

INDEX OF DRAWINGS	
NUMBER	TITLE
28895-C1	AREA MAP, SITE LOCATION MAP AND SITE PLAN
28895-C2	MAIN DAM PLAN
28895-C3	MAIN DAM AND SPILLWAY SECTIONS AND DETAILS
28895-C4	CONCRETE OUTLET STRUCTURE SECTIONS AND DETAILS
28895-C5	FUSE PLUG AND SPILLWAY CHANNEL PLAN AND PROFILE
28895-C6	FUSE PLUG PROFILE AND CROSS SECTIONS

NOTES:

1. DETAILS OF WORK TO BE PERFORMED BY CONTRACTOR FOR CONSTRUCTION OF NEW FUSE PLUG AND SPILLWAY CHANNEL AND REMOVAL OF DIKE 2 ARE SHOWN ON DRAWINGS 18305G-02 AND 18305G-03.
2. CONTRACTOR SHALL REGRADE CREST OF EXISTING DAM AND DIKES 1, 3 AND 4 TO EL. 1491.5 USING SUITABLE MATERIAL RECOVERED DURING REMOVAL OF DIKE 2 IN ACCORDANCE WITH THE SPECIFICATIONS.
3. CONTRACTOR SHALL CONSTRUCT SADDLE DIKE USING SUITABLE MATERIAL IN ACCORDANCE WITH THE SPECIFICATIONS. DETAILS OF WORK TO BE PERFORMED ARE SHOWN ON DRAWING 28895-C3.
4. HORIZONTAL PROJECT DATUM IS MICHIGAN STATE PLANE COORDINATE SYSTEM, NAD 83/86, NORTH ZONE. VERTICAL PROJECT DATUM IS NGVD 1929.
5. THE COMPANY WILL PROVIDE STOCKPILE AND DISPOSAL AREAS.
6. CONTRACTOR SHALL REPAIR AREAS OF DAMAGED CONCRETE ON OUTLET STRUCTURE IN ACCORDANCE WITH THE SPECIFICATIONS. DETAILS OF WORK TO BE PERFORMED ARE SHOWN ON DRAWINGS 28895-C2 AND 28895-C4.
7. CONTRACTOR SHALL REGRADE OVERSTEEPENED DOWNSTREAM SLOPE OF MAIN DAM NEAR OUTLET STRUCTURE IN ACCORDANCE WITH THE SPECIFICATIONS. CONTRACTOR SHALL INSTALL TOE DRAIN ALONG DOWNSTREAM TOE OF MAIN DAM IN ACCORDANCE WITH SPECIFICATIONS. DETAILS OF WORK TO BE PERFORMED ARE SHOWN ON DRAWINGS 28895-C2 AND 28895-C3.

REFERENCE DRAWINGS:

WORK THIS DRAWING WITH 28895-C2, C3, C4, C5, C6 AND 1992 COLEMAN ENGINEERING DRAWINGS 1, 2, 3, 4, 5, 6 AND 7 OF 11.
WSK-745 - AS BUILT SURVEY DRAWING FOR SILVER LAKE DAM

SCALE 0 1000 2000 FEET

CHKD.	BY	REVIEWED
CHKD.	CH	CIVIL
CHKD.	LJM	MECH.
CHKD.	MS	ELECT.

REV.	DATE	REVISION	BY	CHKD.	APPR.
1	12/18/02	ISSUED FOR CONSTRUCTION PER DCF 4008	JMS		

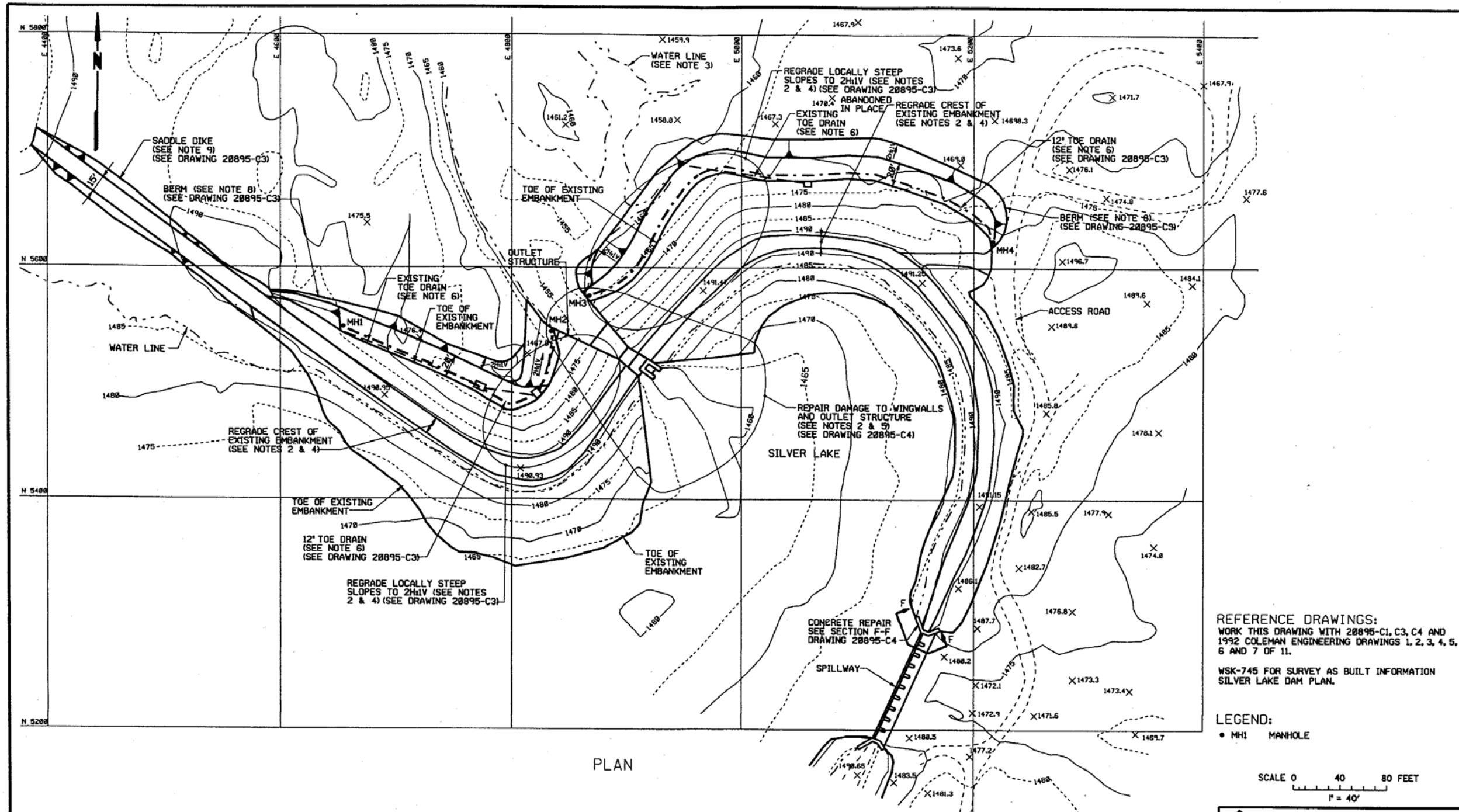
UPPER PENINSULA POWER COMPANY
 "A SUBSIDIARY OF WPS RESOURCES"
SILVER LAKE BASIN PROJECT
FUSE PLUG SPILLWAY & DAM MODIFICATIONS
 AREA MAP, SITE LOCATION MAP AND SITE PLAN
MWH
 MONTGOMERY WATSON HARZA
 CHICAGO, ILLINOIS DATE DWG. NO. 20895-C1

Area Map, Site Location Map and Site Plan (MWH Dwg. No. 20895-C1)



SILVER LAKE DAM - ROOT CAUSE REPORT

FIGURE I-1



REFERENCE DRAWINGS:
 WORK THIS DRAWING WITH 20895-C1, C3, C4 AND
 1992 COLEMAN ENGINEERING DRAWINGS 1, 2, 3, 4, 5,
 6 AND 7 OF 11.
 WSK-745 FOR SURVEY AS BUILT INFORMATION
 SILVER LAKE DAM PLAN.

LEGEND:
 • MH1 MANHOLE

SCALE 0 40 80 FEET
 1" = 40'

NOTES:

1. TOPOGRAPHY AND STRUCTURE LIMITS SHOWN ON THIS DRAWING ARE FROM COLEMAN ENGINEERING DRAWING 1 OF 11. CONTRACTOR SHALL VERIFY EXISTING TOPOGRAPHY AND STRUCTURES IN THE FIELD.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXTENT OF SLOPE AND CREST REGRADING AND CONCRETE REPAIR WITH APPROVAL OF THE COMPANY PRIOR TO THE START OF WORK.
3. WATER LINE AT ELEVATION MEASURED DURING 1992 SURVEY BY COLEMAN ENGINEERING.
4. CONTRACTOR SHALL REGRADE LOCALLY STEEP SLOPES TO 2H:1V IN ACCORDANCE WITH THE SPECIFICATIONS.
5. CONTRACTOR SHALL REGRADE CREST OF MAIN DAM TO EL. 1491.5 IN ACCORDANCE WITH THE SPECIFICATIONS. AREA BETWEEN ACCESS ROAD AND OUTLET STRUCTURE SHALL BE REGRADED USING GRAVEL MATERIAL IN ACCORDANCE WITH SPECIFICATIONS.
6. CONTRACTOR SHALL INSTALL NEW TOE DRAIN IN ACCORDANCE WITH THE SPECIFICATIONS. WHERE CONTRACTOR ENCOUNTERS EXISTING DRAIN CONTRACTOR SHALL CONNECT EXISTING DRAIN TO NEW TOE DRAIN IN ACCORDANCE WITH SPECIFICATIONS.
7. CONTRACTOR SHALL REPAIR CONCRETE DAMAGE TO WINGWALLS, OUTLET STRUCTURE, AND AREAS IDENTIFIED IN THE FIELD IN ACCORDANCE WITH THE SPECIFICATIONS.
8. CONTRACTOR SHALL CONSTRUCT BERM ALONG DOWNSTREAM TOE OF DAM IN ACCORDANCE WITH THE SPECIFICATIONS.
9. CONTRACTOR SHALL CONSTRUCT SADDLE DIKE FROM EXISTING DIKE USING MATERIAL IN ACCORDANCE WITH THE SPECIFICATIONS.

ISSN	MS	REVIEWED
CHDL	CH	CIVIL
CHDL	LM	MEDIA
CHDL	CH	ELECT.

A	REV./NO.	ISSUED FOR CONSTRUCTION PER DCP 4008	JOB
REV.	DATE	REVISION	BY

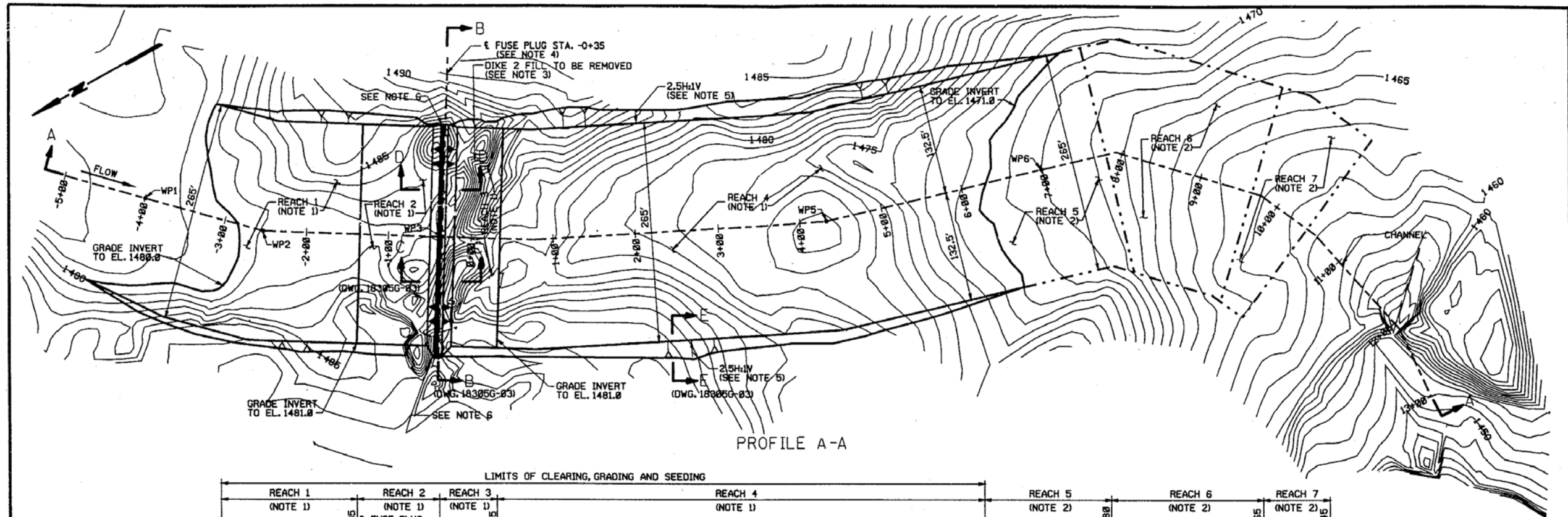
UPPER PENINSULA POWER COMPANY
 "A SUBSIDIARY OF WPS RESOURCES"
 SILVER LAKE BASIN PROJECT
 FUSE PLUG SPILLWAY & DAM MODIFICATIONS

MAIN DAM PLAN

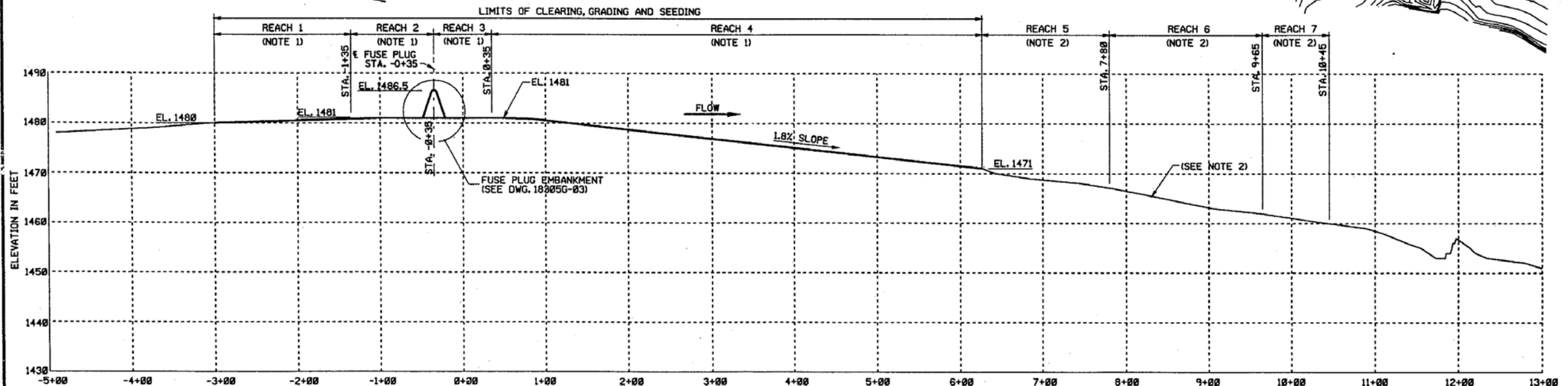
MWH
 MONTGOMERY WATSON HARZA
 CHICAGO, ILLINOIS DATE DWG. NO. 20895-C2

Main Dam Plan (MWH Dwg. No. 20895-C2)





PROFILE A-A



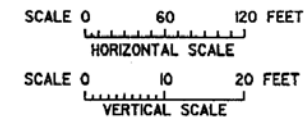
NOTES:

- CONTRACTOR SHALL GRADE REACHES 1, 2, 3 AND 4 BY EXCAVATION OR PLACEMENT AND COMPACTION OF FILL TO ELEVATIONS AS SHOWN AND SHALL PROTECT THE CHANNEL INVERT AND SLOPES, AS PER SPECIFICATIONS.
- EXISTING VEGETATION IN REACHES 5, 6 AND 7 SHALL NOT BE REMOVED AND REGRADING SHALL NOT BE PERFORMED UNLESS OTHERWISE AUTHORIZED BY ENGINEER.
- CONTRACTOR SHALL REMOVE DIKE 2 FILL PRIOR TO THE CONSTRUCTION OF FUSE PLUG.
- REFER TO DRAWING 18305G-03 FOR DETAILS REGARDING FUSE PLUG DIKE CONSTRUCTION.
- CONTRACTOR SHALL EXCAVATE CHANNEL SIDE SLOPES AT 2.5H TO 1.0V IN ACCORDANCE WITH THE SPECIFICATIONS. THE CHANNEL SIDE SLOPES SHALL BE PROTECTED IN ACCORDANCE WITH THE SPECIFICATIONS.
- TRAFFIC AND PEDESTRIAN BARRIERS SHALL BE ERECTED AT ENDS OF FUSE PLUG DIKE AS PER SPECIFICATIONS.

PROFILE A-A

REFERENCE DRAWINGS:
 WORK THIS DRAWING WITH 20895-C1 AND 20895-C6
 AND 1992 COLEMAN ENGINEERING DRAWINGS 1, 2, 3,
 4, 5, 6 AND 7 OF 11.

WORKING POINTS		
	N	E
WP1	682,490.020	26,040,491.073
WP2	682,385.906	26,040,386.520
WP3	682,201.350	26,040,271.525
WP4	682,106.709	26,040,212.604
WP5	681,787.966	26,040,054.870
WP6	681,531.127	26,039,978.771

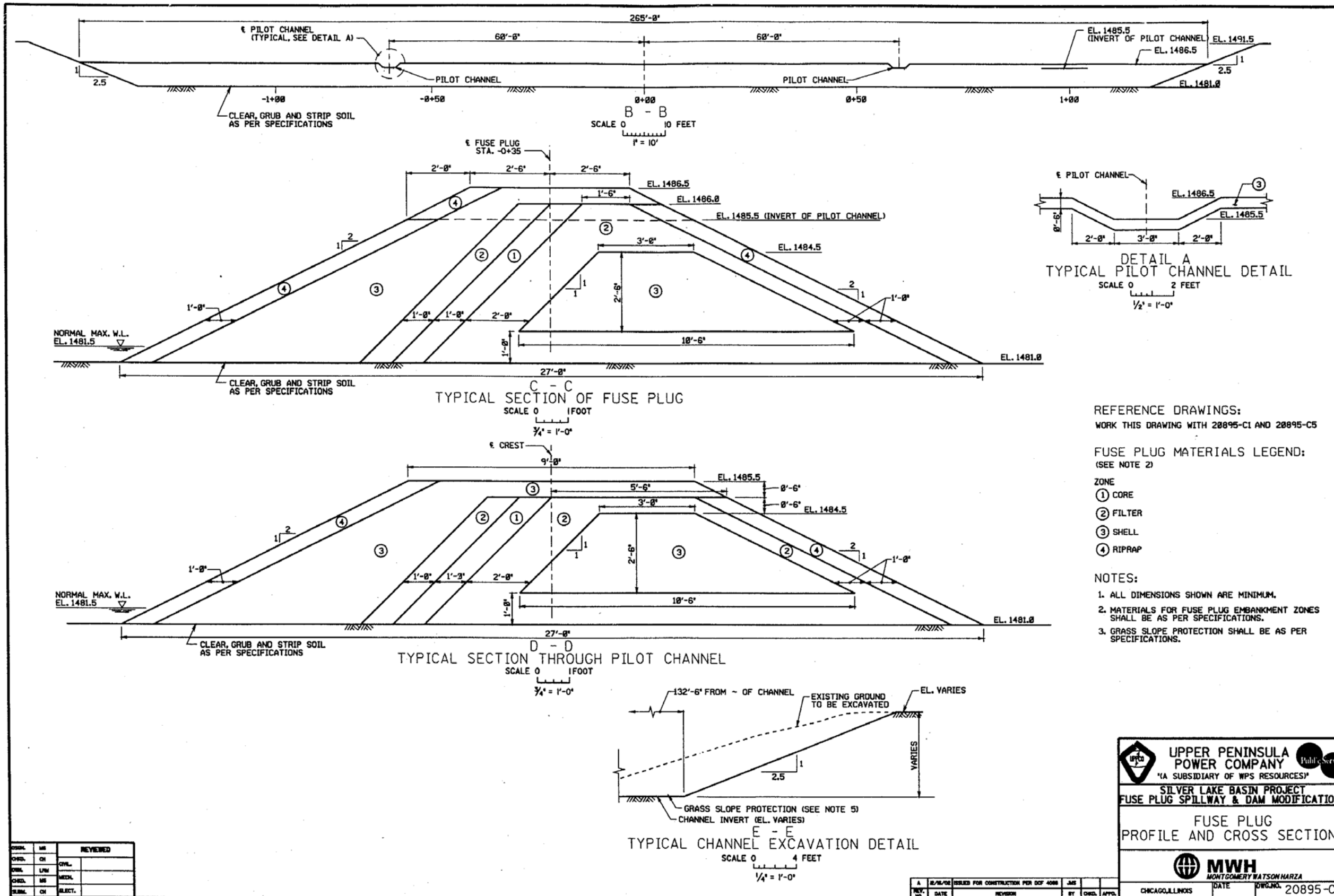


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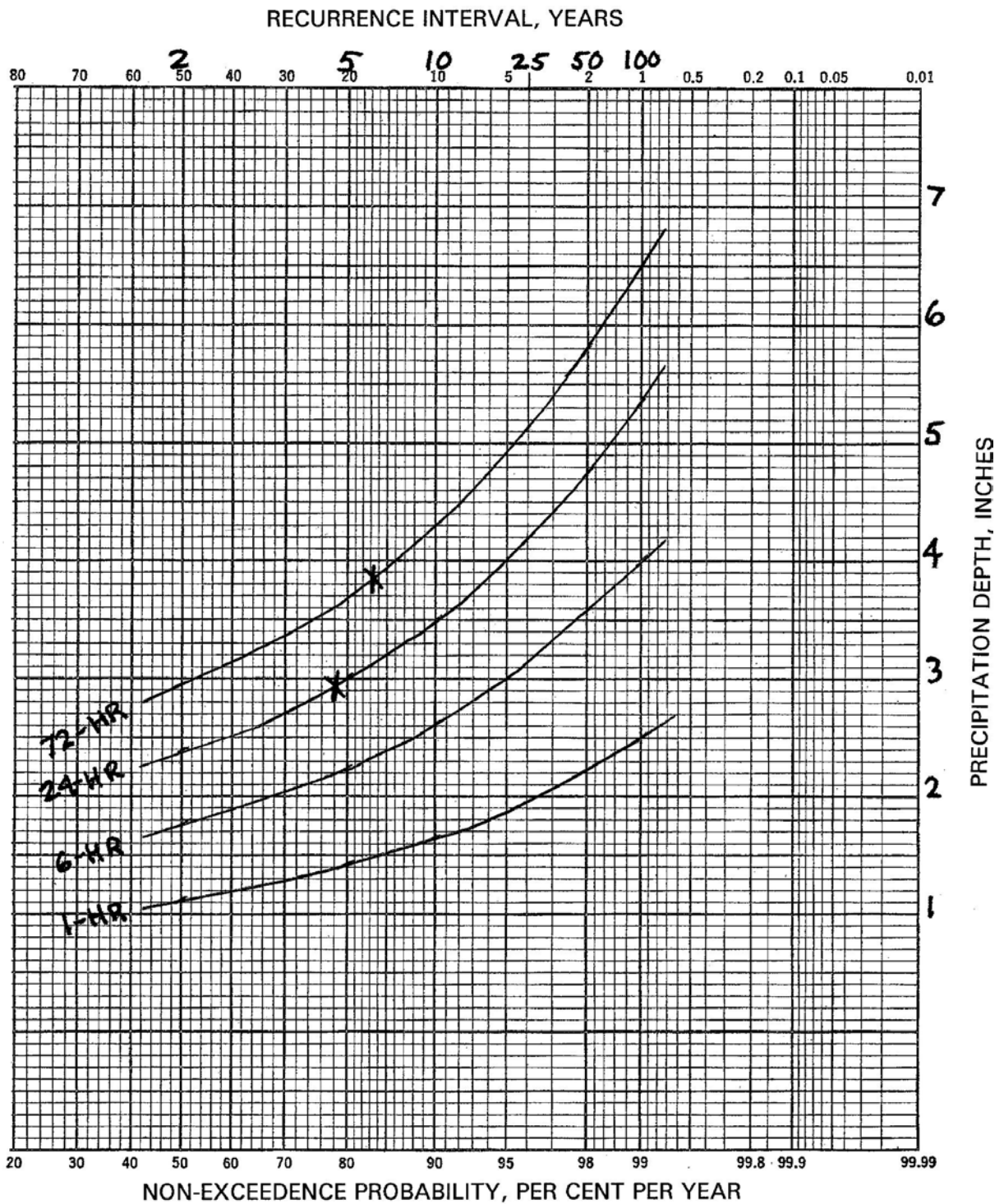
UPPER PENINSULA POWER COMPANY
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 FUSE PLUG AND SPILLWAY CHANNEL PLAN AND PROFILE
 MWH
 MONTGOMERY WATSON HARZA
 CHICAGO, ILLINOIS DATE DWG. NO. 20895-C5

Fuse Plug and Spillway Channel Plan and Profile (MWH Dwg. No. 20895-C5)



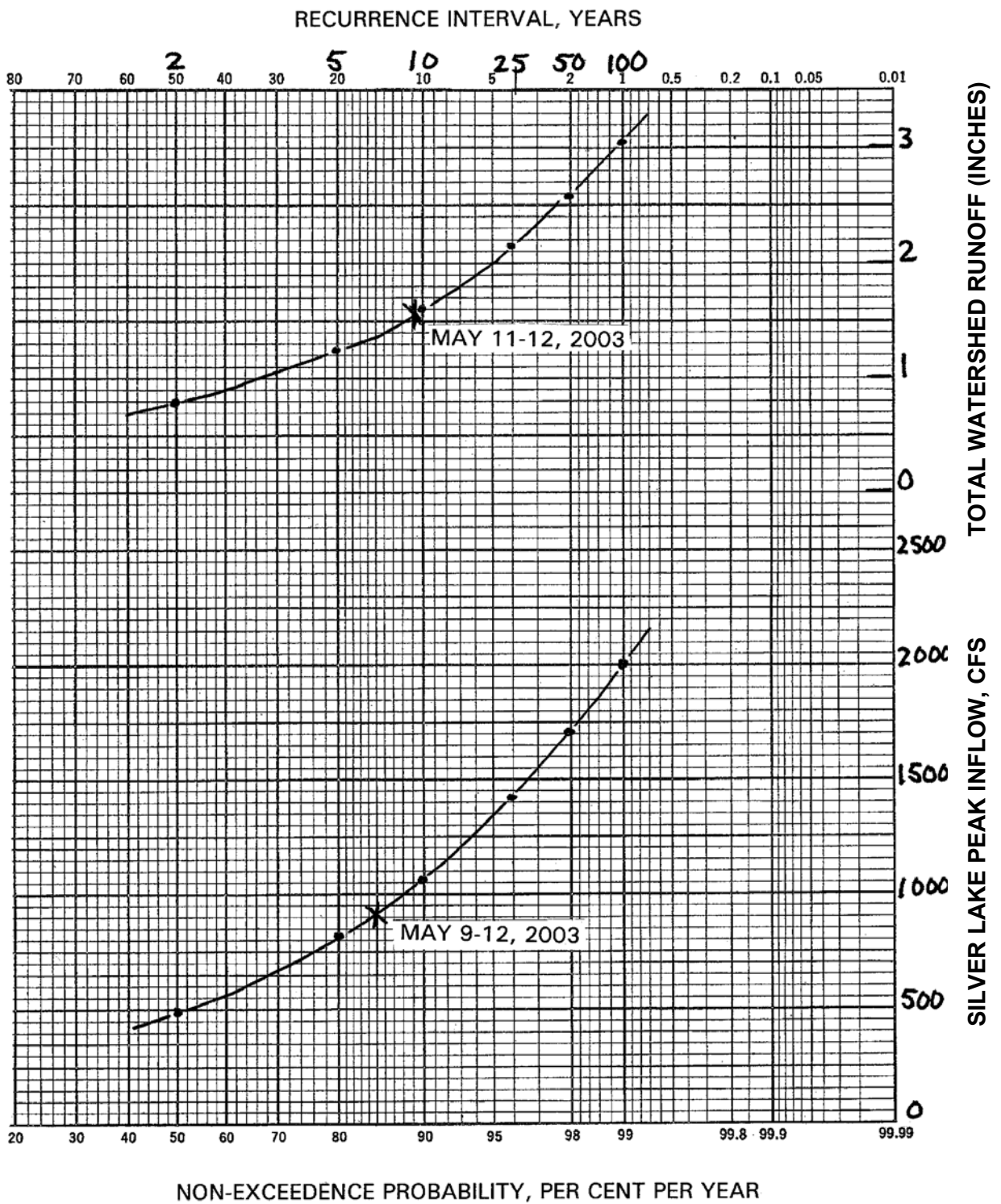


Fuse Plug Profile and Cross Sections (MWH Dwg. No. 20895-C6)

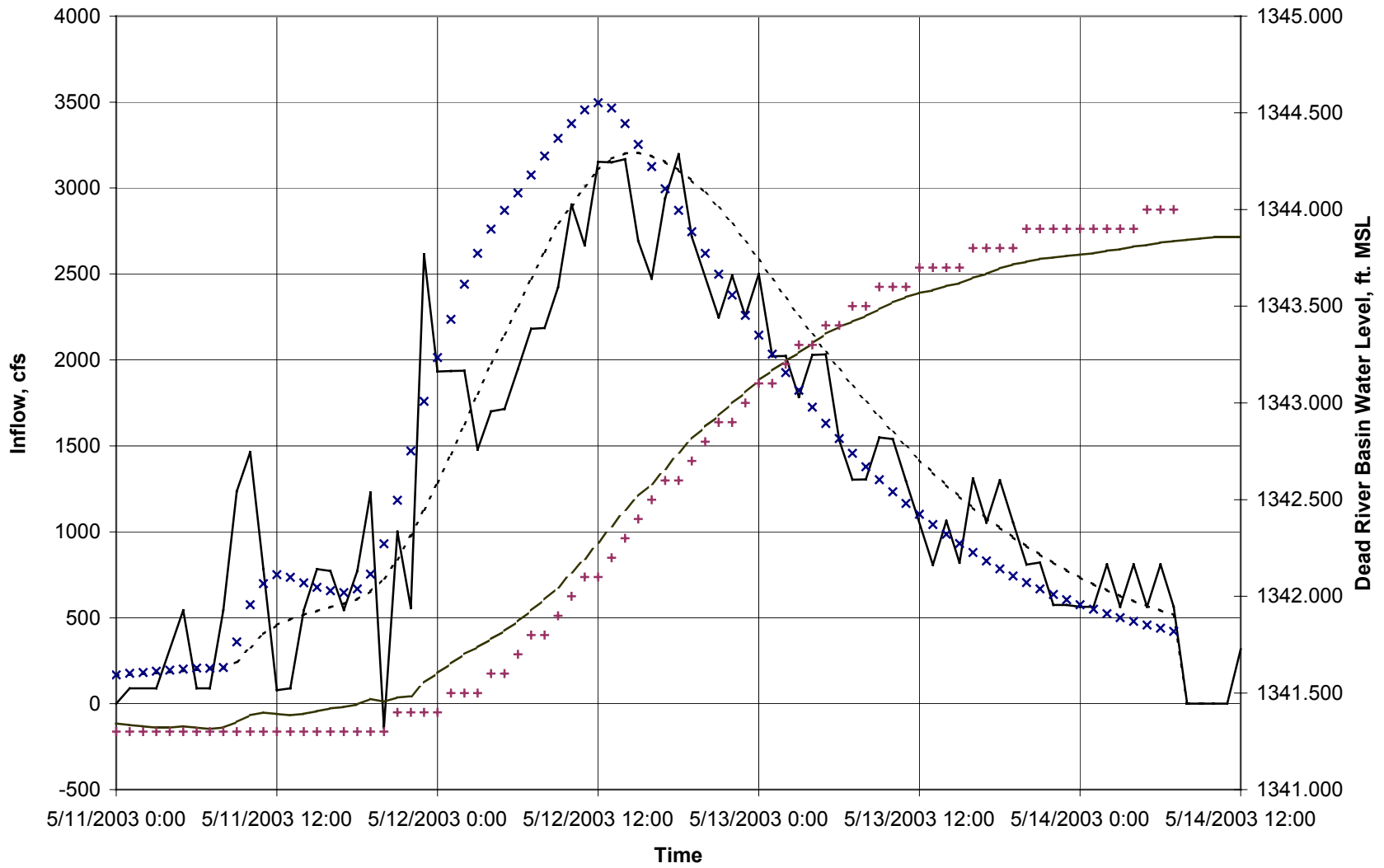


X MAY 9-12, 2003
 Data Source: Huff and Angel, 1992

Rainfall Frequency / Depth / Duration Curves



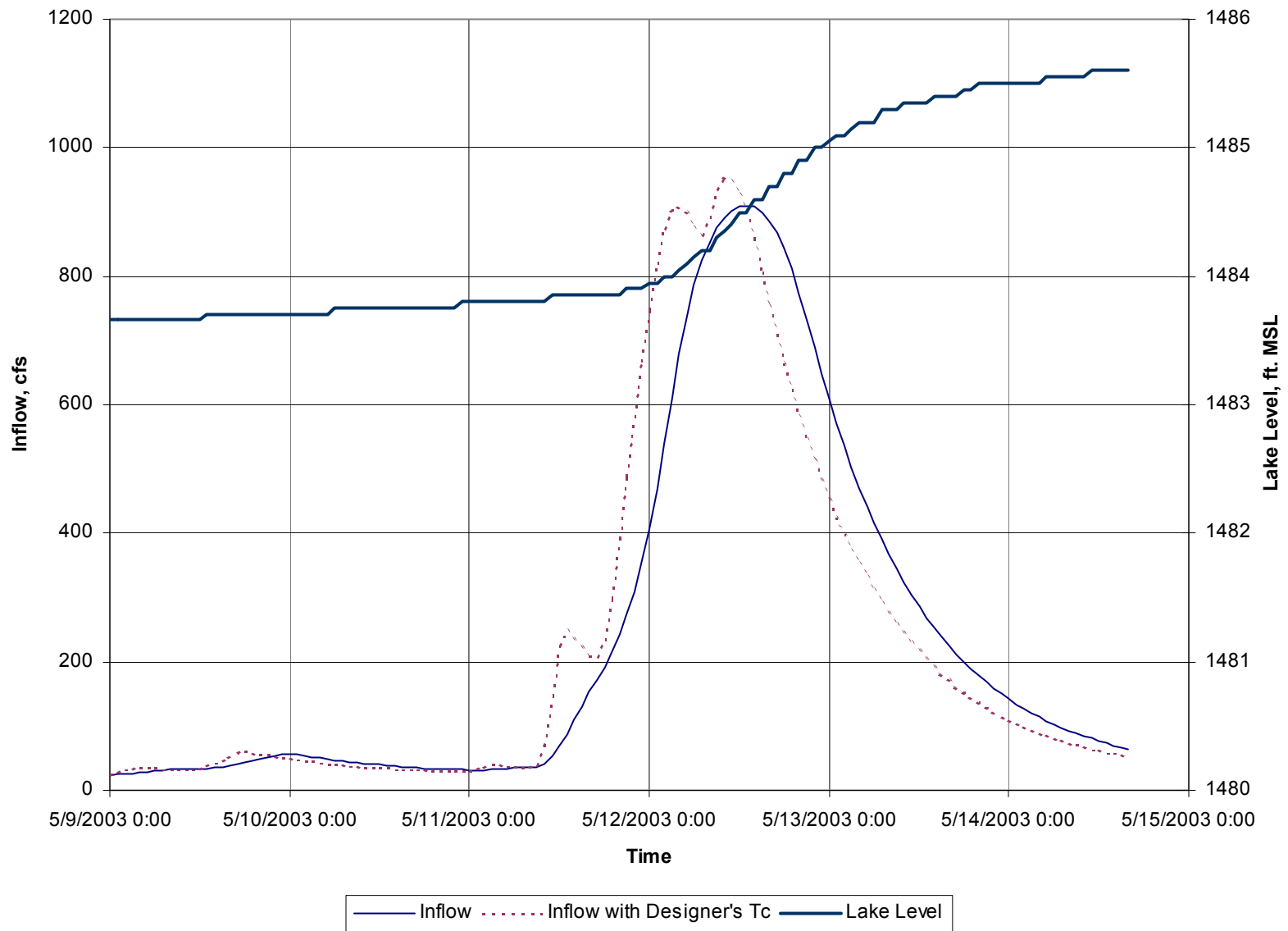
Flood Discharge and Runoff Recurrence Intervals



— Obs. Inflow ····· HEC-HMS Inflow × HMS with Designer's Tc - - - Obs. Res. El. (3-hr average) + HEC-HMS Res. El.

May 11-14 Dead River Storage Basin Inflow – Observed vs. HEC-HMS





Silver Lake May 9-14 Inflow from HEC-HMS Model

