TRAVERSE MOUNTAIN AREA PLAN
STORM DRAIN

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TRAVERSE MOUNTAIN AREA PLAN
STORM DRAIN

12 June 2012

The Traverse Mountain development is comprised of two main drainage areas. These areas, as shown in Figure One, consist of the Fox Hollow Drainage and the SR-92 Drainage. The Fox Hollow Drainage flows westerly to an existing 60" culvert under I-15. The culvert has been extended and an energy dissipater constructed in the Jordan Narrows Regional Drainage Facility. The SR-92 Drainage flows westerly and southerly to a recently constructed 72" outfall storm drain for the Timpanogos Highway. The outfall terminal is the Jordan Narrows Facility.

Outfall Drainage

The drainage from the SR-92 basin discharges into the 72" storm drain. Traverse Mountain's by agreement between UDOT and Lehi City has the ability to connect to this storm drain and discharge at specified flow rates. Traverse Mountain participated in the project to construct the Jordan Narrows Regional Detention Facility at the end of the 72" SR-92 outfall line. By the agreement, Traverse Mountain has 8.1 acre feet of capacity in the 17.1 acre feet constructed in the first phase. This allows them to transfer the existing Pond "A" facility offsite. Traverse Mountain also has the right to construct a second pond consisting of an additional 20 acre feet at the same location. Traverse Mountain will have to disconnect the existing pond "A" detention and connect it to the 72" storm drain at the Adobe Way location. The existing 36" storm drain in Adobe Way will need to be connected to the existing Bull River Ditch crossing of I-15 which connects to the 36" storm drain in the west frontage road.

Drainage Analysis

The concept plan was modeled in WMS software using a hec-1 model to estimate drainage flow for the development. The rainfall data used is provided in the appendix. A rainfall depth of 2.52 inches for the 100 year event, 2.30 inches for the 50 year event and 1.79 inches for the 10 year event were used in the modeling.

The estimated peak flows for the development can be found on Figure 1. The analysis calculated the allowable discharge rates for the project. The discharge rates were determined to be 0.4 cfs/acre for residential and commercial for the SR-92 drainage area and the allowable discharge will be based upon a c-factor of 0.53 for a 50 year event for the Fox Hollow drainage basin, as seen in Figure 2. Onsite detention will be required for projects exceeding this discharge rate for a 100 year design event. The developer will be responsible for meeting the city's requirement for detention of 0.2 cfs/acre based upon the 100 year event. The detention will be provided in both onsite facilities and offsite facilities (Lambert and Jordan Narrows Ponds). The developer will construct the onsite detention determined from the difference on the allowable discharge rate and the city's 0.2 cfs/acre discharge. The developer will also construct the offsite detention as it is needed for the project.

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The following is an example for East Canyon A1-A4:

Required detention based upon 0.2 cfs/acre:	76,248 cubic feet.
Required detention based upon 0.4 cfs/acre:	58,176 cubic feet.
Require offsite detention (Difference between 0.2 and 0.4):	18,072 cubic feet

Offsite detention has been provided with the balance required onsite to hold to these flow rates.

An analysis of the proposed developable area was performed using the rational method to estimate the required detention volumes. Results are shown in the attached detention tables. The following c-factors were used:

			Soil Group C		Soil Group D	
Land Use	C-Factor Range	C-Factor Used	CN Range	CN Used	CN Range	CN Used
Native Open Space	.10	.10	55-59	57	61-65	63
Parks/Cut slopes/Landscaping	.20	.20	72-76	74	78-82	80
Low Density (1-4)	.34-.47	.41	79-83	81.0	84-87	85.5
Medium Density (4.1-6)	.47-.59	.53	83-88	85.5	87-90	88.5
High Density (6.1-20)	.59-.70	.64	88-91	89.5	90-93	91.5
Churches/Schools (70% imp.)	.69	.69	84-88	86	91-95	93
Commercial (85% imp.)	.80	.80	93-95	94	95	95
Roads/Impervious	.90	.90		95		95

The development will require approximately 75.49 acre-feet of detention. The following is an estimate of where it will be distributed.

	Total Req.	Constructed	Proposed
Jordan Narrows	26.50 AF	8.10 AF	18.40 AF
Lambert	10.00 AF		10.00 AF
On Site Storage	35.22 AF	5.28 AF	29.94 AF
TOTAL	**75.49 acre-feet**		

Storm Drains

The SR-92 basin will have storm drains designed for the 10 year event as per Lehi City Standards. Pipes will meet the requirement of Section 9.07 of the Lehi Design Standards. The maximum 10 year event will not exceed the agreed discharge into the 72" storm drain. Detention will be required to control the flows from developments draining to the 72" storm drain. This will be done by the discharge rates as shown on Figure 1 and as follows:

Adobe (9C):	109 CFS	Murdock Canal (11C):	62.8 CFS
Rail Road (10C):	72.7 CFS	Perry (13C):	22.6 CFS
Existing Bull River Bore	50.0 CFS		

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The master plan storm drains are shown in Figure 3. These storm drains must be installed with developments or as soon as the existing downstream capacity is exceeded. The schedule of when the storm drain lines need to be installed is shown on Figure 3. The plan requires several major pipes to be installed. The removal of pond "A" will require the installation of several storm drain lines as shown on Figure 3. A 36" line will need to be installed south of the Murdock Corridor and a 42" line (parallel in sections) will need to be installed under the canal along Cabella's Blvd. to the Adobe corridor.

Central Canyon will have the main storm drain pipe designed for the 50 year event. The existing storm drain has a capacity of approximately 200 CFS. The outfall from the Lambert basin will be limited to 325 CFS maximum flow with discharge into the Jordan Narrows facility. A parallel storm drain construction of 48" and 60" pipe will be constructed along Traverse Mtn. Blvd. to the Lambert Detention Facility. A connection from Chapple Ridge to Fox Canyon will also be required to separate the Chapple Ridge system into parts.

Mass Grading

Mass grading operations will be detained to 0.1 CFS per acre of disturbed ground or higher as determined by the City Engineer during all construction phases to control erosion and sedimentation of downstream facilities. A complete Storm Water Pollution Prevention Plan (SWPPP) will also be developed to include Best Management Practices (BMPs), for erosion and revegitation of slopes and pads.

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Outfall	Master Plan
3 C	591
4 C	85
7 C	129
8 C	11
9 C	159
10 R	40.1
11 C	72.7
12 C	25
13 C	22.3
15 R	6
16 C	51
17 R	3
18 C	57
19 R	6
20 C	93
21 C	23
22 C	30
23 R	6.2
24 C	11
25 R	26

Outfall	Master Plan
29 R	13
30 C	31
31 R	31
32 C	111
37 C	80
38 R	31
41 C	176
43 C	325

LEGEND

DRAINAGE BASIN

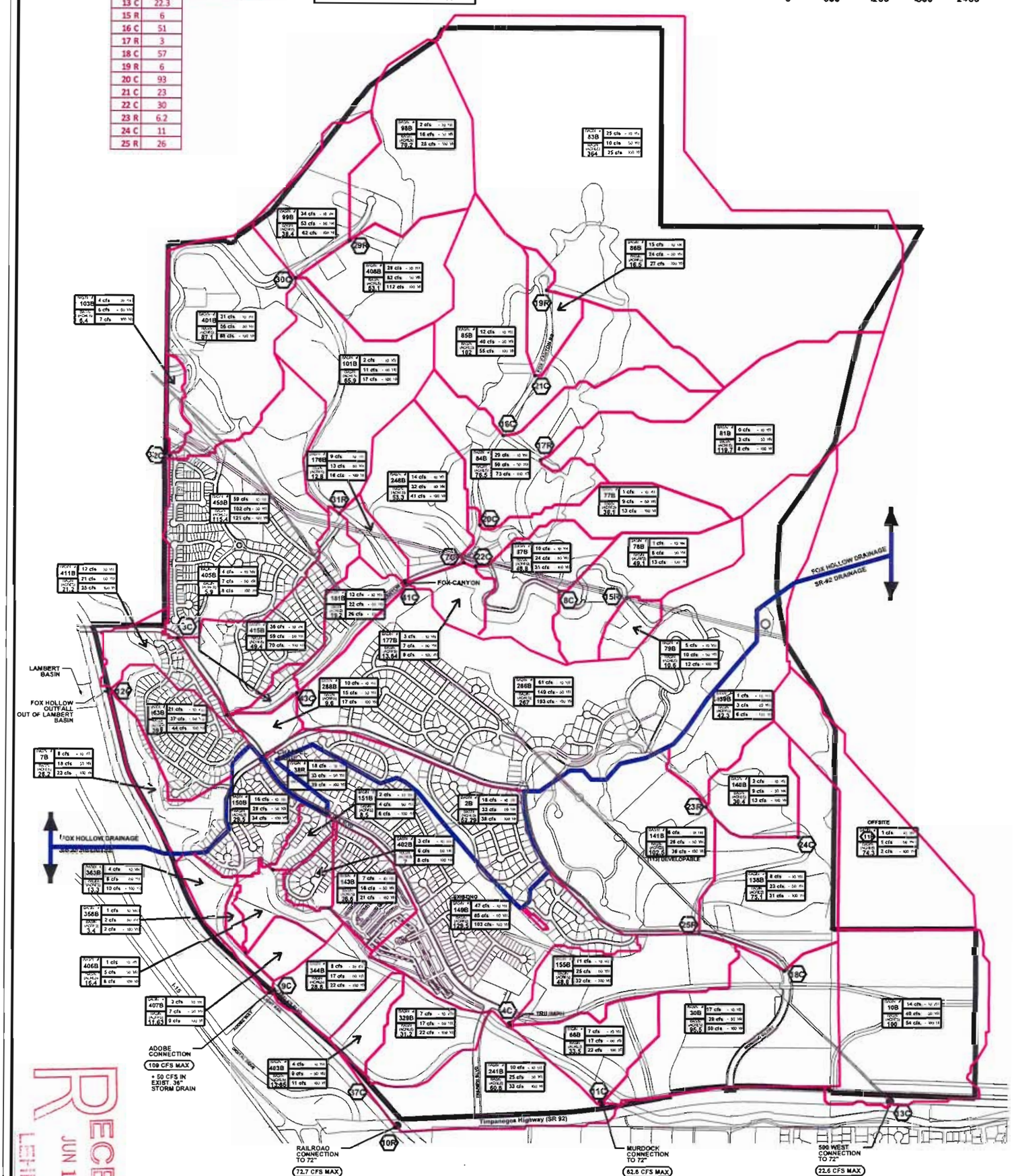
OUTFALLS

BASIN #	★ - 10 YR
BASIN ACRES	★ - 50 YR
	★ - 100 YR

* ESTIMATED DISCHARGE FROM WMS MODEL 11-30-11

SCALE (FEET)

0 600 1200 1800 2400



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Office: (801) 377-1790 Fax: (801) 377-1789
578 East 770 North , Orem UT 84097

Title:

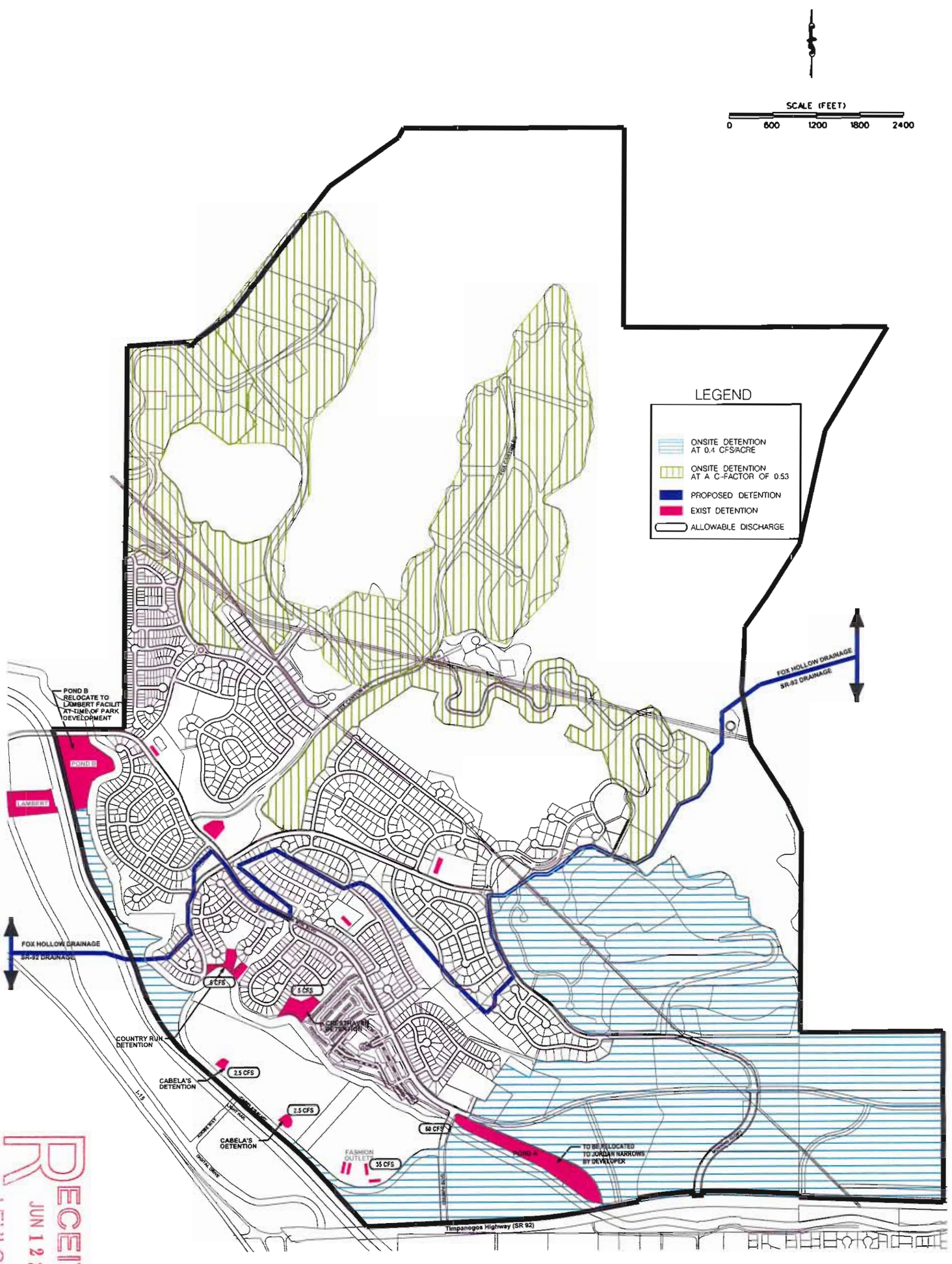
Client: TRAVERSE MOUNTAIN, LEHI UTAH

Drawing Name: DRAINAGE AREAS

PROJECT NO. 2010.037.005

FIGURE 1

DATE: 6-12-12



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Title:

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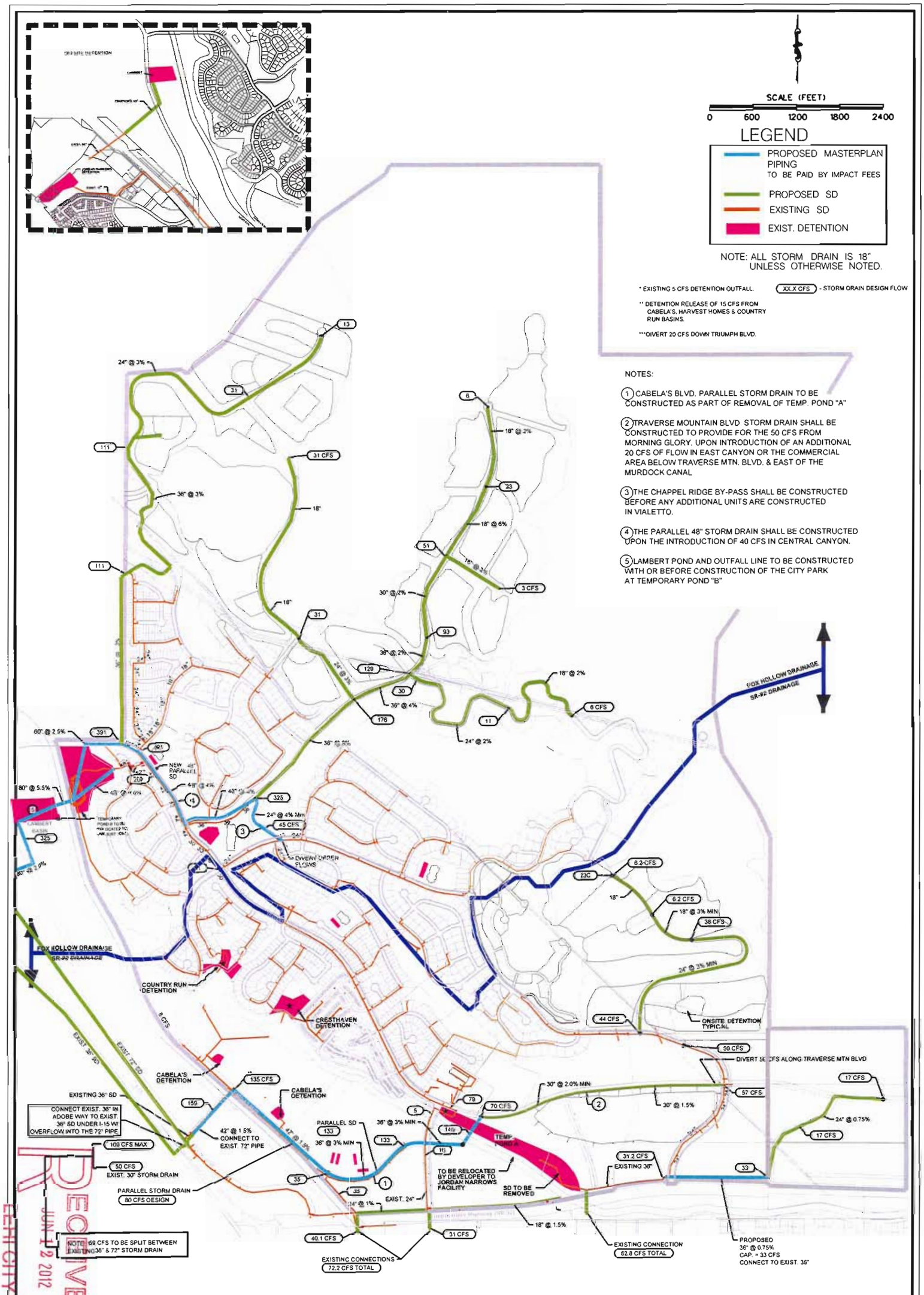
Drawing Name: ALLOWABLE RELEASE RATE

PROJECT NO. 2010.037.005

FIGURE 2

DATE: 6-12-12



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Title:

Client: TRAVERSE MOUNTAIN, LEHI UTAH

Drawing Name: STORM DRAIN PIPE SIZES

PROJECT NO. 2010.037.005

FIGURE 3

DATE: 6-12-12

DETENTION SUMMARY

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Proposed Plats Required Detention

Traverse Mountain Overall System

May 25, 2012

West Canyon	Acres	Required Detention		Onsite Detention		Lambert	Jordan Landing
		CF	Acre-Ft	CF	Acre-Ft	Acre-Ft	Acre-Ft
A1-A3	16.0	44,280	1.02	8,784	0.20	0.00	0.81
B1-B2	5.1	12,888	0.30	0	0.00	0.00	0.30
C1-C2	15.8	42,768	0.98	8,712	0.20	0.00	0.78
D1	5.7	18,216	0.42	3,816	0.09	0.00	0.33
E1-E2	14.0	37,044	0.85	7,704	0.18	0.00	0.67
F1-F3	15.5	27,720	0.64	0	0.00	0.00	0.64
Total	**72.1**	**182,916**	**4.20**	**29,016**	**0.67**	**0.00**	**3.53**

Central Canyon	Acres	Required Detention		Onsite Detention		Lambert	Jordan Landing
		CF	Acre-Ft	CF	Acre-Ft	Acre-Ft	Acre-Ft
A1-A2	10.3	22,824	0.52	0	0.00	0.00	0.52
B	7.0	17,676	0.41	0	0.00	0.00	0.41
C	5.7	14,400	0.33	0	0.00	0.00	0.33
D1-D2	10.4	23,076	0.53	0	0.00	0.00	0.53
E1-E2	15.0	34,200	0.79	0	0.00	0.00	0.79
F1-F3	15.2	28,116	0.65	0	0.00	0.00	0.65
G1-G2	10.4	23,076	0.53	0	0.00	0.00	0.53
H1-H2	9.9	23,184	0.53	0	0.00	0.00	0.53
I1-I2	8.4	19,152	0.44	0	0.00	0.00	0.44
J1-J2	14.4	41,616	0.96	7,920	0.18	0.00	0.77
K1-K2	9.9	26,208	0.60	5,472	0.13	0.00	0.48
L2	14.5	41,040	0.94	8,892	0.20	0.00	0.74
[illegible]	4.0	12,780	0.29	2,700	0.06	0.00	0.23
N (Public Park)	1.2	756	0.02	0	0.00	0.00	0.02
Total	**136.3**	**328,104**	**7.53**	**24,984**	**0.57**	**0.00**	**6.96**

East Canyon	Acres	Required Detention		Onsite Detention		Lambert	Jordan Landing
		CF	Acre-Ft	CF	Acre-Ft	Acre-Ft	Acre-Ft
A1-A4	25.3	76,248	1.75	58,176	1.34	0.00	0.41
B1	9.0	28,764	0.66	22,284	0.51	0.00	0.15
C1-C2	19.3	38,088	0.87	28,134	0.65	0.00	0.23
D1-D6	59.4	109,908	2.52	80,730	1.85	0.00	0.67
Total	**113.0**	**253,008**	**5.81**	**189,324**	**4.35**	**0.00**	**1.46**

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Proposed Plats Required Detention

Traverse Mountain Overall System

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Perry Properties	Acres	Required Detention		Onsite Detention		Lambert	Jordan Landing
		CF	Acre-Ft	CF	Acre-Ft	Acre-Ft	Acre-Ft
A1-A2	34.9	83,808	1.92	62,982	1.45	0.00	0.48
B1-B2	28.4	66,456	1.53	49,842	1.14	0.00	0.38
C	69.7	222,804	5.11	172,620	3.96	0.00	1.15
D	25.6	81,828	1.88	63,396	1.46	0.00	0.42
Private Park	10.4	6,552	0.15	3,915	0.09	0.00	0.06
Total	**169.0**	**461,448**	**10.59**	**352,755**	**8.10**	**0.00**	**2.50**

River Bend	Acres	Required Detention		Onsite Detention		Lambert	Jordan Landing
		CF	Acre-Ft	CF	Acre-Ft	Acre-Ft	Acre-Ft
A	9.8	24,732	0.57	0	0.00	0.57	0.00
B	14.5	46,368	1.06	9,792	0.22	0.00	0.84
C	23.8	76,068	1.75	16,020	0.37	0.00	1.38
D	5.7	18,216	0.42	3,816	0.09	0.33	0.00
E	18.9	47,700	1.10	0	0.00	0.00	1.10
F	16.0	40,392	0.93	0	0.00	0.93	0.00
Total	**88.7**	**253,476**	**5.82**	**29,628**	**0.68**	**1.83**	**3.31**

Non-Canyon	Acres	Required Detention		Onsite Detention		Lambert	Jordan Landing
		CF	Acre-Ft	CF	Acre-Ft	Acre-Ft	Acre-Ft
Church	3.4	14,184	0.33	5,616	0.13	0.00	0.20
A	8.1	25,884	0.59	5,436	0.12	0.00	0.47
	6.5	20,772	0.48	4,356	0.10	0.00	0.38
	3.3	8,316	0.19	0	0.00	0.00	0.19
D	0.6	1,512	0.03	0	0.00	0.00	0.03
Total	**21.9**	**70,668**	**1.62**	**15,408**	**0.35**	**0.00**	**1.27**

Commercial	Acres	Required Detention		Onsite Detention		Lambert	Jordan Landing
		CF	Acre-Ft	CF	Acre-Ft	Acre-Ft	Acre-Ft
Public Park	9.6	6,048	0.14	3,609	0.08	0.00	0.06
Highway Comm.	9.4	39,240	0.90	32,472	0.75	0.00	0.16
Highway Comm.	7.3	30,492	0.70	25,236	0.58	0.00	0.12
Highway Comm.	6.7	27,972	0.64	23,140	0.53	0.00	0.11
Highway Comm.	7.8	32,580	0.75	26,964	0.62	0.00	0.13
Highway Comm.	14.8	61,812	1.42	51,156	1.17	0.00	0.24
Highway Comm.	2.5	10,440	0.24	8,640	0.20	0.00	0.04
Highway Comm.	114.6	478,584	10.99	396,072	9.09	0.00	1.89
Highway Comm.	27.3	114,012	2.62	94,356	2.17	0.00	0.45
HC	1.8	7,524	0.17	6,228	0.14	0.00	0.03
HC	3.1	12,960	0.30	10,728	0.25	0.00	0.05
Total	**204.9**	**821,664**	**18.86**	**678,601**	**15.58**	**0.00**	**3.28**

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DETENTION BASIN TOTALS

Traverse Mountain Overall System

May 25, 2012

EXISTING DEVELOPMENT		DETENTION Location	REQUIRED VOLUME (cubic feet)	POND A	POND B	HH POND	CR POND	Onsite	Lambert	JORDAN NARROWS
Recorded Plats										
TM BLVD. NORTH	ROAD PLAT	POND B	6,100		6,100					
TM BLVD. SOUTH	ROAD PLAT	POND A	22,500	22,500						
MORNING GLORY ROAD	ROAD PLAT	POND A	25,265	25,265						
CHAPEL RIDGE	PHASES 1&2	POND A	20,285	20,285						
	PHASE 3	POND B	19,440		19,440					
COUNTRY RUN	ALL PHASES	CR BASIN	35,667				35,667			
HARVEST HOMES	PLAT ONE	HAR HOMES	33,000			33,000				
	PLAT TWO	DET. BASIN	0							
	PLAT THREE		0							
HEATHER MOORE	PLAT ONE	POND A	31,000	31,000						
HUNTER CHASE	PLAT ONE	POND A	15,000	15,000						
	PLAT TWO	POND A	14,000	14,000						
	PLAT THREE	POND A	2,000	2,000						
EAGLE SUMMIT	PHASES 1&2	POND B	74,558		74,558					
	PLAT THREE	POND B	870		870					
	PLAT FOUR	POND B	870		870					
	PLAT FIVE	POND B	870		870					
Eagle Summit Plat 6	Site Plan	Detained onsite	0							
SHADOW RIDGE	PLAT ONE	POND B	28,920		28,920					
	PLAT TWO	POND B	26,950		26,950					
WINTERHAVEN	PHASES 1&2	POND B	42,274		42,274					
WOODHAVEN	PHASES 1-3	POND B	68,310		68,310					
VISTA RIDGE	PHASES 1&2	POND B	43,856		43,856					
	PHASE 3 & 4	POND A	22,908	22,908						
Traverse Mount Plat D & Challenger School	Plat D	Pond A	11,909	11,909						
Vialetto Recorded Plat		Pond B	39,350		39,350					
Cresthaven Townhomes	All	Harvest Homes	23,666			23,666				
Cresthaven Apartments	All	JORDAN NARROWS/ HH	31,741			12,630				19,111
FASHION OUTLET	SITE PLAN	JORDAN NARROWS	114,138					65,959		48,179
TRAVERSE MOUNTAIN SALES CENTER			3,973	3,973						
CABELLAS ON SITE			131,237					131,237		
CHURCH (TRAVERSE MOUNTAIN BLVD)			9,230					9,230		
CHURCH (CHAPEL RIDGE)			13,464					13,464		
CHURCH (FOXTAIL DR.)			9,967					9,967		
TRANSFER FROM POND A TO JORDAN NARROWS	AGREEMENT		0	-168,840						168,840
Total Volumes Required for Existing Development (Cubic Feet)			923,318	0	352,368	69,296	35,667	229,857	0	236,130
Total Volumes Required for Existing Development (Acre Feet)			21.20	0.00	8.09	1.59	0.82	5.28	0.00	5.42

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DETENTION BASIN TOTALS

Traverse Mountain Overall System

May 25, 2012

EXISTING DETENTION BASINS

Constructed Ponds	CONSTRUCTED	DETENTION VOLUME (cubic feet)	POND A	POND B	HH POND	CR POND	On Site	Lambert	JORDAN NARROWS
TRAVERSE MOUNTAIN POND A	TRAV. PLAT 1	352,836	352,836						
TRAVERSE MOUNTAIN POND B*	CHAPEL BEND	196,020		196,020					
TRAVERSE MOUNTAIN POND B*	SHADOW RIDGE	60,984		60,984					
HARVEST HOMES	HARVEST HOME	33,000			33,000				
COUNTRY RUN	COUNTRY RUN	87,120				87,120			
CRESTHAVEN (constructed)	CRESTHAVEN	44,000			44,000				
JORDAN NARROWS (REPLACES POND A)	AGREEMENT	8,712	-352,836						361,548
FASHION OUTLET		65,959					65,959		
CABELLAS ON SITE		131,237					131,237		
CHURCH (TRAVERSE MOUNTAIN BLVD)		9,230					9,230		
CHURCH (CHAPEL RIDGE)		13,464					13,464		
CHURCH (FOXTAIL DR.)		9,967					9,967		
	Total Storage Provided (cubic feet)	1,012,529	0	257,004	77,000	87,120	229,857	0	361,548
	Total Storage Provided (Acre Feet)	23.24	0.00	5.90	1.77	2.00	5.28	0.00	8.30
	Percentage of storage used	91%	0	137%	90%	41%	100%	0	65%
	Percentage Available	9%	0%	-37%	10%	59%	0%	0%	35%

*Note: Expansion of Pond B to be in the Lambert Parcel with Vialetto and Fox Canyon Subdivisions. Upon final build out of project, no pond will exceed 100% of capacity.

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DETENTION BASIN TOTALS

Traverse Mountain Overall System

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PROPOSED DEVELOPMENT

Proposed Plats		DETENTION VOLUME (cubic feet)	POND A	POND B	HH POND	CR POND	On Site	Lambert	JORDAN NARROWS
TRANSFER FROM POND B TO LAMBERT	AREA PLAN	0		-352,368				352,368	0
West Canyon		182,916					29,016	0	153,900
Central Canyon		328,104					24,984	0	303,120
East Canyon		253,008					189,324	0	63,684
Perry Properties		461,448					352,755	0	108,693
Riverbend Properties		253,476					29,628	79,524	144,324
Commercial		821,664					678,601	0	143,063
Total Volumes Required for Proposed Development (Cubic Feet)		2,300,616	0	-352,368	0	0	1,304,308	431,892	916,784
Total Volumes Required for Proposed Development (Acre Feet)		52.81	0.00	-8.09	0.00	0.00	29.94	9.91	21.05

PROPOSED DETENTION BASINS

Proposed Pond Expansions		DETENTION VOLUME (cubic feet)	POND A	POND B	HH POND	CR POND	On Site	Lambert	JORDAN NARROWS
Jordan Narrows Expansion		792,792							792,792
Lambert Pond	Area Plan W/Park	178,596		-257,004				435,600	
West Canyon		29,016					29,016		
Central Canyon		24,984					24,984		
East Canyon		189,324					189,324		
Perry Properties		352,755					352,755		
Riverbend Properties		29,628					29,628		
Commercial		678,601					678,601		
Total Volumes Required for Proposed Development (Cubic Feet)		2,275,696	0	-257,004	0	0	1,304,308	435,600	792,792
Total Volumes Required for Proposed Development (Acre Feet)		52.24	0.00	-5.90	0.00	0.00	29.94	10.00	18.20
	Percentage of storage used	101%	0	137%	0	0	100%	99%	116%
	Percentage Available	-1%	0%	-37%	0%	0%	0%	1%	-16%

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DETENTION BASIN TOTALS

Traverse Mountain Overall System

May 25, 2012

PROJECT TOTALS

Required Storage		DETENTION VOLUME	POND A	POND B	HH POND	CR POND	On Site	Lambert	JORDAN NARROWS
Storage Required For Existing Development	Cubic Feet	923,318	0	352,368	69,296	35,667	229,857	0	236,130
	Acre Feet	21.20	0.00	8.09	1.59	0.82	5.28	0.00	5.42
Storage Required For Proposed Development	Cubic Feet	2,300,616	0	-352,368	0	0	1,304,308	431,892	916,784
	Acre Feet	52.81	0.00	-8.09	0.00	0.00	29.94	9.91	21.05
Total Required Storage For Project (Cubic Feet)		3,223,934	0	0	69,296	35,667	1,534,165	431,892	1,152,914
Total Required Storage For Project (Acre Feet)		74.01	0.00	0.00	1.59	0.82	35.22	9.91	26.47

Provided Storage		DETENTION VOLUME (cubic feet)	POND A	POND B	HH POND	CR POND	On Site	Lambert	JORDAN NARROWS
Constructed Pond Total	Cubic Feet	1,012,529	0	257,004	77,000	87,120	229,857	0	361,548
	Acre Feet	23	0	6	2	2	5	0	8
Proposed Pond Expansion Total	Cubic Feet	2,275,696	0	-257,004	0	0	1,304,308	435,600	792,792
	Acre Feet	52.24	0.00	-5.90	0.00	0.00	29.94	10.00	18.20
Total Required Storage For Project (Cubic Feet)		3,288,225	0	0	77,000	87,120	1,534,165	435,600	1,154,340
Total Required Storage For Project (Acre Feet)		75.49	0.00	0.00	1.77	2.00	35.22	10.00	26.50
Percentage of storage used		98%	0%	0%	90%	41%	100%	99%	100%
Percentage Available		2%	0%	0%	10%	59%	0%	1%	0%

Note: Expansion of Pond B to be in the Lambert Parcel with Vialetto and Fox Canyon Subdivisions. Upon final build out of project, no pond will exceed 100% of capacity.

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Hyd ow IDF Curves

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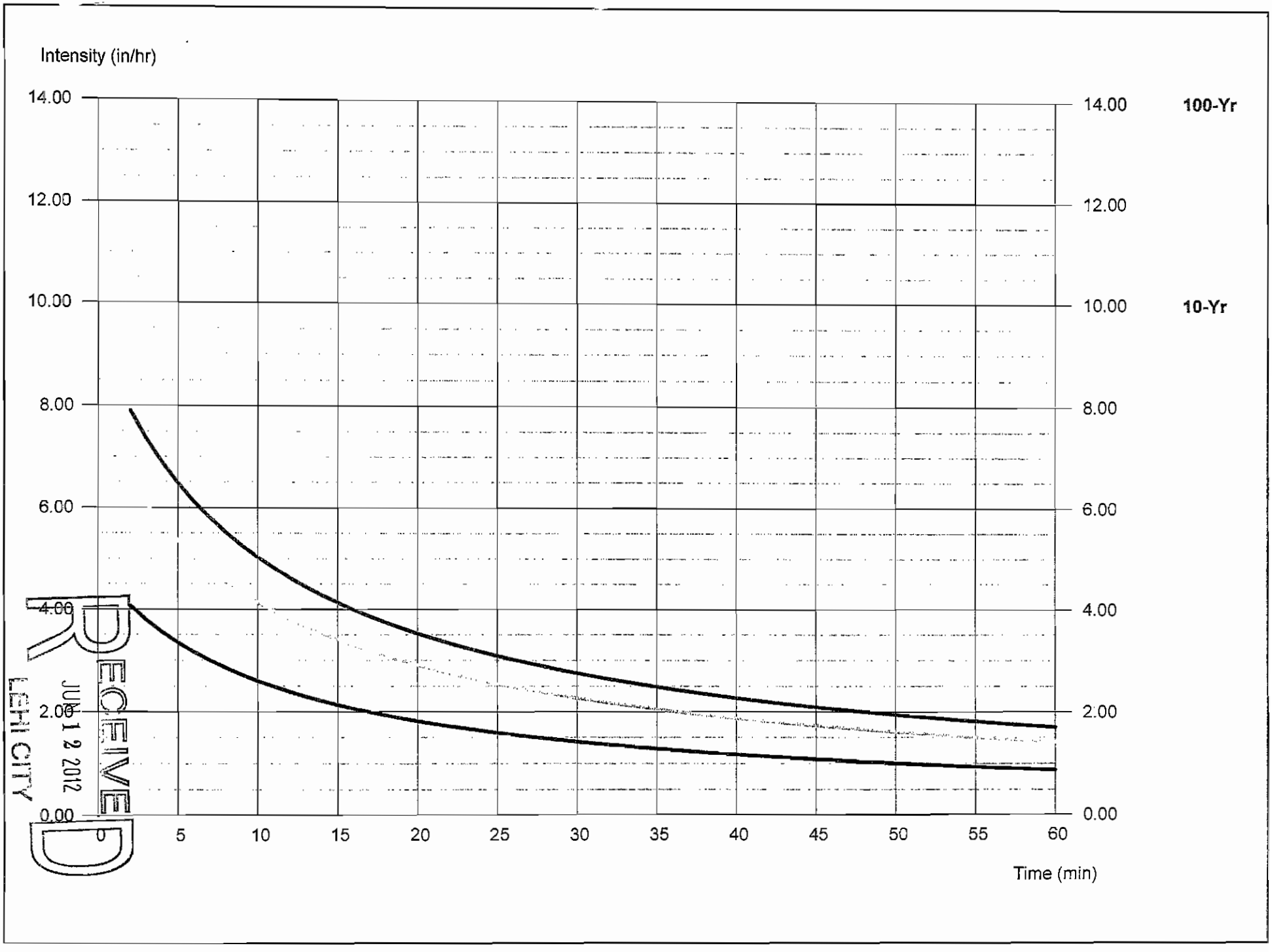

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Hydraflow Rainfall Report

Hydraflow Hydrographs by Intelisolve v9.23 Friday, Apr 22, 2011

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	0.0000	0.0000	0.0000	--------
3	0.0000	0.0000	0.0000	--------
5	0.0000	0.0000	0.0000	--------
10	32.9029	9.5000	0.8549	--------
25	0.0000	0.0000	0.0000	--------
50	47.9118	8.9000	0.8330	--------
100	61.8434	9.3000	0.8479	--------

File name: lehitraverse.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	3.34	2.60	2.14	1.82	1.59	1.42	1.28	1.17	1.08	1.00	0.93	0.88
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	5.35	4.14	3.41	2.91	2.55	2.27	2.05	1.88	1.73	1.61	1.50	1.41
100	6.48	5.03	4.13	3.53	3.09	2.75	2.48	2.27	2.09	1.94	1.81	1.70

Tc = time in minutes. Values may exceed 60.

Precip. file name: Lehitraverse.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	1.08	1.33	0.00	1.58	1.79	2.08	2.30	2.52
SCS 6-Hr	0.76	0.94	0.00	1.14	1.32	1.58	1.82	2.07
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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Hyd ow IDF Curves

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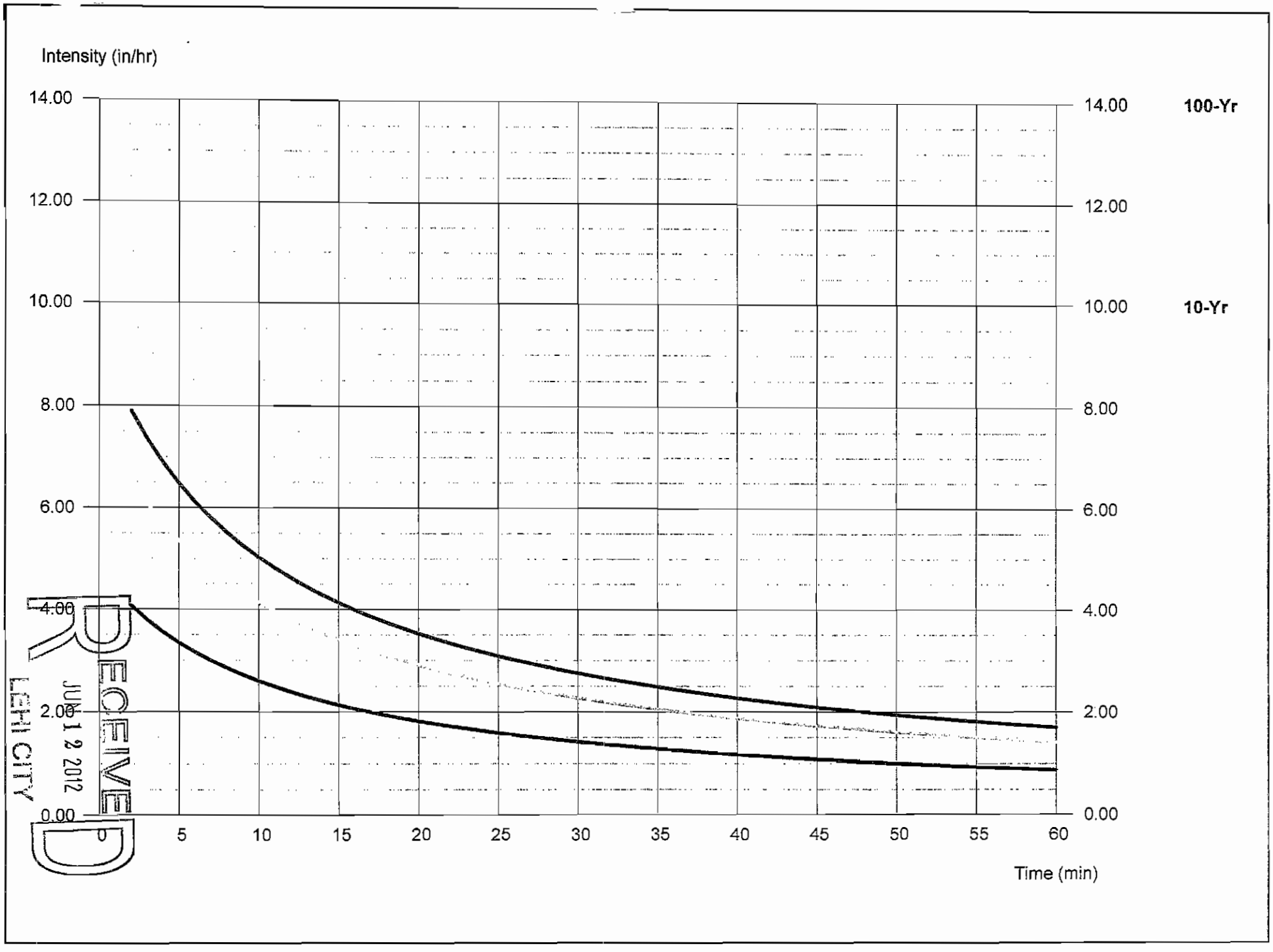

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Hydraflow Rainfall Report

Hydraflow Hydrographs by Intelisolve v9.23 Friday, Apr 22, 2011

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	0.0000	0.0000	0.0000	--------
3	0.0000	0.0000	0.0000	--------
5	0.0000	0.0000	0.0000	--------
10	32.9029	9.5000	0.8549	--------
25	0.0000	0.0000	0.0000	--------
50	47.9118	8.9000	0.8330	--------
100	61.8434	9.3000	0.8479	--------

File name: lehitraverse.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	3.34	2.60	2.14	1.82	1.59	1.42	1.28	1.17	1.08	1.00	0.93	0.88
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	5.35	4.14	3.41	2.91	2.55	2.27	2.05	1.88	1.73	1.61	1.50	1.41
100	6.48	5.03	4.13	3.53	3.09	2.75	2.48	2.27	2.09	1.94	1.81	1.70

Tc = time in minutes. Values may exceed 60.

Precip. file name: Lehitraverse.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	1.08	1.33	0.00	1.58	1.79	2.08	2.30	2.52
SCS 6-Hr	0.76	0.94	0.00	1.14	1.32	1.58	1.82	2.07
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

NOAA Atlas 14, Volume 1, Version 5
Location name: Lehi, Utah, US*
Coordinates: 40.4373, -111.8674
Elevation: 4978ft*
* source: Google Maps

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekie, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval(years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.128 (0.112-0.148)	0.162 (0.143-0.188)	0.223 (0.195-0.259)	0.279 (0.241-0.324)	0.366 (0.308-0.429)	0.447 (0.366-0.528)	0.541 (0.430-0.647)	0.652 (0.499-0.792)	0.830 (0.602-1.03)	0.992 (0.689-1.26)
10-min	0.195 (0.171-0.226)	0.247 (0.217-0.287)	0.339 (0.297-0.394)	0.424 (0.366-0.493)	0.557 (0.469-0.652)	0.681 (0.558-0.804)	0.824 (0.655-0.984)	0.993 (0.760-1.21)	1.26 (0.917-1.57)	1.51 (1.05-1.92)
15-min	0.242 (0.212-0.280)	0.306 (0.270-0.355)	0.421 (0.368-0.488)	0.526 (0.454-0.611)	0.690 (0.581-0.809)	0.844 (0.692-0.996)	1.02 (0.812-1.22)	1.23 (0.942-1.49)	1.57 (1.14-1.95)	1.87 (1.30-2.38)
30-min	0.325 (0.285-0.377)	0.413 (0.363-0.478)	0.567 (0.495-0.657)	0.708 (0.611-0.823)	0.929 (0.783-1.09)	1.14 (0.931-1.34)	1.38 (1.09-1.64)	1.66 (1.27-2.01)	2.11 (1.53-2.62)	2.52 (1.75-3.20)
60-min	0.403 (0.353-0.466)	0.511 (0.449-0.592)	0.701 (0.613-0.813)	0.876 (0.756-1.02)	1.15 (0.969-1.35)	1.41 (1.15-1.66)	1.70 (1.35-2.03)	2.05 (1.57-2.49)	2.61 (1.90-3.25)	3.12 (2.17-3.97)
2-hr	0.503 (0.456-0.571)	0.630 (0.566-0.712)	0.823 (0.735-0.932)	1.00 (0.887-1.14)	1.29 (1.12-1.48)	1.56 (1.31-1.79)	1.67 (1.53-2.18)	2.24 (1.76-2.66)	2.83 (2.11-3.46)	3.37 (2.40-4.21)
3-hr	0.582 (0.531-0.649)	0.720 (0.658-0.801)	0.912 (0.827-1.01)	1.09 (0.979-1.21)	1.37 (1.21-1.53)	1.61 (1.39-1.82)	1.91 (1.60-2.19)	2.26 (1.84-2.69)	2.85 (2.21-3.49)	3.38 (2.52-4.26)
6-hr	0.762 (0.706-0.829)	0.936 (0.866-1.02)	1.14 (1.05-1.25)	1.32 (1.22-1.45)	1.59 (1.44-1.75)	1.82 (1.61-2.01)	2.07 (1.81-2.32)	2.38 (2.03-2.71)	2.95 (2.44-3.53)	3.44 (2.77-4.30)
12-hr	0.967 (0.893-1.05)	1.18 (1.09-1.29)	1.43 (1.32-1.56)	1.64 (1.50-1.80)	1.95 (1.76-2.14)	2.20 (1.96-2.44)	2.46 (2.16-2.76)	2.76 (2.38-3.14)	3.23 (2.71-3.76)	3.62 (2.96-4.33)
24-hr	1.08 (1.01-1.16)	1.33 (1.24-1.43)	1.58 (1.48-1.70)	1.79 (1.68-1.92)	2.08 (1.94-2.23)	2.30 (2.13-2.46)	2.52 (2.33-2.79)	2.78 (2.53-3.17)	3.26 (2.78-3.79)	3.65 (2.99-4.37)
2-day	1.28 (1.20-1.37)	1.57 (1.47-1.68)	1.87 (1.75-2.00)	2.12 (1.98-2.26)	2.45 (2.29-2.62)	2.71 (2.52-2.89)	2.97 (2.75-3.17)	3.23 (2.97-3.46)	3.57 (3.26-3.86)	3.83 (3.48-4.42)
3-day	1.40 (1.30-1.50)	1.71 (1.59-1.84)	2.04 (1.90-2.20)	2.32 (2.16-2.49)	2.70 (2.51-2.90)	2.99 (2.77-3.22)	3.29 (3.03-3.54)	3.60 (3.29-3.88)	4.00 (3.63-4.35)	4.31 (3.89-4.83)
4-day	1.51 (1.40-1.64)	1.85 (1.72-2.01)	2.22 (2.06-2.39)	2.52 (2.34-2.72)	2.95 (2.72-3.18)	3.28 (3.02-3.54)	3.62 (3.32-3.92)	3.96 (3.61-4.30)	4.43 (4.00-4.83)	4.80 (4.30-5.25)
7-day	1.79 (1.65-1.94)	2.19 (2.03-2.38)	2.61 (2.42-2.83)	2.96 (2.74-3.20)	3.43 (3.17-3.71)	3.80 (3.50-4.10)	4.16 (3.82-4.50)	4.53 (4.14-4.91)	5.02 (4.54-5.46)	5.38 (4.85-5.88)
10-day	2.01 (1.86-2.17)	2.46 (2.28-2.66)	2.92 (2.72-3.15)	3.29 (3.06-3.54)	3.78 (3.50-4.08)	4.14 (3.82-4.45)	4.49 (4.14-4.84)	4.84 (4.45-5.22)	5.26 (4.83-5.72)	5.61 (5.10-6.09)
20-day	2.65 (2.45-2.85)	3.25 (3.00-3.50)	3.83 (3.55-4.13)	4.29 (3.98-4.61)	4.87 (4.50-5.23)	5.28 (4.89-5.68)	5.68 (5.25-6.11)	6.06 (5.58-6.52)	6.52 (5.99-7.03)	6.84 (6.26-7.40)
30-day	3.19 (2.95-3.43)	3.90 (3.62-4.20)	4.59 (4.26-4.94)	5.13 (4.76-5.51)	5.82 (5.40-6.25)	6.33 (5.85-6.80)	6.81 (6.29-7.34)	7.27 (6.70-7.85)	7.85 (7.20-8.50)	8.26 (7.55-8.97)
45-day	3.96 (3.69-4.26)	4.84 (4.51-5.21)	5.68 (5.30-6.10)	6.33 (5.90-6.79)	7.16 (6.67-7.67)	7.75 (7.21-8.30)	8.31 (7.72-8.91)	8.84 (8.19-9.49)	9.47 (8.76-10.2)	9.91 (9.13-10.7)
60-day	4.69 (4.37-5.04)	5.74 (5.34-6.17)	6.72 (6.26-7.20)	7.47 (6.97-8.01)	8.42 (7.84-9.03)	9.10 (8.46-9.75)	9.73 (9.04-10.4)	10.3 (9.57-11.1)	11.0 (10.2-11.9)	11.5 (10.6-12.4)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

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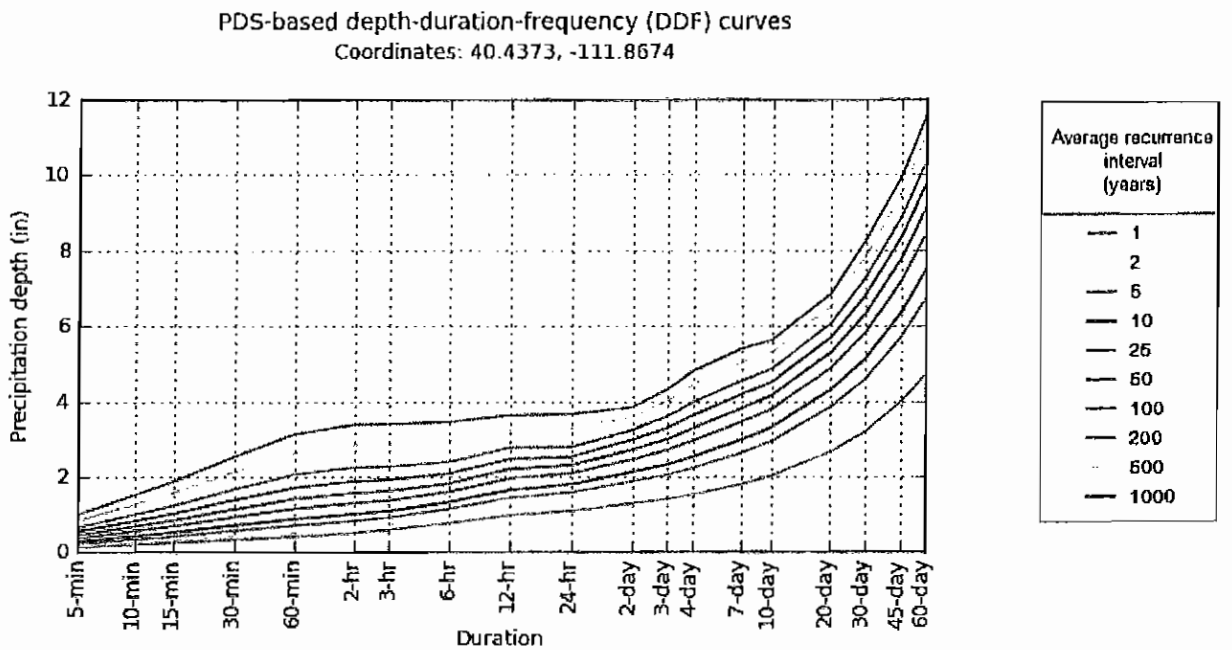
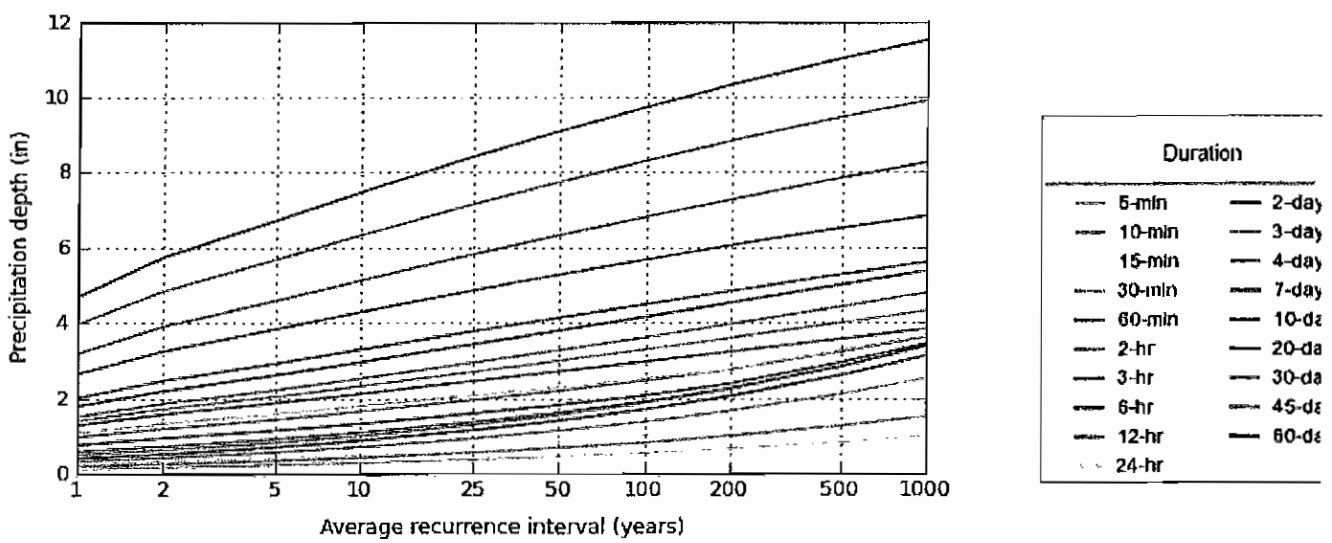
PF graphical





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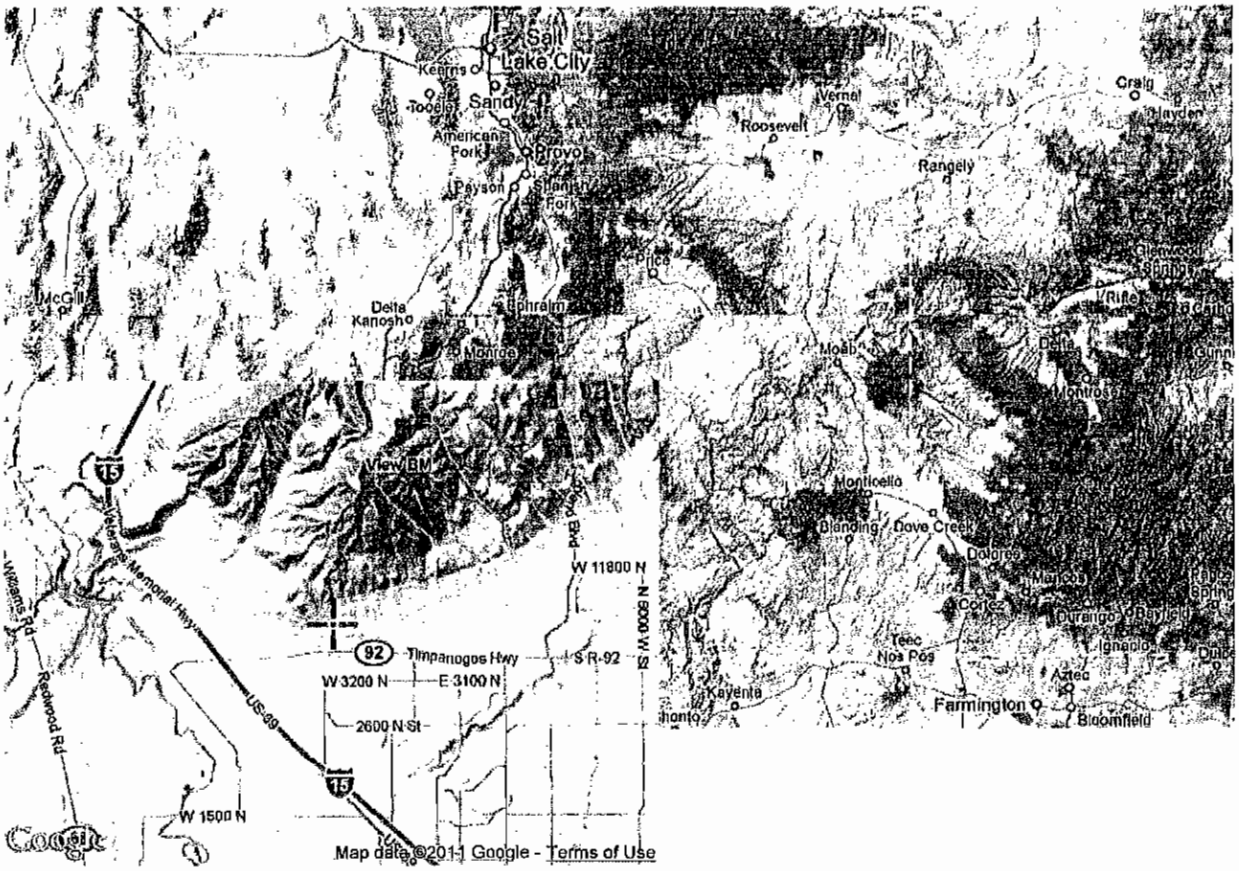
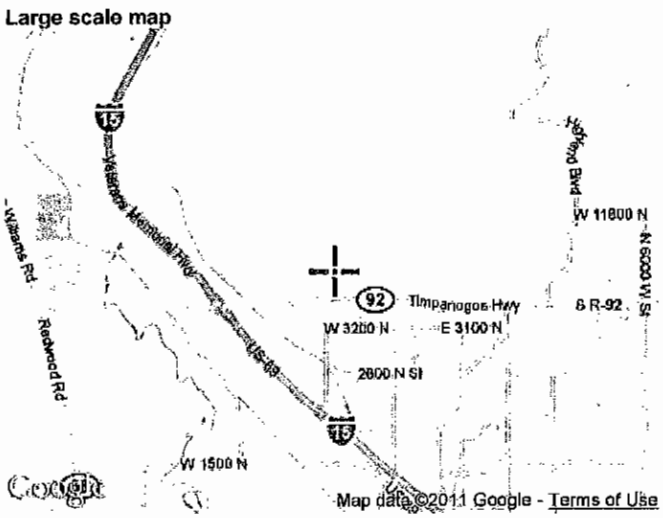
Back to Top

Maps & aerials

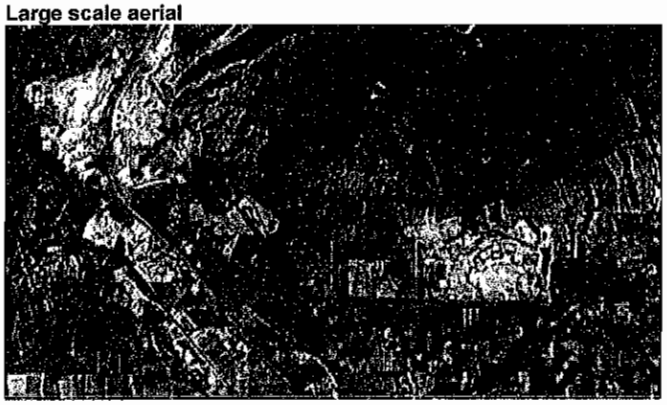
Small scale terrain



Large scale map



Large scale aerial



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NOAA Atlas 14, Volume 1, Version 5
Location name: Lehi, Utah, US*
Coordinates: 40.4373, -111.8674
Elevation: 4978ft*
* source: Google Maps

POINT PRECIPITATION FREQUENCY ESTIMATES

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NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval(years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	1.54 (1.34-1.78)	1.94 (1.72-2.26)	2.68 (2.34-3.11)	3.35 (2.89-3.89)	4.39 (3.70-5.15)	5.36 (4.39-6.34)	6.49 (5.16-7.76)	7.82 (5.99-9.50)	9.96 (7.22-12.4)	11.9 (8.27-15.1)
10-min	1.17 (1.03-1.36)	1.48 (1.30-1.72)	2.03 (1.78-2.36)	2.54 (2.20-2.96)	3.34 (2.81-3.91)	4.09 (3.35-4.62)	4.94 (3.93-5.90)	5.96 (4.56-7.23)	7.58 (5.50-9.43)	9.06 (6.29-11.5)
15-min	0.968 (0.848-1.12)	1.22 (1.08-1.42)	1.68 (1.47-1.95)	2.10 (1.82-2.44)	2.76 (2.32-3.24)	3.38 (2.77-3.98)	4.09 (3.25-4.88)	4.92 (3.77-5.98)	6.26 (4.55-7.79)	7.49 (5.20-9.52)
30-min	0.650 (0.570-0.754)	0.826 (0.726-0.956)	1.13 (0.990-1.31)	1.42 (1.22-1.65)	1.86 (1.57-2.18)	2.27 (1.86-2.68)	2.75 (2.19-3.28)	3.32 (2.54-4.03)	4.22 (3.06-5.25)	5.04 (3.50-6.41)
60-min	0.403 (0.353-0.466)	0.511 (0.449-0.592)	0.701 (0.613-0.813)	0.876 (0.756-1.02)	1.15 (0.969-1.35)	1.41 (1.15-1.66)	1.70 (1.35-2.03)	2.05 (1.57-2.49)	2.61 (1.90-3.25)	3.12 (2.17-3.97)
2-hr	0.252 (0.228-0.286)	0.315 (0.283-0.356)	0.412 (0.368-0.466)	0.501 (0.444-0.569)	0.646 (0.558-0.738)	0.779 (0.656-0.897)	0.936 (0.762-1.09)	1.12 (0.878-1.33)	1.42 (1.05-1.73)	1.69 (1.20-2.11)
3-hr	0.194 (0.177-0.216)	0.240 (0.219-0.267)	0.304 (0.275-0.338)	0.362 (0.326-0.404)	0.455 (0.401-0.510)	0.536 (0.463-0.607)	0.636 (0.534-0.730)	0.753 (0.613-0.896)	0.947 (0.736-1.16)	1.13 (0.839-1.42)
6-hr	0.127 (0.118-0.138)	0.156 (0.145-0.171)	0.191 (0.176-0.208)	0.221 (0.203-0.241)	0.266 (0.240-0.292)	0.303 (0.270-0.335)	0.346 (0.302-0.388)	0.398 (0.340-0.452)	0.492 (0.407-0.589)	0.575 (0.463-0.718)
12-hr	0.080 (0.074-0.087)	0.098 (0.091-0.107)	0.119 (0.109-0.130)	0.136 (0.125-0.149)	0.162 (0.146-0.178)	0.182 (0.163-0.202)	0.204 (0.179-0.229)	0.229 (0.197-0.260)	0.268 (0.225-0.312)	0.300 (0.246-0.359)
24-hr	0.045 (0.042-0.048)	0.055 (0.052-0.059)	0.066 (0.062-0.071)	0.075 (0.070-0.080)	0.087 (0.081-0.093)	0.096 (0.089-0.103)	0.105 (0.097-0.116)	0.116 (0.105-0.132)	0.136 (0.116-0.158)	0.152 (0.124-0.182)
2-day	0.027 (0.025-0.029)	0.033 (0.031-0.035)	0.039 (0.036-0.042)	0.044 (0.041-0.047)	0.051 (0.048-0.055)	0.056 (0.052-0.060)	0.062 (0.057-0.066)	0.067 (0.062-0.072)	0.074 (0.068-0.080)	0.080 (0.072-0.092)
3-day	0.019 (0.018-0.021)	0.024 (0.022-0.026)	0.028 (0.026-0.031)	0.032 (0.030-0.035)	0.037 (0.035-0.040)	0.042 (0.038-0.045)	0.046 (0.042-0.049)	0.050 (0.046-0.054)	0.056 (0.050-0.060)	0.060 (0.054-0.067)
4-day	0.016 (0.015-0.017)	0.019 (0.018-0.021)	0.023 (0.021-0.025)	0.026 (0.024-0.028)	0.031 (0.028-0.033)	0.034 (0.031-0.037)	0.038 (0.035-0.041)	0.041 (0.038-0.045)	0.046 (0.042-0.050)	0.050 (0.045-0.055)
7-day	0.011 (0.010-0.012)	0.013 (0.012-0.014)	0.016 (0.014-0.017)	0.018 (0.016-0.019)	0.020 (0.019-0.022)	0.023 (0.021-0.024)	0.025 (0.023-0.027)	0.027 (0.025-0.029)	0.030 (0.027-0.032)	0.032 (0.029-0.035)
10-day	0.008 (0.008-0.009)	0.010 (0.010-0.011)	0.012 (0.011-0.013)	0.014 (0.013-0.015)	0.016 (0.015-0.017)	0.017 (0.016-0.019)	0.019 (0.017-0.020)	0.020 (0.019-0.022)	0.022 (0.020-0.024)	0.023 (0.021-0.025)
20-day	0.006 (0.005-0.006)	0.007 (0.006-0.007)	0.008 (0.007-0.009)	0.009 (0.008-0.010)	0.010 (0.009-0.011)	0.011 (0.010-0.012)	0.012 (0.011-0.013)	0.013 (0.012-0.014)	0.014 (0.012-0.015)	0.014 (0.013-0.015)
30-day	0.004 (0.004-0.005)	0.005 (0.005-0.006)	0.006 (0.006-0.007)	0.007 (0.007-0.008)	0.008 (0.007-0.009)	0.009 (0.008-0.009)	0.009 (0.009-0.010)	0.010 (0.009-0.011)	0.011 (0.010-0.012)	0.011 (0.010-0.012)
45-day	0.004 (0.003-0.004)	0.004 (0.004-0.005)	0.005 (0.005-0.006)	0.006 (0.005-0.006)	0.007 (0.006-0.007)	0.007 (0.007-0.008)	0.008 (0.007-0.008)	0.008 (0.008-0.009)	0.009 (0.008-0.009)	0.009 (0.008-0.010)
60-day	0.003 (0.003-0.003)	0.004 (0.004-0.004)	0.005 (0.004-0.005)	0.005 (0.005-0.006)	0.006 (0.005-0.006)	0.006 (0.006-0.007)	0.007 (0.006-0.007)	0.007 (0.007-0.008)	0.008 (0.007-0.008)	0.008 (0.007-0.009)

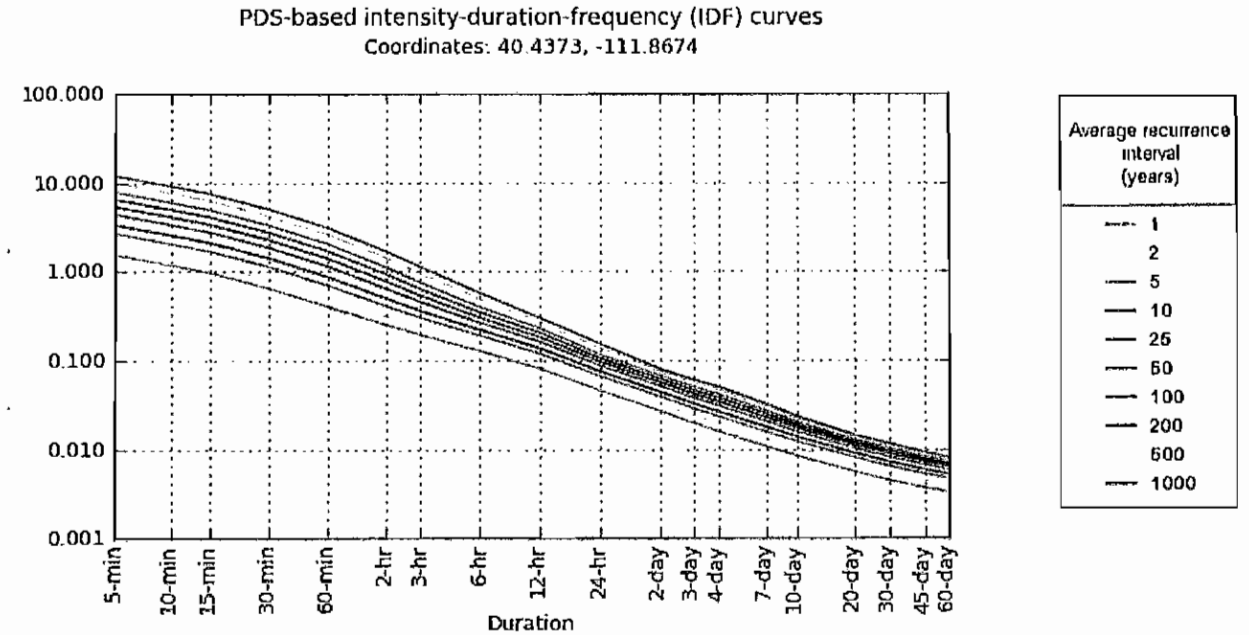
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

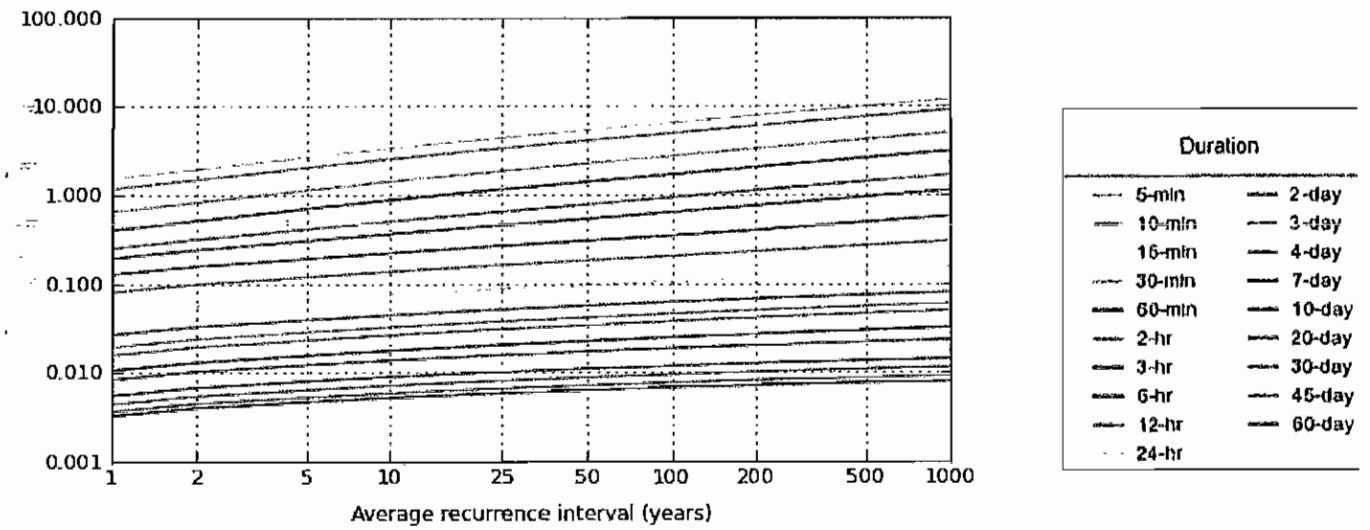
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical





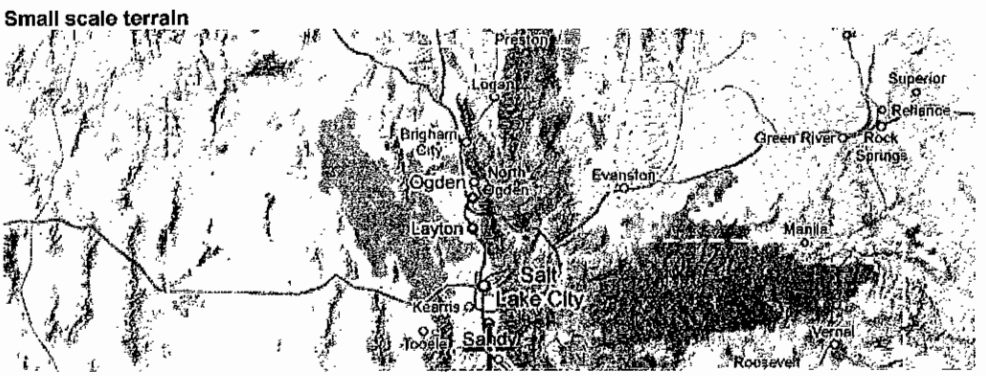
NOAA/NWS/OHD/HDSC

Created (GMT): Fri Apr 22 19:51:10 2011

Back to Top

Maps & aerials

Small scale terrain



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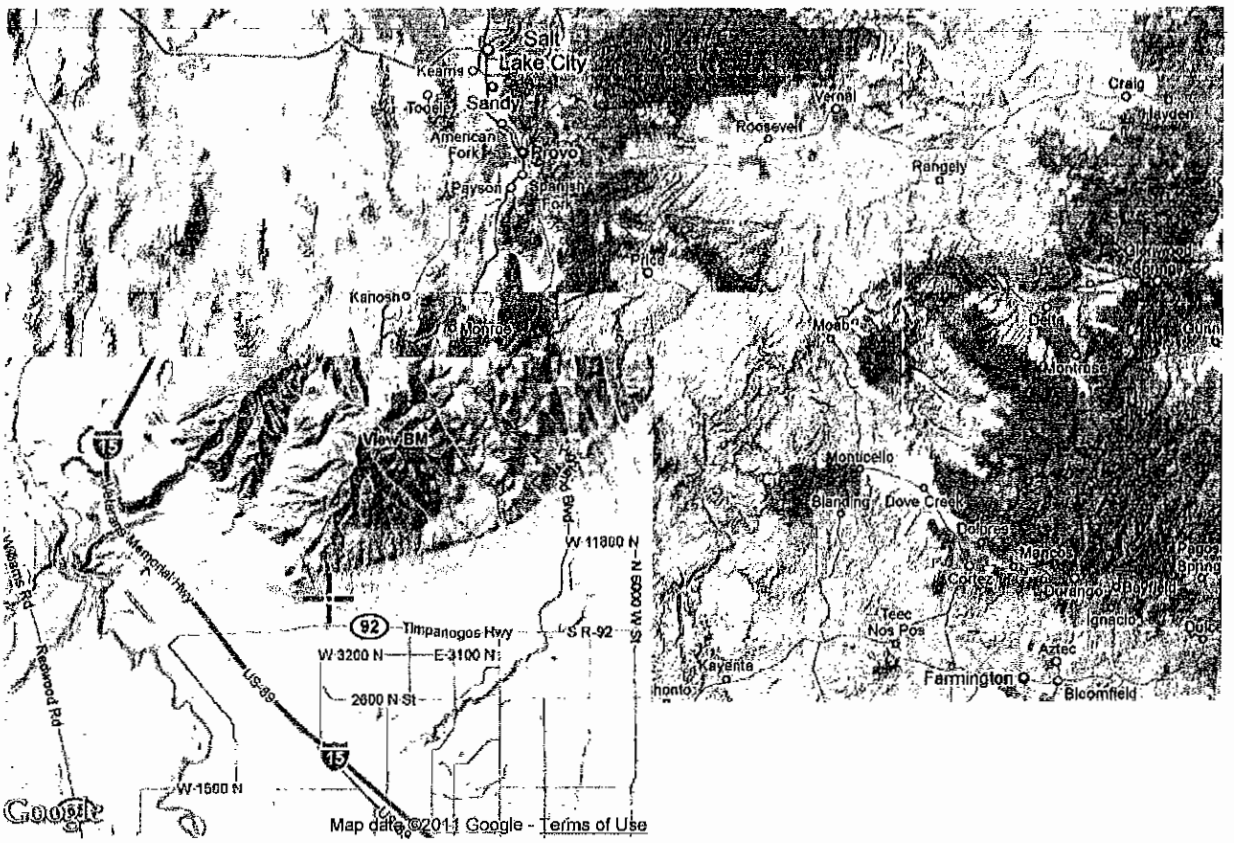
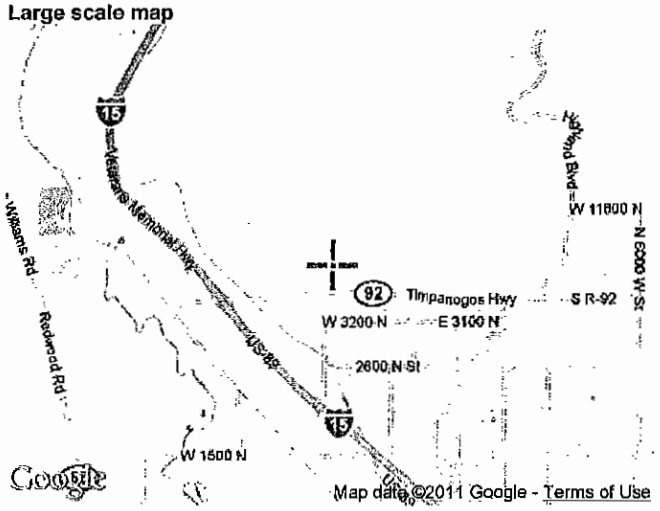


Large scale map



Large scale aerial

LEHI CITY
AGREEMENT & UDOT
EXHIBITS

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AGREEMENT

For

LEHI CITY DETENTION & STORM DRAIN FACILITIES AT PILGRIM'S LANDING

Between

LEHI CITY and PILGRIM'S LANDING, LLC and

MOUNTAIN HOME DEVELOPMENT CORPORATION

WHEREAS, Lehi City owns an existing 8.10 acre foot detention basin (the "Traverse Mountain Detention Basin") on a 9.46 acre parcel located in the Traverse Mountain Development (Parcel No.: 53:257:0001) (the "Development Property");

WHEREAS, Lehi City owns and maintains an existing detention facility (the "Pilgrim's Landing Detention Basin") along the western edge of the Pilgrim's Landing, LLC property, and has already purchased an additional 1.15 acres of adjacent property from Pilgrim's Landing, LLC;

WHEREAS, Lehi City is currently in the process of designing and constructing a 72-inch storm drain and detention basin along and in property owned by Pilgrim's Landing, LLC;

WHEREAS, Lehi City desires to acquire additional land from Pilgrim's Landing, LLC to upgrade and increase the Pilgrim's Landing Detention Basin's capacity to serve the residents of Lehi City, drainage from I-15, SR-92, and Traverse Mountain Development (including replacement of the Traverse Mountain Detention Basin), and to provide a multi-use facility; and

WHEREAS, Mountain Home Development Corporation desires to acquire from Lehi City the Development Property for commercial development purposes, and Lehi City is willing to convey such property to Mountain Home Development Corporation on the terms and conditions set forth herein.

NOW THEREFORE, in consideration of the foregoing premises and the mutual promises contained herein, the Parties hereto agree as follows:

1. Pilgrim's Landing, LLC will sign a Special Warranty Deed to Lehi City for the property needed to increase the area of the Pilgrim's Landing Detention Basin to approximately 18.75 acres. (See attached Exhibit A.) The price of the sale will be $2,890,000.00.

2. Lehi City will pay Pilgrim's Landing, LLC $200,000.00 to be applied toward the total purchase price, reducing the amount owing to $2,690,000.00. In consideration of Mountain Home Development Corporation being able to purchase the Development Property, it agrees to pay to Pilgrim's Landing, LLC the balance of the purchase price ($2,690,000.00), to be evidenced by a Promissory Note from Mountain Home Development Corporation in favor of Pilgrim's Landing, LLC, secured by a first-priority Trust Deed on the Development Property in favor of Pilgrim's Landing, LLC.

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3. Lehi City will construct a detention basin on the property purchased from Pilgrim's Landing, LLC with a capacity of 17.1 acre feet, and upon completion thereof Lehi City will decommission the detention basin on the Development Property.

4. Lehi City will sign a Special Warranty Deed to Mountain Home Development Corporation for the 9.46 acre parcel (County Parcel No.: 53:257:0001, see attached Exhibit B) per the Area Plan Note #4, page 1 on the concept plan approved by Lehi City on November 18, 2008 which shall be used for commercial purposes only as generally described in the Area Plan.

5. Mountain Home Development Corporation will execute a promissory note and a first-position trust deed on the 9.46 acre parcel in favor of Pilgrim's Landing, LLC with the following terms:

    a. The promissory note shall be in the principal amount of $2,690,000.00, plus interest at the rate of 7% per annum.
    b. Annual interest payments of $188,300.00 shall be due on each anniversary date of the Promissory Note, and all unpaid principal and accrued interest shall be due on the 3rd anniversary of the Promissory Note.
    c. The Trust Deed on the Development Property shall be in the amount of $2,690,000.00, plus accrued interest, with a 3-year maturity date.
    d. Mountain Home Development Corporation's obligations under the trust deed will be recourse only to the property encumbered by the trust deed.
    e. If Pilgrim's Landing, LLC and/or its successors and assigns forecloses on the trust deed and acquires ownership of the 9.46 acre parcel, all owners of the parcel will hold the parcel subject to the Traverse Mountain Area Plan and CC&R's, all as in effect from time to time.

6. Lehi City will own and agrees to diligently proceed to build and maintain the new storm drain and detention facility to be built on the property purchased from Pilgrim's Landing, LLC.

7. Mountain Home Development Corporation will expand at its own cost the new storm basin to 37 acre feet in the future as capacity is needed.

8. Mountain Home Development Corporation will provide the trust deed in form and substance acceptable to Pilgrim's Landing, LLC in its sole discretion.

9. Lehi City will provide all legal documents for the Special Warranty Deeds in form and substance acceptable to the grantees of such Special Warranty Deeds.

10. The grantors of the Special Warranty Deeds shall provide at their cost an ALTA standard owner's policy insuring title to the subject properties, respectively, with only such exceptions as may be approved by the grantees.

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11. Lehi City, Pilgrim's Landing, LLC, and Mountain Home Development Corporation agree to close with Affiliated First Title Company, 321 East State Road, American Fork, UT 84003, Attention: Marnae Ballantyne.

Signed:

Lehi City	7-28-10 Date	Lehi City Mayor Title
Attest	7/28/10 Date	City Recorder Title
Pilgrim's Landing, LLC	7/28/10 Date	Manager Title
Mountain Home Development Corporation By Ted Heap, CEO	7/28/10 Date	CEO Title

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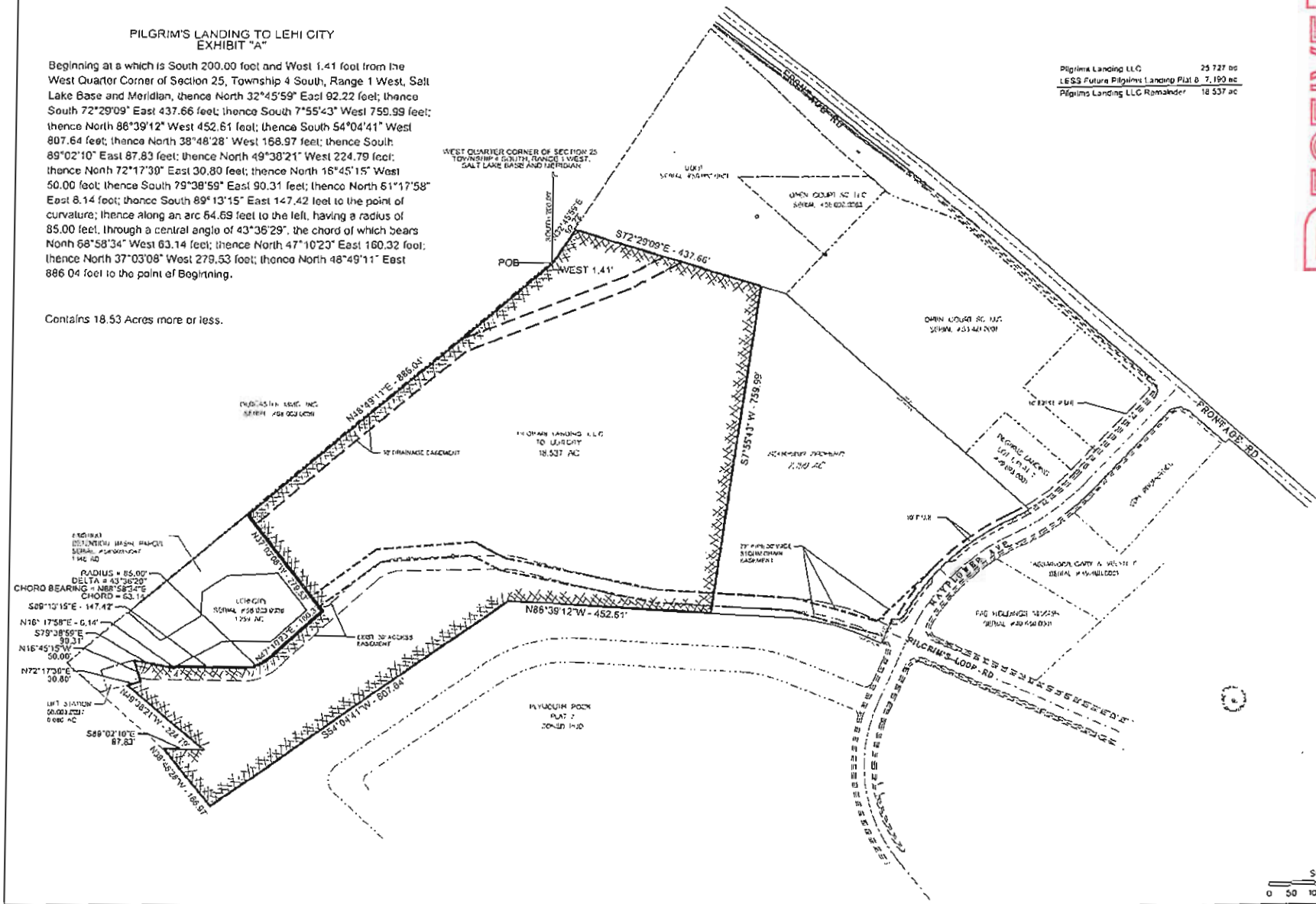
PILGRIM'S LANDING TO LEHI CITY
EXHIBIT "A"

Beginning at a which is South 200.00 feet and West 1.41 feet from the West Quarter Corner of Section 25, Township 4 South, Range 1 West, Salt Lake Base and Meridian, thence North 32°45'59" East 92.22 feet; thence South 72°29'09" East 437.66 feet; thence South 7°55'43" West 759.99 feet; thence North 86°39'12" West 452.61 feet; thence South 54°04'41" West 807.64 feet; thence North 38°48'28" West 168.97 feet; thence South 89°02'10" East 87.83 feet; thence North 49°38'21" West 224.79 feet; thence North 72°17'30" East 30.80 feet; thence North 16°45'15" West 50.00 feet; thence South 79°38'59" East 90.31 feet; thence North 61°17'58" East 8.14 feet; thence South 89°13'15" East 147.42 feet to the point of curvature; thence along an arc 64.69 feet to the left, having a radius of 85.00 feet, through a central angle of 43°36'29", the chord of which bears North 68°58'34" West 63.14 feet; thence North 47°10'23" East 160.32 feet; thence North 37°03'08" West 279.53 feet; thence North 46°49'11" East 886.04 feet to the point of Beginning.

Contains 18.53 Acres more or less.

Pilgrims Landing LLC	25.727 ac
LESS Future Pilgrims Landing Plat B	7.190 ac
Pilgrims Landing LLC Remainder	18.537 ac



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BROWN ENGINEERING, INC.

MAYFLOWER AVE REGIONAL STORM DRAIN
LEHI CITY
EXHIBIT A

Exhibit "B"

Lehi City to Traverse Mountain

Lot 1, Plat A, Traverse Mountain Subdivision.

Area = 9.455 acres

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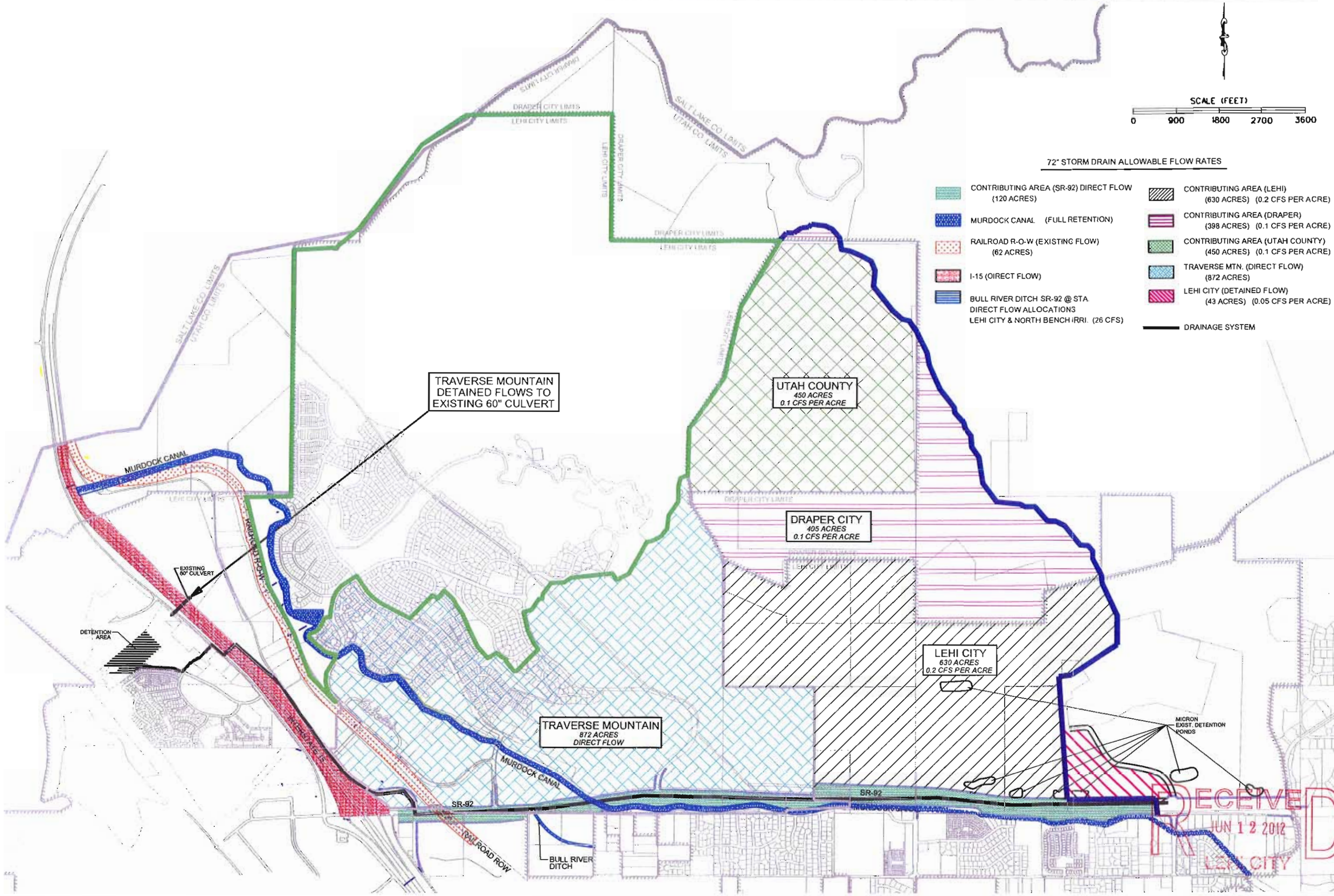


MW BROWN ENGINEERING, INC.
Office: (801) 377-1790 Fax: (801) 377-1789
578 East 770 North, Orem UT 84097

No.	Date	By	REVISIONS	Notes

Designed: D.A. BRIFFO
Drawn: D.A. BRIFFO
Checked: M.W. BROWN
Date: JANUARY 27, 2010

Title: EXHIBIT "A"
Client: LEHI CITY ALLOWABLE FLOW RATE
DATE: FEBRUARY 2011

PROJECT NO. 2008.070

SHEET NO. 1

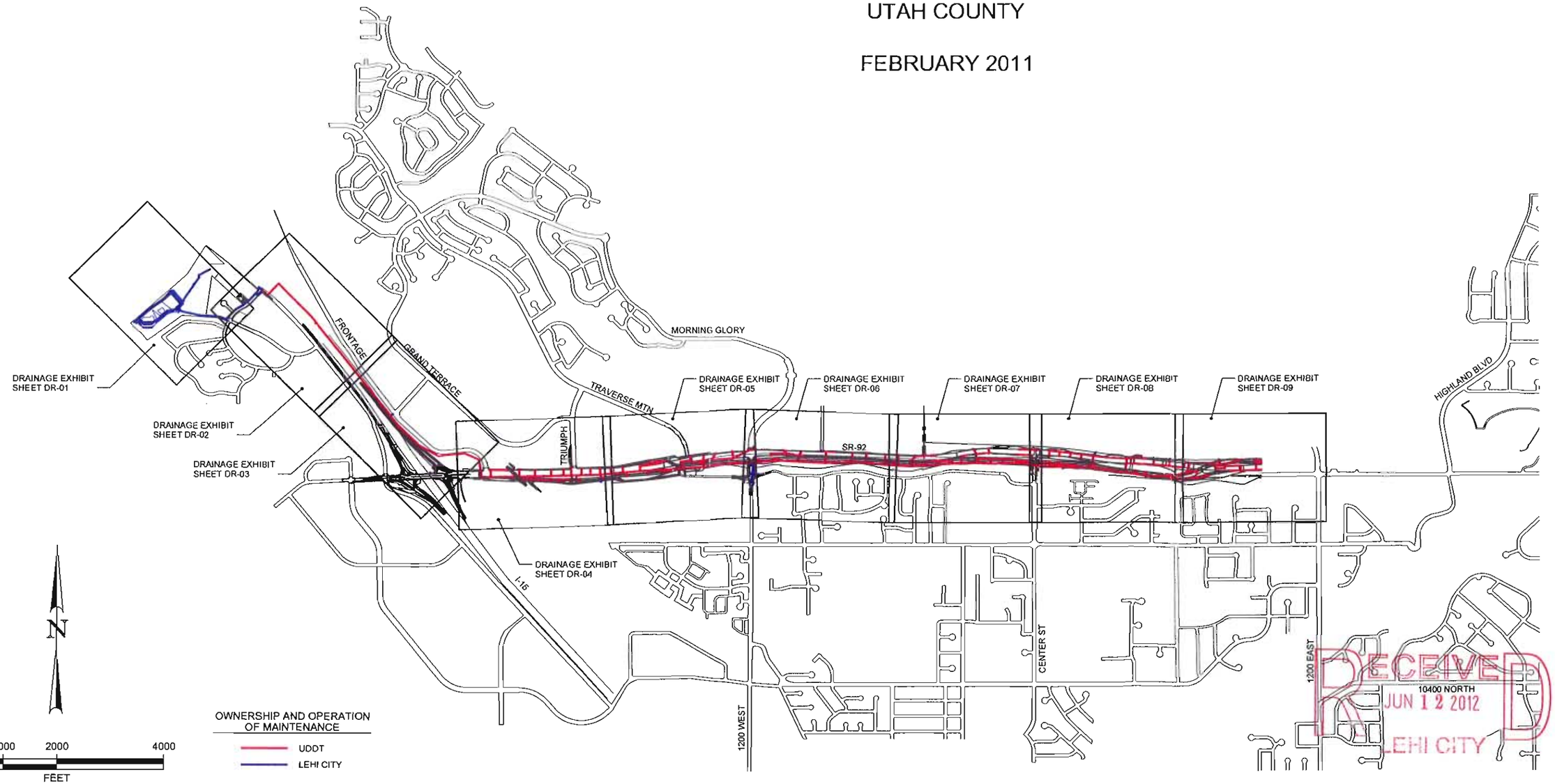
UTAH
DEPARTMENT OF TRANSPORTATION

DRAINAGE AGREEMENT EXHIBIT B

UTAH COUNTY ACCESS MANAGEMENT
SR-92, LEHI TO HIGHLAND

UTAH COUNTY

FEBRUARY 2011



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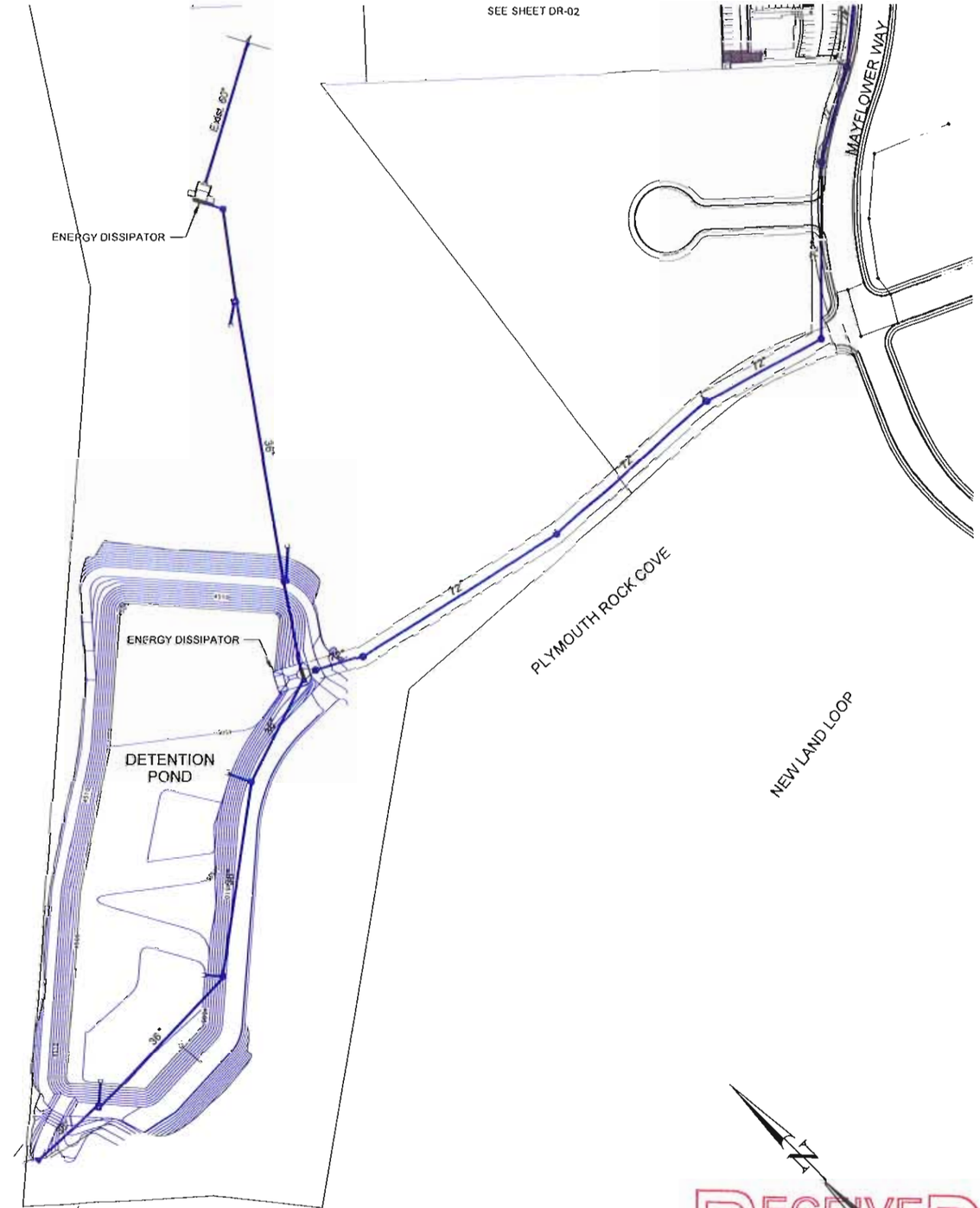
SEE SHEET DR-02
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ENERGY DISSIPATOR
ENERGY DISSIPATOR
DETENTION POND
PLYMOUTH ROCK COVE
NEW LAND LOOP
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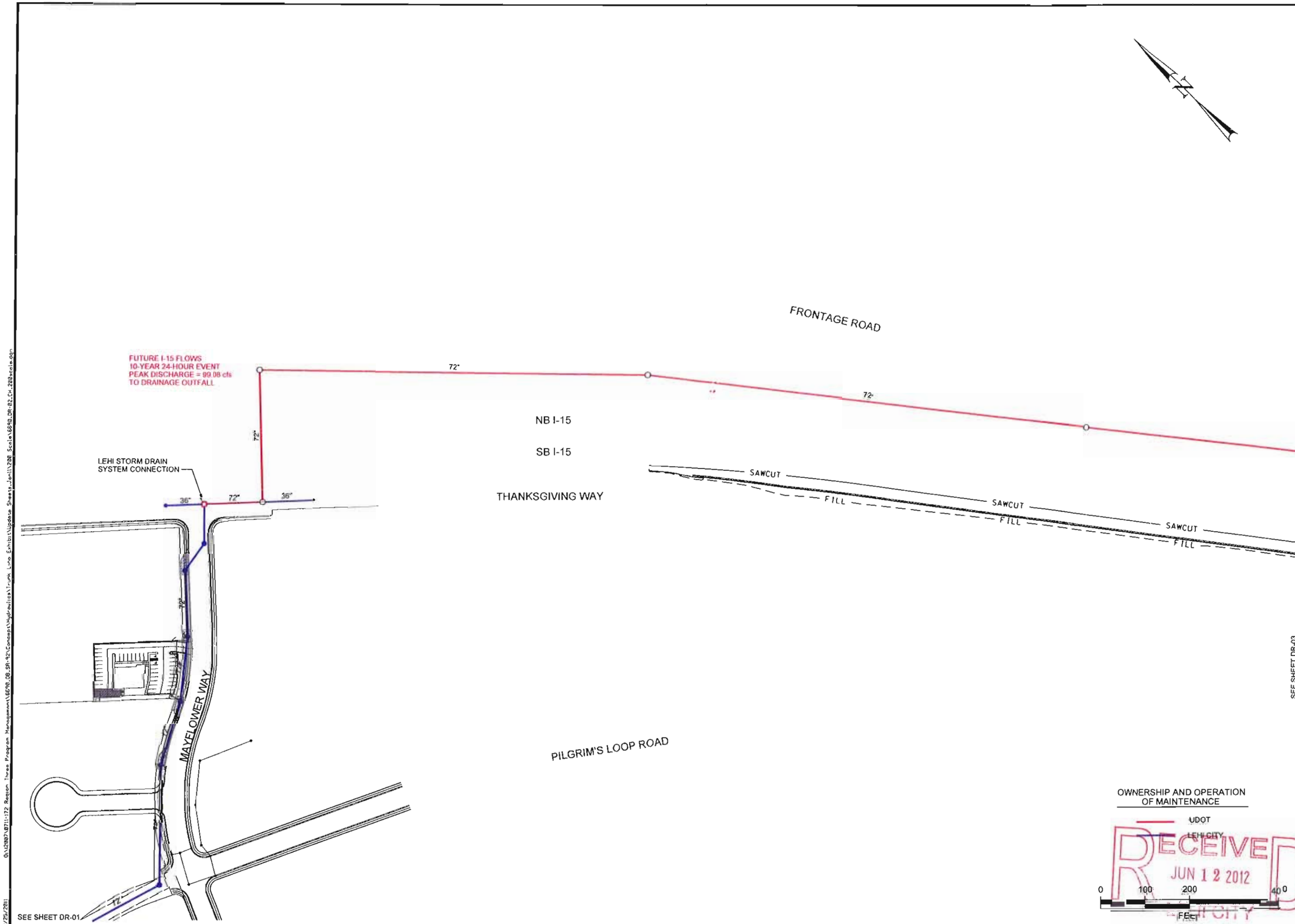
72"
72"
36"
36"
36



REVISIONS

NO.	DATE	APPROVED BY	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN

DRAWN BY
QC CHECKED BY
DATE
APPROVED
PROFESSIONAL ENGINEER

UTAH COUNTY ACCESS MANAGEMENT
SR-92, LEHI TO HIGHLAND
F-0092(12)1
DRAINAGE EXHIBIT

PROJECT
PROJECT NUMBER
SHEET NO. DR-02

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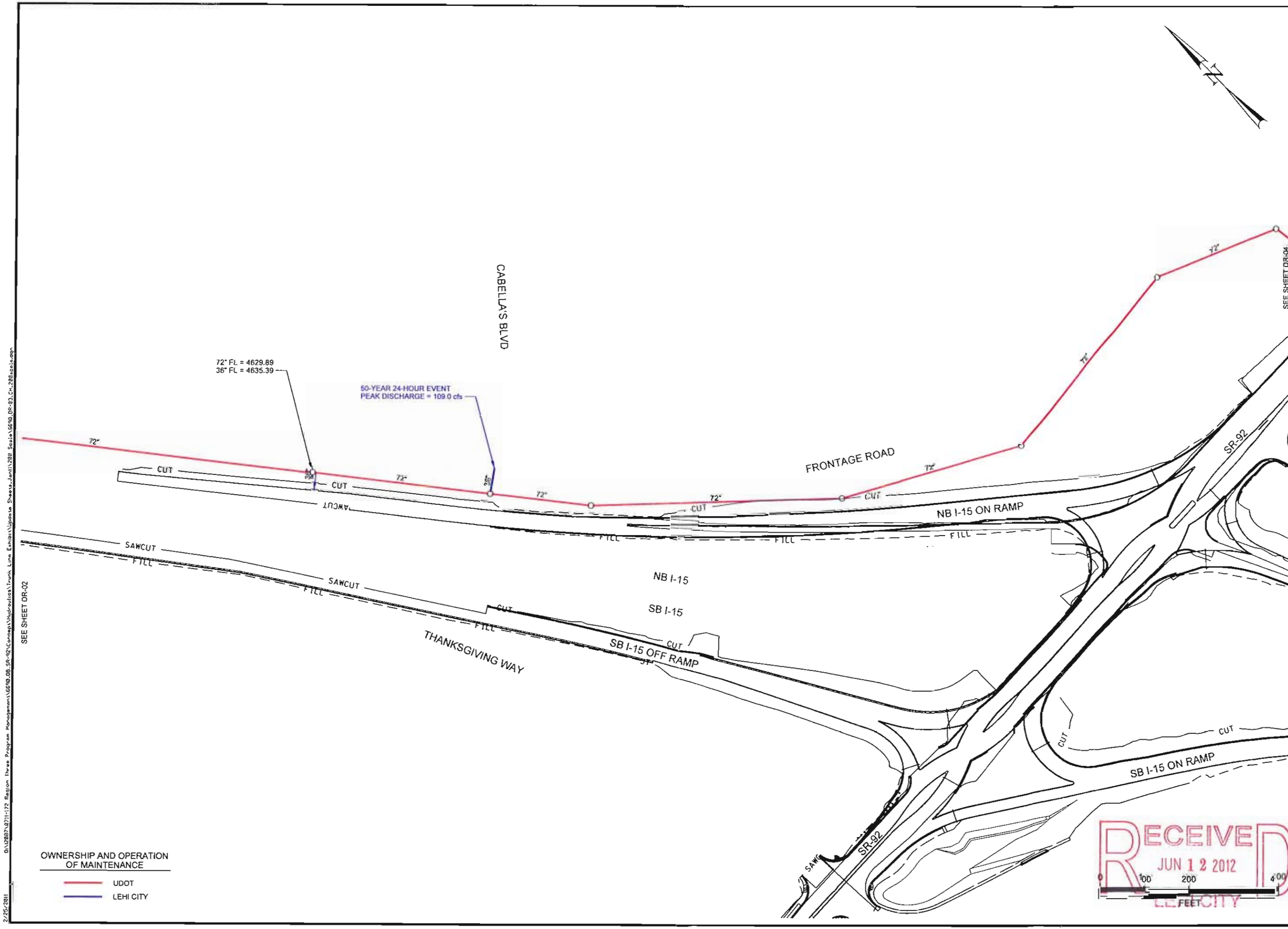
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72" FL = 4629.89
36" FL = 4635.39
50-YEAR 24-HOUR EVENT
PEAK DISCHARGE = 109.0 cfs
72"
CUT
SAWCUT
FILL
FRONTAGE ROAD
NB I-15 ON RAMP
NB I-15
SB I-15
SB I-15 OFF RAMP
THANKSGIVING WAY
SR-92
SB I-15 ON RAMP
SEE SHEET DR-02
SEE SHEET DR-04
OWNERSHIP AND OPERATION
OF MAINTENANCE
UDOT
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PROFESSIONAL ENGINEER
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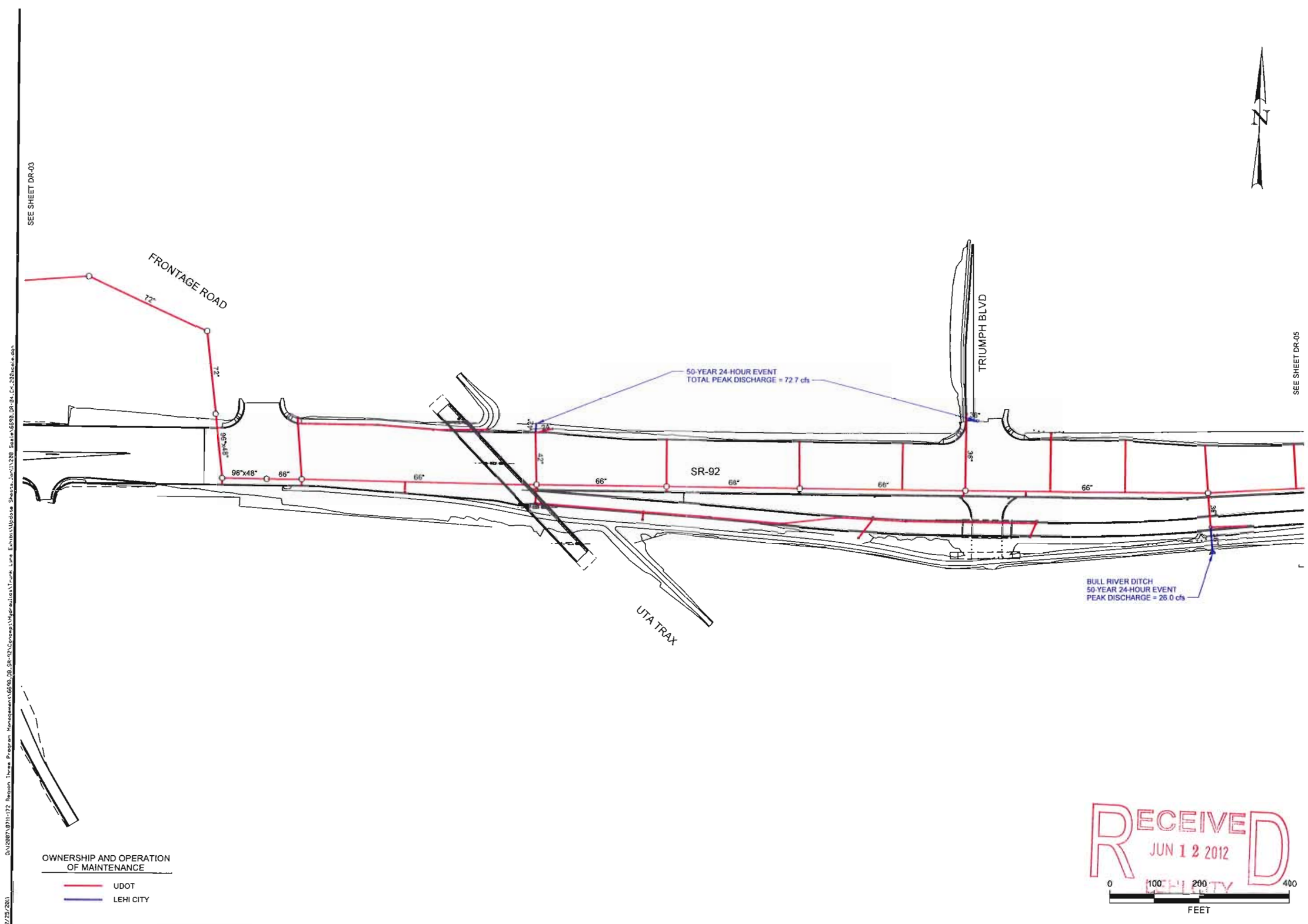

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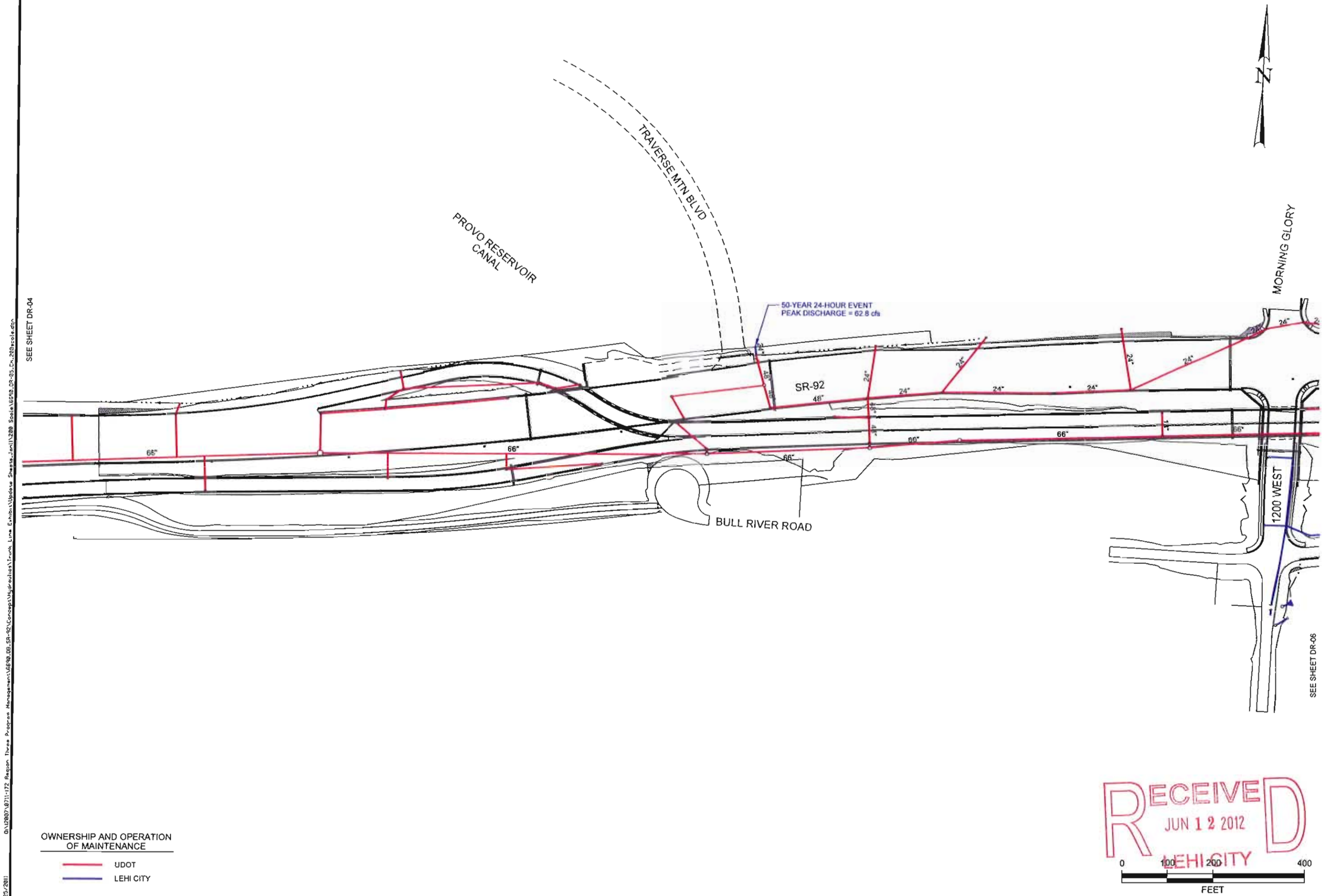

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SR-92, LEHI TO HIGHLAND

PROJECT NUMBER: F-0092(12)1

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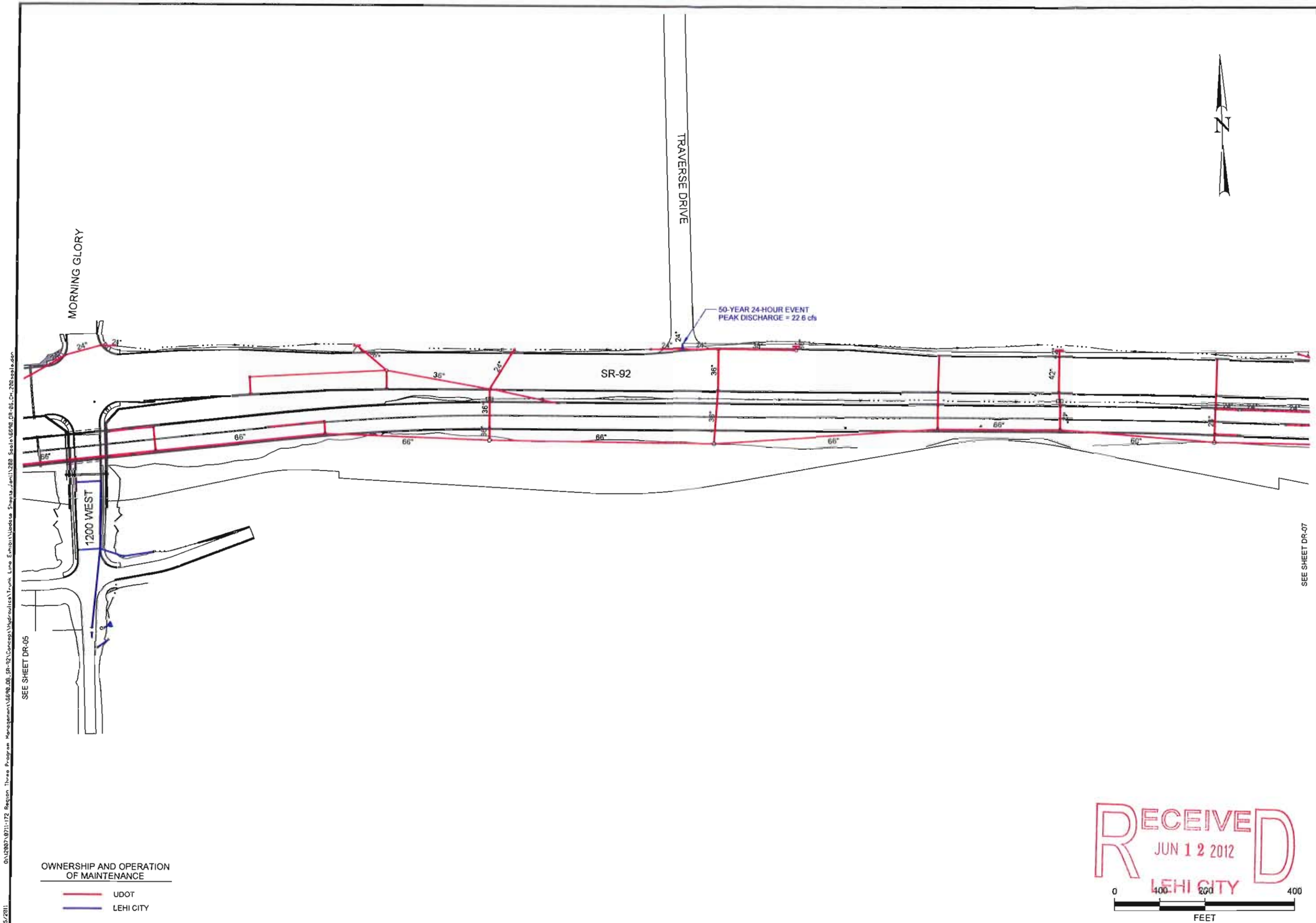

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PROJECT NUMBER: F-0092(12)1
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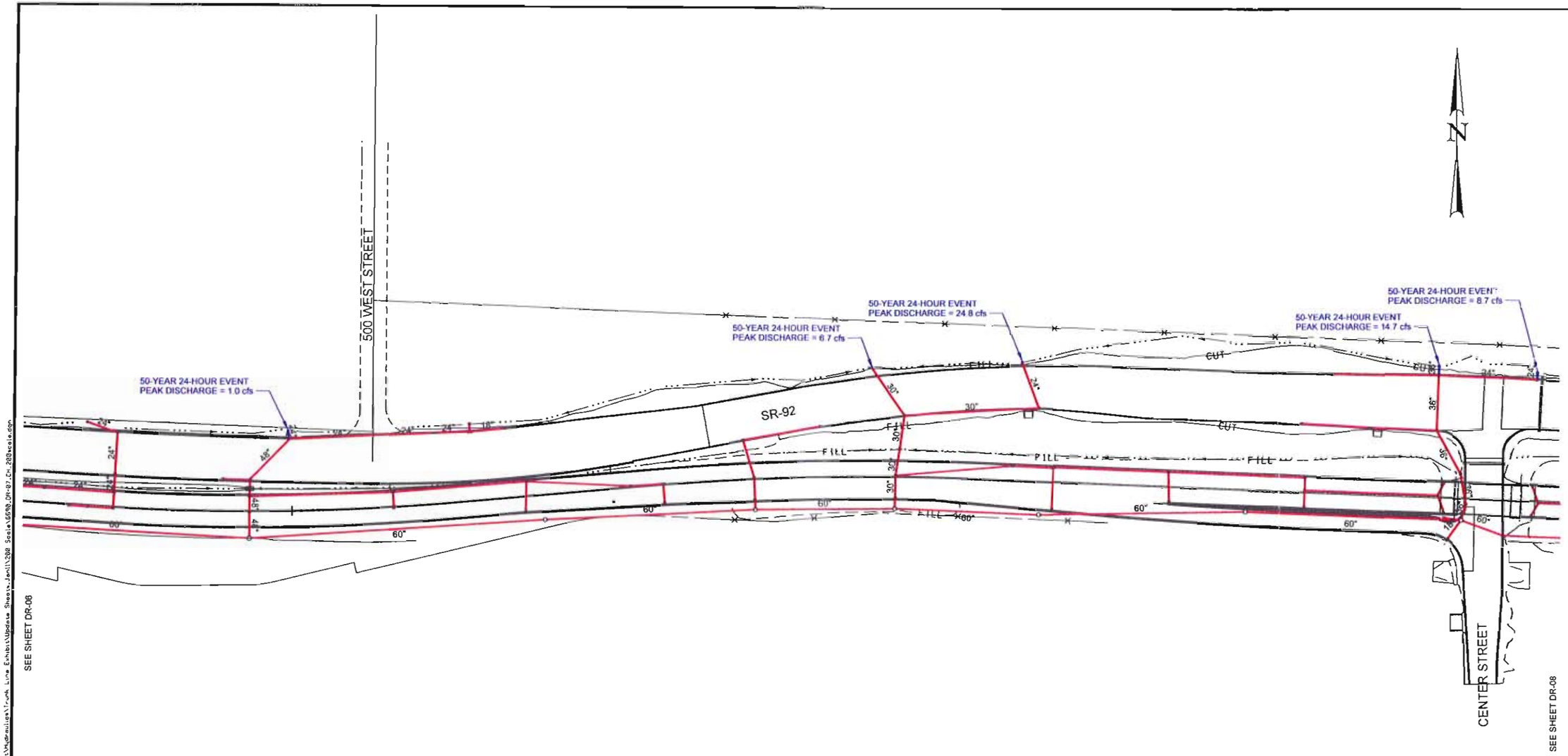

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PROFESSIONAL ENGINEER

UTAH COUNTY ACCESS MANAGEMENT

SR-92, LEHI TO HIGHLAND

PROJECT

F-0092(12)1

PROJECT NUMBER

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10 YEAR HEC-1

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*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 551-1748              *
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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

HEC-1 INPUT PAGE 1

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

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 10           PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
 11           PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
 12           PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
 13           PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
 14           PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
 15           PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
 16           PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
 17           PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
 18           PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
 19           PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
 20           PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
 21           PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
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JUN 12 2012
LEHI CITY

21	PC	0.772	0.778	0.7836	0.789	0.7942	0.799	0.8036	0.808	0.8122	0.8162
22	PC	0.82	0.8237	0.8273	0.8308	0.8342	0.8376	0.8409	0.8442	0.8474	0.8505
23	PC	0.8535	0.8565	0.8594	0.8622	0.8649	0.8676	0.8702	0.8728	0.8753	0.8777
24	PC	0.88	0.8823	0.8845	0.8868	0.889	0.8912	0.8933	0.8955	0.8976	0.8997
25	PC	0.9018	0.9038	0.9058	0.9078	0.9097	0.9117	0.9136	0.9155	0.9174	0.9192
26	PC	0.921	0.9228	0.9245	0.9263	0.928	0.9297	0.9314	0.933	0.9346	0.9362
27	PC	0.9377	0.9393	0.9408	0.9423	0.9437	0.9452	0.9466	0.948	0.9494	0.9507
28	PC	0.952	0.9533	0.9546	0.9559	0.9572	0.9584	0.9597	0.961	0.9622	0.9635
29	PC	0.9648	0.966	0.9672	0.9685	0.9697	0.9709	0.9722	0.9734	0.9746	0.9758
30	PC	0.977	0.9782	0.9794	0.9806	0.9818	0.9829	0.9841	0.9853	0.9864	0.9876
31	PC	0.9888	0.9899	0.991	0.9922	0.9933	0.9944	0.9956	0.9967	0.9978	0.9989
32	PC	1.0									
33	KK	329B									
34	KO	0	0	0.0	0	22					
35	BA	0.0487									
36	LS	0.0	74.2	0.0							
37	UD	0.1151									
38	KK	403B									
39	KO	0	0	0.0	0	22					
40	BA	0.0216									
41	LS	0.0	74.49	0.0							
42	UD	0.0893									
43	KK	37C	CNAME	37R							
44	KO	0	0	0.0	0	22					
45	HC	2									

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

  46          KK     37R   CNAME     37C
  47          KO       0       0     0.0       0      22
  48          RS       1    FLOW     0.0     0.0
              * 37C Volume
  49          SV     0.00.1266630.253327 0.379990.5066530.633316 0.759980.8866431.0133061.139969
  50          SV  1.26661.3932961.5199591.6466221.7732861.8999492.0266122.1532752.2799392.406602
              * 37C Elevation
  51          SE  4742.04742.4214742.8424743.2634743.6844744.1054744.5264744.9474745.3684745.789
  52          SE  4746.24746.6314747.0524747.4734747.8944748.3154748.7364749.1574749.578  4750.0
              * 37C Discharge
  53          SQ     0.02.197453 8.3679616.4140423.1448215.9029218.6881421.1090223.2794925.26417
  54          SQ  27.10328.8264930.4517731.9946033.4663734.8761036.2310137.5370538.7991540.02147
              * 37C Elevation
  55          SE  4742.04742.4214742.8424743.2634743.6844744.1054744.5264744.9474745.3684745.789
  56          SE  4746.24746.6314747.0524747.4734747.8944748.3154748.7364749.1574749.578  4750.0

  57          KK     11B
  58          KO       0       0     0.0       0      22
  59          BA  0.1161
  60          LS     0.0    57.0     0.0
  61          UD  0.0767

  62          KK      6R   CNAME      6C
  63          KO       0       0     0.0       0      22
  64          RN      6R

  65          KK     10B
  66          KO       0       0     0.0       0      22
  67          BA  0.1616
  68          LS     0.0   71.74     0.0
  69          UD  0.1283

  70          KK     13C   CNAME     13R
  71          KO       0       0     0.0       0      22
  72          HC       2

  73          KK     13R   CNAME     13C
  74          KO       0       0     0.0       0      22
  75          RS       1    FLOW     0.0     0.0
              * 13C Volume
  76          SV     0.00.9742581.9639382.969202 3.990215.0271236.0801017.1493058.2348969.337034
  77          SV  10.45511.5915912.7443313.9142715.1015516.3063517.5288218.7691220.0274121.30386
              * 13C Elevation
  78          SE  4800.04800.5264801.0524801.5784802.1054802.6314803.1574803.6844804.2104804.736
  79          SE  4805.24805.7894806.3154806.8424807.3684807.8944808.4214808.9474809.473  4810.0
              * 13C Discharge
  80          SQ     0.03.42952912.3279421.8209515.9029219.3218222.2207724.7829127.1039229.24128
  81          SQ  31.23233.1045734.8761036.5618938.1733239.7194241.2075542.6437844.0331945.38008
              * 13C Elevation
  82          SE  4800.04800.5264801.0524801.5784802.1054802.6314803.1574803.6844804.2104804.736
  83          SE  4805.24805.7894806.3154806.8424807.3684807.8944808.4214808.9474809.473  4810.0
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JUN 12 2012
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  84          KK     98B
  85          KO       0       0     0.0       0      22
  86          BA  0.1097
  87          LS     0.0   64.48     0.0
  88          UD  0.0812

  89          KK     29R   CNAME     29C
  90          KO       0       0     0.0       0      22
  91          RN     29R

  92          KK    408B
  93          KO       0       0     0.0       0      22
  94          BA  0.0830
  95          LS     0.0   66.25     0.0
  96          UD  0.1008

  97          KK     99B
  98          KO       0       0     0.0       0      22
  99          BA  0.0594
 100          LS     0.0   78.61     0.0
 101          UD  0.0694

 102          KK     30C   CNAME     30R
 103          KO       0       0     0.0       0      22
 104          HC       3

 105          KK    103B
 106          KO       0       0     0.0       0      22
 107          BA  0.0102
 108          LS     0.0    84.1     0.0
 109          UD  0.1933

 110          KK    401B
 111          KO       0       0     0.0       0      22
 112          BA  0.1360
 113          LS     0.0   74.82     0.0
 114          UD  0.1917

 115          KK     32C   CNAME     32R
 116          KO       0       0     0.0       0      22
 117          HC       3

 118          KK    101B
 119          KO       0       0     0.0       0      22
 120          BA  0.1138
 121          LS     0.0   64.94     0.0
 122          UD  0.1459

 123          KK     31R   CNAME     31C
 124          KO       0       0     0.0       0      22
 125          RN     31R
```

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

  126         KK     83B
  127         KO       0       0     0.0       0      22
  128         BA  0.5686
  129         LS     0.0   58.07     0.0
  130         UD  0.0556

  131         KK     19R   CNAME     19C
  132         KO       0       0     0.0       0      22
  133         RN     19R

  134         KK     86B
  135         KO       0       0     0.0       0      22
  136         BA  0.0259
  137         LS     0.0   73.61     0.0
  138         UD  0.0556

  139         KK     21C   CNAME     21R
  140         KO       0       0     0.0       0      22
  141         HC       2

  142         KK     85B
  143         KO       0       0     0.0       0      22
  144         BA  0.1593
  145         LS     0.0   63.35     0.0
  146         UD  0.0556

  147         KK     16C   CNAME     16R
  148         KO       0       0     0.0       0      22
  149         HC       2

  150         KK     81B
  151         KO       0       0     0.0       0      22
  152         BA  0.1869
  153         LS     0.0   58.02     0.0
  154         UD  0.0556

  155         KK     17R   CNAME     17C
  156         KO       0       0     0.0       0      22
  157         RN     17R

  158         KK     84B
  159         KO       0       0     0.0       0      22
  160         BA  0.1198
  161         LS     0.0   67.12     0.0
  162         UD  0.0556

  163         KK     20C   CNAME     20R
  164         KO       0       0     0.0       0      22
  165         HC       3
```

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JUN 12 2012
LEHI CITY

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

  166         KK     79B
  167         KO       0       0     0.0       0      22
  168         BA  0.0165
  169         LS     0.0   68.61     0.0
  170         UD  0.0556

  171         KK     15R   CNAME     15C
  172         KO       0       0     0.0       0      22
  173         RN     15R

  174         KK     78B
  175         KO       0       0     0.0       0      22
  176         BA  0.0764
  177         LS     0.0   61.01     0.0
  178         UD  0.0556

  179         KK      8C   CNAME      8R
  180         KO       0       0     0.0       0      22
  181         HC       2

  182         KK     87B
  183         KO       0       0     0.0       0      22
  184         BA  0.0637
  185         LS     0.0   66.31     0.0
  186         UD  0.0556

  187         KK     22C   CNAME     22R
  188         KO       0       0     0.0       0      22
  189         HC       2

  190         KK     77B
  191         KO       0       0     0.0       0      22
  192         BA  0.0564
  193         LS     0.0   62.17     0.0
  194         UD  0.0556

  195         KK      7C   CNAME      7R
  196         KO       0       0     0.0       0      22
  197         HC       3

  198         KK    177B
  199         KO       0       0     0.0       0      22
  200         BA  0.0215
  201         LS     0.0    64.7     0.0
  202         UD  0.0320

  203         KK    248B
  204         KO       0       0     0.0       0      22
  205         BA  0.0832
  206         LS     0.0   66.07     0.0
  207         UD  0.0813
```

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

  208         KK    176B
  209         KO       0       0     0.0       0      22
  210         BA  0.0174
  211         LS     0.0   75.39     0.0
  212         UD  0.1412

  213         KK     41C   CNAME     41R
  214         KO       0       0     0.0       0      22
  215         HC       5

  216         KK    286B
  217         KO       0       0     0.0       1      22
  218         BA  0.4184
  219         LS     0.0   70.78     0.0
  220         UD  0.0268

  221         KK    181B
  222         KO       0       0     0.0       1      22
  223         BA  0.0313
  224         LS     0.0   77.05     0.0
  225         UD  0.0991

  226         KK     43C   CNAME     43R
  227         KO       0       0     0.0       0      22
  228         HC       3

  229         KK      2B
  230         KO       0       0     0.0       1      22
  231         BA  0.0817
  232         LS     0.0   81.16     0.0
  233         UD  0.3103

  234         KK     38R   CNAME     38C
  235         KO       0       0     0.0       0      22
  236         RN     38R

  237         KK    405B
  238         KO       0       0     0.0       1      22
  239         BA  0.0092
  240         LS     0.0   80.21     0.0
  241         UD  0.0730

  242         KK    288B
  243         KO       0       0     0.0       1      22
  244         BA  0.0149
  245         LS     0.0   78.34     0.0
  246         UD  0.0664

  247         KK     44C   CNAME     44R
  248         KO       0       0     0.0       0      22
  249         HC       4
```

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JUN 12 2012
LEHI CITY

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

 250          KK    415B
 251          KO       0       0     0.0       1      22
 252          BA  0.0771
 253          LS     0.0   80.26     0.0
 254          UD  0.0921

 255          KK    459B
 256          KO       0       0     0.0       1      22
 257          BA  0.1803
 258          LS     0.0   79.85     0.0
 259          UD  0.1662

 260          KK      3C   CNAME      3R
 261          KO       0       0     0.0       0      22
 262          HC       4

 263          KK    163B
 264          KO       0       0     0.0       1      22
 265          BA  0.0618
 266          LS     0.0   80.62     0.0
 267          UD  0.1138

 268          KK      7B
 269          KO       0       0     0.0       1      22
 270          BA  0.0408
 271          LS     0.0   67.23     0.0
 272          UD  0.0556

 273          KK    411B
 274          KO       0       0     0.0       1      22
 275          BA  0.0331
 276          LS     0.0   79.74     0.0
 277          UD  0.0892

 278          KK     12C   CNAME     12R
 279          KO       0       0     0.0       0      22
 280          HC       4

 281          KK     12R   CNAME     12C
 282          KO       0       0     0.0       0      22
 283          RN     12R

 284          KK    141B
 285          KO       0       0     0.0       1      22
 286          BA  0.1600
 287          LS     0.0   69.57     0.0
 288          UD  0.1866

 289          KK     25R   CNAME     25C
 290          KO       0       0     0.0       0      22
 291          RD  1297.6 0.07153   0.013            CIRC     2.0     0.0
```

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

 292          KK    139B
 293          KO       0       0     0.0       0      22
 294          BA  0.0660
 295          LS     0.0   61.27     0.0
 296          UD  0.0702

 297          KK     23R   CNAME     23C
 298          KO       0       0     0.0       0      22
 299          RD  1357.8 0.04276   0.013            CIRC     2.0     0.0

 300          KK    140B
 301          KO       0       0     0.0       0      22
 302          BA  0.0475
 303          LS     0.0   67.54     0.0
 304          UD  0.0616

 305          KK     24C   CNAME     24R
 306          KO       0       0     0.0       0      22
 307          HC       2

 308          KK     24R   CNAME     24C
 309          KO       0       0     0.0       0      22
 310          RD  3765.7 0.06856   0.013            CIRC     2.0     0.0

 311          KK    138B
 312          KO       0       0     0.0       0      22
 313          BA  0.1174
 314          LS     0.0   71.23     0.0
 315          UD  0.2069

 316          KK     18C   CNAME     18R
 317          KO       0       0     0.0       0      22
 318          HC       3

 319          KK     18R   CNAME     18C
 320          KO       0       0     0.0       0      22
 321          RD  3528.0 0.04879   0.013            TRAP     2.0     0.0

 322          KK    155B
 323          KO       0       0     0.0       0      22
 324          BA  0.0758
 325          LS     0.0   75.21     0.0
 326          UD  0.1458

 327          KK    149B
 328          KO       0       0     0.0       0      22
 329          BA  0.2020
 330          LS     0.0   80.17     0.0
 331          UD  0.2477
```

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JUN 12 2012
LEHI CITY

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

 332          KK      4C   CNAME      4R
 333          KO       0       0     0.0       0      22
 334          HC       2

 335          KK      4R   CNAME      4C
 336          KO       0       0     0.0       0      22
 337          RS       1    FLOW     0.0     0.0
              * 4C Volume
 338          SV     0.00.2728530.5501420.8319091.118195 1.409041.7044872.0045762.3093492.618846
 339          SV  2.93313.2521783.5760963.9049024.2386384.5773464.921066 5.269845.6237085.982713
              * 4C Elevation
 340          SE  4811.04811.2104811.4214811.6314811.8424812.0524812.2634812.4734812.6844812.894
 341          SE  4813.14813.3154813.5264813.7364813.9474814.1574814.3684814.5784814.789  4815.0
              * 4C Discharge
 342          SQ  12.76313.3469013.9061714.4438114.9621415.4631015.9483316.4192316.8770017.32267
 343          SQ  17.75718.1812818.7378822.8393729.3622537.5566847.1173257.86315 69.670582.44792
              * 4C Elevation
 344          SE  4811.04811.2104811.4214811.6314811.8424812.0524812.2634812.4734812.6844812.894
 345          SE  4813.14813.3154813.5264813.7364813.9474814.1574814.3684814.5784814.789  4815.0

 346          KK     30B
 347          KO       0       0     0.0       0      22
 348          BA  0.1491
 349          LS     0.0   74.12     0.0
 350          UD  0.2306

 351          KK     66B
 352          KO       0       0     0.0       0      22
 353          BA  0.0522
 354          LS     0.0    72.0     0.0
 355          UD  0.0556

 356          KK     11C   CNAME     11R
 357          KO       0       0     0.0       0      22
 358          HC       4

 359          KK     11R   CNAME     11C
 360          KO       0       0     0.0       0      22
 361          RN     11R

 362          KK    241B
 363          KO       0       0     0.0       0      22
 364          BA  0.0949
 365          LS     0.0   73.24     0.0
 366          UD  0.1459

 367          KK     10R   CNAME     10C
 368          KO       0       0     0.0       0      22
 369          RN     10R
```

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

 370          KK    151B
 371          KO       0       0     0.0       0      22
 372          BA  0.0132
 373          LS     0.0   72.23     0.0
 374          UD  0.0337

 375          KK    150B
 376          KO       0       0     0.0       0      22
 377          BA  0.0461
 378          LS     0.0   79.46     0.0
 379          UD  0.0407

 380          KK     35C   CNAME     35R
 381          KO       0       0     0.0       0      22
 382          HC       2

 383          KK     35R   CNAME     35C
 384          KO       0       0     0.0       0      22
 385          RS       1    FLOW     0.0     0.0
              * 35C Volume
 386          SV     1.0     2.0     3.0     4.0     5.0     6.0     7.0     8.0     9.0    10.0
              * 35C Elevation
 387          SE  4815.0  4816.0  4817.0  4818.0  4819.0  4820.0  4821.0  4822.0  4823.0  4824.0
              * 35C Discharge
 388          SQ     5.0     5.0     5.0     5.0     5.0     5.0     5.0     5.0     5.0     5.0
              * 35C Elevation
 389          SE  4815.0  4816.0  4817.0  4818.0  4819.0  4820.0  4821.0  4822.0  4823.0  4824.0

 390          KK    143B
 391          KO       0       0     0.0       0      22
 392          BA  0.0414
 393          LS     0.0    74.0     0.0
 394          UD  0.0120

 395          KK    402B
 396          KO       0       0     0.0       0      22
 397          BA  0.0153
 398          LS     0.0    74.0     0.0
 399          UD  0.0514

 400          KK     33C   CNAME     33R
 401          KO       0       0     0.0       0      22
 402          HC       2

 403          KK     33R   CNAME     33C
 404          KO       0       0     0.0       0      22
 405          RS       1    FLOW     0.0     0.0
              * 33C Volume
 406          SV     0.0     1.0     2.0     3.0     4.0     5.0     6.0     7.0     8.0     9.0
              * 33C Elevation
 407          SE  4810.0  4811.0  4812.0  4813.0  4814.0  4815.0  4816.0  4817.0  4818.0  4819.0
              * 33C Discharge
 408          SQ     5.0     5.0     5.0     5.0     5.0     5.0     5.0     5.0     5.0     5.0
              * 33C Elevation
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JUN 12 2012
LEHI CITY

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

 409          SE  4810.0  4811.0  4812.0  4813.0  4814.0  4815.0  4816.0  4817.0  4818.0  4819.0

 410          KK    407B
 411          KO       0       0     0.0       0      22
 412          BA  0.0182
 413          LS     0.0    74.0     0.0
 414          UD  0.0532

 415          KK    406B
 416          KO       0       0     0.0       0      22
 417          BA  0.0256
 418          LS     0.0   68.46     0.0
 419          UD  0.0717

 420          KK    358B
 421          KO       0       0     0.0       0      22
 422          BA  0.0053
 423          LS     0.0    72.0     0.0
 424          UD  0.0822

 425          KK     54C   CNAME     54R
 426          KO       0       0     0.0       0      22
 427          HC       5

 428          KK    344B
 429          KO       0       0     0.0       0      22
 430          BA  0.0449
 431          LS     0.0   73.99     0.0
 432          UD  0.0895

 433          KK    363B
 434          KO       0       0     0.0       0      22
 435          BA  0.0208
 436          LS     0.0   75.76     0.0
 437          UD  0.1262

 438          KK      9C   CNAME      9R
 439          KO       0       0     0.0       0      22
 440          HC       3

 441          KK      9R   CNAME      9C
 442          KO       0       0     0.0       0      22
 443          RN      9R
 444          ZZ
```

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	329B	7.	12.00	1.	0.	0.	0.05		
+	HYDROGRAPH AT	403B	4.	12.00	1.	0.	0.	0.02		
+	2 COMBINED AT	37C	11.	12.00	2.	1.	1.	0.07		
+	ROUTED TO	37R	5.	12.33	2.	1.	1.	0.07		
+									4742.62	12.33
+	HYDROGRAPH AT	11B	0.	18.33	0.	0.	0.	0.12		
+	ROUTED TO	6R	0.	18.33	0.	0.	0.	0.12		
+	HYDROGRAPH AT	10B	14.	12.00	3.	1.	1.	0.16		
+	2 COMBINED AT	13C	14.	12.00	3.	1.	1.	0.28		
+	ROUTED TO	13R	2.	14.00	2.	1.	1.	0.28		
+									4800.34	14.00
+	HYDROGRAPH AT	98B	1.	12.33	1.	0.	0.	0.11		
+	ROUTED TO	29R	1.	12.33	1.	0.	0.	0.11		
+	HYDROGRAPH AT	408B	2.	12.00	1.	0.	0.	0.08		
+	HYDROGRAPH AT	99B	19.	12.00	2.	1.	1.	0.06		
+	3 COMBINED AT	30C	21.	12.00	3.	1.	1.	0.25		
+	HYDROGRAPH AT	103B	4.	12.17	1.	0.	0.	0.01		
+	HYDROGRAPH AT	401B	18.	12.17	3.	1.	1.	0.14		

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	3 COMBINED AT						
+	32C	37.	12.00	7.	3.	3.	0.40
	HYDROGRAPH AT						
+	101B	1.	12.33	1.	0.	0.	0.11
	ROUTED TO						
+	31R	1.	12.33	1.	0.	0.	0.11
	HYDROGRAPH AT						
+	83B	1.	17.83	1.	0.	0.	0.57
	ROUTED TO						
+	19R	1.	17.83	1.	0.	0.	0.57
	HYDROGRAPH AT						
+	86B	4.	12.00	1.	0.	0.	0.03
	2 COMBINED AT						
+	21C	4.	12.00	1.	0.	0.	0.59
	HYDROGRAPH AT						
+	85B	1.	12.50	1.	0.	0.	0.16
	2 COMBINED AT						
+	16C	5.	12.00	2.	1.	1.	0.75
	HYDROGRAPH AT						
+	81B	0.	17.83	0.	0.	0.	0.19
	ROUTED TO						
+	17R	0.	17.83	0.	0.	0.	0.19
	HYDROGRAPH AT						
+	84B	4.	12.00	1.	0.	0.	0.12
	3 COMBINED AT						
+	20C	9.	12.00	3.	1.	1.	1.06
	HYDROGRAPH AT						
+	79B	1.	12.00	0.	0.	0.	0.02
	ROUTED TO						
+	15R	1.	12.00	0.	0.	0.	0.02
	HYDROGRAPH AT						
+	78B	0.	13.50	0.	0.	0.	0.08
	2 COMBINED AT						
+	8C	1.	12.00	0.	0.	0.	0.09
	HYDROGRAPH AT						
+	87B	1.	12.00	1.	0.	0.	0.06
	2 COMBINED AT						
+	22C	2.	12.00	1.	0.	0.	0.16
	HYDROGRAPH AT						
+	77B	0.	12.83	0.	0.	0.	0.06

+	3 COMBINED AT	7C	11.	12.00	4.	2.	2.	1.27
+	HYDROGRAPH AT	177B	0.	12.33	0.	0.	0.	0.02
+	HYDROGRAPH AT	248B	2.	12.00	1.	0.	0.	0.08
+	HYDROGRAPH AT	176B	3.	12.00	0.	0.	0.	0.02
+	5 COMBINED AT	41C	16.	12.00	6.	2.	2.	1.51
+	HYDROGRAPH AT	286B	41.	12.00	7.	2.	2.	0.42
+	HYDROGRAPH AT	181B	8.	12.00	1.	0.	0.	0.03
+	3 COMBINED AT	43C	65.	12.00	14.	5.	5.	1.96
+	HYDROGRAPH AT	2B	18.	12.17	4.	1.	1.	0.08
+	ROUTED TO	38R	18.	12.17	4.	1.	1.	0.08
+	HYDROGRAPH AT	405B	3.	12.00	0.	0.	0.	0.01
+	HYDROGRAPH AT	288B	5.	12.00	1.	0.	0.	0.01
+	4 COMBINED AT	44C	83.	12.00	18.	6.	6.	2.06
+	HYDROGRAPH AT	415B	27.	12.00	3.	1.	1.	0.08
+	HYDROGRAPH AT	459B	42.	12.00	7.	2.	2.	0.18
+	4 COMBINED AT	3C	190.	12.00	36.	12.	12.	2.72
+	HYDROGRAPH AT	163B	21.	12.00	3.	1.	1.	0.06
+	HYDROGRAPH AT	7B	1.	12.00	0.	0.	0.	0.04
+	HYDROGRAPH AT	411B	11.	12.00	1.	0.	0.	0.03
	4 COMBINED AT							

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+		12C	224.	12.00	40.	14.	14.	2.86	
	ROUTED TO								
+		12R	224.	12.00	40.	14.	14.	2.86	
	HYDROGRAPH AT								
+		141B	8.	12.17	2.	1.	1.	0.16	
	ROUTED TO								
+		25R	8.	12.17	2.	1.	1.	0.16	
	HYDROGRAPH AT								
+		139B	0.	13.33	0.	0.	0.	0.07	
	ROUTED TO								
+		23R	0.	13.33	0.	0.	0.	0.07	
	HYDROGRAPH AT								
+		140B	2.	12.00	0.	0.	0.	0.05	
	2 COMBINED AT								
+		24C	2.	12.00	1.	0.	0.	0.11	
	ROUTED TO								
+		24R	2.	12.17	1.	0.	0.	0.11	
	HYDROGRAPH AT								
+		138B	8.	12.17	2.	1.	1.	0.12	
	3 COMBINED AT								
+		18C	18.	12.17	5.	2.	2.	0.39	
	ROUTED TO								
+		18R	16.	12.17	5.	2.	2.	0.39	
	HYDROGRAPH AT								
+		155B	11.	12.00	2.	1.	1.	0.08	
	HYDROGRAPH AT								
+		149B	46.	12.17	8.	3.	3.	0.20	
	2 COMBINED AT								
+		4C	57.	12.17	10.	3.	3.	0.28	
	ROUTED TO								
+		4R	16.	12.83	14.	13.	13.	0.28	
+									4812.09 12.83
	HYDROGRAPH AT								
+		30B	17.	12.17	3.	1.	1.	0.15	
	HYDROGRAPH AT								
+		66B	7.	12.00	1.	0.	0.	0.05	
	4 COMBINED AT								
+		11C	50.	12.17	23.	16.	16.	0.87	
	ROUTED TO								
+		11R	50.	12.17	23.	16.	16.	0.87	

+	HYDROGRAPH AT	241B	10.	12.17	2.	1.	1.	0.09	
+	ROUTED TO	10R	10.	12.17	2.	1.	1.	0.09	
+	HYDROGRAPH AT	151B	2.	12.00	0.	0.	0.	0.01	
+	HYDROGRAPH AT	150B	16.	12.00	2.	1.	1.	0.05	
+	2 COMBINED AT	35C	17.	12.00	2.	1.	1.	0.06	
+	ROUTED TO	35R	5.	0.17	5.	5.	5.	0.06	
+									4815.00 0.00
+	HYDROGRAPH AT	143B	7.	12.00	1.	0.	0.	0.04	
+	HYDROGRAPH AT	402B	3.	12.00	0.	0.	0.	0.02	
+	2 COMBINED AT	33C	10.	12.00	1.	0.	0.	0.06	
+	ROUTED TO	33R	5.	0.17	5.	5.	5.	0.06	
+									4810.01 12.17
+	HYDROGRAPH AT	407B	3.	12.00	0.	0.	0.	0.02	
+	HYDROGRAPH AT	406B	1.	12.00	0.	0.	0.	0.03	
+	HYDROGRAPH AT	358B	1.	12.00	0.	0.	0.	0.01	
+	5 COMBINED AT	54C	15.	12.00	11.	10.	10.	0.17	
+	HYDROGRAPH AT	344B	8.	12.00	1.	0.	0.	0.04	
+	HYDROGRAPH AT	363B	4.	12.00	1.	0.	0.	0.02	
+	3 COMBINED AT	9C	26.	12.00	12.	11.	11.	0.23	
+	ROUTED TO	9R	26.	12.00	12.	11.	11.	0.23	

1

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

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                                                                                  INTERPOLATED TO
                                                                              COMPUTATION INTERVAL
        ISTAQ    ELEMENT      DT       PEAK    TIME TO     VOLUME      DT       PEAK    TIME TO     VOLUME
                                                  PEAK                                    PEAK

                            (MIN)     (CFS)     (MIN)      (IN)     (MIN)     (CFS)     (MIN)       (IN)

       FOR STORM = 1  STORM AREA (SQ MI) =      10.00
            25R  MANE         1.26      8.21    731.71      0.16     10.00      7.92    730.00       0.16

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1336E+01 EXCESS=0.0000E+00 OUTFLOW=0.1334E+01 BASIN STORAGE=0.2259E-02 PERCENT ERROR=   0.0

       FOR STORM = 1  STORM AREA (SQ MI) =      10.00
            23R  MANE         3.29      0.24    806.43      0.04     10.00      0.24    810.00       0.04

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1403E+00 EXCESS=0.0000E+00 OUTFLOW=0.1395E+00 BASIN STORAGE=0.7757E-03 PERCENT ERROR=   0.0

       FOR STORM = 1  STORM AREA (SQ MI) =      10.00
            24R  MANE         0.50      1.83    725.50      0.07     10.00      1.56    730.00       0.07

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4467E+00 EXCESS=0.0000E+00 OUTFLOW=0.4434E+00 BASIN STORAGE=0.3500E-02 PERCENT ERROR=   0.0

       FOR STORM = 1  STORM AREA (SQ MI) =      10.00
            18R  MANE         2.00     17.70    734.00      0.14     10.00     16.22    730.00       0.14

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2969E+01 EXCESS=0.0000E+00 OUTFLOW=0.2956E+01 BASIN STORAGE=0.2097E-01 PERCENT ERROR=  -0.2


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

50 YEAR HEC-1

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```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              MAY   1991              *
*           VERSION 4.0.1E             *
*                                      *
*  RUN DATE            TIME            *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 551-1748             *
*                                      *
****************************************
```

```
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

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HEC-1 INPUT PAGE 1

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

  1           ID  HEC-1 Analysis using WMS
  2           ID  50 year devloped flow
  3           ID  MAY 2012
  4           IT      10 07MAY09       0     130
  5           IO       5
  6           IN       6 07MAY09       0
  7           JD     2.3    10.0
              * typeII-24hour
  8           PC     0.0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
  9           PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
 10           PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
 11           PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
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PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
PC     1.0

KK    329B
KO       0       0     0.0       0      22
BA  0.0487
LS     0.0    74.2     0.0
UD  0.1151

KK    403B
KO       0       0     0.0       0      22
BA  0.0216
LS     0.0   74.49     0.0
UD  0.0893

KK     37C   CNAME     37R
KO       0       0     0.0       0      22
HC       2
```

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

  46          KK     37R   CNAME     37C
  47          KO       0       0     0.0       0      22
  48          RS       1    FLOW     0.0     0.0
              * 37C Volume
  49          SV     0.00.1266630.253327 0.379990.5066530.633316 0.759980.8866431.0133061.139969
  50          SV  1.26661.3932961.5199591.6466221.7732861.8999492.0266122.1532752.2799392.406602
              * 37C Elevation
  51          SE  4742.04742.4214742.8424743.2634743.6844744.1054744.5264744.9474745.3684745.789
  52          SE  4746.24746.6314747.0524747.4734747.8944748.3154748.7364749.1574749.578  4750.0
              * 37C Discharge
  53          SQ     0.02.197453 8.3679616.4140423.1448215.9029218.6881421.1090223.2794925.26417
  54          SQ  27.10328.8264930.4517731.9946033.4663734.8761036.2310137.5370538.7991540.02147
              * 37C Elevation
  55          SE  4742.04742.4214742.8424743.2634743.6844744.1054744.5264744.9474745.3684745.789
  56          SE  4746.24746.6314747.0524747.4734747.8944748.3154748.7364749.1574749.578  4750.0

  57          KK     11B
  58          KO       0       0     0.0       0      22
  59          BA  0.1161
  60          LS     0.0    57.0     0.0
  61          UD  0.0767

  62          KK      6R   CNAME      6C
  63          KO       0       0     0.0       0      22
  64          RN      6R

  65          KK     10B
  66          KO       0       0     0.0       0      22
  67          BA  0.1616
  68          LS     0.0   71.74     0.0
  69          UD  0.1283

  70          KK     13C   CNAME     13R
  71          KO       0       0     0.0       0      22
  72          HC       2

  73          KK     13R   CNAME     13C
  74          KO       0       0     0.0       0      22
  75          RS       1    FLOW     0.0     0.0
              * 13C Volume
  76          SV     0.00.9742581.9639382.969202 3.990215.0271236.0801017.1493058.2348969.337034
  77          SV  10.45511.5915912.7443313.9142715.1015516.3063517.5288218.7691220.0274121.30386
              * 13C Elevation
  78          SE  4800.04800.5264801.0524801.5784802.1054802.6314803.1574803.6844804.2104804.736
  79          SE  4805.24805.7894806.3154806.8424807.3684807.8944808.4214808.9474809.473  4810.0
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            * 13C Discharge
80          SQ     0.03.42952912.3279421.8209515.9029219.3218222.2207724.7829127.1039229.24128
81          SQ  31.23233.1045734.8761036.5618938.1733239.7194241.2075542.6437844.0331945.38008
            * 13C Elevation
82          SE  4800.04800.5264801.0524801.5784802.1054802.6314803.1574803.6844804.2104804.736
83          SE  4805.24805.7894806.3154806.8424807.3684807.8944808.4214808.9474809.473  4810.0
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  84          KK     98B
  85          KO       0       0     0.0       0      22
  86          BA  0.1097
  87          LS     0.0   64.48     0.0
  88          UD  0.0812

  89          KK     29R   CNAME     29C
  90          KO       0       0     0.0       0      22
  91          RN     29R

  92          KK    408B
  93          KO       0       0     0.0       0      22
  94          BA  0.0830
  95          LS     0.0   66.25     0.0
  96          UD  0.1008

  97          KK     99B
  98          KO       0       0     0.0       0      22
  99          BA  0.0594
 100          LS     0.0   78.61     0.0
 101          UD  0.0694

 102          KK     30C   CNAME     30R
 103          KO       0       0     0.0       0      22
 104          HC       3

 105          KK    103B
 106          KO       0       0     0.0       0      22
 107          BA  0.0102
 108          LS     0.0    84.1     0.0
 109          UD  0.1933

 110          KK    401B
 111          KO       0       0     0.0       0      22
 112          BA  0.1360
 113          LS     0.0   74.82     0.0
 114          UD  0.1917

 115          KK     32C   CNAME     32R
 116          KO       0       0     0.0       0      22
 117          HC       3

 118          KK    101B
 119          KO       0       0     0.0       0      22
 120          BA  0.1138
```

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JUN 12 2012
LEHI CITY

```
121          LS     0.0   64.94     0.0
122          UD  0.1459

123          KK     31R   CNAME     31C
124          KO       0       0     0.0       0      22
125          RN     31R
```

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

 126          KK     83B
 127          KO       0       0     0.0       0      22
 128          BA  0.5686
 129          LS     0.0   58.07     0.0
 130          UD  0.0556

 131          KK     19R   CNAME     19C
 132          KO       0       0     0.0       0      22
 133          RN     19R

 134          KK     86B
 135          KO       0       0     0.0       0      22
 136          BA  0.0259
 137          LS     0.0   73.61     0.0
 138          UD  0.0556

 139          KK     21C   CNAME     21R
 140          KO       0       0     0.0       0      22
 141          HC       2

 142          KK     85B
 143          KO       0       0     0.0       0      22
 144          BA  0.1593
 145          LS     0.0   63.35     0.0
 146          UD  0.0556

 147          KK     16C   CNAME     16R
 148          KO       0       0     0.0       0      22
 149          HC       2

 150          KK     81B
 151          KO       0       0     0.0       0      22
 152          BA  0.1869
 153          LS     0.0   58.02     0.0
 154          UD  0.0556

 155          KK     17R   CNAME     17C
 156          KO       0       0     0.0       0      22
 157          RN     17R

 158          KK     84B
 159          KO       0       0     0.0       0      22
 160          BA  0.1198
 161          LS     0.0   67.12     0.0
 162          UD  0.0556
```

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JUN 12 2012
LEHI CITY

163	KK	20C	CNAME	20R		
164	KO	0	0	0.0	0	22
165	HC	3				

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

  166         KK     79B
  167         KO       0       0     0.0       0      22
  168         BA  0.0165
  169         LS     0.0   68.61     0.0
  170         UD  0.0556

  171         KK     15R   CNAME     15C
  172         KO       0       0     0.0       0      22
  173         RN     15R

  174         KK     78B
  175         KO       0       0     0.0       0      22
  176         BA  0.0764
  177         LS     0.0   61.01     0.0
  178         UD  0.0556

  179         KK      8C   CNAME      8R
  180         KO       0       0     0.0       0      22
  181         HC       2

  182         KK     87B
  183         KO       0       0     0.0       0      22
  184         BA  0.0637
  185         LS     0.0   66.31     0.0
  186         UD  0.0556

  187         KK     22C   CNAME     22R
  188         KO       0       0     0.0       0      22
  189         HC       2

  190         KK     77B
  191         KO       0       0     0.0       0      22
  192         BA  0.0564
  193         LS     0.0   62.17     0.0
  194         UD  0.0556

  195         KK      7C   CNAME      7R
  196         KO       0       0     0.0       0      22
  197         HC       3

  198         KK    177B
  199         KO       0       0     0.0       0      22
  200         BA  0.0215
  201         LS     0.0    64.7     0.0
  202         UD  0.0320
```

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JUN 12 2012
LEHI CITY

```
203          KK    248B
204          KO       0       0     0.0       0      22
205          BA  0.0832
206          LS     0.0   66.07     0.0
207          UD  0.0813
```

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

  208         KK    176B
  209         KO       0       0     0.0       0      22
  210         BA  0.0174
  211         LS     0.0   75.39     0.0
  212         UD  0.1412

  213         KK     41C   CNAME     41R
  214         KO       0       0     0.0       0      22
  215         HC       5

  216         KK    286B
  217         KO       0       0     0.0       1      22
  218         BA  0.4184
  219         LS     0.0   70.78     0.0
  220         UD  0.0268

  221         KK    181B
  222         KO       0       0     0.0       1      22
  223         BA  0.0313
  224         LS     0.0   77.05     0.0
  225         UD  0.0991

  226         KK     43C   CNAME     43R
  227         KO       0       0     0.0       0      22
  228         HC       3

  229         KK      2B
  230         KO       0       0     0.0       1      22
  231         BA  0.0817
  232         LS     0.0   81.16     0.0
  233         UD  0.3103

  234         KK     38R   CNAME     38C
  235         KO       0       0     0.0       0      22
  236         RN     38R

  237         KK    405B
  238         KO       0       0     0.0       1      22
  239         BA  0.0092
  240         LS     0.0   80.21     0.0
  241         UD  0.0730

  242         KK    288B
  243         KO       0       0     0.0       1      22
  244         BA  0.0149
```

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JUN 12 2012
LEHI CITY

```
245          LS     0.0   78.34     0.0
246          UD  0.0664

247          KK     44C   CNAME     44R
248          KO       0       0     0.0       0      22
249          HC       4
```

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

 250          KK    415B
 251          KO       0       0     0.0       1      22
 252          BA  0.0771
 253          LS     0.0   80.26     0.0
 254          UD  0.0921

 255          KK    459B
 256          KO       0       0     0.0       1      22
 257          BA  0.1803
 258          LS     0.0   79.85     0.0
 259          UD  0.1662

 260          KK      3C   CNAME      3R
 261          KO       0       0     0.0       0      22
 262          HC       4

 263          KK    163B
 264          KO       0       0     0.0       1      22
 265          BA  0.0618
 266          LS     0.0   80.62     0.0
 267          UD  0.1138

 268          KK      7B
 269          KO       0       0     0.0       1      22
 270          BA  0.0408
 271          LS     0.0   67.23     0.0
 272          UD  0.0556

 273          KK    411B
 274          KO       0       0     0.0       1      22
 275          BA  0.0331
 276          LS     0.0   79.74     0.0
 277          UD  0.0892

 278          KK     12C   CNAME     12R
 279          KO       0       0     0.0       0      22
 280          HC       4

 281          KK     12R   CNAME     12C
 282          KO       0       0     0.0       0      22
 283          RN     12R

 284          KK    141B
 285          KO       0       0     0.0       1      22
 286          BA  0.1600
```

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JUN 12 2012
LEHI CITY

```
287          LS     0.0   69.57     0.0
288          UD  0.1866

289          KK     25R   CNAME     25C
290          KO       0       0     0.0       0      22
291          RD  1297.6 0.07153   0.013            CIRC     2.0     0.0
```

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

 292          KK    139B
 293          KO       0       0     0.0       0      22
 294          BA  0.0660
 295          LS     0.0   61.27     0.0
 296          UD  0.0702

 297          KK     23R   CNAME     23C
 298          KO       0       0     0.0       0      22
 299          RD  1357.8 0.04276   0.013            CIRC     2.0     0.0

 300          KK    140B
 301          KO       0       0     0.0       0      22
 302          BA  0.0475
 303          LS     0.0   67.54     0.0
 304          UD  0.0616

 305          KK     24C   CNAME     24R
 306          KO       0       0     0.0       0      22
 307          HC       2

 308          KK     24R   CNAME     24C
 309          KO       0       0     0.0       0      22
 310          RD  3765.7 0.06856   0.013            CIRC     2.0     0.0

 311          KK    138B
 312          KO       0       0     0.0       0      22
 313          BA  0.1174
 314          LS     0.0   71.23     0.0
 315          UD  0.2069

 316          KK     18C   CNAME     18R
 317          KO       0       0     0.0       0      22
 318          HC       3

 319          KK     18R   CNAME     18C
 320          KO       0       0     0.0       0      22
 321          RD  3528.0 0.04879   0.013            TRAP     2.0     0.0

 322          KK    155B
 323          KO       0       0     0.0       0      22
 324          BA  0.0758
 325          LS     0.0   75.21     0.0
 326          UD  0.1458

 327          KK    149B
```

RECEIVED
JUN 12 2012
LEHI CITY

328	KO	0	0	0.0	0	22
329	BA	0.2020				
330	LS	0.0	80.17	0.0		
331	UD	0.2477				

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

 332          KK      4C   CNAME      4R
 333          KO       0       0     0.0       0      22
 334          HC       2

 335          KK      4R   CNAME      4C
 336          KO       0       0     0.0       0      22
 337          RS       1    FLOW     0.0     0.0
              * 4C Volume
 338          SV     0.00.2728530.5501420.8319091.118195 1.409041.7044872.0045762.3093492.618846
 339          SV  2.93313.2521783.5760963.9049024.2386384.5773464.921066 5.269845.6237085.982713
              * 4C Elevation
 340          SE  4811.04811.2104811.4214811.6314811.8424812.0524812.2634812.4734812.6844812.894
 341          SE  4813.14813.3154813.5264813.7364813.9474814.1574814.3684814.5784814.789  4815.0
              * 4C Discharge
 342          SQ  12.76313.3469013.9061714.4438114.9621415.4631015.9483316.4192316.8770017.32267
 343          SQ  17.75718.1812818.7378822.8393729.3622537.5566847.1173257.86315 69.670582.44792
              * 4C Elevation
 344          SE  4811.04811.2104811.4214811.6314811.8424812.0524812.2634812.4734812.6844812.894
 345          SE  4813.14813.3154813.5264813.7364813.9474814.1574814.3684814.5784814.789  4815.0

 346          KK     30B
 347          KO       0       0     0.0       0      22
 348          BA  0.1491
 349          LS     0.0   74.12     0.0
 350          UD  0.2306

 351          KK     66B
 352          KO       0       0     0.0       0      22
 353          BA  0.0522
 354          LS     0.0    72.0     0.0
 355          UD  0.0556

 356          KK     11C   CNAME     11R
 357          KO       0       0     0.0       0      22
 358          HC       4

 359          KK     11R   CNAME     11C
 360          KO       0       0     0.0       0      22
 361          RN     11R

 362          KK    241B
 363          KO       0       0     0.0       0      22
 364          BA  0.0949
 365          LS     0.0   73.24     0.0
 366          UD  0.1459
```

RECEIVED
JUN 12 2012
LEHI CITY

367	KK	10R	CNAME	10C		
368	KO	0	0	0.0	0	22
369	RN	10R				

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

 370          KK    151B
 371          KO       0       0     0.0       0      22
 372          BA  0.0132
 373          LS     0.0   72.23     0.0
 374          UD  0.0337

 375          KK    150B
 376          KO       0       0     0.0       0      22
 377          BA  0.0461
 378          LS     0.0   79.46     0.0
 379          UD  0.0407

 380          KK     35C   CNAME     35R
 381          KO       0       0     0.0       0      22
 382          HC       2

 383          KK     35R   CNAME     35C
 384          KO       0       0     0.0       0      22
 385          RS       1    FLOW     0.0     0.0
              * 35C Volume
 386          SV     1.0     2.0     3.0     4.0     5.0     6.0     7.0     8.0     9.0    10.0
              * 35C Elevation
 387          SE  4815.0  4816.0  4817.0  4818.0  4819.0  4820.0  4821.0  4822.0  4823.0  4824.0
              * 35C Discharge
 388          SQ     5.0     5.0     5.0     5.0     5.0     5.0     5.0     5.0     5.0     5.0
              * 35C Elevation
 389          SE  4815.0  4816.0  4817.0  4818.0  4819.0  4820.0  4821.0  4822.0  4823.0  4824.0

 390          KK    143B
 391          KO       0       0     0.0       0      22
 392          BA  0.0414
 393          LS     0.0    74.0     0.0
 394          UD  0.0120

 395          KK    402B
 396          KO       0       0     0.0       0      22
 397          BA  0.0153
 398          LS     0.0    74.0     0.0
 399          UD  0.0514

 400          KK     33C   CNAME     33R
 401          KO       0       0     0.0       0      22
 402          HC       2

 403          KK     33R   CNAME     33C
```

RECEIVED
JUN 12 2012
LEHI CITY

```
KO        0        0      0.0        0       22
RS        1     FLOW      0.0      0.0
* 33C Volume
SV      0.0      1.0      2.0      3.0      4.0      5.0      6.0      7.0      8.0      9.0
* 33C Elevation
SE   4810.0   4811.0   4812.0   4813.0   4814.0   4815.0   4816.0   4817.0   4818.0   4819.0
* 33C Discharge
SQ      5.0      5.0      5.0      5.0      5.0      5.0      5.0      5.0      5.0      5.0
* 33C Elevation
```

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

 409          SE  4810.0  4811.0  4812.0  4813.0  4814.0  4815.0  4816.0  4817.0  4818.0  4819.0

 410          KK    407B
 411          KO       0       0     0.0       0      22
 412          BA  0.0182
 413          LS     0.0    74.0     0.0
 414          UD  0.0532

 415          KK    406B
 416          KO       0       0     0.0       0      22
 417          BA  0.0256
 418          LS     0.0   68.46     0.0
 419          UD  0.0717

 420          KK    358B
 421          KO       0       0     0.0       0      22
 422          BA  0.0053
 423          LS     0.0    72.0     0.0
 424          UD  0.0822

 425          KK     54C   CNAME     54R
 426          KO       0       0     0.0       0      22
 427          HC       5

 428          KK    344B
 429          KO       0       0     0.0       0      22
 430          BA  0.0449
 431          LS     0.0   73.99     0.0
 432          UD  0.0895

 433          KK    363B
 434          KO       0       0     0.0       0      22
 435          BA  0.0208
 436          LS     0.0   75.76     0.0
 437          UD  0.1262

 438          KK      9C   CNAME      9R
 439          KO       0       0     0.0       0      22
 440          HC       3

 441          KK      9R   CNAME      9C
 442          KO       0       0     0.0       0      22
 443          RN      9R
 444          ZZ
```

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JUN 12 2012
LEHI CITY

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	329B	17.	12.00	2.	1.	1.	0.05		
+	HYDROGRAPH AT	403B	9.	12.00	1.	0.	0.	0.02		
+	2 COMBINED AT	37C	26.	12.00	3.	1.	1.	0.07		
+	ROUTED TO	37R	15.	12.17	3.	1.	1.	0.07		
+									4743.20	12.17
+	HYDROGRAPH AT	11B	1.	12.50	1.	0.	0.	0.12		
+	ROUTED TO	6R	1.	12.50	1.	0.	0.	0.12		
+	HYDROGRAPH AT	10B	40.	12.00	6.	2.	2.	0.16		
+	2 COMBINED AT	13C	40.	12.00	7.	2.	2.	0.28		
+	ROUTED TO	13R	7.	13.00	5.	2.	2.	0.28		
+									4800.75	13.00
+	HYDROGRAPH AT	98B	12.	12.00	2.	1.	1.	0.11		
+	ROUTED TO	29R	12.	12.00	2.	1.	1.	0.11		
+	HYDROGRAPH AT	408B	11.	12.00	2.	1.	1.	0.08		
+	HYDROGRAPH AT	99B	34.	12.00	4.	1.	1.	0.06		
	3 COMBINED AT									

+		30C	57.	12.00	8.	3.	3.	0.25
+	HYDROGRAPH AT	103B	6.	12.17	1.	0.	0.	0.01
+	HYDROGRAPH AT	401B	39.	12.17	7.	2.	2.	0.14
+	3 COMBINED AT	32C	96.	12.00	15.	5.	5.	0.40
+	HYDROGRAPH AT	101B	9.	12.17	2.	1.	1.	0.11
+	ROUTED TO	31R	9.	12.17	2.	1.	1.	0.11
+	HYDROGRAPH AT	83B	7.	12.33	4.	2.	2.	0.57
+	ROUTED TO	19R	7.	12.33	4.	2.	2.	0.57
+	HYDROGRAPH AT	86B	10.	12.00	1.	0.	0.	0.03
+	2 COMBINED AT	21C	13.	12.00	5.	2.	2.	0.59
+	HYDROGRAPH AT	85B	13.	12.00	3.	1.	1.	0.16
+	2 COMBINED AT	16C	26.	12.00	8.	3.	3.	0.75
+	HYDROGRAPH AT	81B	2.	12.33	1.	1.	1.	0.19
+	ROUTED TO	17R	2.	12.33	1.	1.	1.	0.19
+	HYDROGRAPH AT	84B	21.	12.00	3.	1.	1.	0.12
+	3 COMBINED AT	20C	48.	12.00	12.	4.	4.	1.06
+	HYDROGRAPH AT	79B	4.	12.00	0.	0.	0.	0.02

RECEIVED
JUN 12 2012
LEHI CITY

+	ROUTED TO 15R	4.	12.00	0.	0.	0.	0.02
+	HYDROGRAPH AT 78B	3.	12.00	1.	0.	0.	0.08
+	2 COMBINED AT 8C	6.	12.00	1.	0.	0.	0.09
+	HYDROGRAPH AT 87B	10.	12.00	1.	0.	0.	0.06
+	2 COMBINED AT 22C	16.	12.00	3.	1.	1.	0.16
+	HYDROGRAPH AT 77B	3.	12.00	1.	0.	0.	0.06
+	3 COMBINED AT 7C	67.	12.00	16.	6.	6.	1.27
+	HYDROGRAPH AT 177B	2.	12.00	0.	0.	0.	0.02
+	HYDROGRAPH AT 248B	12.	12.00	2.	1.	1.	0.08
+	HYDROGRAPH AT 176B	6.	12.00	1.	0.	0.	0.02
+	5 COMBINED AT 41C	96.	12.00	21.	7.	7.	1.51
+	HYDROGRAPH AT 286B	119.	12.00	15.	5.	5.	0.42
+	HYDROGRAPH AT 181B	15.	12.00	2.	1.	1.	0.03
+	3 COMBINED AT 43C	230.	12.00	37.	13.	13.	1.96
+	HYDROGRAPH AT 2B	32.	12.17	6.	2.	2.	0.08
+	ROUTED TO 38R	32.	12.17	6.	2.	2.	0.08
+	HYDROGRAPH AT 405B	6.	12.00	1.	0.	0.	0.01

+	HYDROGRAPH AT	288B	8.	12.00	1.	0.	0.	0.01
+	4 COMBINED AT	44C	265.	12.00	45.	15.	15.	2.06
+	HYDROGRAPH AT	415B	49.	12.00	5.	2.	2.	0.08
+	HYDROGRAPH AT	459B	80.	12.00	12.	4.	4.	0.18
+	4 COMBINED AT	3C	489.	12.00	78.	26.	26.	2.72
+	HYDROGRAPH AT	163B	37.	12.00	4.	1.	1.	0.06
+	HYDROGRAPH AT	7B	7.	12.00	1.	0.	0.	0.04
+	HYDROGRAPH AT	411B	20.	12.00	2.	1.	1.	0.03
+	4 COMBINED AT	12C	553.	12.00	86.	29.	29.	2.86
+	ROUTED TO	12R	553.	12.00	86.	29.	29.	2.86
+	HYDROGRAPH AT	141B	26.	12.17	5.	2.	2.	0.16
+	ROUTED TO	25R	26.	12.17	5.	2.	2.	0.16
	HYDROGRAPH AT	139B	3.	12.00	1.	0.	0.	0.07
	ROUTED TO	23R	2.	12.17	1.	0.	0.	0.07
	HYDROGRAPH AT	140B	9.	12.00	1.	0.	0.	0.05
	2 COMBINED AT	24C	11.	12.00	2.	1.	1.	0.11
	ROUTED TO							

RECEIVED
JUN 12 2012
LEHI CITY

+		24R	8.	12.17	2.	1.	1.	0.11		
	HYDROGRAPH AT									
+		138B	23.	12.17	4.	1.	1.	0.12		
	3 COMBINED AT									
+		18C	57.	12.17	11.	4.	4.	0.39		
	ROUTED TO									
+		18R	55.	12.17	11.	4.	4.	0.39		
	HYDROGRAPH AT									
+		155B	25.	12.00	4.	1.	1.	0.08		
	HYDROGRAPH AT									
+		149B	85.	12.17	14.	5.	5.	0.20		
	2 COMBINED AT									
+		4C	106.	12.17	18.	6.	6.	0.28		
	ROUTED TO									
+		4R	21.	13.00	17.	14.	14.	0.28		
+									4813.64	13.00
	HYDROGRAPH AT									
+		30B	38.	12.17	7.	2.	2.	0.15		
	HYDROGRAPH AT									
+		66B	17.	12.00	2.	1.	1.	0.05		
	4 COMBINED AT									
+		11C	117.	12.17	37.	21.	21.	0.87		
	ROUTED TO									
+		11R	117.	12.17	37.	21.	21.	0.87		
	HYDROGRAPH AT									
+		241B	25.	12.00	4.	1.	1.	0.09		
	ROUTED TO									
+		10R	25.	12.00	4.	1.	1.	0.09		
	HYDROGRAPH AT									
+		151B	4.	12.00	1.	0.	0.	0.01		
	HYDROGRAPH AT									
+		150B	28.	12.00	3.	1.	1.	0.05		
	2 COMBINED AT									
+		35C	33.	12.00	4.	1.	1.	0.06		

+	ROUTED TO	35R	5.	0.17	5.	5.	5.	0.06		
+									4815.00	0.00
+	HYDROGRAPH AT	143B	16.	12.00	2.	1.	1.	0.04		
+	HYDROGRAPH AT	402B	6.	12.00	1.	0.	0.	0.02		
+	2 COMBINED AT	33C	23.	12.00	3.	1.	1.	0.06		
+	ROUTED TO	33R	5.	0.17	5.	5.	5.	0.06		
+									4810.30	12.50
+	HYDROGRAPH AT	407B	7.	12.00	1.	0.	0.	0.02		
+	HYDROGRAPH AT	406B	5.	12.00	1.	0.	0.	0.03		
+	HYDROGRAPH AT	358B	2.	12.00	0.	0.	0.	0.01		
+	5 COMBINED AT	54C	24.	12.00	12.	11.	11.	0.17		
+	HYDROGRAPH AT	344B	17.	12.00	2.	1.	1.	0.04		
+	HYDROGRAPH AT	363B	8.	12.00	1.	0.	0.	0.02		
+	3 COMBINED AT	9C	50.	12.00	15.	12.	12.	0.23		
+	ROUTED TO	9R	50.	12.00	15.	12.	12.	0.23		

1

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

STAQ	ELEMENT	DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	INTERPOLATED TO COMPUTATION INTERVAL DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)

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FOR STORM = 1  STORM AREA (SQ MI) =      10.00
     25R  MANE         1.00     25.99    730.49      0.35     10.00     25.72    730.00        0.35

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2960E+01 EXCESS=0.0000E+00 OUTFLOW=0.2957E+01 BASIN STORAGE=0.3543E-02 PERCENT ERROR=   0.0

FOR STORM = 1  STORM AREA (SQ MI) =      10.00
     23R  MANE         0.50      2.68    722.00      0.14     10.00      2.21    730.00        0.14

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5098E+00 EXCESS=0.0000E+00 OUTFLOW=0.5084E+00 BASIN STORAGE=0.1490E-02 PERCENT ERROR=   0.0

FOR STORM = 1  STORM AREA (SQ MI) =      10.00
     24R  MANE         1.00     10.99    724.00      0.20     10.00      8.20    730.00        0.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1245E+01 EXCESS=0.0000E+00 OUTFLOW=0.1240E+01 BASIN STORAGE=0.6146E-02 PERCENT ERROR=   0.0

FOR STORM = 1  STORM AREA (SQ MI) =      10.00
     18R  MANE         1.50     56.03    732.00      0.32     10.00     54.90    730.00        0.32

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6707E+01 EXCESS=0.0000E+00 OUTFLOW=0.6693E+01 BASIN STORAGE=0.2973E-01 PERCENT ERROR=  -0.2


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

100 YEAR HEC-1

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1****************************************                                    ****************************************
*                                      *                                    *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                    *    U.S. ARMY CORPS OF ENGINEERS      *
*              MAY   1991              *                                    *    HYDROLOGIC ENGINEERING CENTER     *
*           VERSION 4.0.1E             *                                    *          609 SECOND STREET           *
*                                      *                                    *       DAVIS, CALIFORNIA 95616        *
*  RUN DATE            TIME            *                                    *          (916) 551-1748              *
*                                      *                                    *                                      *
****************************************                                    ****************************************
```

```
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

HEC-1 INPUT PAGE 1

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

  1           ID  HEC-1 Analysis using WMS
  2           ID  100 year devloped flow
  3           ID  MAY 2012
  4           IT      10 07MAY09       0     130
  5           IO       5
  6           IN       6 07MAY09       0
  7           JD    2.52    10.0
  8           * typeII-24hour
  9           PC     0.0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
 10           PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
 11           PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
 12           PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
 13           PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
 14           PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
 15           PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
 16           PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
 17           PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
 18           PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
 19           PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
 20           PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
 21           PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
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21	PC	0.772	0.778	0.7836	0.789	0.7942	0.799	0.8036	0.808	0.8122	0.8162
22	PC	0.82	0.8237	0.8273	0.8308	0.8342	0.8376	0.8409	0.8442	0.8474	0.8505
23	PC	0.8535	0.8565	0.8594	0.8622	0.8649	0.8676	0.8702	0.8728	0.8753	0.8777
24	PC	0.88	0.8823	0.8845	0.8868	0.889	0.8912	0.8933	0.8955	0.8976	0.8997
25	PC	0.9018	0.9038	0.9058	0.9078	0.9097	0.9117	0.9136	0.9155	0.9174	0.9192
26	PC	0.921	0.9228	0.9245	0.9263	0.928	0.9297	0.9314	0.933	0.9346	0.9362
27	PC	0.9377	0.9393	0.9408	0.9423	0.9437	0.9452	0.9466	0.948	0.9494	0.9507
28	PC	0.952	0.9533	0.9546	0.9559	0.9572	0.9584	0.9597	0.961	0.9622	0.9635
29	PC	0.9648	0.966	0.9672	0.9685	0.9697	0.9709	0.9722	0.9734	0.9746	0.9758
30	PC	0.977	0.9782	0.9794	0.9806	0.9818	0.9829	0.9841	0.9853	0.9864	0.9876
31	PC	0.9888	0.9899	0.991	0.9922	0.9933	0.9944	0.9956	0.9967	0.9978	0.9989
32	PC	1.0									
33	KK	329B									
34	KO	0	0	0.0	0	22					
35	BA	0.0487									
36	LS	0.0	74.2	0.0							
37	UD	0.1151									
38	KK	403B									
39	KO	0	0	0.0	0	22					
40	BA	0.0216									
41	LS	0.0	74.49	0.0							
42	UD	0.0893									
43	KK	37C	CNAME	37R							
44	KO	0	0	0.0	0	22					
45	HC	2									

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

  46          KK     37R   CNAME     37C
  47          KO       0       0     0.0       0      22
  48          RS       1    FLOW     0.0     0.0
              * 37C Volume
  49          SV     0.00.1266630.253327 0.379990.5066530.633316 0.759980.8866431.0133061.139969
  50          SV  1.26661.3932961.5199591.6466221.7732861.8999492.0266122.1532752.2799392.406602
              * 37C Elevation
  51          SE  4742.04742.4214742.8424743.2634743.6844744.1054744.5264744.9474745.3684745.789
  52          SE  4746.24746.6314747.0524747.4734747.8944748.3154748.7364749.1574749.578  4750.0
              * 37C Discharge
  53          SQ     0.02.197453 8.3679616.4140423.1448215.9029218.6881421.1090223.2794925.26417
  54          SQ  27.10328.8264930.4517731.9946033.4663734.8761036.2310137.5370538.7991540.02147
              * 37C Elevation
  55          SE  4742.04742.4214742.8424743.2634743.6844744.1054744.5264744.9474745.3684745.789
  56          SE  4746.24746.6314747.0524747.4734747.8944748.3154748.7364749.1574749.578  4750.0

  57          KK     11B
  58          KO       0       0     0.0       0      22
  59          BA  0.1161
  60          LS     0.0    57.0     0.0
  61          UD  0.0767

  62          KK      6R   CNAME      6C
  63          KO       0       0     0.0       0      22
  64          RN      6R

  65          KK     10B
  66          KO       0       0     0.0       0      22
  67          BA  0.1616
  68          LS     0.0   71.74     0.0
  69          UD  0.1283

  70          KK     13C   CNAME     13R
  71          KO       0       0     0.0       0      22
  72          HC       2

  73          KK     13R   CNAME     13C
  74          KO       0       0     0.0       0      22
  75          RS       1    FLOW     0.0     0.0
              * 13C Volume
  76          SV     0.00.9742581.9639382.969202 3.990215.0271236.0801017.1493058.2348969.337034
  77          SV  10.45511.5915912.7443313.9142715.1015516.3063517.5288218.7691220.0274121.30386
              * 13C Elevation
  78          SE  4800.04800.5264801.0524801.5784802.1054802.6314803.1574803.6844804.2104804.736
  79          SE  4805.24805.7894806.3154806.8424807.3684807.8944808.4214808.9474809.473  4810.0
              * 13C Discharge
  80          SQ     0.03.42952912.3279421.8209515.9029219.3218222.2207724.7829127.1039229.24128
  81          SQ  31.23233.1045734.8761036.5618938.1733239.7194241.2075542.6437844.0331945.38008
              * 13C Elevation
  82          SE  4800.04800.5264801.0524801.5784802.1054802.6314803.1574803.6844804.2104804.736
  83          SE  4805.24805.7894806.3154806.8424807.3684807.8944808.4214808.9474809.473  4810.0
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  84          KK     98B
  85          KO       0       0     0.0       0      22
  86          BA  0.1097
  87          LS     0.0   64.48     0.0
  88          UD  0.0812

  89          KK     29R   CNAME     29C
  90          KO       0       0     0.0       0      22
  91          RN     29R

  92          KK    408B
  93          KO       0       0     0.0       0      22
  94          BA  0.0830
  95          LS     0.0   66.25     0.0
  96          UD  0.1008

  97          KK     99B
  98          KO       0       0     0.0       0      22
  99          BA  0.0594
 100          LS     0.0   78.61     0.0
 101          UD  0.0694

 102          KK     30C   CNAME     30R
 103          KO       0       0     0.0       0      22
 104          HC       3

 105          KK    103B
 106          KO       0       0     0.0       0      22
 107          BA  0.0102
 108          LS     0.0    84.1     0.0
 109          UD  0.1933

 110          KK    401B
 111          KO       0       0     0.0       0      22
 112          BA  0.1360
 113          LS     0.0   74.82     0.0
 114          UD  0.1917

 115          KK     32C   CNAME     32R
 116          KO       0       0     0.0       0      22
 117          HC       3

 118          KK    101B
 119          KO       0       0     0.0       0      22
 120          BA  0.1138
 121          LS     0.0   64.94     0.0
 122          UD  0.1459

 123          KK     31R   CNAME     31C
 124          KO       0       0     0.0       0      22
 125          RN     31R
```

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

  126         KK     83B
  127         KO       0       0     0.0       0      22
  128         BA  0.5686
  129         LS     0.0   58.07     0.0
  130         UD  0.0556

  131         KK     19R   CNAME     19C
  132         KO       0       0     0.0       0      22
  133         RN     19R

  134         KK     86B
  135         KO       0       0     0.0       0      22
  136         BA  0.0259
  137         LS     0.0   73.61     0.0
  138         UD  0.0556

  139         KK     21C   CNAME     21R
  140         KO       0       0     0.0       0      22
  141         HC       2

  142         KK     85B
  143         KO       0       0     0.0       0      22
  144         BA  0.1593
  145         LS     0.0   63.35     0.0
  146         UD  0.0556

  147         KK     16C   CNAME     16R
  148         KO       0       0     0.0       0      22
  149         HC       2

  150         KK     81B
  151         KO       0       0     0.0       0      22
  152         BA  0.1869
  153         LS     0.0   58.02     0.0
  154         UD  0.0556

  155         KK     17R   CNAME     17C
  156         KO       0       0     0.0       0      22
  157         RN     17R

  158         KK     84B
  159         KO       0       0     0.0       0      22
  160         BA  0.1198
  161         LS     0.0   67.12     0.0
  162         UD  0.0556

  163         KK     20C   CNAME     20R
  164         KO       0       0     0.0       0      22
  165         HC       3
```

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

  166         KK     79B
  167         KO       0       0     0.0       0      22
  168         BA  0.0165
  169         LS     0.0   68.61     0.0
  170         UD  0.0556

  171         KK     15R   CNAME     15C
  172         KO       0       0     0.0       0      22
  173         RN     15R

  174         KK     78B
  175         KO       0       0     0.0       0      22
  176         BA  0.0764
  177         LS     0.0   61.01     0.0
  178         UD  0.0556

  179         KK      8C   CNAME      8R
  180         KO       0       0     0.0       0      22
  181         HC       2

  182         KK     87B
  183         KO       0       0     0.0       0      22
  184         BA  0.0637
  185         LS     0.0   66.31     0.0
  186         UD  0.0556

  187         KK     22C   CNAME     22R
  188         KO       0       0     0.0       0      22
  189         HC       2

  190         KK     77B
  191         KO       0       0     0.0       0      22
  192         BA  0.0564
  193         LS     0.0   62.17     0.0
  194         UD  0.0556

  195         KK      7C   CNAME      7R
  196         KO       0       0     0.0       0      22
  197         HC       3

  198         KK    177B
  199         KO       0       0     0.0       0      22
  200         BA  0.0215
  201         LS     0.0    64.7     0.0
  202         UD  0.0320

  203         KK    248B
  204         KO       0       0     0.0       0      22
  205         BA  0.0832
  206         LS     0.0   66.07     0.0
  207         UD  0.0813
```

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

  208         KK    176B
  209         KO       0       0     0.0       0      22
  210         BA  0.0174
  211         LS     0.0   75.39     0.0
  212         UD  0.1412

  213         KK     41C   CNAME     41R
  214         KO       0       0     0.0       0      22
  215         HC       5

  216         KK    286B
  217         KO       0       0     0.0       1      22
  218         BA  0.4184
  219         LS     0.0   70.78     0.0
  220         UD  0.0268

  221         KK    181B
  222         KO       0       0     0.0       1      22
  223         BA  0.0313
  224         LS     0.0   77.05     0.0
  225         UD  0.0991

  226         KK     43C   CNAME     43R
  227         KO       0       0     0.0       0      22
  228         HC       3

  229         KK      2B
  230         KO       0       0     0.0       1      22
  231         BA  0.0817
  232         LS     0.0   81.16     0.0
  233         UD  0.3103

  234         KK     38R   CNAME     38C
  235         KO       0       0     0.0       0      22
  236         RN     38R

  237         KK    405B
  238         KO       0       0     0.0       1      22
  239         BA  0.0092
  240         LS     0.0   80.21     0.0
  241         UD  0.0730

  242         KK    288B
  243         KO       0       0     0.0       1      22
  244         BA  0.0149
  245         LS     0.0   78.34     0.0
  246         UD  0.0664

  247         KK     44C   CNAME     44R
  248         KO       0       0     0.0       0      22
  249         HC       4
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 250          KK    415B
 251          KO       0       0     0.0       1      22
 252          BA  0.0771
 253          LS     0.0   80.26     0.0
 254          UD  0.0921

 255          KK    459B
 256          KO       0       0     0.0       1      22
 257          BA  0.1803
 258          LS     0.0   79.85     0.0
 259          UD  0.1662

 260          KK      3C   CNAME      3R
 261          KO       0       0     0.0       0      22
 262          HC       4

 263          KK    163B
 264          KO       0       0     0.0       1      22
 265          BA  0.0618
 266          LS     0.0   80.62     0.0
 267          UD  0.1138

 268          KK      7B
 269          KO       0       0     0.0       1      22
 270          BA  0.0408
 271          LS     0.0   67.23     0.0
 272          UD  0.0556

 273          KK    411B
 274          KO       0       0     0.0       1      22
 275          BA  0.0331
 276          LS     0.0   79.74     0.0
 277          UD  0.0892

 278          KK     12C   CNAME     12R
 279          KO       0       0     0.0       0      22
 280          HC       4

 281          KK     12R   CNAME     12C
 282          KO       0       0     0.0       0      22
 283          RN     12R

 284          KK    141B
 285          KO       0       0     0.0       1      22
 286          BA  0.1600
 287          LS     0.0   69.57     0.0
 288          UD  0.1866

 289          KK     25R   CNAME     25C
 290          KO       0       0     0.0       0      22
 291          RD  1297.6 0.07153   0.013            CIRC     2.0     0.0
```

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

  292         KK    139B
  293         KO       0       0     0.0       0      22
  294         BA  0.0660
  295         LS     0.0   61.27     0.0
  296         UD  0.0702

  297         KK     23R   CNAME     23C
  298         KO       0       0     0.0       0      22
  299         RD  1357.8 0.04276   0.013            CIRC     2.0     0.0

  300         KK    140B
  301         KO       0       0     0.0       0      22
  302         BA  0.0475
  303         LS     0.0   67.54     0.0
  304         UD  0.0616

  305         KK     24C   CNAME     24R
  306         KO       0       0     0.0       0      22
  307         HC       2

  308         KK     24R   CNAME     24C
  309         KO       0       0     0.0       0      22
  310         RD  3765.7 0.06856   0.013            CIRC     2.0     0.0

  311         KK    138B
  312         KO       0       0     0.0       0      22
  313         BA  0.1174
  314         LS     0.0   71.23     0.0
  315         UD  0.2069

  316         KK     18C   CNAME     18R
  317         KO       0       0     0.0       0      22
  318         HC       3

  319         KK     18R   CNAME     18C
  320         KO       0       0     0.0       0      22
  321         RD  3528.0 0.04879   0.013            TRAP     2.0     0.0

  322         KK    155B
  323         KO       0       0     0.0       0      22
  324         BA  0.0758
  325         LS     0.0   75.21     0.0
  326         UD  0.1458

  327         KK    149B
  328         KO       0       0     0.0       0      22
  329         BA  0.2020
  330         LS     0.0   80.17     0.0
  331         UD  0.2477
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 332          KK      4C   CNAME      4R
 333          KO       0       0     0.0       0      22
 334          HC       2

 335          KK      4R   CNAME      4C
 336          KO       0       0     0.0       0      22
 337          RS       1    FLOW     0.0     0.0
              * 4C Volume
 338          SV     0.00.2728530.5501420.8319091.118195 1.409041.7044872.0045762.3093492.618846
 339          SV  2.93313.2521783.5760963.9049024.2386384.5773464.921066 5.269845.6237085.982713
              * 4C Elevation
 340          SE  4811.04811.2104811.4214811.6314811.8424812.0524812.2634812.4734812.6844812.894
 341          SE  4813.14813.3154813.5264813.7364813.9474814.1574814.3684814.5784814.789  4815.0
              * 4C Discharge
 342          SQ  12.76313.3469013.9061714.4438114.9621415.4631015.9483316.4192316.8770017.32267
 343          SQ  17.75718.1812818.7378822.8393729.3622537.5566847.1173257.86315 69.670582.44792
              * 4C Elevation
 344          SE  4811.04811.2104811.4214811.6314811.8424812.0524812.2634812.4734812.6844812.894
 345          SE  4813.14813.3154813.5264813.7364813.9474814.1574814.3684814.5784814.789  4815.0

 346          KK     30B
 347          KO       0       0     0.0       0      22
 348          BA  0.1491
 349          LS     0.0   74.12     0.0
 350          UD  0.2306

 351          KK     66B
 352          KO       0       0     0.0       0      22
 353          BA  0.0522
 354          LS     0.0    72.0     0.0
 355          UD  0.0556

 356          KK     11C   CNAME     11R
 357          KO       0       0     0.0       0      22
 358          HC       4

 359          KK     11R   CNAME     11C
 360          KO       0       0     0.0       0      22
 361          RN     11R

 362          KK    241B
 363          KO       0       0     0.0       0      22
 364          BA  0.0949
 365          LS     0.0   73.24     0.0
 366          UD  0.1459

 367          KK     10R   CNAME     10C
 368          KO       0       0     0.0       0      22
 369          RN     10R
```

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

  370         KK    151B
  371         KO       0       0     0.0       0      22
  372         BA  0.0132
  373         LS     0.0   72.23     0.0
  374         UD  0.0337

  375         KK    150B
  376         KO       0       0     0.0       0      22
  377         BA  0.0461
  378         LS     0.0   79.46     0.0
  379         UD  0.0407

  380         KK     35C   CNAME     35R
  381         KO       0       0     0.0       0      22
  382         HC       2

  383         KK     35R   CNAME     35C
  384         KO       0       0     0.0       0      22
  385         RS       1    FLOW     0.0     0.0
              * 35C Volume
  386         SV     1.0     2.0     3.0     4.0     5.0     6.0     7.0     8.0     9.0    10.0
              * 35C Elevation
  387         SE  4815.0  4816.0  4817.0  4818.0  4819.0  4820.0  4821.0  4822.0  4823.0  4824.0
              * 35C Discharge
  388         SQ     5.0     5.0     5.0     5.0     5.0     5.0     5.0     5.0     5.0     5.0
              * 35C Elevation
  389         SE  4815.0  4816.0  4817.0  4818.0  4819.0  4820.0  4821.0  4822.0  4823.0  4824.0

  390         KK    143B
  391         KO       0       0     0.0       0      22
  392         BA  0.0414
  393         LS     0.0    74.0     0.0
  394         UD  0.0120

  395         KK    402B
  396         KO       0       0     0.0       0      22
  397         BA  0.0153
  398         LS     0.0    74.0     0.0
  399         UD  0.0514

  400         KK     33C   CNAME     33R
  401         KO       0       0     0.0       0      22
  402         HC       2

  403         KK     33R   CNAME     33C
  404         KO       0       0     0.0       0      22
  405         RS       1    FLOW     0.0     0.0
              * 33C Volume
  406         SV     0.0     1.0     2.0     3.0     4.0     5.0     6.0     7.0     8.0     9.0
              * 33C Elevation
  407         SE  4810.0  4811.0  4812.0  4813.0  4814.0  4815.0  4816.0  4817.0  4818.0  4819.0
              * 33C Discharge
  408         SQ     5.0     5.0     5.0     5.0     5.0     5.0     5.0     5.0     5.0     5.0
              * 33C Elevation
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 409          SE  4810.0  4811.0  4812.0  4813.0  4814.0  4815.0  4816.0  4817.0  4818.0  4819.0

 410          KK    407B
 411          KO       0       0     0.0       0      22
 412          BA  0.0182
 413          LS     0.0    74.0     0.0
 414          UD  0.0532

 415          KK    406B
 416          KO       0       0     0.0       0      22
 417          BA  0.0256
 418          LS     0.0   68.46     0.0
 419          UD  0.0717

 420          KK    358B
 421          KO       0       0     0.0       0      22
 422          BA  0.0053
 423          LS     0.0    72.0     0.0
 424          UD  0.0822

 425          KK     54C   CNAME     54R
 426          KO       0       0     0.0       0      22
 427          HC       5

 428          KK    344B
 429          KO       0       0     0.0       0      22
 430          BA  0.0449
 431          LS     0.0   73.99     0.0
 432          UD  0.0895

 433          KK    363B
 434          KO       0       0     0.0       0      22
 435          BA  0.0208
 436          LS     0.0   75.76     0.0
 437          UD  0.1262

 438          KK      9C   CNAME      9R
 439          KO       0       0     0.0       0      22
 440          HC       3

 441          KK      9R   CNAME      9C
 442          KO       0       0     0.0       0      22
 443          RN      9R
 444          ZZ
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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	329B	22.	12.00	3.	1.	1.	0.05		
+	HYDROGRAPH AT	403B	11.	12.00	1.	0.	0.	0.02		
+	2 COMBINED AT	37C	33.	12.00	4.	1.	1.	0.07		
+	ROUTED TO	37R	20.	12.17	4.	1.	1.	0.07		
+									4743.48	12.17
+	HYDROGRAPH AT	11B	2.	12.33	1.	0.	0.	0.12		
+	ROUTED TO	6R	2.	12.33	1.	0.	0.	0.12		
+	HYDROGRAPH AT	10B	54.	12.00	8.	3.	3.	0.16		
+	2 COMBINED AT	13C	56.	12.00	9.	3.	3.	0.28		
+	ROUTED TO	13R	11.	12.83	7.	3.	3.	0.28		
+									4800.96	12.83
+	HYDROGRAPH AT	98B	19.	12.00	3.	1.	1.	0.11		
+	ROUTED TO	29R	19.	12.00	3.	1.	1.	0.11		
+	HYDROGRAPH AT	408B	17.	12.00	3.	1.	1.	0.08		
+	HYDROGRAPH AT	99B	42.	12.00	5.	1.	1.	0.06		
+	3 COMBINED AT	30C	78.	12.00	10.	3.	3.	0.25		
+	HYDROGRAPH AT	103B	7.	12.17	1.	0.	0.	0.01		
+	HYDROGRAPH AT	401B	49.	12.17	8.	3.	3.	0.14		
	3 COMBINED AT									

+	32C	128.	12.00	19.	6.	6.	0.40
+ HYDROGRAPH AT	101B	14.	12.17	3.	1.	1.	0.11
+ ROUTED TO	31R	14.	12.17	3.	1.	1.	0.11
+ HYDROGRAPH AT	83B	17.	12.00	7.	2.	2.	0.57
+ ROUTED TO	19R	17.	12.00	7.	2.	2.	0.57
+ HYDROGRAPH AT	86B	13.	12.00	1.	0.	0.	0.03
+ 2 COMBINED AT	21C	29.	12.00	8.	3.	3.	0.59
+ HYDROGRAPH AT	85B	23.	12.00	4.	1.	1.	0.16
+ 2 COMBINED AT	16C	52.	12.00	12.	4.	4.	0.75
+ HYDROGRAPH AT	81B	5.	12.00	2.	1.	1.	0.19
+ ROUTED TO	17R	5.	12.00	2.	1.	1.	0.19
+ HYDROGRAPH AT	84B	30.	12.00	4.	1.	1.	0.12
+ 3 COMBINED AT	20C	88.	12.00	18.	6.	6.	1.06
+ HYDROGRAPH AT	79B	5.	12.00	1.	0.	0.	0.02
+ ROUTED TO	15R	5.	12.00	1.	0.	0.	0.02
+ HYDROGRAPH AT	78B	6.	12.00	1.	0.	0.	0.08
+ 2 COMBINED AT	8C	11.	12.00	2.	1.	1.	0.09
+ HYDROGRAPH AT	87B	15.	12.00	2.	1.	1.	0.06
+ 2 COMBINED AT	22C	26.	12.00	4.	1.	1.	0.16
+ HYDROGRAPH AT	77B	6.	12.00	1.	0.	0.	0.06

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LEHI CITY

+	3 COMBINED AT	7C	120.	12.00	23.	8.	8.	1.27
+	HYDROGRAPH AT	177B	4.	12.00	1.	0.	0.	0.02
+	HYDROGRAPH AT	248B	18.	12.00	2.	1.	1.	0.08
+	HYDROGRAPH AT	176B	8.	12.00	1.	0.	0.	0.02
+	5 COMBINED AT	41C	163.	12.00	30.	10.	10.	1.51
+	HYDROGRAPH AT	286B	160.	12.00	19.	6.	6.	0.42
+	HYDROGRAPH AT	181B	19.	12.00	2.	1.	1.	0.03
+	3 COMBINED AT	43C	341.	12.00	51.	17.	17.	1.96
+	HYDROGRAPH AT	2B	39.	12.17	7.	2.	2.	0.08
+	ROUTED TO	38R	39.	12.17	7.	2.	2.	0.08
+	HYDROGRAPH AT	405B	7.	12.00	1.	0.	0.	0.01
+	HYDROGRAPH AT	288B	10.	12.00	1.	0.	0.	0.01
+	4 COMBINED AT	44C	384.	12.00	60.	20.	20.	2.06
+	HYDROGRAPH AT	415B	59.	12.00	7.	2.	2.	0.08
+	HYDROGRAPH AT	459B	98.	12.00	15.	5.	5.	0.18
+	4 COMBINED AT	3C	668.	12.00	100.	33.	33.	2.72
+	HYDROGRAPH AT	163B	44.	12.00	5.	2.	2.	0.06
+	HYDROGRAPH AT	7B	10.	12.00	1.	0.	0.	0.04
+	HYDROGRAPH AT	411B	25.	12.00	3.	1.	1.	0.03
+	4 COMBINED AT	12C	747.	12.00	110.	36.	36.	2.86

+	ROUTED TO	12R	747.	12.00	110.	36.	36.	2.86	
+	HYDROGRAPH AT	141B	36.	12.17	6.	2.	2.	0.16	
+	ROUTED TO	25R	35.	12.17	6.	2.	2.	0.16	
+	HYDROGRAPH AT	139B	6.	12.00	1.	0.	0.	0.07	
+	ROUTED TO	23R	5.	12.00	1.	0.	0.	0.07	
+	HYDROGRAPH AT	140B	13.	12.00	2.	1.	1.	0.05	
+	2 COMBINED AT	24C	18.	12.00	3.	1.	1.	0.11	
+	ROUTED TO	24R	13.	12.00	3.	1.	1.	0.11	
+	HYDROGRAPH AT	138B	31.	12.17	5.	2.	2.	0.12	
+	3 COMBINED AT	18C	79.	12.17	15.	5.	5.	0.39	
+	ROUTED TO	18R	77.	12.17	15.	5.	5.	0.39	
+	HYDROGRAPH AT	155B	32.	12.00	5.	2.	2.	0.08	
+	HYDROGRAPH AT	149B	103.	12.17	17.	5.	5.	0.20	
+	2 COMBINED AT	4C	129.	12.17	22.	7.	7.	0.28	
+	ROUTED TO	4R	35.	12.67	20.	15.	15.	0.28	
+									4814.08 12.67
+	HYDROGRAPH AT	30B	49.	12.17	9.	3.	3.	0.15	
+	HYDROGRAPH AT	66B	22.	12.00	3.	1.	1.	0.05	
+	2 COMBINED AT	11C	154.	12.17	45.	23.	23.	0.87	
+	ROUTED TO	11R	154.	12.17	45.	23.	23.	0.87	

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          HYDROGRAPH AT
+                         241B       33.   12.00          5.          2.          2.       0.09

          ROUTED TO
+                          10R       33.   12.00          5.          2.          2.       0.09

          HYDROGRAPH AT
+                         151B        6.   12.00          1.          0.          0.       0.01

          HYDROGRAPH AT
+                         150B       34.   12.00          4.          1.          1.       0.05

          2 COMBINED AT
+                          35C       40.   12.00          4.          1.          1.       0.06

          ROUTED TO
+                          35R        5.    0.17          5.          5.          5.       0.06
+                                                                                        4815.00        0.00

          HYDROGRAPH AT
+                         143B       21.   12.00          2.          1.          1.       0.04

          HYDROGRAPH AT
+                         402B        8.   12.00          1.          0.          0.       0.02

          2 COMBINED AT
+                          33C       29.   12.00          3.          1.          1.       0.06

          ROUTED TO
+                          33R        5.    0.17          5.          5.          5.       0.06
+                                                                                        4810.49       12.50

          HYDROGRAPH AT
+                         407B        9.   12.00          1.          0.          0.       0.02

          HYDROGRAPH AT
+                         406B        8.   12.00          1.          0.          0.       0.03

          HYDROGRAPH AT
+                         358B        2.   12.00          0.          0.          0.       0.01

          5 COMBINED AT
+                          54C       29.   12.00         12.         11.         11.       0.17

          HYDROGRAPH AT
+                         344B       22.   12.00          3.          1.          1.       0.04

          HYDROGRAPH AT
+                         363B       10.   12.00          1.          0.          0.       0.02

          3 COMBINED AT
+                           9C       61.   12.00         16.         12.         12.       0.23

          ROUTED TO
+                           9R       61.   12.00         16.         12.         12.       0.23
1
                    SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                        (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                  INTERPOLATED TO
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                                                                                  COMPUTATION INTERVAL
          ISTAQ    ELEMENT      DT       PEAK    TIME TO     VOLUME      DT       PEAK    TIME TO     VOLUME
                                                  PEAK                                      PEAK

                              (MIN)     (CFS)     (MIN)      (IN)     (MIN)     (CFS)     (MIN)       (IN)

          FOR STORM = 1  STORM AREA (SQ MI) =      10.00
               25R  MANE        0.94     35.56    730.30      0.45     10.00     35.38    730.00       0.45

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3804E+01 EXCESS=0.0000E+00 OUTFLOW=0.3801E+01 BASIN STORAGE=0.4098E-02 PERCENT ERROR=   0.0

          FOR STORM = 1  STORM AREA (SQ MI) =      10.00
               23R  MANE        0.50      5.82    722.00      0.21     10.00      4.93    720.00       0.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7282E+00 EXCESS=0.0000E+00 OUTFLOW=0.7265E+00 BASIN STORAGE=0.1807E-02 PERCENT ERROR=   0.0

          FOR STORM = 1  STORM AREA (SQ MI) =      10.00
               24R  MANE        1.00     17.38    723.00      0.28     10.00     12.90    720.00       0.28

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1692E+01 EXCESS=0.0000E+00 OUTFLOW=0.1686E+01 BASIN STORAGE=0.7309E-02 PERCENT ERROR=   0.0

          FOR STORM = 1  STORM AREA (SQ MI) =      10.00
               18R  MANE        1.54     77.93    731.22      0.41     10.00     76.86    730.00       0.42

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8656E+01 EXCESS=0.0000E+00 OUTFLOW=0.8640E+01 BASIN STORAGE=0.3327E-01 PERCENT ERROR=  -0.2


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