SUBDIVISION COMMITTEE
METROPOLITAN AREA PLANNING COMMISSION

AGENDA ITEM NO. 5
DECEMBER 14, 2006

STAFF REPORT
(One-Step Final Plat)

CASE NUMBER: **SUB 2006-108 -- SOUTH LAKES SPORTS COMPLEX ADDITION**

OWNER/APPLICANT: City of Wichita, Attn: Larry Hoetmer, Park Department, 455 N. Main, Wichita, KS 67202

SURVEYOR/AGENT: Baughman Company, P.A., Attn: Kris Rose, 315 Ellis, Wichita, KS 67211

LOCATION: North of 55th St. North, East side of Meridian

SITE SIZE: 7.60 acres

NUMBER OF LOTS

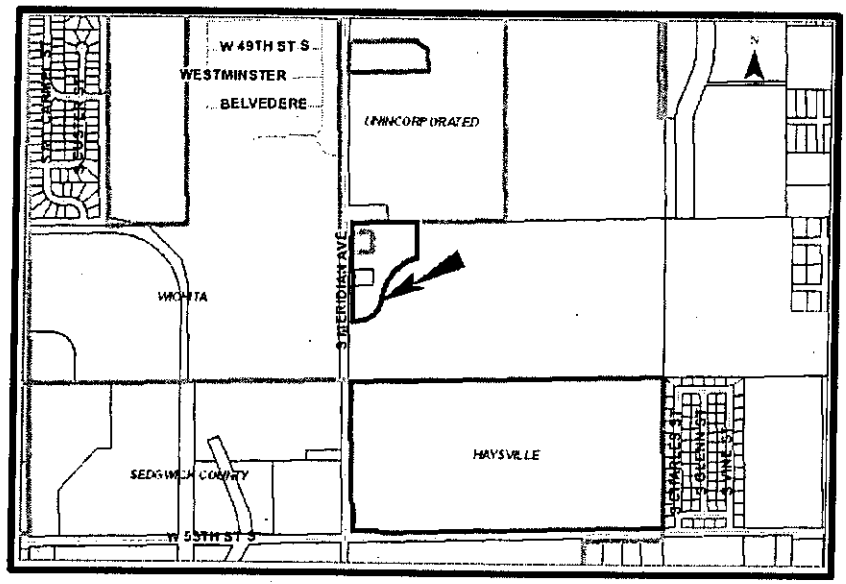
Residential:	1
Office:	
Commercial:	
Industrial:	
Total:	1

MINIMUM LOT AREA: 7.03 acres

CURRENT ZONING: SF-20, Single-Family Residential; SF-5, Single-Family Residential

PROPOSED ZONING: SF-5, Single-Family Residential

VICINITY MAP



NOTE: This is an unplatted site with a portion located within the County and annexation is required. The County portion of the property will be converted to SF-5, Single-Family Residential upon annexation.

STAFF COMMENTS:

A. Prior to this plat being scheduled for City Council review, annexation of the property will need to be completed. Upon annexation, the property will be zoned SF-5, Single-Family Residential.

B. Municipal serves are available to serve the site.

C. If improvements are guaranteed by petition, a notarized certificate listing the petitions shall be submitted to the Planning Department for recording.

D. **City Engineering** needs to comment on the status of the applicant's drainage plan. ***County Engineering requests a drainage plan for review.***

E. **Traffic Engineering** needs to comment on the access controls. The plat proposes one access opening along Meridian. ***Access controls are approved.***

F. The Applicant shall meet with **Sedgwick County Public Works** concerning right-of-way for the Meridian 2008 improvement project.

G. The applicant shall provide a guarantee for a left turn lane at the opening along Meridian.

H. The applicant shall guarantee the closure of any driveway openings located in areas of complete access control or that exceed the number of allowed openings. A Driveway Closure Certificate in lieu of a guarantee may be provided.

I. Provisions shall be made for ownership and maintenance of the proposed reserves. The applicant shall either form a lot owners' association prior to recording the plat or shall submit a covenant stating when the association will be formed, when the reserves will be deeded to the association and who is to own and maintain the reserves prior to the association taking over those responsibilities.

J. For those reserves being platted for drainage purposes, the required covenant that provides for ownership and maintenance of the reserves, shall grant to the appropriate governing body the authority to maintain the drainage reserves in the event the owner(s) fail to do so. The covenant shall provide for the cost of such maintenance to be charged back to the owner(s) by the governing body.

K. In accordance with the KS Wetland Mapping Conventions under the Memorandum of Understanding between the USDA-NRCS; USEPA; USACE; and USF&WS, this site has been identified as one with potential wetland hydrology. The US Army Corps of Engineers (USACE) should be contacted (316-322-8247) to have a wetland determination completed.

L. This property is within a zone identified by the City Engineers' office as likely to have groundwater at some or all times within 10 feet of the ground surface elevation. Building with

specially engineered foundations or with the lowest floor opening above groundwater is recommended, and owners seeking building permits on this property will be similarly advised. More detailed information on recorded groundwater elevations in the vicinity of this property is available in the City Engineers' office.

M. The Applicant has platted a 20-foot building setback along Meridian which represents an adjustment of the Zoning Code standard of 25 feet for the SF-5, Single-Family District. The Subdivision Regulations permit the setback provisions to be modified by the plat upon the approval of the Planning Commission.

N. GIS requests that Meridian Street be labeled as "Meridian Ave".

O. The Applicant is reminded that a platting binder is required with the final plat. Approval of this plat will be subject to submittal of this binder and any relevant conditions found by such a review.

P. The plattor's text shall include language that a drainage plan has been developed for the plat and that all drainage easements, rights-of-way, or reserves shall remain at established grades or as modified with the approval of the applicable City or County Engineer, and unobstructed to allow for the conveyance of stormwater.

Q. The applicant shall install or guarantee the installation of all utilities and facilities that are applicable and described in Article 8 of the MAPC Subdivision Regulations. (Water service and fire hydrants required by Article 8 for fire protection shall be as per the direction and approval of the Chief of the Fire Department.)

R. The applicant's engineer is advised that the Register of Deeds is requiring the name(s) of the notary public, who acknowledges the signatures on this plat, to be printed beneath the notary's signature.

S. To receive mail delivery without delay, and to avoid unnecessary expense, the applicant is advised of the necessity to meet with the U.S. Postal Service Growth Management Coordinator (Phone: 316-946-4556) prior to development of the plat so that the type of delivery, and the tentative mailbox locations can be determined.

T. The applicant is advised that various State and Federal requirements (specifically but not limited to the Army Corps of Engineers, Kanopolis Project Office, Rt. 1, Box 317, Valley Center, KS 67147) for the control of soil and wind erosion and the protection of wetlands may impact how this site can be developed. It is the applicant's responsibility to contact all appropriate agencies to determine any such requirements.

U. The owner of the subdivision should note that any construction that results in earthwork activities that will disturb one (1) acre or more of ground cover requires a Federal/State NPDES Storm Water Discharge Permit from the Kansas Department of Health and Environment in Topeka. Also, for projects located within the City of Wichita, erosion and sediment control devices must be used on ALL projects. For projects outside of the City of Wichita, but within the Wichita Metropolitan area, the owner should contact the appropriate governmental jurisdiction concerning erosion and sediment control device requirements.

V. Perimeter closure computations shall be submitted with the final plat tracing.

W. Recording of the plat within 30 days after approval by the City Council and/or County Commission.

X. The representatives from the utility companies should be prepared to comment on the need for any additional utility easements to be platted on this property.

Y. A compact disc (CD), which will be used by the City and County GIS Departments, detailing the final plat in digital format in AutoCAD. If a disc is not provided, please send via e-mail to Cheryl Holloway (E-Mail address: cholloway@wichita.gov. Please include the name of the plat on the disc.

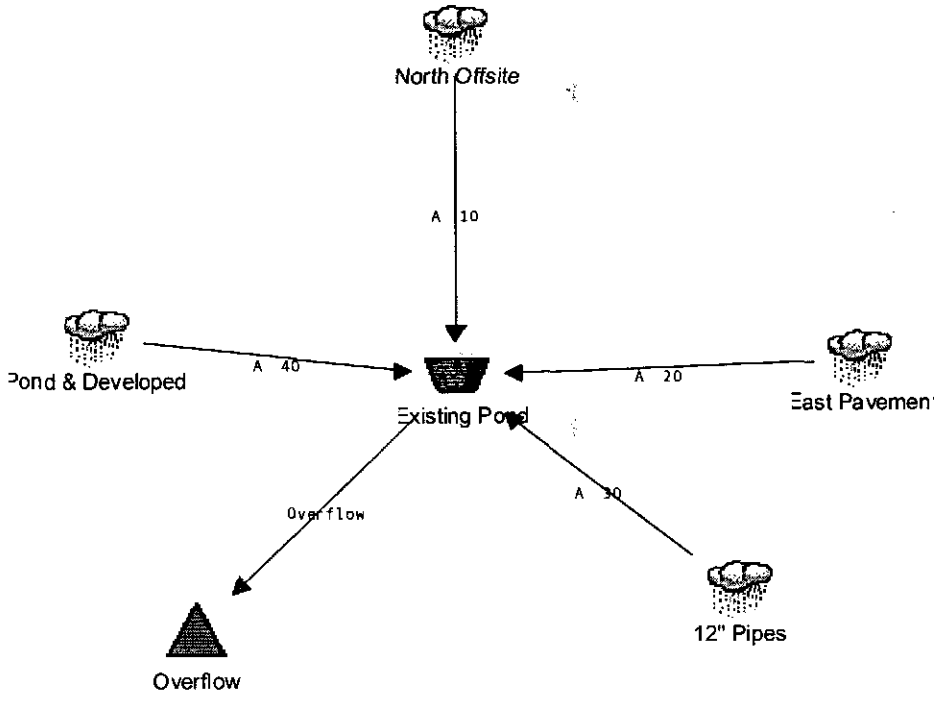

North Offsite
A 10
Pond & Developed
A 40
A 20
East Pavemen
Existing Pond
Overflow
A 30
12" Pipes
Overflow

Table of Contents

WARNING: The difference between calculated peak flow
and interpolated peak flow is greater than 1.50%
Computed peak flow = 9.53 cfs
Interp. peak flow = 9.37 cfs (1.69% difference)

Check SCS UH data for: SCS Unit Hyd. EAST PAVEMENT
Output increment for this subarea may be too large.
Use Options -- Output Filter to change increment for entire project,
or if you are running a watershed network analysis,
use the GO button to change output increment.

WARNING: The difference between calculated peak flow
and interpolated peak flow is greater than 1.50%
Computed peak flow = 6.86 cfs
Interp. peak flow = 6.74 cfs (1.82% difference)

Check SCS UH data for: SCS Unit Hyd. 12" PIPES
Output increment for this subarea may be too large.
Use Options -- Output Filter to change increment for entire project,
or if you are running a watershed network analysis,
use the GO button to change output increment.

WARNING: The difference between calculated peak flow
and interpolated peak flow is greater than 1.50%
Computed peak flow = 12.31 cfs
Interp. peak flow = 12.10 cfs (1.71% difference)

Check SCS UH data for: SCS Unit Hyd. EAST PAVEMENT
Output increment for this subarea may be too large.
Use Options -- Output Filter to change increment for entire project,
or if you are running a watershed network analysis,
use the GO button to change output increment.

WARNING: The difference between calculated peak flow
and interpolated peak flow is greater than 1.50%
Computed peak flow = 8.83 cfs
Interp. peak flow = 8.66 cfs (1.82% difference)

Check SCS UH data for: SCS Unit Hyd. 12" PIPES
Output increment for this subarea may be too large.
Use Options -- Output Filter to change increment for entire project,
or if you are running a watershed network analysis,
use the GO button to change output increment.

WARNING: The difference between calculated peak flow
and interpolated peak flow is greater than 1.50%
Computed peak flow = 21.72 cfs
Interp. peak flow = 21.34 cfs (1.73% difference)

Check SCS UH data for: SCS Unit Hyd. EAST PAVEMENT
Output increment for this subarea may be too large.
Use Options -- Output Filter to change increment for entire project,
or if you are running a watershed network analysis,
use the GO button to change output increment.

WARNING: The difference between calculated peak flow
and interpolated peak flow is greater than 1.50%
Computed peak flow = 15.49 cfs
Interp. peak flow = 15.21 cfs (1.82% difference)

Check SCS UH data for: SCS Unit Hyd. 12" PIPES
Output increment for this subarea may be too large.
Use Options -- Output Filter to change increment for entire project,
or if you are running a watershed network analysis,
use the GO button to change output increment.

MASTER DESIGN STORM SUMMARY

Default Network Design Storm File, ID SEDGWICK.RNQ Sedgwick24

Return Event	Total Depth in	Rainfall Type	RNF File	RNF ID
2y24h	3.5000	Synthetic Curve	SCSTYPES	TypeII 24hr
5y24h	4.5000	Synthetic Curve	SCSTYPES	TypeII 24hr
100y24	7.9000	Synthetic Curve	SCSTYPES	TypeII 24hr

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Storage Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond ac-ft
12" PIPES	AREA	2	.437		11.9000	6.74		
12" PIPES	AREA	5	.562		11.9000	8.66		
12" PIPES	AREA	100	.987		11.9000	15.21		
EAST PAVEMENT	AREA	2	.735		12.0500	9.37		
EAST PAVEMENT	AREA	5	.959		12.0500	12.10		
EAST PAVEMENT	AREA	100	1.724		12.0500	21.34		
EXISTING PONDIN	POND	2	2.176		12.0000	28.51		
EXISTING PONDIN	POND	5	2.996		12.0000	39.40		
EXISTING PONDIN	POND	100	5.915		12.0000	77.41		
EXISTING PONDOUT	POND	2	.000		.0500	.00	83.05	2.174
EXISTING PONDOUT	POND	5	.000		.0500	.00	83.59	2.994
EXISTING PONDOUT	POND	100	.000		.0500	.00	85.35	5.907
NORTH OFFSITE	AREA	2	.216		12.0500	3.04		
NORTH OFFSITE	AREA	5	.348		12.0500	5.02		
NORTH OFFSITE	AREA	100	.866		12.0500	12.52		
*OVERFLOW	JCT	2	.000		.0500	.00		
*OVERFLOW	JCT	5	.000		.0500	.00		
*OVERFLOW	JCT	100	.000		.0500	.00		

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Storage Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond ac-ft
POND & DEVELOPED AREA		2	.787		12.0500	11.38		
POND & DEVELOPED AREA		5	1.126		12.0500	16.11		
POND & DEVELOPED AREA		100	2.338		12.0500	32.27		

JOB TITLE NOT SPECIFIED
Click Project Summary on the File Menu to enter title

DESIGN STORMS SUMMARY

Design Storm File,ID = SEDGWICK.RNQ Sedgwick24

Storm Tag Name = 2y24h

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 2 yr
Total Rainfall Depth= 3.5000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 5y24h
Description: Sedgwick County 5-yr 24 hour Duration

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 5 yr
Total Rainfall Depth= 4.5000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 100y24
Description: Sedgwick County 100-yr 24 hour Duration

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 7.9000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

DESIGN STORMS SUMMARY

Design Storm File,ID = SEDGWICK.RNQ Sedgwick24

Storm Tag Name   = 2y24h

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency   = 2 yr
Total Rainfall Depth= 3.5000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name   = 5y24h
Description: Sedgwick County 5-yr 24 hour Duration

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency   = 5 yr
Total Rainfall Depth= 4.5000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name   = 100y24
Description: Sedgwick County 100-yr 24 hour Duration

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency   = 100 yr
Total Rainfall Depth= 7.9000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
81.00	-----	.3700	.0000	.000	.000
82.00	-----	1.2000	2.2363	.745	.745
83.00	-----	1.5000	4.0416	1.347	2.093
84.00	-----	1.6000	4.6492	1.550	3.642
85.00	-----	1.7000	4.9492	1.650	5.292
86.00	-----	2.0000	5.5439	1.848	7.140

POND VOLUME EQUATIONS

* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

File.... C:\HAESTAD\PPKW\SAMPLE\PROJECT1.PPW

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 81.00 ft
Increment = .50 ft
Max. Elev.= 86.00 ft

****
OUTLET CONNECTIVITY
****

---> Forward Flow Only (UpStream to DnStream)
<--- Reverse Flow Only (DnStream to UpStream)
<---> Forward and Reverse Both Allowed

Structure	No.		Outfall	E1, ft	E2, ft
Weir-Rectangular	WR	--->	TW	86.000	86.000
TW SETUP, DS Channel					

File.... C:\HAESTAD\PPKW\SAMPLE\PROJECT1.PPW

OUTLET STRUCTURE INPUT DATA

Structure ID = WR
Structure Type = Weir-Rectangular

# of Openings = 1
Crest Elev. = 86.00 ft
Weir Length = 100.00 ft
Weir Coeff. = 2.600000

Weir TW effects (Use adjustment equation)

Structure ID = TW
Structure Type = TW SETUP, DS Channel

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...
Maximum Iterations= 30
Min. TW tolerance = .01 ft
Max. TW tolerance = .01 ft
Min. HW tolerance = .01 ft
Max. HW tolerance = .01 ft
Min. Q tolerance = .10 cfs
Max. Q tolerance = .10 cfs

Index of Starting Page Numbers for ID Names

PIPE A

HY-8

CURRENT DATE: 11-28-2006 FILE DATE: 11-28-2006
CURRENT TIME: 16:18:19 FILE NAME: SPORT_S

FHWA CULVERT ANALYSIS
HY-8, VERSION 6.1

CULVERT NO.	SITE DATA: INLET ELEV. (ft)	SITE DATA: OUTLET ELEV. (ft)	SITE DATA: CULVERT LENGTH (ft)	CULVERT SHAPE, MATERIAL, INLET: BARRELS	SHAPE	SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	100.00	96.50	700.01	1	RCP		1.00	1.00	.010	CONVENTIONAL
2										
3										
4										
5										
6										

SUMMARY OF CULVERT FLOWS (cfs) FILE: SPORT_S DATE: 11-28-2006

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
100.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	1
100.51	0.8	0.8	0.0	0.0	0.0	0.0	0.0	0.00	1
100.77	1.6	1.6	0.0	0.0	0.0	0.0	0.0	0.00	1
100.98	2.4	2.4	0.0	0.0	0.0	0.0	0.0	0.00	1
101.17	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.00	1
103.07	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.00	1
105.67	4.8	4.8	0.0	0.0	0.0	0.0	0.0	0.00	1
108.62	5.6	5.6	0.0	0.0	0.0	0.0	0.0	0.00	1
109.63	6.4	5.8	0.0	0.0	0.0	0.0	0.0	0.00	30
109.66	7.2	5.8	0.0	0.0	0.0	0.0	0.0	0.00	30
109.69	8.0	5.9	0.0	0.0	0.0	0.0	0.0	0.00	30
110.00	5.9	5.9	0.0	0.0	0.0	0.0	0.0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: SPORT_S DATE: 11-28-2006

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
100.00	0.000	0.00	0.00	0.00
100.51	0.000	0.80	0.00	0.00
100.77	0.000	1.60	0.00	0.00
100.98	0.000	2.40	0.00	0.00
101.17	0.000	3.00	0.00	0.00
103.07	0.000	4.00	0.00	0.00
105.67	0.000	4.80	0.00	0.00
108.62	0.000	5.60	0.00	0.00
109.63	0.000	6.40	0.55	8.59
109.66	-0.001	7.20	1.35	18.75
109.69	-0.001	8.00	2.14	26.75

<1> TOLERANCE (ft) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 11-28-2006 FILE DATE: 11-28-2006
CURRENT TIME: 16:18:19 FILE NAME: SPORT_S

PERFORMANCE CURVE FOR CULVERT 1 - 1(1.00 (ft) BY 1.00 (ft)) RCP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
0.00	100.00	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
0.80	100.51	0.51	0.51	1-S2n	0.33	0.37	0.27	0.07	4.61	0.53
1.60	100.77	0.77	0.77	1-S2n	0.49	0.53	0.43	0.11	4.90	0.69
2.40	100.98	0.98	0.98	1-S2n	0.64	0.66	0.56	0.14	5.29	0.81
3.00	101.17	1.15	1.17	2-M2c	0.75	0.74	0.74	0.17	4.80	0.88
4.00	103.07	1.51	3.07	2-M2c	1.00	0.84	0.84	0.19	5.64	0.99
4.80	105.67	1.87	5.67	2-M2c	1.00	0.91	0.91	0.22	6.40	1.06
5.60	108.62	2.30	8.62	2-M2c	1.00	0.97	0.97	0.24	7.23	1.12
5.85	109.63	2.45	9.63	2-M2c	1.00	1.00	1.00	0.26	7.46	1.18
5.85	109.65	2.46	9.65	2-M2c	1.00	1.00	1.00	0.28	7.47	1.23
5.86	109.69	2.46	9.69	2-M2c	1.00	1.00	1.00	0.29	7.48	1.28

El. inlet face invert 100.00 ft El. outlet invert 96.50 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION	0.00 ft
INLET ELEVATION	100.00 ft
OUTLET STATION	700.00 ft
OUTLET ELEVATION	96.50 ft
NUMBER OF BARRELS	1
SLOPE (V/H)	0.0050
CULVERT LENGTH ALONG SLOPE	700.01 ft

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	1.00 ft
BARREL MATERIAL	CONCRETE
BARREL MANNING'S n	0.010
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	GROOVED END PROJECTION
INLET DEPRESSION	NONE

CURRENT DATE: 11-28-2006
CURRENT TIME: 16:18:19

FILE DATE: 11-28-2006
FILE NAME: SPORT_S

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ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ TAILWATER ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ
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******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH	20.00 ft
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (ft/ft)	0.005
MANNING'S n (.01-0.1)	0.035
CHANNEL INVERT ELEVATION	96.50 ft
CULVERT NO.1 OUTLET INVERT ELEVATION	96.50 ft

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (cfs)	W.S.E. (ft)	FROUDE NUMBER	DEPTH (ft)	VEL. (f/s)	SHEAR (psf)
0.00	96.50	0.000	0.00	0.00	0.00
0.80	96.57	0.340	0.07	0.53	0.02
1.60	96.61	0.362	0.11	0.69	0.04
2.40	96.64	0.375	0.14	0.81	0.05
3.00	96.67	0.383	0.17	0.88	0.05
4.00	96.69	0.392	0.19	0.99	0.06
4.80	96.72	0.398	0.22	1.06	0.07
5.60	96.74	0.404	0.24	1.12	0.08
6.40	96.76	0.408	0.26	1.18	0.08
7.20	96.78	0.412	0.28	1.23	0.09
8.00	96.79	0.415	0.29	1.28	0.09

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ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ ROADWAY OVERTOPPING DATA ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ
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ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	650.00 ft
CREST LENGTH	1000.00 ft
OVERTOPPING CREST ELEVATION	110.00 ft

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PIPE B

HY-8

CURRENT DATE: 11-28-2006 FILE DATE: 11-28-2006
CURRENT TIME: 16:31:51 FILE NAME: SPRT_SM

FHWA CULVERT ANALYSIS
HY-8, VERSION 6.1

CULVERT NO.	SITE DATA: INLET ELEV. (ft)	SITE DATA: OUTLET ELEV. (ft)	SITE DATA: CULVERT LENGTH (ft)	CULVERT SHAPE, MATERIAL, INLET: BARRELS	SHAPE	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	100.00	99.40	120.00	1	RCP	1.00	1.00	.010	CONVENTIONAL
2									
3									
4									
5									
6									

SUMMARY OF CULVERT FLOWS (cfs) FILE: SPRT_SM DATE: 11-28-2006

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
100.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	1
100.59	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.00	1
100.88	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.00	1
101.17	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.00	1
101.67	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.00	1
102.55	5.0	5.0	0.0	0.0	0.0	0.0	0.0	0.00	1
103.49	6.0	6.0	0.0	0.0	0.0	0.0	0.0	0.00	1
104.61	7.0	7.0	0.0	0.0	0.0	0.0	0.0	0.00	1
105.89	8.0	8.0	0.0	0.0	0.0	0.0	0.0	0.00	1
107.35	9.0	9.0	0.0	0.0	0.0	0.0	0.0	0.00	1
108.98	10.0	10.0	0.0	0.0	0.0	0.0	0.0	0.00	1
110.00	10.6	10.6	0.0	0.0	0.0	0.0	0.0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: SPRT_SM DATE: 11-28-2006

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
100.00	0.000	0.00	0.00	0.00
100.59	0.000	1.00	0.00	0.00
100.88	0.000	2.00	0.00	0.00
101.17	0.000	3.00	0.00	0.00
101.67	0.000	4.00	0.00	0.00
102.55	0.000	5.00	0.00	0.00
103.49	0.000	6.00	0.00	0.00
104.61	0.000	7.00	0.00	0.00
105.89	0.000	8.00	0.00	0.00
107.35	0.000	9.00	0.00	0.00
108.98	0.000	10.00	0.00	0.00

<1> TOLERANCE (ft) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 11-28-2006 FILE DATE: 11-28-2006
CURRENT TIME: 16:31:51 FILE NAME: SPRT_SM

PERFORMANCE CURVE FOR CULVERT 1 - 1(1.00 (ft) BY 1.00 (ft)) RCP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
0.00	100.00	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
1.00	100.59	0.59	0.59	1-S2n	0.38	0.42	0.32	0.08	4.67	0.57
2.00	100.88	0.88	0.88	1-S2n	0.56	0.60	0.50	0.13	5.05	0.75
3.00	101.17	1.15	1.17	2-M2c	0.75	0.74	0.74	0.17	4.80	0.88
4.00	101.67	1.51	1.67	2-M2c	1.00	0.84	0.84	0.19	5.64	0.99
5.00	102.55	1.97	2.55	2-M2c	1.00	0.92	0.92	0.22	6.56	1.07
6.00	103.49	2.55	3.49	6-FFc	1.00	1.00	1.00	0.25	7.64	1.15
7.00	104.61	3.22	4.61	6-FFc	1.00	1.00	1.00	0.27	8.91	1.22
8.00	105.89	3.98	5.89	6-FFc	1.00	1.00	1.00	0.29	10.19	1.28
9.00	107.35	4.89	7.35	6-FFc	1.00	1.00	1.00	0.32	11.46	1.34
10.00	108.98	6.02	8.98	6-FFc	1.00	1.00	1.00	0.34	12.73	1.39

El. inlet face invert 100.00 ft El. outlet invert 99.40 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION	0.00 ft
INLET ELEVATION	100.00 ft
OUTLET STATION	120.00 ft
OUTLET ELEVATION	99.40 ft
NUMBER OF BARRELS	1
SLOPE (V/H)	0.0050
CULVERT LENGTH ALONG SLOPE	120.00 ft

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	1.00 ft
BARREL MATERIAL	CONCRETE
BARREL MANNING'S n	0.010
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	GROOVED END PROJECTION
INLET DEPRESSION	NONE

CURRENT DATE: 11-28-2006
CURRENT TIME: 16:31:51

FILE DATE: 11-28-2006
FILE NAME: SPRT_SM

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******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH	20.00 ft
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (ft/ft)	0.005
MANNING'S n (.01-0.1)	0.035
CHANNEL INVERT ELEVATION	99.40 ft
CULVERT NO.1 OUTLET INVERT ELEVATION	99.40 ft

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (cfs)	W.S.E. (ft)	FROUDE NUMBER	DEPTH (ft)	VEL. (f/s)	SHEAR (psf)
0.00	99.40	0.000	0.00	0.00	0.00
1.00	99.49	0.347	0.08	0.57	0.03
2.00	99.53	0.369	0.13	0.75	0.04
3.00	99.57	0.383	0.17	0.88	0.05
4.00	99.60	0.392	0.19	0.99	0.06
5.00	99.62	0.400	0.22	1.07	0.07
6.00	99.65	0.406	0.25	1.15	0.08
7.00	99.67	0.411	0.27	1.22	0.09
8.00	99.69	0.415	0.29	1.28	0.09
9.00	99.72	0.419	0.32	1.34	0.10
10.00	99.74	0.422	0.34	1.39	0.10

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ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	100.00 ft
CREST LENGTH	1000.00 ft
OVERTOPPING CREST ELEVATION	110.00 ft

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HY-8

CURRENT DATE: 11-28-2006 FILE DATE: 11-28-2006
CURRENT TIME: 16:23:08 FILE NAME: SPORT_M

FHWA CULVERT ANALYSIS
HY-8, VERSION 6.1

CULVERT NO.	SITE DATA: INLET ELEV. (ft)	SITE DATA: OUTLET ELEV. (ft)	SITE DATA: CULVERT LENGTH (ft)	CULVERT SHAPE, MATERIAL, INLET: BARRELS	SHAPE	SHAPE: SPAN (ft)	SHAPE: RISE (ft)	MATERIAL: MANNING n	INLET TYPE
1	100.00	98.10	375.00	1	RCP	1.00	1.00	.010	CONVENTIONAL
2									
3									
4									
5									
6									

SUMMARY OF CULVERT FLOWS (cfs) FILE: SPORT_M DATE: 11-28-2006

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
100.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	1
100.51	0.8	0.8	0.0	0.0	0.0	0.0	0.0	0.00	1
100.77	1.6	1.6	0.0	0.0	0.0	0.0	0.0	0.00	1
100.98	2.4	2.4	0.0	0.0	0.0	0.0	0.0	0.00	1
101.17	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.00	1
102.26	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.00	1
103.80	4.8	4.8	0.0	0.0	0.0	0.0	0.0	0.00	1
105.50	5.6	5.6	0.0	0.0	0.0	0.0	0.0	0.00	1
107.46	6.4	6.4	0.0	0.0	0.0	0.0	0.0	0.00	1
109.68	7.2	7.2	0.0	0.0	0.0	0.0	0.0	0.00	1
109.69	8.0	7.2	0.0	0.0	0.0	0.0	0.0	0.00	30
110.00	7.3	7.3	0.0	0.0	0.0	0.0	0.0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: SPORT_M DATE: 11-28-2006

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
100.00	0.000	0.00	0.00	0.00
100.51	0.000	0.80	0.00	0.00
100.77	0.000	1.60	0.00	0.00
100.98	0.000	2.40	0.00	0.00
101.17	0.000	3.00	0.00	0.00
102.26	0.000	4.00	0.00	0.00
103.80	0.000	4.80	0.00	0.00
105.50	0.000	5.60	0.00	0.00
107.46	0.000	6.40	0.00	0.00
109.68	0.000	7.20	0.00	0.00
109.69	0.000	8.00	0.80	10.00

<1> TOLERANCE (ft) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 11-28-2006 FILE DATE: 11-28-2006
CURRENT TIME: 16:23:08 FILE NAME: SPORT_M

PERFORMANCE CURVE FOR CULVERT 1 - 1(1.00 (ft) BY 1.00 (ft)) RCP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
0.00	100.00	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
0.80	100.51	0.51	0.51	1-S2n	0.33	0.37	0.27	0.08	4.61	0.53
1.60	100.77	0.77	0.77	1-S2n	0.49	0.53	0.48	0.11	4.24	0.69
2.40	100.98	0.98	0.98	1-S2n	0.63	0.66	0.56	0.14	5.29	0.81
3.00	101.17	1.15	1.17	2-M2c	0.75	0.74	0.74	0.17	4.80	0.88
4.00	102.26	1.51	2.26	2-M2c	1.00	0.84	0.84	0.19	5.64	0.99
4.80	103.80	1.87	3.80	2-M2c	1.00	0.91	0.91	0.22	6.40	1.06
5.60	105.50	2.30	5.50	2-M2c	1.00	0.97	0.97	0.24	7.23	1.12
6.40	107.46	2.80	7.46	6-FFc	1.00	1.00	1.00	0.26	8.15	1.18
7.20	109.68	3.36	9.68	6-FFc	1.00	1.00	1.00	0.28	9.17	1.23
7.20	109.69	3.37	9.69	6-FFc	1.00	1.00	1.00	0.29	9.17	1.28

El. inlet face invert 100.00 ft El. outlet invert 98.10 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION	0.00 ft
INLET ELEVATION	100.00 ft
OUTLET STATION	375.00 ft
OUTLET ELEVATION	98.10 ft
NUMBER OF BARRELS	1
SLOPE (V/H)	0.0051
CULVERT LENGTH ALONG SLOPE	375.00 ft

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	1.00 ft
BARREL MATERIAL	CONCRETE
BARREL MANNING'S n	0.010
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	GROOVED END PROJECTION
INLET DEPRESSION	NONE

CURRENT DATE: 11-28-2006
CURRENT TIME: 16:23:08

FILE DATE: 11-28-2006
FILE NAME: SPORT_M

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******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH	20.00 ft
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (ft/ft)	0.005
MANNING'S n (.01-0.1)	0.035
CHANNEL INVERT ELEVATION	98.10 ft
CULVERT NO.1 OUTLET INVERT ELEVATION	98.10 ft

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (cfs)	W.S.E. (ft)	FROUDE NUMBER	DEPTH (ft)	VEL. (f/s)	SHEAR (psf)
0.00	98.10	0.000	0.00	0.00	0.00
0.80	98.18	0.340	0.08	0.53	0.02
1.60	98.21	0.362	0.11	0.69	0.04
2.40	98.24	0.375	0.14	0.81	0.05
3.00	98.26	0.383	0.17	0.88	0.05
4.00	98.29	0.392	0.19	0.99	0.06
4.80	98.32	0.398	0.22	1.06	0.07
5.60	98.34	0.404	0.24	1.12	0.08
6.40	98.36	0.408	0.26	1.18	0.08
7.20	98.38	0.412	0.28	1.23	0.09
8.00	98.39	0.415	0.29	1.28	0.09

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ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	300.00 ft
CREST LENGTH	1000.00 ft
OVERTOPPING CREST ELEVATION	110.00 ft

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CLOSURE - SOUTH LAKES SPORTS

PT 01 North: 43000.0000 East : 38000.0000
Line Course: N 13.215 W Length: 817.5300
PT 02 North: 43817.4612 East : 37989.3940
Line Course: N 1579.640 E Length: 592.8400
PT 03 North: 43829.3106 East : 38582.1156
Line Course: S 18.603 E Length: 301.1600
PT 04 North: 43528.2008 East : 38587.6153
Curve Length: 477.7575 Radius: 420.0000
Delta: 1158.666 Tangent: 268.4719
Chord: 452.4129 Course: S 707.312 W
Course In: S 313.355 E Course Out: N 1472.022 W
RP North: 43127.9190 East : 38714.7941
PT 05 End North: 43180.5501 East : 38298.1048
Curve Length: 293.5969 Radius: 205.0000
Delta: 1458.807 Tangent: 178.3856
Chord: 269.1405 Course: S 857.382 W
Course In: N 1472.022 W Course Out: S 13.215 E
RP North: 43206.2391 East : 38094.7207
PT 06 End North: 43001.2563 East : 38097.3802
Line Course: S 1586.785 W Length: 97.3900
PT 01 North: 42999.9929 East : 37999.9984