

1921P Collins First Addn.
Drainage

5/1/01
CMB

1/3

Check 30" x 54" CMPA's Under Cart.

From USGS Quad Sheet:

Max DA = 1100' x 1300' = 33 Acres
Very flat slopes, Drains to South Pond
(South of Carr, East of Lark).

Estimate T_c = 30 minutes for tri2.
USGS Quad sheet does not indicate
Pawnee Mesa Channel.

From SCS Soil Survey; Soil Type = BA(C)

FA(B) and Fb(B); Use Type B Hydrological
Soil Group.

Use 1/4 Ac lots for analysis; $C_{100} = 0.61$

$$i_{100} = 5.4 \text{"/hour}$$

$$Q_{100} = (33 \text{ Acres}) (5.4 \text{"/hr}) (0.61) = 109 \text{ cfs}$$

Existing 30" x 54" CMPAs

$$US\&L = 1319.30$$

$$\text{Max Road Elev} = 1323.6$$

$$\text{Max Hw} = 23.6 - 19.3 = 4.3 \text{ feet}$$

Use 34 x 53 for Analysis - Hyd. Eng. Cir #5

$$\text{Inlet Control: } Hw/D = 4.3/3.112 = 1.67$$

$$\text{Inlet Control} = 98 \text{ cfs/pipe} = 98 \times 2 = 196 \text{ cfs}$$

O.K. - Road Doesn't Overlap. ^{Max}

Check Entire Basin to
North Pond Weir.

5/11/01 2/3
CMB

From USGS Sheet, DA = 56 Acres

Use $T_c = 30$ minutes

$$C_{100} = 0.61$$

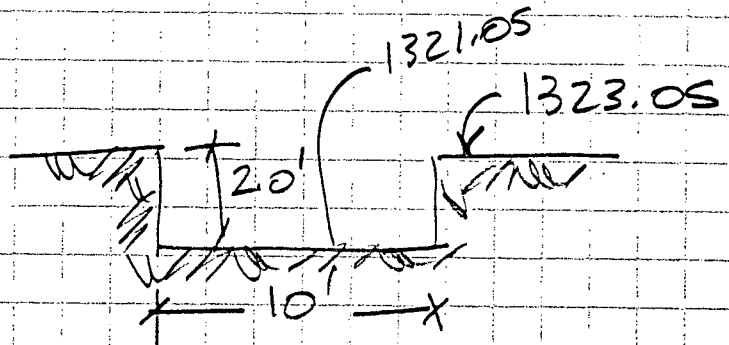
$$L_{100} = 5.4 \text{"/in}$$

$$Q_{100} = (56 \text{ ac}) (0.61) (5.4 \text{"/in}) = 185 \text{ cfs}$$

North Pond drains east, parallel w/ R/R tracks
to Cowskin Creek. Out via weir (concrete)
@ north side pond.

Ignore storage!

Survey of weir =



$$Q_{\text{weir}} = CLH^{1.5}$$

$$Q_{\text{weir}} = (3.0)(10')(2.0)^{1.5} = 85 \text{ cfs} < 185 \text{ cfs}$$

Look @ Storage: From GIS Aerial scaled,
Pond Surface Area = $56285 \text{ ft}^2 = 1.3 \text{ Acres}$
(Conservative from map).

Storage @	1321 =	1.3	1324 =	1.45
	1322 =	1.35		
	1323 =	1.4		

$Q_{\text{weir}} @$	1321 =	0	}	$Q = CLH^{1.5}$
	1321.5 =	11		
	1322 =	30		
	1322.5 =	55		
	1323 =	85		
	1323.5 =	119		
	1324 =	155		

To HEC1

5/1/01

3/3

$$BA = 56 AC = 0.875 \text{ Sq. Miles}$$

$$CN = B1$$

$$SCS \text{ Lag} = 0.6 T_c = 0.30 \text{ hours}$$

CMB

Pond Information As Indicated.

$$\text{HEC1 Output; } Q_{in} = 225 \text{ cfs}$$

$$Q_{out} = 180 \text{ cfs}$$

Does not work within confines of exist. weir.

Some detention may take place upstream
in pond south of Can.

Ground adjacent to existing weir can
pass storm water. F g map from pond
is 185 cfs, a 10' wide weir could discharge
@

$$185 = (3)(10)(x)^{1.5} \quad x^{1.5} = 6.167$$

$$x = 6.167^{0.67} \quad x = 3.4 \text{ feet}$$

$$\text{Elevation} = 1321.05 + 3.4 = 1324.45$$

w/o beam flow.

Roadway @ Can spills @ 1323.6, opens
south pond up to storage.

Based on evidence, recommend 100 yr. W.S.
of 1324.0 on Collins Addition plat.

$$\text{Min Pond} = 1325.0$$

DRAINAGE AREA SQUARE MILES
PRECIPITATION DEPTH INCHES
LENGTH, ELEVATION FEET
FLOW CUBIC FEET PER SECOND
STORAGE VOLUME ACRE-FEET
SURFACE AREA ACRES
TEMPERATURE DEGREES FAHRENHEIT

*
* BASIN *
*

5 IN TIME DATA FOR INPUT TIME SERIES
JXMIN 30 TIME INTERVAL IN MINUTES
JXDATE 1 0 STARTING DATE
JXTIME 0 STARTING TIME

SUBBASIN RUNOFF DATA

13 BA SUBBASIN CHARACTERISTICS
TAREA 0.09 SUBBASIN AREA

PRECIPITATION DATA

8 PB STORM 7.80 BASIN TOTAL PRECIPITATION

8 PI INCREMENTAL PRECIPITATION PATTERN

Table with 10 columns of incremental precipitation values ranging from 0.01 to 0.09.

15 LS SCS LOSS RATE
STRTL 0.47 INITIAL ABSTRACTION
CRVNB 81.00 CURVE NUMBER
RTIMP 0.00 PERCENT IMPERVIOUS AREA

14 UD SCS DIMENSIONLESS UNITGRAPH
TLAG 0.30 LAG

UNIT HYDROGRAPH

20 END-OF-PERIOD ORDINATES

Table with 10 columns of ordinates: 17., 56., 106., 124., 114., 89., 56., 38., 26., 17.

*
* POND *
*

HYDROGRAPH ROUTING DATA

17 RS STORAGE ROUTING
NSTPS 1 NUMBER OF SUBREACHES
ITYP ELEV TYPE OF INITIAL CONDITION
RSVRIC 1321.00 INITIAL CONDITION
X 0.00 WORKING R AND D COEFFICIENT

Table with 5 columns: AREA, ELEVATION, DISCHARGE, ELEVATION. Values include 1.3, 1.4, 1.4, 1.5, 1321.00, 1322.00, 1323.00, 1324.00, 0., 11., 30., 55., 85., 118., 155.

COMPUTED STORAGE-ELEVATION DATA

Table with 2 columns: STORAGE, ELEVATION. Values include 0.00, 1.32, 2.70, 4.12, 1321.00, 1322.00, 1323.00, 1324.00.

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

Table with 2 columns: STORAGE, ELEVATION. Values include 0.00, 0.66, 1.32, 2.01, 2.70, 3.41, 4.12, 0.00, 11.00, 30.00, 55.00, 85.00, 118.00, 155.00, 1321.00, 1321.50, 1322.00, 1322.50, 1323.00, 1323.50, 1324.00.

WARNING --- ROUTED OUTFLOW (162.) IS GREATER THAN MAXIMUM OUTFLOW (155.) IN STORAGE-OUTFLOW TABLE

Collins.out

WARNING --- ROUTED OUTFLOW (177.) IS GREATER THAN MAXIMUM OUTFLOW (155.) IN STORAGE-OUTFLOW TABLE
 WARNING --- ROUTED OUTFLOW (180.) IS GREATER THAN MAXIMUM OUTFLOW (155.) IN STORAGE-OUTFLOW TABLE
 WARNING --- ROUTED OUTFLOW (171.) IS GREATER THAN MAXIMUM OUTFLOW (155.) IN STORAGE-OUTFLOW TABLE
 WARNING --- ROUTED OUTFLOW (156.) IS GREATER THAN MAXIMUM OUTFLOW (155.) IN STORAGE-OUTFLOW TABLE

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

OPERATION	STATION	PEAK	TIME OF	AVERAGE FLOW FOR MAXIMUM PERIOD		BASIN	MAXIMUM	TIME OF
6-HOUR	24-HOUR	FLOW	PEAK			AREA	STAGE	MAX STAGE
		72-HOUR						
HYDROGRAPH AT		BASIN		225.	12.08	41.	13.	0.09
ROUTED TO		POND		180.	12.33	41.	13.	0.09
				1324.33	12.33			

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