City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

Planning Department
Transportation Development Services Section

June 29, 2004

Guy Jackson, P.E.
6200 Uptown Blvd. NE, Ste 400
Albuquerque, NM 87110

Re: Certification Submittal for Final Building Certificate of Occupancy for
Downtown Parking Structure, [K-14 / D75]
214 Second Street SW
Engineer's Stamp Dated 05/17/04

Dear Mr. Jackson:

The TCL / Letter of Certification submitted on June 29, 2004 is sufficient for acceptance by this office for final Certificate of Occupancy (C.O.). Notification has been made to the Building and Safety Section.

Sincerely,

Nilo E. Salgado-Fernandez, P.E.
Senior Traffic Engineer
Development and Building Services
Planning Department

c: Engineer
Hydrology file
CO clerk

DRAINAGE AND TRANSPORTATION INFORMATION SHEET
(REV. 1/28/2003rd)

PROJECT TITLE: Downtown Parking Structure ZONE MAP/DRG. FILE #: K14/D075
DRB #: _____ EPC#: _____ WORK ORDER#: 6282.91

LEGAL DESCRIPTION: _____
CITY ADDRESS: 214 Second Street SW

ENGINEERING FIRM: BRLW Architects & Engineers — CONTACT: Guy Jackson
ADDRESS: 6200 Uptown Blvd NE — PHONE: 881-2759
CITY, STATE: Albuquerque NM — ZIP CODE: 87110

OWNER: City of Albuquerque — CONTACT: _____
ADDRESS: 600 2nd NW — PHONE: _____
CITY, STATE: Albuq, NM 87102 — ZIP CODE: 87102

ARCHITECT: BRLW Architects & Engineers — CONTACT: _____
ADDRESS: 6200 Uptown Blvd — PHONE: _____
CITY, STATE: _____ — ZIP CODE: _____

SURVEYOR: _____ — CONTACT: _____
ADDRESS _____ — PHONE: _____
CITY, STATE: _____ — ZIP CODE: _____

CONTRACTOR: Bradbury Stamm — CONTACT: David Whatel
ADDRESS: _____ — PHONE: _____
CITY, STATE: _____ — ZIP CODE: _____

CHECK TYPE OF SUBMITTAL:

___ DRAINAGE REPORT
___ DRAINAGE PLAN 1st SUBMITTAL, *REQUIRES TCL or equal*
___ DRAINAGE PLAN RESUBMITTAL
___ CONCEPTUAL GRADING & DRAINAGE PLAN
___ GRADING PLAN
(X) EROSION CONTROL PLAN
___ ENGINEER'S CERTIFICATION (HYDROLOGY)
___ CLOMR/LOMR
(X) TRAFFIC CIRCULATION LAYOUT (TCL)
___ ENGINEERS CERTIFICATION (TCL)
___ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
___ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

___ SIA / FINANCIAL GUARANTEE RELEASE
___ PRELIMINARY PLAT APPROVAL
___ S. DEV. PLAN FOR SUB'D. APPROVAL
___ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
___ SECTOR PLAN APPROVAL
___ FINAL PLAT APPROVAL
___ FOUNDATION PERMIT APPROVAL
___ BUILDING PERMIT APPROVAL
(X) CERTIFICATE OF OCCUPANCY (PERM.)
___ CERTIFICATE OF OCCUPANCY (TEMP.)
___ GRADING PERMIT APPROVAL
___ PAVING PERMIT APPROVAL
___ WORK ORDER APPROVAL
___ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

___ YES
(X) NO
(✓) COPY PROVIDED

2 Submittals.
- CO - Perm
- TC - CO - Perm

RECEIVED
MAY 17 2004
HYDROLOGY SECTION

DATE SUBMITTED: 5/17/04 BY: Guy Jackson

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope of the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

1. **Conceptual Grading and Drainage Plan:** Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.
2. **Drainage Plans:** Required for building permits, grading permits, paving permits and site plans less than five (5) acres.
3. **Drainage Report:** Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or more.

Downtown Park
structure
K-14/D75

1000631

BPLW

Architects & Engineers, Inc.

6200 Uptown Blvd NE
Suite 400
Albuquerque, New Mexico 87110
(505) 881-BPLW (2759)
FAX (505) 881-1230
Web site: http://www.bplw.com

May 17, 2004

Mr. Brad Bingham, PE
City Floodplain Administrator
City of Albuquerque
Plaza Del Sol Building
600 2nd Street NW
ABQ., NM 87102

Re: Grading, Drainage and Site Plan for Building Permit Certification for Downtown Parking Structure BPLW #99069 COA Hydrology #K14, COA Project No. 6282.91

Dear Mr. Bingham:

Attached for your review and approval are the following:

One (1) Drainage Information Sheet

One (1) Copy of the Certified Grading & Drainage Plan

One (1) Copy of the Certified Site Plan for Building Permit

The site is located at 214 Second St. S.W. This site is in substantial compliance with the approved 2010 Downtown Master Plan. The site is in substantial compliance with the approved Grading & Drainage Plan.

Based upon the information provided for the referenced project, please approve this project for certificate of occupancy.

If you should have any questions, please contact me at (505) 881-2759.

Sincerely,

BPLW ARCHITECTS & ENGINEERS, INC.

Guy Jackson, PE
Director of Civil Engineering

Attachments:

RECEIVED
MAY 17 2004
HYDROLOGY SECTION

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

May 21, 2004

Mr. Guy Jackson, P.E.
BPLW ARCHITECT & ENGINEERS, INC.
6200 Uptown Blvd. NE
Albuquerque, NM 87110

Re: DOWNTOWN PARKING STRUCTURE
214 Second St. S.W.
Approval of Permanent Certificate of Occupancy (C.O.)
Engineer's Stamp dated 09/15/2000 (K-14/D075)
Certification dated 05/17/2004

Dear Guy,

Based upon the information provided in your submittal received 05/17/2004, the above referenced certification is approved for release of Permanent Certificate of Occupancy by Hydrology.

If you have any questions, you can contact me at 924-3982.

Sincerely,

Arlene V. Portillo

Arlene V. Portillo
Plan Checker, Planning Dept. - Hydrology
Development and Building Services

BVB

C: Phyllis Villanueva
File

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

September 20, 2000

Guy Jackson, PE
BPLW
6200 Uptown Blvd, Ste 400
Albuquerque, NM 87110

Re: Downtown Parking Structure Grading and Drainage Plan
Engineer's Stamp dated 9-15-00 (K14/D75)

Dear Mr. Jackson,

Based upon the information provided in your submittal dated 9-15-00, the above referenced site is approved for Building Permit.

Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology.

Also, prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required.

If you have any questions, you can contact me at 924-3986.

Sincerely,

Bradley L. Bingham, PE
Sr. Engineer, Hydrology

C: file

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

September 20, 2000

Guy Jackson, PE
BPLW
6200 Uptown Blvd, Ste 400
Albuquerque, NM 87110

Re: Downtown Parking Structure Grading and Drainage Plan
Engineer's Stamp dated 9-15-00 (K14/D75)

Dear Mr. Jackson,

Based upon the information provided in your submittal dated 9-15-00, the above referenced site is approved for Building Permit.

Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology.

Also, prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required.

If you have any questions, you can contact me at 924-3986.

Sincerely,

Bradley L. Bingham, PE
Sr. Engineer, Hydrology

C: file

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Downtown Parking Structure ZONE ATLAS/DRWG. FILE # K-14

DRB#: _____ EPC #_____ WORK ORDER #_____

LEGAL DESCRIPTION: Tract D Block 28, Alvarado Transportation Center

CITY ADDRESS: Entire Block comprising of 1st&2nd Streets and Gold and Silver Ave.

ENGINEERING FIRM: BPLW CONTACT: Nicole Losack

ADDRESS: 6200 Uptown Blvd., Suite 400 PHONE: 880-9670

OWNER: City of Albuquerque CONTACT: (See Architect)

ADDRESS: (See Architect) PHONE: (See Architect)

ARCHITECT: BPLW CONTACT: Edward Aragon

ADDRESS: 6200 Uptown Blvd., Suite 400 PHONE: 881-2759

SURVEYOR: Precision Surveys CONTACT: Larry W. Medrano

ADDRESS: 8414-D Jefferson St. N.E. PHONE: 856-5700

CONTRACTOR: --- CONTACT: _____

ADDRESS: --- PHONE: _____

TYPE OF SUBMITTAL:

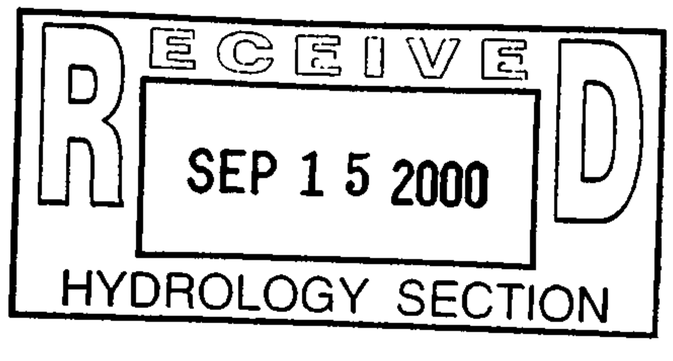
__ DRAINAGE REPORT
X DRAINAGE PLAN
__ CONCEPTUAL GRADING & DRAINAGE PLAN
X GRADING PLAN
__ EROSION CONTROL PLAN
__ ENGINEER'S CERTIFICATION
OTHER _____

PRE-DESIGN MEETING:
_ YES
_ NO
_ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

_ SKETCH PLAT APPROVAL
_ PRELIMINARY PLAT APPROVAL
_ S. DEV. PLAN FOR SUB'D APPROVAL
_ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
_ SECTOR PLAN APPROVAL
_ FINAL PLAT APPROVAL
_ FOUNDATION PERMIT APPROVAL
X BUILDING PERMIT APPROVAL
_ CERTIFICATE OF OCCUPANCY APPROVAL
_ GRADING PERMIT APPROVALS
X PAVING PERMIT APPROVAL
_ S.A.B. DRAINAGE REPORT
_ DRAINAGE REQUIREMENTS
OTHER _____ (SPECIFY)

DATE SUBMITTED: September 15, 2000
BY: Nicole Losack

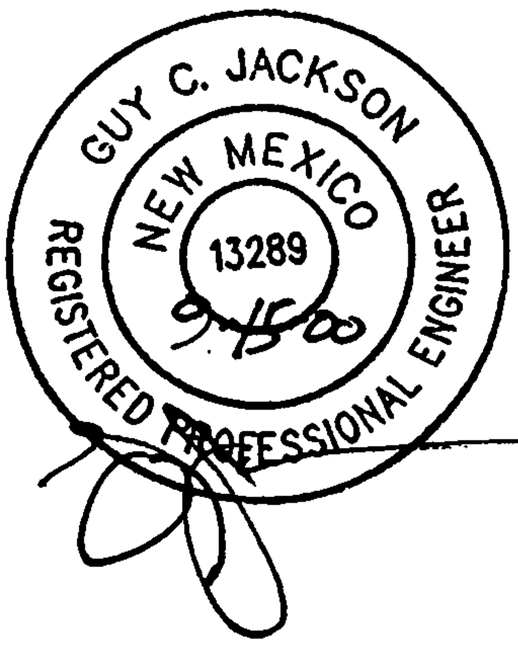


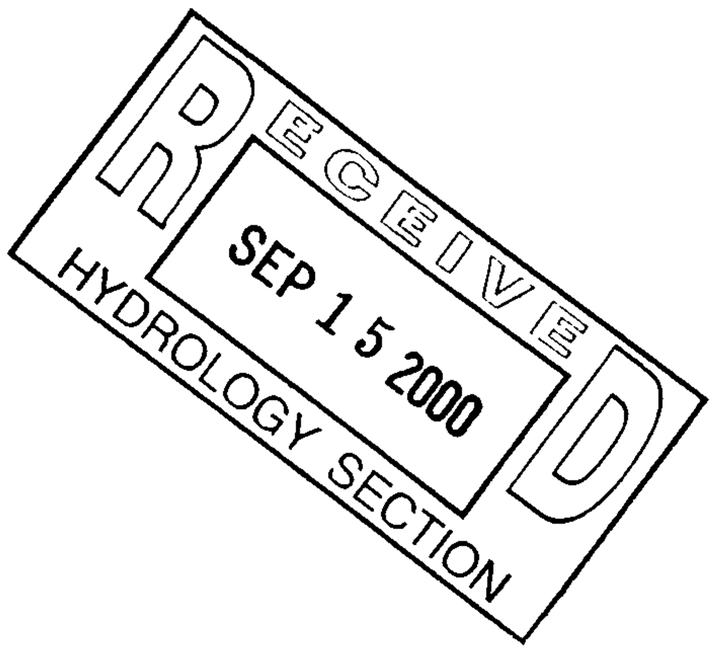
Downtown Parking Structure
Grading and Drainage Plan
(K-14)

BPLW Architects and Engineers

Prepared by
Michele F. De Lilla
and
Nicole Losack

Reviewed by Guy C. Jackson
PE#13289
September 15, 2000





The following items pertaining to the Downtown Parking Structure Drainage Plan are contained herein: 1) Vicinity Map; 2) Flood Hazard Map; & 3) Calculations

Existing Conditions:

As shown by the Vicinity Map, the site contains the property that is bounded by four streets. Gold Avenue and Silver Avenue comprise the north and south boundaries, while Second Street and First Street bound the property on the west and east. Currently there is an existing parking lot on this property. Gold Avenue is under construction to straighten east/west the alignment. This construction is part of the new Alvarado Transportation Center construction.

The grading plan shows that the site varies little across its length in elevation. Due to the current construction bounding the site, existing elevations along Gold Ave. and First St. are unavailable. Also, due to this construction, only one existing contour appears on the plan.

As shown on the Existing Basin Plan, Basin Ex1 drains approximately 1.39 cfs onto Second Street while basin Ex2 drains approximately 1.8 cfs into First Street to the east. Once the drainage from basins Ex1 and Ex2 reaches First and Second streets, it continues to flow down the gutters to existing storm drain inlets located near the northern corners of our site. The drainage of Silver Ave. is divided in half. The Offsite drainage, consisting of runoff from the adjacent bus station parking lot, drains onto Silver Ave and discharges 0.69 cfs. ,The offsite drainage along with Basin Ex3, the western half of Silver Ave., flows down Silver Ave. onto Second St. to drain as mentioned prior. Basin Ex3 discharges 0.93 cfs. Basin Ex4, the eastern half of Silver Ave., flows towards First St. where it drains also as mentioned prior. Basin Ex4 discharges 1.00 cfs. The total discharge for the site is 5.55 cfs with a total of 2.32 cfs discharging onto Second St. and 3.23 discharging onto First St.

Proposed Conditions:

In the proposed conditions, Silver Ave. is to be vacated as part of the 2010 Downtown Master Plan. The current offsite drainage that flows onto this street will not be blocked, but will flow down the proposed pedestrian access that will separate the existing bus station and the new parking structure. The proposed multi story parking structure covers almost the entire lot. There will be retail shops located on the north side of the lot, but this area of development does not fall within the scope of this project. This area will be left vacant for future development. It will be graded to drain onto Gold Ave.

The roof drainage from the proposed parking structure will drain into the existing storm drain in Silver Ave. and is described in more detail below. This area will be designated by basin Pro2, and will produce approximately 3.80 cfs of runoff. This runoff, will discharge into a holding tank to be located in the new parking structure's basement which will act as a sand/oil interceptor as required in the UBC/UPC per John Sheets, COA Mechanical. The water at that point is pumped via an 8" force main located in the basement of the parking structure and then discharges into a storm drain manhole located south of the intersection of Silver and Second on Silver. The pump will discharge at a rate of 2.45 cfs (a velocity of 7.02 ft/s). This is less than the peak discharge for the 100 year 6 hour storm per the DPM but more than adequate per the UBC/UPC

requirements. As a final note, if the DPM numbers are used the basement level will have approximately 5 inches of standing water once the peak of the storm is achieved. This number was calculated two different ways: one assuming that the holding tank is full, another assuming the holding tank is empty. The more conservative of the two, the tank being full will be assumed. The flooding situation, using the DPM method may cause possible problems with mechanical and electrical systems located in the basement. Since the building occupies the entire site, it was dictated by John Sheets (COA Mechanical) that the UBC/UPC criteria should apply. Therefore the DPM calculations should be for information only and should not be used.

As for the other basins, the pedestrian access will maintain drainage of offsite flows along its centerline. Basin Pro3 discharges 0.43 cfs, along with offsite flow, onto Second St. (a total of 1.12 cfs). Basin Pro4 discharges 0.15 cfs onto First St.

Conclusions:

The calculations contained in this report analyze the developed conditions for the 100-yr 6-hour rainfall event. The procedure for the 40 acre or smaller basins set by section 22.2 Hydrology of the Development Process Manual, Volume 2, Design Criteria, Dated January 1993, has been used to quantify the peak rate of discharge and volume of runoff generated. As shown by these calculations, there will be a decrease in runoff. This is due to the clearing of the future retail land without development of said area and due to the rate of discharge of the pump. Due to the fact that the building comprises the whole site, the drainage criteria as set by the UBC/UPC should comply over the DPM criteria in the opinion of COA Mechanical.

Drainage Summary

Project:	Downtown Parking Structure
Project Numbe:	99069
Date:	05/25/00
By:	Nicole Losack

Site Location

Precipitaion Zone 2 Per Table A-1 COA DPM Section 22.2

Existing summary

Basin Name	Ex1	Ex2	Ex3	Ex4	Offsite
Soil Treatment (acres)					
Area "A"	0.00	0.00	0.00	0.00	0.00
Area "B"	0.04	0.07	0.00	0.00	0.00
Area "C"	0.00	0.00	0.00	0.00	0.00
Area "D"	0.33	0.38	0.20	0.21	0.15
Excess Runoff (acre-feet)					
100yr. 6hr.	0.0615	0.0724	0.0350	0.0377	0.0260
10yr. 6hr.	0.0382	0.0446	0.0221	0.0238	0.0165
2yr. 6hr.	0.0221	0.0255	0.0131	0.0140	0.0097
100yr. 24hr.	0.0726	0.0853	0.0416	0.0448	0.0310
Peak Discharge (cfs)					
100 yr.	1.66	1.96	0.93	1.00	0.69
10yr.	1.08	1.27	0.62	0.67	0.46
2yr.	0.62	0.72	0.37	0.40	0.27

Proposed summary

Basin Name	Pro 1	Pro 2	Pro 3	Pro 4
Soil Treatment (acres)				
Area "A"	0.00	0.00	0.00	0.00
Area "B"	0.00	0.00	0.00	0.00
Area "C"	0.00	0.00	0.00	0.00
Area "D"	0.31	0 80	0.09	0.03
Excess Runoff (acre-feet)				
100yr. 6hr.	0.0548	0.1413	0.0160	0.0058
10yr. 6hr.	0.0346	0.0893	0.0101	0.0037
2yr. 6hr.	0.0204	0.0527	0.0060	0.0022
100yr. 24hr.	0.0651	0.1680	0.0191	0.0069
Peak Discharge (cfs)				
100 yr.	1.46	3.76	0.43	0.15
10yr.	0.97	2.51	0.29	0.10
2yr.	0.58	1.49	0.17	0.06

BPLW

Architects and Engineers

PROJECT **Downtown Parking Structure**
PROJECT NO. **99069.00**
DATE **05/25/00**
BY **Nicole Losack**

DPM Section 22.2 - Hydrology

Part A-Watersheds less than 40 acres.
January, 1993

INSTRUCTIONS

* Spread sheet requires three input areas (dark cells):
  Location
  >A.1 Precipitation Zone
  >A.3 Land Treaments
* Values from the tables are automatically placed using "if" statements.
* Table values should be checked for correctness for each use.

SUMMARY

Location	**Ex1**		
Precipitation Zone		**2**	
Land Area		**0.37**	acres
Excess Precipitation Volume			
	>>> **100-year 6-hour (design)**	**0.06**	**acre-ft.**
	10-year 6-hour	**0.04**	acre-ft.
	2-year 6-hour	**0.02**	acre-ft.
	100-year 24-hour	**0.07**	acre-ft.
Peak Discharge Rates (DPM)			
	>>> **Q100 (design)**	**1.66**	**cfs**
	Q10	**1.08**	cfs
	Q2	**0.62**	cfs
Peak Discharge Rates (DPM-Rational Method)			
	>>> **Q100 (design)**	**1.65**	**cfs**
	Q10	**1.08**	cfs
	Q2	**0.62**	cfs

CALCULATIONS FOLLOW

INPUT AND CALCULATIONS

	LOCATION	Ex1	
>A.1	PRECIPITATION ZONE (from Table A-1)	2	
>A.2	DEPTHS		
	(from Table A-2)		
	100-YEAR STORM (P60)	**2.01**	inches
	100-YEAR STORM (P360)	**2.35**	inches
	100-YEAR STORM (P1440)	**2.75**	inches
	10-YEAR (P360) (Calculated: P360*RPF10)	**1.57**	inches
	2-YEAR (P360) (Calculated: P360*RPF2)	**1.02**	inches
>A.3	LAND TREATMENTS (Ai)		
	Treatment A	0.00	acres
	Treatment B	0.04	acres
	Treatment C	0.00	acres
	Treatment D	0.33	acres
	Total Area	**0.37**	acres
>A.4	ABSTRACTIONS	See A.5	

CALCULATIONS FOLLOW

INPUT AND CALCULATIONS (CON'T)

>A.5 EXCESS PRECIPITATION 6 HOUR AND 24 HOUR (Ei) from Table A-8		
100-year 6-hour		
Treatment A	**0.53**	inches
Treatment B	**0.78**	inches
Treatment C	**1.13**	inches
Treatment D	**2.12**	inches
WEIGHTED E (Sum Ei*Ai/A)	**1.99**	inches
VOLUME V100:6h (E*A)	**0.06**	acre-ft.
	2,677.49	ft^3
10-year 6-hour		
Treatment A	**0.13**	inches
Treatment B	**0.28**	inches
Treatment C	**0.52**	inches
Treatment D	**1.34**	inches
WEIGHTED E (Sum Ei*Ai/A)	**1.23**	inches
VOLUME V10:6h (E*A)	**0.04**	acre-ft.
	1,663.66	ft^3
2-year 6-hour		
Treatment A	**0.00**	inches
Treatment B	**0.02**	inches
Treatment C	**0.15**	inches
Treatment D	**0.79**	inches
WEIGHTED E (Sum Ei*Ai/A)	**0.71**	inches
VOLUME V2:6h (E*A)	**0.02**	acre-ft.
	961.25	ft^3
100-year 24-hour		
VOLUME V100:24h (V100-6h+Ad*P1440-P360)/12)	**0.07**	acre-ft.
	3,162.83	ft^3

CALCULATIONS FOLLOW

INPUT AND CALCULATIONS (CON'T)

>A.6 PEAK DISCHARGE RATE FOR SMALL WATERSHEDS (Qi)
from Table A-9

100-year			
Treatment A		**1.56**	cfs/acre
Treatment B		**2.28**	cfs/acre
Treatment C		**3.14**	cfs/acre
Treatment D		**4.70**	cfs/acre

	Q100 (Sum Qi*Ai)	**1.66**	cfs
		==========	
10-year			
Treatment A		**0.38**	cfs/acre
Treatment B		**0.95**	cfs/acre
Treatment C		**1.71**	cfs/acre
Treatment D		**3.14**	cfs/acre

	Q10 (Sum Qi*Ai)	**1.08**	cfs
		==========	
2-year			
Treatment A		**0.00**	cfs/acre
Treatment B		**0.08**	cfs/acre
Treatment C		**0.60**	cfs/acre
Treatment D		**1.86**	cfs/acre

	Q2 (Sum Qi*Ai)	**0.62**	cfs
		==========	

CALCULATIONS FOLLOW

RATIONAL METHOD

PEAK INTENSITY (in/hr at tc=0.2 hour)
from Table A-10

Peak Intensity (I) 100-year	**5.05**
Peak Intensity (I) 10-year	**3.41**
Peak Intensity (I) 2-year	**2.04**

RATIONAL METHOD COEFFICIENT, C
from Table A-11

100-year

Treatment A	**0.31**	cfs/acre
Treatment B	**0.45**	cfs/acre
Treatment C	**0.62**	cfs/acre
Treatment D	**0.93**	cfs/acre
Q100 (Sum Qi*I*Ai)	**1.65**	cfs

10-year

Treatment A	**0.11**	cfs/acre
Treatment B	**0.28**	cfs/acre
Treatment C	**0.50**	cfs/acre
Treatment D	**0.92**	cfs/acre
Q10 (Sum Qi*I*Ai)	**1.08**	cfs

2-year

Treatment A	**0.00**	cfs/acre
Treatment B	**0.04**	cfs/acre
Treatment C	**0.29**	cfs/acre
Treatment D	**0.91**	cfs/acre
Q2 (Sum Qi*I*Ai)	**0.62**	cfs

BPLW

Architects and Engineers

PROJECT **Downtown Parking Structure**
PROJECT NO. **99069**
DATE **05/25/00**
BY **Nicole Losack**

DPM Section 22.2 - Hydrology

Part A-Watersheds less than 40 acres.
January, 1993

INSTRUCTIONS

* Spread sheet requires three input areas (dark cells):
  - Location
  - >A.1 Precipitation Zone
  - >A.3 Land Treaments
* Values from the tables are automatically placed using "if" statements.
* Table values should be checked for correctness for each use.

SUMMARY

Location	**Pro 1**	
Precipitation Zone	**2**	
Land Area	**0.31**	acres
Excess Precipitation Volume		
>>> **100-year 6-hour (design)**	**0.05**	**acre-ft.**
10-year 6-hour	**0.03**	acre-ft.
2-year 6-hour	**0.02**	acre-ft.
100-year 24-hour	**0.07**	acre-ft.
Peak Discharge Rates (DPM)		
>>> **Q100 (design)**	**1.46**	**cfs**
Q10	**0.97**	cfs
Q2	**0.58**	cfs
Peak Discharge Rates (DPM-Rational Method)		
>>> **Q100 (design)**	**1.46**	**cfs**
Q10	**0.97**	cfs
Q2	**0.58**	cfs

CALCULATIONS FOLLOW

INPUT AND CALCULATIONS

	LOCATION	Pro 1	
>A.1	PRECIPITATION ZONE (from Table A-1)	2	
>A.2	DEPTHS		
	(from Table A-2)		
	100-YEAR STORM (P60)	**2.01**	inches
	100-YEAR STORM (P360)	**2.35**	inches
	100-YEAR STORM (P1440)	**2.75**	inches
	10-YEAR (P360) (Calculated: P360*RPF10)	**1.57**	inches
	2-YEAR (P360) (Calculated: P360*RPF2)	**1.02**	inches
>A.3	**LAND TREATMENTS (Ai)**		
	Treatment A	0.00	acres
	Treatment B	0.00	acres
	Treatment C	0.00	acres
	Treatment D	0.31	acres
	Total Area	**0.31**	acres
>A.4	**ABSTRACTIONS**	**See A.5**	

CALCULATIONS FOLLOW

INPUT AND CALCULATIONS (CON'T)

>A.5 EXCESS PRECIPITATION 6 HOUR AND 24 HOUR (Ei) from Table A-8		
100-year 6-hour		
Treatment A	**0.53**	inches
Treatment B	**0.78**	inches
Treatment C	**1.13**	inches
Treatment D	**2.12**	inches
WEIGHTED E (Sum Ei*Ai/A)	**2.12**	inches
VOLUME V100:6h (E*A)	**0.05**	acre-ft.
	2,385.64	ft^3
10-year 6-hour		
Treatment A	**0.13**	inches
Treatment B	**0.28**	inches
Treatment C	**0.52**	inches
Treatment D	**1.34**	inches
WEIGHTED E (Sum Ei*Ai/A)	**1.34**	inches
VOLUME V10:6h (E*A)	**0.03**	acre-ft.
	1,507.90	ft^3
2-year 6-hour		
Treatment A	**0.00**	inches
Treatment B	**0.02**	inches
Treatment C	**0.15**	inches
Treatment D	**0.79**	inches
WEIGHTED E (Sum Ei*Ai/A)	**0.79**	inches
VOLUME V2:6h (E*A)	**0.02**	acre-ft.
	888.99	ft^3
100-year 24-hour		
VOLUME V100:24h (V100-6h+Ad*P1440-P360)/12)	**0.07**	acre-ft.
	2,835.76	ft^3

CALCULATIONS FOLLOW

INPUT AND CALCULATIONS (CON'T)

>A.6 PEAK DISCHARGE RATE FOR SMALL WATERSHEDS (Qi)

from Table A-9

100-year		
Treatment A	**1.56**	cfs/acre
Treatment B	**2.28**	cfs/acre
Treatment C	**3.14**	cfs/acre
Treatment D	**4.70**	cfs/acre
Q100 (Sum Qi*Ai)	**1.46**	cfs
10-year		
Treatment A	**0.38**	cfs/acre
Treatment B	**0.95**	cfs/acre
Treatment C	**1.71**	cfs/acre
Treatment D	**3.14**	cfs/acre
Q10 (Sum Qi*Ai)	**0.97**	cfs
2-year		
Treatment A	**0.00**	cfs/acre
Treatment B	**0.08**	cfs/acre
Treatment C	**0.60**	cfs/acre
Treatment D	**1.86**	cfs/acre
Q2 (Sum Qi*Ai)	**0.58**	cfs

CALCULATIONS FOLLOW

RATIONAL METHOD

PEAK INTENSITY (in/hr at tc=0.2 hour)
from Table A-10

Peak Intensity (I) 100-year	**5.05**
Peak Intensity (I) 10-year	**3.41**
Peak Intensity (I) 2-year	**2.04**

RATIONAL METHOD COEFFICIENT, C
from Table A-11

100-year

Treatment A	**0.31**	cfs/acre
Treatment B	**0.45**	cfs/acre
Treatment C	**0.62**	cfs/acre
Treatment D	**0.93**	cfs/acre
Q100 (Sum Qi*I*Ai)	**1.46**	cfs

10-year

Treatment A	**0.11**	cfs/acre
Treatment B	**0.28**	cfs/acre
Treatment C	**0.50**	cfs/acre
Treatment D	**0.92**	cfs/acre
Q10 (Sum Qi*I*Ai)	**0.97**	cfs

2-year

Treatment A	**0.00**	cfs/acre
Treatment B	**0.04**	cfs/acre
Treatment C	**0.29**	cfs/acre
Treatment D	**0.91**	cfs/acre
Q2 (Sum Qi*I*Ai)	**0.58**	cfs

Site Pumping Unit Hydrograph

A_D = Basin Pro 2_D

A_D = 0.80 acres

A_T = Basin Pro2_T
=0.80 acres

Q_P = 3.76 cfs

E = (2.12 in* A_D)/A_T
= 2.12 in

Hydrograph Calculations:

$T_P = 0.7*T_C + (1.6-A_D/A_T)/12$
$= (0.7*0.2) + [(1.6-1)/12]$
= 0.19 hrs

peak = $0.25*(A_D/A_T)$
$= 0.25*(0.8/0.8)$
= 0.25 hrs

$T_B = (2.107*E*A_T/Q_P) - (0.25*A_D/A_T)$
$= (2.107*2.12*0.80/3.76) - (0.25*0.8/0.8)$
= .70 hrs

Volume =$[(0.5*0.19*3.76) + (3.76*0.25) + (0.5*0.26*3.76)]*3600_{\text{unit conversion}}$
$= [0.357 + 0.94 + 0.489]*3600$
= 6430 cf

Controlled Discharge Hydrograph Calculations:

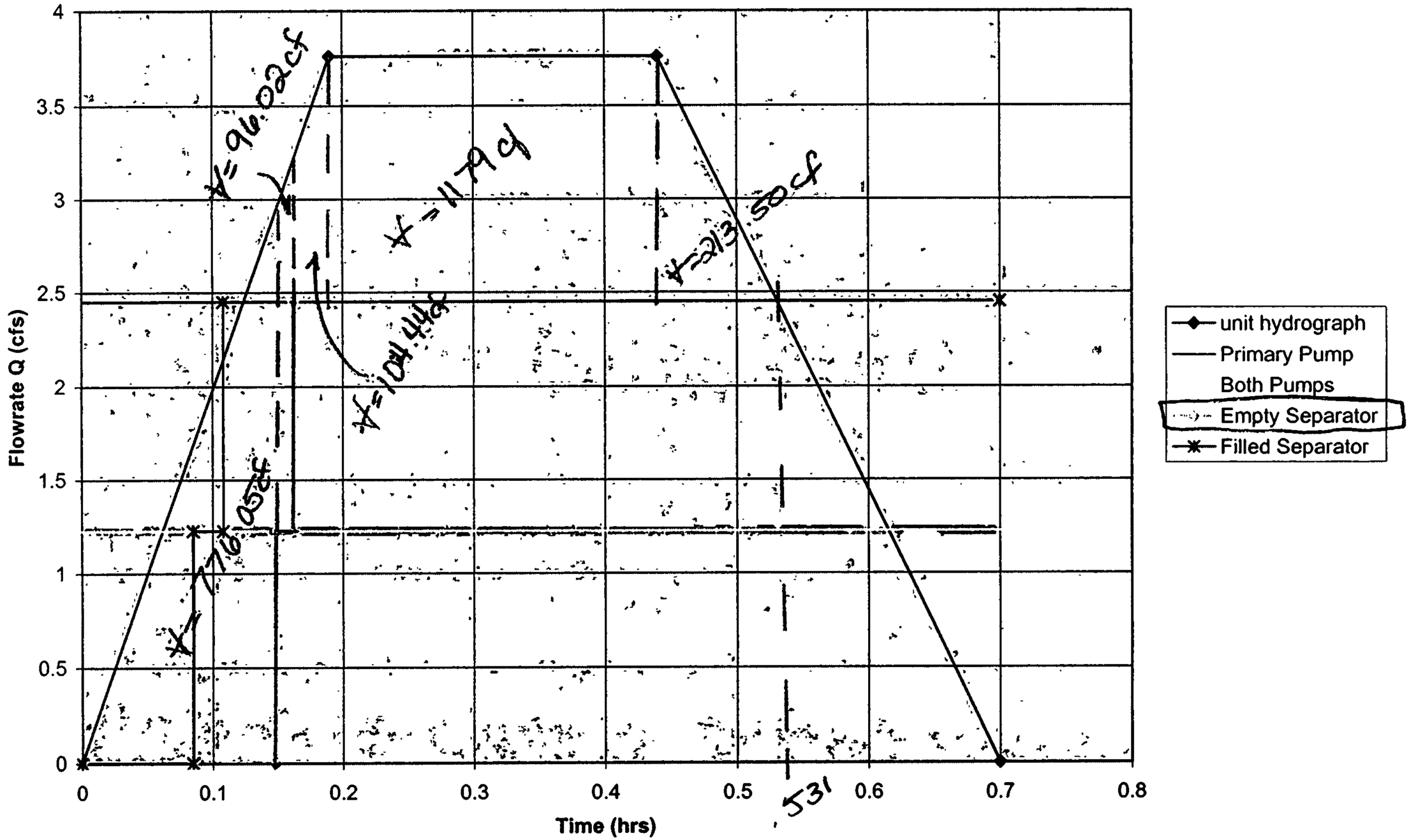
Separator Capacity = 520 cf
First Pump Level Sensor @ 256 cf
Second Pump Level Sensor @ 416 cf (difference of 160 cf)
Wet Well Volume = 544 cf

Since Separator does not drain completely after each storm, two curves were generated. One includes the filling of the separator, the other does not.

For a 100 yr, 6-hr storm, the basement will experience flooding. The basement has an area of 5011 sq. ft. When the Oil/Water separator is empty, the basement will flood with 1849 cu. ft. of water (approximately 4" of water). When the separator is filled, as

expected in most instances, there will be 2030 cu. ft. of water (approximately 5" of water) in the basement.

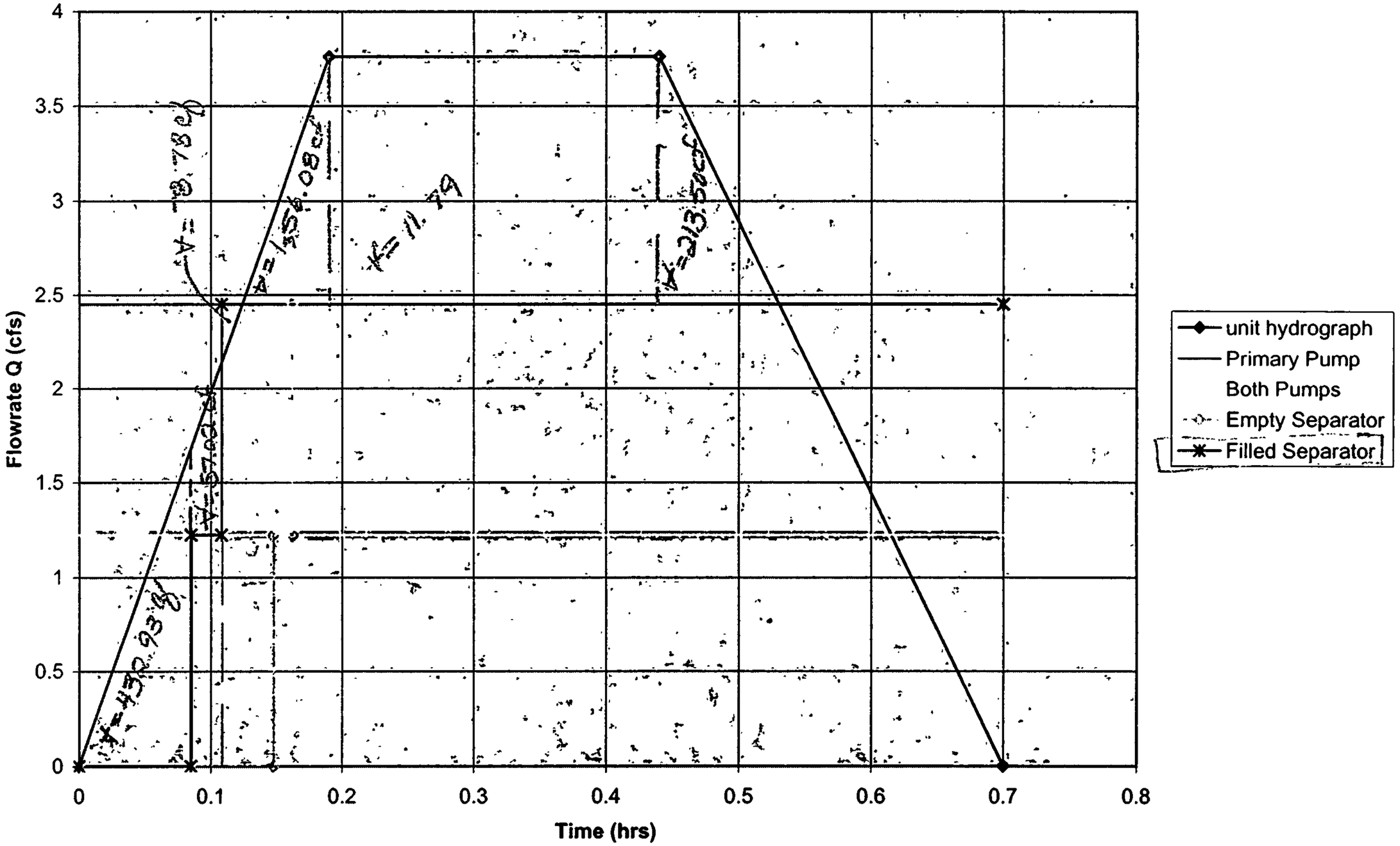
Unit Hydrograph for Basin Pro2 if Oil Water Separator Completely Empty



$\forall = 2369\ cf$ (1849 cf)

Basement
5011 ft²

Unit Hydrograph for Basin Pro2



$\forall = 2029.75$ cf $d = 5''$

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

November 16, 2001

Guy Jackson, P.E.
BPLW
6200 Uptown Blvd NE Suite 220
Albuquerque, New Mexico 87110

RE: DOWNTOWN PARKING STRUCTURE (K-14/D75)
(214 2nd St SW)
CERTIFICATE OF OCCUPANCY APPROVAL-*Temporary*
ENGINEERS CERTIFICATION COMMITTMENT LETTER DATED 11/16/2001

Dear Mr. Jackson:

Based on the information provided in your November 16, 2001 letter, the above referenced project is approved for a **TEMPORARY** Certificate of Occupancy.

A Temporary Certificate of Occupancy has been issued for 30 days, allowing the remaining drainage issues and your Engineers Certification to be completed within this time scope.

Upon completion of the remaining drainage issues, final certification will be required for a Permanent Certificate of Occupancy.

If I can be of further assistance, please feel free to contact me at 924-3981.

Sincerely,

Teresa A. Martin
Hydrology Plan Checker
Public Works Department
BLB

c: Vickie Chavez, COA
Drainage file
Approval file

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

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Sincerely,

Teresa A. Martin
Hydrology Plan Checker
Public Works Department
BLB

c: Vickie Chavez, COA
Drainage file
Approval file

DRAINAGE INFORMATION SHEET
(REV 11/01/2001)

K-14/D75

PROJECT TITLE CITY OF ALBUQUERQUE PARKING STRUCTURE
DRB # _____ EPC# _____ ZONE MAP/DRG FILE # K-14-Z
CITY PROJECT: 6282.91 WORK ORDER# _____
LEGAL DESCRIPTION _____
CITY ADDRESS 214 2ND STREET SW

ENGINEERING FIRM BPLW — CONTACT GUY JACKSON
ADDRESS 6200 UPTOWN NE — PHONE 881-2759
CITY, STATE ABQ, NM 87110 — ZIP CODE 87110

OWNER CITY OF ABQ - CIP — CONTACT GEORGE GEE -
ADDRESS. — PHONE
CITY, STATE ABQ, NM — ZIP CODE 87102-

ARCHITECT. — CONTACT
ADDRESS. — PHONE.
CITY, STATE — ZIP CODE

SURVEYOR — CONTACT
ADDRESS — PHONE
CITY, STATE — ZIP CODE

CONTRACTOR BRADBURY STAMM — CONTACT BOB GOLDEN
ADDRESS 3701 PASEO DEL NORTE NE — PHONE 681-6724
CITY, STATE ALBUQ, NM 87113 — ZIP CODE 87113

CHECK TYPE OF SUBMITTAL
- DRAINAGE REPORT
- X DRAINAGE PLAN
- CONCEPTUAL GRADING & DRAINAGE PLAN
- GRADING PLAN
- EROSION CONTROL PLAN
- X ENGINEER'S CERTIFICATION (HYDROLOGY)
- CLOMR/LOMR
- X TRAFFIC CIRCULATION LAYOUT (TCL)
- ENGINEERS CERTIFICATION (TCL)
- ENGINEERS CERTIFICATION (DRB APPR SITE PLAN)
- OTHER

CHECK TYPE OF APPROVAL SOUGHT
- SIA / FINANCIAL GUARANTEE RELEASE
- PRELIMINARY PLAT APPROVAL
- S DEV PLAN FOR SUB'D APPROVAL
- S DEV PLAN FOR BLDG PERMIT APPROVAL
- SECTOR PLAN APPROVAL
- FINAL PLAT APPROVAL
- FOUNDATION PERMIT APPROVAL
- BUILDING PERMIT APPROVAL
- CERTIFICATE OF OCCUPANCY (PERM.)
- X CERTIFICATE OF OCCUPANCY (TEMP.)
- GRADING PERMIT APPROVAL
- PAVING PERMIT APPROVAL
- WORK ORDER APPROVAL
- OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED
- YES
- NO
- COPY PROVIDED

DATE SUBMITTED Nov 16, 2001 BY Bob Golden

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope of the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

1. **Conceptual Grading and Drainage Plan** Required for approval of Site Development Plans greater than five
2. **Drainage Plans** Required for building permits, grading permits, paving permits and site plans less than five (5)
3. **Drainage Report** Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or

BPLW

Architects & Engineers, Inc.

6200 Uptown Blvd NE
Suite 400
Albuquerque, NM 87110
(505) 881-2759

49 West First Street
Suite 100
Mesa, AZ 85201
(480) 827-2759

Martin Building, Suite 501
215 North Stanton Street
El Paso, TX 79901
(915) 545-1665

Project _____

Subject _____

Project # _____ Date _____ By _____

- ❑ Memorandum
- ❑ Telephone Record
- ❑ Note to the File
- ❑ Minutes of Meeting
- ❑ To be Typed
- ❑ _____

Mr. Fred Aguirre, PE
City Engineer
COA Public Works
600 2nd Street NW
Albuquerque, NM 87103

11-16-01

Re: Downtown Parking Structure @ 2nd and Silver SW.

Dear Fred;

BPLW Architects & Engineers have been employed by the City of Albuquerque to provide both the design and as-built certification of the grading & drainage plan for certificate of Occupancy for the referenced project.

We will obtain a certified as-built from a registered NM land surveyor and provide a certification of compliance for Certificate of Occupancy once the as-built information is verified. We propose to provide this submittal within 30 days.

Please call if you have any questions or comments.

Thanks,
Guy C. Jackson, PE
Senior Vice President
BPLW Architects & Engineers

OK for TEMP C/O
11/16/01

cc: Bob Golden - Bradbury Stamm

Copies to:

Page of

ADDRESS: 214 2nd St. N.W

DATE: 8/10/00 PLANCHECK/BUILDING PERMIT NUMBER 0013772

PROJECT: Parking Garage

TYPE OF CONSTRUCTION: II-1Hr. / Sprinklered

OCCUPANCY GROUP: S-3 & S-4 LAND USE ZONE: _____ SUITE NUMBER: _____

OWNER OF BUILDING: City of Albuquerque

ADDRESS: P.O. Box 1293, ABQ. N.M. 87103

CERTIFICATE OF OCCUPANCY: Yes CERTIFICATION OF COMPLETION: _____

DATE CERTIFICATE ISSUED: _____

SECTIONS	C/O REQUIRED	INSPECTION REQUIRED	DATE
ENV. HEALTH 924-3623	No	n/a	
FIRE MARSHAL 924-3611 R. Ducha 11/16/01 30 DAY	Yes		
HYDROLOGY 924-3983 30 days 11/16/01 Fnd Acquire	Yes		
MECHANICAL 924-3310 30 Days. 11/16/01 C.R.	Yes		
PLUMBING 924-3310 30 Day: 11/16/01 C.R.	Yes		
ELECTRICAL 924-3311 30 Day. M. Hill 11/16/01	Yes		

SECTIONS	C/O REQUIRED	INSPECTION REQUIRED	DATE
BOILER 924-3325	NO	n/a	
30 DAY. ELEVATOR 924-3325 11/16/01. M. Vanderlinden	Yes		
REFUSE 924-3631 30 days T.L. Baca 11/16/01	Yes		
TRANSPT. DEVELM'T 924-3620 T. Jaquin 30 DAY 11-16-01	Yes.		
UBC 924-3326 30 DAY. 11/16/01. P. Wilkes.	Yes		
ZONING 924-3850 AG 30 days 11/16/01	Yes		

Bradbury Stamm

Bradbury Stamm Construction

3701 Paseo Del Norte NE, Albuquerque, NM 87113-1522 505-765-1200 fax 505-842-5419 bscci@bradburystamm.com
PO Box 10850, Albuquerque, NM 87184-0850 Building in New Mexico, Arizona, Colorado and Texas

November 16, 2001

Mike Zamora, Transportation Plans Checker
City of Albuquerque
600 Second Street NW
Albuquerque, NM 87102

924-3620

RE: 30 Day Temp Certificate of Occupancy at City of ABQ Parking Structure, 214 2nd Str. SW

Request a 30 day Temporary Tag for "Transportation." The following information is provided to indicate the safety measures for the public.

VEHICLES

Vehicles will be able to park along 2nd Street on the west, and 1st Street on the east. There is no parking on Gold for the North. Silver Street, on the south, was condemned and is now only a sidewalk.

PEDESTRIANS

The only sidewalks that are not completed are at the southwest corner of the building and the southeast side of the structure. Joe Luehring, Public Works, has approved a pedestrian walkway on the north side of Gold Street from 1st to 2nd Street. When the sidewalk is completed, the fence will be removed. There is separate construction on the south side of Gold. A construction fence will keep the pedestrians out of the construction site.

If you have any questions, call me at 681-6724.

I WILL GET CERTIFICATION FOR TRANSPORTATION ISSUES. THE ARCHITECT IS GREG HARTMAN, FMSM.

Sincerely,

Bob Golden
Support Director

Enclosure: Site Map

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

August 31, 2000

Guy Jackson, PE
BPLW
6200 Uptown Blvd, Ste 400
Albuquerque, NM 87110

Re: Downtown Parking Structure Grading and Drainage Plan
Engineer's Stamp dated 8-11-00 (K14/D75)

Dear Mr. Jackson,

Based upon the information provided in your submittal dated 8-11-00, the above referenced site cannot be approved for Building Permit until the following minor comments are addressed.

- The report states that 2.22 cfs will be pumped thru the 8" force main. The calculations show 3.76 cfs and the pump hydrograph is drawn at approximately 2.45 cfs. Please clear this up for me. Also, please indicate the velocity in the force main. The 90-degree fitting on the outfall pipe will require blocking – please show or note on plan. Also, it should have some slope to the manhole in order to drain once the pump stops.

- Please provide grate elevations of the inlet at Gold and First in order to determine if there is adequate slope to drain. There is a high point at the PT of return C13 that will create a birdbath.

- Is there offsite runoff entering what was Silver from the south. If so, please provide basin and runoff amount.

- What panel of the flood plain map is your site in?

- Your calculations will need to include developed runoff in basin PRO1.

For all future submittals, please bind your calculations in some fashion. Otherwise it would too easy to misplace or lose a sheet. If you have any questions about my comments, you can contact me at 924-3986.

Sincerely,

Bradley L. Bingham

Bradley L. Bingham, PE
Sr. Engineer, Hydrology

C: file

Downtown Parking Structure
Grading and Drainage Plan
(K-14)

BPLW Architects and Engineers

Prepared by
Michele F. De Lilla
and
Nicole Losack

Reviewed by Guy C. Jackson
PE#13289
August 10, 2000

The following items pertaining to the Downtown Parking Structure Drainage Plan are contained herein: 1) Vicinity Map; 2) Flood Hazard Map; & 3) Calculations

Existing Conditions:

As shown by the Vicinity Map, the site contains the property that is bounded by four streets. Gold Avenue and Silver Avenue comprise the north and south boundaries, while Second Street and First Street bound the property on the west and east. Currently there is an existing parking lot on this property. Gold Avenue is under construction to straighten east/west the alignment. This construction is part of the new Alvarado Transportation Center construction.

The grading plan shows that the site varies little across its length in elevation. Due to the current construction bounding the site, existing elevations along Gold Ave. and First St. are unavailable. Also, due to this construction, only one existing contour appears on the plan.

obtain design from BHI

As shown on the Existing Basin Plan, Basin Ex1 drains approximately 1.39 cfs onto Second Street while basin Ex2 drains approximately 1.8 cfs into First Street to the east. Once the drainage from basins Ex1 and Ex2 reaches First and Second streets, it continues to flow down the gutters to existing storm drain inlets located near the northern corners of our site. The drainage of Silver Ave. is divided in half. Offsite Drainage, from the existing bus station, along with Basin Ex3, the western half of Silver Ave., flows down Silver Ave. onto Second St. to drain as mentioned prior. Basin Ex3 discharges 0.93 cfs. Basin Ex4, the eastern half of Silver Ave., flows towards First St. where it drains also as mentioned prior. Basin Ex4 discharges 1.00 cfs. The total discharge for the site is 5.55 cfs with a total of 2.32 cfs discharging onto Second St. and 3.23 discharging onto First St.

Proposed Conditions:

In the proposed conditions, Silver Ave. is to be vacated as part of the 2010 Downtown Master Plan. The current offsite drainage that flows onto this street will not be blocked, but will flow down the proposed pedestrian access that will separate the existing bus station and the new parking structure. The proposed multi story parking structure covers almost the entire lot. There will be retail shops located on the north side of the lot, but this area of development does not fall within the scope of this project. This area will be left vacant for future development. It will be graded to drain onto Gold Ave.

The roof drainage from the proposed parking structure will drain into the existing storm drain in Silver Ave. and is described in more detail below. This area will be designated by basin Pro2, and will produce approximately 3.80 cfs of runoff. This runoff, will discharge into a holding tank to be located in the new parking structure's basement which will act as a sand/oil interceptor as required in the UBC/UPC per John Sheets, COA Mechanical. The water at that point is pumped via an 8" force main located in the basement of the parking structure and then discharges into a storm drain manhole located south of the intersection of Silver and Second on Silver. The pump will discharge at a rate of 2.22 cfs. This is less than the peak discharge for the 100 year 6 hour storm per the DPM but more than adequate per the UBC/UPC requirements. As a final note, if the DPM numbers are used the basement level will have approximately 5 inches of standing water once the peak of the storm is achieved. This number was calculated two

different ways: one assuming that the holding tank is full, another assuming the holding tank is empty. The more conservative of the two, the tank being full will be assumed. The flooding situation, using the DPM method may cause possible problems with mechanical and electrical systems located in the basement. Since the building occupies the entire site, it was dictated by John Sheets (COA Mechanical) that the UBC/UPC criteria should apply. Therefore the DPM calculations should be for information only and should not be used.

As for the other basins, the pedestrian access will maintain drainage of offsite flows along its centerline. Basin Pro3 discharges 0.43 cfs, along with offsite flow, onto Second St. Basin Pro4 discharges 0.15 cfs onto First St.

what is offsite flow

Conclusions:

The calculations contained in this report analyze the developed conditions for the 100-yr 6-hour rainfall event. The procedure for the 40 acre or smaller basins set by section 22.2 Hydrology of the Development Process Manual, Volume 2, Design Criteria, Dated January 1993, has been used to quantify the peak rate of discharge and volume of runoff generated. As shown by these calculations, there will be a decrease in runoff. This is due to the clearing of the future retail land without development of said area and due to the rate of discharge of the pump. Due to the fact that the building comprises the whole site, the drainage criteria as set by the UBC/UPC should comply over the DPM criteria in the opinion of COA Mechanical.

This has no drainage criteria.

how

This should be included

Drainage Summary

Project: Downtown Parking Structure
Project Numbe: 99069
Date: 05/25/00
By: Nicole Losack

Site Location

Precipitaion Zone 2 Per Table A-1 COA DPM Section 22.2

Existing summary

Basin Name	Ex1	Ex2	Ex3	Ex4
Soil Treatment (acres)				
Area "A"	0.00	0.00	0.00	0.00
Area "B"	0.04	0.07	0.00	0.00
Area "C"	0.00	0.00	0.00	0.00
Area "D"	0.33	0.38	0.20	0 21
Excess Runoff (acre-feet)				
100yr. 6hr.	0.06	0.07	0.04	0.04
10yr. 6hr.	0 04	0.04	0.02	0.02
2yr. 6hr.	0.02	0.03	0.01	0.01
100yr. 24hr	0.07	0.09	0.04	0.04
Peak Discharge (cfs)				
100 yr.	1.66	1.96	0.93	1.00
10yr.	1.08	1.27	0.62	0.67
2yr.	0.62	0.72	0.37	0.40

Proposed summary

Basin Name	Pro 1	Pro 2	Pro 3	Pro 4
Soil Treatment (acres)				
Area "A"	0.00	0.00	0 00	0.00
Area "B"	0.31	0.00	0 00	0.00
Area "C"	0.00	0.00	0.00	0.00
Area "D"	0.00	0.80	0 09	0.03
Excess Runoff (acre-feet)				
100yr. 6hr.	0.02	0 14	0.02	0.01
10yr 6hr.	0.01	0.09	0.01	0 00
2yr. 6hr.	0.00	0 05	0.01	0.00
100yr 24hr.	0.02	0.17	0.02	0 01
Peak Discharge (cfs)				
100 yr.	0.76	3 76	0 43	0.15
10yr.	0.29	2.51	0.29	0.10
2yr.	0.02	1.49	0.17	0.06

BPLW

Architects and Engineers

PROJECT **Downtown Parking Structure**
PROJECT NO **99069.00**
DATE **05/25/00**
BY **Nicole Losack**

DPM Section 22.2 - Hydrology

Part A-Watersheds less than 40 acres.
January, 1993

INSTRUCTIONS

* Spread sheet requires three input areas (dark cells):
  - Location
  - >A.1 Precipitation Zone
  - >A.3 Land Treaments
* Values from the tables are automatically placed using "if" statements.
* Table values should be checked for correctness for each use.

SUMMARY

Location	**Ex1**		
Precipitation Zone		**2**	
Land Area		**0.37**	acres
Excess Precipitation Volume			
	>>> 100-year 6-hour (design)	**0.06**	**acre-ft.**
	10-year 6-hour	**0.04**	acre-ft.
	2-year 6-hour	**0.02**	acre-ft.
	100-year 24-hour	**0.07**	acre-ft.
Peak Discharge Rates (DPM)			
	>>> Q100 (design)	**1.66**	**cfs**
	Q10	**1.08**	cfs
	Q2	**0.62**	cfs
Peak Discharge Rates (DPM-Rational Method)			
	>>> Q100 (design)	**1.65**	**cfs**
	Q10	**1.08**	cfs
	Q2	**0.62**	cfs

CALCULATIONS FOLLOW

INPUT AND CALCULATIONS

	LOCATION	Ex1	
>A.1	PRECIPITATION ZONE (from Table A-1)	2	
>A.2	DEPTHS		
	(from Table A-2)		
	100-YEAR STORM (P60)	**2.01**	inches
	100-YEAR STORM (P360)	**2.35**	inches
	100-YEAR STORM (P1440)	**2.75**	inches
	10-YEAR (P360) (Calculated: P360*RPF10)	**1.57**	inches
	2-YEAR (P360) (Calculated: P360*RPF2)	**1.02**	inches
>A.3	**LAND TREATMENTS (Ai)**		
	Treatment A	0.00	acres
	Treatment B	0.04	acres
	Treatment C	0.00	acres
	Treatment D	0.33	acres
	Total Area	**0.37**	acres
>A.4	**ABSTRACTIONS**	**See A.5**	

CALCULATIONS FOLLOW

INPUT AND CALCULATIONS (CON'T)

>A.5 EXCESS PRECIPITATION 6 HOUR AND 24 HOUR (Ei) from Table A-8		
100-year 6-hour		
Treatment A	**0.53**	inches
Treatment B	**0.78**	inches
Treatment C	**1.13**	inches
Treatment D	**2.12**	inches
WEIGHTED E (Sum Ei*Ai/A)	**1.99**	inches
VOLUME V100:6h (E*A)	**0.06**	acre-ft.
	2,677.49	ft^3
10-year 6-hour		
Treatment A	**0.13**	inches
Treatment B	**0.28**	inches
Treatment C	**0.52**	inches
Treatment D	**1.34**	inches
WEIGHTED E (Sum Ei*Ai/A)	**1.23**	inches
VOLUME V10:6h (E*A)	**0.04**	acre-ft.
	1,663.66	ft^3
2-year 6-hour		
Treatment A	**0.00**	inches
Treatment B	**0.02**	inches
Treatment C	**0.15**	inches
Treatment D	**0.79**	inches
WEIGHTED E (Sum Ei*Ai/A)	**0.71**	inches
VOLUME V2:6h (E*A)	**0.02**	acre-ft.
	961.25	ft^3
100-year 24-hour		
VOLUME V100:24h (V100-6h+Ad*P1440-P360)/12)	**0.07**	acre-ft.
	3,162.83	ft^3

CALCULATIONS FOLLOW

INPUT AND CALCULATIONS (CON'T)

>A.6 PEAK DISCHARGE RATE FOR SMALL WATERSHEDS (Qi)
from Table A-9

100-year			
Treatment A		**1.56**	cfs/acre
Treatment B		**2.28**	cfs/acre
Treatment C		**3.14**	cfs/acre
Treatment D		**4.70**	cfs/acre

	Q100 (Sum Qi*Ai)	**1.66**	cfs
		==========	
10-year			
Treatment A		**0.38**	cfs/acre
Treatment B		**0.95**	cfs/acre
Treatment C		**1.71**	cfs/acre
Treatment D		**3.14**	cfs/acre

	Q10 (Sum Qi*Ai)	**1.08**	cfs
		==========	
2-year			
Treatment A		**0.00**	cfs/acre
Treatment B		**0.08**	cfs/acre
Treatment C		**0.60**	cfs/acre
Treatment D		**1.86**	cfs/acre

	Q2 (Sum Qi*Ai)	**0.62**	cfs
		==========	

CALCULATIONS FOLLOW

RATIONAL METHOD

PEAK INTENSITY (in/hr at tc=0.2 hour)
from Table A-10

Peak Intensity (I) 100-year	**5.05**
Peak Intensity (I) 10-year	**3.41**
Peak Intensity (I) 2-year	**2.04**

RATIONAL METHOD COEFFICIENT, C
from Table A-11

100-year

Treatment A	**0.31**	cfs/acre
Treatment B	**0.45**	cfs/acre
Treatment C	**0.62**	cfs/acre
Treatment D	**0.93**	cfs/acre
Q100 (Sum Qi*I*Ai)	**1.65**	cfs

10-year

Treatment A	**0.11**	cfs/acre
Treatment B	**0.28**	cfs/acre
Treatment C	**0.50**	cfs/acre
Treatment D	**0.92**	cfs/acre
Q10 (Sum Qi*I*Ai)	**1.08**	cfs

2-year

Treatment A	**0.00**	cfs/acre
Treatment B	**0.04**	cfs/acre
Treatment C	**0.29**	cfs/acre
Treatment D	**0.91**	cfs/acre
Q2 (Sum Qi*I*Ai)	**0.62**	cfs

BPLW

Architects and Engineers

PROJECT **Downtown Parking Structure**
PROJECT NO. **99069**
DATE **05/25/00**
BY **Nicole Losack**

DPM Section 22.2 - Hydrology

Part A-Watersheds less than 40 acres.
January, 1993

INSTRUCTIONS

* Spread sheet requires three input areas (dark cells):
  - Location
  - >A.1 Precipitation Zone
  - >A.3 Land Treaments
* Values from the tables are automatically placed using "if" statements.
* Table values should be checked for correctness for each use.

SUMMARY

Location	**Pro 1**		
Precipitation Zone		**2**	
Land Area		**0.31**	acres
Excess Precipitation Volume			
	>>> 100-year 6-hour (design)	**0.02**	**acre-ft.**
	10-year 6-hour	**0.01**	acre-ft.
	2-year 6-hour	**0.00**	acre-ft.
	100-year 24-hour	**0.02**	acre-ft.
Peak Discharge Rates (DPM)			
	>>> Q100 (design)	**0.70**	**cfs**
	Q10	**0.29**	cfs
	Q2	**0.02**	cfs
Peak Discharge Rates (DPM-Rational Method)			
	>>> Q100 (design)	**0.70**	**cfs**
	Q10	**0.29**	cfs
	Q2	**0.03**	cfs

CALCULATIONS FOLLOW

INPUT AND CALCULATIONS

	LOCATION	Pro 1	
>A.1	PRECIPITATION ZONE (from Table A-1)	2	
>A.2	DEPTHS		
	(from Table A-2)		
	100-YEAR STORM (P60)	**2.01**	inches
	100-YEAR STORM (P360)	**2.35**	inches
	100-YEAR STORM (P1440)	**2.75**	inches
	10-YEAR (P360) (Calculated: P360*RPF10)	**1.57**	inches
	2-YEAR (P360) (Calculated: P360*RPF2)	**1.02**	inches
>A.3	**LAND TREATMENTS (Ai)**		
	Treatment A	0.00	acres
	Treatment B	0.31	acres
	Treatment C	0.00	acres
	Treatment D	0.00	acres
	Total Area	**0.31**	acres
>A.4	**ABSTRACTIONS**	**See A.5**	

CALCULATIONS FOLLOW

INPUT AND CALCULATIONS (CON'T)

>A.5 EXCESS PRECIPITATION 6 HOUR AND 24 HOUR (Ei) from Table A-8		
100-year 6-hour		
Treatment A	**0.53**	inches
Treatment B	**0.78**	inches
Treatment C	**1.13**	inches
Treatment D	**2.12**	inches
WEIGHTED E (Sum Ei*Ai/A)	**0.78**	inches
VOLUME V100:6h (E*A)	**0.02**	acre-ft.
	870.94	ft^3
10-year 6-hour		
Treatment A	**0.13**	inches
Treatment B	**0.28**	inches
Treatment C	**0.52**	inches
Treatment D	**1.34**	inches
WEIGHTED E (Sum Ei*Ai/A)	**0.28**	inches
VOLUME V10:6h (E*A)	**0.01**	acre-ft.
	312.64	ft^3
2-year 6-hour		
Treatment A	**0.00**	inches
Treatment B	**0.02**	inches
Treatment C	**0.15**	inches
Treatment D	**0.79**	inches
WEIGHTED E (Sum Ei*Ai/A)	**0.02**	inches
VOLUME V2:6h (E*A)	**0.00**	acre-ft.
	22.33	ft^3
100-year 24-hour		
VOLUME V100:24h (V100-6h+Ad*P1440-P360)/12)	**0.02**	acre-ft.
	870.94	ft^3

CALCULATIONS FOLLOW

INPUT AND CALCULATIONS (CON'T)

>A.6 PEAK DISCHARGE RATE FOR SMALL WATERSHEDS (Qi) from Table A-9		
100-year		
Treatment A	**1.56**	cfs/acre
Treatment B	**2.28**	cfs/acre
Treatment C	**3.14**	cfs/acre
Treatment D	**4.70**	cfs/acre
Q100 (Sum Qi*Ai)	**0.70**	cfs
10-year		
Treatment A	**0.38**	cfs/acre
Treatment B	**0.95**	cfs/acre
Treatment C	**1.71**	cfs/acre
Treatment D	**3.14**	cfs/acre
Q10 (Sum Qi*Ai)	**0.29**	cfs
2-year		
Treatment A	**0.00**	cfs/acre
Treatment B	**0.08**	cfs/acre
Treatment C	**0.60**	cfs/acre
Treatment D	**1.86**	cfs/acre
Q2 (Sum Qi*Ai)	**0.02**	cfs

CALCULATIONS FOLLOW

RATIONAL METHOD

PEAK INTENSITY (in/hr at tc=0.2 hour)
from Table A-10

Peak Intensity (I) 100-year	**5.05**
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Peak Intensity (I) 2-year	**2.04**

RATIONAL METHOD COEFFICIENT, C
from Table A-11

100-year

Treatment A	**0.31**	cfs/acre
Treatment B	**0.45**	cfs/acre
Treatment C	**0.62**	cfs/acre
Treatment D	**0.93**	cfs/acre
Q100 (Sum QI*I*AI)	**0.70**	cfs

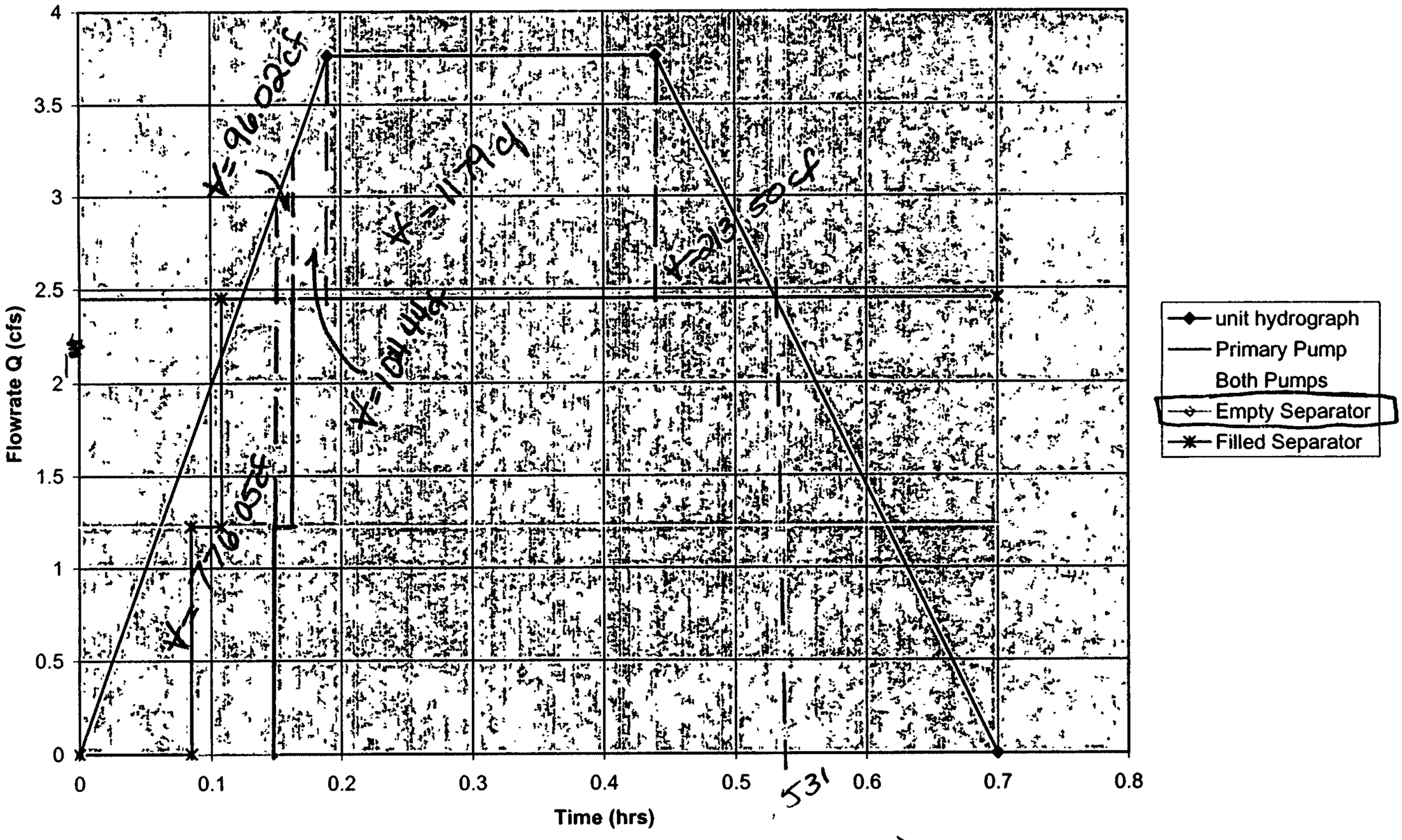
10-year

Treatment A	**0.11**	cfs/acre
Treatment B	**0.28**	cfs/acre
Treatment C	**0.50**	cfs/acre
Treatment D	**0.92**	cfs/acre
Q10 (Sum QI*I*AI)	**0.29**	cfs

2-year

Treatment A	**0.00**	cfs/acre
Treatment B	**0.04**	cfs/acre
Treatment C	**0.29**	cfs/acre
Treatment D	**0.91**	cfs/acre
Q2 (Sum QI*I*AI)	**0.03**	cfs

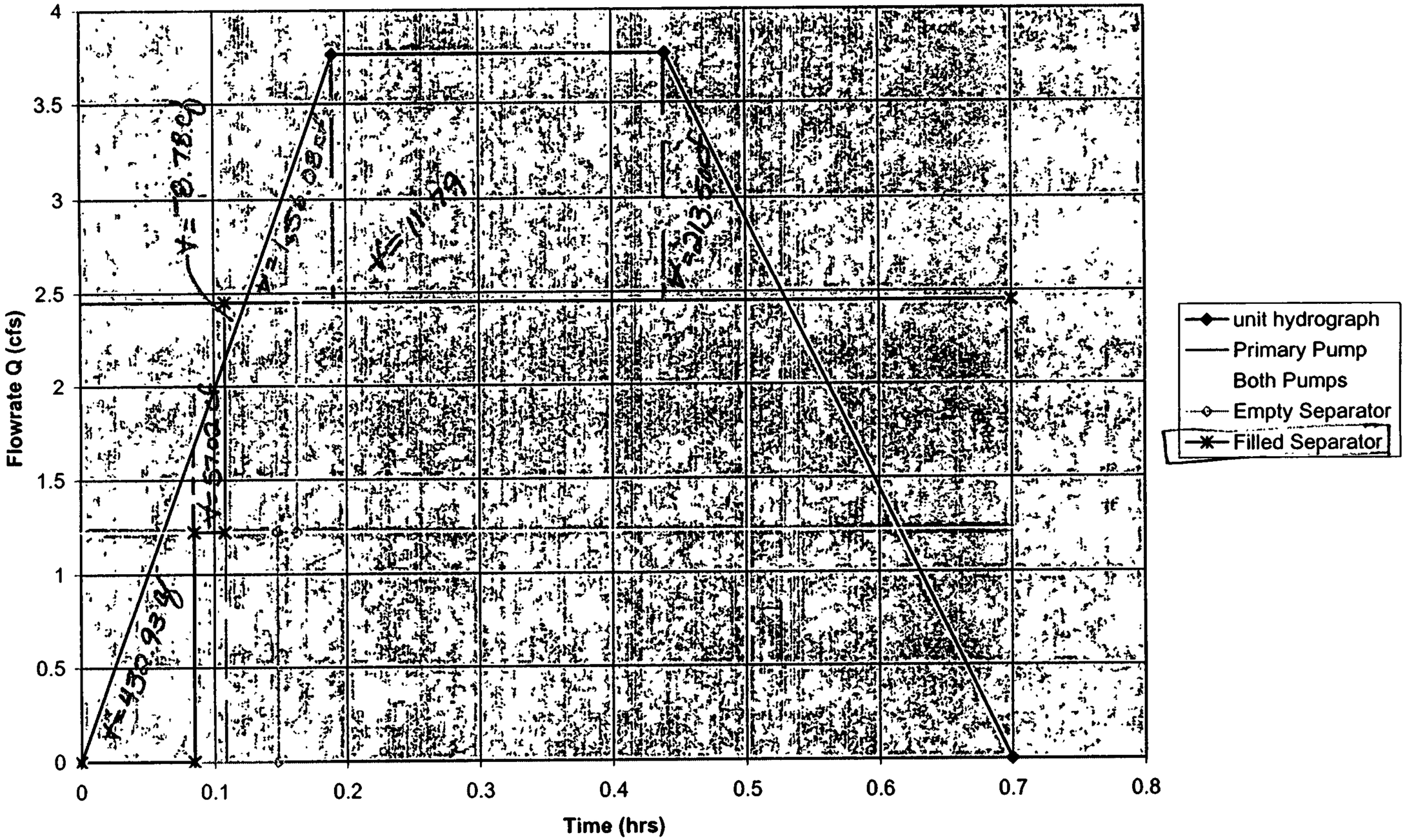
Unit Hydrograph for Basin Pro2 if Oil Water Separator Completely Empty



$\forall = 2369\ cf$ (1849 cf)

Basement
5011 ft²

Unit Hydrograph for Basin Pro2



V = 2029.75 cf d = 5"

Site Pumping Unit Hydrograph

A_D = Basin Pro 2_D

A_D = 0.80 acres

A_T = Basin Pro2_T
=0.80 acres

Q_P = 3.76 cfs – ok 2.22 ?

E = (2.12 in* A_D)/A_T
= 2.12 in

Hydrograph Calculations:

$T_P = 0.7*T_C + (1.6-A_D/A_T)/12$
$= (0.7*0.2) + [(1.6-1)/12]$
= 0.19 hrs

peak = $0.25*(A_D/A_T)$
$= 0.25*(0.8/0.8)$
= 0.25 hrs

$T_B = (2.107*E*A_T/Q_P) – (0.25*A_D/A_T)$
$= (2.107*2.12*0.80/3.76) – (0.25*0.8/0.8)$
= .70 hrs

Volume =$[(0.5*0.19*3.76) + (3.76*0.25) + (0.5*0.26*3.76)]*3600_{\text{unit conversion}}$
$= [0.357 + 0.94 + 0.489]*3600$
= 6430 cf

Controlled Discharge Hydrograph Calculations:

Separator Capacity = 520 cf
First Pump Level Sensor @ 256 cf
Second Pump Level Sensor @ 416 cf (difference of 160 cf)
Wet Well Volume = 544 cf

OUT FALL PIPE ?

Since Separator does not drain completely after each storm, two curves were generated. One includes the filling of the separator, the other does not.

For a 100 yr, 6-hr storm, the basement will experience flooding. The basement has an area of 5011 sq. ft. When the Oil/Water separator is empty, the basement will flood with 1849 cu. ft. of water (approximately 4" of water). When the separator is filled, as

expected in most instances, there will be 2030 cu. ft. of water (approximately 5" of water) in the basement.