Type: Treatment and Flow Control
Location: Pittsburg, CA
APN: 073-200-013
Drainage Area: 17030 sf
Mean Annual Precipitation: 13 in

IV. Areas Draining to IMPs

IMP Name: IMP 4 (Soil Type: C)

IMP Type: Bioretention Facility
Soil Type: C

DMA Name	DMA Area (sq ft)	Post-Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
DMA 4-AC	14,501	Concrete or Asphalt	1.00	14,501
			Total	14,501

	IMP Sizing			
	IMP Sizing Factor	Rain Adjust-ment Factor	Minimum Area or Volume	Proposed Area or Volume
Area	0.060	1.264	1,100	2,529
Surface Volume	0.050	1.264	916	2,231
Subsurface Volume	0.066	1.264	1,210	1,233
Maximum Underdrain Flow (cfs)				0.01
Orifice Diameter (in)				0.67

Software Tool Warnings

No warnings to report.

Appendix C
Guidance on Flow Control Memorandum

TECHNICAL MEMORANDUM

To: **Contra Costa Clean Water Program**
C.3 Implementation Work Group

From: Dan Cloak

Subject: Guidance on Flow Control for Development Projects on Sites that are Already Partially Developed

Date: 10 March 2009

Introduction

This memorandum describes and illustrates a rationale for applying the NPDES permit flow-control standard in situations where the site to be developed is already partially impervious, and the total impervious area is to be increased compared to the current condition of the site.

In Regional Water Board Order R2-2006-0050, the flow-control standard is to:

"...ensure estimated post-project runoff peaks and durations do not exceed estimated pre-project peaks and durations if increased stormwater runoff peaks or durations could cause erosion or other significant effects on beneficial uses."

Under Option 1 for compliance with the flow-control standard, an applicant:

"...may compare the project design to the pre-project condition and show the project will not increase impervious area and also will not facilitate the efficiency of drainage collection and conveyance."

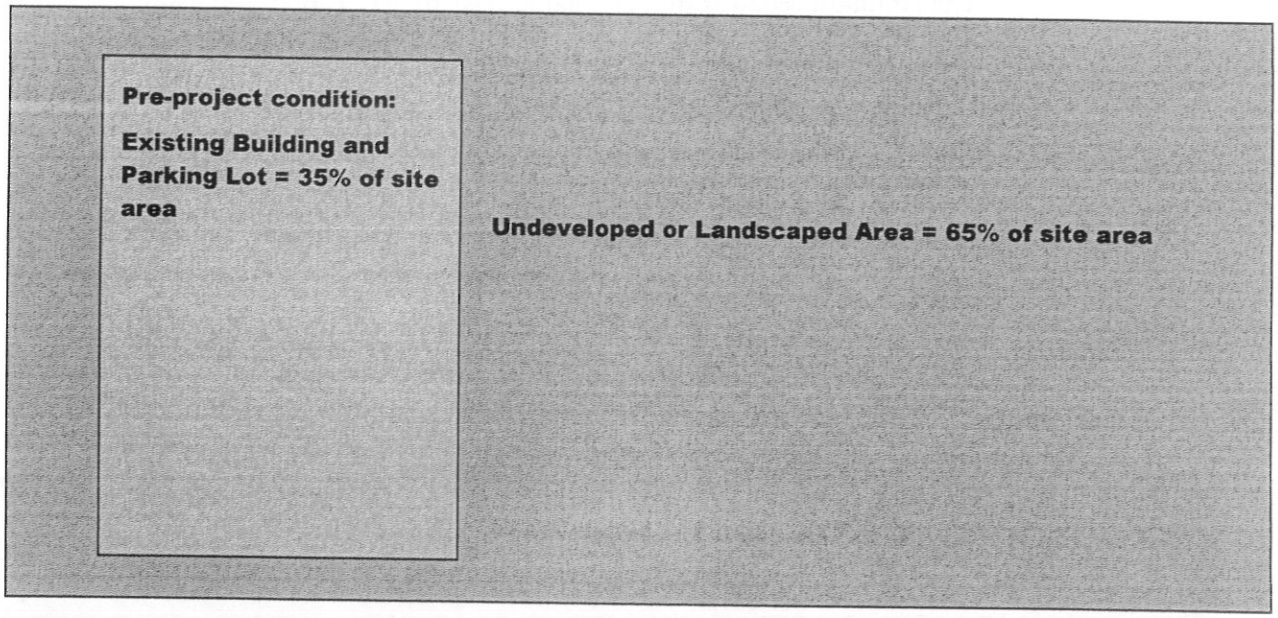
Under Option 2 for compliance with the flow-control standard, an applicant:

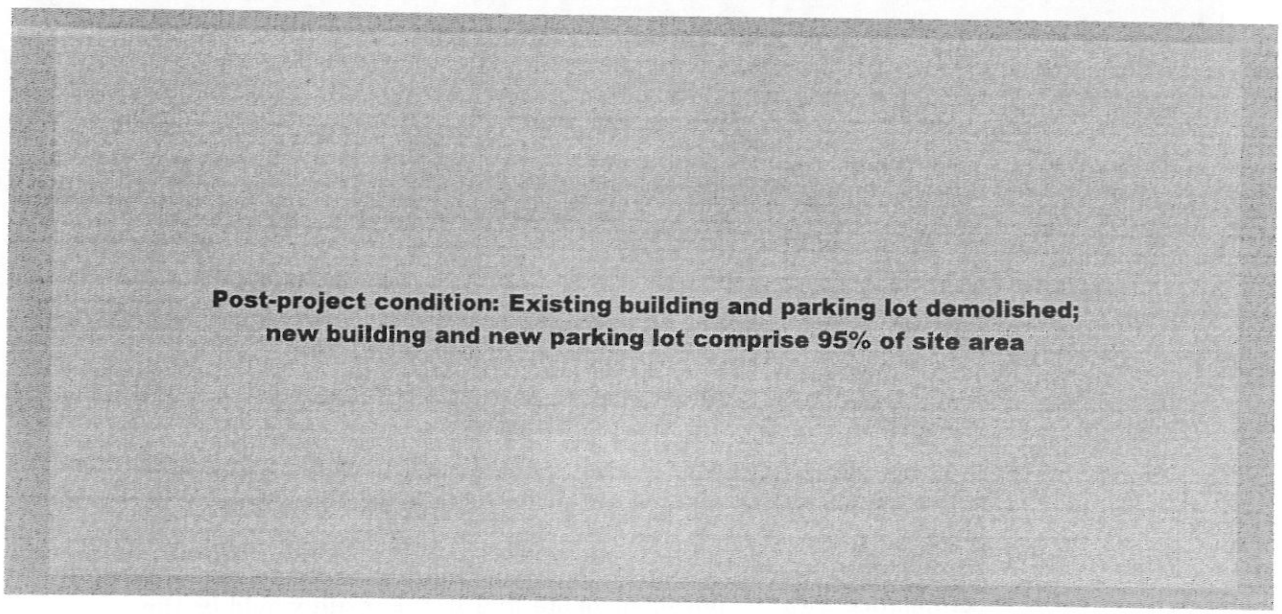
"...may select and size IMPs to manage hydrograph modification impacts, using the design procedure, criteria, and sizing factors specified in the Contra Costa Clean Water Program's *Stormwater C.3 Guidebook.*"

For development projects on sites that are already partially developed, the following question may arise: May an applicant demonstrate compliance under Option 1 for the previously developed portions of the site, and demonstrate compliance under Option 2 (or perhaps Option 3, site-specific continuous simulation modeling) for the as-yet undeveloped portions of the same site?

Example

Consider a 10-acre site which is currently 35% impervious. The applicant proposes to demolish and replace the existing impervious portion of the site and also to build additional impervious area, bringing the total impervious area to 95% of the site area. Flow-control requirements apply to the entire site.





In this example, can the applicant be allowed to match the hydrology of the pre-project condition, including the previous site imperviousness?

Rationale

The standard requires that estimated post-project runoff peaks and durations *from the site as a whole* do not exceed estimated pre-project peaks and durations.

Consider two cases:

Case 1: The previously existing imperviousness could be accounted for by considering the two portions of the site separately: One portion is to redevelop the existing impervious area, and the other portion is to develop portions of the remaining existing landscaped area. Option 1 for compliance with the flow control standard could apply to the first portion and Option 2 to the second portion.

Case 2: Equivalently, the two options could be assigned in the same proportions to different areas of the site, while having the same effect on overall site runoff:

HMP Option 2 (LID facilities for flow-control) is applied to this portion, comprising 60% of the site	**HMP Option 1 (no increase in impervious area) is credited to this portion, comprising 35% of the site**

In either case, the NPDES permit standard is met: For the site as a whole, runoff will not exceed pre-project peaks and durations.

If the applicant were to create a model and simulate and compare runoff from the site in its pre-project and post-project condition (Option 3 for compliance with the flow-control standard), the result would be the same.

Guidance

Where the pre-project condition of the site is partially impervious, Copermittees may consider the following alternatives, all of which comply with the flow-control standard in the NPDES permit:

1. Require LID facilities designed for treatment-and-flow-control for all impervious areas created or replaced. This is a conservative approach.
2. Allow an amount of impervious area not to exceed the previously existing impervious area to drain to LID facilities designed for treatment only, and require the remaining impervious area drain to LID facilities designed for treatment and flow control. This is also a conservative approach, as the treatment-only facilities also provide substantial flow-control.
3. In rare cases, as described in "Selection of Stormwater Treatment Facilities" on page 16 of the Fourth Edition of the *Stormwater C.3 Guidebook*, an applicant may propose to use higher-rate facilities such as "tree-box" biofilters or cartridge filters. In such a case, the applicant could allow a total amount of impervious area not to exceed the previously existing impervious area to drain to these higher-flow-rate treatment facilities and require the remaining impervious area drain to LID facilities designed for treatment and flow-control. The applicant would also need to demonstrate the portion of the drainage system tributary to higher-flow-rate treatment facilities does not "facilitate the efficiency of drainage collection and conveyance" when compared to the pre-project condition.

Exhibits

EXISTING

DESCRIPTION	AREA (SF)±	% OF TOTAL
PERVIOUS	37,230	23.7%
IMPERVIOUS	119,547	76.3%
TOTAL	156,777	100%

LEGEND

PROJECT BOUNDARY

TREATABLE AREA

EXHIBIT 1
EXISTING CONDITION
IMPERVIOUS AREAS
1600 LOVERIDGE ROAD

CITY OF PITTSBURG CONTRA COSTA COUNTY CALIFORNIA

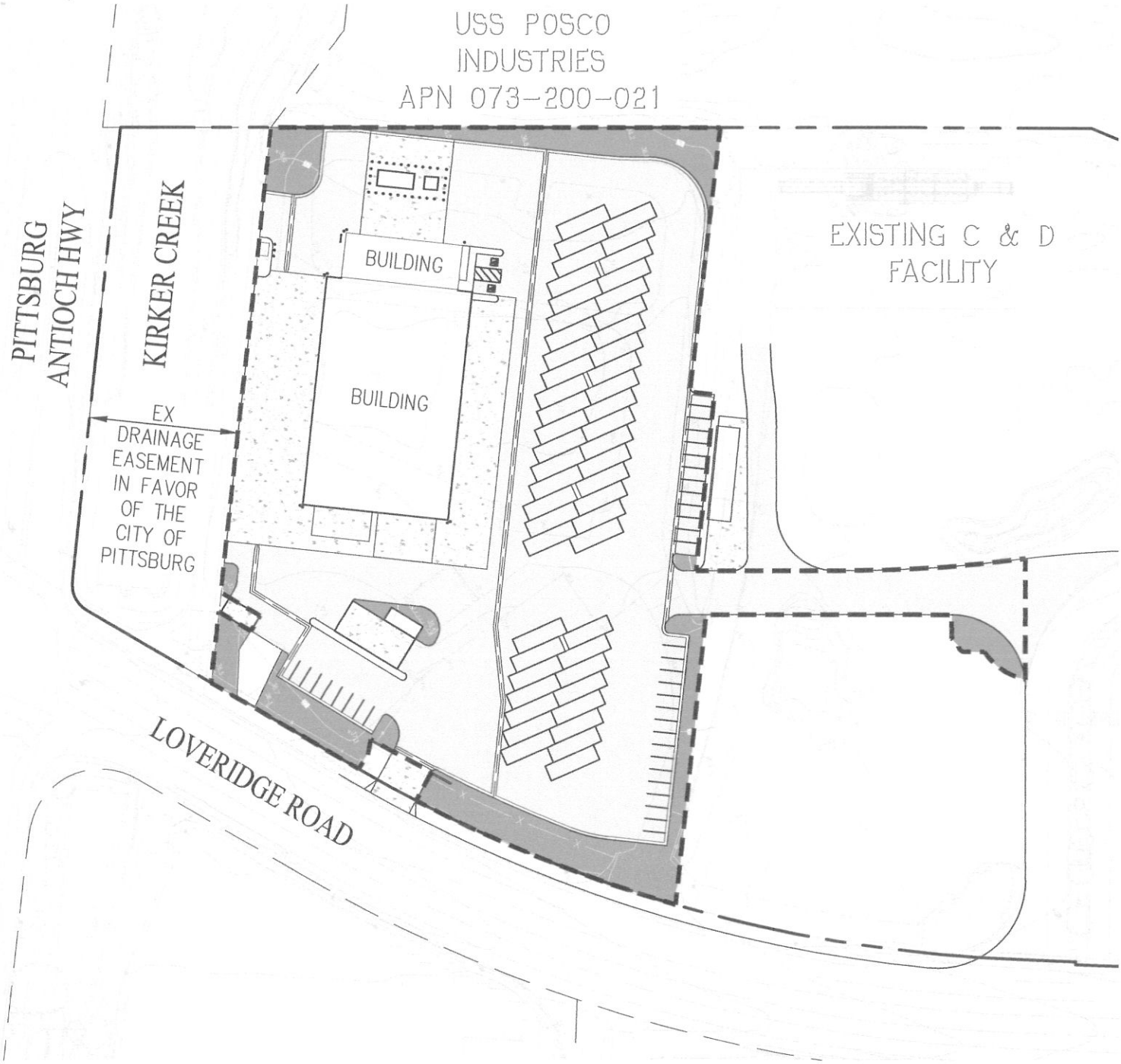
DATE: OCTOBER 1, 2014

SCALE: 1" = 100'

cbg
Carlson, Barbee & Gibson, Inc.
CIVIL ENGINEERS • SURVEYORS • PLANNERS
2633 CAMINO RAMON, SUITE 350
SAN RAMON, CALIFORNIA 94583
(925) 866-0322
www.cbandg.com

10/1/2014 11:04 AM

G:\1362\ACAD\EXHIBITS\XB_EX IMPERVIOUS AREAS.DWG



PROPOSED

DESCRIPTION	AREA (SF)±	% OF TOTAL
PERVIOUS	22,729	14.5%
IMPERVIOUS	134,048	85.5%
TOTAL	156,777	100%

LEGEND

PROJECT BOUNDARY

TREATABLE AREA

EXHIBIT 2
PROPOSED CONDITION
IMPERVIOUS AREAS
1600 LOVERIDGE ROAD

CITY OF PITTSBURG CONTRA COSTA COUNTY CALIFORNIA

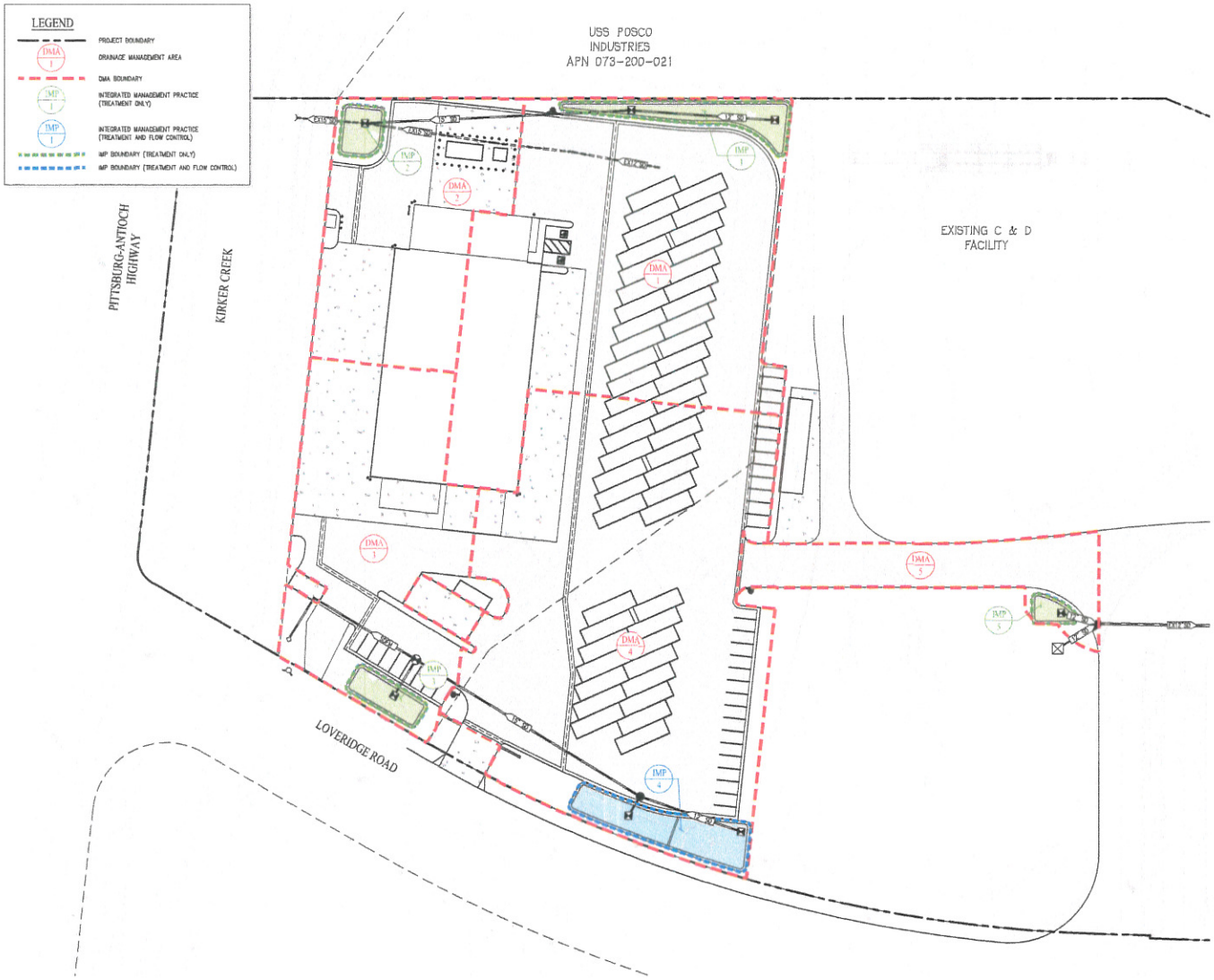
DATE: OCTOBER 1, 2014

SCALE: 1" = 100'

cbg
Carlson, Barbee & Gibson, Inc.
CIVIL ENGINEERS • SURVEYORS • PLANNERS
2633 CAMINO RAMON, SUITE 350
SAN RAMON, CALIFORNIA 94583
(925) 866-0322
www.cbandg.com

10/1/2014 11:05 AM

G:\1362\ACAD\EXHIBITS\XB_PROPOSED IMPERVIOUS AREAS.DWG



DMA SUMMARY TABLE

DRAINAGE MANAGEMENT AREA (DMA 1)	43,943 SF
PERVIOUS CONCRETE	0 SF
POROUS ASPHALT	0 SF
IMPERVIOUS ASPHALT	31,342 SF
CONVENTIONAL ROOF	9,044 SF
LANDSCAPE	3,557 SF
DRAINAGE MANAGEMENT AREA (DMA 2)	20,120 SF
PERVIOUS CONCRETE	0 SF
POROUS ASPHALT	0 SF
IMPERVIOUS ASPHALT	12,886 SF
CONVENTIONAL ROOF	5,340 SF
LANDSCAPE	2,194 SF
DRAINAGE MANAGEMENT AREA (DMA 3)	25,423 SF
PERVIOUS CONCRETE	0 SF
POROUS ASPHALT	0 SF
IMPERVIOUS ASPHALT	18,092 SF
CONVENTIONAL ROOF	3,800 SF
LANDSCAPE	3,531 SF
DRAINAGE MANAGEMENT AREA (DMA 4)	84,780 SF
PERVIOUS CONCRETE	0 SF
POROUS ASPHALT	0 SF
IMPERVIOUS ASPHALT	47,825 SF
CONVENTIONAL ROOF	0 SF
LANDSCAPE	7,155 SF
DRAINAGE MANAGEMENT AREA (DMA 5)	9,241 SF
PERVIOUS CONCRETE	0 SF
POROUS ASPHALT	0 SF
IMPERVIOUS ASPHALT	8,219 SF
CONVENTIONAL ROOF	0 SF
LANDSCAPE	1,022 SF

NOTES:
1. DMA SIZING FACTORS:
CONCRETE OR ASPHALT: 1.00
PERVIOUS CONCRETE: 0.10
CONVENTIONAL ROOF: 1.00
LANDSCAPE: 0.10
POROUS ASPHALT: 0.10

IMP SUMMARY TABLE

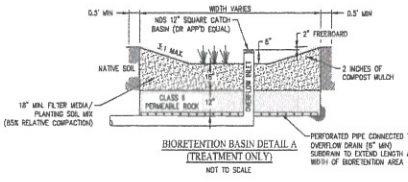
INTEGRATED MANAGEMENT PRACTICE (IMP 1) TREATMENT ONLY	
FACILITY TYPE	BIORETENTION BASIN DETAIL A
PROPOSED AREA (A)	1,836 SF
REQUIRED AREA (A)	1,836 SF
INTEGRATED MANAGEMENT PRACTICE (IMP 2) TREATMENT ONLY	
FACILITY TYPE	BIORETENTION BASIN DETAIL A
PROPOSED AREA (A)	757 SF
REQUIRED AREA (A)	726 SF
INTEGRATED MANAGEMENT PRACTICE (IMP 3) TREATMENT ONLY	
FACILITY TYPE	BIORETENTION BASIN DETAIL A
PROPOSED AREA (A)	829 SF
REQUIRED AREA (A)	816 SF
INTEGRATED MANAGEMENT PRACTICE (IMP 4) TREATMENT AND FLOW CONTROL	
FACILITY TYPE	BIORETENTION BASIN DETAIL B
PROPOSED AREA (A)	2,525 SF
REQUIRED AREA (A)	1,110 SF
PROPOSED SUBSURFACE VOLUME (V1)	2,231 CF
REQUIRED SUBSURFACE VOLUME (V1)	916 CF
PROPOSED SUBSURFACE VOLUME (V2)	1,259 CF
REQUIRED SUBSURFACE VOLUME (V2)	1,216 CF
INTEGRATED MANAGEMENT PRACTICE (IMP 5) TREATMENT ONLY	
FACILITY TYPE	BIORETENTION BASIN DETAIL A
PROPOSED AREA (A)	334 SF
REQUIRED AREA (A)	333 SF

NOTES:
IMP CALCULATIONS WERE COMPLETED USING THE SIXTH EDITION OF THE CONTRA COSTA CLEAN WATER PROGRAM C.3 HANDBOOK & THE CONTRA COSTA COUNTY IMP SIZING CALCULATOR

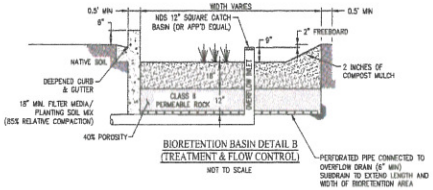
HYDROMODIFICATION REQUIREMENTS

PRE-DEVELOPMENT IMPERVIOUS AREA	119,547 SF
POST-DEVELOPMENT IMPERVIOUS AREA	134,048 SF
CHANGE IN IMPERVIOUS AREA	14,501 SF
COMPLIANCE OPTION	OPTIONS 1 & 2

NOTE: HYDROMODIFICATION COMPLIANCE ACCORDING TO THE SIXTH EDITION OF THE CONTRA COSTA COUNTY CLEAN WATER PROGRAM C.3 HANDBOOK



BIORETENTION BASIN DETAIL A
(TREATMENT ONLY)
NOT TO SCALE



BIORETENTION BASIN DETAIL B
(TREATMENT & FLOW CONTROL)
NOT TO SCALE

1600 LOVERIDGE ROAD
PRELIMINARY STORMWATER CONTROL PLAN

CITY OF PITTSBURG CONTRA COSTA COUNTY CALIFORNIA

0' 30' 90' 120'
SCALE: 1" = 30'

DATE: OCTOBER 3, 2014

Carlson, Barbee & Gibson, Inc.
CIVIL ENGINEERS • SURVEYORS • PLANNERS
2633 CAMINO RAMON, SUITE 350
SAN RAMON, CALIFORNIA 94583
(925) 866-0322
www.cbandg.com

Carlson, Barbee
& Gibson, Inc.
CIVIL ENGINEERS • SURVEYORS • PLANNERS

July 10, 2014
Job No.: 1362-000

Drainage Assessment
Mount Diablo Resource Recovery Park
SEG Trucking Maintenance Facility
Pittsburg, California

BACKGROUND

SEG Trucking proposes to construct a Truck Maintenance Facility at 1600 Loveridge Road. The site approximately 3 acres and is bound by Loveridge Road to the east, the existing Contra Costa Waste Transfer and Recycling Center to the north, Pittsburg / Antioch Highway to the south and USS Posco vacant land to the west. This site was previously encompassed by a GWF Power Plant, which has since been demolished.

The proposed Truck Maintenance Facility includes the construction of a building, parking lot, and fueling station. The site will eventually be covered throughout with impervious surfaces, such as asphalt concrete paving and covered structures. See Figure 1 depicting the proposed truck maintenance facility.

The purpose of this assessment is to analyze the necessary drainage improvements to support the development of the truck maintenance facility.

EXISTING DRAINAGE CONDITIONS

There are existing drainage facilities that collect and convey stormwater runoff from the existing site. See Figure 2 depicting the existing drainage system within the site.

The project site mostly drains directly to Kirker Creek which is located along the southern portion of the site. This is a separate watershed from the surrounding Contra Costa Waste and USS Posco sites. There is an existing on-site drainage system that consists of concrete swales, inlets and pipelines. There is an existing concrete swale along the eastern property line that collects stormwater runoff from the eastern portion of this site. The concrete swale discharges via an outfall directly into the adjacent Kirker Creek at a location along the eastern property line. Additionally, the on-site pipelines collect runoff from the majority of the remainder of the site and discharge via a second outfall directly to Kirker Creek closer to the western property line. There is a small portion of the site in the northwest corner that drains overland to the Contra Costa Waste property.

A hydrology model was assembled for the existing site. The existing conditions of the site include nearly complete site coverage with impervious surfaces. The 10-year and 100-year design storms based on the current Contra Costa County Hydrology Manual have been evaluated to estimate the existing condition peak flow rates from each of these sites. Table 1 provides summary of the existing peak flow rates.

Table 1 – Existing Peak Flow Rates (CFS)

	10-Year 24-Hour	**100-Year 24-Hour**
Project Site	3.4	5.2

PROPOSED CONDITIONS

The proposed conditions analyzed assume that the Truck Maintenance Facility will be fully developed. The development of the project contemplates complete coverage with impervious surfaces, such as asphalt or covered structures. Also, the proposed project may extend northerly into the adjacent Contra Costa Waste Property. As previously mentioned, the areas within the Contra Costa Waste property are within a separate watershed. The proposed project will include the installation of a new on-site stormwater system that will collect and convey site runoff to Kirker Creek via the two existing outfall locations.

The proposed stormwater system will incorporate a detention component to ensure the peak flows from the project site do not exceed the existing the existing conditions. This detention component will address the re-routing of the stormwater from the portion of the Truck Maintenance Facility proposed within the Contra Costa Waste property. The detention component will likely include an underground vault that will provide adequate storage to attenuate the peak flows and not exceed existing peak flows.

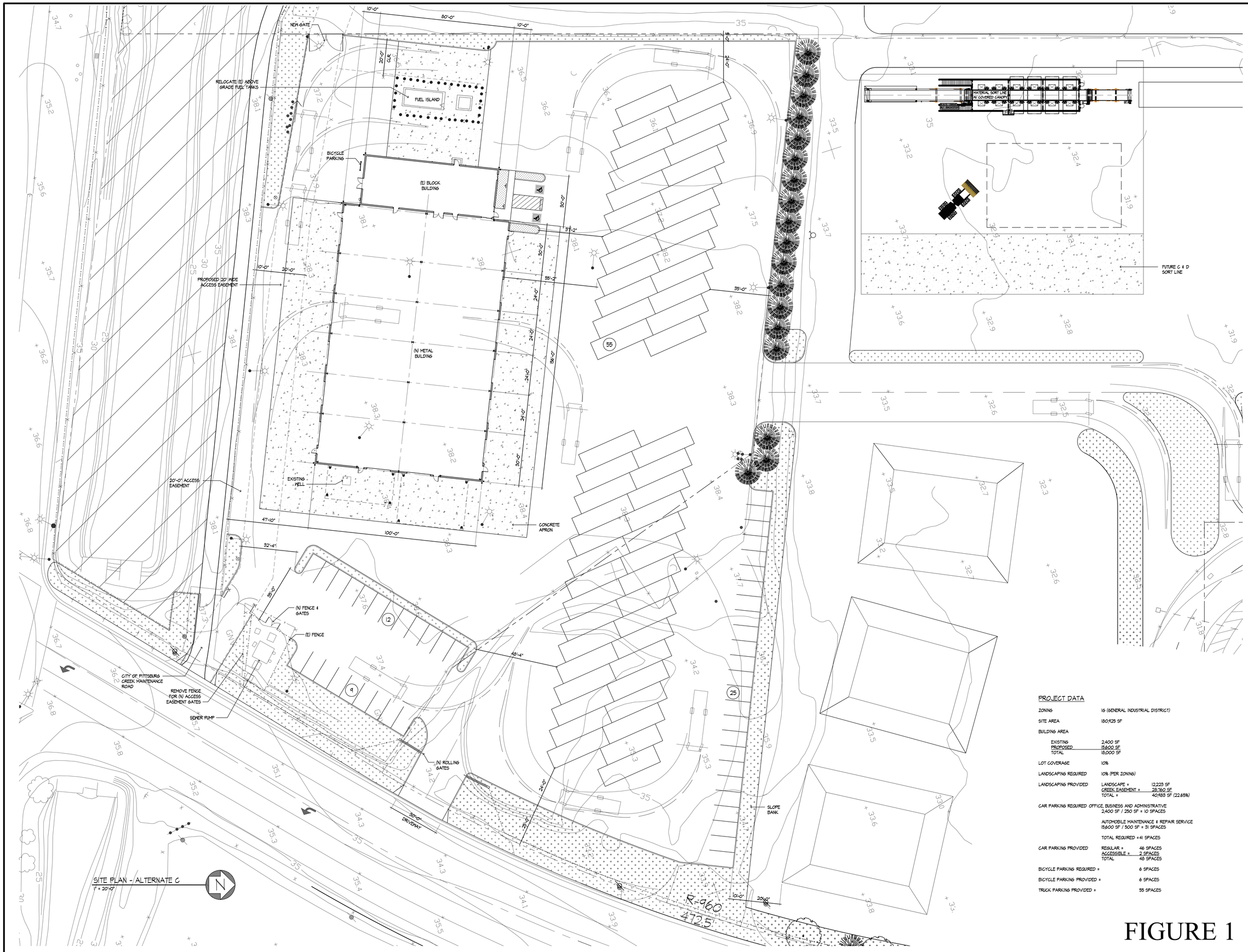
CONCLUSIONS AND ADDITIONAL CONSIDERATIONS

The proposed conditions can be accommodated with the installation of an on-site stormwater system and detention component that will utilize the existing outfalls to Kirker Creek and ensure that the existing capacities of the downstream facilities are not impacted.

Additional, considerations that will need to be incorporated to the final design of the expansion areas include:

- Water quality treatment measures to comply with the Contra Costa County Clean Water Program

- Water quality treatment measures at all discharge points to comply with Industrial Storm Water General Permit Order



PROJECT DATA

ZONING	I-G (GENERAL INDUSTRIAL DISTRICT)	
SITE AREA	180,925 SF	
BUILDING AREA		
EXISTING	2,400 SF	
PROPOSED	15,600 SF	
TOTAL	18,000 SF	
LOT COVERAGE	10%	
LANDSCAPING REQUIRED	10% (PER ZONING)	
LANDSCAPING PROVIDED	LANDSCAPE =	12,223 SF
	CREEK EASEMENT =	28,760 SF
	TOTAL =	40,983 SF (22.65%)
CAR PARKING REQUIRED	OFFICE, BUSINESS AND ADMINISTRATIVE 2,400 SF / 250 SF = 10 SPACES	
	AUTOMOBILE MAINTENANCE & REPAIR SERVICE 15,600 SF / 500 SF = 31 SPACES	
	TOTAL REQUIRED = 41 SPACES	
CAR PARKING PROVIDED	REGULAR =	46 SPACES
	ACCESSIBLE =	2 SPACES
	TOTAL	48 SPACES
BICYCLE PARKING REQUIRED =		6 SPACES
BICYCLE PARKING PROVIDED =		6 SPACES
TRUCK PARKING PROVIDED =		55 SPACES

FIGURE 1

ROGER J. WILSON
Architect

1601 North Main St.
Suite 108
Walnut Creek, CA 94596

P 925.705.7019
F 925.705.7081
www.rw-architect.com
roger@rw-architect.com

SEG TRUCK MAINTENANCE FACILITY

1600 Loveridge Rd. Pittsburg, CA

Garaventa Properties
4080 Mallard Drive
Concord, CA

SITE PLAN

Drawn	LI
Checked	RJW
Date	06-18-14
Project	1411
Revisions	

Sheet A1

LEGEND

- 12" SD — EXISTING STORM DRAIN
- EXISTING DRAINAGE SWALE
- EXISTING DRAINAGE DITCH (CONCRETE)
- EXISTING OUTFALL

FIGURE 2
EX DRAINAGE FACILITIES
SEG TRUCKING FACILITY

CITY OF PITTSBURG CONTRA COSTA COUNTY CALIFORNIA

DATE: JULY 9, 2014 SCALE: 1" = 100'

cbg
Carlson, Barbee & Gibson, Inc.
CIVIL ENGINEERS • SURVEYORS • PLANNERS
2633 CAMINO RAMON, SUITE 350
SAN RAMON, CALIFORNIA 94583
(925) 866-0322
FAX (925) 866-8575

G:\1362\ACAD\EXHIBITS\15 AC EXPANSION\MEMO REVISIONS\SEG TRUCK\FIGURE 2 - EX DRAINAGE FACILITIES.DWG