Appendix F

Stormwater Quality Management Plan

Storm Water Quality Management Plan

Dixon Downs

Dixon, California

April 1, 2005

Revised April 26, 2005

26250 Enterprise Court, Suite 150
Lake Forest, CA 92630

HDR

Contents

Appendices

HDR

Chapter 1 - Introduction

Purpose

This document presents the Storm Water Quality Management Plan (SWQMP) for the proposed Dixon Downs development in Dixon, California. The SWQMP responds to the October 18, 2004, draft memorandum from the City of Dixon's (City's) representative; the December 2, 2004, conference call between City and Dixon Down representatives; the subsequent telephone calls clarifying the City's SWQMP requirements as documented in the Meeting Notes; and a conference call with the City's environmental consultant, EIP Associates. A subsequent review of concentrated animal feeding operations (CAFOs) regulations found that the regulations also impacted the conceptual design of Dixon Down stable area facilities.

Dixon Downs is a mixed-use development program featuring a state-of-the-art thoroughbred horseracing and training facility with spectator, stable hand residential, and recreational facilities, as well as conference, dining, and entertainment facilities in the first phase. Additional entertainment, conference, and dining development with new retail facilities and a hotel are planned for the second phase. The SWQMP design basis and regulatory framework are specified by:

- The City's Storm Water Control Ordinance—Chapter 16.06, Title 16 of the Dixon Municipal Code
- City of Vacaville and City of Dixon Storm Water Management Plan for Fiscal Years 2003/2004 through 2007/2008
- Federal Pretreatment Regulations for CAFOs
- California Code of Regulations for confined animal feeding operations (CAFOs)
- Regional Water Quality Control Board, Central Valley Region North (RWQCB) January 13, 2004, letter to Marshall Drack of the City of Dixon
- California Stormwater Quality Association (CASQA) *Stormwater Best Management Practices Handbook for New Development and Redevelopment,* January 2003 (Handbook)

Chapter 2 - Storm Water Quality Features

Storm Water Quality Areas and Best management Practices (BMPs)

General

For storm water quality purposes, the project site was divided into seven sub-areas as shown in Figure 1: Stormwater Quality Areas and is a copy of Exhibit D of the Conceptual Drainage Report for Dixon Downs updated April 26, 2003, by Morton & Pitalo, Inc. For all sub-areas except the CAFO portion of the Stable Area, the on-site private drainage system will consist of an improved piped drainage system typical of an urban development. Storm water sheet flows from paved parking lots, building roofs, and landscaping areas will be collected in valley gutters/landscaping swales and directed to drain inlets. The piped drainage system will be designed to convey a storm event frequency of once in 10 years (10-year storm) in accordance with City Design Standards. The sections below describe storm water flow

through the sub-areas under three different storm conditions (up to the 10-year storm, from the 10-year up to the 100-year storm, and the 100-year storm) and the impact of each on storm water BMPs and therefore storm water quality.

North Areas 1 through 4

For the 10-year storm, collected runoff will be conveyed in the underground pipes to water quality vegetative swales, one each for North Areas 1 through 4. Flow through the vegetative swale improves water quality by reducing pollutants such as suspended solids, greases, oils, nutrients, etc. (See CASQA Handbook for performance of various BMPs.) Treated storm water will then flow through piped drainage that runs through the Race Track Infield and combine with race track infield area flows, discharging through an 18-inch pipe to a diversion structure. The diversion structure receives flows from the site's other flows (two pipes) and exits under the street through two outlet pipes to a ditch on the eastern side of Pedrick Road. (Refer to the Conceptual Drainage Report for Dixon Downs City of Dixon, CA, April 26, 2005 by Morton & Pitalo, Inc.)

The diversion structure also contains a 48-inch inlet pipe that will return flow from the diversion structure to the Race Track Area Detention Pond during high-flow conditions. This 48-inch line is equipped with a sluice gate/flap gate combination. Normal operations only allow flow into the Race Track Detention Basin. However, at the end of the storm event and after the downstream conditions have improved, the City staff can raise the sluice gate and allow flow to discharge off site at an appropriate rate.

For storm flows greater than runoff generated by a 10-year storm, storm water runoff will follow overland relief paths that are designed to allow freeboard above the building finish floor elevations in accordance with the City Design Standards. The overland paths will be designed to minimize sediment pick-up and transport and where possible flow over grassy areas. Slopes in all areas are generally less than 5 to 1 except in the Storm Water Detention Basins (described later), and most are greater than 10 to 1, minimizing soil erosion.

Preliminary grading of the project site directs overland release from these areas to the water quality swales; swales will be designed to contain runoff flows from a 100-year frequency storm, and the discharge pipe from the swale will be designed to handle the 100-year storm. Flows in excess of the capacity of the 18-inch drain will "bubble-up" through Race Track infield inlets and pond until there is sufficient capacity available through the 18-inch pipe. The estimated time for the Race Track Infield Detention Basin to empty is provided in the Conceptual Drainage Report.

Race Track Area

During dry weather conditions, the Race Track Infield. The Race Track Detention Basin is approximately 16 acres at the bottom, 22 acres at the top, and will hold approximately 92 acre-feet of storm water. The Race Track Area runoff from the track flows via overland flow to the Race Track Infield. Track runoff and direct rainfall is collected in the Race Track Infield by storm drain catch basins and conveyed through the 18-inch discharge pipe to the diversion structure as described above. Collection and conveyance during a greater than 10-year storm up to 100-year storm event is the same as described above except that ponding is likely to occur at and above a 10-year storm. Catch basins are placed in the infield to maximize the path length across the grass to remove pollutants such as suspended solids,

greases, oils, nutrients, etc. while still providing proper drainage under the most frequent storm events. Storm water will also percolate through the soil, filtering out pollutants.

Drainage in the grassy area between the track and the berm next to Pedrick Road consists of catch basin inlets that discharge to the 18-inch pipe flowing to the diversion structure. Runoff from storm events greater than the 10-year storm will pond in the area until the flow capacity of the 18-inch pipe can receive flow from this area. Storm water flowing across the grassy area to the catch basin will remove sediment, oils, greases, nutrients, etc.

Off-Site Flows

Off-site storm water from west of the project flows into the southwest corner and exits the southeast corner of the grass-lined Storm Detention Channel located just north of the Stable Area. Stable Area flows from the parking lot and roof areas also flow into the south side of Storm Detention Channel. Drainage flows east collecting storm water flow from the Service Area prior to turning north and discharging into the diversion structure. Flows in excess of the 10-year storm will begin to fill the Storm Detention Basin if there is insufficient downstream capacity. As flows increase, flow at the diversion structure will begin to divert into the Race Track Infield Detention Pond.

Service Area

The Service Area sub-area south of race track is the location for the project site support systems, including maintenance, repair, and storage facilities; stable hand living quarters, parking, and recreation areas; and a stable area soiled bedding materials transfer station. The piped drainage system will be similar to the typical urban development as described above. Service Area storm water will be treated using a vegetative swale equipped with a forebay and a two-foot-high gravel berm to allow settling of very large particles and separation of the floating particles. The forebay will add redundancy to the drainage system to contain any accidental spills from the service area before draining to the public drainage system. Flow from the Service Area discharges to the trunk drainage system and then to the diversion structure.

Similar to the flow storage and conveyance system described above for the northern sub-areas, runoff from storm events greater than the 10-year storm will fill the vegetative swale, but still be conveyed to the Trunk Drainage System line flowing to the diversion structure. Excess flows are conveyed back into the Race Track Infield.

The abovementioned BMPs have been recommended based on pre-design information for the project. If it becomes necessary to change the BMPs for any of the sub-areas, the BMPs will be selected from any one or a combination of the BMPs listed below as referenced from the CASQA Handbook. Substitution of other BMPs may be proposed by Dixons Downs and submitted to the City Engineer for review and comment.

1. Water Quality Vegetative Swale: BMP TC-30
2. Vegetated Buffer Strip: BMP TC-31
3. Bio-Retention: BMP TC-32
4. Media Filter: BMP TC-40
5. Wet Vaults: BMP MP-50
6. Vortex Separator: BMP MP-51

Stable Area

Part of the Stable Area, the pervious horse walk paths and interior of the stable, will be considered a CAFO. The other portion of the Stable Area is similar to a parking area and roadway. As such, storm water must be handled in two separate systems. For the CAFO area, the project proposes to intercept storm runoff from the once in 25-year frequency (four percent probability of occurrence in any storm year), 24-hour storm. The intercepted storm runoff will be stored in the underground watertight pipes and later pumped to the public sewer system for treatment and disposal. Additional details are included in Chapter 3—Operation Plans. Please note that runoff from the roofed horse wash pads shown in Figure 1 is diverted to the Non-CAFO area storm drains for the Stable Area parking lots.

The paved area will serve as parking and stable area access for the stable hands (grooms), owners, and trainers. Storm water runoff from the paved area and stable roofs are considered as regular urban storm drainage for storm water quality purposes. Drainage will be collected in a piped drainage system and routed by gravity through a BMP treatment mechanical device (CDS Interceptor or Vortex Interceptor) before gravity discharge to the Storm Water Detention Channel located north of the Stable Area. The piped drainage system for the paved area will be designed to convey the 25-year, 24-hour design storm event.

For storm events greater than the 25-year storm, flows will be conveyed as surface overland flow from the horse walk paths (CAFO Area) to paved parking area (Non-CAFO Area) generally from the center of the CAFO walkway areas east and west to the Stable Area perimeter road as sheet flow. Sheet flow from the Stable Area will discharge into the Storm Water Detention Channel and discharge off site and/or be held in the Race Track Detention Basin as described above. “First flush” storm water collected in the 60-inch diameter underground pipes from the 25-year, 24-hour storm will not mix with or contaminate the subsequent runoff. Therefore, the estimated pollutant levels should be very low.

Chapter 3 - Operational Plans

All Areas

Dixon Downs and the City will enter into a maintenance agreement with a commitment to maintain and keep the CASQA BMPs operational to the standards recommended in the CASQA Handbook. Depending on the type of BMP, the maintenance agreement could include inspection, reporting, and periodic/event-triggered cleaning.

Stable Area

General

The stable area is subject to federal and state regulations as a CAFO and must apply for and be covered by a National Pollutant Discharge Elimination System (NPDES) permit. The RWQCB January 2004 letter appeared to be based on the traditional approach for controlling waste from CAFO, which is to contain all stable area process wastes and storm water runoff from a 25-year, 24-hour storm event in ponds for subsequent land application in accordance with a comprehensive nutrient management plan.

New Federal Regulations for CAFO require containment of all process wastewater from the production area which includes:

- Horse wash water
- Spillage or overflow watering systems
- Spray cooling of horses
- Dust control
- Water that may come in contact with fresh or soiled bedding materials or feed

The production area is defined as the stable stalls (covered by a roofed area), walkways between barns where horses normally travel, hot walkers, soiled bedding materials, transfer station (covered), feed and fresh bedding material, storage areas, and autopsy facilities (covered).

Dixon Downs plans to use a different approach, one that eliminates contact of storm water with process wastewater where possible by diverting uncontaminated runoff to the site drainage system and covering process wastewater generation activities and manure/soiled bedding materials.

Process Wastewater

The stable area contains a process wastewater sewer and a separate storm drain system. Process wastewater is generated by the 24 horse wash stations (three groups of eight) with four horse wash pads per station serving the 40 stalls and approximately 1,440 horses. Wash stations will be covered and slightly above grade to prevent storm water run-on and sloped to a central drain to prevent runoff. The central drain will be equipped with a drain cover equivalent to a 20-mesh screen. Three sand traps (one at the end of each group of eight stations) will be installed to remove sand and grit. Final design may change the number of sand traps for sand and grit removal. Transfer station area drains will be routed to the process wastewater sewer. Process wastewater will flow through an industrial sewer to a monitoring station equipped with a flume, flow recorder and totalizer, and sampling point for determining compliance with City industrial waste discharge permit limits.

Sanitary sewage from grandstand and spectator facilities north of the stable area will flow along the western property boundary in a 12-inch sewer and then combine with the industrial waste (Combined Flow). Sanitary sewage from the maintenance area, stable hand living quarters, and dining area will be conveyed in a separate 10-inch sewer that flows from east to west along the stable area's southern border. This sewer will connect with the Combined Flow sewer, representing the total discharge from Dixon Downs, and will flow through a second monitoring station similarly equipped as the industrial waste monitoring station (Total Flow) to the 15-inch City sewer in Dixon Down Parkway. A flow signal from the Total Flow monitoring station will be used to control captured storm water flow conveyed by the storm water lift station pump as described below and as shown in Figures 2 and 3.

Storm Water

Dixon Downs Stable Area contains an inner walkway between stables for horses and an outer corridor for vehicles. All stables are roofed. Dixon Downs will segregate the uncontaminated storm water from the potentially contaminated water between the stables into two separate systems.

Process wastewater, which is storm water from the unpaved stable area horse walkway, is collected by a combination of granular soil and perforated pipe and flows into 6,000 feet of 60-inch-diameter pipe located in the median planter. The 60-inch-diameter pipes will slope towards the lift station. Appendix C provides the calculated exposed stable area runoff and volumes.

As dictated by the City-issued industrial waste permit, runoff after a storm event will be conveyed to the process wastewater sewer by the storm water lift station equipped with a variable speed drive pump. Flow will be discharged through a flow meter to the Stable Area industrial sewer. The flow signal from the Total Flow meter will control the lift station flow to less than the peak flow restriction (currently estimated to be 0.68 million gallons per day or 472 gallons per minute) established in the industrial waste discharge permit issued by the City to prevent exceeding the capacity of the downstream 21-inch City sewer. The conceptual design of the lift station and flow monitoring station are shown in Figure 3. Using the City-provided once-per-100-year wet season monthly rainfall distribution, it is estimated that Dixon Downs will convey a maximum of approximately 6.3 million gallons annually of contaminated storm water to the City treatment plant. Appendix C shows the estimated monthly flows and the assumptions used to develop the volume.

Additionally, the stable area will generate a small volume of dry weather flow (process wastewater) from dust control, landscape watering, drinking water for horses and/or cool down water for overheated horses, and inadvertent spray that may escape the horse wash pads. Dry weather flow will flow by gravity to the 60-inch underground storage pipes and be pumped to the process wastewater sewer using the same control system noted above for wet weather runoff. A rain gage and controller will determine when there is a rain event and signal the lift station to stop pumping dry weather flow to the sewer. The system controller must be reset manually to begin using the lift station after a rain event.

Soiled Bedding Material

BMPs for minimizing contact between soiled bedding material and storm water are to keep the materials in covered containers and then in a covered transfer station when handling the material on site. All soiled bedding material is transferred from stables in wheelbarrows to covered containers. A fork lift transfers the covered containers to a semi-trailer for transport to the covered transfer station. The truck will be unloaded and emptied onto the transfer station floor. The transfer station and the unloading and loading activities are completely covered, reducing storm water pollution. Figures 4 through 8 show the soiled bedding material handling procedures. The transfer station will be designed so that storm water will be drained away from the transfer station, preventing storm water run-on and potential contamination.

CAFO regulations require that the owner prepare a comprehensive nutrient management plan (CNMP) if process wastewater and/or manure solids are applied to land owned by the CAFO owner. Since process wastewater is discharged to the sanitary sewer and waste bedding materials are recycled off-site by an approved recycler, no DNMP is required.

An additional Stable Area and Service Area BMP will be the use of a street sweeper. This will minimize the dust, sediment, and potential fecal material that may be tracked by horses entering and leaving the stable area or vehicles tracking feed, straw, and dirt from the stable area, transfer station, and maintenance areas.

Barn Floor Construction and Ground Water Protection

The RWQCB January 2004 letter required the developer (MEC) to submit a Report of Waste Discharge, which will serve as the NPDES permit application. Among other items that have already been submitted as part of the City's Environmental Impact Report, the RWQCB requested a hydrogeologic evaluation plan to address existing groundwater quality and site monitoring to identify any changes in groundwater quality that may be caused by Dixon Downs activities. We believe the RWQCB request assumed that, as a CAFO, Dixon Downs would use the traditional approach and the ponds would represent a significant potential threat to groundwater quality.

As noted above, Dixon Downs is using BMPs to capture all dry weather flows from the stable area and prevent storm water from contacting process waters or soiled bedding materials. Nearly all horse waste is produced in the barns so Dixon Downs plans to construct the barn floors using impermeable materials to prevent groundwater contamination. The bottom layer is a mixture of digested sludge and soil compacted to form a type of soil cement. The second layer consists of compacted decomposed granite and limestone tailings to help neutralize any waste and retard percolation. The third layer is the absorbent bedding material. Portions of the bedding will be replaced daily. Damaged portions of the second layer will be replaced during major maintenance, and the bottom layer will never be replaced.

No permanent groundwater monitoring wells are planned as part of the Dixon Downs operation unless required by the RWQCB as part of the CAFO permit.

Chapter 4 - Conclusions

The SWQMP addresses the issues set forth by the City for the Dixon Downs development. Dixon Downs will install BMPs to meet all City, State, and Federal regulatory requirements. The project will use the CASQA BMP standards as the design basis for post-construction structural BMPs including detention basins, vegetative swales, grassy areas, and mechanical devices. The BMPs also include minimizing storm water pollution from the CAFO are by capturing and later sewering the stable area storm water and using covered containers and transfer facilities for waste bedding materials.

Appendix A

Figures

STORMWATER QUALITY BMP TABLE

AREA	Land Use	Storm Water Quality BMP
North 1	Commercial / Business Office with 90% impervious area	Water Quality Vegetative Swale
North 2	Commercial / Business Office with 90% impervious area	Water Quality Vegetative Swale
North 2	Commercial / Business Office with 90% impervious area	Water Quality Vegetative Swale
North 3	Commercial / Business Office with 90% impervious area	Water Quality Vegetative Swale
North 4	Commercial / Business Office with 90% impervious area	Water Quality Vegetative Swale
Race Track	Race Track consisting of landscaped/ turf with 2% impervious area. Dirt track will have sub-surface drainage system.	No BMP Required
Service Area	Service Area includes Grooms Quarters, and maintenance and support service area for the whole project.	Water Quality Vegetative Swale
Stable Area	Paved Area, Stables & Horse Wash-station Roofed Area	Piped Drainage system for 25Year Storm, Storm water quality treatment with CDS-Interceptor, discharge to public drainage system.
	Horse Walk Area (CAFO)	Retention for 25yr-24hr storm, then pumped to sewer.

Note:
1. The Storm Water Quality Best Management Practices (BMP) shown on this exhibit are preliminary only. The Project can install BMPs one or a combination of Water Quality Vegetative Swale, Water Quality Pond, Media-Filters, Vortex Separators (CDS) as necessary conforming to California Storm-water Quality Association (CASQA) BMP-Handbook for new development and re-development.
2. The Vortex Separators (CDS) are recommended for treating the storm-stor run-off from the Public Streets prior to discharge into trunk drainage system, subject to City of Dixon approval.

HORSE WALK AREA (CAFO)
PIPED RETENTION FOR 25Yr-24Hr STORM
THEN PUMPED TO PUBLIC SEWER
(SEE SWQMP BY HDR, INC.)

ROOFS & PAVEMENT - WITHIN STABLE AREA
STORM WATER TREATMENT CONTROL BMP
(MECHANICAL INTERCEPTOR DEVICE OR
OR BMP APPVD. BY CITY)

PROFESSIONAL DRIVE

STABLE AREA (34.36 AC.)

STORM DETENTION CHANNEL

TRUNK DRAINAGE SYSTEM

NORTH AREA 4
(29.36 AC.)

NORTH AREA 3
(20.92 AC.)

NORTH AREA 1
(32.34 AC.)

BMP N4

BMP N3

BMP N1

NORTH AREA 2
(20.05 AC.)

RACE TRACK AREA
(77.54 AC.)

RACE TRACK DETENTION BASIN

SERVICE AREA
(27.27 AC.)

BMP SA
w/ FOREBAY &
GRAVEL BERM

BMP N2

PEDRICK ROAD

VICINITY MAP
N.T.S.

SLEVERS RD
113
80
PROJECT SITE
PEDRICK RD
MAUGHN RD
SOUTHERN PACIFIC RAILROAD

GRAPHIC SCALE
120 60 0 120 240
1 in. = 120 ft

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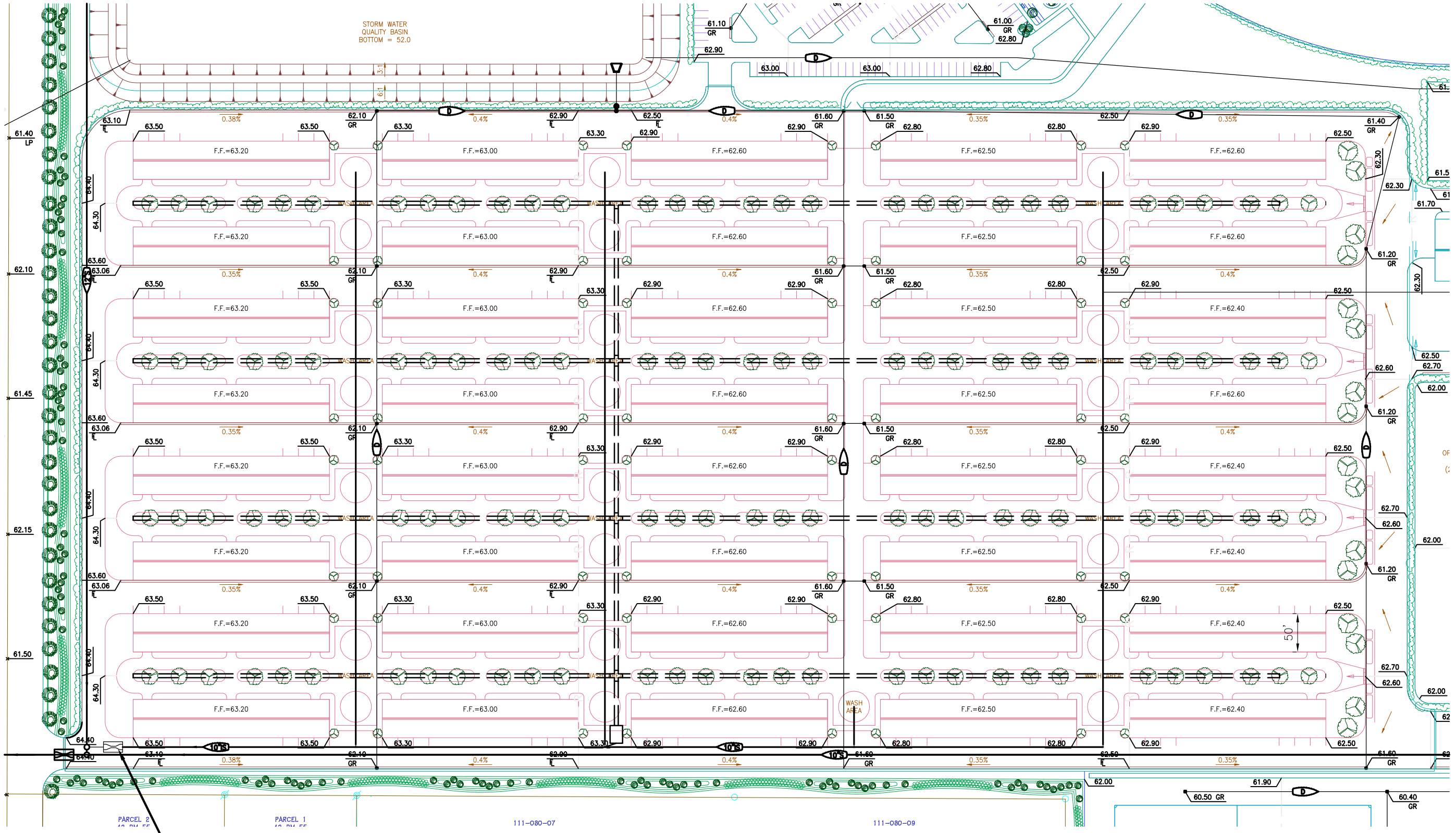
DIXON DOWNS
SWQMP
EXHIBIT D

DATE
April 27, 2005

FIGURE
1



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DATE: Apr 27, 2005 4:29pm XREFS: 000147-C1-GB01 000147-PB01-BS01 DixonPhase1 FIGURE 1 34X22FTB

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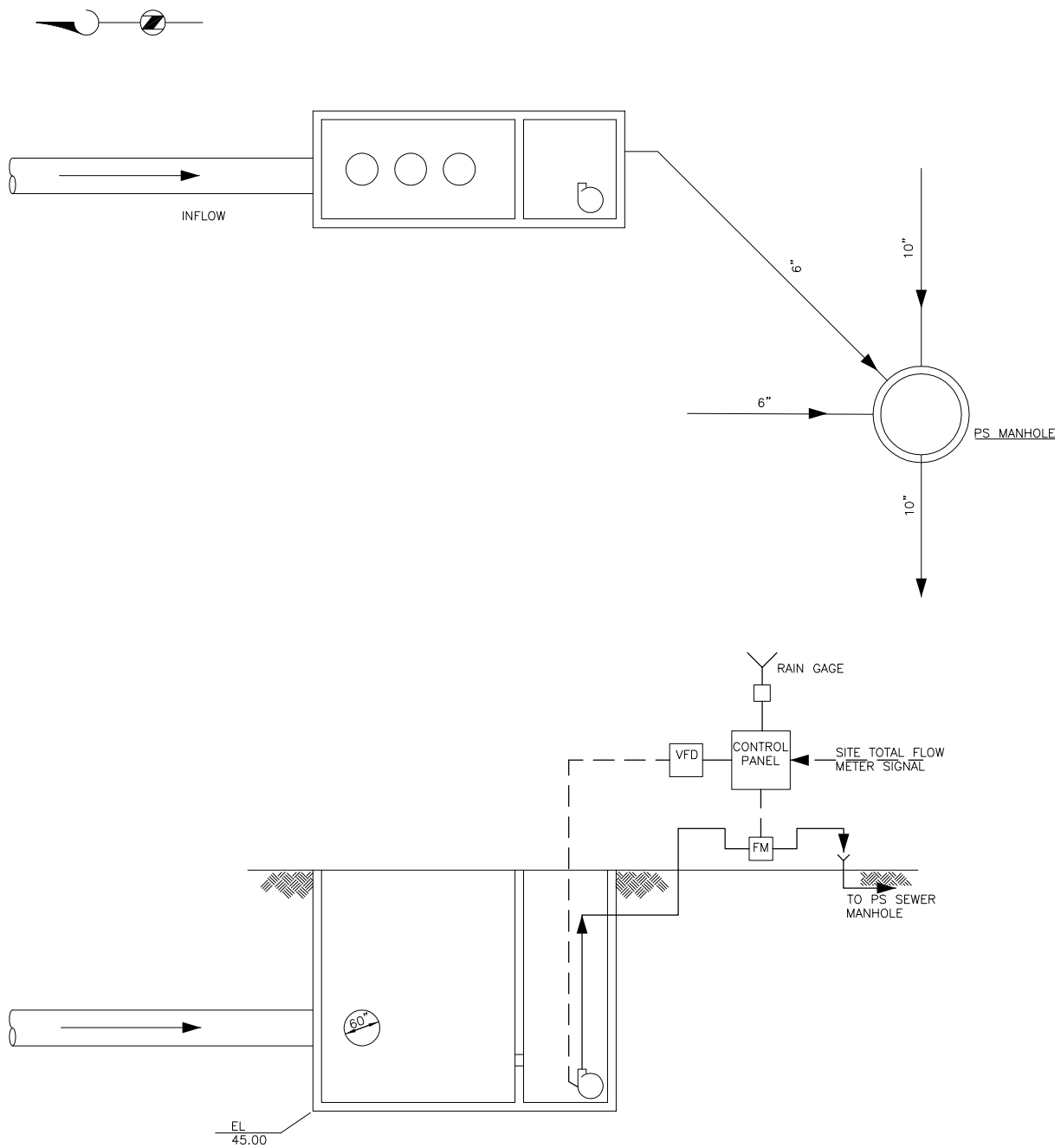
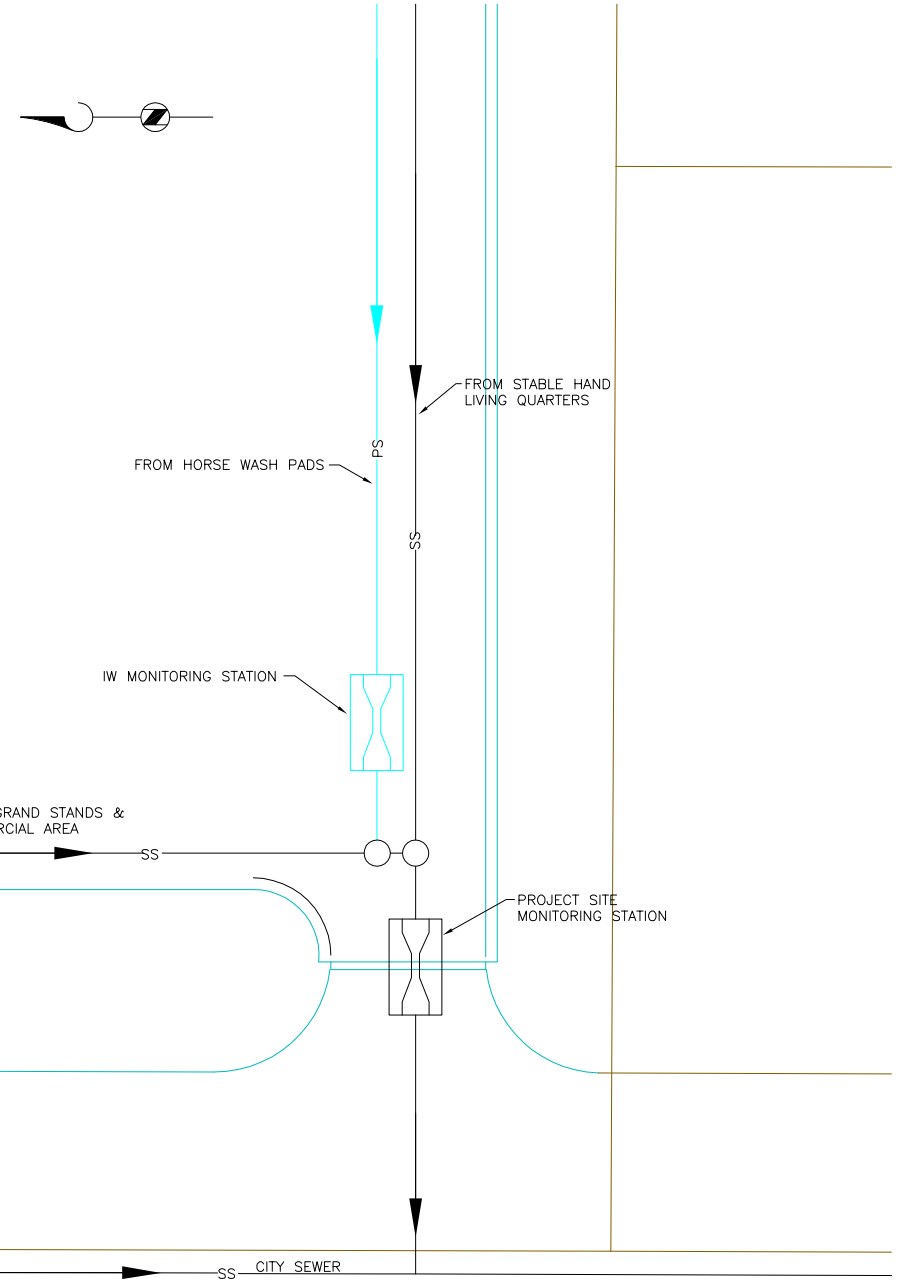
DIXON DOWNS SWQMP
STABLE AREA CAFO/NON-CAFO AREAS AND ON-SITE SEWERS

DATE
April 27, 2005

FIGURE
2





ABBREVIATIONS:

FM – FLOW METER

IW – INDUSTRIAL WASTE

LS – LIFT STATION

PS – PROCESS WASTEWATER SEWER

SS – SANITARY SEWER

SW – STORM WATER

VFD – VARIABLE FREQUENCY DRIVE

NOTE:

1. DRY WEATHER FLOWS PUMPED TO PS SEWER BY LS AT MIN. FLOW RATE.
2. RAIN GAGE DEACTIVATES LS WHEN RAINING(>0.02 INCHES PER 24–HOURS).
3. MANUAL RESET TO ACTIVATE LS AT MININIMUM FLOW.
4. SITE TOTAL FLOW METER CONTROLS LS PUMP FLOW TO BELOW MAXIMUM ALLOWED FLOW FROM SITE.

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DIXON DOWNS SWQMP
STABLE AREA STORM WATER LIFT STATION AND MONITORING STATIONS

DATE

April 27, 2005

FIGURE

3

DWG: P:\201042.MEC\15049.DIXON DOWNS\FROM CLIENT\01-27-05\FIGURE 3-1.dwg USER: cbalendh
DATE: Apr 27, 2005 4:26pm XREFS: 11X17FBRDR FIGURE 1

HDR

Typical Covered Container for Soiled Bedding Material

DATE April 27, 2005

FIGURE Figure 4

HDR

Covered Containers Pick Up for Loading

DATE
April 27, 2005

FIGURE
Figure 5

HDR

Covered Containers Loaded for Transport to Transfer Station

DATE
April 27, 2005

FIGURE
Figure 6

HDR

Covered Transfer Station

DATE
April 27, 2005

FIGURE
Figure 7

HDR

Truck Inside Transfer Station for Loading

DATE
April 27, 2005

FIGURE
Figure 8

Appendix B

Conceptual Design Basis Communications (see previous submittal)

Appendix C

Storm Water Runoff and Volume Calculation

DIXON DOWNS
Table 1- Barn Area Walkway Annual Retention Volume

DESCRIPTION	MONTH												TOTAL
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	WATER YEAR
1 in 100 year Annual Precipitation [a] Inches	1.63	3.47	6.33	7.21	5.76	4.43	2.35	1.04	0.27	0.04	0.04	0.45	33.03
C[b,c,d]	0.88	0.88	0.75	0.75	0.75	0.75	0.88	0.88	0	0	0	0.88	0.75
CAFO Area (Acres)	9.42	9.42	9.42	9.42	9.42	9.42	9.42	9.42	9.42	9.42	9.42	9.42	9.42
Volume (Ac-ft)	1.12	2.40	3.73	4.25	3.39	2.61	1.62	0.72	0.00	0.00	0.00	0.31	19.44
Volume (MG)	0.4	0.8	1.2	1.4	1.1	0.8	0.5	0.2	0.0	0.0	0.0	0.1	6.3

a Apportioned by multiplying the average monthly rainfall times 1.960. These climatic numbers are used for the WWTP water balance to determine design storage and disposal area needs for the land disposal system.
b Assumption: Monthly precipitation >0.3 and <3.89 inches, runoff percent = 88% (See below).
c Assumption: Monthly precipitation > 3.89 inches, runoff percent = 75% (See below).
d Assumption: Monthly precipitation < 0.3 inches, no runoff (See below).

Data:
25 year rainfall distribution
24 hour 3.89 inches
2 day 5.82 inches
4 day 6.47 inches

TOTAL TRIBUTARY AREA = 9.42 AC = 0.015 MI^2

CURVE NUMBER = 96

S= 0.42 Q=(P-0.2S)^2 / (P+0.8S)

PERIOD	DELTA PRECIP (25 year)	RUNOFF (in)	Storage (Acre-ft)	STORAGE (Million Gallons)	
1	3.89	3.43	2.69	877,660	

For Precipitation > 25-year, 24-hour Storm

Assumption
During the wet season where the flow s are higher than the 25yr -24 hr storm only

Calculation
From 100 year wet season data
100 year annual precipitation for January = 7.21 inches
If this event contains a 25 year, 24 hour storm
rainfall for 4 days = 6.47 inches
Amount to be contained, 25 year,24 hour storm= 3.89 inches
Remaining rainfall for January 0.74
Total rainfall needs to be contained in January **4.63** inches
With the assumption of C = 0.75
Rainfall needs to be contained in January = **5.41** inches

Conclusion

The assumption of 75% capture during wet season with storms higher than the 25-24 hour storm event is valid. Because that actual rainfall needs to contained is lower than the assumed capture of 75% rainfall.

For Precipitation < 25-year, 24-hour storm

See below for SCS runoff curve number method
Precipitation for a 25 year 24 storm = 3.89 inches
Runoff calculated by SCS runoff curve number met 3.43 inches
Ratio of Runoff/Precipitation = 0.88
C factor similar to SCS runoff curve method 0.88

* The 25Year 24 hour storm depth is Based on Solano County Hydrology Manual Table 1B
* The curve number is based on NRCS - Urban Hydrology for Small Watersheds (June 1986) Table 2-2a: for Western Urban Area Desert Landscaping (Impervious Barrier under 1" to 2" sand). The curve number is a conservative assumption (Considering the natural soil as impervious)
* The calculations are based on NRCS Urban Hydrology Chapter 2.

For Precipitation <0.3 inches per month

Assume that all rainfall occurred on the same day and there was 100% runoff and that it was released over 25 days

Rainfall 0.3 inches
Area 9.42 Acres
Runoff C= 1
Volume 76,733 gallons
Daily 3,069 gpd over 25 days

Conclusion

Daily volume is insignificant compared to the likely daily flow variation from Dixon Downs.