VALERO

VALERO REFINING COMPANY – CALIFORNIA

VALERO BENICIA REFINERY

3400 East Second Street
Benicia, California 94510

STORM WATER POLLUTION PREVENTION PLAN

Original Plan prepared by:

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Plan Revised:

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LIST OF ACRONYMS

AHM acutely hazardous material
API American Petroleum Institute

BMP best management practice
BOD biological oxygen demand

CASQA California Stormwater Quality Association
CFR Code of Federal Regulations
COD chemical oxygen demand

DAF dissolved air flotation
DHS California Department of Health Services

eSMR electronic self monitoring and reporting

NPDES National Pollutant Discharge Elimination System

O&G oil and grease

RMPP Risk Management and Prevention Program
SFBRWQCB San Francisco Bay Regional Water Quality Control Board

SC specific conductance
SEAOC Structural Engineering Association of California
SIC Standard Industrial Classification
SPCC Spill Prevention Control and Countermeasure
SWRCB State Water Resources Control Board
SWPPP storm water pollution prevention plan

TOC total organic carbon
TSS total suspended solids

UBC Uniform Building Code
URS URS Corporation
U.S. EPA U.S. Environmental Protection Agency
USGS U.S. Geological Survey

CERTIFICATION

Name and Type of Facility:	Valero Benicia Refinery – Petroleum Refining
Location of Facility:	3400 East Second Street Benicia, California 94510
Name and Address of Owner/Operator:	Valero Refining Company – California 3400 East Second Street Benicia, California 94510
Name and Address of Manager:	Douglas W. Comeau Vice President and General Manager 3400 East Second Street Benicia, California 94510
Designated Person Accountable for Storm Water Pollution Prevention at Facility Name and Title:	C. W. Howe, Director of Health, Safety, Environment & Government Affairs

PLAN CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel have properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted, is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Approved and Endorsed by:

Signature: _____

Name: C. W. Howe

Title: Director

Health, Safety, Environment & Government Affairs

Date: _____

1 INTRODUCTION

This Storm Water Pollution Prevention Plan (SWPPP) describes policies and procedures used by Valero Refining Company – California, Benicia Refinery (Valero Benicia Fuels Refinery and adjacent Benicia Asphalt Plant) to manage storm water discharges to minimize impacts on water quality. This plan was originally prepared to comply with San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) Order No. 2002-0112 (NPDES Permit No. CA0005550) adopted in October 2002. In July 2011, this plan was revised to comply with Order No. R2-2009-0079, issued by SFBRWQCB on November 18, 2009 and effective from January 1, 2010 through December 31, 2014. A copy of SFBRWQCB Order No. R2-2009-0079 is maintained in the Valero Benicia Refinery Environmental Department.

The original plan prepared by URS Corporation in September, 2003, was certified by a Registered Professional Engineer. This revised plan includes personnel changes and incorporates Valero South, the new property that was acquired in 2010. No substantive changes have been made regarding any engineering evaluations contained in the original document.

The Storm Water Pollution Prevention Plan necessarily depends on other documents, permits and orders for content and regulatory information. By reference, relevant portions of these documents are included in the SWPPP without re-stating the entire reference document. Furthermore, should any disagreement occur between the SWPPP and other documents, the governing document shall prevail.

1.1 REGULATORY REQUIREMENTS

On November 18, 2009, NPDES Permit No. CA0005550 (SFBRWQCB Order No. R2-2009-0079) was adopted for the Valero Benicia Refinery with an effective date of January 1, 2010, and an expiration date of December 31, 2014. This permit superseded the former NPDES permit (SFBRWQCB Order No. 2002-0112) and covers all the storm water outfalls previously covered (outfalls 001 through 017).

Under this NPDES permit, the Valero Benicia Refinery currently monitors the 16 storm water outfalls, which are the focus of this SWPPP. Since storm water and other process wastewaters are all discharged from Outfall 001, it is regulated differently than the other sixteen outfalls. The effluent limitations for the discharge from Outfall 001 can be found on pages 12 through 16 of the NPDES permit. Reporting for Outfall 001 is completed monthly. Permit requirements are summarized in Table 1-1.

One of the key elements of the storm water pollution prevention program is the use of best management practices (BMPs). Dischargers who use, manufacture, store, or handle the chemicals listed as toxic under section 307(a)(1) of the Clean Water Act are required by 40 CFR 125.105 to establish objectives for the control of toxic and hazardous pollutants. They are further required by 40 CFR 125.105 to establish specific BMPs to meet these objectives. The BMPs are required to address each component or system capable of causing the release of toxic or hazardous pollutants to the waters of the United States. This updated SWPPP identifies and describes the BMPs used by the Valero refinery to protect storm water quality.

Table 1-1

Summary of Storm Water Requirements in the NPDES Permit, Order R2-2009-0079

Requirement	Reference
Limits specified for pollutants (pH, oil and grease, TOC, visible oil, and visible color) discharged to Outfalls 002 through 017.	Provision IV.B.1
If there is an exceedance of the oil and grease or TOC limit, supplemental limits specified for pollutants (BOD, TSS, COD, phenolic compounds, Total Chromium, Hexavalent Chromium) discharged to Outfalls 002 through 017.	Provision IV.B.2
Storm water sampling requirements prior to the release of tank farm secondary containment areas through storm water outfalls 006, 009, and 010.	Provision VI.C.2
The SWPPP should be updated by 1 October each year or sooner if there is a change of operation in the facility that may substantially affect the quality of storm water. If Valero determines that it does not need to update its SWPPP, it will submit a letter to the Executive Officer that indicates no revisions are necessary and the last year it updated its SWPPP.	Provision VI.C.4.d
The Annual Storm Water Report should be submitted by 1 July each year.	Provision VI.C.4.d
Records of all monitoring information and reports should be maintained for a period of at least 3 years.	Attachment D.IV.A
Monitor storm water discharges quarterly (TOC, oil and grease, pH, specific conductance) and flow monthly.	Attachment E.IV.B
In a 5-year period, monitor Outfall 009 at least once in the wet season and once in the dry season.	Attachment E.IV.B
Monitor the supplemental limits daily during storm events if the supplemental limits become effective.	Attachment E.IV.B
Monitor Sulfur Springs Creek, Beaver Creek, and Buffalo Wallow for standard observations at least once per month and once during each storm event.	Attachment E.VI
A SWPPP should include: • A topographical map with wastewater treatment area, surface water bodies, and discharge points; • A site map with storm drains, paved areas, surface water locations, discharge locations, vehicle maintenance areas, and a description of the areas with the potential for pollutants in runoff; • Erosion control measures for steep, un-vegetated areas; • A narrative description of wastewater treatment, management practices to minimize storm water, material storage areas, loading and unloading areas, structural and nonstructural control measures, and on-site storage and disposal methods; • A list of pollutants that have a reasonable potential to be present in storm water discharges in significant quantities; and • A description of management controls, including personnel, housekeeping, spill prevention and response, source control, management practices, sediment control, employee training, inspections, and recordkeeping.	Attachment G.I.J
A Facility inspection should be conducted annually to verify that all elements of the SWPPP are accurate and up to date.	Attachment G.I.J.4

2 SITE LOCATION AND BACKGROUND INFORMATION

This section describes the Valero Benicia Refinery and summarizes past sampling results related to storm water discharges.

2.1 SITE LOCATION

The Valero Benicia Refinery is located in the southeast corner of the city of Benicia, in Solano County, California (see Figure 2-1). The site is bounded on the west by the city of Benicia, on the north and east by Sulfur Springs Creek, and on the south by Highway 680. The Valero Benicia Refinery includes the Crude Tank Farm, Refinery Dock, the Crude Transfer Pipeline, the Coke Silos Area, the Wastewater Treatment Area, the Marketing Terminal, the Asphalt Plant, office space at Valero East, and a construction lay down site at Valero South. The Wastewater Treatment Area, the Refinery Dock, and the Coke Silos, Valero East, and Valero South are not part of the refinery proper. The Wastewater Treatment Area is located on Suisun Bay south of Highway 680 at the Industrial Park Road exit, and the Refinery Dock and Coke Silos are approximately one-quarter mile west of the Martinez-Benicia Bridge. Valero East and Valero South are located east of Sulfur Springs Creek.

2.2 FACILITY DESCRIPTION AND OPERATION

The Valero Benicia Refinery began operations in 1969. Refined petroleum products, including gasoline, jet fuels, diesel, asphalt, coke, sulfur, and liquefied petroleum gas, are produced at the refinery. The refinery has a crude-run throughput of about 135,000 barrels per day and is classified as a cracking refinery by the U.S. EPA in 40 CFR 419.20. Refinery operations are conducted 24 hours per day, 365 days per year. The refinery real estate parcels are:

- Parcel 1: Contains the administration building, marketing area, main processing units, 5.1-million-barrel-capacity of oil storage, and the main storage area for hazardous materials and waste (referred to as the Refinery Proper in this plan);
- Parcel 2: Contains 2.1-million-barrel-capacity of crude oil storage (referred to as the Crude Field). This parcel also contains diked areas that provide containment capacity for approximately 13 million gallons of treated refinery effluent water;
- Parcel 3: Contains the wastewater treatment plant (referred to as the Wastewater Treatment Area). Wastewater composed of process wastes, cooling tower and boiler blowdown, ballast water, sour water, raw water treatment backwash, and storm water runoff is treated at this area;
- Parcel 4: Contains two wastewater/rainwater diversion tanks
- Parcel 5: Contains the Refinery Dock, which is located on the Carquinez Strait. The dock is connected to the Fuels Refinery, Crude Field, and Asphalt Plant by pipelines that are used to transfer crude to the Refinery and Asphalt Plant, and intermediates, and petroleum products to barges and ships; and
- Parcel 6: Contains the Benicia Asphalt Plant.
- Parcels 51 & 70: Contains Valero South (a total of 5.71 acres), a temporary construction lay down site.
- Parcel 58: Contains Valero East (4.07 acres), additional office space.

In addition to these real estate parcels, there is a leased coke-loading facility and an inactive ballast water tank. The coke-loading facility (the Coke Silos) is the receptacle for processed coke prior to ship transfer. The coke-loading facility consists of a rail spur, four storage silos, and a ship conveyance system. This facility, which is operated by a lessee, is located approximately one-quarter mile west of the Refinery Dock on the Carquinez Strait.

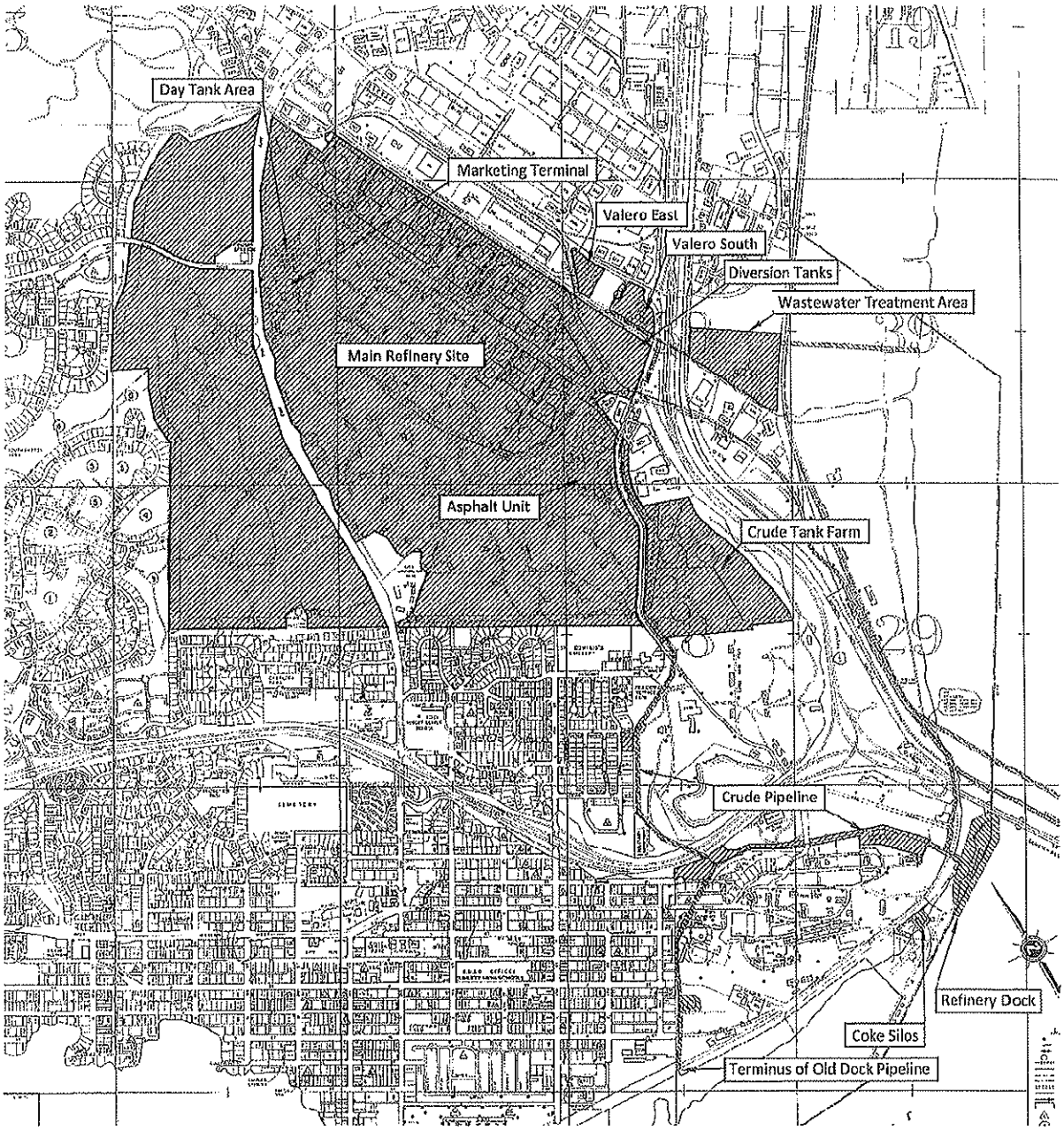

Figure 2-1. Valero Benicia Refinery Site Location – Topographical Map

The inactive ballast water tank was previously used for transfer of ballast water from incoming ships. Currently, the tank is sealed and not in use. The ballast water tank site is located off Highway 780, approximately three-quarters of a mile northwest of the Martinez-Benicia Bridge.

Current NPDES Permitted Outfalls

The following outfalls are described and have specified observation and sampling/analysis requirements in NPDES Permit No. CA 000550.

Outfall 002: Storm water runoff from 1.8 acres of refinery property which is discharged at the north west corner of the wastewater treatment area via a ditch and several pipes into Sulfur Springs Creek and ultimately Suisun Bay. The area is separated from the wastewater treatment area and storm water retention pond by a dike. No treatment is provided.

Outfall 003: Storm water runoff from 85.6 acres of refinery property and may contain the Lower Level Tank Farm (LLTF, tentatively in 2008) which is discharged near the Raw Water Break Tank at the north end of Avenue "A" via a culvert to Sulfur Springs Creek and ultimately Suisun Bay. Tank farm contributions are monitored prior to discharge and can be directed to treatment if off specifications. The drainage area is separated from the refinery processing area by peripheral roads around the processing area. No treatment is provided.

Outfall 004: Storm water runoff from 32.5 acres of gravel area between 1st Street and the railway on the south side of 1st Street. This outfall was identified as a potential storm water outfall in Benicia's 1994 Annual General Industrial Stormwater Permit Report submitted on June 30, 1994. This outfall is discharged west of Gate No. 4, into the eastern end of a ditch (Beaver Creek), followed by a culvert, another ditch (Buffalo Wallow), and a 72-inch culvert into Sulfur Springs Creek and ultimately Suisun Bay. The drainage area is separated from the processing area by the peripheral road. No treatment is provided.

Outfall 005: Storm water runoff from 68.9 acres of refinery property west of the processing area. This outfall is discharged west of Gate No. 4, on the south side of the processing area via a spillway into the western end of a ditch (Beaver Creek), followed by a culvert, another ditch (Buffalo Wallow), and a 72-inch culvert into Sulfur Springs Creek and ultimately Suisun Bay. The drainage area is separated from the processing area by railroad tracks and the peripheral road, and is bordered on the southern side by Gate 5 Road and on the western side by the refinery fence. No treatment is provided.

Outfall 006: Storm water runoff from 3.5 acres under the refinery crude pipeline, starting at the southwest corner of the crude tank field and running northeast along the perimeter of the tank field and Park Road. It includes runoff from the perimeter road on the north side of the crude tank field and may contain the Crude Oil Storage Area (COSA) tank farm storm water discharges. Tank farm contributions are monitored prior to discharge and can be directed to treatment if off specifications. The outfall is discharged on the south side of Park Road, where the refinery crude pipeline crosses Park Road, via a ditch that discharges into Sulfur Springs Creek and ultimately Suisun Bay. A small amount of condensate from steam traps on the pipeline and groundwater seepage enter this outfall. Runoff collects in a concrete sump equipped with a containment valve. No treatment is provided.

Outfall 007: Storm water runoff from 0.7 acres of gravel and paved area near Gate 4. The outfall is discharged just east of Gate 4 via a tributary ditch (Buffalo Wallow) followed by a 72-inch culvert into Sulfur Springs Creek and ultimately to Suisun Bay. The drainage area is separated from the processing area by the peripheral road. No treatment is provided.

Outfall 008: Storm water from 0.9 acres of gravel area along the railway and the refinery fence line. The outfall is discharged east of Gate 4 via a culvert followed by a tributary ditch (Buffalo Wallow) and a 72-inch culvert into Sulfur Springs Creek and ultimately to Suisun Bay. The drainage area is separated from the processing area by the railway. No treatment is provided.

Outfall 009: Storm water from 0.3 acres of gravel and paved area between the railway and avenue "A" and may contain the adjacent Upper Level Tank Farm (ULTF) storm water discharges (tentatively in 2011). Tank farm contributions are monitored prior to discharge and can be directed to treatment if off specifications. The outfall is discharged along Avenue "A" on the south east side of the processing area via a culvert into Sulfur Springs Creek and ultimately to Suisun Bay. The drainage area is separated from the processing area by the railway. No treatment is provided.

Outfall 010: Storm water from 63.8 acres of gravel and paved area between the railway and Avenue "A" and may contain the adjacent Upper Level Tank Farm (ULTF) storm water discharges (tentatively in 2011). Tank farm contributions are monitored prior to discharge and can be directed to treatment if off specifications. The outfall is discharged along Avenue "A" on the south east side of the processing area via a culvert into Sulfur Springs Creek and ultimately to Suisun Bay. The drainage area is separated from the processing area by the railway and the peripheral roadway. No treatment is provided.

Outfall 011: Storm water runoff from 0.4 acres under the refinery crude pipeline on the north side of Park Road. The outfall is discharged on the north side of Park Road, where the refinery crude pipeline crosses Park Road, via a culvert that discharges into Sulfur Springs Creek and ultimately Suisun Bay. This drainage area is not adjacent to any processing area. Asphalt berms are provided on either side of the pipeline to channel runoff to the collection sump. Runoff collects in a concrete sump equipped with a containment valve, normally kept closed. No treatment is provided.

Outfall 012: Storm water runoff from 0.8 acres under a section of the refinery crude pipeline southwest of the crude tank field. The outfall is discharged into the City of Benicia municipal sewer system and ultimately into the Carquinez Strait. The drainage area below the pipeline is bordered on one side by an asphalt berm and on the other side by a service road. Runoff collects in a concrete sump equipped with a containment valve, normally kept closed. No treatment is provided.

Outfall 013: Storm water runoff from 1.2 acres under the refinery crude pipeline southwest of Outfall 12. The outfall is discharged into the City of Benicia municipal sewer system and ultimately into the Carquinez Strait. The drainage area below the pipeline is bordered on one side by an asphalt berm and on the other side by a service road. Runoff collects in a concrete sump equipped with a containment valve, normally kept closed, and with a hydrocarbon detector which alarms at a central control house in the event of a hydrocarbon release. No treatment is provided.

Outfall 014: Storm water runoff from 0.4 acres under a section of the refinery crude pipeline south of Outfall 13. The outfall is discharged into the City of Benicia municipal sewer system and ultimately into the Carquinez Strait. The drainage area below the pipeline is bordered on both sides by asphalt berms. Runoff collects in a concrete sump equipped with a containment valve, normally kept closed. No treatment is provided.

Outfall 015: Storm water runoff from 0.5 acres under a section of the refinery crude pipeline southeast of Outfall 14. The outfall is discharged into the City of Benicia municipal sewer system and ultimately into the Carquinez Strait. The drainage area below the pipeline is bordered on both sides by asphalt berms. Runoff collects in a concrete sump equipped with a containment valve, normally kept closed. No treatment is provided.

Outfall 016: Storm water runoff from 0.1 acres under a section of the refinery crude pipeline south of Outfall 15, near the refinery dock. The outfall is discharged via a culvert into the Carquinez Strait. The drainage area below the pipeline is bordered on both sides by asphalt berms. Runoff collects in a concrete sump equipped with a containment valve, normally kept closed. No treatment is provided.

All of the sumps associated with the crude pipeline (outfall 006, and 011 through 016) were designed to contain releases from a leak or rupture of the pipeline, or runoff from a 10-year, 24-hour storm. Collected runoff is visually inspected before discharge. In case of contamination, the water would be collected with vacuum trucks and treated in the refinery wastewater treatment unit.

Outfall 017: Storm water runoff from approximately 12.1 acres at the Benicia Asphalt Plant (BAP) of which roughly 35 percent is impervious. Runoff collects in a 0.425 million gallon holding tank (Tank 33) located north of Buffalo Wallow. From the holding tank storm water is discharged on a batch basis via an underground culvert to Buffalo Wallow, then to a 72-inch culvert into Sulfur Springs Creek, and ultimately to Suisun Bay. No discharge occurs from the tank without confirmation that all permit limits and conditions are met.

2.3 TOPOGRAPHY, SURFACE WATER, AND HYDROLOGY

Figure 2-1 illustrates the site and the area within a quarter mile of the site boundary.

According to the USGS topographic map, the surface waters that have potential for receiving storm water or wastewater from the Valero Benicia Refinery include Suisun Bay, Sulfur Springs Creek, and Beaver Creek.

Approximately 230 groundwater monitoring wells have been installed at the Valero Benicia Refinery. Because highly impermeable seals have been incorporated into the construction of these wells, storm water intrusion into these wells is not expected. A review of regulatory files and the USGS map indicate that there are no registered domestic groundwater supply wells within a quarter mile of the Valero Benicia Refinery.

2.4 MONITORING PROCEDURES AND HISTORIC SAMPLING RESULTS

Procedures to assure that storm water monitoring requirements specified by NPDES Permit CA0005550 are met are maintained by the Valero Benicia Refinery Environmental Department, Environmental Laboratory and Wastewater Treatment Plant Department.

Sampling and analysis for Outfall 001 are conducted according to the NPDES permit Self Monitoring Program. Because storm water from certain areas is combined with process wastewaters for treatment and discharge at this sample point, this outfall is regulated differently than the other outfalls. Specific limits for Outfall 001 are specified in the Effluent Limitations section of the NPDES permit. Outfall 001 reporting data is submitted monthly via hard copy and via the Internet to the State Water Board eSMR database.

Discharges from Outfalls 002 through 017 consist entirely of storm water. The effluent limitations identified in Provision IV.B of the NPDES permit for discharges from these outfalls are listed in Table 2-1. The discharges from these outfalls have generally complied with all limitations with the exception of rare pH readings outside of the permitted range. During January 2000, studies were conducted to determine the cause of the pH being at times lower than normal storm water pH ranges. During these studies the following observations were made:

- Samples with low conductivity (<100 µmhos/cm) showed a higher level of variability in the pH measurement using standard pH probes.
- Sample pH was dramatically affected by temperature for the low conductivity samples.
- No soil or water contaminants were found that could explain the low pH in this area.

As a result of these findings, the pH probes were changed; probes that are less likely to cause variability under low conductivity conditions are now being used.

Table 2-1

Effluent Limitations for Outfalls 002 through 017

Constituent	Limitation
pH	Within 6.5 to 8.5
Oil & grease	Daily maximum of 15 mg/L
Total organic carbon	Daily maximum of 110 mg/L
Visible oil	None may be observed
Visible color	None may be observed

mg/L milligrams per liter

If there is an exceedance of the TOC or oil and grease limit in Table 2-1, effluent limits in Table 2-2 shall become effective.

Table 2-2

Supplemental Effluent Limitations for Storm Water Outfalls

Constituent	Daily Maximum Limit (mg/L)	30-Day Rolling Average Limit (mg/L)
BOD	48	26
TSS	33	21
COD	360	180
Oil and Grease	15	8.0
Phenolic Compounds	0.35	0.17
Total Chromium	0.60	0.21
Hexavalent Chromium	0.062	0.028

mg/L milligrams per liter

Tank farm secondary containment areas may be discharged through storm water Outfalls 006, 009, and 010. The storm water in the secondary containment areas must meet the limitations in Provision IV.C.2.e, which are listed in Table 2-3, or the storm water must be processed in the wastewater treatment plant.

Table 2-3

Tank Farm Storm Water Limits

Constituent	Limitation
pH	Within 6.5 to 8.5
TSS	Daily maximum of 100 mg/L
Total organic carbon	Daily maximum of 110 mg/L
Visible oil	None may be observed
Visible color	None may be observed

mg/L milligrams per liter

In addition to the effluent limitations specified in the NPDES permit, the discharge of storm water cannot cause any of the following conditions to exist in waters of the state at any place at levels that cause nuisance or adversely affect beneficial uses:

- Floating, suspended, or deposited macroscopic particulate matter or foam;
- Bottom deposits or aquatic growths;
- Alteration of temperature, turbidity, or apparent color beyond present natural background levels;
- Visible, floating, suspended, or deposited oil or other product of petroleum origin; and
- Toxic or deleterious substances to be present in concentrations or quantities that will cause deleterious effects on aquatic biota, wildlife, or waterfowl, or that render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentration.

The wet and dry season visual observations conducted since 1996 indicate there have been no reported violations of these regulations.

2.5 SIGNIFICANT SPILLS AND LEAKS

There have been two reportable spills to ground at the Valero Benicia Refinery. The first spill was contained within the facility's tank farm bermed area and did not impact either surface or ground waters. On January 29, 2003, an estimated 6,750 barrels of crude oil were released from Tank 1702 during mixer maintenance activity. The spill was contained and promptly removed from within the facility's bermed tank farm area and did not impact either surface or groundwater. On December 13, 2003, the # 6 Dock Line released an estimated 1000 barrels of crude oil to the ground near the refinery dock. The spill response limited the impact to surface waters to several quarts, and received full agency oversight.

2.6 LIST OF SIGNIFICANT MATERIALS INCLUDED IN SPCC PLAN

Various significant materials are used in support of the operations that occur at the Valero Benicia Refinery. A current list of these materials is maintained in the facility's Spill Prevention, Control and Countermeasure (SPCC) Plan and is included here by reference.

3 STORM WATER POLLUTION PREVENTION STRATEGY

The goal of this SWPPP is to minimize storm water pollution, improve water quality, and comply with the storm water regulations in NPDES Permit No. CA0005550. The strategy to achieve this goal is to implement BMPs, wet season observations, dry season observations, an annual site inspection, and appropriate responses to the inspections and sampling. This section describes the personnel and tasks related to storm water pollution prevention.

3.1 PERSONNEL AND RESPONSIBILITIES

The Environmental Manager ensures that a storm water pollution prevention team is organized to respond to storm water-related tasks. These tasks include conducting BMP/storm water inspections, performing the annual inspection, collecting storm water samples, and preparing the annual report. The storm water pollution prevention team at the facility is identified in Table 3-1.

Table 3-1

Storm Water Pollution Prevention Team

Point of Contact	Title	Phone No.	Responsibilities
Lisa Crowley	Staff Environmental Engineer	(707) 745-7925	Manage Storm Water Pollution Prevention Program
Sue Gustofson	Environmental Manager	(707) 745-7203	Manage Storm Water Pollution Prevention Program (first alternate)
Chris Howe	Director of Health, Safety, Environment & Government Affairs	(707) 745-7534	Manage facility environmental program

Table 3-2 outlines the strategy of the storm water pollution prevention team for preventing storm water pollution at the Valero Benicia Refinery.

3.2 VISUAL OBSERVATIONS

Storm Water Outfall Observations

The NPDES permit requires quarterly storm water outfall visual observations. Because the discharge to Outfall 017 is controlled by a tank, any discharge from Outfall 017 is considered a storm water discharge. Before a storm event may be observed, it must produce significant storm water discharge. The General Permit defines "significant storm water discharge" as a continuous discharge of storm water for approximately one hour. Visual observations must also be conducted the entire time storm water from tank berms is discharged to the outfalls.

Receiving Water Observations

The NPDES permit requires standard observations during each storm event and at least once per month of Sulfur Springs Creek, Beaver Creek, and Buffalo Wallow. Standard observations include: floating and suspended materials, discoloration and turbidity, odor, beneficial water use, hydrographic condition, and weather conditions.

3.3 SAMPLING AND ANALYSIS

Methods

Sample collection, storage, and analysis are performed according to 40 CFR Section 136 or other methods approved and specified by the executive officer of the SFBRWQCB. Water and waste analysis will be performed by a laboratory approved for these analyses by the California Department of Health Services (DHS) or a laboratory waived by the executive officer of the SFBRWQCB from the necessity of obtaining a certification for these analyses from the DHS.

Collection

Outfalls 002 through 016 are sampled quarterly. Since the discharge from Outfall 017 is controlled by a tank, Outfall 017 will be sampled during each discharge. Grab samples of storm water during storm events that produce a significant discharge must be collected and analyzed for pH, total organic carbon (TOC), and oil and grease (O&G). In addition, the flow must be approximated for each discharge point. Flow volumes are estimated by the Environmental Department and included in Self Monitoring Reports to the SFBRWQCB based on rainfall data, runoff coefficients, and drainage areas.

With appropriate consideration for personnel safety, samples are taken within the first 30 minutes after determining that a storm event is significant. A significant storm event is defined (USEPA, 1992) as greater than 0.1" of rain. According to USEPA guidance, at least 72 hours of dry weather should occur between storm events. To meet sampling requirements according to these guidelines Valero has implemented the following steps:

For Outfalls 002 through 016:

Step	Responsibility
1. Monitor rainfall gauge and notify Environmental Laboratory when 01" of rain has accumulated from new storm event.	Oil Movements Department
2. Sample storm water outfalls 002 through 016 for pH, Oil and Grease and Total Organic Carbon.	Environmental Laboratory
3. Analyze collected samples for pH within 15 minutes and other parameters within timelines specified by USEPA regulations.	Environmental Laboratory
4. Report results from storm water sampling to Environmental Department.	Environmental Laboratory
5.a. Review analytical results for permit compliance. 5.b. Coordinate additional sampling and corrective measures (including implementation of supplemental limits) as appropriate. 5.c. Report results, including any required non-compliance reports, to SFBRWQCB.	Environmental Department

For Outfall 017:

Step	Responsibility
1. Notify Environmental Laboratory each time when discharge from Tank 33 is planned.	Benicia Asphalt Plant
2. Sample storm water Outfall 017 for pH, Oil and Grease and Total Organic Carbon.	Environmental Laboratory
3. Analyze collected samples for pH within 15 minutes and other parameters within timelines specified by USEPA regulations.	Environmental Laboratory
4. Report results from storm water sampling to Environmental Department.	Environmental Laboratory
5.a. Review analytical results for permit compliance. 5.b. Coordinate additional sampling and corrective measures (including implementation of supplemental limits) as appropriate. 5.c. Report results, including any required non-compliance reports, to SFBRWQCB.	Environmental Department

For Storm Water discharge to Outfalls 006, 009, and 010 from Tank Berms:

Step	Responsibility
1. Sample storm water from the secondary containment for pH, Total Suspended Solids, and Total Organic Carbon. Deliver samples to the Environmental Laboratory	Oil Movements Department
2. Analyze collected samples for pH within 15 minutes and other parameters within timelines specified by USEPA regulations.	Oil Movements Department
3. Report results from storm water sampling to Environmental Department and Oil Movements Department.	Environmental Laboratory
4. Review analytical results for permit compliance.	Environmental Department and Oil Movements Department
5. If results show the storm water can be discharged through an outfall, unlock the valve, monitor the entire discharge, and close and lock the valve when discharge is complete. If results show the storm water does not meet the limits, discharge to the waste water treatment plant.	Oil Movements Department

Table 3-2

Strategy for the Storm Water Pollution Prevention Program at Valero Benicia Refinery

Goal			
Minimize storm water pollution, improve water quality, and comply with storm water regulations per NPDES Permit No. CA0005550 under the Clean Water Act.			
Strategy	**Objectives**	**Actions**	**Metrics**
Prepare and maintain SWPPP.	Meet permit requirements for the SWPPP. Establish a program to minimize storm water pollution. Maintain discussion within the refinery and with regulators on storm water issues.	Identify potential sources of pollution to storm water. Design BMPs to minimize each potential source of pollution. Design an inspection and sampling program to monitor the effectiveness of the BMPs.	Did the operators find the BMPs feasible and easy to implement? Did the SFBRWQCB provide positive feedback on the SWPPP, if reviewed? Did results of inspection and monitoring indicate that the BMPs are effective and that storm water is not being polluted?
Train the operators at each facility site.	Ensure that personnel understand the importance of storm water pollution prevention measures. Ensure that personnel are aware of storm water pollution sources and the means for minimizing pollution. Establish communication channels between managers and facility operators to address storm water pollution prevention issues.	Incorporate SWPPP/BMP requirements into technician training program. Conduct a follow-up investigation to ensure proper use of BMPs and to address questions. Storm Water Pollution Prevention Team to provide technical and regulatory support to operators on storm water issues.	Did facility operators use the designated BMPs in their day-to-day operations? Did the results of inspection and monitoring confirm the proper implementation of BMPs?
Monitor potential pollution to storm water.	Confirm effectiveness of the BMPs. Ensure that the SWPPP addresses all potential storm water pollution sources. Obtain information necessary to modify the SWPPP.	Per the SWPPP: Conduct sampling and analysis; and Conduct annual inspections.	Were the sampling and inspection procedures described in the SWMPP followed?

Table 3-2 (Continued)

Strategy for the Storm Water Pollution Prevention Program at Valero Benicia Refinery

Goal			
Minimize storm water pollution, improve water quality, and comply with storm water requirements specified in NPDES Permit No. CA0005550			
Strategy	**Objectives**	**Actions**	**Metrics**
Evaluate storm water monitoring data and BMP inspection reports, and respond if data suggest storm water may have been impacted.	Eliminate illicit discharges. Respond effectively to accidental discharges. Reduce or eliminate other discharges.	Control inappropriate dumping through outreach, inspection, training, and enforcement. Identify responsible parties for initiating cleanup actions and establish cleanup and notification procedures. Train employees for proper response and establish procedures for monitoring, recordkeeping, and reporting. Identify and effectively manage discharges associated with maintenance activities and construction activities.	Were non-storm water discharges identified and eliminated? Were accidental discharges handled effectively and in a timely manner?
Evaluate and update SWPPP.	Identify need to update the SWPPP for the next water year.	Evaluate results of inspections and sampling to determine if BMPs are adequate and if all industrial pollution has been addressed by the SWPPP and SWMRP. Update SWPPP and SWMRP if needed. Submit updates to SFBRWQCB by 1 July.	Did the results of sampling and inspections confirm that the SWPPP is adequate for the next water year
Report to SFBRWQCB.	Comply with report requirements.	Submit annual report for the refinery to SFBRWQCB by 1 July of each year.	Are annual reports submitted before 1 July of each year?

BMP Best Management Practice
NPDES National Pollutant Discharge Elimination System
SFBRWQCB San Francisco Bay Regional Water Quality Control Board
SWPPP Storm Water Pollution Prevention Plan

Annual Site Inspection

Standard Provision I.J.4 of Attachment G, *Regional Standard Provisions, and Monitoring and Reporting Requirements*, of the NPDES permit requires the facility be inspected annually to verify all elements of the SWPPP are up to date. The inspections should identify industrial activities that are affecting storm water discharge and to evaluate whether the BMPs identified in the SWPPP to reduce pollutant loadings are adequate and properly implemented in accordance with the terms of the permit. If the BMPs are inadequate or improperly implemented, additional control measures may be needed. Section 4.0 of this SWPPP describes the BMPs in detail, and Table 4-2 provides a summary list of all BMPs that can be used in the annual site inspection.

During the annual site inspection, all elements of the SWPPP, including the site map, potential pollutant sources, structural and non-structural controls to reduce pollutants, and changes in activity, are verified for accuracy. The storm water drainage system, including conveyances and structures, is also visually inspected for signs of deterioration, physical stress, accumulation of debris, etc. Observations that require a response and the appropriate response to the observation are recorded and retained as part of the SWPPP. All inspections will be conducted by qualified and trained personnel. The Storm Water Pollution Prevention Team ensures that a tracking and follow-up procedure will be implemented and that the correction of any deficiencies will be appropriately documented.

3.4 RESPONSES TO OBSERVATIONS, INSPECTIONS, AND MONITORING

Valero maintains all observation, sampling, and monitoring records for a period of five years. Refinery staff will respond to abnormal conditions or sampling results with appropriate BMPs.

Annual Report

An annual report spanning June 1 through May 31 and covering data for the previous wet season for the identified storm water discharge points is due to the SFBRWQCB on 1 July of each year. The annual storm water report will include:

- A tabulated summary of all sampling results and a summary of the visual observations made during the inspections;
- A comprehensive discussion of the compliance record and the corrective actions taken or planned for full compliance with the NPDES permit;
- A comprehensive discussion of the progress of source identification and control programs for non-effluent limited parameters; and
- Recent modifications to the SWPPP.

4 BMPS FOR INDUSTRIAL ACTIVITY SITES

This section identifies baseline BMPs and site-specific BMPs for industrial areas at the Valero Benicia Refinery. The areas requiring source identification or regulation under this SWPPP are:

- The Refinery Dock;
- The Crude Transfer Pipeline;
- The Coke Silos Area;
- The Burma Road and Fire Training Surface Drainage Area;
- The Raw Water Break Tank Surface Drainage Area;
- The Avenue A Surface Drainage Area;
- Valero East;
- The Buffalo Wallow Surface Drainage Area;
- The Wastewater Treatment Surface Drainage Area;
- The Marketing Terminal;
- The Benicia Asphalt Plant; and
- Valero South

Detailed descriptions of these sites are provided in Sections 4.1 through 4.12.

A figure has been prepared for each area to depict features, as required by the NPDES permit Standard Provisions and Reporting Requirements, Section B [Standard Storm Water Provisions], Provisions 2.b.1 through 2.b.7. Table 4-1 lists the features that the NPDES permit requires the figures to show.

Table 4-1

Features Required by the Permit to be Shown on Maps[a]

Feature[b]	Map Requirements	Item(s) Shown on the Valero Site Plan
1	Storm water conveyance, drainage, and discharge structures	Berms, dikes, channels, and culverts that divert storm water flow (described for each topic area).
2	Outline of the storm water drainage areas for each storm water discharge point	Potential pooling areas and/or receiving surface waters.
3	Paved areas and buildings	All paved areas and buildings.
4	Areas of pollutant contact with storm water, actual or potential	Areas shown on site plans are described in Section 4.0 of the SWPPP.
5	Location of existing storm water structural control measures (i.e., berms, coverings, etc.)	Areas shown on map are described in Sections 4.0 and 5.0 of the SWPPP.
6	Surface water locations, including springs and wetlands	Relevant surface water locations, including springs and wetlands.
7	Vehicle service areas	None of the areas contain vehicle maintenance areas.

[a] NPDES Permit No. CA0005550.
[b] Attachment G: Regional Standard Provisions, Monitoring and Reporting Requirements for NPDES Wastewater Discharge Permits, Section I, Subsection J, Provision 2.b.
NPDES National Pollutant Discharge Elimination System
SWPPP Storm Water Pollution Prevention Plan

Baseline BMPs

Baseline BMPs are non-site-specific; they pertain to most industrial activities. Table 4-2 lists the baseline BMPs and actions for implementing each BMP. Appendix D presents excerpts of pertinent BMPs from the California Stormwater Quality Association's (CASQA) *Stormwater Best Management Practice Handbook (CASQA 2003)*.

Table 4-2

Baseline Best Management Practices

BMP Category	BMP
Good housekeeping	When storm water contacts rubbish, litter, and other uncovered materials, it may wash away residues and materials that may pollute receiving waters. To control this type of storm water contamination, outdoor areas at Valero should be kept neat and clean. Personnel should attempt to prevent littering and should promptly remove any waste materials to avoid contact with storm water. Those materials that must be stored outdoors should be covered with tarps or moved into a covered area. Good housekeeping also includes other types of practices. Sensitive materials (e.g., petroleum, oil, and lubricants; chemicals; cleaning agents; and fuels) should be clearly labeled for use and disposal. Indoor areas should remain uncluttered so that work does not take place outdoors, and leaks and spills can be quickly detected and controlled.
Covering trash dumpsters	Trash in an open bin can bring pollutants into contact with storm water. All trash dumpsters should be covered.
Source control	Source controls include measures such as eliminating or reducing the use of toxic pollutants, covering pollutant areas, sweeping paved areas, containing potential pollutants, and stenciling all storm drain inlets with "No Dumping" signs. Discharges associated with maintenance activities, maintenance facilities, or construction activities (including vehicle and equipment wash water discharges) and discharges associated with waste disposal or the repair/replacement of paved surfaces should be reduced through prevention or effective management.
Preventive maintenance	Materials, buildings, and equipment that are in disrepair are more likely to become storm water hazards than those that operate smoothly. Leaky roofs, broken shed doors, cracked pavement and berms, and any other enclosure defects that compromise storm water protection should be repaired promptly. Similarly, equipment that regularly leaks oil, fuel, or other contaminants should be repaired promptly. Roads, parking lots, and landscaping should not be allowed to degrade to the point where they erode and contaminate runoff. Most important, these types of activities should be undertaken before problems arise, so storm water pollution is minimized.
Control of illicit discharges	The requirements of this SWPPP provide a means for controlling potential illicit discharge through inspections, training, and enforcement.

BMP Category	BMP
Spill and accidental discharge prevention and response	Valero has an oil and hazardous substance SPCC Plan. This plan includes measures and recommendations to reduce the likelihood and extent of spills. Because outdoor spills are a major source of storm water pollution, care should be taken to prevent such spills, equipment should be readily available to mitigate a spill if it occurs, and personnel should receive training on the use of the equipment. These measures are especially important in field training areas, where personnel might incorrectly consider small spills to be harmless. Field trainees should be fully trained in the use and importance of spill control equipment and cleanup procedures. Engineering control features such as berms and containments should be constructed around all sensitive material storage areas, so that spills can be easily detected and controlled. The SPCC Plan defines a mechanism for responding to accidental spills, including identifying parties responsible for initiating immediate cleanup actions; establishing cleanup procedures; notifying appropriate agencies; training employees to identify and react to accidental discharge scenarios; ensuring that properly credentialed contractors are hired for cleanup; and establishing procedures for monitoring, records management, and reporting.
Training	Training is integral to the overall Storm Water Pollution Prevention Program. Personnel should be thoroughly trained in pollution prevention measures pertaining to their day-to-day activities. Training should be tailored to each industrial activity at Valero (e.g., fueling personnel should receive specialized training in fuel spill control). Refinery personnel should receive constructive feedback on their efforts through periodic inspections and reviews.
Inspections	As part of the storm water monitoring program, the storm water pollution prevention team should conduct inspections of each industrial activity and storm water discharge point. The inspections should verify that BMPs are being implemented correctly in each area. The team should also check for signs of storm water pollution (e.g., stains, damaged materials, or oil sheen on runoff or standing water) and should identify ways to correct these problems.

BMP best management practice
SPCC spill prevention control and countermeasure
SWPPP storm water pollution prevention plan

Site-Specific BMPs

In addition to baseline BMPs and Valero's site-wide earthquake preparedness program (see Section 6.3), Valero has identified site-specific BMPs for all industrial activities that have the potential to impact storm water quality. As discussed in Section 5.0, runoff in the Refinery Proper is contained and pumped to the Wastewater Treatment Plant; therefore activities in the refinery proper cannot affect storm water quality. Specific sites and their corresponding BMPs are discussed in the following sections and summarized in Table 4-3.

Table 4-3

Summary of Site-Specific Best Management Practices

BMP	Explanation
Baseline BMPs (see Table 4-2) • Good housekeeping • Covering trash dumpsters • Source control • Preventative maintenance • Control of illicit discharge • Spill and accidental discharge prevention and response • Training • Inspections	Implemented as appropriate at all sites.
Refinery Dock	
Bermed vapor recovery system	The berm surrounding the vapor recovery system is approximately 1.5 feet high and drains to a sump at the end of the dock that has an approximate capacity of 3,000 gallons.
Catch basins and sumps	In case of a spill, sumps and catch basins are used to collect runoff and a sump pumping system discharges the runoff to the treatment plant.
Spill Prevention Controls and Countermeasures Plan	The refinery's SPCC Plan contains procedures for preventing and responding to spills at the refinery dock.
Dock Operations Manual	The Dock Operations Manual provides procedures to prevent and respond to spills.
Crude Transfer Pipeline	
Cathodic protection	Transfer lines are equipped with cathodic protection to prevent corrosion.
Check valves	The transfer line is equipped with check valves to limit the size of spills.
Containment	The asphalt berms and collection sumps contain storm water runoff. Runoff is visually inspected before it is released to the sewer system or surface water.
Inspections	The crude transfer pipeline is visually inspected for leaks once per shift.
SPCC Plan	The SPCC Plan provides procedures for responding to spills from the crude transfer pipeline.
Coke Silos Area	
Catch trays and tarps	Provide containment for coke dust under the conveyor belt.
Vacuum system	Applied to contain coke dust during unloading of bottom-dump rail cars.
Wind barrier	Prevents stray coke dust from leaving the site.

BMP	Explanation
Burma Road and Fire Training Surface Drainage Area	
Bermed training area with discharge to the wastewater treatment plant	Storm water in the fire training area is collected and treated.
Erosion controls	BMPs will be applied to control erosion (see Section 5.0).
Operational procedures	Designed to prevent the storage of hazardous materials.
Metal fence	Designed to prevent gross solids or airborne pollutants from leaving the site.
Raw Water Break Tank Surface Drainage Area	
Erosion controls	BMPs will be applied as needed to control erosion (see Section 5.0).
Avenue A Surface Drainage Area	
Erosion controls	BMPs will be applied as needed to control erosion (see Section 5.0).
SPCC Plan	Provides procedures for responding to spills in the roadway.
Buffalo Wallow Surface Drainage Area	
Erosion controls	BMPs will be applied as needed to control erosion (see Section 5.0).
Berms and sumps	Constructed at the pump pad and Gate 4 to contain spills and discharge them to the API sewer.
Valero East	
Erosion Controls	BMPs will be implemented as need to control any potential erosion (See Section 5.0)
Housekeeping	Throughout the paved receiving area, materials stored will have appropriate BMPs, such as secondary containment, tarps, etc. (See Table 4-2)
Wastewater Treatment Surface Drainage Area	
Dike	Controls drainage within the wastewater treatment plant. Collected runoff is treated prior to discharge.
Marketing Terminal	
Tank overflow prevention	Provides procedures to prevent overflow.
Tank leakage prevention	Specifies maintenance and inspections to minimize leakage.
Loading tank design	Existing tank is designed to send overflow to refinery oily water sewer system.
Vapor recovery system containment	Contains spills in contained area.
Benicia Asphalt Plant[n]	
Storm Water Tank 4633	Storm water drains in the Benicia Asphalt Plant collect storm water flows and direct them to a storm water tank for settling and flow equalization.
Regular inspections	Regular inspections of equipment (including drains, valves, and pumps) for leaks are conducted. In addition, equipment is checked for structural failures. Upon discovery of a malfunction, Valero conducts repairs as required.
Wastewater treatment system	Drains in the Wastewater Treatment System Area capture the storm water in areas with high pollution potential and convey it into the wastewater treatment system.
Good housekeeping	Employees are encouraged to practice good house-keeping procedures throughout the Benicia Asphalt

BMP	Explanation
	Plant.
Maintenance	Wastewater and storm water conveyances are kept open and clear of debris and dirt.
Sweeping	Valero has contracted a street sweeper to sweep the driveways and parking lots prior to each rainy season.
Avoid hosing down areas	Employees are instructed to avoid hosing down the Benicia Asphalt Plant. However, if hosing down the Benicia Asphalt Plant cannot be avoided, the wash water is directed to the Benicia Asphalt Plant's Water Oil Recycling and Treatment System drains instead of the storm drains.
Valero South	
Erosion controls	BMPs will be applied to control erosion (see Section 5.0).
Housekeeping	Throughout the paved receiving area, materials stored will have appropriate BMPs, such as secondary containment, tarps, etc. (See Table 4-2)

[a]Table 4-4 contains site-specific BMPs for other areas within the Benicia Asphalt Plant.
BMP best management practices
SPCC spill prevention, control, and countermeasure
API American Petroleum Institute

4.1 REFINERY DOCK

Site Description

The Refinery Dock is located on the Carquinez Strait approximately a quarter mile northwest of the Martinez-Benicia Bridge (Figure 4-1). No outdoor storage (including aboveground or underground tanks), manufacturing, and/or processing facilities are associated with the Refinery Dock. Dock operating procedures and contingencies are documented in the *Dock Operations Manual* maintained on site (Valero, 1996). Containment curbing, catch basins, a sump, and a sump pumping system, located beneath the dock transfer equipment, are used to collect rainwater and also act as an emergency backup for spills. The sump is pumped to the Crude Transfer Pipeline, which conveys the material into one of the refinery's aboveground storage tanks for later treatment.

Because there are no collection and conveyance systems on point source discharges from the Refinery Dock, storm water samples cannot be collected.

Buildings

There is one building on the Refinery Dock. This building is used as a dock services office for dock employees. The dock services office covers an area of approximately 300 square feet. Wastewater lines from this building are associated with employee rest rooms connecting to the sanitary sewer. The dock services office does not include any industrial activities and, therefore, is not a potential source of storm water pollution. For this reason, this office is not subject to the requirements of the SWPPP.

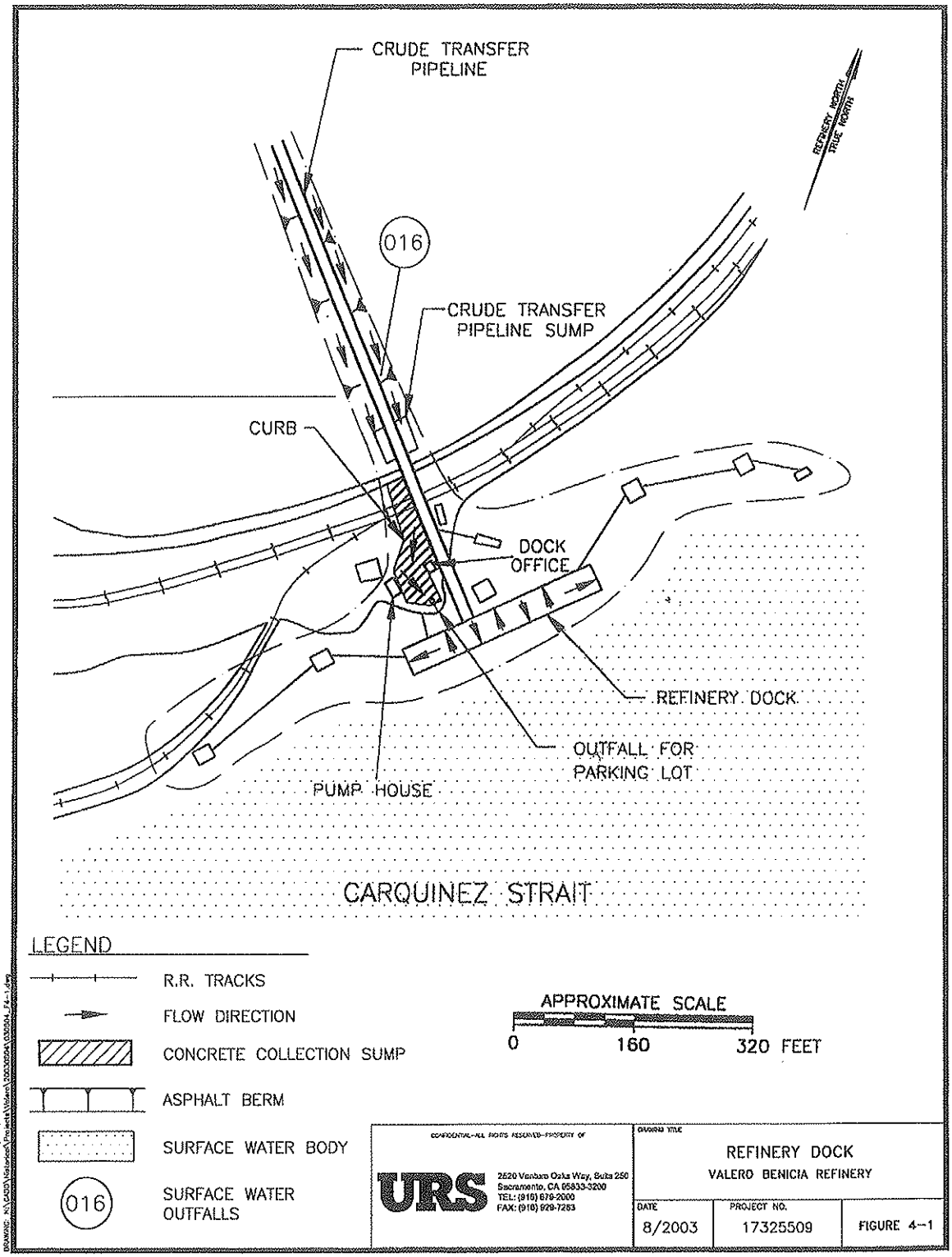

Figure 4-1
Refinery Dock

Additional structures at this site include a fire water pump house and a small covered dock for harboring small boats. Storm water runoff from the dock services office and the fire water pump house runs onto the employee parking lot. Storm water runoff from the small covered dock flows off of the A-frame roof directly into Carquinez Strait.

Loading/Unloading Areas

The primary purpose of the Refinery Dock is to unload incoming ships filled with crude oil and intermediates. The main portion of the dock is 350 feet long and 50 feet wide. It is constructed of pipe piling and reinforced concrete. Product transfer equipment consists of three 16-inch hydraulically operated unloading arms, three 10-inch hydraulically operated loading/ unloading arms, one 12-inch vapor unloading arm and manifold, and a vapor recovery unit. This equipment is surrounded by a curb and drains to a segregated collection system consisting of a 2,380-gallon sump and a 50-gallon-per-minute pump. Also situated on the dock outside of this curbed/contained area are the tie-up crew shelter, the gangway and operating controls, a fire system, and mooring hooks. The dock is normally manned 24 hours a day.

Site Paving and Drainage

Approximately 20% of the Refinery Dock site is covered with impervious surfaces, including paved areas and roofed buildings. The unpaved areas of the site consist of areas around the perimeter of the site that are landscaped, the dock itself, which is constructed from concrete, and the shoreline, which is lined with cemented riprap.

Storm water runoff from the areas of the dock that do not contain transfer equipment flows out from the center of the dock, in the form of sheet flow, to outlets along the sides, and is not directed into any storm drains or channels.

A small employee parking lot at the dock entrance has a drain that channels storm water to Suisun Bay. Because this parking lot is used solely for employee vehicles, no monitoring of the effluent water is required by the NPDES permit.

Process Wastewater and Sanitary Sewer System

Underground utility maps are available for the Refinery Dock and it is believed that all lavatories, shower rooms, and personnel sinks are plumbed to the city of Benicia sanitary sewer. The city of Benicia inspected the integrity of this system on issuing the Building and Occupancy Permits. Other non-storm water discharges appear to be contained, collected, and controlled.

No process wastewater is generated at the Refinery Dock; however, ballast water from incoming ships has, in the past, been generated. Due to updates in the design of today's oil tankers, the necessity to store and treat ballast water has been eliminated. For this reason, the ballast water storage tank has been sealed and is currently inactive.

Storm Drain System

General operation, maintenance, and cleanup practices are implemented so that minimal liquid waste is created in the Refinery Dock area. Valero employees follow strictly enforced spill prevention and control practices, which are described in the *Dock Operations Manual*. Because all storm water at the Refinery Dock is either captured or flows directly into the Carquinez Strait, no storm water drain systems are present at this site.

Site-Specific BMPs

The Refinery Dock presents a significant potential for spills to surface waters.

Potential pollutants at the refinery dock include:

- Crude oil, intermediates, and petroleum products (pipeline leak only).

BMPs used to prevent potential pollutants from entering surface water include:

- **Baseline BMPs.** Implemented as appropriate.
- **Bermed vapor recovery system.** The berm surrounding the vapor recovery system is approximately 1.5 feet high and drains to a sump at the end of the dock that has an approximate capacity of 3,000 gallons.
- **Catch basins and sumps.** In case of a spill, sumps and catch basins are used to collect runoff and a sump pumping system discharges the runoff to the treatment plant.
- **Spill Prevention, Control, and Countermeasure (SPCC) Plan.** The refinery's SPCC plan contains procedures for preventing and responding to spills at the Refinery Dock.
- **Dock Operations Manual.** The *Dock Operations Manual* provides procedures to prevent and respond to spills.

4.2 CRUDE TRANSFER PIPELINE

Site Description

The Crude Transfer Pipeline extends from the Refinery Dock to the Fuels Refinery (Figure 4-2). There are no buildings, storage (including aboveground or underground tanks), manufacturing, and/or processing areas associated with the Crude Transfer Pipeline. The primary loading and unloading facility associated with the Crude Transfer Pipeline is the Refinery Dock. In addition, no wastewater or sanitary sewer lines are associated with the Crude Transfer Pipeline. Outfalls 011 through 016 are located along this pipeline

Outfall 006 is located at the foot of the pipe alley on the south side of the Refinery Proper, and also includes drainage from the Crude Oil Storage Area (COSA) tank farm.

Site Paving and Drainage

The area beneath the Crude Transfer Pipeline (approximately 10,000 linear feet) is underlain primarily with graded, compacted natural soil. One portion of the pipeline extends over a natural earthen swale. This portion extends from the southwest corner of the crude tank field to the northeast along the perimeter of the tank field and Park Road. As indicated on Figure 4-2, one area beneath the pipeline was recently paved with asphalt. Areas immediately adjoining the pipeline consist of landscaped slopes. These areas are maintained on a regular basis to minimize potential erosion. Asphalt berms running parallel with the pipeline channel storm water into seven separate collection sumps located along the length of the pipeline (see Figure 4-2).

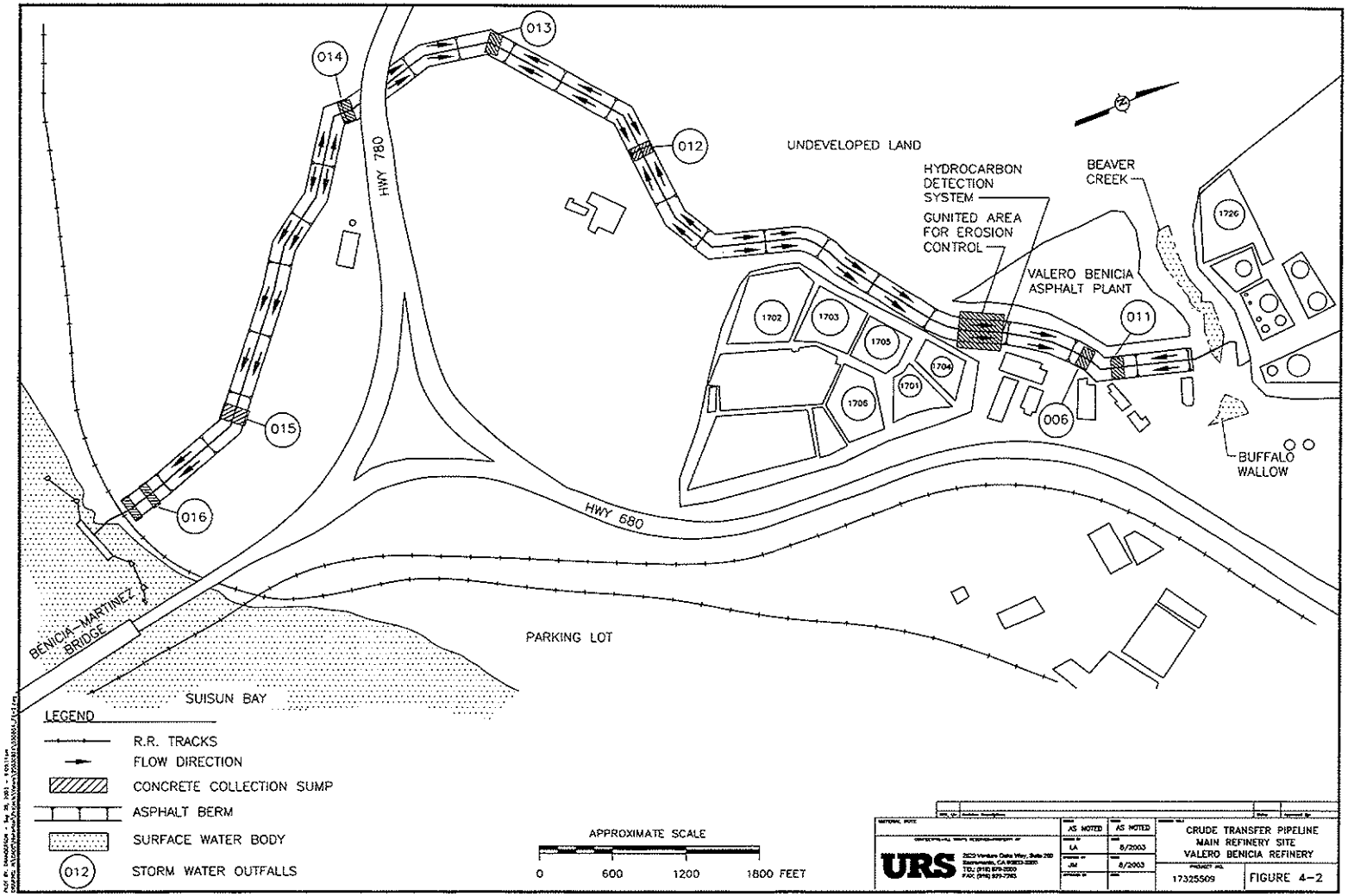

Figure 4-2
Crude Transfer Pipeline

The sumps are constructed from concrete with valved piping connections to the municipal storm water sewer system; the sumps were designed to contain releases from a leak or rupture of the pipeline, or runoff from a 10-year, 24-hour storm. One of the sumps located near the Refinery Dock on the north side of Bayshore Road pumps contained rainwater into the Crude Transfer Pipeline (similar to the dock sump).

Rainwater collected in these sumps is visually inspected prior to release to the municipal sewer system or nearest surface water body. The containment valves for three of the sumps (Outfalls 006, 012, and 015 on Figure 4-2) are normally left open to accommodate flow from natural springs. The valves for these sumps are motor operated and can be automatically closed remotely from central control.

Storm Drain System

The collection sumps associated with the Crude Transfer Pipeline collect storm water runoff from immediately below and around the pipeline. This storm water is channeled via the asphalt berms (illustrated on Figure 4-2) to the collection sumps. Following visual inspection, clean storm water from this area is released into the municipal sewer system or nearest surface water body. If oil sheen is observed during the visual inspection, the contaminated storm water is collected via vacuum truck and directed into the refinery oily water treatment system.

Drainage from outside the Crude Transfer Pipeline is captured in various storm water inlets that drain to municipal storm water sewers.

Site-Specific BMPs

Line failure in the pipe alley due to flange separation could result in leakage. Leaked material could find its way to receiving waters by traveling approximately a quarter mile through a piped drainage system, which is preceded by a sump and underflow weir, to Sulfur Springs Creek.

Valero employees assigned to pipeline maintenance regularly attend training sessions for spill prevention and containment. In addition, established procedures have been prepared to respond to potential spills or releases. Valero's oil spill prevention and contingency plans can be found in the SPCC Plan maintained on site (Valero, in revision at the time of this submittal, 2007).

Specific details of source controls and inspection procedures for the Crude Transfer Pipeline and COSA tank farms are also listed in the SPCC Plan.

Potential pollutants in the Crude Transfer Pipeline and COSA tank farm area include:

- Crude oil, intermediates, and petroleum products.

BMPs used to prevent potential pollutants from entering surface water include:

- **Baseline BMPs.** Implemented as appropriate.
- **Cathodic protection.** Transfer lines are equipped with cathodic protection to prevent corrosion.
- **Check valves.** The transfer line is equipped with check valves to limit the size of any spills.
- **Containment.** The asphalt berms and collection sumps contain storm water runoff. Runoff is visually inspected before it is released to the sewer system or surface water.
- **Inspections.** The Crude Transfer Pipeline is visually inspected for leaks once per shift.

- **Spill Prevention, Control, and Countermeasure Plan.** The SPCC Plan provides procedures for responding to spills from the Crude Transfer Pipeline and COSA tank farm.

4.3 COKE SILOS AREA

Site Description

The Coke Silos are located on the Carquinez Strait approximately a quarter mile west of the Refinery Dock (Figure 4-3). Four silos at this site receive and store processed coke—a petroleum-based powder used for fuel—until it can be loaded onto ships. Coke is transferred to the silos by rail cars, which are loaded in the refinery. Once the rail cars reach the Coke Silos, telescoping extraction tubes are connected to remove their contents. An underground pneumatic system transfers the coke to the four silos pending ship loading.

The Coke Silos and associated transfer systems are constructed and operated in a manner that minimizes or eliminates airborne particulates. A vacuum system is employed at the base of bottom-dump rail cars while off loading coke to the silos. The vacuum system helps draw the coke dust from the rail cars and minimizes potential airborne coke particulates. Coke dust that accumulates at the rail car unloading area is vacuumed up manually. A wind barrier was constructed along the cyclone fence to the immediate north to prevent stray coke dust from leaving the site.

A conveyor belt transfers coke from the silos to waiting ships. The north end of the conveyor belt is completely enclosed to prevent airborne particulates from leaving the site. In addition, a vacuum truck is used to capture airborne particulates while transferring coke from the silos to the ships. The vacuum truck draws airborne coke dust from around the conveyor belt into a portable bin. The bin is transported back to the refinery when full and emptied to accommodate future loading events.

Given the absence of storm water collection and conveyance systems and point source discharges at the Coke Silos Area, no monitoring of effluent storm water is possible. In addition, no storm drain systems are associated with the Coke Silos. Storm water exits this site in the form of sheet flow.

A shower and lavatory facility at the operations shelter is connected to the Benicia sanitary sewer system. No storage tanks are associated with the Coke Silos.

Buildings

There are two small operations shacks at the Coke Silos where contract employees control loading and unloading operations. Storm water runoff from the operations shack flows onto the ground and toward the Carquinez Strait. The lavatory facilities in one of the shacks are connected to the municipal sanitary sewer system.

Storm Drain System

No storm drains exist in this area. Drainage of this area is via sheet flow.

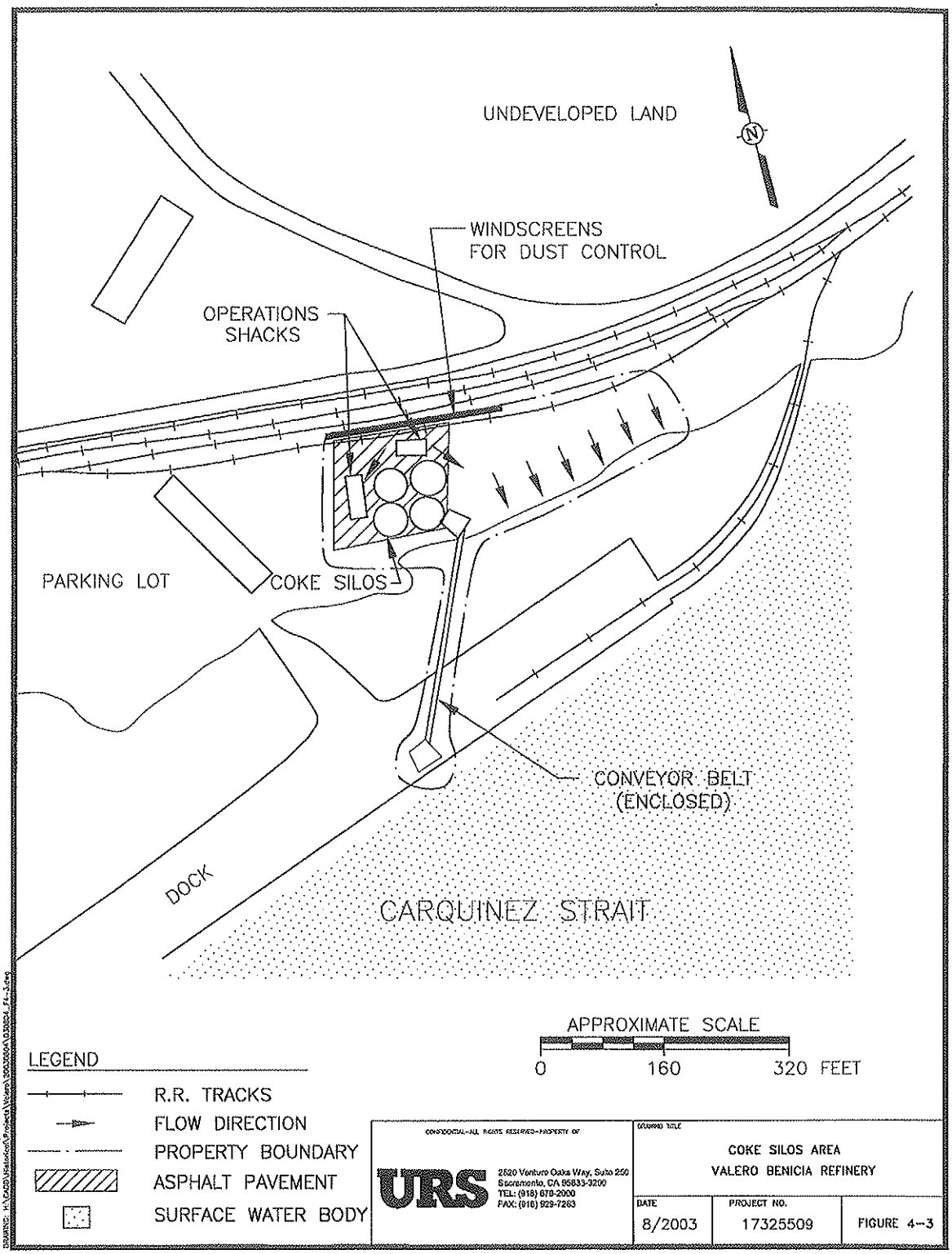

Figure 4-3
Coke Silos Area

Site-Specific BMPs

The Coke Silos area has the potential to contaminate surface water when coke dust is not contained. A small surface water inlet exists near the conveyor belt, which has the potential to become contaminated with coke dust if the coke dust is not handled appropriately.

Potential pollutants in the Coke Silos area include:

- Coke dust (TSS, metals, and hydrocarbons).

BMPs used to prevent potential pollutants from entering surface water include:

- **Baseline BMPs.** Implemented as appropriate.
- **Catch trays.** Provide containment for coke dust under the conveyor belt.
- **Vacuum system.** Applied to contain coke dust during unloading of bottom-dump railcars.
- Wind barrier. Prevents stray coke dust from leaving the site.

4.4 BURMA ROAD AND FIRE TRAINING SURFACE DRAINAGE AREA

Site Description

The Burma Road and Fire Training Surface Drainage Area is located immediately west of the process block and extends to the western Valero property boundary (Figure 4-4). The 69-acre area is primarily unpaved (1% is paved surface), and consists of roads, parking, and temporary administration buildings for contractors. The Burma Road area is also used as a laydown area for miscellaneous equipment and materials.

This area of the refinery has more topographical relief than the rest of the refinery. The steep banks in this area are subject to erosion.

The runoff is discharged west of Gate Number 4, on the south side of the refinery processing area, via a spillway into the western end of Beaver Creek. Beaver Creek routes the storm water via outfall 005 to Buffalo Wallow and, in turn, to Sulfur Springs Creek and Suisun Bay. A natural spring also discharges to this drainage.

There are no manufacturing and/or processing areas or storage tanks associated with this surface drainage area. No industrial process wastes or wastewaters are associated with this surface water drainage area.

Buildings

Buildings at the Burma Road and Fire Training Surface Drainage Area are limited to trailers used by Valero employees and subcontractors while conducting work at the refinery.

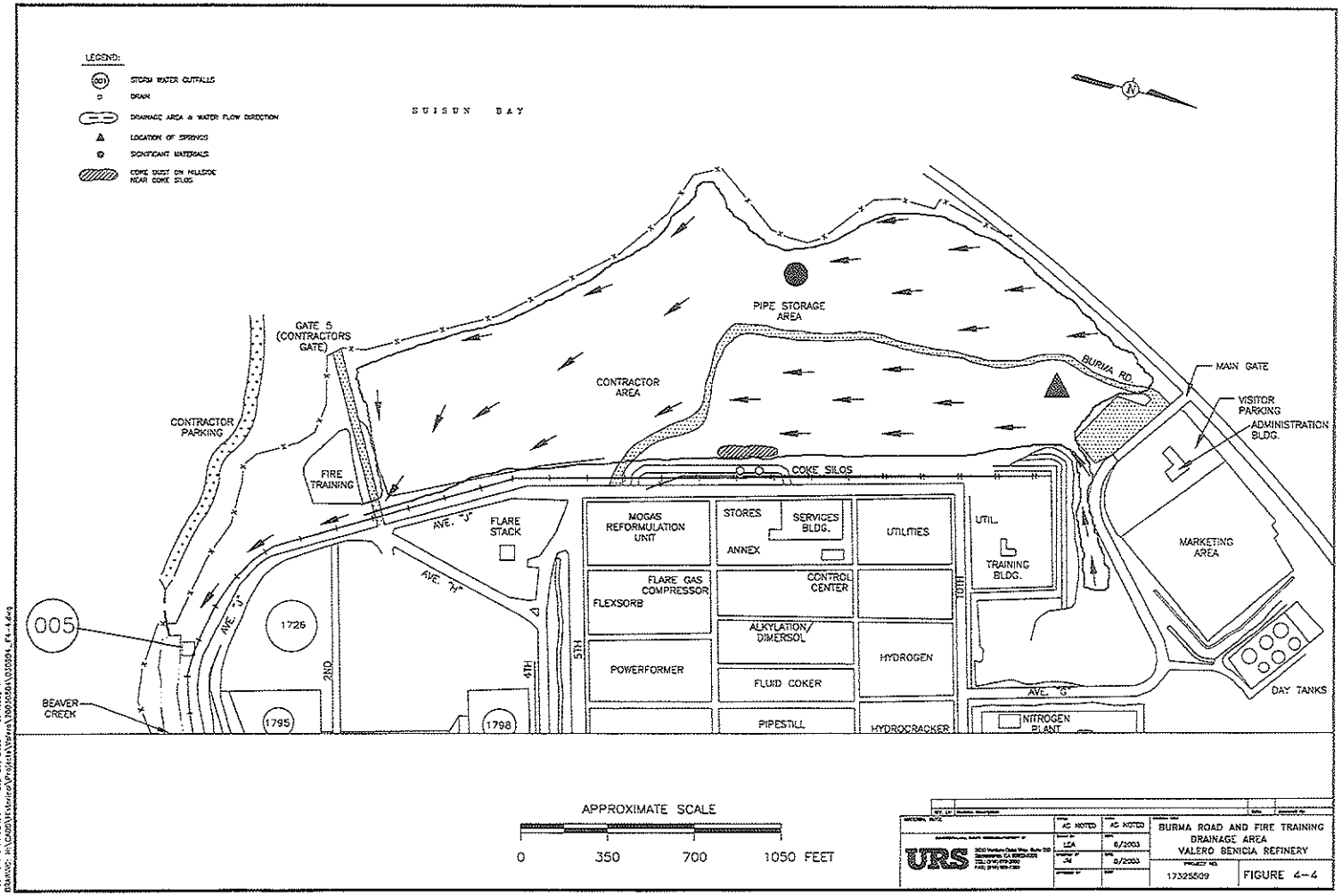

Figure 4-4
Burma Road and Fire Training Drainage Area

Outdoor Storage, Manufacturing, and/or Processing Areas

The primary use of the Burma Road and Fire Training Surface Drainage Area is outdoor storage and fire training. Subcontractors routinely store equipment and supplies at the site until needed (loading and unloading is infrequent). Valero also uses part of the area for storage of piping and potentially salvageable equipment and materials. Outdoor storage areas compose approximately 20% of the 69-acre area.

Approximately a quarter-acre is used for fire training. The remainder of the area consists of steep, vegetated banks and paved access roads.

Site Paving and Drainage

One percent of the Burma Road and Fire Training Surface Drainage Area is paved. The paved areas are limited to access roads. Sheet flow from Burma Road and most of the Fire Training Surface Drainage Area is directed toward Beaver Creek by topography and concrete channels. Drainage from a portion of the Fire Training Area is collected and drained to the Wastewater Treatment Plant to prevent the migration of runoff from training exercises to surface water.

Storm Drain System

The surface drainage area is the primary channel for storm water in the immediate area. This area drains directly to Beaver Creek and subsequently to Suisun Bay via Sulfur Springs Creek. The storm drain clogged during heavy rains in 1997 and 1998, but has since been cleaned and modified to ensure that drainage controls function as designed.

There is a concrete and asphalt fire training pad in the Burma Road and Fire Training Surface Drainage Area. The fire training pad drains independently to the Wastewater Treatment Plant.

Site-Specific BMPs

Potential storm water contamination concerns in this area are greatest in the Fire Training Area, which drains to the Wastewater Treatment Plant. However, in the event of a backup in the drainage system the discharge overflows to the storm drain.

Potential pollutants in the Burma Road and Fire Training Surface Drainage Area include:

- Herbicide applications;
- Metals (in the Fire Training Surface Drainage Area); and
- TSS from erosion.

BMPs used to prevent potential pollutants from entering surface water include:

- **Baseline BMPs.** Implemented as appropriate.
- **Bermed training area with discharge to the Wastewater Treatment Plant.** Storm water in the training area is collected and treated.
- **Erosion controls.** BMPs will be applied to control erosion (see Section 5.0).
- **Operational procedures.** Designed to prevent the storage of hazardous materials.
- **Metal fence.** A metal fence was constructed at the edge of the fire training area to prevent gross solids or airborne pollutants from leaving the site.

4.5 RAW WATER BREAK TANK SURFACE DRAINAGE AREA

Site Description

The Raw Water Break Tank Surface Drainage Area is near the Raw Water Break Tank at the north end of Avenue A (Figure 4-5). Sheet flow is directed toward Outfall 003 from the 19-acre, unpaved area. The outfall flow is directed to Sulfur Springs Creek via a culvert. A spring also discharges to this drainage. This site has significant topographical relief, so the effectiveness of erosion controls must be monitored.

The area includes the Lower Level Tank Farm (LLTF). There are no manufacturing or processing areas associated with this surface drainage area. In addition, no industrial process wastes or wastewaters are associated with this surface water drainage area.

Site Paving and Drainage

Sheet flow from the Raw Water Break Tank Surface Drainage Area is directed into Sulfur Springs Creek through a culvert. Sulfur Springs Creek ultimately conveys the storm water to the Carquinez Strait.

No paving is found in this surface drainage area.

Storm Drain System

The surface water drainage area is the primary channel for storm water in the area. This area drains directly to Sulfur Springs Creek.

Site-Specific BMPs

Storm water runoff from this area is discharged near the refinery water service entrance box at the northeast corner of the refinery (in the processing area at the Raw Water Break Tank) via a culvert that discharges into a ditch tributary to Sulfur Springs Creek. Because of the location of the drains in the Refinery Proper, (the drains lead to the API and Chem Sewers), it is unlikely that drainage from this area would contain hazardous materials. The only potential for a direct discharge into this runoff would be from aboveground piping south of the Main Substation in this area or the LLTF.

Potential pollutants in the Raw Water Break Tank Surface Drainage Area include:

- TSS from erosion.

BMPs used to prevent potential pollutants from entering surface water include:

- **Baseline BMPs.** Implemented as appropriate.
- **Erosion controls.** BMPs will be applied as needed to control erosion (see Section 5.0).
- **Spill Prevention, Control, and Countermeasure Plan.** The SPCC Plan provides procedures for responding to spills from the LLTF.
- **Inspections.** Storm water from the LLTF is contained behind valved berms and is monitored and released manually by operators.

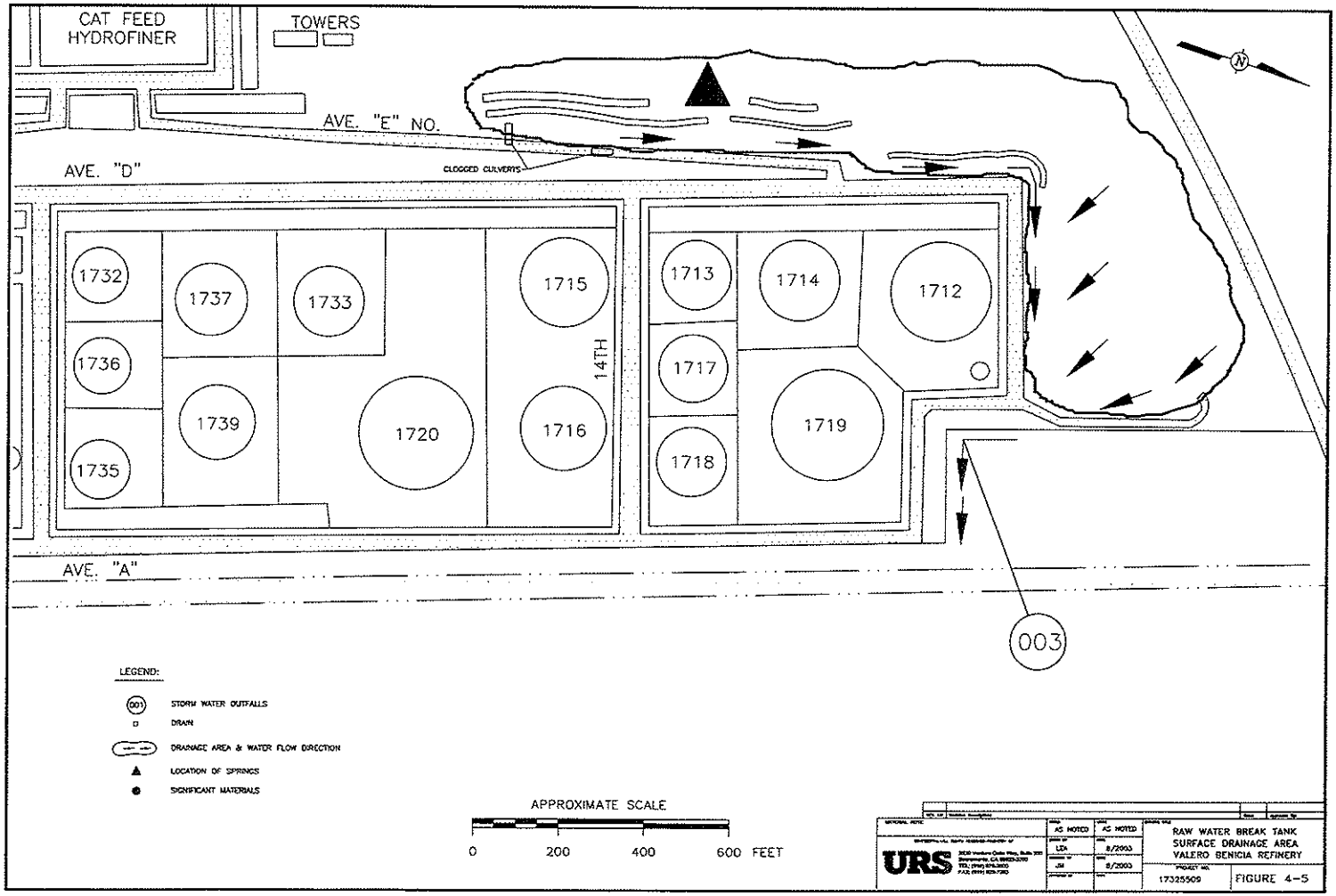

Figure 4-5
Raw Water Break Tank Surface Drainage Area

4.6 AVENUE A SURFACE DRAINAGE AREA

Site Description

A small surface water drainage area is present on Avenue A in the Refinery Proper (Figure 4-6), as well as the storm water contained behind containment berms in the Upper Level Tank Farm (ULTF). Storm water from this area drains to Outfalls 009 and 010 before flowing to Sulfur Springs Creek.

Site Paving and Drainage

Sheet flow from Avenue A, the ULTF and the adjacent railroad is directed toward three storm drains and channeled below ground to surface drainage leading into Sulfur Springs Creek. The main purpose of this drainage area is to control erosion and the flooding of a small access road that bisects the locality.

Storm Drain System

The surface water drainage area is the primary channel for storm water in the immediate area. Storm water in the ULTF is held back to regulate drainage to the Outfalls. This area drains directly to Sulfur Springs Creek.

Site-Specific BMPs

It is unlikely that a spill or discharge could occur in this area because ULTF storm water is controlled and only released manually. Runoff from Avenue A could only be impacted by direct discharge if a spill occurred on the roadway.

Potential pollutants in the Avenue A surface drainage area include:

- TSS from erosion (minimal); and
- Urban runoff from the road.
- Hydrocarbon from tank farm activities

BMPs used to prevent potential pollutants from entering surface water include:

- **Baseline BMPs.** Implemented as appropriate.
- **Erosion controls.** BMPs will be applied as needed to control erosion (see Section 5.0).
- **Spill Prevention, Control, and Countermeasure Plan.** The SPCC Plan provides procedures for responding to spills in the roadway and in the ULTF.

4.7 VALERO EAST

Site Description

The 4.07-acre area consists of a two buildings with associated asphalt paved parking lots and storage areas, and to the north an unimproved soil covered lot. Improvements to this lot are planned for use as a laydown area during refinery turnarounds.

Site Paving and Drainage

Paved areas currently drain to the City of Benicia storm sewers.

Storm Drain System

The surface water drainage area is the primary channel for storm water in the immediate area. This area drains directly to Sulfur Springs Creek.

Site-Specific BMPs

BMPs used to prevent potential pollutants from entering surface water include:

- **Baseline BMPs.** Implemented as appropriate.
- **Erosion controls.** BMPs will be applied as needed to control erosion (see Section 5.0).

4.8 BUFFALO WALLOW SURFACE DRAINAGE AREA

Site Description

A surface water collection area is located near Gate 4 in the Refinery Proper (Figure 4-7). Valero has designated this area as the Buffalo Wallow Area. This area serves as a receptacle for surface water runoff originating adjacent to Beaver Creek and in a small area surrounding an adjacent truck scale and approximately 650 feet of railway. Storm water from Outfalls 004, 007, and 008 is diverted at this point into a 72-inch concrete culvert, which channels the storm water to Sulfur Springs Creek.

Outfall 008 has low flow and is difficult to sample. During the 2011-2012 rain season, Valero will collect samples from both the official Outfall 008 sample location and from the Outfall 008 pipe discharge point upstream of the 72-inch concrete culvert. If sample results are consistent, Outfall 008 may be moved further downstream to the new sample location.

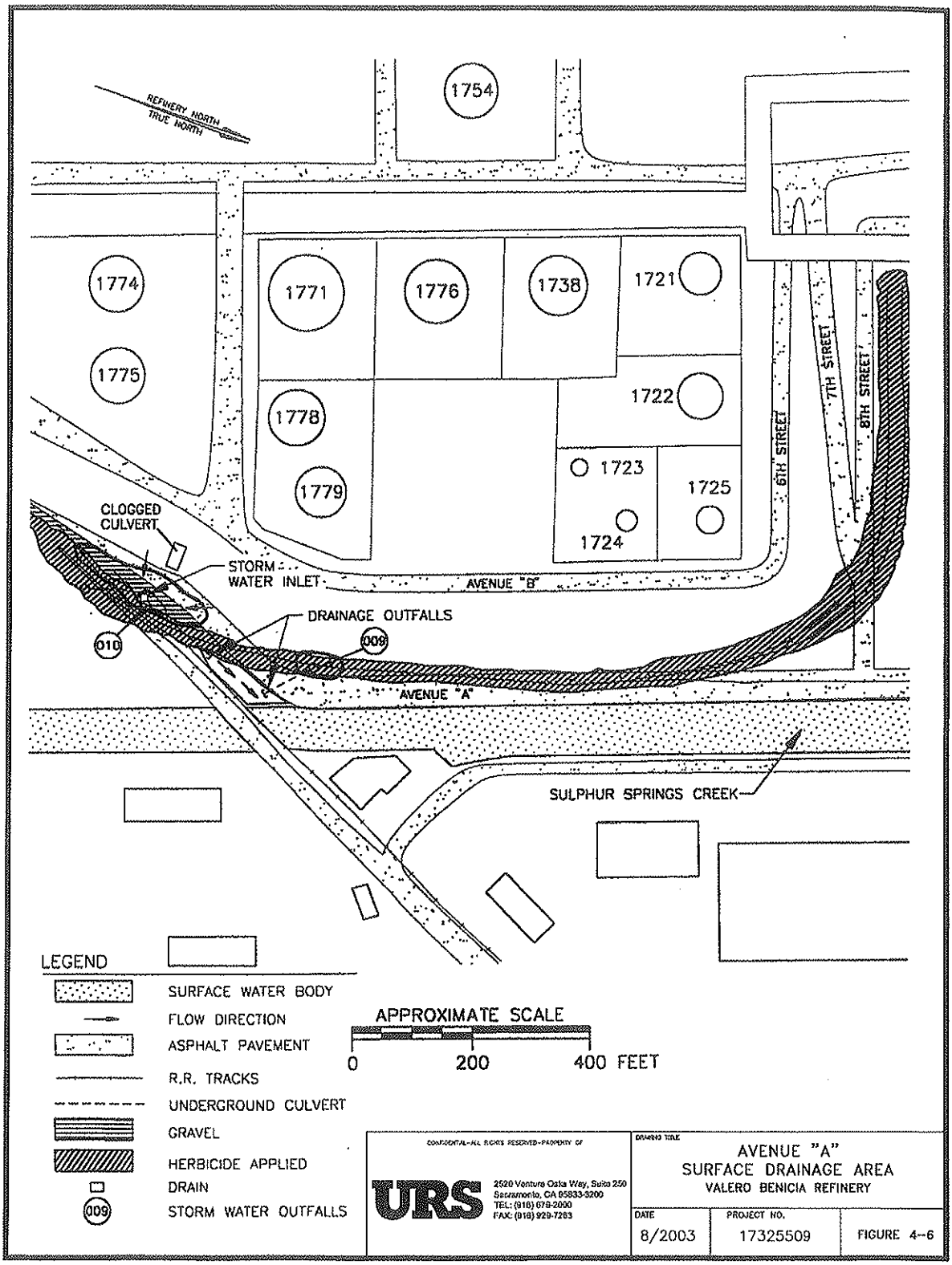

Figure 4-6
Avenue "A" Surface Drainage Area

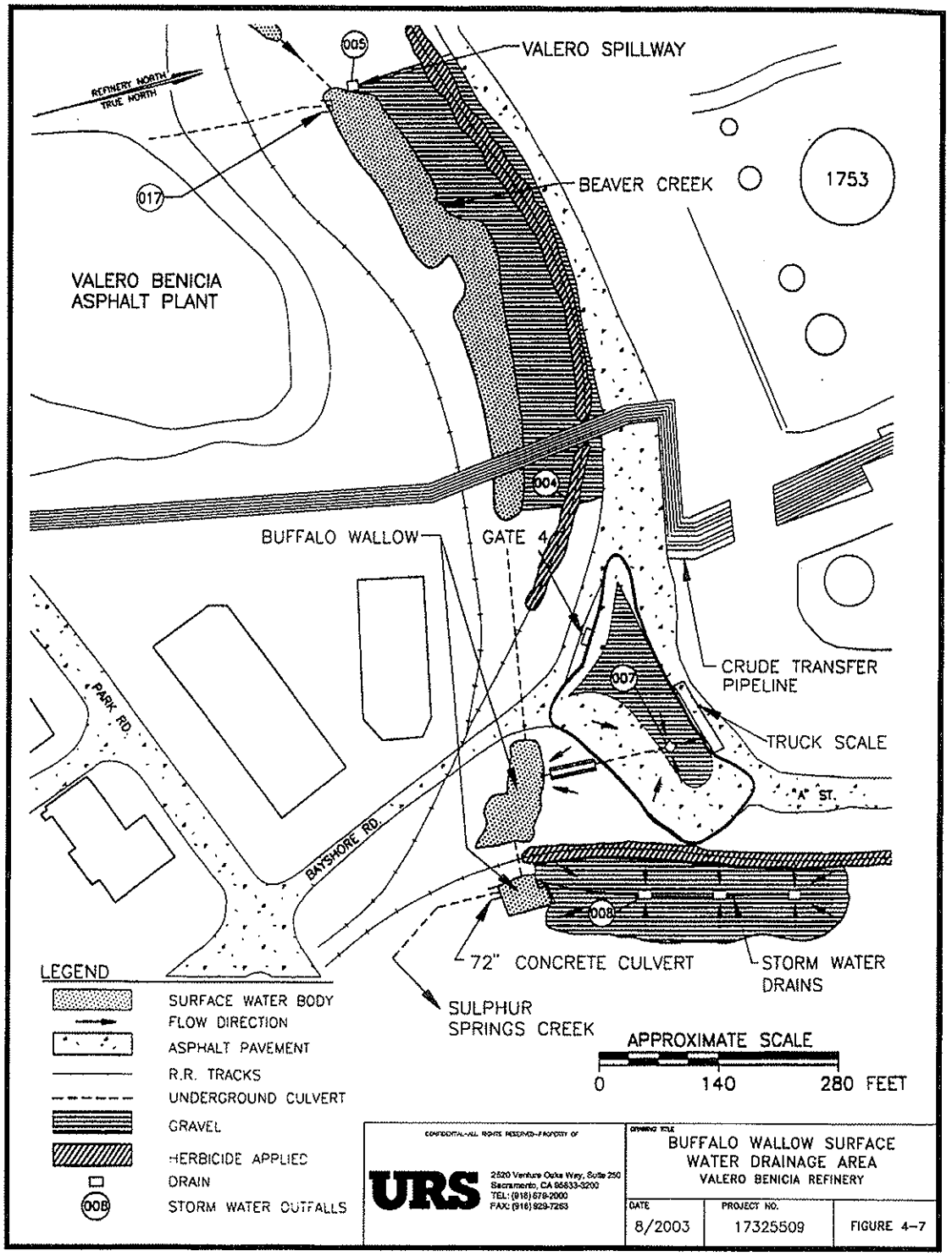

Figure 4-7
Buffalo Wallow Surface Water Drainage Area

There are no buildings, storage (including aboveground or underground tanks), manufacturing and/or processing, or loading and unloading areas associated with the Buffalo Wallow Area. In addition, no industrial process wastes or wastewaters are associated with this area.

Site Paving and Drainage

Sheet flow from an adjacent asphalt truck turnaround area drains into the Buffalo Wallow Area via a storm drain and soil drainage swale. Surface water drainage also enters Buffalo Wallow in the form of sheet flow from the immediate area, which is directed by a slight inward grade on all sides of the area.

In addition, drainage is directed to the Buffalo Wallow Area from a series of storm water inlets. These inlets receive surface water from isolated areas located parallel to a nearby railroad spur. Drainage at each of these isolated areas flows inward toward the inlets, which is facilitated by slight grades in each of the immediate areas.

Storm Drain System

The storm drain at the truck turnaround area is located north of Buffalo Wallow, just past the northern edge of the asphalt turnaround area. An underground culvert channels flow underneath the truck turnaround area to a drainage swale located on the north side of Buffalo Wallow.

A second storm drain system, mentioned above, uses three inlets to receive and direct storm water to the diversion area. The storm water from this system is diverted directly to Sulfur Springs Creek.

Site-Specific BMPs

Drainage at the south side of main refinery/Avenue J is discharged at the pump pad into one or both of two sumps, from which the collected material is pumped to slop tankage or the API sewer. A discharge of hazardous materials could potentially go off site at this point and enter Beaver Creek. The most likely source of discharge would be petroleum product from the pump pad. Discharges at the pump pad (e.g., during transfer of materials) enter a sump, from which the collected material is pumped to the API sewer. In addition, a berm has been constructed at Gate 4 to contain releases within the refinery.

BMPs used to prevent potential pollutants from entering surface water include:

- **Baseline BMPs.** Implemented as appropriate.
- **Erosion controls.** BMPs will be applied as needed to control erosion (see Section 5.0).
- **Berms and sumps.** Constructed at the pump pad and Gate 4 to contain spills and discharge them to the API sewer.

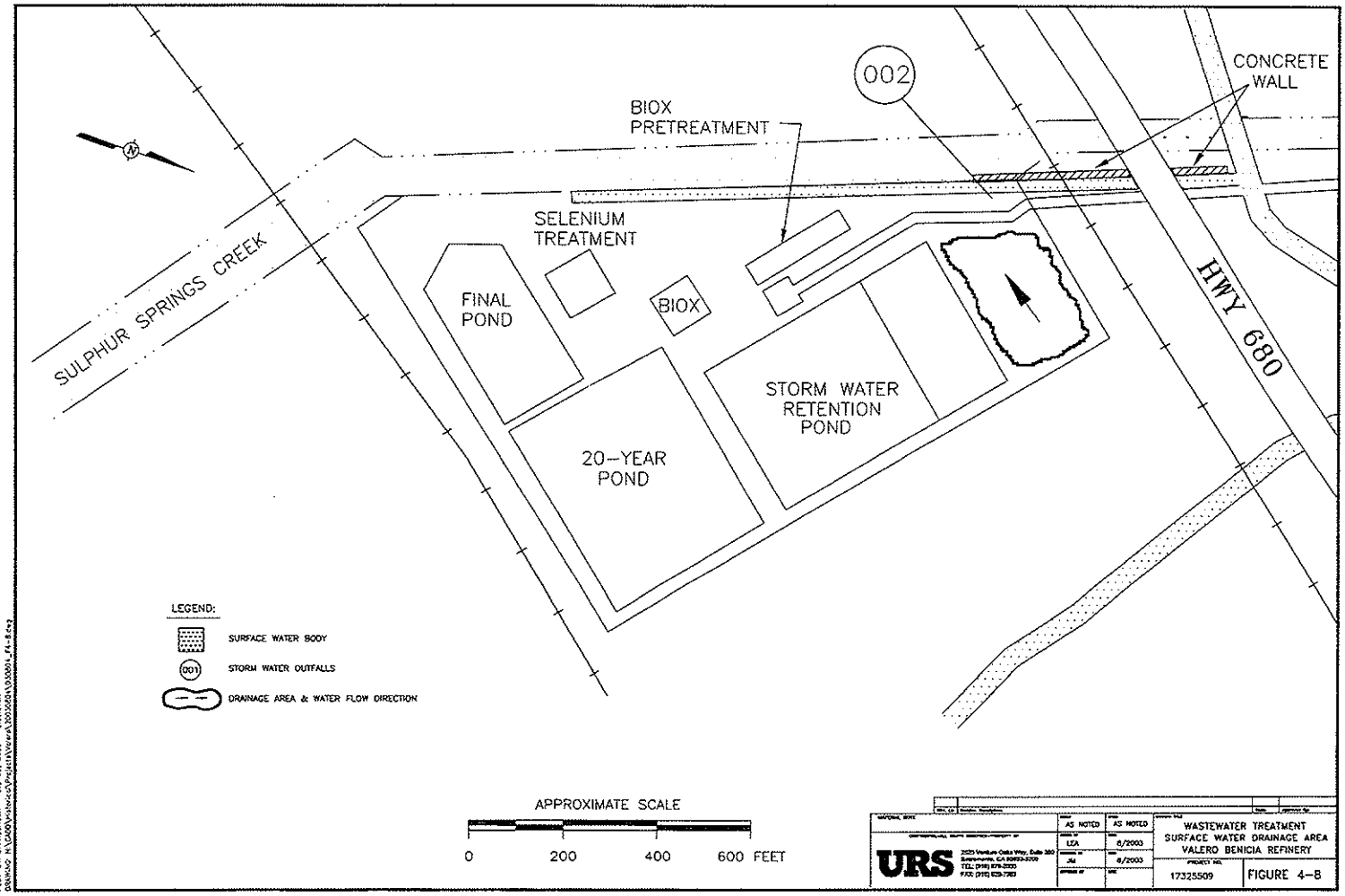

Figure 4-8
Wastewater Treatment Surface Water Drainage Area

4.9 WASTEWATER TREATMENT SURFACE DRAINAGE AREA

Site Description

Wastewater composed of process wastes, cooling tower and boiler blowdown, ballast water, stripped sour water, raw water treatment backwash, and storm water runoff is treated at the Wastewater Treatment Plant (Figure 4-8). This parcel is bordered on the west by a dike; the access road to the Wastewater Treatment Area sits on top of the dike. Immediately west of the dike is Sulfur Springs Creek. The road continues around the southern portion of the Wastewater Treatment Area. The easternportion contains the final pond (fully treated wastewater that is discharged to Suisun Bay), the 20-year pond, and the storm water retention pond. Runoff within the diked area is collected and treated. Areas outside the perimeter of the diked area are discussed below.

The API and Chem Sewer Lines enter this parcel at the northern corner. Two culverts drain to Sulfur Springs Creek from this area. Thus, spillage of untreated wastewater or hazardous materials used at the treatment plant could potentially be discharged to Sulfur Springs Creek, although, the valves are kept closed until water is treated. In addition, the 20-year and storm water retention ponds could contain untreated storm water commingled with untreated wastewater after a storm event.

A 1.8-acre, unpaved site along the western boundary of the Wastewater Treatment Surface Drainage Area drains surface water via Outfall 002 to Sulfur Springs Creek. The area is occasionally used to store equipment and is separated from the Wastewater Treatment Plant by a dike.

There are no buildings, aboveground or underground tanks, or loading and unloading areas associated with the 1.8-acre area. No industrial process wastes or wastewaters are associated with the Wastewater Treatment Surface Drainage Area.

Another area subject to potential BMP incidents is the point at which the API and Chem Sewer Lines cross Sulfur Springs Creek on their way to the Wastewater Treatment Area. Leaks from these lines could spill directly into the creek.

Outdoor Storage, Manufacturing, and/or Processing Areas

The Wastewater Treatment Surface Drainage Area is occasionally used to store equipment. No manufacturing and/or processing areas are associated with this surface water drainage area.

Site Paving and Drainage

The Wastewater Treatment Surface Drainage Area is unpaved. Drainage is discharged through a ditch and several pipes into Sulfur Springs Creek, which is contiguous with Suisun Bay.

Storm Drain System

The Wastewater Treatment Surface Drainage Area is the primary channel for storm water in the immediate area. This area drains through a ditch and several pipes into Sulfur Springs Creek.

Site-Specific BMPs

Runoff within the Wastewater Treatment Plant is contained and treated. Additional BMPs have been developed to address runoff outside of the contained area.

Potential pollutants in the Wastewater Treatment Area include:

- Untreated wastewater from the API and Chem Sewer collection systems.

BMPs used to prevent potential pollutants from entering surface water include:

- **Baseline BMPs.** Implemented as appropriate.
- **Dike.** Controls drainage within the Wastewater Treatment Plant. Collected runoff is treated prior to discharge.

4.10 MARKETING TERMINAL

Site Description

The Marketing Terminal is located immediately to the north of the main refinery administration building on East Second Street (Figure 4-9). Truck and trailer vehicles enter the terminal to load product from the refinery for transport off site.

The Marketing Terminal rack operation is restricted and requires card access for control of the truck or trailer transfer operation. All trucks loading at the rack are required to have overfill protection to shut off the flow of product into the tank truck to prevent spills. Connection of ground and product hoses is monitored automatically. Transfer operations can only commence with all connections correctly connected.

Storm Drain System

The area of the terminal is completely paved with asphaltic concrete. All sheet flow in open areas subject to rainwater drains to a sump located at the south portion of the terminal. This sump drains to the Raw Water Break Tank Surface Drainage Area. This sheet flow is then directed toward Outfall 003.

Any spill at the loading rack would flow to the drain sumps at the rack islands and from there to the refinery oily water sewer system. Emergency cutoff switches are located at the loading rack to shut off the flow from the transfer pumps to the rack area.

Site-Specific BMPs

Storm water runoff is contained in the paved area and transported to the sump at the south end of the terminal. This sump drains to the Raw Water Break Tank Surface Drainage Area and leaves the site through Outfall 003. However, all hazardous material storage areas in the Marketing Terminal are in areas that drain to the refinery oily water sewer system, not the storm water sump. Thus, hazardous constituents are not likely to be present in the sheet flow runoff.

Site-specific BMPs used to prevent potential pollutants from entering surface water include:

- **Tank overflow prevention.** Overflow is prevented through practices and operational procedures for regularly gauging tanks to ensure that overflow is prevented. Any overflow would be contained in the diked area. In addition, trucks are required to have overfill protection and interlocks to ensure all connections are made properly.
- **Tank leakage prevention.** The likelihood of tank leakage is minimized by periodic maintenance activities and inspections according to American Petroleum Institute Standard 653. All tanks are equipped with cathodic protection. Leaked materials would be contained in the concrete containment area.

- **Loading rack design.** Any spill at the loading rack would flow to the drain sumps at the rack islands, which discharge to the refinery oily water sewer system. Emergency cutoff switches are located at the loading rack to shut off the flow from the transfer pumps to the rack area.
- **Vapor recovery design.** Spills or leaks in the tank or recovery area would be contained by the concrete containment.

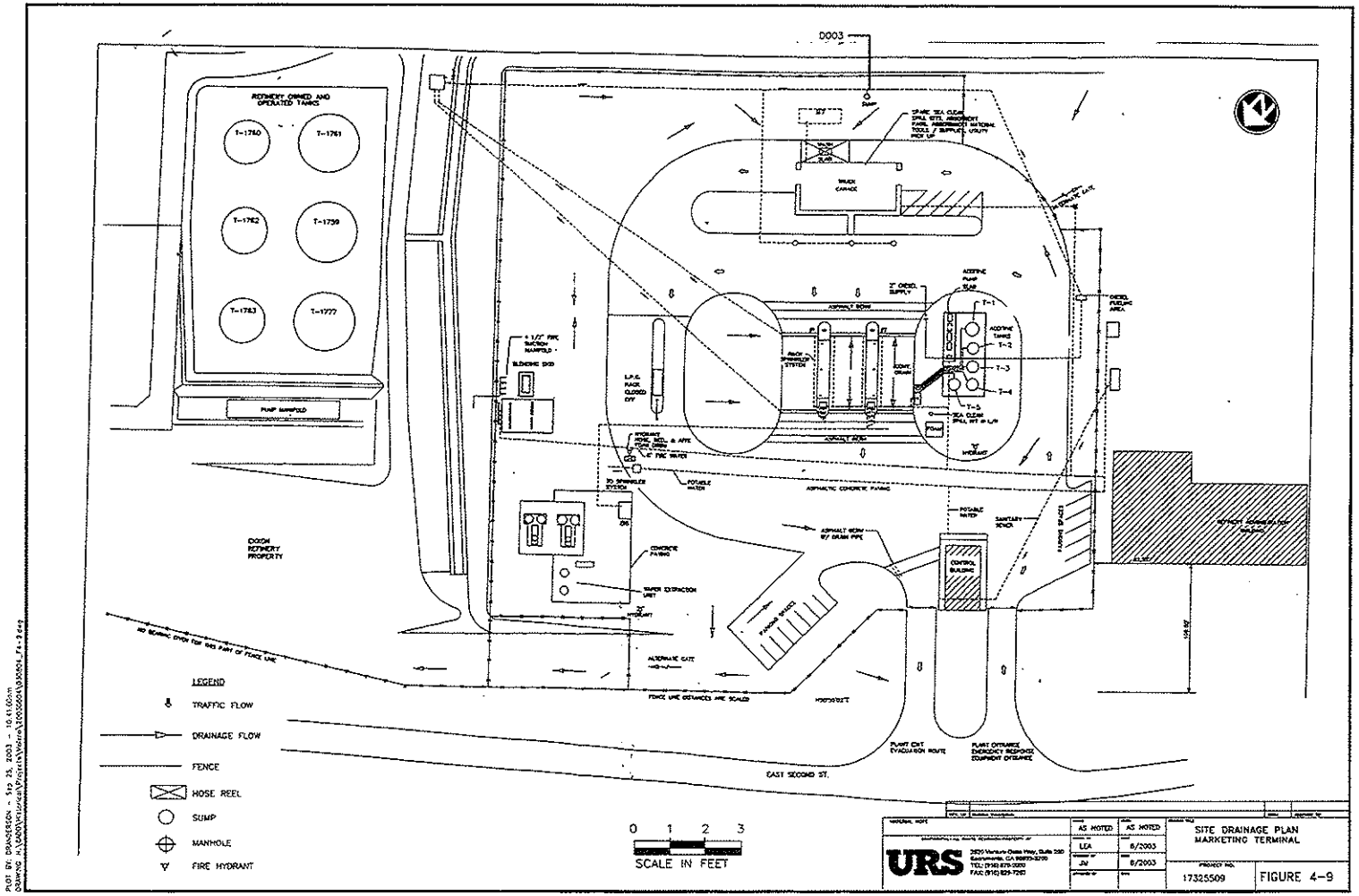

Figure 4-9
Marketing Terminal

4.11 BENICIA ASPHALT PLANT

Site Description

The Benicia Asphalt Plant refines crude oil into a number of asphalt products. The Benicia Asphalt Plant's primary product is paving asphalt. Naphtha, kerosene, and gas oil are secondary products and are typically sent to the main refinery or sold to other refiners for further processing. No distillate fuels, gasoline, diesel fuel, or jet fuel are manufactured.

The primary manufacturing units at the Benicia Asphalt Plant are a pre-flash tower and a vacuum distillate unit. There are no complex hydrocarbon processing units at the Benicia Asphalt Plant, such as hydro-treating, visbreaking, coking, or thermal or catalytic cracking. The absence of complex hydrocarbon processing minimizes the types and toxicity of wastes generated at the Benicia Asphalt Plant.

The Benicia Asphalt Plant is built on approximately 19 acres of land. Storm water is discharged to the Suisun Bay via the city of Benicia's storm water discharge system. There are no active or inactive wells, streams, or wetlands on site.

The location of buildings and major activities at the Benicia Asphalt Plant are shown on Figure 4-10. The buildings and major activity areas consist of two tank farms, a loading rack area, a railcar loading area, executive offices and an operations building, a process unit area, a modified asphalt plant, a maintenance bunker, a wastewater treatment area, a storm water tank, and a laboratory in the operations building. In addition to these, Figure 4-10 shows the following:

- The facility's boundaries;
- Areas of industrial activities;
- Storm water discharge points;
- Paved areas and buildings;
- Areas of potential pollutant contact;
- Location of existing storm water structural control measures (i.e., berms); and
- Areas of existing and potential soil erosion.

Storm Drain System

There are numerous storm water drains located in the Benicia Asphalt Plant. These drains capture the unit's storm water flows. This storm water is captured in the Benicia Asphalt Plant's storm water tank and is held until tested and discharged to Suisun Bay via the City of Benicia's storm water drainage system.

Process Area

The entire production of asphalt and distillates, such as gas oil and naphtha, takes place in the Benicia Asphalt Plant's process area. The process area is paved with concrete and is partially bermed to ensure all storm water is captured and treated in the process area. In addition, the area is sloped toward the center to facilitate the collection of storm water in oil recovery area drains. Potential sources of pollution are major spills due to equipment malfunctioning; and spills while taking product samples.

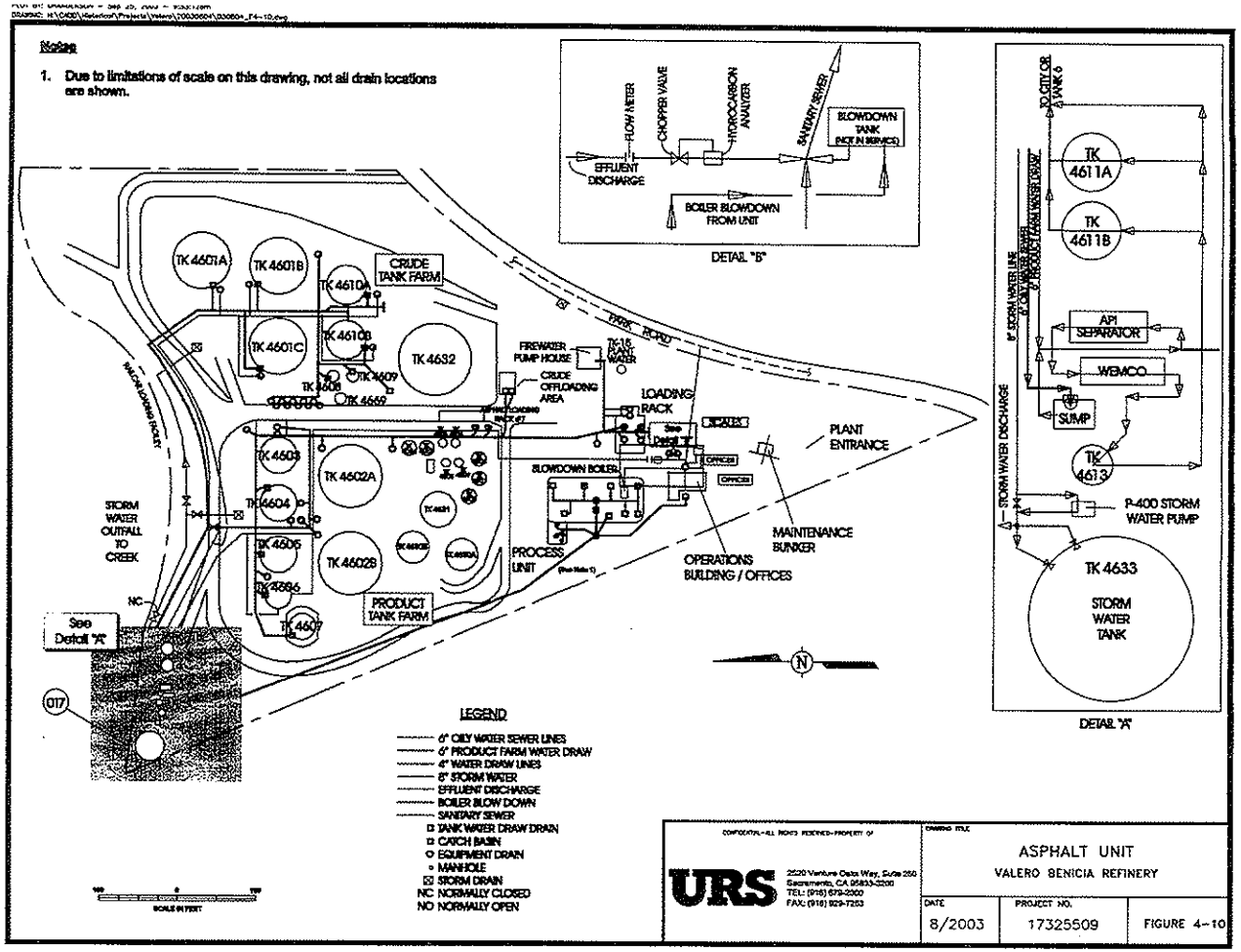

Figure 4-10
Benicia Asphalt Plant

Tank Farm Areas

Crude oil is stored in aboveground tanks in the crude oil tank farm area. Products are also stored in aboveground tanks until shipped via tank truck, ships, or railcars. The capacity of the crude and product tanks varies.

The tank farm truck routes are paved. The tank farm areas are isolated from the rest of the Benicia Asphalt Plant by hills and berms. Spills and overflows are cleaned with gravel, and the dirty gravel is either transported to an asphalt facility for recycling or disposed of. The storm water trapped in the tank farm area flows via area drains to storm water tank 4633. Possible sources of pollution are:

- Crude oil and product spills; and
- Erosion from the berms.

Loading/Unloading Areas

The Benicia Asphalt Plant has two tank truck loading facilities and one railcar loading facility. One of the tank truck loading facilities is used exclusively for transporting asphalt, and the other tank truck loading facility is used for transporting asphalt and distillate products. Valero loads spent caustic and light vacuum gas oil and occasionally receives asphalt and lubrication oil at the railcar loading rack.

The tank truck distillate loading rack is paved with concrete and has area drains that are connected to the water/oil recovery and treatment system. Therefore, any spilled distillate is directed to this system. However, the asphalt and modified asphalt tank truck and railcar loading racks are covered with gravel. Spills and overflows are cleaned with gravel and transported to an asphalt facility for reuse or disposed of. In addition, due to the viscosity and solidification temperature of the asphalt, the likelihood of storm water pollution from spilled asphalt is low.

The tank truck loading racks are covered and sloped. Berming is not possible since it would prevent tank truck access to the loading rack.

The railcar loading area is not paved and there is no drainage system in the railcar loading rack. However, railcars themselves are designed to prevent spills and there is a storm water collection tank located in the railcar loading facility designed to capture storm water discharges.

The distillate/cutback asphalt/crude off-loading area is located between the loading rack and the tank farm area. The area is paved with concrete but is not bermed. Two drains are located in the off-loading area; they are connected to the wastewater treatment system.

The majority of crude oil is shipped to the Benicia Asphalt Plant via underground pipelines and ships.

Possible sources of pollution for loading and unloading activities are:

- Large spills or overflows in the loading areas; and
- Large spills in the off-loading area.

Benicia Asphalt Plant Wastewater Treatment Area

The wastewater treatment area in the Benicia Asphalt Plant is bermed and unpaved. Storm water may come in contact with material generated from tank leaks or chemical spills. However, it is collected by a

drain that automatically pumps the discharge to the crude oil tanks. Therefore, there is low potential for storm water pollution.

Storm Water Tank

The storm water tank is located in the wastewater treatment area. Storm water is collected by various storm water drains throughout the Benicia Asphalt Plant and is conveyed to the storm water tank. Valero has the ability to remove any oil that could enter the tank accidentally. The tank is designed with a leak detection system. The storm water is usually tested for O&G and pH prior to each discharge. During discharge, the tank is sampled and tested for pH, TSS, TOC, SC, and O&G. The tank's contents can be pumped to the wastewater treatment system under emergency circumstances. Possible sources of pollution are:

- Soil entering the tank via area storm water drains; and
- Spills reaching a storm drain in a non-processing area.

Modified Asphalt Plant

The modified asphalt plant is located in the product tank farm. A possible source of pollution is polymer spills. (Asphalt spills are contained by gravel and are not considered to contribute to storm water pollution.)

Dust-and Particulate-Generating Activities

Valero has paved most of the Benicia Asphalt Plant (tank farms) to reduce the amount of dust and particulate generated in the Benicia Asphalt Plant. Certain areas of the Benicia Asphalt Plant still are not paved; wind may blow dust and particulates and disperse them throughout the Benicia Asphalt Plant. In addition, dust may be generated from the outside of the Benicia Asphalt Plant and settle on the roadways or other areas of the facility. Valero continually takes measures to reduce the dust particles in its facility by paving its roadways as explained above and by contracting a powered sweeper to sweep the Benicia Asphalt Plant's parking lots and driveways.

Site-Specific BMPs

The following is a listing of the types of pollutants that may be present in the storm water from the Benicia Asphalt Plant:

- Oil/grease
- Total suspended solids
- Benzene
- Xylene
- Sulfides
- Ethyl benzene
- Petroleum hydrocarbons
- Small floating debris
- Toluene
- Naphthalene
- Ammonia
- Cyclohexane

As required by NPDES Permit renewal submittals, Valero has tested for the above pollutants and has found that only a very limited number of them have been present in the storm water discharges.

Valero currently has the following BMPs in place for the Benicia Asphalt Plant:

- Valero has eliminated all but one of its storm water discharge points by strategically placing storm water drains in the Benicia Asphalt Plant to collect storm water flows and to direct them to a storm water tank.
- Valero conducts regular inspections of its equipment (including drains, valves, and pumps) for leaks. In addition, equipment is checked for structural failures. Upon discovery of a malfunction, Valero conducts repairs as required.
- Drains in the wastewater treatment system area capture the storm water in areas with high pollution potential and transfer it to the wastewater treatment system.
- Valero encourages employees to practice good housekeeping procedures throughout the Benicia Asphalt Plant.
- Wastewater and storm water conveyances are kept open and clear of debris and dirt.
- Valero has a "call card" to contract a street sweeper to sweep the driveways and parking lots prior to each rainy season.
- Valero's employees have been instructed to avoid hosing down the Benicia Asphalt Plant. However, if hosing down the Benicia Asphalt Plant cannot be avoided, the wash water must be directed to the Benicia Asphalt Plant's Water Oil Recycling and Treatment System drains and not storm drains.

Table 4-4 identifies area specific BMPs currently in place at the Benicia Asphalt Plant.

TABLE 4-4
Description of Current Area within the Benicia Asphalt Plant

Specific Best Management Practices

Site	Current BMPs
Loading/Unloading Areas	• The loading rack has a roof that reduces the exposure of materials to storm water. • The distillate tank truck loading rack and product unloading area is paved with concrete. • The distillate loading rack and unloading areas are sloped toward the Benicia Asphalt Plant's oil/water collection system which is designed to handle large material spills. • The asphalt truck loading racks are covered with gravel. Gravel absorbs spilled material. After the spill is cleaned, the used gravel is sent to the neighboring asphalt facility for use. • During the transfer of material to tank trucks, leaks are captured in drip pans. The captured material is then recycled back to the process. • Valero's written procedures for loading or unloading materials are kept in a readily accessible place. • During all loading and unloading activities, an employee trained in spill containment is required to be present. • Small spills are either washed into the Benicia Asphalt Plant's oily wastewater collection system or contained by using rags or absorbents. • Valero has posted a sign at the unloading area requiring the person in charge of unloading to report all spills immediately.

Site	Current BMPs
Railcar Loading Rack	• Spilled asphalt is contained with gravel and the used gravel is sent to an asphalt plant for use. • Valero has provided leak containment devices to collect spillage from tank cars. • Valero has installed a storm water collection tank in its railcar loading rack area in order to prevent discharge of untested storm water and contain accidental spills.
Tank Farm Areas	• The tank farm areas currently meet specific federal and state Spill Prevention SPCC standards. • All tanks are labeled with National Fire Protection Association placards to permit easy identification of their content. • The entire tank farm area is bermed, which provides secondary containment for major spills. • In order to reduce the amount of solids entering its storm water discharge, Valero has paved the gauge truck routes in the tank farm areas.
Chemical and Waste Storage Area	• All waste and chemical drums/containers are labeled. • The chemicals and wastes are stored in areas in a manner that complies with the Solano County's Fire Code. • Operators are trained to prevent overflows and/or spills of chemicals during emptying and/or filling of containers. • Dumpsters are covered at all times to keep out rainwater. The dumpsters will be replaced if they begin deteriorating. • Valero has purchased chemical sheds to store excess chemical and waste containers.
Process Area	• The process area is bermed and paved with concrete. The area also slopes toward the oil/water recovery area drains. • Valero has recently upgraded the old berms surrounding the process area. • There are numerous area drains located in the process plant. All storm water from process areas is captured and receives full treatment at the wastewater treatment plant. The drains are kept clear to assure unrestricted flow of storm water to the system.
Wastewater Treatment System	• The entire wastewater treatment area is fully contained, which eliminates storm water discharges outside of the facility. • The wastewater treatment area is sloped toward a drain that directs the storm water in the wastewater area to the WORT system.
Modified Asphalt Plant	• Valero has enclosed the asphalt rubber plant area to prevent polymer spills from entering the storm water discharges.
Storm Water Tank	• Operators regularly inspect the tank. • Valero tests the storm water prior to each discharge. If the levels are high, storm water is sent through the oil/water recovery system. • The conveyance system to the storm water system is inspected and is regularly cleaned and kept free of solids.

BMP best management practice
SPCC spill prevention, control, and countermeasure

4.12 VALERO SOUTH

Site Description

In 2010 Valero acquired Valero South, a property adjacent to the Refinery, for intermittent use as a temporary construction laydown site. This property consists of a building, adjacent parking lots, unstriped paved yards, and a vacant parcel of unimproved property. Figure 4-12 shows the layout of the property and storm water runoff flow paths. The 5.71-acre site is separated from the refinery proper by Sulfur Springs Creek.

Site Paving and Drainage

Most of the drainage is captured in storm drains. A portion of the vacant lot flows off site towards Sulfur Springs Creek.

Site-Specific BMPs

It is unlikely that a spill or discharge would occur in this area. Potential pollutants include:

- TSS from erosion (minimal); and
- Urban runoff from the road.

BMPs used to prevent potential pollutants from entering surface water include:

- **Baseline BMPs.** Implemented as appropriate.
- **Erosion controls.** BMPs will be applied as needed to control erosion (see Section 5.0).

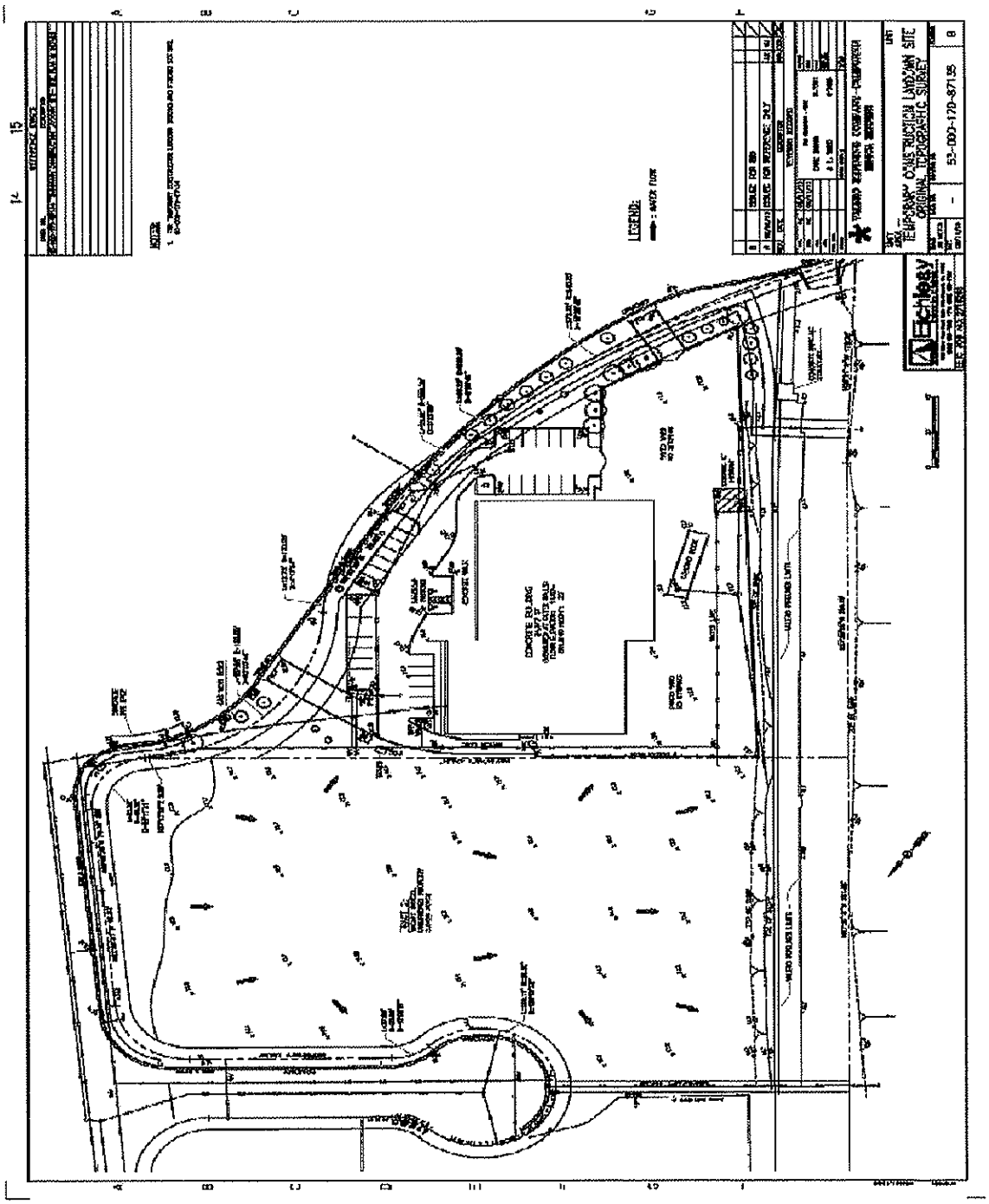

Figure 4-11. Valero South

5 BMPS FOR EROSION CONTROL, CONSTRUCTION AND REMEDIAL ACTIVITIES

Described in the following sections, are BMPs for erosion control, construction activities, and remedial activities that can be applied throughout the Valero Benicia Refinery as needed.

5.1 BMPS FOR EROSION CONTROL

To prevent erosion, earthen banks with the potential for severe erosion problems should be graded and landscaped as needed. Landscaping vegetation should be deep rooted and suitable to prevent erosion. The vegetation should be maintained in a manner that will prevent future erosion. In addition to the vegetation, a geotextile fabric may be appropriate for use on the earthen banks to enhance erosion resistance.

For earthen banks where vegetation cannot be planted, the hillsides may be covered with a gravel layer or gunite.

The areas covered in this SWPPP are occupied by a combination of buildings and/or structures, paving or gravel, and landscaping or natural ground cover. The paving should be inspected for cracks and wear and repaired as needed. Areas that are not paved should be maintained with ground cover or natural foliage, as appropriate, to prevent erosion and improve the aesthetic character of the facility. A landscaping contractor maintains the site vegetation. Watering of the vegetation should be conducted as needed.

Other BMPs for erosion control that can be applied as needed include:

- **Silt fence** A silt fence consists of a filter fabric that is entrenched and attached to supporting poles. It may also be supported or reinforced by a wire fence. Silt fences are typically used in areas where sheet flow runoff occurs. The area should have a level contour, so water does not pond more than 1.5 feet deep at any point. This control measure also requires an area upstream of the fence for sediment disposition. Silt fences are generally ineffective at locations where storm water flows are concentrated.
- **Sandbag barrier** This type of erosion control consists of sandbags stacked along a level contour to detain sediment-laden water. Sandbags may be installed around catch basins to restrict suspended sediment from entering the storm drain system. Sandbag barriers are typically used for trapping sediment in areas of strong flows where silt fences and straw bale barriers are ineffective. An area should be provided behind the barrier for runoff to pond and for sediment processes to occur. With routine inspection and cleaning, sandbags may be used for extended periods of time.
- **Straw bale barrier** This type of barrier consists of straw bales placed end to end along a level contour in a shallow trench. Each bale is secured with stakes. The barrier detains runoff, creating areas of ponding upstream of the barrier to facilitate sedimentation processes. The bales also act as filters. Straw bales are typically used in areas where sheet or rill erosion occurs. Because straw bales decompose, they cannot be used effectively for extended periods of time.

5.2 BMPS FOR CONSTRUCTION ACTIVITIES

Most construction activities at the Valero Benicia Refinery would occur within the drainage area of one of the NPDES-permitted outfalls. Any construction permit executed in a drainage area that is not covered under the NPDES permit will be performed in a way consistent with the requirements of the General Permit for Construction Activities. Construction activities within the drainage areas covered by the NPDES permit may employ, as needed, the erosion control BMPs presented in this SWPPP.

5.3 BMPS FOR REMEDIAL ACTIVITIES

Appropriate erosion control measures should be included as integral parts of work plans involving the excavation and handling of any contaminated soil. Control practices may involve:

- Scheduling soil movement activities to avoid exposure to rainwater;
- Covering soil stockpiles with impervious materials (e.g., Visqueen®);
- Properly backfilling and compacting excavated areas;
- Properly locating soil stockpiles to avoid steep areas subject to severe storm water runoff;
- Properly cleaning soil-moving equipment and vehicles before leaving project areas to avoid spreading the sediment into other areas;
- Preparing spill response plans to address transportation accidents;
- Installing sediment traps at downstream locations to minimize the sediment entering storm drains; or
- Inspecting areas routinely and training personnel.

6 OTHER STORM WATER CONTROLS

The Valero Benicia Refinery has a variety of training programs, plans, manuals, and maintenance procedures to prevent and respond to the release of hazardous materials to the environment. These programs, described in this section, are an important element of Valero's overall storm water pollution prevention strategy.

6.1 SPILL PREVENTION AND RESPONSE

For employees with no specific emergency response assignments, spill prevention and response training focuses on both prevention and initial reporting and response to emergency situations. Personnel responsible for handling spill response and mitigation receive this training plus additional training in safe handling, regulatory requirements, policies, and procedures governing the handling and transport of contaminants.

Specific procedures for responding to an emergency, detailed in the Valero SPCC Plan (2007 update in progress at time of this revision) and Valero Best Management Practices Plan (1991), are regularly reinforced through refresher training. The purpose of the SPCC Plan is to reduce the risks of oil spills, provide comprehensive spill response procedures, and ameliorate the consequences of a spill. The SPCC plan is revised on a three-year cycle. Requirements for the plan are found in 40 CFR Part 112. Additional procedures for handling and responding to any incident involving spills and containment are maintained in the subject areas and are readily accessible to those personnel trained and working in the areas.

Valero provides a comprehensive on-site interactive training system for each employee. This training system uses standardized computer-based training modules ("CBTs") to cover specific topics,

Hazardous Materials Management Plan

Hazardous material inventories and business plans are required of businesses that handle quantities of hazardous materials above regulatory thresholds. The *Emergency Procedures Manual* has been developed to address response to, mitigation of, and prevention of hazardous material incidents. The hazardous materials inventory for the refinery lists the amounts and types of hazardous materials handled at the Valero Benicia Refinery. This inventory, which is also compiled to meet the federal community right-to-know requirements of Superfund Amendments and Reauthorization Act, Title III, is updated annually. The specific requirements for business plans and inventories are found in California Health and Safety Code Section 25503.5.

6.3 OTHER PLANS AND MANUALS

Other plans and manuals at the Valero Benicia Refinery include:

- Hazardous Waste Contingency Plan and Hazardous Waste Emergency Procedures;
- Risk Management Plan;
- Earthquake Preparedness Program;
- Accident Prevention Manual;
- Refinery Task Manuals;
- Housekeeping Manuals;
- Management of Change (MOC) procedures; and

- Spill Prevention, Control and Countermeasures Plan

A brief discussion of these documents is provided below.

Hazardous Waste Contingency Plan and Hazardous Waste Emergency Procedures

Generators of hazardous waste must develop and implement procedures that minimize the possibility of a fire, explosion, or release of hazardous constituents. The refinery's *Hazardous Waste Contingency Plan and Hazardous Waste Emergency Procedures*, which is found in Section IX of the *Emergency Procedures Manual*, has been developed to address materials defined as federal or state-only hazardous waste. This manual is revised as necessary.

Risk Management Plan

Risk Management and Prevention Programs (RMPs) are required of businesses that handle acutely hazardous materials (AHMs) in quantities above regulatory thresholds. RMPs are intended to improve existing emergency response and risk reduction or risk minimization plans or programs established for a facility. An RMP has been developed at the Valero Benicia Refinery to address the AHMs handled at the site.

Earthquake Preparedness Program

The Earthquake Preparedness Procedures at the Valero Benicia Refinery includes measures to protect surface water quality. Various emergency conditions resulting from a major earthquake could cause untreated wastewater discharges to public waters, potentially via the storm drain system or outfalls. Incidents could include fires, utility failures, and hydrocarbon leakage. The refinery's program to prevent and effectively deal with emergency conditions resulting from earthquake events includes:

- The refinery maintains firefighting equipment, and a well-trained firefighting response team of refinery technicians and operating staff is directed by the refinery Shift Superintendent.
- All personnel are trained in basic firefighting techniques, and refinery technicians are cross-trained in the operation of several process units to provide support to personnel handling shutdowns and other needed services.
- Refinery technicians carry portable two-way radios and are in direct contact with other technicians and the refinery's control center. Supervisors, rescue teams, and designated others have radios available to them. In addition, the refinery's internal telephone system operates independently of the Pacific Bell System with a battery backup power supply that is capable of operating for four hours.
- The refinery's on-site warehouse stores general and repair materials to meet emergency needs. In addition, a 20-day supply of polymer and up to a three-month supply of dissolved air flotation (DAF) floc (ISF floc) chemical is maintained.

At the time of its design in 1966 and 1967, the Valero Benicia Refinery was built to the most severe prevailing earthquake standard of the Uniform Building Code (UBC) and the Structural Engineering Association of California (SEAOC). Since then, the UBC and SEAOC standards have been upgraded and revised. Valero's internal standards have kept pace with the revised standards. Valero's internal standards require refinery structures and equipment to be designed for larger earthquake forces than specified to account for the structures' different responses, performances, and functions in an earthquake.

No facility modifications or operational changes were found to be necessary for improvement of refinery safety or reliability as a consequence of the 17 October 1989 Loma Prieta Earthquake. This reflects the strict design criteria used since the initial construction of the refinery. In addition, the Earthquake Engineering Research Institute prepared a report on the effects of the 1989 earthquake, which supports the findings that no further modifications or operational changes are necessary.

Accident Prevention Manual

This manual provides refinery personnel with detailed procedures for reporting health and safety incidents or releases of hazardous materials and conducting follow-up investigations.

Refinery Task Manuals

The task manuals for each of the refinery's units list the tasks to be performed to assure safe operation and include checklists to be completed.

Housekeeping Manuals

Housekeeping manuals for each of the refinery's units assure that personnel maintain a safe and clean workplace and provide checklists to be completed.

Management of Change (MOC)

Various facility modifications to the Valero Benicia Refinery, planned or considered, are described in this program.

Spill Prevention, Control and Countermeasure Plan

The SPCC establishes procedures, methods, equipment, and other measures to prevent the discharge of oil into or upon the navigable waters of the United States or adjoining waters.

6.4 MAINTENANCE

Valero performs regular maintenance on storm drains and conveyance structures as required to prevent plugging or structural damage. In addition, landscaping and ground cover is periodically maintained as needed by a landscaping contractor. The use of fertilizers and pesticides is generally not necessary, though herbicides are used for controlling vegetation (see Figures 4-6 and 4-7 for locations of herbicide applications). When these chemicals are used, the manufacturers' instructions are followed and only the minimum quantity needed is applied.

A plan for regular inspections of the storm water drains and/or conveyance structures is presented in Section 3.5.

6.5 EMPLOYEE ENVIRONMENTAL AND SAFETY TRAINING

Valero employees are trained in refinery safety at the beginning of employment and during yearly refresher training. Employee training is performed using a comprehensive, interactive video training system that is presented by Valero's specialized training department. Training modules are prepared by Valero on specific subjects and are required aspects of an employee's job. These modules are viewed by the employee in a fully equipped classroom and are reinforced with open forum discussions afterwards. Training modules include Valero's emergency procedures, right-to-know requirements, BMPs, and other

pertinent and required topics. Table 6-1 identifies recommended elements for the storm water pollution prevention training program.

Table 6-1

Recommended Elements of Storm Water Pollution Prevention Training Program

Define storm water pollution.
Summarize regulatory requirements (Clean Water Act, NPDES permit, SFBRWQCB documents).
Present overall strategy (Figure 3-1 in the SWPPP) and describe each element.
Discuss roles and responsibilities of management and operators.
Identify and briefly discuss related programs, manuals, and training that are integrated into the storm water pollution prevention program (e.g., SPCC Plan, Hazardous Waste Management Plan, etc.).
Introduce baseline BMPs—making sure these get implemented is everyone's responsibility. The attached excerpts from BMP guidance manuals are good reference materials and may be used as handouts during training.
Identify specific areas of concern around the plant and affected outfalls.
Review the list of site-specific BMPs (Table 4-3 of the SWPPP). The attached excerpts from BMP guidance manuals are good reference materials and may be used as handouts during training.
Solicit input on existing BMPs that are not documented in the SWPPP or suggestions for new BMPs that should be implemented.
Discuss annual inspection (confirms that BMPs are in place).

BMP Best Management Practice
NPDES National Pollutant Discharge Elimination System
SFBRWQCB(San Francisco Bay) Regional Water Quality Control Board
SPCC Spill Prevention Control and Countermeasure
SWPPP Storm Water Pollution Prevention Plan

Certain specialists responsible for handling emergency response receive additional training. The training includes corporate procedures for the handling of unique refinery hazards, regulatory requirements, and emergency procedures. Refinery technicians are provided quarterly safety/environmental training through interactive software training sessions. Additional training is conducted in both classroom and field emergency simulation drills. Special safety and environmental topics are periodically presented through both in-house and off-site seminars and courses.

The Valero Benicia Refinery training department retains personnel training records on site for Valero employees that have completed training classes.

Further details of Valero's training procedures and policies are documented in the BMP manual, the SPCC Plan, and the Hazard Communications Program Manual.

6.6 WASTE COLLECTION, RECYCLING, AND DISPOSAL PRACTICES

In general, wastes are collected at or near their source(s) and are isolated to prevent exposure to storm water.

6.7 RECORDKEEPING AND REPORTING PROCEDURES

The Storm Water Pollution Prevention Team maintains records and plans (including this plan and all documents incorporated by reference). Other records maintained at the Valero Benicia Refinery that are pertinent to the implementation of this plan include:

- Oil Spill Contingency Plan;
- Spill Prevention Control and Countermeasure Plan (SPCC) ;
- Hazardous Materials Management Plan;
- Risk Management and Prevention Plan (RMPP);
- Dock Operations Manual;
- Accident Prevention Manual;
- Refinery Task Manuals;
- Refinery Modifications;
- Housekeeping Manuals;
- Documentation related to any spills requiring regulatory reporting;
- Hazardous Waste Manifests;
- Material Safety Data Sheets;
- Worker Right-to-Know Information;
- Inspection Records;
- Training Records; and
- Employee Records.

These plans and/or records are retained at the site and will be made available to regulatory agencies and inspectors as required by law.

6.8 SECURITY

The entire refinery is fenced to maintain security. Overall security is managed pursuant to a Facility Security Plan that has been approved by the USCG. Access to and within the site is restricted to employees, pre-authorized contractors, and registered visitors.

7 NON-STORM WATER DISCHARGES

Five monitoring locations, 003, 005, 006, 012, and 015, are associated with natural springs located at the Valero Benicia Refinery. In addition, discharges from a steam condensate trap provide minor additional water flow through monitoring location 006. Although these discharges are considered non-storm water discharges, no specific BMPs are deemed necessary due to the uncontaminated nature and quantity of the discharge. Specifically the quality and quantity do not warrant diversion to containment areas or other similar control measures. These natural spring and steam condensate discharges have been reported to the SFBRWQCB.

8 REFERENCES

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Valero Off-Site Piping Oil Spill Prevention/Mitigation Project Process Specification No. 31-29.

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Valero Emergency Procedures Manual.

United States Environmental Protection Agency, Stormwater Sampling Guidance, 1992