CITY OF SCOTTSDALE

WESTWORLD SPORTS FIELDS

PRELIMINARY DRAINAGE REPORT

Plan # ____________________

Case # 9-UP-2021

Q-S # 35-51

X Approved

____ Corrections

Richard M. Anderson 07/06/2021

Reviewed By Date

This report and the preliminary g/d plan contained herein will need to be updated to a 75% level of design and analysis in accordance with DSPM as part of the DR submittal for the project.

Project No.: PG09

MAY 2021

Prepared For:

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Job No. 2101

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1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION/BACKGROUND

The purpose of this drainage study is to provide a basis of design for the drainage infrastructure associated with the new Westworld Sports Fields at the southwest corner of McDowell Mountain Ranch Road and Thompson Peak Parkway. The proposed complex will consist of five lighted multi-use fields, curbed parking lots, a restroom and office building with potable water and sewer connections, sidewalks, offsite street improvements and a raw (CAP Canal) water connection for sports field and landscape irrigation. The improvements are situated on a 40-acre area on the east end of Westworld which is located within the Bureau of Reclamation (Reclamation) floodwater reservoir behind Dike 4 of the CAP Canal dikes. The sports complex will be designed to meet the drainage requirements set forth by the Reclamation for development within their floodwater impoundment area as well as the design requirements outlined in the City of Scottsdale *Design Standards & Policies Manual* (DSPM).

1.2 PROJECT LOCATION

The project is located within the City of Scottsdale on the southwest corner of McDowell Mountain Ranch Road and Thompson Peak Parkway. It is located on the east end of Westworld and bound by Thompson Peak Parkway on the south and McDowell Mountain Ranch on the north and east. Refer to Figure 1 below for a detailed vicinity map.

{Figure 1 will be included with the next submittal of the Drainage Report}

Figure 1: Vicinity Map

2.0 STORMWATER RETENTION ANALYSIS

The site lies within the 100-year flood pool behind Dike 4 of the CAP Canal. Therefore, the subsurface drainage systems for the sports complex will essentially add to the volume of the floodwater storage reservoir and will be used to provide the required stormwater retention. These subsurface systems include the void space within the 4" thick gravel layer that underlies the sand-based sports fields plus the volume associated with the proposed field drains, parking lot storm drain pipes and culverts.

The required stormwater retention was calculated as the combined total from the following:

1. **Undisturbed Desert –** The full 100-year, 2-hour runoff volume was added to the retention requirement for the undisturbed desert areas of the site.
2. **Existing Westworld Parking Areas and Drives –** The pre versus post runoff volume associated with the existing gravel parking lot and driveways was also added to the required retention volume.
3. **ESLO Parcel** - The pre versus post runoff volume was added for the ESLO parcel. This is the parcel of land on the east side of the project site that the City recently purchased from the State Land Department. It lies outside of the Reclamation's jurisdiction and is included within the ESLO area and therefore is only required to store the pre versus post runoff volume.

Refer to Appendix A for the runoff volume calculations and an Exhibit showing the drainage areas associated with the runoff volumes.

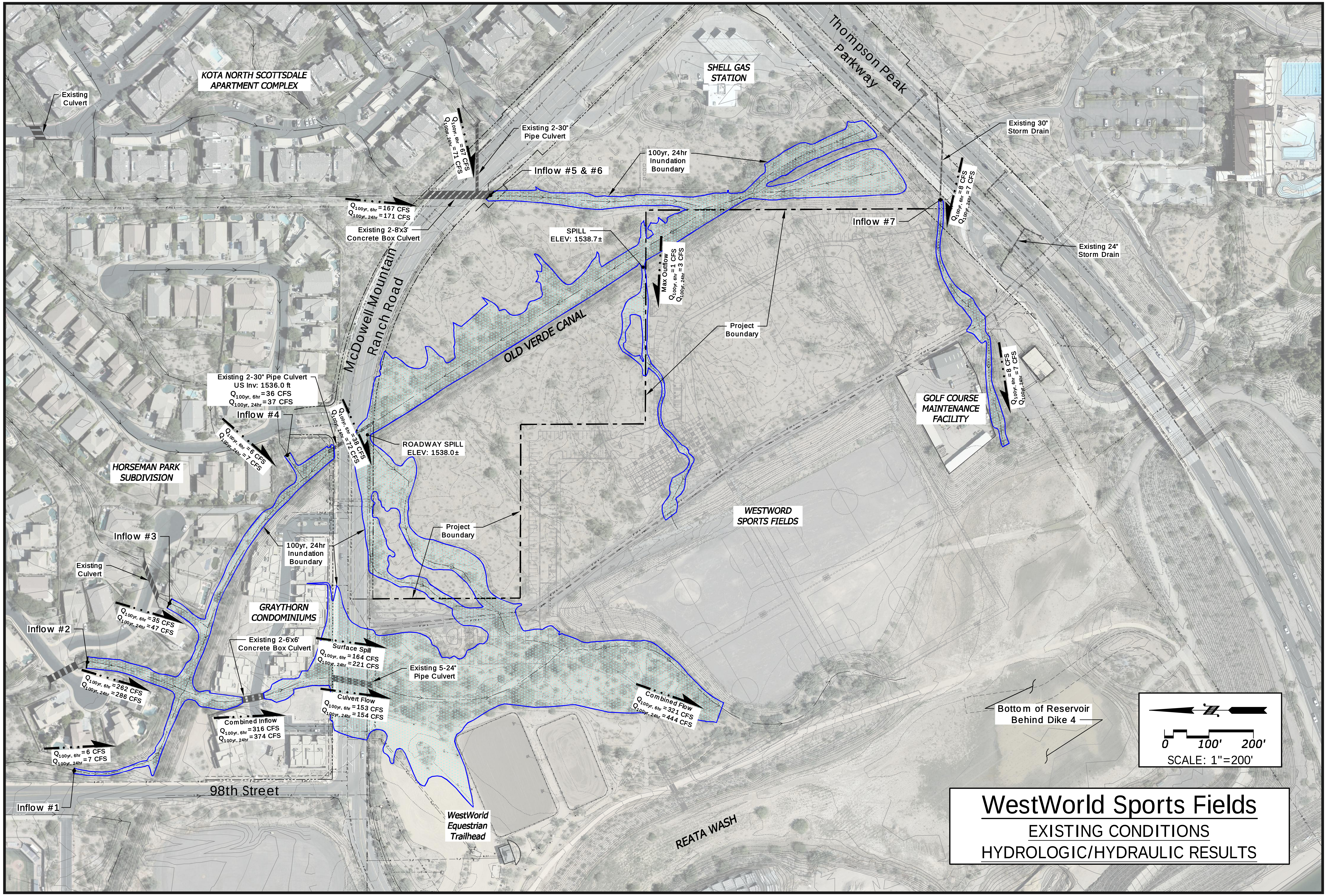
{a more complete description of the stormwater retention analysis will be included with the next submittal of the Drainage Report}

3.0 OFFSITE HYDROLOGIC ANALYSIS

Offsite flows that impact the site from north of McDowell Mountain Ranch Road were determined using the Pinnacle Peak South FLO-2D model. Several adjustments were made to the model to better define the drainage patterns. These adjustments will be fully described in the next submittal of the drainage report. **Refer to Appendix B for the Offsite Watershed Map and the FLO-2D inflow hydrographs. The FLO-2D digital data can be downloaded from the link provided in Appendix F.**

The offsite flows concentrate in the Old Verde Canal upstream of the proposed sports complex. To determine the hydraulic impact of the Old Verde Canal and better define flows that enter site, a two-dimensional HEC-RAS model was developed that covers the sports complex and the Old Verde Canal. **The results of the HEC-RAS analysis are summarized on the following Exhibit. The HEC-RAS digital data can be downloaded from the link provided in Appendix F.**

{a more complete description of the Offsite Hydrologic Analysis will be included in the next submittal of the Drainage Report}



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Existing Conditions Hydrologic/ Hydraulic Results

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4.0 DESIGN HYDROLOGIC ANALYSIS

A HEC-1 model was developed to determine design flows for the onsite drainage systems. This model also includes the small, offsite contributing drainage areas that lie downstream of the Old Verde Canal. **Refer to Appendix C for the HEC-1 Schematic and Drainage Area Map which includes a summary of peak discharges calculated with HEC-1. Appendix C also includes printouts of the 100-yr, 6-hr and 100-yr, 24-hr HEC-1 models. The HEC-1 digital data can be downloaded from the link provided in Appendix F.**

{a more complete description of the Design Hydrologic Analysis will be included in the next submittal of the Drainage Report}

5.0 STORM DRAIN DESIGN AND ANALYSIS

New storm drains are proposed for the site which will 1) collect and convey offsite flows from the properties adjacent to the east side of the site that lie downstream of the Old Verde Canal and 2) convey runoff collected in catch basins installed within the new parking lot. Preliminary design calculations have been completed to size the proposed storm drain and catch basins that are shown on the Storm Drian Layout Exhibit in Appendix D. The design calculations will be finalized and documented with the next submittal of the Drainage Report.

Refer to Appendix D for the proposed storm drain layout.

{the design calculations, along with a more complete description of the analysis will be included in the next submittal of the Drainage Report}

6.0 CULVERT DESIGN & WASH HYDRUALIC ANALYSIS

The two primary offsite flows will be routed through the site in existing washes. One that runs along the south side of the site and the other that runs through the northwest corner of the site. New culverts will be provided within the washes to convey flows under the driveways and pathways. Preliminary wash hydraulic analysis and culvert sizing calculations have been completed. The layout and preliminary sizing of the proposed culverts is presented in the Exhibit in Appendix D.

The drainage plan for the site includes routing offsite flow from the Old Verde Canal through the wash that runs along the south side of the site. As can be seen from the Exhibit on page 4, the 100-year flood currently overtops the Old Verde Canal in two locations. To prevent the overtopping, it is proposed to install a culvert that will divert excess flow from the Old Verde Canal into the south wash. Since the adjacent property's stormwater retention basin is hydraulically connected to the Canal, the proposed culvert will run from their retention basin and into the south wash.

The offsite flow that runs through the NW corner of the site currently overtops McDowell Mountain Ranch Road because the existing 5-24" pipes under the roadway do not have enough capacity to convey the 100-yr flow. In accordance with the DSPM, the plan is to design the new street improvements in a manner that will ensure that the maximum flow depth over the roadway will not exceed 6 inches. The calculations of this flow depth will be included in the next submittal of the Drainage Report.

Refer to Appendix D for the proposed pipe culverts.

{the design calculations, along with a more complete description of the analysis will be included in the next submittal of the Drainage Report}

7.0 FEMA FLOOD ZONE / LOWEST FLOOR ELEVATION

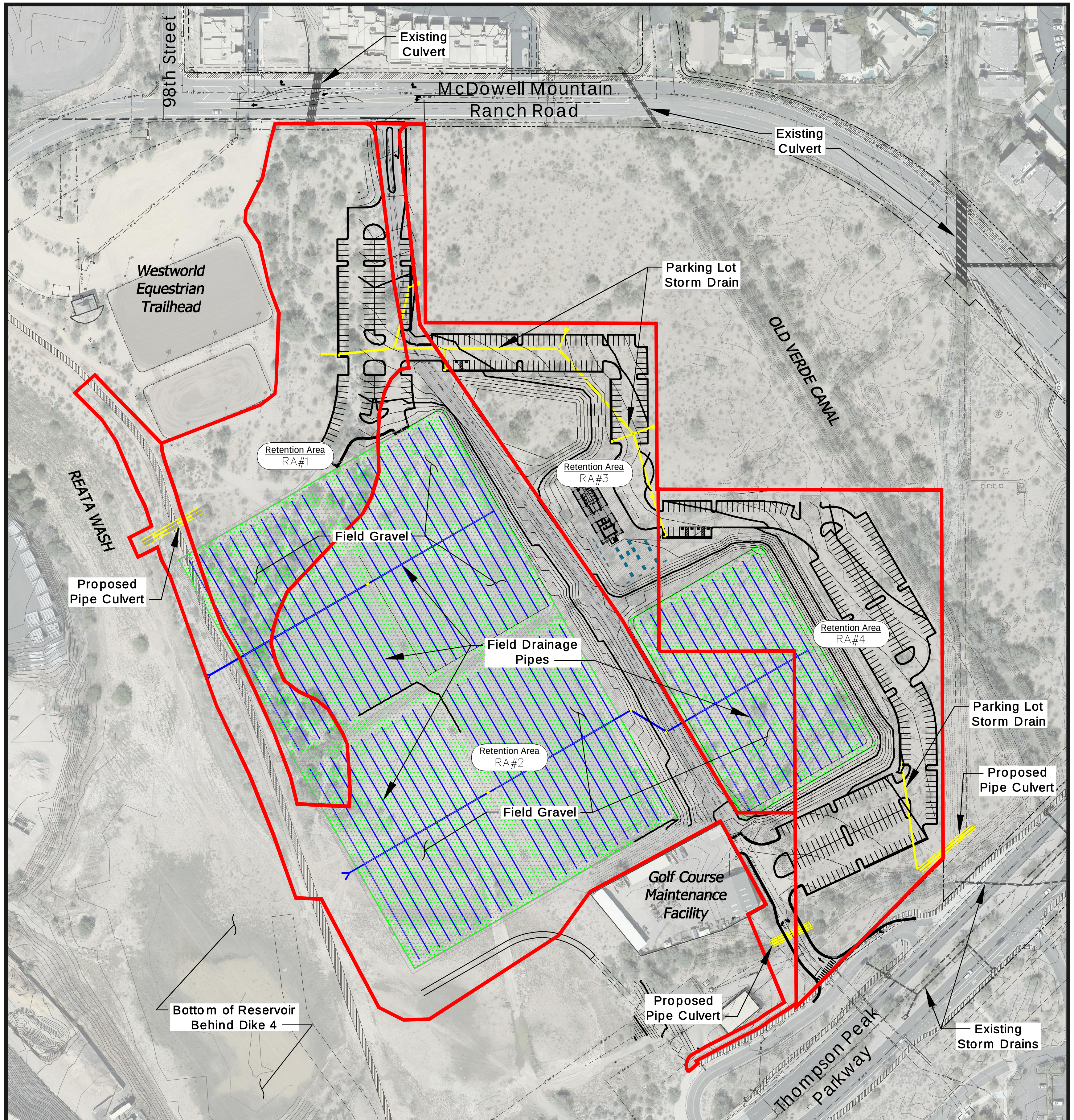
The site is located within FEMA Flood Zone A (FEMA Map No. 04013C1340L, dated Oct. 16, 2013). The Zone A Floodplain does not include a Base Flood Elevation (BFE), but the Reclamation established a 100-year water surface elevation (WSEL) of 1526.00 ft (NGVD29) for the flood pool behind Dike 4. This is a very conservative estimate of the BFE because it includes a 100-year runoff volume of 2320 ac-ft plus a long-term sediment accumulation of 1080 ac-ft. With the level of development at Westworld, it seems very unlikely that 1080 ac-ft of sediment would be allowed to accumulate. If the site did experience such sediment loads, the City would be forced to remove the sediment, or it would cover much of the developed area within Westworld.

Since the site design is based on City of Scottsdale vertical datum (NAVD88), we converted the Reclamation's WSEL to NAVD88 using the National Geodetic Survey's VERTCON program. The conversion obtained from VERTCON is NGVD29 + 1.75 ft = NAVD88. Therefore, the WSEL for the flood pool behind Dike 4 is 1527.75 ft based on City of Scottsdale's vertical datum.

We propose to set the finished floor of the site's Restroom/Office Building at 1528.75 or higher to be at least one foot above the BFE.

Appendix A: Stormwater Retention Calculations

Retention Design – Drainage Area Map



LEGEND

Retention Area Boundary

100-yr, 2-hr RUNOFF VOLUME SUMMARY TABLE

RETENTION AREA	Contributing Drainage Area (sq/ft)	100-yr, 2-hr Runoff Volume (cu.ft.)
RA#1	222,200	20,910
RB#3	175,800	18,980

PRE. vs. POST RUNOFF VOLUME SUMMARY TABLE

RETENTION AREA	Contributing Drainage Area (sq/ft)	Pre Development Runoff Volume (cu.ft.)	Post Development Runoff Volume (cu.ft.)	Increase in Runoff Volume (cu.ft.)
RA#2	249,030	21,946	29,971	8,025
RB#4	548,770	68,510	45,209	-23,300

NOTES:

1) All required retention storage for the Westworld Sports Fields site is provided within the subsurface drainage system of the new sports fields.
2) Under existing conditions, the project site consists of undeveloped desert and previously developed gravel parking areas and access roads. The retention requirements are as follows:
   A. Retention Areas #1 and #3 consists of undeveloped desert. Therefore, the full 100-year, 2-hour runoff was included in the required retention volume.
   B. Retention Area #2 of the project site has been previously developed and therefore only the increase runoff was included in the required retention volume.
   C. Retention Area #4 consists of undeveloped desert. However, since it is located within the ESL Ordinance, only the increase in runoff volume was added to the retention requirement.

REQUIRED RUNOFF VOLUME

TOTAL RUNOFF VOLUME = RA#1 + RA#2 + RA#3 + RA#4

TOTAL RUNOFF VOLUME = 20,910+ 8,025 + 18,980 - 23,300

TOTAL RUNOFF VOLUME = 24,615 cu.ft

PROVIDED STORAGE VOLUME

SUBSURFACE STORAGE VOLUME = Field Drainage Pipes + Field Gravel + Parking Lot SD

SUBSURFACE STORAGE VOLUME = 3,100 + 57,400 + 4,300

SUBSURFACE STORAGE VOLUME = 64,800 cu.ft

0 100' 200'

SCALE: 1"=200'

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Retention Volume Drainage Area Map

Sheet Number:

1

100-year, 2-hour Volume Calculation

100-year, 2-hour Runoff Volume Calculations

WestWorld
Multi-Use Sports Fields
Gavan & Barker No. 2101
Project No.: PG09

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Retention Area#1: 100-yr 2-hr Runoff Volume

Cover Type	Area (A) (sq.ft)	Runoff Coefficient* (C)	Area x C	Rainfall Depth^ (inches)	Runoff Volume (cu.ft)
Impermeable (Sidewalk, Parking, etc)	35,540	0.95	33,763.0	2.35	6,611.9
Desert Landscaping	117,430	0.45	52,843.5	2.35	10,348.5
Grass Areas (Turf Fields)	67,230	0.30	20,169.0	2.35	3,949.8
Total Contributing Drainage Area:	220,200		Total 100-year, 2-hour Runoff Volume		20,910

Retention Area#3: 100-yr 2-hr Runoff Volume

Cover Type	Area (A) (sq.ft)	Runoff Coefficient* (C)	Area x C	Rainfall Depth^ (inches)	Runoff Volume (cu.ft)
Impermeable (Sidewalk, Parking, etc)	61,850	0.95	58,757.5	2.35	11,506.7
Desert Landscaping	26,510	0.45	11,929.5	2.35	2,336.2
Grass Areas (Turf Fields)	87,440	0.30	26,232.0	2.35	5,137.1
Total Contributing Drainage Area:	175,800		Total 100-year, 2-hour Runoff Volume		18,980

^The 100-year, 2-hour rainfall depth was obtained from Appendix 4-1D of the *City of Scottsdale Drainage Policies and Standards Manual.*

*The runoff coefficients were obtained from Figure 4-1.5 of the *City of Scottsdale Drainage Policies and Standards Manual.*

Pre vs. Post 100-year, 2-hour Runoff Volume Calculation

Retention Area #2: Pre vs Post 100-year, 2-hour Runoff Volume Calculations

WestWorld
Multi-Use Sports Fields
Gavan & Barker No. 2101
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Civil Engineering & Landscape Architecture

Retention Area #2: Pre Development 100-yr 2-hr Runoff Volume

Cover Type	Area (A) (sq.ft)	Runoff Coefficient* (C)	Area x C	Rainfall Depth^ (inches)	Runoff Volume (cu.ft)
Undeveloped Desert	249,030	0.45	112,063.5	2.35	21,945.8
Total Contributing Drainage Area:	249,030		Total Pre Development Runoff Volume		21,946

Retention Area #2: Post Development 100-yr 2-hr Runoff Volume

Cover Type	Area (A) (sq.ft)	Runoff Coefficient* (C)	Area x C	Rainfall Depth^ (inches)	Runoff Volume (cu.ft)
Impermeable (Sidewalk, Parking, etc)	104,200	0.95	98,990.0	2.35	19,385.5
Desert Landscaping	36,930	0.45	16,618.5	2.35	3,254.5
Grass Areas (Turf Fields)	74,130	0.30	22,239.0	2.35	4,355.1
Undeveloped Desert (NAOS)	33,770	0.45	15,196.5	2.35	2,976.0
Total Contributing Drainage Area:	249,030		Total Post Development Runoff Volume		29,971
			Total Pre vs. Post Runoff Volume Increase :		8,025

^The 100-year, 2-hour rainfall depth was obtained from Appendix 4-1D of the *City of Scottsdale Drainage Policies and Standards Manual.*

*The runoff coefficients were obtained from Figure 4-1.5 of the *City of Scottsdale Drainage Policies and Standards Manual.*

Retention Area #4: Pre vs Post 100-year, 2-hour Runoff Volume Calculations

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Retention Area #4: Pre Development 100-yr 2-hr Runoff Volume

Cover Type	Area (A) (sq.ft)	Runoff Coefficient* (C)	Area x C	Rainfall Depth^ (inches)	Runoff Volume (cu.ft)
Gravel Access Road & Parking Area	278,080	0.82	228,025.6	2.35	44,655.0
Desert Landscaping	270,690	0.45	121,810.5	2.35	23,854.6
Total Contributing Drainage Area:	548,770			Total Pre Development Runoff Volume	68,510

Retention Area #4: Post Development 100-yr 2-hr Runoff Volume

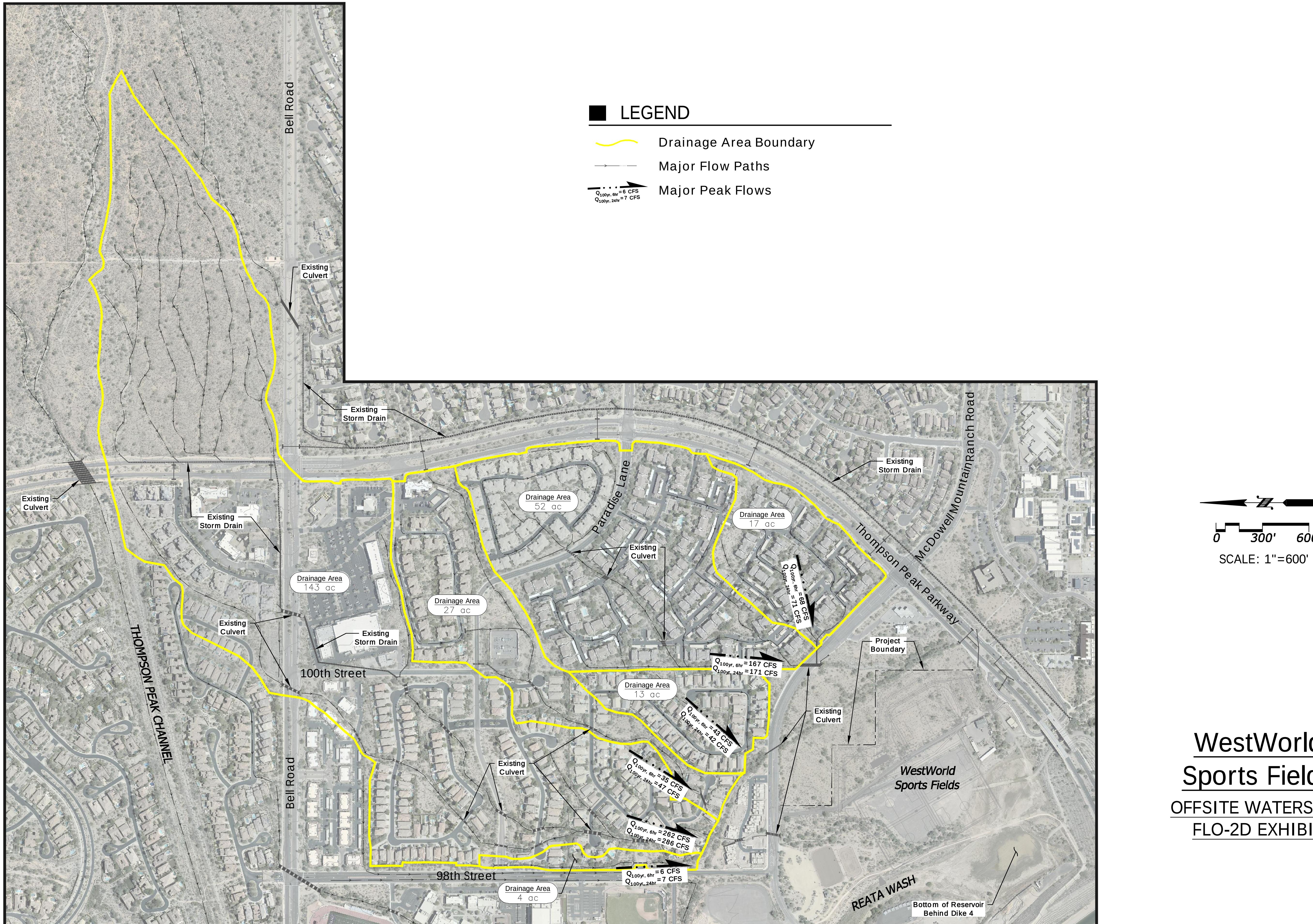
Cover Type	Area (A) (sq.ft)	Runoff Coefficient* (C)	Area x C	Rainfall Depth^ (inches)	Runoff Volume (cu.ft)
Impermeable (Sidewalk, Parking, etc)	76,140	0.95	72,333.0	2.35	14,165.2
Desert Landscaping	111,560	0.45	50,202.0	2.35	9,831.2
Grass Areas (Turf Fields)	361,070	0.30	108,321.0	2.35	21,212.9
Total Contributing Drainage Area:	548,770			Total Post Development Runoff Volume	45,209
				Total Pre vs. Post Runoff Volume Increase :	-23,300

^The 100-year, 2-hour rainfall depth was obtained from Appendix 4-1D of the *City of Scottsdale Drainage Policies and Standards Manual.*

*The runoff coefficients were obtained from Figure 4-1.5 of the *City of Scottsdale Drainage Policies and Standards Manual.*

Appendix B: Offsite Hydrologic Analysis

Offsite FLO-2D Model Watershed Map



WestWorld Sports Fields

OFFSITE WATERSHED FLO-2D EXHIBIT

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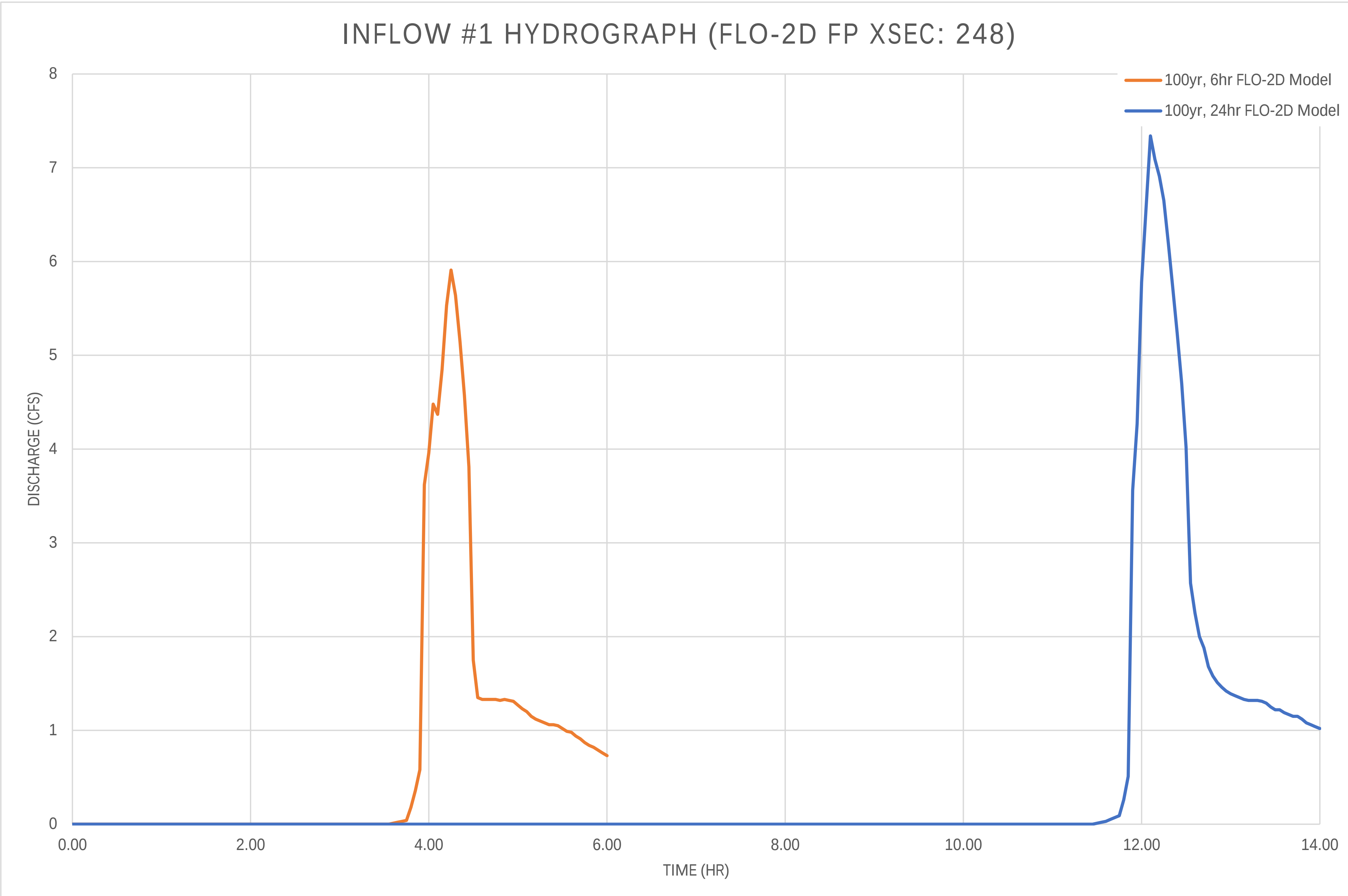
Offsite Watershed FLO-2D Exhibit

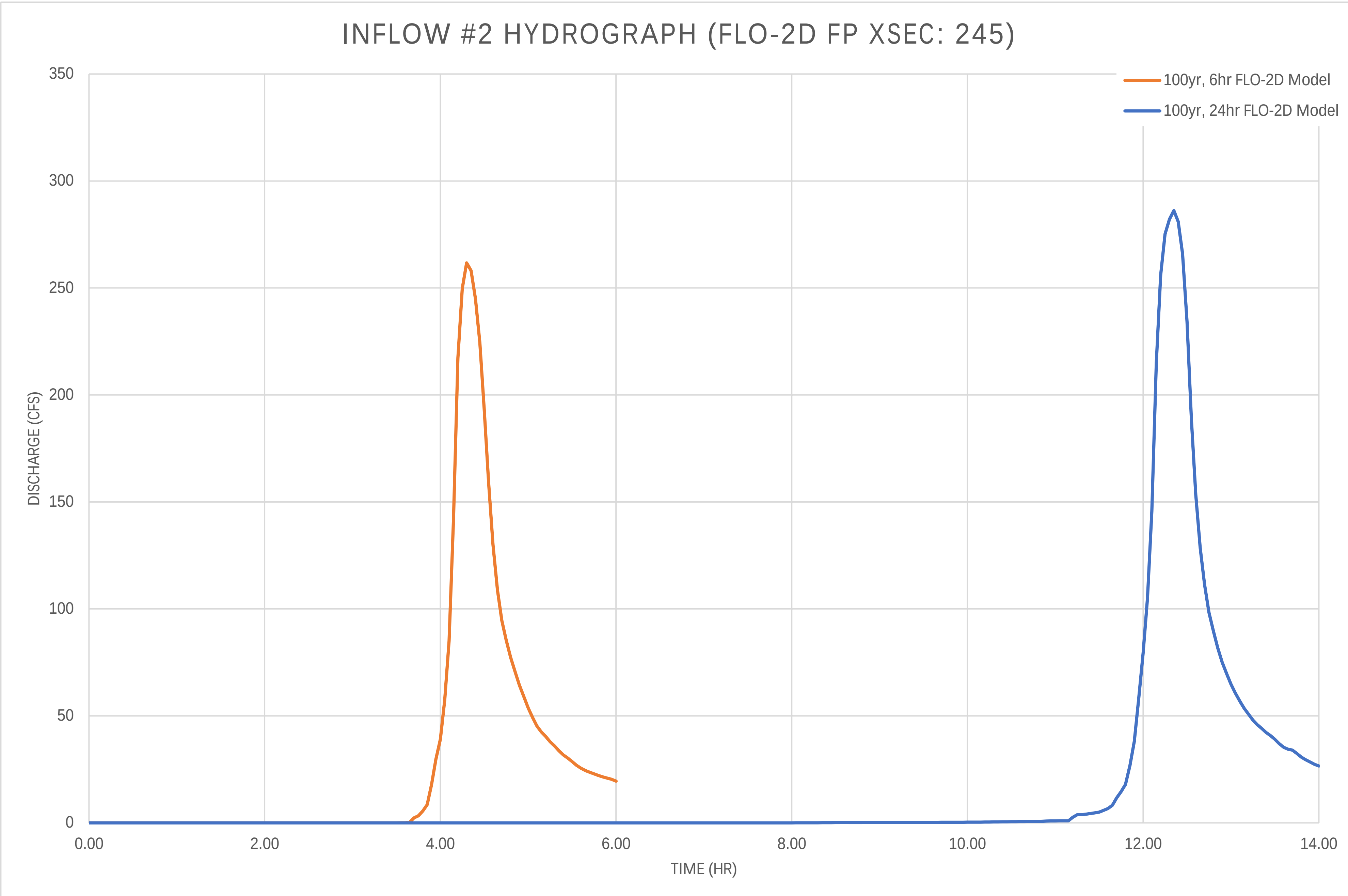
Sheet Number:

1

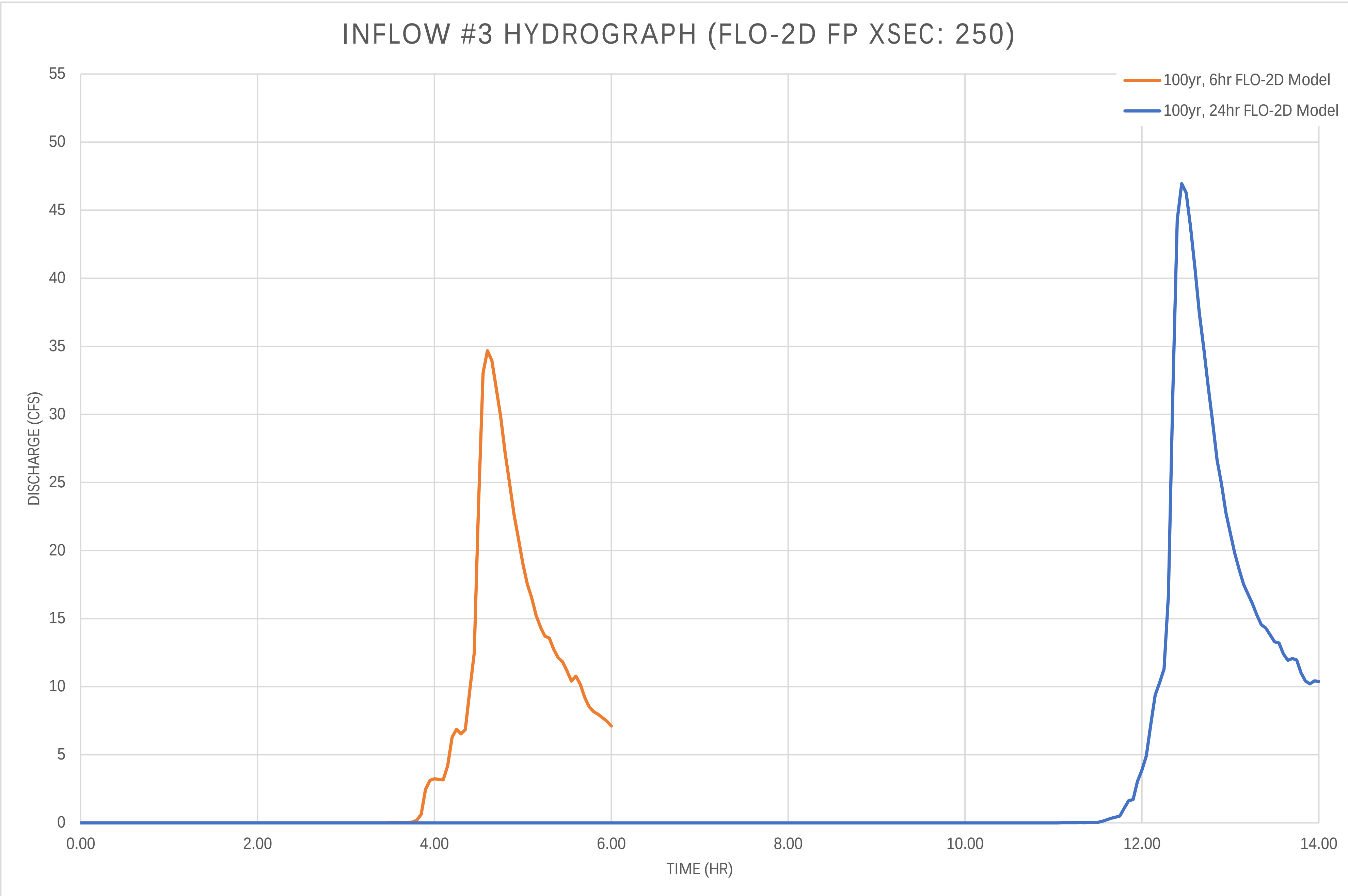
Offsite FLO-2D Model Inflow Hydrographs

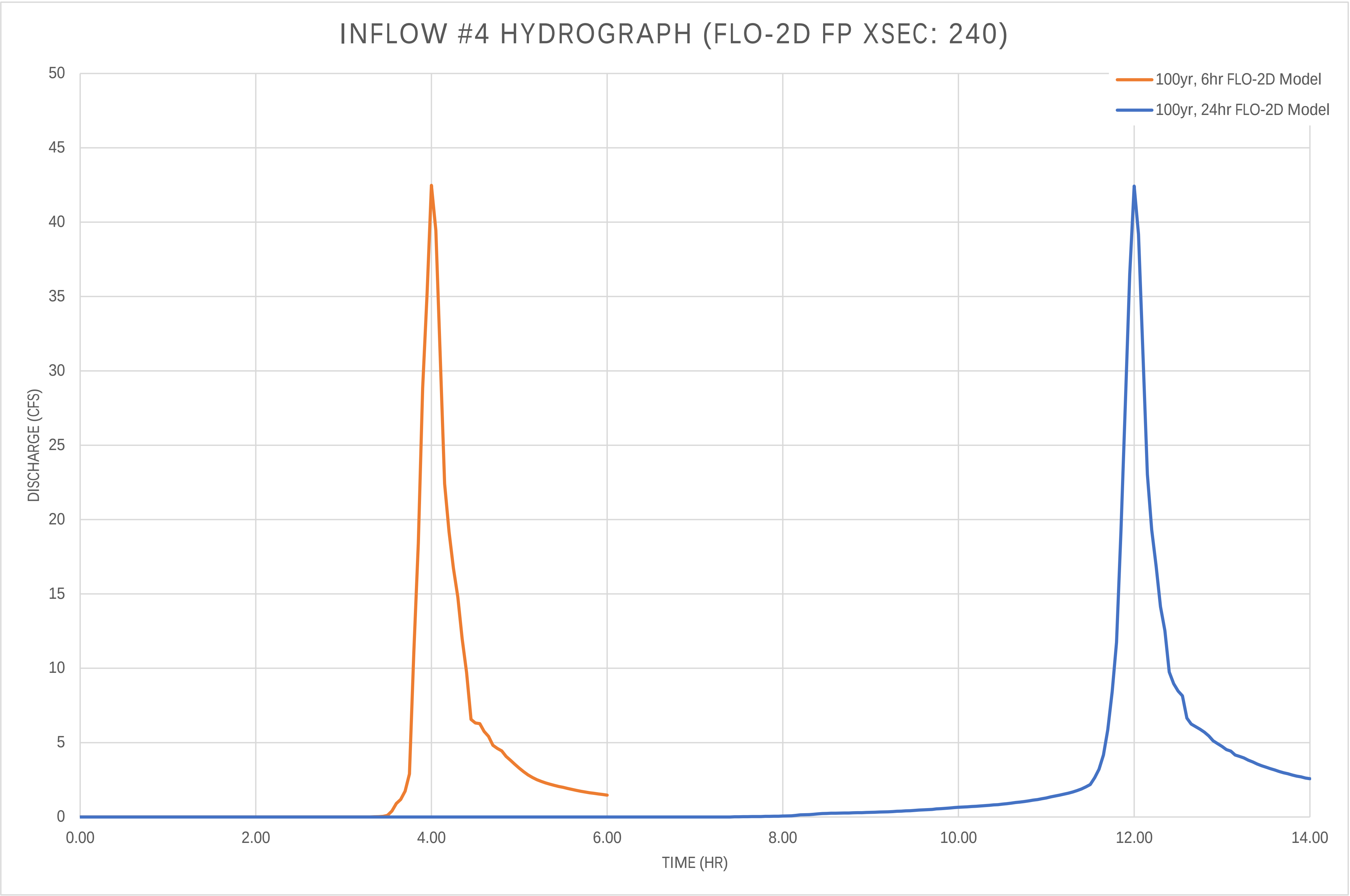


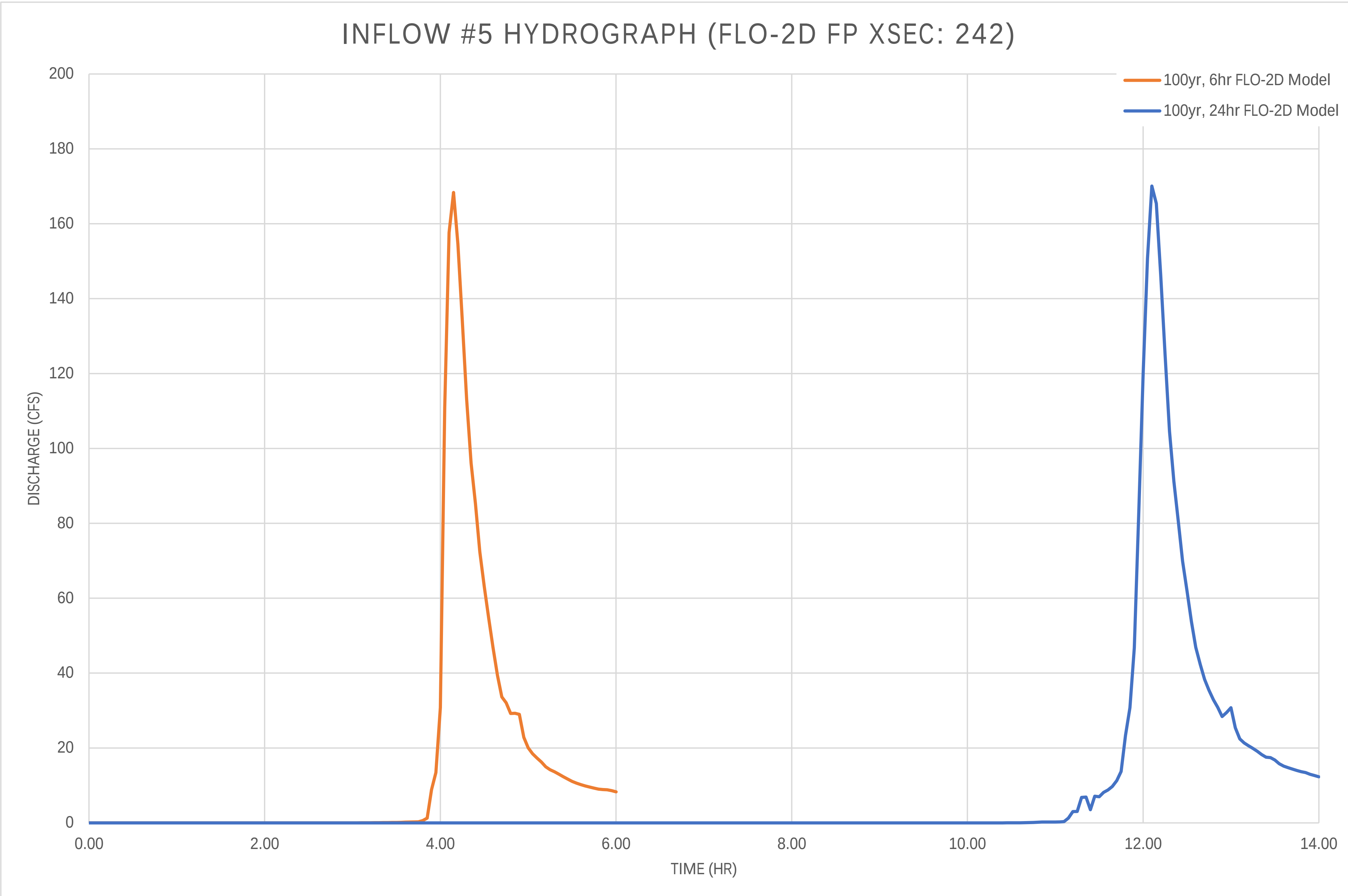
INFLOW #1 HYDROGRAPH (FLO-2D FP XSEC: 248)
DISCHARGE (CFS)
TIME (HR)
100yr, 6hr FLO-2D Model
100yr, 24hr FLO-2D Model
0
1
2
3
4
5
6
7
8
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00



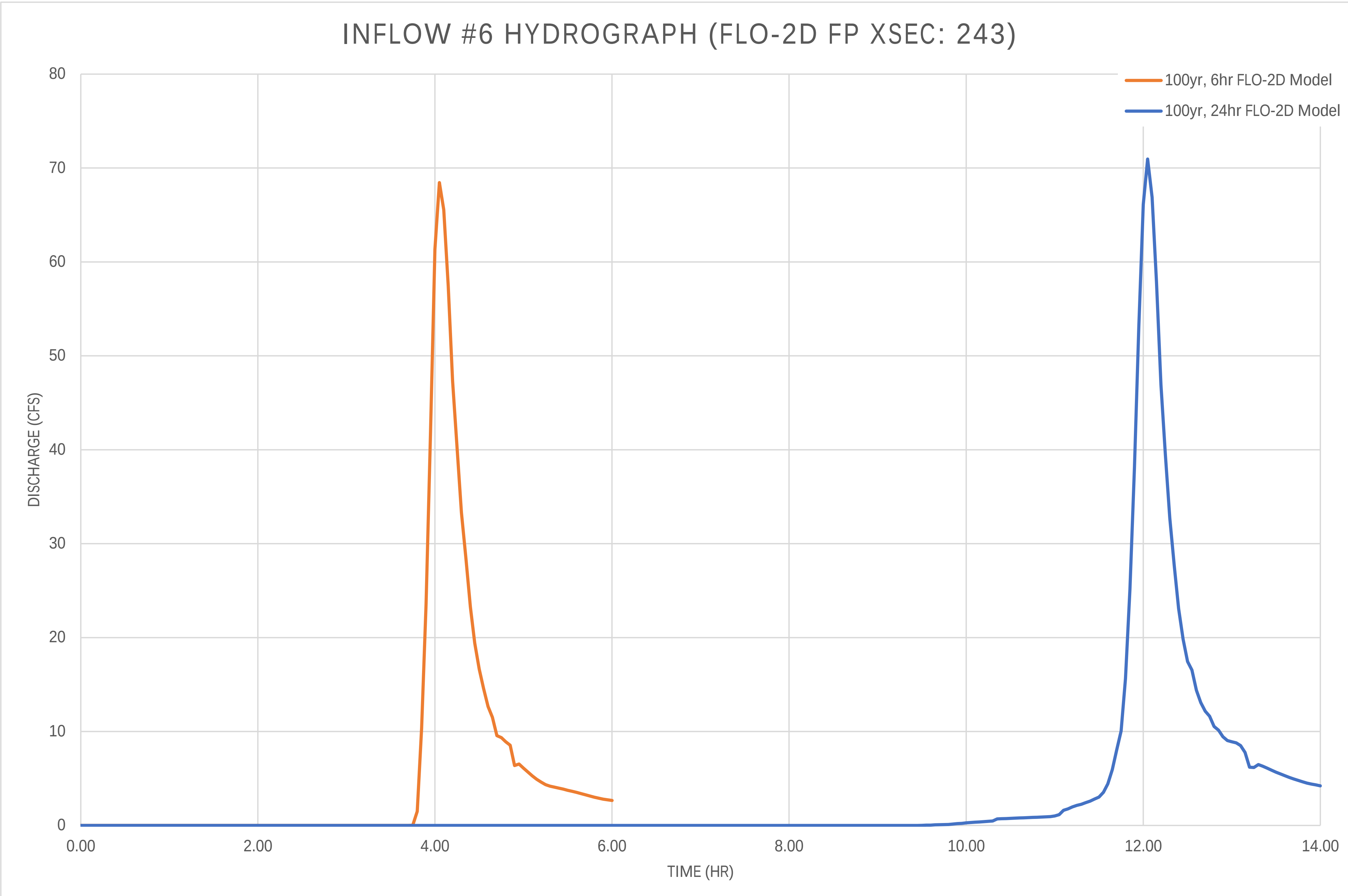
INFLOW #2 HYDROGRAPH (FLO-2D FP XSEC: 245)
100yr, 6hr FLO-2D Model
100yr, 24hr FLO-2D Model
DISCHARGE (CFS)
350
300
250
200
150
100
50
0
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00
TIME (HR)


INFLOW #3 HYDROGRAPH (FLO-2D FP XSEC: 250)
100yr, 6hr FLO-2D Model
100yr, 24hr FLO-2D Model
DISCHARGE (CFS)
0
5
10
15
20
25
30
35
40
45
50
55
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00
TIME (HR)


INFLOW #4 HYDROGRAPH (FLO-2D FP XSEC: 240)
100yr, 6hr FLO-2D Model
100yr, 24hr FLO-2D Model
DISCHARGE (CFS)
TIME (HR)
0
5
10
15
20
25
30
35
40
45
50
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00

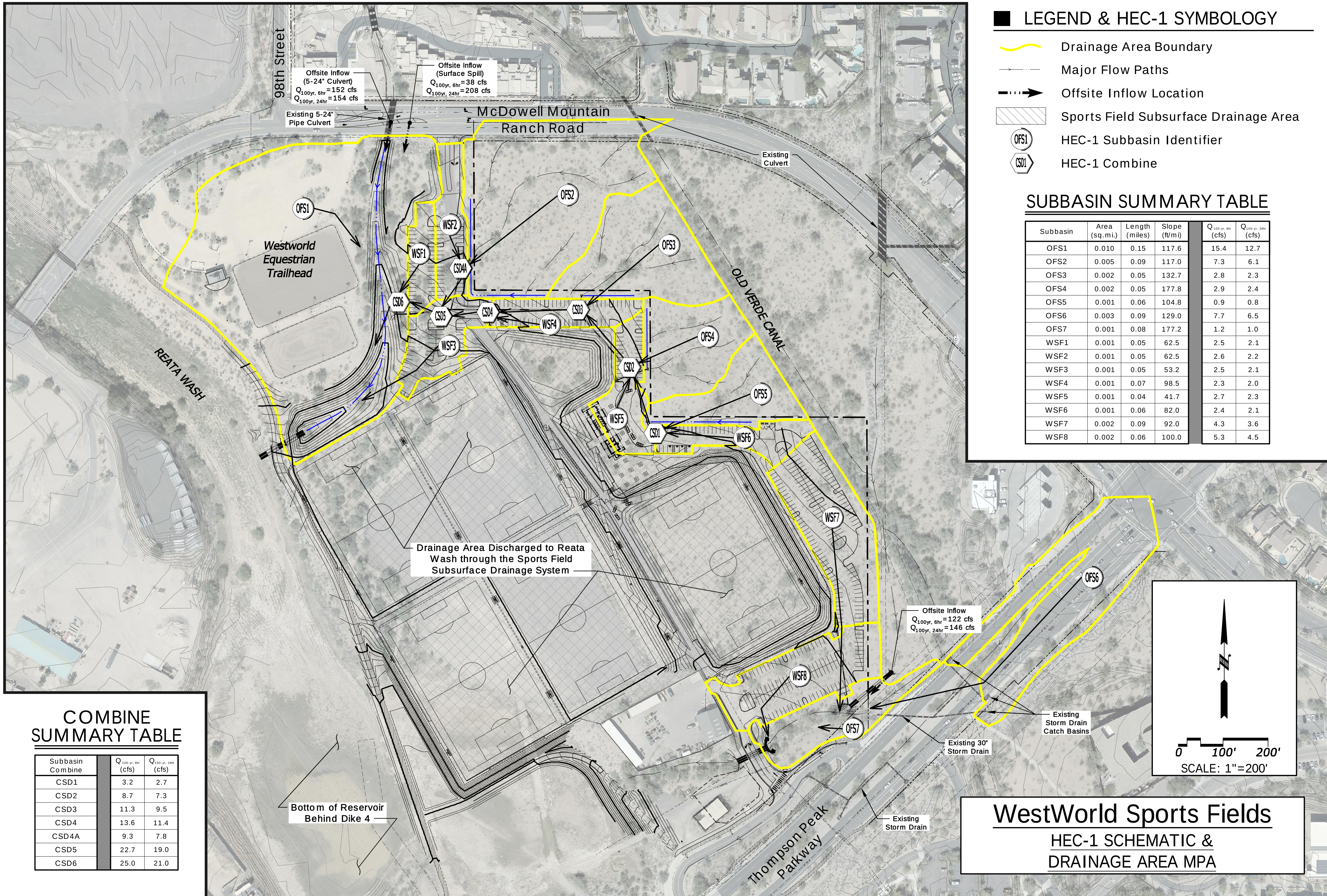


INFLOW #5 HYDROGRAPH (FLO-2D FP XSEC: 242)
100yr, 6hr FLO-2D Model
100yr, 24hr FLO-2D Model
DISCHARGE (CFS)
200
180
160
140
120
100
80
60
40
20
0
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00
TIME (HR)


INFLOW #6 HYDROGRAPH (FLO-2D FP XSEC: 243)
100yr, 6hr FLO-2D Model
100yr, 24hr FLO-2D Model
DISCHARGE (CFS)
80
70
60
50
40
30
20
10
0
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00
TIME (HR)

Appendix C: Design Hydrologic Analysis

Design HEC-1 Schematic and Drainage Area Map



LEGEND & HEC-1 SYMBOLOGY

- Drainage Area Boundary
- Major Flow Paths
- Offsite Inflow Location
- Sports Field Subsurface Drainage Area
- OFS1 — HEC-1 Subbasin Identifier
- CSD1 — HEC-1 Combine

SUBBASIN SUMMARY TABLE

Subbasin	Area (sq.mi.)	Length (miles)	Slope (ft/mi)	$Q_{100\text{-yr},\,6hr}$ (cfs)	$Q_{100\text{-yr},\,24hr}$ (cfs)
OFS1	0.010	0.15	117.6	15.4	12.7
OFS2	0.005	0.09	117.0	7.3	6.1
OFS3	0.002	0.05	132.7	2.8	2.3
OFS4	0.002	0.05	177.8	2.9	2.4
OFS5	0.001	0.06	104.8	0.9	0.8
OFS6	0.003	0.09	129.0	7.7	6.5
OFS7	0.001	0.08	177.2	1.2	1.0
WSF1	0.001	0.05	62.5	2.5	2.1
WSF2	0.001	0.05	62.5	2.6	2.2
WSF3	0.001	0.05	53.2	2.5	2.1
WSF4	0.001	0.07	98.5	2.3	2.0
WSF5	0.001	0.04	41.7	2.7	2.3
WSF6	0.001	0.06	82.0	2.4	2.1
WSF7	0.002	0.09	92.0	4.3	3.6
WSF8	0.002	0.06	100.0	5.3	4.5

COMBINE SUMMARY TABLE

Subbasin Combine	$Q_{100\text{-yr},\,6hr}$ (cfs)	$Q_{100\text{-yr},\,24hr}$ (cfs)
CSD1	3.2	2.7
CSD2	8.7	7.3
CSD3	11.3	9.5
CSD4	13.6	11.4
CSD4A	9.3	7.8
CSD5	22.7	19.0
CSD6	25.0	21.0

WestWorld Sports Fields

HEC-1 SCHEMATIC & DRAINAGE AREA MPA

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Sheet Title :

HEC-1 SCHEMATIC & DRAINAGE AREA MAP

Sheet Number:

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1 of 1

100-year, 6-hour HEC-1 Model

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1*****************************************                                                         ***************************************
 *                                       *                                                         *                                     *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                         *   U.S. ARMY CORPS OF ENGINEERS      *
 *              JUN   1998               *                                                         *   HYDROLOGIC ENGINEERING CENTER     *
 *           VERSION 4.1                 *                                                         *        609 SECOND STREET            *
 *                                       *                                                         *     DAVIS, CALIFORNIA 95616         *
 *  RUN DATE   21MAY21  TIME  09:44:19   *                                                         *         (916) 756-1104              *
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X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X                X
XXXXXXX  XXXX     X        XXXXX   X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX   XXXXX          XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM
```



```
LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  1            ID        City of Scottsdale
  2            ID        WESTWORLD MUSF - WestWorld Multi-Use Sports Fields
  3            ID        100 YEAR
  4            ID        6 Hour  Storm
  5            ID        Unit Hydrograph: Clark
  6            ID        05/21/2021
               *DIAGRAM
  7            IT       2  1JAN99       0     360
  8            IO       5
  9            IN      15
               *

 10            KK    OFS5   BASIN
 11            BA   0.001
 12            PB   2.755  0.0001
 13            PC   0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
```

```
     14           PC   0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
     15           PC   0.962   0.972   0.983   0.991   1.000
     16           LG    0.35    0.35    2.75    1.09       0
     17           UC   0.186   0.309
     18           UA       0     3.0     5.0     8.0    12.0    20.0    43.0    75.0    90.0    96.0
     19           UA     100
     20           ZW   A=OFS5   B=BASIN  C=FLOW  F=CALC
                  *

     21           KK    WSF6   BASIN
     22           BA   0.001
     23           LG    0.07    0.34    2.75    0.93      81
     24           UC   0.104   0.162
     25           UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
     26           UA     100
     27           ZW   A=WSF6   B=BASIN  C=FLOW  F=CALC
                  *

     28           KK    CSD1 COMBINE
     29           HC       2
     30           ZW   A=CSD1  B=COMBINE  C=FLOW  F=CALC
                  *

     31           KK    OFS4   BASIN
     32           BA   0.002
     33           LG    0.35    0.35    2.75    1.09       0
     34           UC   0.141   0.132
     35           UA       0     3.0     5.0     8.0    12.0    20.0    43.0    75.0    90.0    96.0
     36           UA     100
     37           ZW   A=OFS4   B=BASIN  C=FLOW  F=CALC
                  *

     38           KK    WSF5   BASIN
     39           BA   0.001
     40           LG    0.07    0.34    2.75    0.93      84
     41           UC   0.104   0.117
     42           UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
     43           UA     100
     44           ZW   A=WSF5   B=BASIN  C=FLOW  F=CALC
                  *
1                                             HEC-1 INPUT                                          PAGE  2

   LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


     45           KK    CSD2 COMBINE
     46           HC       3
     47           ZW   A=CSD2  B=COMBINE  C=FLOW  F=CALC
                  *

     48           KK    OFS3   BASIN
     49           BA   0.002
     50           LG    0.35    0.35    2.75    1.09       0
     51           UC   0.154   0.146
```

```
  52           UA       0     3.0     5.0     8.0    12.0    20.0    43.0    75.0    90.0    96.0
  53           UA     100
  54           ZW   A=OFS3   B=BASIN  C=FLOW  F=CALC
               *

  55           KK    CSD3 COMBINE
  56           HC       2
  57           ZW   A=CSD3  B=COMBINE  C=FLOW  F=CALC
               *

  58           KK    WSF4   BASIN
  59           BA   0.001
  60           LG    0.07    0.34    2.75    0.93      81
  61           UC   0.106   0.188
  62           UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
  63           UA     100
  64           ZW   A=WSF4   B=BASIN  C=FLOW  F=CALC
               *

  65           KK    CSD4 COMBINE
  66           HC       2
  67           ZW   A=CSD4  B=COMBINE  C=FLOW  F=CALC
               *

  68           KK    OFS2   BASIN
  69           BA   0.005
  70           LG    0.32    0.35    2.75    1.06      11
  71           UC   0.189   0.173
  72           UA       0     3.0     5.0     8.0    12.0    20.0    43.0    75.0    90.0    96.0
  73           UA     100
  74           ZW   A=OFS2   B=BASIN  C=FLOW  F=CALC
               *

  75           KK    WSF2   BASIN
  76           BA   0.001
  77           LG    0.07    0.34    2.75    0.93      83
  78           UC   0.103   0.139
  79           UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
  80           UA     100
  81           ZW   A=WSF2   B=BASIN  C=FLOW  F=CALC
               *
```



```
LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


  82           KK   CSD4A COMBINE
  83           HC       2
  84           ZW   A=CSD4A  B=COMBINE  C=FLOW  F=CALC
               *

  85           KK    CSD5 COMBINE
  86           HC       2
  87           ZW   A=CSD5  B=COMBINE  C=FLOW  F=CALC
```

```
                 *

   88            KK    WSF1   BASIN
   89            BA   0.001
   90            LG    0.08    0.34    2.75    0.93      76
   91            UC   0.105   0.141
   92            UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
   93            UA     100
   94            ZW   A=WSF1   B=BASIN  C=FLOW  F=CALC
                 *

   95            KK    CSD6 COMBINE
   96            HC       2
   97            ZW   A=CSD6  B=COMBINE  C=FLOW  F=CALC
                 *

   98            KK    OFS1   BASIN
   99            BA   0.010
  100            LG    0.16    0.31    2.75    1.01       3
  101            UC   0.173   0.160
  102            UA       0     3.0     5.0     8.0    12.0    20.0    43.0    75.0    90.0    96.0
  103            UA     100
  104            ZW   A=OFS1   B=BASIN  C=FLOW  F=CALC
                 *

  105            KK    WSF3   BASIN
  106            BA   0.001
  107            LG    0.07    0.34    2.75    0.93      84
  108            UC   0.108   0.146
  109            UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
  110            UA     100
  111            ZW   A=WSF3   B=BASIN  C=FLOW  F=CALC
                 *

  112            KK    WSF7   BASIN
  113            BA   0.002
  114            LG    0.12    0.35    2.75    0.93      71
  115            UC   0.135   0.202
  116            UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
  117            UA     100
  118            ZW   A=WSF7   B=BASIN  C=FLOW  F=CALC
                 *
1                                                HEC-1 INPUT                                      PAGE  4

 LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


  119            KK    WSF8   BASIN
  120            BA   0.002
  121            LG    0.10    0.35    2.75    0.93      76
  122            UC   0.104   0.109
  123            UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
  124            UA     100
  125            ZW   A=WSF8   B=BASIN  C=FLOW  F=CALC
```

```
                   *

   126             KK    OFS6   BASIN
   127             BA   0.003
   128             LG    0.08    0.34    2.87    0.85      76
   129             UC   0.108   0.124
   130             UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
   131             UA     100
   132             ZW   A=OFS6   B=BASIN  C=FLOW  F=CALC
                   *

   133             KK    OFS7   BASIN
   134             BA   0.001
   135             LG    0.35    0.35    3.86    0.51       0
   136             UC   0.163   0.335
   137             UA       0     3.0     5.0     8.0    12.0    20.0    43.0    75.0    90.0    96.0
   138             UA     100
   139             ZW   A=OFS7   B=BASIN  C=FLOW  F=CALC
                   *
   140             ZZ
1
                    SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    10        OFS5
                 .
                 .
    21           .        WSF6
                 .           .
                 .           .
    28        CSD1............
                 .
                 .
    31           .        OFS4
                 .           .
                 .           .
    38           .           .        WSF5
                 .           .           .
                 .           .           .
    45        CSD2........................
                 .
                 .
    48           .        OFS3
                 .           .
                 .           .
    55        CSD3............
                 .
                 .
    58           .        WSF4
                 .           .
                 .           .
```

```
   65        CSD4............
                 .
                 .
   68            .        OFS2
                 .            .
                 .            .
   75            .            .        WSF2
                 .            .            .
                 .            .            .
   82            .       CSD4A............
                 .            .
                 .            .
   85        CSD5............
                 .
                 .
   88            .        WSF1
                 .            .
                 .            .
   95        CSD6............
                 .
                 .
   98            .        OFS1
                 .            .
                 .            .
  105            .            .        WSF3
                 .            .            .
                 .            .            .
  112            .            .            .        WSF7
                 .            .            .            .
                 .            .            .            .
  119            .            .            .            .        WSF8
                 .            .            .            .            .
                 .            .            .            .            .
  126            .            .            .            .            .        OFS6
                 .            .            .            .            .            .
                 .            .            .            .            .            .
  133            .            .            .            .            .            .        OFS7

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1*****************************************                                                            *****************************************
 *                                       *                                                            *                                       *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                            *    U.S. ARMY CORPS OF ENGINEERS       *
 *              JUN   1998               *                                                            *    HYDROLOGIC ENGINEERING CENTER      *
 *           VERSION 4.1                 *                                                            *          609 SECOND STREET            *
 *                                       *                                                            *       DAVIS, CALIFORNIA 95616         *
 *  RUN DATE   21MAY21  TIME  09:44:19   *                                                            *           (916) 756-1104              *
 *                                       *                                                            *                                       *
 *****************************************                                                            *****************************************
```

```
                              WESTWORLD MUSF - WestWorld Multi-Use Sports Fields
                              100 YEAR
                              6 Hour  Storm
                              Unit Hydrograph: Clark
                              05/21/2021

   8 IO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE

     IT          HYDROGRAPH TIME DATA
                        NMIN           2  MINUTES IN COMPUTATION INTERVAL
                       IDATE      1JAN99  STARTING DATE
                       ITIME        0000  STARTING TIME
                          NQ         360  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE      1JAN99  ENDING DATE
                      NDTIME        1158  ENDING TIME
                      ICENT           19  CENTURY MARK

                 COMPUTATION INTERVAL     .03 HOURS
                      TOTAL TIME BASE   11.97 HOURS

          ENGLISH UNITS
               DRAINAGE AREA         SQUARE MILES
               PRECIPITATION DEPTH   INCHES
               LENGTH, ELEVATION     FEET
               FLOW                  CUBIC FEET PER SECOND
               STORAGE VOLUME        ACRE-FEET
               SURFACE AREA          ACRES
               TEMPERATURE           DEGREES FAHRENHEIT
   -----DSS---ZOPEN:  New File Opened,  File: 100YR 6HR DESIGN MODEL.DSS
                      Unit:  71;  DSS Version: 6-JG
-----DSS---ZWRITE Unit  71; Vers.    1:  /OFS5/BASIN/FLOW/31DEC1998/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    1:  /OFS5/BASIN/FLOW/01JAN1999/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    1:  /WSF6/BASIN/FLOW/31DEC1998/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    1:  /WSF6/BASIN/FLOW/01JAN1999/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    1:  /CSD1/COMBINE/FLOW/31DEC1998/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    1:  /CSD1/COMBINE/FLOW/01JAN1999/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    1:  /OFS4/BASIN/FLOW/31DEC1998/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    1:  /OFS4/BASIN/FLOW/01JAN1999/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    1:  /WSF5/BASIN/FLOW/31DEC1998/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    1:  /WSF5/BASIN/FLOW/01JAN1999/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    1:  /CSD2/COMBINE/FLOW/31DEC1998/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    1:  /CSD2/COMBINE/FLOW/01JAN1999/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    1:  /OFS3/BASIN/FLOW/31DEC1998/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    1:  /OFS3/BASIN/FLOW/01JAN1999/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    1:  /CSD3/COMBINE/FLOW/31DEC1998/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    1:  /CSD3/COMBINE/FLOW/01JAN1999/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    1:  /WSF4/BASIN/FLOW/31DEC1998/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    1:  /WSF4/BASIN/FLOW/01JAN1999/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    1:  /CSD4/COMBINE/FLOW/31DEC1998/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    1:  /CSD4/COMBINE/FLOW/01JAN1999/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    1:  /OFS2/BASIN/FLOW/31DEC1998/2MIN/CALC/
```

```
 -----DSS---ZWRITE Unit  71; Vers.    1:  /OFS2/BASIN/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    1:  /WSF2/BASIN/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    1:  /WSF2/BASIN/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    1:  /CSD4A/COMBINE/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    1:  /CSD4A/COMBINE/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    1:  /CSD5/COMBINE/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    1:  /CSD5/COMBINE/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    1:  /WSF1/BASIN/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    1:  /WSF1/BASIN/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    1:  /CSD6/COMBINE/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    1:  /CSD6/COMBINE/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    1:  /OFS1/BASIN/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    1:  /OFS1/BASIN/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    1:  /WSF3/BASIN/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    1:  /WSF3/BASIN/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    1:  /WSF7/BASIN/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    1:  /WSF7/BASIN/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    1:  /WSF8/BASIN/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    1:  /WSF8/BASIN/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    1:  /OFS6/BASIN/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    1:  /OFS6/BASIN/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    1:  /OFS7/BASIN/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    1:  /OFS7/BASIN/FLOW/01JAN1999/2MIN/CALC/
1
```

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	OFS5	1.	4.10	0.	0.	0.	.00		
+	HYDROGRAPH AT	WSF6	2.	4.03	0.	0.	0.	.00		
+	2 COMBINED AT	CSD1	3.	4.03	0.	0.	0.	.00		
+	HYDROGRAPH AT	OFS4	3.	4.07	0.	0.	0.	.00		
+	HYDROGRAPH AT	WSF5	3.	4.00	0.	0.	0.	.00		
+	3 COMBINED AT	CSD2	9.	4.03	1.	0.	0.	.00		
+	HYDROGRAPH AT	OFS3	3.	4.07	0.	0.	0.	.00		
	2 COMBINED AT									

```
+                             CSD3        11.    4.03           1.          0.          0.         .01

          HYDROGRAPH AT
+                             WSF4         2.    4.03           0.          0.          0.         .00

          2 COMBINED AT
+                             CSD4        14.    4.03           1.          1.          1.         .01

          HYDROGRAPH AT
+                             OFS2         7.    4.10           1.          0.          0.         .00

          HYDROGRAPH AT
+                             WSF2         3.    4.03           0.          0.          0.         .00

          2 COMBINED AT
+                            CSD4A         9.    4.07           1.          0.          0.         .01

          2 COMBINED AT
+                             CSD5        23.    4.07           2.          1.          1.         .01

          HYDROGRAPH AT
+                             WSF1         2.    4.03           0.          0.          0.         .00

          2 COMBINED AT
+                             CSD6        25.    4.03           2.          1.          1.         .02

          HYDROGRAPH AT
+                             OFS1        15.    4.10           1.          0.          0.         .01

          HYDROGRAPH AT
+                             WSF3         3.    4.03           0.          0.          0.         .00

          HYDROGRAPH AT
+                             WSF7         4.    4.03           0.          0.          0.         .00

          HYDROGRAPH AT
+                             WSF8         5.    4.00           0.          0.          0.         .00

          HYDROGRAPH AT
+                             OFS6         8.    4.03           1.          0.          0.         .00

          HYDROGRAPH AT
+                             OFS7         1.    4.10           0.          0.          0.         .00


 *** NORMAL END OF HEC-1 ***



    -----DSS---ZCLOSE Unit:  71,   File: 100YR 6HR DESIGN MODEL.DSS
               Pointer Utilization:   .26
               Number of Records:     44
               File Size:    163.9  Kbytes
               Percent Inactive:    .0
```

100-year, 24-hour HEC-1 Model

```
1****************************************                                                     ***************************************
 *                                       *                                                     *                                     *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                     *    U.S. ARMY CORPS OF ENGINEERS     *
 *               JUN   1998              *                                                     *    HYDROLOGIC ENGINEERING CENTER    *
 *            VERSION 4.1                *                                                     *          609 SECOND STREET          *
 *                                       *                                                     *       DAVIS, CALIFORNIA 95616       *
 *  RUN DATE   21MAY21  TIME  10:07:32   *                                                     *           (916) 756-1104            *
 *                                       *                                                     *                                     *
 ****************************************                                                     ***************************************


                          X     X  XXXXXXX   XXXXX           X
                          X     X  X        X     X         XX
                          X     X  X        X                X
                          XXXXXXX  XXXX     X        XXXXX   X
                          X     X  X        X                X
                          X     X  X        X     X          X
                          X     X  XXXXXXX   XXXXX          XXX


            THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

            THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
            THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
            NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
            DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
            KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1                                          HEC-1 INPUT                                                   PAGE  1

           LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

              1           ID        City of Scottsdale
              2           ID        WESTWORLD MUSF - WestWorld Multi-Use Sports Fields
              3           ID        100 YEAR
              4           ID        24 Hour Storm
              5           ID        Unit Hydrograph: Clark
              6           ID        05/21/2021
                          *DIAGRAM
              7           IT       2  1JAN99       0    1220
              8           IO       5
              9           IN      15
                          *

             10           KK    OFS5   BASIN
             11           BA   0.001
             12           PB   3.842  0.0001
             13           PC   0.000   0.002   0.005   0.008   0.011   0.014   0.017   0.020   0.023   0.026
```

```
     14           PC   0.029   0.032   0.035   0.038   0.041   0.044   0.048   0.052   0.056   0.060
     15           PC   0.064   0.068   0.072   0.076   0.080   0.085   0.090   0.095   0.100   0.105
     16           PC   0.110   0.115   0.120   0.126   0.133   0.140   0.147   0.155   0.163   0.172
     17           PC   0.181   0.191   0.203   0.218   0.236   0.257   0.283   0.387   0.663   0.707
     18           PC   0.735   0.758   0.776   0.791   0.804   0.815   0.825   0.834   0.842   0.849
     19           PC   0.856   0.863   0.869   0.875   0.881   0.887   0.893   0.898   0.903   0.908
     20           PC   0.913   0.918   0.922   0.926   0.930   0.934   0.938   0.942   0.946   0.950
     21           PC   0.953   0.956   0.959   0.962   0.965   0.968   0.971   0.974   0.977   0.980
     22           PC   0.983   0.986   0.989   0.992   0.995   0.998   1.000
     23           LG    0.35    0.35    2.75    1.09       0
     24           UC   0.186   0.309
     25           UA       0     3.0     5.0     8.0    12.0    20.0    43.0    75.0    90.0    96.0
     26           UA     100
     27           ZW   A=OFS5   B=BASIN  C=FLOW  F=CALC
                  *

     28           KK    WSF6   BASIN
     29           BA   0.001
     30           LG    0.07    0.34    2.75    0.93      81
     31           UC   0.104   0.162
     32           UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
     33           UA     100
     34           ZW   A=WSF6   B=BASIN  C=FLOW  F=CALC
                  *

     35           KK    CSD1 COMBINE
     36           HC       2
     37           ZW   A=CSD1  B=COMBINE  C=FLOW  F=CALC
                  *

     38           KK    OFS4   BASIN
     39           BA   0.002
     40           LG    0.35    0.35    2.75    1.09       0
     41           UC   0.141   0.132
     42           UA       0     3.0     5.0     8.0    12.0    20.0    43.0    75.0    90.0    96.0
     43           UA     100
     44           ZW   A=OFS4   B=BASIN  C=FLOW  F=CALC
                  *
1                                        HEC-1 INPUT                                            PAGE  2

   LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


     45           KK    WSF5   BASIN
     46           BA   0.001
     47           LG    0.07    0.34    2.75    0.93      84
     48           UC   0.104   0.117
     49           UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
     50           UA     100
     51           ZW   A=WSF5   B=BASIN  C=FLOW  F=CALC
                  *

     52           KK    CSD2 COMBINE
     53           HC       3
```

```
  54           ZW   A=CSD2  B=COMBINE  C=FLOW  F=CALC
               *

  55           KK    OFS3   BASIN
  56           BA   0.002
  57           LG    0.35    0.35    2.75    1.09       0
  58           UC   0.154   0.146
  59           UA       0     3.0     5.0     8.0    12.0    20.0    43.0    75.0    90.0    96.0
  60           UA     100
  61           ZW   A=OFS3   B=BASIN  C=FLOW  F=CALC
               *

  62           KK    CSD3 COMBINE
  63           HC       2
  64           ZW   A=CSD3  B=COMBINE  C=FLOW  F=CALC
               *

  65           KK    WSF4   BASIN
  66           BA   0.001
  67           LG    0.07    0.34    2.75    0.93      81
  68           UC   0.106   0.188
  69           UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
  70           UA     100
  71           ZW   A=WSF4   B=BASIN  C=FLOW  F=CALC
               *

  72           KK    CSD4 COMBINE
  73           HC       2
  74           ZW   A=CSD4  B=COMBINE  C=FLOW  F=CALC
               *

  75           KK    OFS2   BASIN
  76           BA   0.005
  77           LG    0.32    0.35    2.75    1.06      11
  78           UC   0.189   0.173
  79           UA       0     3.0     5.0     8.0    12.0    20.0    43.0    75.0    90.0    96.0
  80           UA     100
  81           ZW   A=OFS2   B=BASIN  C=FLOW  F=CALC
               *
```



```
LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


  82           KK    WSF2   BASIN
  83           BA   0.001
  84           LG    0.07    0.34    2.75    0.93      83
  85           UC   0.103   0.139
  86           UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
  87           UA     100
  88           ZW   A=WSF2   B=BASIN  C=FLOW  F=CALC
               *

  89           KK   CSD4A COMBINE
```

```
  90           HC       2
  91           ZW   A=CSD4A  B=COMBINE  C=FLOW  F=CALC
               *

  92           KK    CSD5 COMBINE
  93           HC       2
  94           ZW   A=CSD5  B=COMBINE  C=FLOW  F=CALC
               *

  95           KK    WSF1   BASIN
  96           BA   0.001
  97           LG    0.08    0.34    2.75    0.93      76
  98           UC   0.105   0.141
  99           UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 100           UA     100
 101           ZW   A=WSF1   B=BASIN  C=FLOW  F=CALC
               *

 102           KK    CSD6 COMBINE
 103           HC       2
 104           ZW   A=CSD6  B=COMBINE  C=FLOW  F=CALC
               *

 105           KK    OFS1   BASIN
 106           BA   0.010
 107           LG    0.16    0.31    2.75    1.01       3
 108           UC   0.173   0.160
 109           UA       0     3.0     5.0     8.0    12.0    20.0    43.0    75.0    90.0    96.0
 110           UA     100
 111           ZW   A=OFS1   B=BASIN  C=FLOW  F=CALC
               *

 112           KK    WSF3   BASIN
 113           BA   0.001
 114           LG    0.07    0.34    2.75    0.93      84
 115           UC   0.108   0.146
 116           UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 117           UA     100
 118           ZW   A=WSF3   B=BASIN  C=FLOW  F=CALC
               *
1                                          HEC-1 INPUT                                         PAGE  4

LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


 119           KK    WSF7   BASIN
 120           BA   0.002
 121           LG    0.12    0.35    2.75    0.93      71
 122           UC   0.135   0.202
 123           UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 124           UA     100
 125           ZW   A=WSF7   B=BASIN  C=FLOW  F=CALC
               *
```

```
             126           KK    WSF8   BASIN
             127           BA   0.002
             128           LG    0.10    0.35    2.75    0.93      76
             129           UC   0.104   0.109
             130           UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
             131           UA     100
             132           ZW   A=WSF8   B=BASIN  C=FLOW  F=CALC
                           *

             133           KK    OFS6   BASIN
             134           BA   0.003
             135           LG    0.08    0.34    2.87    0.85      76
             136           UC   0.108   0.124
             137           UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
             138           UA     100
             139           ZW   A=OFS6   B=BASIN  C=FLOW  F=CALC
                           *

             140           KK    OFS7   BASIN
             141           BA   0.001
             142           LG    0.35    0.35    3.86    0.51       0
             143           UC   0.163   0.335
             144           UA       0     3.0     5.0     8.0    12.0    20.0    43.0    75.0    90.0    96.0
             145           UA     100
             146           ZW   A=OFS7   B=BASIN  C=FLOW  F=CALC
                           *
             147           ZZ
1
                  SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    10        OFS5
                 .
                 .
    28           .        WSF6
                 .           .
                 .           .
    35        CSD1............
                 .
                 .
    38           .        OFS4
                 .           .
                 .           .
    45           .           .        WSF5
                 .           .           .
                 .           .           .
    52        CSD2........................
                 .
                 .
    55           .        OFS3
                 .           .
```

```
                    .           .
  62             CSD3............
                    .
                    .
  65                .        WSF4
                    .           .
                    .           .
  72             CSD4............
                    .
                    .
  75                .        OFS2
                    .           .
                    .           .
  82                .           .         WSF2
                    .           .            .
                    .           .            .
  89                .       CSD4A............
                    .           .
                    .           .
  92             CSD5............
                    .
                    .
  95                .        WSF1
                    .           .
                    .           .
 102             CSD6............
                    .
                    .
 105                .        OFS1
                    .           .
                    .           .
 112                .           .         WSF3
                    .           .            .
                    .           .            .
 119                .           .            .         WSF7
                    .           .            .            .
                    .           .            .            .
 126                .           .            .            .         WSF8
                    .           .            .            .            .
                    .           .            .            .            .
 133                .           .            .            .            .         OFS6
                    .           .            .            .            .            .
                    .           .            .            .            .            .
 140                .           .            .            .            .            .         OFS7
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1*****************************************                                     ****************************************
 *                                       *                                     *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                     *    U.S. ARMY CORPS OF ENGINEERS      *
 *              JUN   1998               *                                     *    HYDROLOGIC ENGINEERING CENTER     *
 *           VERSION 4.1                 *                                     *          609 SECOND STREET           *
 *                                       *                                     *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   21MAY21  TIME  10:07:32   *                                     *           (916) 756-1104             *
 *                                       *                                     *                                      *
```

```
*****************************************                                                    ***************************************




                                City of Scottsdale
                                WESTWORLD MUSF - WestWorld Multi-Use Sports Fields
                                100 YEAR
                                24 Hour Storm
                                Unit Hydrograph: Clark
                                05/21/2021

   8 IO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE

     IT          HYDROGRAPH TIME DATA
                        NMIN           2  MINUTES IN COMPUTATION INTERVAL
                       IDATE      1JAN99  STARTING DATE
                       ITIME        0000  STARTING TIME
                          NQ        1220  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE      2JAN99  ENDING DATE
                      NDTIME        1638  ENDING TIME
                      ICENT           19  CENTURY MARK

                 COMPUTATION INTERVAL     .03 HOURS
                      TOTAL TIME BASE   40.63 HOURS

          ENGLISH UNITS
               DRAINAGE AREA         SQUARE MILES
               PRECIPITATION DEPTH   INCHES
               LENGTH, ELEVATION     FEET
               FLOW                  CUBIC FEET PER SECOND
               STORAGE VOLUME        ACRE-FEET
               SURFACE AREA          ACRES
               TEMPERATURE           DEGREES FAHRENHEIT
   -----DSS---ZOPEN:  Existing File Opened,  File: 100YR 24HR DESIGN MODEL.DSS
                      Unit:  71;  DSS Version: 6-JG
-----DSS---ZWRITE Unit  71; Vers.    2:  /OFS5/BASIN/FLOW/31DEC1998/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    2:  /OFS5/BASIN/FLOW/01JAN1999/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    2:  /OFS5/BASIN/FLOW/02JAN1999/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    2:  /WSF6/BASIN/FLOW/31DEC1998/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    2:  /WSF6/BASIN/FLOW/01JAN1999/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    2:  /WSF6/BASIN/FLOW/02JAN1999/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    2:  /CSD1/COMBINE/FLOW/31DEC1998/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    2:  /CSD1/COMBINE/FLOW/01JAN1999/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    2:  /CSD1/COMBINE/FLOW/02JAN1999/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    2:  /OFS4/BASIN/FLOW/31DEC1998/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    2:  /OFS4/BASIN/FLOW/01JAN1999/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    2:  /OFS4/BASIN/FLOW/02JAN1999/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    2:  /WSF5/BASIN/FLOW/31DEC1998/2MIN/CALC/
-----DSS---ZWRITE Unit  71; Vers.    2:  /WSF5/BASIN/FLOW/01JAN1999/2MIN/CALC/
```

```
 -----DSS---ZWRITE Unit  71; Vers.    2:  /WSF5/BASIN/FLOW/02JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /CSD2/COMBINE/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /CSD2/COMBINE/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /CSD2/COMBINE/FLOW/02JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /OFS3/BASIN/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /OFS3/BASIN/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /OFS3/BASIN/FLOW/02JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /CSD3/COMBINE/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /CSD3/COMBINE/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /CSD3/COMBINE/FLOW/02JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /WSF4/BASIN/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /WSF4/BASIN/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /WSF4/BASIN/FLOW/02JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /CSD4/COMBINE/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /CSD4/COMBINE/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /CSD4/COMBINE/FLOW/02JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /OFS2/BASIN/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /OFS2/BASIN/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /OFS2/BASIN/FLOW/02JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /WSF2/BASIN/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /WSF2/BASIN/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /WSF2/BASIN/FLOW/02JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /CSD4A/COMBINE/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /CSD4A/COMBINE/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /CSD4A/COMBINE/FLOW/02JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /CSD5/COMBINE/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /CSD5/COMBINE/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /CSD5/COMBINE/FLOW/02JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /WSF1/BASIN/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /WSF1/BASIN/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /WSF1/BASIN/FLOW/02JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /CSD6/COMBINE/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /CSD6/COMBINE/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /CSD6/COMBINE/FLOW/02JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /OFS1/BASIN/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /OFS1/BASIN/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /OFS1/BASIN/FLOW/02JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /WSF3/BASIN/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /WSF3/BASIN/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /WSF3/BASIN/FLOW/02JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /WSF7/BASIN/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /WSF7/BASIN/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /WSF7/BASIN/FLOW/02JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /WSF8/BASIN/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /WSF8/BASIN/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /WSF8/BASIN/FLOW/02JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /OFS6/BASIN/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /OFS6/BASIN/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /OFS6/BASIN/FLOW/02JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /OFS7/BASIN/FLOW/31DEC1998/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /OFS7/BASIN/FLOW/01JAN1999/2MIN/CALC/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /OFS7/BASIN/FLOW/02JAN1999/2MIN/CALC/
1
```

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

+	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	OFS5	1.	12.10	0.	0.	0.	.00		
+	HYDROGRAPH AT	WSF6	2.	12.03	0.	0.	0.	.00		
+	2 COMBINED AT	CSD1	3.	12.03	0.	0.	0.	.00		
+	HYDROGRAPH AT	OFS4	2.	12.07	0.	0.	0.	.00		
+	HYDROGRAPH AT	WSF5	2.	12.00	0.	0.	0.	.00		
+	3 COMBINED AT	CSD2	7.	12.03	1.	0.	0.	.00		
+	HYDROGRAPH AT	OFS3	2.	12.07	0.	0.	0.	.00		
+	2 COMBINED AT	CSD3	9.	12.03	1.	0.	0.	.01		
+	HYDROGRAPH AT	WSF4	2.	12.03	0.	0.	0.	.00		
+	2 COMBINED AT	CSD4	11.	12.03	1.	0.	0.	.01		
+	HYDROGRAPH AT	OFS2	6.	12.10	0.	0.	0.	.00		
+	HYDROGRAPH AT	WSF2	2.	12.00	0.	0.	0.	.00		
+	2 COMBINED AT	CSD4A	8.	12.07	1.	0.	0.	.01		
+	2 COMBINED AT	CSD5	19.	12.07	2.	1.	0.	.01		
+	HYDROGRAPH AT	WSF1	2.	12.03	0.	0.	0.	.00		
	2 COMBINED AT									

```
+                            CSD6        21.   12.03           2.          1.          0.         .02

          HYDROGRAPH AT
+                            OFS1        13.   12.10           1.          0.          0.         .01

          HYDROGRAPH AT
+                            WSF3         2.   12.03           0.          0.          0.         .00

          HYDROGRAPH AT
+                            WSF7         4.   12.03           0.          0.          0.         .00

          HYDROGRAPH AT
+                            WSF8         4.   12.00           0.          0.          0.         .00

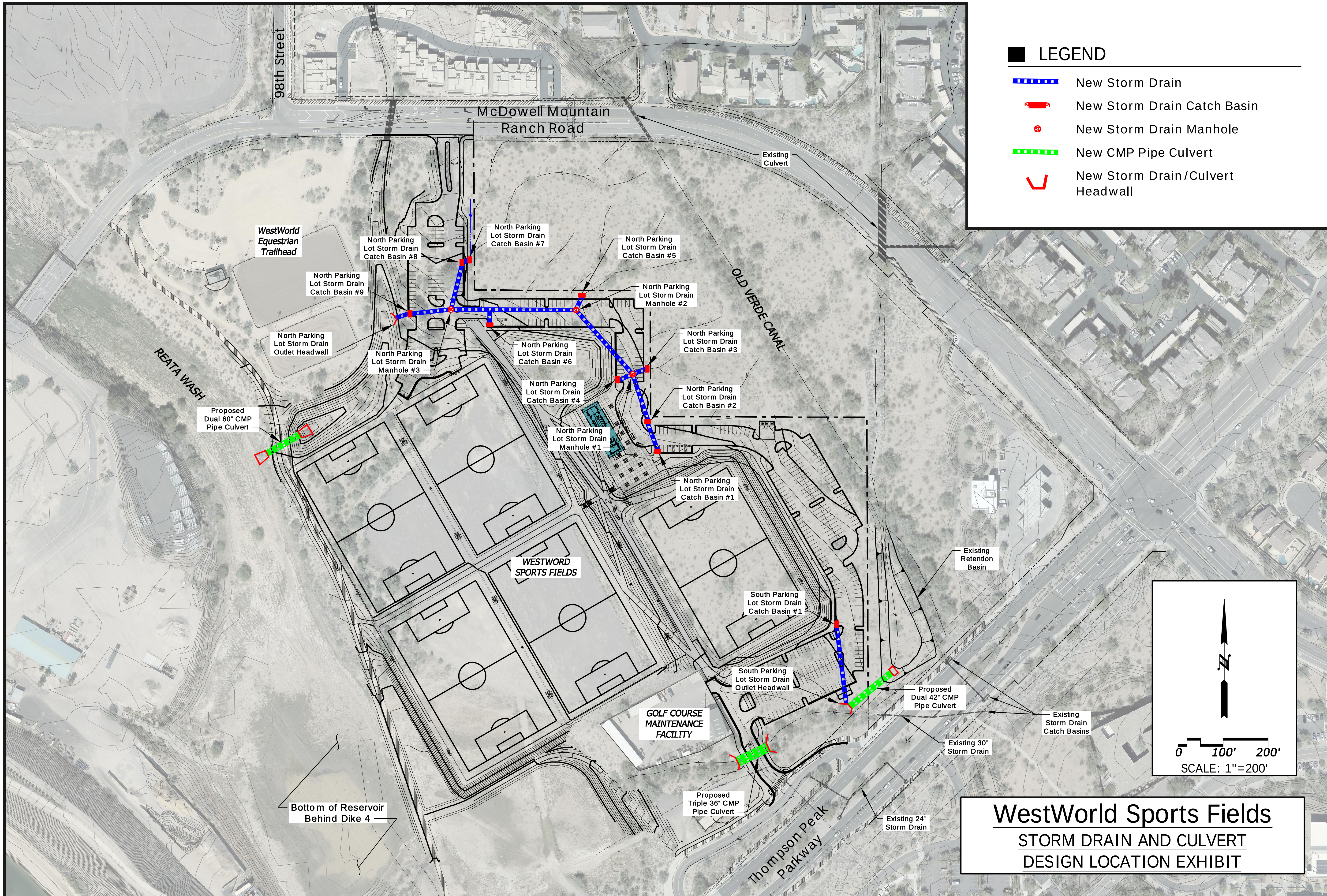
          HYDROGRAPH AT
+                            OFS6         7.   12.00           1.          0.          0.         .00

          HYDROGRAPH AT
+                            OFS7         1.   12.10           0.          0.          0.         .00


 *** NORMAL END OF HEC-1 ***


    -----DSS---ZCLOSE Unit:  71,   File: 100YR 24HR DESIGN MODEL.DSS
               Pointer Utilization:   .28
               Number of Records:     66
               File Size:    240.2  Kbytes
               Percent Inactive:    .0
```

Appendix D: Storm Drain and Culvert Design Hydraulic Analysis



WestWorld Sports Fields

STORM DRAIN AND CULVERT DESIGN LOCATION EXHIBIT

Gavan & Barker Inc.

Gavan & Barker, Inc.
3030 N. Central Ave.
Suite 700
Phoenix, Arizona 85012
Phone: 602-200-0031
Fax: 602-200-0032

Civil Engineering
Landscape Architecture

Project :

WESTWORLD SPORTS FIELDS
CITY OF SCOTTSDALE
PROJECT NUMBER: PG09

Submittal :

G&B No.	2101
Issue Date:	04/21
Drawn By:	OK
Checked By:	MTG

Sheet Title :

STORM DRAIN & CULVERT DESIGN LOCATION EXHIBIT

Sheet Number:

1

1 of 1

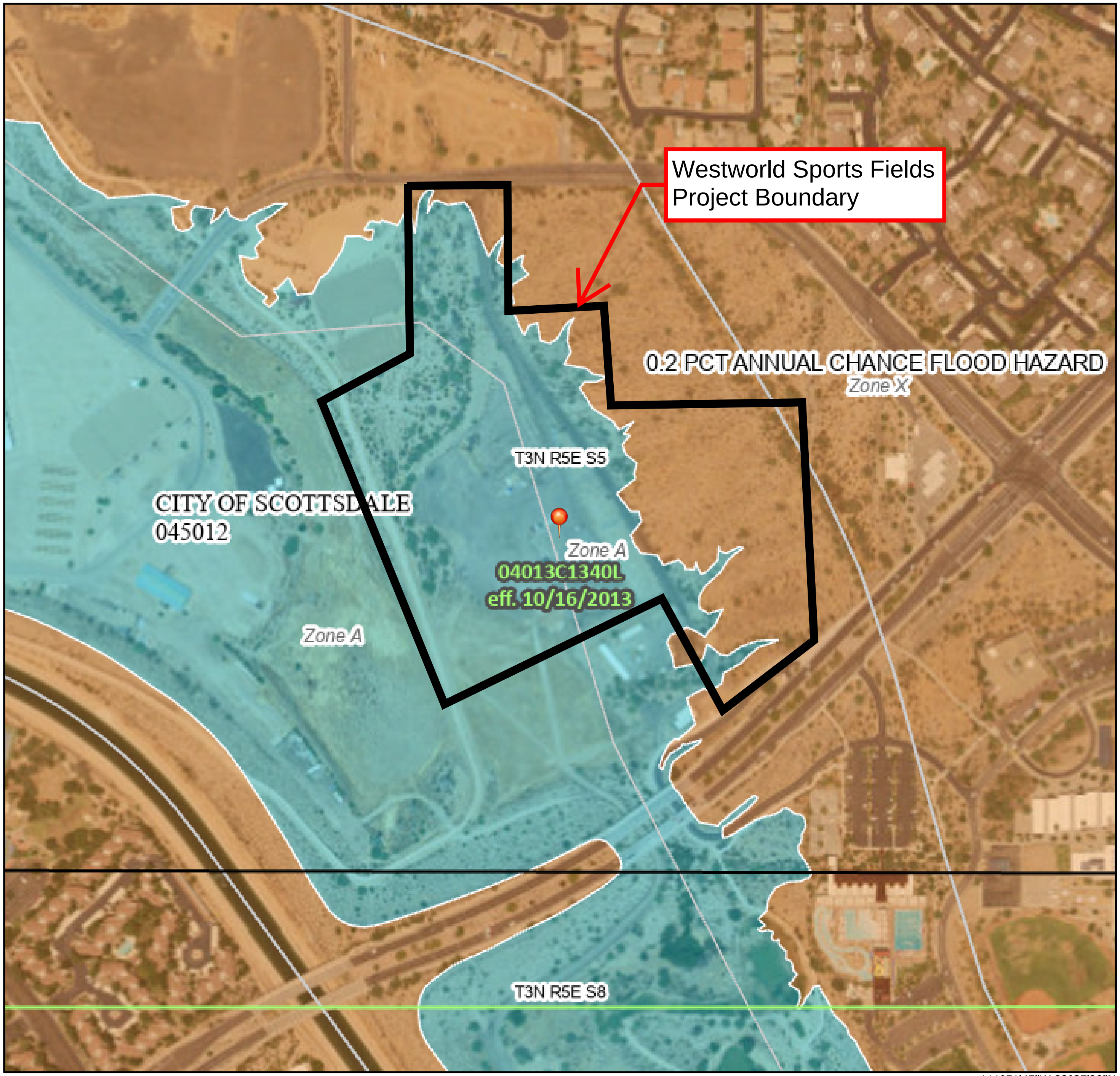
Preliminary sizing calculations of the proposed storm drain and culvert infrastructure has been done. Documentation of the final design calculations will be included in the subsequent Drainage Report Submittal.

Appendix E: FEMA FIRMette

National Flood Hazard Layer FIRMette

FEMA

111°52'22"W 33°37'58"N



111°51'45"W 33°37'28"N

Feet 0 250 500 1,000 1,500 2,000

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- (B) 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- 8 Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 5/28/2021 at 5:12 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Appendix F: Digital Data

If pdf copy, click HERE to
download the Digital Data

[Digital Data CD]