WHITE TANKS

FRS # 3

Design Issues/ Basin Alternatives Report

Volume II – Appendices

Prepared by:

URS

Submitted August 2001

Flood Control District of Maricopa County

Project No. E1-15448007.00

Contract No. FCD 98-11 PCN 4700430

DESIGN ISSUES AND BASIN ALTERNATIVES REPORT VOLUME II - APPENDICES

WHITE TANKS FRS #3 MODIFICATIONS DESIGN PROJECT

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

Prepared for
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
Contract # FCD98-11
PCN 4700430

Prepared by

URS

Registered Professional Engineer (Civil)
CERTIFICATE NO.
32847
TODD E.
RINGSMUTH
Date Signed 8-3-01
ARIZONA, U.S.A.

URS Project No. E1-15448007.00

August 2001

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APPENDIX A

BASIN ALTERNATIVES COST ESTIMATES

TABLE 1
LEVEL I CONCEPTUAL CAPITAL COST ESTIMATE SUMMARY

Alternative	Basin and Drainage Construction	Recreational Facilities	Total
1	$18,169,000	$1,292,000	$19,461,000
2	$27,950,000	$45,842,000	$73,792,000
3	$27,787,000	$14,964,000	$42,751,000

TABLE 2
LEVEL II CONCEPTUAL LAND ACQUISITION
COST ESTIMATE SUMMARY

Location Description	Area (Acres)	Cost
ALTERNATIVE 1		
Maricopa Water District Land	32	$640,000
State Land	71	$1,420,000
State Land - additional 25%	94	$1,880,000
Private Land	22	$440,000
TOTAL ALTERNATIVE 1	**219**	**$4,380,000**
ALTERNATIVE 2		
Maricopa Water District Land	214	$4,280,000
State Land	247	$4,940,000
Private Land	29	$580,000
TOTAL ALTERNATIVE 2	**490**	**$9,800,000**
ALTERNATIVE 3		
Maricopa Water District Land	389	$7,780,000
State Land	24	$480,000
Private Land	19	$380,000
TOTAL ALTERNATIVE 3	**432**	**$8,640,000**

Notes:

1. Cost estimates are based on a land acquisition cost of $20,000 per acre.
2. For Alternative 1, acquisition of Maricopa Water District land can be avoided by increasing the height of spoils on FCD and State Land.

TABLE 3
LEVEL II CONCEPTUAL CAPITAL COST ESTIMATE SUMMARY

ALTERNATIVE 1: SINGLE BASIN, PASSIVE USE	
Component Description	**Cost**
BASIN AND DRAINAGE CONSTRUCTION	
Basin Construction	$9,700,674
Inlet Structures	$574,338
Outlet Structure	$352,498
Waterfall Wash Diversion	$732,016
North Inlet Channel	$2,759,759
Channel Improvements Within Spoil Area (Upstream Diversion Incl	$539,224
Dike Construction	$96,653
General Construction	$362,000
Engineering/Consulting	$750,000
Contingency/Uncosted Items (excludes land acquisition)	$2,301,432
SUBTOTAL	**$18,168,593**
RECREATIONAL FACILITIES	
Scenic Overlook	$150,000
Trailhead	$10,000
Native Multi-Use Trail (8' Wide)	$84,000
Main Access Road (27' Wide w/o Curb & Gutter)	$157,500
Parking Lot (With Curb & Gutter)	$180,000
Parking Lot Lighting	$45,000
Gravel Maintenance Access Road	$90,644
Recharge Basin Excavation	$198,900
Recharge Basin Fine Grading	$55,200
8" Recharge Basin Water Supply Pipe & Valves	$22,500
Contingency	$298,123
SUBTOTAL	**$1,291,867**

TABLE 3
LEVEL II CONCEPTUAL CAPITAL COST ESTIMATE SUMMARY

ALTERNATIVE 2: MULTIPLE BASINS, ACTIVE USE	
Component Description	**Cost**
BASIN AND DRAINAGE CONSTRUCTION	
Basin Construction	$17,102,457
Outlet Structure	$931,727
Channel Overchute	$179,601
Waterfall Wash Diversion	$732,016
North Inlet Channel	$1,806,345
Olive Diversion	$165,408
Camelback Diversion	$5,551
Channel Improvements Within Spoil Area (Upstream Diversion Incl	$1,277,611
Bethany Home/Camelback Channel	$576,595
Dike Construction	$91,108
Channels Downstream of Inlet Structure	$273,816
Side Channel Spillways	$630,527
General Construction	$362,000
Engineering/Consulting	$750,000
Contingency/Uncosted Items (excludes land acquisition)	$3,064,952
SUBTOTAL	**$27,949,714**
RECREATIONAL FACILITIES	
Scenic Overlook	$100,000
Trailhead	$30,000
Native Multi-Use Trail (8' Wide)	$60,900
Main Access Boulevard (45' Wide)	$977,625
Boulevard Curb & Gutter	$521,280
Park Entry Feature	$40,000
Sports Complex	$10,000,000
District Park	$7,500,000
Community Building	$500,000
District Swimming Pool & Locker Rooms	$2,000,000
Equestrian Facility	$6,300,000
18 Hole Golf Course	$4,200,000
Golf Clubhouse & Cart Barn	$500,000
Golf Maintenance Facility	$187,500
Production Well Installation	$2,346,000
Contingency	$10,578,992
SUBTOTAL	**$45,842,297**

TABLE 3
LEVEL II CONCEPTUAL CAPITAL COST ESTIMATE SUMMARY

ALTERNATIVE 3: MULTIPLE BASINS, MIXED USE	
Component Description	**Cost**
BASIN AND DRAINAGE CONSTRUCTION	
Olive Basin Construction	$8,578,036
Main Basin Construction	$9,294,702
Inlet Structures	$391,710
Outlet Structure	$372,498
Channel Overchute	$172,132
North Inlet Channel	$2,963,762
Northern Diversion	$222,458
Olive Diversion	$24,179
Channel Improvements Within Spoil Area (Upstream Diversion Incl	$1,287,749
Dike Construction	$96,653
General Construction	$362,000
Engineering/Consulting	$750,000
Contingency/Uncosted Items (excludes land acquisition)	$3,271,176
SUBTOTAL	**$27,787,054**
RECREATIONAL FACILITIES	
Scenic Overlook	$175,000
Trailhead	$50,000
Native Multi-Use Trail (8' Wide)	$138,222
Main Access Road (36' Wide)	$543,600
Access Road Curb & Gutter	$181,200
Gravel Maintenance Road	$54,053
Park Entry Feature	$10,000
Community Park	$8,125,000
Equestrian Facility	$1,440,000
8" Wetland Supply Pipe & Valves	$12,000
Production Well Installation	$782,000
Contingency	$3,453,323
SUBTOTAL	**$14,964,398**

TABLE 4
LEVEL III CONCEPTUAL CAPITAL COST ESTIMATE
ALTERNATIVE 1
SINGLE BASIN, PASSIVE USE

DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL COST
BASIN CONSTRUCTION				
Clear & Grub	SY	1,597,200	$0.10	$162,680
Temporary Access Ramps (Over existing dam, Unit Cost for Placement at 90%)	CY	14,000	$1.13	$15,844
Basin Excavation Using Scrapers (Mass Exc.)	CY	3,906,450	$0.96	$3,757,790
Basin Excavation (Slower Production, Additional cost to the Scraper Excavation c	CY	390,645	$0.57	$221,046
Fill Placement Zone 2: Basin (95% Compaction, Roller Compaction w/ Moisture)	CY	781,290	$1.41	$1,105,232
Fill Placement Zone 3: Spoils (Placed, No Moisture)	CY	3,125,160	$0.00	$0
Land Acquisition (MWD land)	AC	31	$20,000.00	$620,000
Land Acquisition (State Land)	AC	39	$20,000.00	$780,000
Land Acquisition (State Land - additional 25%)	AC	94	$20,000.00	$1,880,000
Fine Grading	SY	1,616,560	$0.23	$365,892
Dewatering Allowance	LS	1	$33,951.00	$33,951
Revegetate	AC	335	$2,263.40	$758,239
			SUBTOTAL	**$9,700,674**
INLET STRUCTURES				
Excavation (Dozers and Trackhoes)	CY	9,600	$1.41	$13,580
Sheet Piles (20' Deep, Left In Place, 27psf)	TON	150	$1,358.04	$203,706
Soil Cement	CY	9,000	$39.61	$356,486
Backfill (90% Compaction, Minor)	CY	500	$1.13	$566
			SUBTOTAL	**$574,338**
OUTLET STRUCTURE				
Trench Excavation (Depths Vary)	CY	4,267	$3.11	$13,280
RCP Conveyance Piping (36" Dia., Reinforced, with Gaskets)	LF	3,200	$79.22	$253,501
Pipe Bedding	CY	2,100	$16.98	$35,649
Backfill with Spoils	CY	2,167	$4.53	$9,810
Concrete Headwall & Drop Box (Formed, Reinforced Concrete)	CY	10	$396.10	$3,961
Slidegate on Slope	LS	1	$6,790.20	$6,790
Trashrack	LS	1	$735.61	$736
Concrete Structure at Outlet of Pipe	CY	5	$396.10	$1,980
Riprap at Outlet of Pipe (20'x60'x1')	CY	50	$45.27	$2,263
Land Acquisition (15' Easement) (MWD property)	AC	1	$20,000.00	$20,000
Revegetate	AC	2	$2,263.40	$4,527
			SUBTOTAL	**$352,498**
WATERFALL WASH DIVERSION				
Clear & Grub	SY	32,000	$0.10	$3,259
Excavation (Dozers, Loaders, Trucks)	CY	40,800	$1.41	$57,717
Channel Shaping and Grading	SY	48,000	$0.23	$10,864
Soil Cement	CY	400	$39.61	$15,844
Soil Fill (Over Soil Cement)	CY	1,500	$1.13	$1,698
Land Acquisition (State Land)	AC	31	$20,000.00	$620,000
Revegetate	AC	10	$2,263.40	$22,634
			SUBTOTAL	**$732,016**
NORTH INLET CHANNEL				
Clear & Grub	SY	200,000	$0.10	$20,371
Mass Excavation (Scrapers)	CY	240,000	$0.96	$230,867
Soil Cement	CY	24,000	$39.61	$950,628
Soil Fill Placement (90% Compaction, Wheel Roll w/ Moisture)	CY	24,000	$1.13	$27,161
Soil Fill Placement (95% Compaction, Roller Compaction w/ Moisture)	CY	19,200	$1.41	$27,161
Fill Placement Zone 3: Spoils (Placed, No Moisture)	CY	196,800	$0.00	$0
Bridge at Northern Avenue (8063 CFS)	LS	1	$909,660.46	$909,660
Fine Grading	SY	220,000	$0.23	$49,795
Land Acquisition (private property)	AC	22	$20,000.00	$440,000
Revegetate	AC	46	$2,263.40	$104,116
			SUBTOTAL	**$2,759,759**

TABLE 4
LEVEL III CONCEPTUAL CAPITAL COST ESTIMATE
ALTERNATIVE 1
SINGLE BASIN, PASSIVE USE

DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL COST
CHANNEL IMPROVEMENTS WITHIN SPOIL AREA (Upstream Diversion Included)				
Mass Excavation (Scrapers)	CY	33,244	$0.96	$31,979
Misc. Excavation (Dozer and Trackhoe)	CY	5,867	$1.41	$8,299
Soil Cement	CY	12,000	$39.61	$475,314
Soil Fill Placement (90% Compaction, Wheel Roll w/ Moisture)	CY	6,649	$1.13	$7,524
Soil Fill Placement (95% Compaction, Roller Compaction w/ Moisture)	CY	4,987	$1.41	$7,054
Fill Placement Zone 3: Spoils (Placed, No Moisture)	CY	21,608	$0.00	$0
Fine Grading	SY	40,000	$0.23	$9,054
			SUBTOTAL	**$539,224**
DIKE CONSTRUCTION				
Excavation (Scraper)	CY	7,800	$0.96	$7,503
Foundation Preparation	SY	2,000	$1.13	$2,263
Roller Compacted Concrete	CY	1,400	$56.59	$79,219
Soil Fill Placement (95% Compaction, Roller Compaction w/ Moisture)	CY	1,500	$1.41	$2,122
Soil Fill Placement (Loose Placed Cover Material)	CY	4,900	$1.13	$5,545
			SUBTOTAL	**$96,653**
GENERAL CONSTRUCTION				
Construction SWPPP	LS	1	$40,000.00	$40,000
Mob/Demob.	LS	1	$300,000.00	$300,000
Public Information and Notification (Allowance)	LS	1	$8,000.00	$8,000
Project Sign (Allowance)	LS	1	$4,000.00	$4,000
Partnering (Allowance)	LS	1	$10,000.00	$10,000
			SUBTOTAL	**$362,000**
ENGINEERING SUPPORT				
Engineering	LS	1	$300,000.00	$300,000
Construction Management/Reports/As-Builts	LS	1	$250,000.00	$250,000
QA/QC Testing	LS	1	$120,000.00	$120,000
NPPO (Survey, Permit, Plan)	LS	1	$80,000.00	$80,000
			SUBTOTAL	**$750,000**
			TOTAL COST	**$15,867,161**
Contingency/Uncosted Items (excludes land acquisition)	%	20%		**$2,301,432**
	TOTAL PROJECT COST			**$18,168,593**

The following list of General Construction line items were rolled into the individual line item in this cost estimate:

Description	Unit	Quantity
General Conditions	%	0.75%
Temporary Facilities	%	1.00%
Survey AND Grade Control	%	1.25%
Permits	%	0.75%
Taxes	%	4.42%
NPPO (contractor implement)	%	1.50%
Perf. Bond	%	0.50%
Dust Control	%	1.75%
Traffic Control	%	0.25%
Haul Roads	%	1.00%

TABLE 5
LEVEL III CONCEPTUAL CAPITAL COST ESTIMATE
ALTERNATIVE 2
MULTIPLE BASINS, ACTIVE USE

DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL COST
BASIN CONSTRUCTION				
Clear & Grub	SY	3,581,600	$0.10	$364,797
Temporary Access Ramps (Over existing dam, Unit Cost for Placement at 90%)	CY	14,000	$1.13	$15,844
Basin Excavation Using Scrapers (Mass Exc.)	CY	4,054,904	$0.96	$3,900,595
Basin Excavation (Slower Production, Additional cost to the Scraper Excavation c	CY	405,490	$0.57	$229,447
Fill Placement Zone 2: Basin (95% Compaction, Roller Compaction w/ Moisture)	CY	1,216,471	$1.41	$1,720,851
Fill Placement Zone 3: Spoils (Placed, No Moisture)	CY	2,838,433	$0.00	$0
Land Acquisition (MWD property)	AC	202	$20,000.00	$4,040,000
Land Acquisition (State Land)	AC	214	$20,000.00	$4,280,000
Fine Grading	SY	3,620,320	$0.23	$819,423
Dewatering Allowance	LS	1	$33,951.00	$33,951
Revegetate	AC	750	$2,263.40	$1,697,550
			SUBTOTAL	**$17,102,457**
OUTLET STRUCTURE(S)				
Trench Excavation (Depths Vary)	CY	8,792	$3.11	$27,363
RCP Conveyance Piping (36" Dia., Reinforced, with Gaskets)	LF	8,980	$79.22	$711,387
Pipe Bedding	CY	5,655	$16.98	$95,996
Backfill with Spoils	CY	3,137	$4.53	$14,202
Concrete Headwall & Drop Box (Formed, Reinforced Concrete)	CY	20	$396.10	$7,922
Slidegate on Slope	LS	2	$6,790.20	$13,580
Trashrack	LS	2	$735.61	$1,471
Concrete Structure at Outlet of Pipe	CY	10	$396.10	$3,961
Riprap at Outlet of Pipe (20'x60'x1')	CY	100	$45.27	$4,527
Land Acquisition (15' Easement) (State Land)	AC	2	$20,000.00	$40,000
Revegetate	AC	5	$2,263.40	$11,317
			SUBTOTAL	**$931,727**
BEARDSLEY CANAL OVERCHUTES AT OLIVE AVENUE AND CAMELBACK ROAD				
Excavation (Minor, Dozers and Trackhoes)	CY	5,520	$1.41	$7,809
Demolish Existing Channel	LS	2	$5,658.50	$11,317
Manhole Structures (4' Dia.)	EA	4	$7,921.90	$31,688
Siphon Piping	LF	200	$90.54	$18,107
Backfill (95% Compaction)	CY	1,200	$1.41	$1,698
Concrete (Wingwalls, Formed, Reinforced)	CY	75	$396.10	$29,707
Concrete (Apron, Reinforced)	CY	230	$311.22	$71,580
Riprap	CY	170	$45.27	$7,696
			SUBTOTAL	**$179,601**
WATERFALL WASH DIVERSION				
Clear & Grub	SY	32,000	$0.10	$3,259
Excavation (Dozers, Loaders, Trucks)	CY	40,800	$1.41	$57,717
Channel Shaping and Grading	SY	48,000	$0.23	$10,864
Soil Cement	CY	400	$39.61	$15,844
Soil Fill (Over Soil Cement)	CY	1,500	$1.13	$1,698
Land Acquisition (State Land)	AC	31	$20,000.00	$620,000
Revegetate	AC	10	$2,263.40	$22,634
			SUBTOTAL	**$732,016**
NORTH INLET CHANNEL				
Clear & Grub	SY	100,500	$0.10	$10,236
Mass Excavation (Scrapers)	CY	98,668	$0.96	$94,913
Soil Cement	CY	16,000	$39.61	$633,752
Soil Fill Placement (90% Compaction, Wheel Roll w/ Moisture)	CY	9,867	$1.13	$11,166
Soil Fill Placement (95% Compaction, Roller Compaction w/ Moisture)	CY	7,893	$1.41	$11,166
Fill Placement Zone 3: Spoils (Placed, No Moisture)	CY	80,907	$0.00	$0
Bridge at Northern Avenue (5212 CFS)	LS	1	$588,031.32	$588,031
Fine Grading	SY	110,550	$0.23	$25,022
Land Acquisition (private property)	AC	19	$20,000.00	$380,000
Revegetate	AC	23	$2,263.40	$52,058
			SUBTOTAL	**$1,806,345**

TABLE 5
LEVEL III CONCEPTUAL CAPITAL COST ESTIMATE
ALTERNATIVE 2
MULTIPLE BASINS, ACTIVE USE

DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL COST
OLIVE AVENUE DIVERSION				
Excavation (Dozers, Loaders, Trucks)	CY	1,680	$1.41	$2,377
Soil Fill Placement (95% Compaction, Roller Compaction w/ Moisture)	CY	1,592	$1.41	$2,253
Soil Fill Placement (90% Compaction, Wheel Roll w/ Moisture)	CY	248	$1.13	$281
Soil Cement	CY	356	$39.61	$14,101
Riprap	CY	84	$45.27	$3,803
Concrete (Box Culverts, 6 total)	CY	360	$396.10	$142,594
			SUBTOTAL	**$165,408**
CAMELBACK ROAD DIVERSION				
Mass Excavation (Dozer, Trackhoe)	CY	1,174	$1.41	$1,660
Soil Fill Placement (90% Compaction, Wheel Roll w/ Moisture)	CY	434	$1.13	$491
Soil Fill Placement (95% Compaction, Roller Compaction w/ Moisture)	CY	739	$1.41	$1,046
Riprap	CY	52	$45.27	$2,354
			SUBTOTAL	**$5,551**
CHANNEL IMPROVEMENTS WITHIN SPOIL AREA (Upstream Diversion Included)				
Mass Excavation (Scrapers)	CY	77,520	$0.96	$74,570
Misc. Excavation (Dozer and Trackhoe)	CY	13,680	$1.41	$19,352
Soil Cement	CY	28,500	$39.61	$1,128,871
Soil Fill Placement (90% Compaction, Wheel Roll w/ Moisture)	CY	15,504	$1.13	$17,546
Soil Fill Placement (95% Compaction, Roller Compaction w/ Moisture)	CY	11,628	$1.41	$16,449
Fill Placement Zone 3: Spoils (Placed, No Moisture)	CY	50,388	$0.00	$0
Fine Grading	SY	92,000	$0.23	$20,823
			SUBTOTAL	**$1,277,611**
STORM CHANNEL FROM BETHANY HOME ROAD TO CAMELBACK ROAD				
Mass Excavation (Scrapers)	CY	41,280	$0.96	$39,709
Soil Fill Placement (90% Compaction, Wheel Roll w/ Moisture)	CY	8,256	$1.13	$9,343
Soil Fill Placement (95% Compaction, Roller Compaction w/ Moisture)	CY	6,192	$1.41	$8,759
Fill Placement Zone 3: Spoils (Placed, No Moisture)	CY	26,832	$0.00	$0
Fine Grading	SY	84,800	$0.23	$19,194
Riprap	CY	2,200	$45.27	$99,590
Land Acquisition (MWD property)	AC	10	$20,000.00	$200,000
Land Acquisition (private property)	AC	10	$20,000.00	$200,000
Revegetate	AC	0	$2,263.40	$0
			SUBTOTAL	**$576,595**
DIKE CONSTRUCTION				
Excavation (Scraper)	CY	7,800	$0.96	$7,503
Foundation Preparation	SY	2,000	$1.13	$2,263
Roller Compacted Concrete	CY	1,400	$56.59	$79,219
Soil Fill Placement (95% Compaction, Roller Compaction w/ Moisture)	CY	1,500	$1.41	$2,122
Soil Fill Placement (Loose Placed Cover Material)	CY	4,900	$0.00	$0
			SUBTOTAL	**$91,108**
CHANNELS DOWNSTREAM OF INLET STRUCTURE				
Mass Excavation (Scrapers)	CY	43,860	$0.96	$42,191
Misc. Excavation (Dozer and Trackhoe)	CY	7,740	$1.41	$10,949
Riprap	CY	4,000	$45.27	$181,072
Soil Fill Placement (90% Compaction, Wheel Roll w/ Moisture)	CY	10,320	$1.13	$11,679
Soil Fill Placement (95% Compaction, Roller Compaction w/ Moisture)	CY	7,740	$1.41	$10,949
Fill Placement Zone 3: Spoils (Placed, No Moisture)	CY	33,540	$0.00	$0
Fine Grading	SY	75,000	$0.23	$16,976
			SUBTOTAL	**$273,816**
SIDE CHANNEL SPILLWAYS				
Soil Cement	CY	11,000	$39.61	$435,705
Concrete (Box Culverts, 6 total)	CY	360	$311.22	$112,038
Soil Fill Placement (95% Compaction, Roller Compacted with Moisture)	CY	21,720	$1.41	$30,726
Riprap	CY	1,150	$45.27	$52,058
			SUBTOTAL	**$630,527**

TABLE 5
LEVEL III CONCEPTUAL CAPITAL COST ESTIMATE
ALTERNATIVE 2
MULTIPLE BASINS, ACTIVE USE

DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL COST
GENERAL CONSTRUCTION				
Construction SWPPP	LS	1	$40,000.00	$40,000
Mob/Demob.	LS	1	$300,000.00	$300,000
Public Information and Notification (Allowance)	LS	1	$8,000.00	$8,000
Project Sign (Allowance)	LS	1	$4,000.00	$4,000
Partnering (Allowance)	LS	1	$10,000.00	$10,000
			SUBTOTAL	$362,000
ENGINEERING SUPPORT				
Engineering	LS	1	$300,000.00	$300,000
Construction Management/Reports/As-Builts	LS	1	$250,000.00	$250,000
QA/QC Testing	LS	1	$120,000.00	$120,000
NPPO (Survey, Permit, Plan)	LS	1	$80,000.00	$80,000
			SUBTOTAL	$750,000
			TOTAL COST	$24,884,762
Contingency/Uncosted Items (excludes land acquisition)	%	20%		$3,064,952
	TOTAL PROJECT COST			$27,949,714

The following list of General Construction line items were rolled into the individual line item in this cost estimate:

Description	Unit	Quantity
General Conditions	%	0.75%
Temporary Facilities	%	1.00%
Survey AND Grade Control	%	1.25%
Permits	%	0.75%
Taxes	%	4.42%
NPPO	%	1.50%
Perf. Bond	%	0.50%
Dust Control	%	1.75%
Traffic Control	%	0.25%
Haul Roads	%	1.00%

TABLE 6
LEVEL III CONCEPTUAL CAPITAL COST ESTIMATE
ALTERNATIVE 3
MULTIPLE BASINS, MIXED USE

DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL COST
BASIN CONSTRUCTION				
OLIVE BASIN				
Clear & Grub	SY	726,000	$0.10	$73,945
Basin Excavation Using Scrapers (Mass Exc.)	CY	3,931,309	$0.96	$3,781,703
Basin Excavation (Slower Production, Additional cost to the Scraper Excavation co	CY	393,131	$0.57	$222,453
Fill Placement Zone 2: Basin (95% Compaction, Roller Compaction w/ Moisture)	CY	196,565	$1.41	$278,066
Fill Placement Zone 3: Spoils (Placed, No Moisture)	CY	3,734,744	$0.00	$0
Land Acquisition (MWD property)	AC	185	$20,000.00	$3,700,000
Fine Grading	SY	735,680	$0.23	$166,514
Dewatering Allowance	LS	1	$11,317.00	$11,317
Revegetate	AC	152	$2,263.40	$344,037
			SUBTOTAL	**$8,578,036**
MAIN BASIN				
Temporary Access Ramps (Over existing dam, Unit Cost for Placement at 90%)	CY	14,000	$1.13	$15,844
Clear & Grub	SY	2,395,800	$0.10	$244,019
Basin Excavation Using Scrapers (Mass Exc.)	CY	2,582,266	$0.96	$2,483,997
Basin Excavation (Slower Production, Additional cost to the Scraper Excavation co	CY	258,227	$0.57	$146,117
Fill Placement Zone 2: Basin (95% Compaction, Roller Compaction w/ Moisture)	CY	129,113	$1.41	$182,647
Fill Placement Zone 3: Spoils (Placed, No Moisture)	CY	2,453,152	$0.00	$0
Land Acquisition (MWD property)	AC	202	$20,000.00	$4,040,000
Land Acquisition (State Land)	AC	24	$20,000.00	$480,000
Fine Grading	SY	2,420,000	$0.23	$547,743
Dewatering Allowance	LS	1	$22,634.00	$22,634
Revegetate	AC	500	$2,263.40	$1,131,700
			SUBTOTAL	**$9,294,702**
			TWO BASIN SUBTOTAL	**$17,872,738**
INLET STRUCTURES				
Excavation (Dozers and Trackhoes)	CY	4,500	$1.41	$6,366
Sheet Piles (20' Deep, Left In Place, 27psf)	TON	120	$1,358.04	$162,965
Soil Cement	CY	5,600	$39.61	$221,813
Backfill (90% Compaction, Minor)	CY	500	$1.13	$566
			SUBTOTAL	**$391,710**
OUTLET STRUCTURE				
Trench Excavation (Depths Vary)	CY	4,267	$3.11	$13,280
RCP Conveyance Piping (36" Dia., Reinforced, with Gaskets)	LF	3,200	$79.22	$253,501
Pipe Bedding	CY	2,100	$16.98	$35,649
Backfill with Spoils	CY	2,167	$4.53	$9,810
Concrete Headwall & Drop Box (Formed, Reinforced Concrete)	CY	10	$396.10	$3,961
Slidegate on Slope	LS	1	$6,790.20	$6,790
Trashrack	LS	1	$735.61	$736
Concrete Structure at Outlet of Pipe	CY	5	$396.10	$1,980
Riprap at Outlet of Pipe (20'x60'x1')	CY	50	$45.27	$2,263
Land Acquisition (15' Easement) (MWD property)	AC	2	$20,000.00	$40,000
Revegetate	AC	2	$2,263.40	$4,527
			SUBTOTAL	**$372,498**
BEARDSLEY CANAL OVERCHUTE AT NORTHERN AVENUE				
Excavation (Minor, Dozers and Trackhoes)	CY	5,040	$1.41	$7,130
Demolish Existing Channel	LS	2	$5,658.50	$11,317
Manhole Structures (4' Dia.)	EA	4	$6,790.20	$27,161
Siphon Piping	LF	200	$90.54	$18,107
Backfill (95% Compaction)	CY	1,000	$1.41	$1,415
Concrete (Wingwalls, Formed, Reinforced)	CY	70	$396.10	$27,727
Concrete (Apron, Reinforced)	CY	230	$311.22	$71,580
Riprap	CY	170	$45.27	$7,696
			SUBTOTAL	**$172,132**

TABLE 6
LEVEL III CONCEPTUAL CAPITAL COST ESTIMATE
ALTERNATIVE 3
MULTIPLE BASINS, MIXED USE

DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL COST
NORTH INLET CHANNEL				
Clear & Grub	SY	218,000	$0.10	$22,204
Mass Excavation (Scrapers)	CY	206,000	$0.96	$198,161
Soil Cement	CY	35,000	$39.61	$1,386,333
Soil Fill Placement (90% Compaction, Wheel Roll w/ Moisture)	CY	20,600	$1.13	$23,313
Soil Fill Placement (95% Compaction, Roller Compaction w/ Moisture)	CY	16,480	$1.41	$23,313
Fill Placement Zone 3: Spoils (Placed, No Moisture)	CY	168,920	$0.00	$0
Bridge at Northern Avenue (6763 CFS)	LS	1	$762,992.14	$762,992
Fine Grading	SY	239,800	$0.23	$54,276
Land Acquisition (private property)	AC	19	$20,000.00	$380,000
Revegetate	AC	50	$2,263.40	$113,170
			SUBTOTAL	**$2,963,762**
NORTHERN AVENUE DIVERSION				
Excavation (Dozers, Loaders, Trucks)	CY	5,880	$1.41	$8,318
Soil Fill Placement (95% Compaction, Roller Compaction w/ Moisture)	CY	5,575	$1.41	$7,887
Soil Fill Placement (90% Compaction, Wheel Roll w/ Moisture)	CY	871	$1.13	$986
Soil Cement	CY	1,244	$39.61	$49,274
Concrete (Box Culverts, 6 Total)	CY	360	$396.10	$142,594
Riprap	LS	296	$45.27	$13,399
			SUBTOTAL	**$222,458**
OLIVE AVENUE DIVERSION				
Excavation (Dozers, Trackhoe)	CY	1,351	$1.41	$1,911
Soil Fill Placement (95% Compaction, Roller Compaction w/ Moisture)	CY	500	$1.41	$707
Soil Fill Placement (90% Compaction, Wheel Roll w/ Moisture)	CY	851	$1.13	$963
Soil Cement	CY	520	$39.61	$20,597
			SUBTOTAL	**$24,179**
CHANNEL IMPROVEMENTS WITHIN SPOIL AREA (Upstream Diversion Included)				
Mass Excavation (Scrapers)	CY	86,860	$0.96	$83,555
Misc. Excavation (Dozer and Trackhoe)	CY	15,328	$1.41	$21,684
Soil Cement	CY	28,000	$39.61	$1,109,066
Soil Fill Placement (90% Compaction, Wheel Roll w/ Moisture)	CY	20,438	$1.13	$23,129
Soil Fill Placement (95% Compaction, Roller Compaction w/ Moisture)	CY	15,328	$1.41	$21,684
Fill Placement Zone 3: Spoils (Placed, No Moisture)	CY	66,422	$0.00	$0
Fine Grading	SY	126,500	$0.23	$28,632
			SUBTOTAL	**$1,287,749**
DIKE CONSTRUCTION				
Excavation (Scraper)	CY	7,800	$0.96	$7,503
Foundation Preparation	SY	2,000	$1.13	$2,263
Roller Compacted Concrete	CY	1,400	$56.59	$79,219
Soil Fill Placement (95% Compaction, Roller Compaction w/ Moisture)	CY	1,500	$1.41	$2,122
Soil Fill Placement (Loose Placed Cover Material)	CY	4,900	$1.13	$5,545
			SUBTOTAL	**$96,653**
GENERAL CONSTRUCTION				
Construction SWPPP	LS	1	$40,000.00	$40,000
Mob/Demob.	LS	1	$300,000.00	$300,000
Public Information and Notification (Allowance)	LS	1	$8,000.00	$8,000
Project Sign (Allowance)	LS	1	$4,000.00	$4,000
Partnering (Allowance)	LS	1	$10,000.00	$10,000
			SUBTOTAL	**$362,000**

TABLE 6
LEVEL III CONCEPTUAL CAPITAL COST ESTIMATE
ALTERNATIVE 3
MULTIPLE BASINS, MIXED USE

DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL COST
ENGINEERING SUPPORT				
Engineering	LS	1	$300,000.00	$300,000
Construction Management/Reports/As-Builts	LS	1	$250,000.00	$250,000
QA/QC Testing	LS	1	$120,000.00	$120,000
NPPO (Survey, Permit, Plan)	LS	1	$80,000.00	$80,000
			SUBTOTAL	$750,000
			TOTAL COST	$24,515,878
Contingency/Uncosted Items (excludes land acquisition)	%	20%		$3,271,176
	TOTAL PROJECT COST			$27,787,054

The following list of General Construction line items were rolled into the individual line item in this cost estimate:

Description	Unit	Quantity
General Conditions	%	0.75%
Temporary Facilities	%	1.00%
Survey AND Grade Control	%	1.25%
Permits	%	0.75%
Taxes	%	4.42%
NPPO	%	1.50%
Perf. Bond	%	0.50%
Dust Control	%	1.75%
Traffic Control	%	0.25%
Haul Roads	%	1.00%

TABLE 7
LEVEL III CONCEPTUAL CAPITAL COST ESTIMATE
RECREATIONAL FACILITIES

DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL COST
ALTERNATIVE 1				
Scenic Overlook	EA	6	$25,000.00	$150,000
Trailhead	EA	1	$10,000.00	$10,000
Native Multi-Use Trail (8' Wide)	LF	30,000	$2.80	$84,000
Main Access Road (27' Wide w/o Curb & Gutter)	LF	3,500	$45.00	$157,500
Parking Lot (With Curb & Gutter)	SF	80,000	$2.25	$180,000
Parking Lot Lighting	EA	15	$3,000.00	$45,000
Gravel Maintenance Access Road	LF	6,800	$13.33	$90,644
Recharge Basin Excavation	CY	130,000	$1.53	$198,900
Recharge Basin Fine Grading	SF	240,000	$0.23	$55,200
8" Recharge Basin Water Supply Pipe & Valves	LF	750	$30.00	$22,500
			SUBTOTAL	$993,744
Contingency	%	30%		$298,123
	TOTAL PROJECT COST			$1,291,867

ALTERNATIVE 2				
Scenic Overlook	EA	4	$25,000	$100,000
Trailhead	EA	3	$10,000	$30,000
Native Multi-Use Trail (8' Wide)	LF	21,750	$2.80	$60,900
Main Access Boulevard (45' Wide)	LF	13,035	$75	$977,625
Boulevard Curb & Gutter	LF	52,128	$10	$521,280
Park Entry Feature	EA	2	$20,000	$40,000
Sports Complex	AC	80	$125,000	$10,000,000
District Park	AC	60	$125,000	$7,500,000
Community Building	SF	4,000	$125	$500,000
District Swimming Pool & Locker Rooms	LS	1	$2,000,000	$2,000,000
Equestrian Facility	AC	42	$150,000	$6,300,000
18 Hole Golf Course	LS	1	$4,200,000	$4,200,000
Golf Clubhouse & Cart Barn	SF	4,000	$125	$500,000
Golf Maintenance Facility	SF	1,500	$125.00	$187,500
Production Well Installation	EA	3	$782,000	$2,346,000
			SUBTOTAL	$35,263,305
Contingency	%	30%		$10,578,992
	TOTAL PROJECT COST			$45,842,297

ALTERNATIVE 3				
Scenic Overlook	EA	7	$25,000	$175,000
Trailhead	EA	5	$10,000	$50,000
Native Multi-Use Trail (8' Wide)	LF	49,365	$2.80	$138,222
Main Access Road (36' Wide)	LF	9,060	$60	$543,600
Access Road Curb & Gutter	LF	18,120	$10	$181,200
Gravel Maintenance Road	LF	4,055	$13	$54,053
Park Entry Feature	EA	1	$10,000	$10,000
Community Park	AC	65	$125,000	$8,125,000
Equestrian Facility	AC	12	$120,000	$1,440,000
8" Wetland Supply Pipe & Valves	LF	400	$30	$12,000
Production Well Installation	EA	1	$782,000	$782,000
			SUBTOTAL	$11,511,075
Contingency	%	30%		$3,453,323
	TOTAL PROJECT COST			$14,964,398

APPENDIX B

MEMORANDUM – COST IMPACT TO STORMWATER CONTROL STRUCTURES EAST OF BEARDSLEY CANAL

Interoffice Memorandum

DAMES & MOORE

DAMES & MOORE GROUP COMPANY

7500 North Dreamy Draw Drive
Suite 145
Phoenix, Arizona 85020
602 371 1110 Tel
602 861 7431 Fax

Action	Info	File
	Todd Ringsmuth	15448-007-058

From Muawieh Radaideh

Date 10/13/00

Subject Update to Loop 303 Additional Cost Estimates Memo dated 9/26/00

This memorandum amends the cost analysis provided in the URS memo dated September 26, 2000. The District suggested that rehabilitation to the channel adjacent to Beardsley Canal and upstream of White Tanks FRS #3 would take place to prevent breakouts across the canal.

This being the case, only diversions considered as part of Alternatives 2 and 3 would contribute to costs for systems of channels and basins to be built east (downstream) of FRS #3. This would make Alternative 1, which does not include any diversions at Northern Avenue or Camelback, the existing condition or reference case for the cost estimate. Table 1 provides the comparative cost estimates for the 3 basin alternatives:

Table 1
Cost Estimate
Facilities East of Beardsley Canal

Cost Summary			
Alternative	Total Cost	+30% Contingency	Change from Existing Condition
Alternative #1 (Existing Condition)	$27,106,840	$35,238,892	$0.00
Alternative #2	$42,971,019	$55,862,325	$20,623,433
Alternative #3	$36,851,884	$47,907,449	$12,668,557

Project No. E100001526.00

September 26, 2000

Mr. Todd Ringsmuth
Dames & Moore
7500 North Dreamy Draw Drive, Suite 145
Phoenix, AZ 85020

Re: **Additional Cost Estimates**
White Tanks FRS #3 Alternatives Analysis
Loop 303 Corridor/White Tanks ADMP Update – FCD 99-40

Dear Mr. Ringsmuth:

This letter/report briefly describes the analysis used to develop the preliminary cost estimate for the proposed improvements to the existing White Tanks FRS #3 (WT FRS #3). Three alternatives were proposed by Dames & Moore. A summary table with the results of the cost estimate and the individual cost estimates for each alternative is attached.

This cost estimate includes the system of channels and basins required downstream of the WT FRS #3 to safely convey floodwaters to the Dysart Drain and Bullard Wash outlets. These estimates are to be used for relative comparisons between WT FRS #3 improvement alternatives and should not be considered final in regard to the Loop 303 ADMP Update project. The Loop 303 project is not at a stage where the level of detail required for a final cost estimate regarding this portion of the project area is feasible. These estimates will be updated using a higher level of detail during the Phase II Level II and Level III portions of the Loop 303 ADMP Update project.

Since facilities included within this estimate (downstream of WT FRS #3) may be accepting currently unknown discharges from other areas within the watershed, estimated quantities for these facilities may change having a significant impact on the final estimate produced for the Loop 303 ADMP Update project. These potential changes should not significantly alter the relative cost differences/impacts in regard to the proposed alternatives at the WT FRS #3.

As a result of several unknown conditions and currently incomplete information regarding other portions of the Loop 303 ADMP watershed that contribute to the facilities downstream of the WT FRS #3, several assumptions and simplifications were made to complete the preliminary estimate. These assumptions are listed below.

Channels, Basins and Associated Quantities:

- Channel footprints do not include access roads.
- All channels were sized with 2 feet of freeboard.
- Drop structures were added as required in proposed channel reaches to limit velocities to approximately 5 f/s. In no case does the velocity exceed 5.6 f/s except through the drop section areas.
- Hydraulic jump calculations were performed to estimate the distance beyond the toe of proposed drop structures that grouted rip-rap should extend.
- Cut and fill estimates along the proposed channel corridors with multiple drop structures were calculated for one upstream reach and one downstream reach. A reach is defined by a flat segment of channel followed by a drop structure. Therefore, one reach would consist of 3 profile points. Since this profile merely repeats itself as the channel proceeds downstream, this approach should be adequate. Cut and fill quantities on a given reach were computed using cross sections placed at points of longitudinal break in slope. The average end area method was used to calculate actual cut and fill along the reach. The average cut and fill quantities were then computed between the upstream and downstream reaches within a proposed channel corridor. The average cut and fill calculated was then multiplied by the total number of reaches within the corridor to estimate a total quantity for the channel. This method should account for the slightly steeper slopes on the upstream reaches. The overall natural grade is fairly constant at about 0.5% west of Loop 303. Detailed cut and fill quantities using a finer cross section spacing was beyond the scope of this task.
- Cut and fill estimates along proposed channel corridors with one or less drop structures were calculated using cross sections at changes in longitudinal slope along the entire channel profile. Cross section areas were then averaged and multiplied by the distance between sections to determine a cut or fill volume. Very few cross sections were used since the natural grade was fairly constant along the channel corridors. Detailed cut and fill quantities using a finer cross section spacing was beyond the scope of this task.
- As a simplification, the main channel section was used for cut/fill estimates. Narrower sections through drop structure reaches were not evaluated in an effort to save time. The result of this may be a slight over-estimate of the cut quantity since the bottom width of the main channel section is larger than the one through the proposed drop structure.
- Culvert crossings were analyzed using the FHWA Culvert Analysis Program, HY8, version 6.1 and Hydrocalc Hydraulics by Dodson and Associates. The HEC-1 model was used to calculate flow rates only at major roadway crossings for culvert sizing.

The major roadway crossings considered were Perryville, Citrus, Cotton Lane, Loop 303, Sarival and Estrella/Reems. Culverts were also sized to cross the Beardsley Canal at the upstream end of the proposed channel corridors.

- Channel cross sections west of Loop 303 were sized based on the discharge calculated by HEC-1 at Loop 303. Likewise, channel sections east of Loop 303 were sized based on the discharge calculated by HEC-1 at the Falcon Dunes Golf Course and the Bullard Wash, respectively.
- Hydroseed quantities were computed by calculating the perimeter along the average channel cross section (normal to the direction of flow) in the corridor multiplied by the total length of the channel corridor. This number was then added to the area of proposed detention basins if appropriate.
- Proposed detention basins were sized by using the incremental increase in flow volume due to a given alternative at the Dysart Drain and Bullard Wash. The basin depths were limited to 8 feet and an approximate footprint area was defined. Normally, a proposed basin would be designed with side slopes and an outlet structure to limit outflow to existing conditions or less. This is time consuming and beyond this scope. Therefore, the basin footprint is based on the total increase in volume over existing and vertical side slopes. The over-estimate in area due to the use of the entire volume rather than a basin large enough to limit outflow should be offset by the addition of basin side slopes during the Level II portion of the Loop 303 project.
- Additional cut at proposed basin sites due to the natural slope of existing ground was accounted for in the basin cut calculations.
- Equalizer culverts were sized between the proposed detention basin at the northwest corner of Reems and Northern and the Falcon Dunes basin using a maximum headwater of 8 feet and a tailwater of 8 feet. The maximum flow between basins was limited under these conditions to the existing flow rate into the Falcon Dunes basin.
- Drop structure quantities were based on the narrower cross sections and flow depths through the drops. The grouted rip-rap was assumed to be 2 feet thick.
- Concrete and steel quantities for culvert inlet and outlet headwalls were based on the quantities given in the Arizona Department of Transportation Highways Division Structures Section, Standard Drawings, June 1992.

It should be noted that all unit costs used to prepare this estimate are based on present dollar values and could increase by as much as 4% per year.

Four different alternatives were considered when preparing this estimate. The four alternatives considered include the "existing condition" alternative and the three WT FRS #3 alternatives supplied by Dames & Moore. By definition the "existing condition" alternative

assumes that no improvements will be made to the WT FRS #3 or the Beardsley Canal. Under this scenario, channels and basins were sized along Northern and Camelback to concentrate and convey flow to the Dysart Drain and Bullard Wash outfalls. Placing channels along Northern Avenue and Camelback Road cuts off flow that previously overtopped each roadway from the north. This cut-off flow is now conveyed east increasing the total peak discharge at concentration points. The true existing condition is the one that exists currently today, which does not include channels along these roadways. Therefore, discharges at the concentration points under current conditions, is significantly less than those shown for the "existing condition" alternative defined above.

Since WT FRS #3 improvements include elimination of overtopping of the Beardsley Canal, the proposed alternatives have the effect of lowering the discharges at the outfall points relative to the existing condition defined above.

Hydrology

The hydrology for this analysis was based on a composite model using the current existing conditions model by EEC, WTAF2003.dat and the outflow hydrographs from WT FRS #3 per alternative as proposed by Dames & Moore. The EEC model was modified by replacing the WT FRS #3 watershed with QI cards (hydrographs supplied by Dames & Moore) describing the three alternatives proposed by Dames & Moore. In addition, some diverts used to simulate flow splits along Camelback, Northern and the Beardsley Canal were turned off or left on depending on the condition being modeled. In alternatives proposing a channel along Northern, sub-area 188 was routed east along Northern instead of south to area 207A. Since there is a large inflow to area 188 from the overtopping of Beardsley Canal (area 10), there is a large increase in the flow at downstream discharge points in the "existing condition" alternative. This increase was less for alternatives 1-3 since those alternatives eliminate the large inflow resulting from the overtopping of the Beardsley Canal as part of the proposed improvements at the WT FRS #3.

The general effects of the alternatives on the downstream flow rates relative to the "existing condition" alternative are listed below. The discharge points chosen for the comparison are located at the intersection of Northern and Loop 303 (CP192A) and the intersection of Camelback and Loop 303 (CP237).

CP192A:

"Existing Condition"	=	4,749 cfs
Alternative #1	=	2,680 cfs (44% decrease)
Alternative #2	=	3,609 cfs (24% decrease)
Alternative #3	=	3,663 cfs (23% decrease)

CP237:

"Existing Condition"	=	3,104 cfs
Alternative #1	=	2,788 cfs (10% decrease)
Alternative #2	=	4,289 cfs (38% increase)
Alternative #3	=	2,788 cfs (10% decrease)

If you have any questions about the above analysis or require more information, please give me a call.

Sincerely

URS

Elliot Silverston, PhD, PE
Project Manager

Enclosure

cc: J. Martin
R. Scrivo

APPENDIX C

GEOTECHNICAL INVESTIGATION – SUPPORTING INFORMATION

BORING LOG

LOCATION OF BORING:	JOB NO.	CLIENT	LOCATION
WHITE TANKS FRS #3	15448-007-058	FCDMC	BUCKEYE, AZ

DRILLING METHOD:	INTERVAL:	DRILLER:	BORING NO.
CME 75 WITH 6-INCH HOLLOW STEM AUGER	0'-31.5'	ATL	B-1
			SHEET 1 OF 1

SAMPLING METHOD:	INTERVAL:
STANDARD PENETRATION TEST WITH SPLIT SPOON (SPT)	5-FOOT INTERVALS

				DRILLING START	DRILLING FINISH
LOGGED BY: BKW	WATER LEVEL	NA		TIME	TIME
CHECKED BY: SGN	TIME				
	DATE			DATE 11/1/99	DATE 11/1/99
DATUM: APPROX. ELEVATION: feet	CASING DEPTH				

SURFACE CONDITIONS: SPARSLY VEGETATED MINIMAL SIGNS OF DISTURBANCE

DEPTH IN FEET	SAMPLER TYPE	SAMPLE NO.	SAMPLE DEPTH (ft)	% PASSING #200 SIEVE	LIQUID LIMIT %	PLASTICITY INDEX %	WATER CONTENT %	DRY DENS. (pcf)	BLOWS/ft	USCS	DESCRIPTION
										SM	SILTY SAND WITH GRAVEL: Fine, dry, dense, light brown
5	SPT	1	5.0						34		
10	SPT	2	10.0						39		
15	SPT	3	15.0						66		
20	SPT	4	20.0						50/6"		Less gravel at 20 feet
25	SPT	5	25.0						50/6"		
30	SPT	6	30.0	24.5					50/6"		
											Boring terminated at 31.5' below ground surface.
35											

BLGV022 12/5/00

DAMES & MOORE

BORING LOG

LOCATION OF BORING:	JOB NO.	CLIENT FCDMC	LOCATION BUCKEYE, AZ
WHITE TANKS FRS #3	15448-007-058		

DRILLING METHOD:	INTERVAL:	DRILLER:	BORING NO.
CME 75 WITH 6-INCH HOLLOW STEM AUGER	0'-31.5'	ATL	B-2
			SHEET 1 OF 1

SAMPLING METHOD:	INTERVAL:	DRILLING START	DRILLING FINISH
STANDARD PENETRATION TEST WITH SPLIT SPOON (SPT)	5-FOOT INTERVALS		

LOGGED BY: BKW	WATER LEVEL	NA		TIME	TIME
CHECKED BY: SGN	TIME				
	DATE			DATE 11/1/99	DATE 11/1/99
DATUM: APPROX. ELEVATION: feet	CASING DEPTH				

SURFACE CONDITIONS: SPARSLY VEGETATED MINIMAL SIGNS OF DISTURBANCE

DEPTH IN FEET	SAMPLER TYPE	SAMPLE NO.	SAMPLE DEPTH (ft)	% PASSING #200 SIEVE	LIQUID LIMIT %	PLASTICITY INDEX %	WATER CONTENT %	DRY DENS. (pcf)	BLOWS/ft	GRAPHIC LOG	USCS	DESCRIPTION
											CL ML	CLAY WITH SILT, TRACE GRAVEL: Dry, hard, brown 1 bag sample from 0-5 feet
5	SPT	1	5.0						50/6"			1 bag sample from 5-10 feet
10	SPT	2	10.0						60			Not as hard, some gravel 1 bag sample from 10-15 feet
15	SPT	3	15.0	41.4					45			less gravel 1 bag sample from 15-20 feet
20	SPT	4	20.0	24.0	32	9			50/6"			1 bag sample from 20-25 feet
25	SPT	5	25.0						50/6"			1 bag sample from 25-30 feet
30	SPT	6	30.0						50/6"			
												Boring terminated at 31.5' below ground surface.
35												

BLGV022 12/5/00

DAMES & MOORE

BORING LOG

LOCATION OF BORING:	JOB NO.	CLIENT	LOCATION
WHITE TANKS FRS #3	15448-007-058	FCDMC	BUCKEYE, AZ

DRILLING METHOD:	INTERVAL:	DRILLER:	BORING NO.
CME 75 WITH 6-INCH HOLLOW STEM AUGER	0'-31.5'	ATL	B-3
			SHEET 1 OF 1

SAMPLING METHOD:	INTERVAL:
STANDARD PENETRATION TEST WITH SPLIT SPOON (SPT)	5-FOOT INTERVALS

				DRILLING START	DRILLING FINISH
LOGGED BY: BKW	WATER LEVEL	NA		TIME	TIME
CHECKED BY: SGN	TIME				
	DATE			DATE 11/2/99	DATE 11/2/99
DATUM: APPROX. ELEVATION: feet	CASING DEPTH				

SURFACE CONDITIONS: SPARSLY VEGETATED MINIMAL SIGNS OF DISTURBANCE

DEPTH IN FEET	SAMPLER TYPE	SAMPLE NO.	SAMPLE DEPTH (ft)	LABORATORY TESTS: % PASSING #200 SIEVE	LIQUID LIMIT %	PLASTICITY INDEX %	WATER CONTENT %	DRY DENS. (pcf)	BLOWS/ft	GRAPHIC LOG	USCS	DESCRIPTION
											SM	SILTY SAND, TRACE GRAVEL: Dry, brown 1 bag sample from 0-5 feet
5	SPT	1	5.0	20.2					11			1 bag sample 5-10 feet
10	SPT	2	10.0						8			More sand 1 bag sample from 10-15 feet
15	SPT	3	15.0						30			Some gravel 1 bag sample from 15-20 feet
20	SPT	4	20.0	26.2					31			SILTY SAND WITH GRAVEL: Little sand, some gravel 1 bag sample from 20-25 feet
25	SPT	5	25.0						69			Light grayish color gravel rock layer 1 bag sample from 25-30 feet
	SPT	6	28.5						51			Light recovery
30												Boring terminated at 30' below ground surface.
35												

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BORING LOG

LOCATION OF BORING:	JOB NO.	CLIENT FCDMC	LOCATION BUCKEYE, AZ
WHITE TANKS FRS #3	15448-007-058		

DRILLING METHOD:	INTERVAL:	DRILLER:	BORING NO.
CME 75 WITH 6-INCH HOLLOW STEM AUGER	0'-30'	ATL	B-4
			SHEET 1 OF 1

SAMPLING METHOD:	INTERVAL:
STANDARD PENETRATION TEST WITH SPLIT SPOON (SPT)	5-FOOT INTERVALS

				DRILLING START	DRILLING FINISH
LOGGED BY: BKW	WATER LEVEL	NA		TIME 1330	TIME 1530
CHECKED BY: SGN	TIME				
	DATE			DATE 11/2/99	DATE 11/2/99
DATUM: APPROX. ELEVATION: feet	CASING DEPTH				

SURFACE CONDITIONS: SPARSLY VEGETATED MINIMAL SIGNS OF DISTURBANCE

DEPTH IN FEET	SAMPLER TYPE	SAMPLE NO.	SAMPLE DEPTH (ft)	LABORATORY TESTS: % PASSING #200 SIEVE	LIQUID LIMIT %	PLASTICITY INDEX %	WATER CONTENT %	DRY DENS. (pcf)	BLOWS/ft	GRAPHIC LOG	USCS	DESCRIPTION
											SM	SILTY SAND, TRACE GRAVEL: Dry, brown 1 bag sample from 0-5 feet
5	SPT	1	5.0	35.4					5			1 bag sample from 5-10 feet
10	SPT	2	10.0						50/6"			Some gravel 1 bag sample from 10-15 feet
15	SPT	3	15.0						26			1 bag sample from 15-20 feet
20	SPT	4	20.0	50.8					79		ML	SANDY SILT: Less gravel, hard 1 bag sample from 20-25 feet
25	SPT	5	25.0						72			1 bag sample from 25-28 feet
	SPT	6	28.5	52.1					24			Trace gravel
30												Boring terminated at 30' below ground surface.
35												

BLGV022 12/5/00

DAMES & MOORE

BORING LOG

LOCATION OF BORING:	JOB NO.	CLIENT FCDMC	LOCATION BUCKEYE, AZ
WHITE TANKS FRS #3	15448-007-058		

DRILLING METHOD:	INTERVAL:	DRILLER:	BORING NO.
CME 75 WITH 6-INCH HOLLOW STEM AUGER	0'-30'	ATL	B-5
			SHEET 1 OF 1

SAMPLING METHOD:	INTERVAL:
STANDARD PENETRATION TEST WITH SPLIT SPOON (SPT)	5-FOOT INTERVALS

DRILLING	START	FINISH
TIME	0900	1030
DATE	11/3/99	11/3/99

LOGGED BY: BKW	WATER LEVEL	NA	
CHECKED BY: SGN	TIME		
	DATE		
DATUM: APPROX. ELEVATION: feet	CASING DEPTH		

SURFACE CONDITIONS: SPARSLY VEGETATED MINIMAL SIGNS OF DISTURBANCE

DEPTH IN FEET	SAMPLER TYPE	SAMPLE NO.	SAMPLE DEPTH (ft)	LABORATORY TESTS: % PASSING #200 SIEVE	LIQUID LIMIT %	PLASTICITY INDEX %	WATER CONTENT %	DRY DENS. (pcf)	BLOWS/ft	GRAPHIC LOG	USCS	DESCRIPTION
											SM	SILTY SAND WITH GRAVEL: Dry, brown 1 bag sample from 0-5 feet
5	SPT	1	5.0	40.9	26	5			8			1 bag sample from 5-10 feet
10	SPT	2	10.0	23.0					43			Some gravel 1 bag sample from 10-15 feet
15	SPT	3	15.0						48			1 bag sample from 15-20 feet
20	SPT	4	20.0						45			1 bag sample from 20-25 feet
25	SPT	5	25.0						50/6"			1 bag sample from 25-28.5 feet
	SPT	6	28.5						83			
30												Boring terminated at 30' below ground surface.
35												

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DAMES & MOORE

BORING LOG

LOCATION OF BORING:	JOB NO.	CLIENT	LOCATION
WHITE TANKS FRS #3	15448-007-058	FCDMC	BUCKEYE, AZ

DRILLING METHOD:	INTERVAL:	DRILLER:	BORING NO.
CME 75 WITH 6-INCH HOLLOW STEM AUGER	0'-30'	ATL	B-6
			SHEET 1 OF 1

SAMPLING METHOD:	INTERVAL:
STANDARD PENETRATION TEST WITH SPLIT SPOON (SPT)	5-FOOT INTERVALS

				DRILLING START	DRILLING FINISH
LOGGED BY: BKW	WATER LEVEL	NA		TIME 1045	TIME 1200
CHECKED BY: SGN	TIME				
	DATE			DATE 11/3/99	DATE 11/3/99
DATUM: APPROX. ELEVATION: feet	CASING DEPTH				

SURFACE CONDITIONS: SPARSLY VEGETATED MINIMAL SIGN OF DISTURBANCE

DEPTH IN FEET	SAMPLER TYPE	SAMPLE NO.	SAMPLE DEPTH (ft)	LABORATORY TESTS: % PASSING #200 SIEVE	LIQUID LIMIT %	PLASTICITY INDEX %	WATER CONTENT %	DRY DENS. (pcf)	BLOWS/ft	GRAPHIC LOG	USCS	DESCRIPTION
											SM	SILTY SAND: Little sand, dry, brown
5	SPT	1	5.0	44.8					6			
10	SPT	2	10.0	27.0					21			More sand 1 bag sample from 10-15 feet
15	SPT	3	15.0						45			Some gravel 1 bag sample from 15-20 feet
20	SPT	4	20.0						48			
25	SPT	5	25.0						50/6"			1 bag sample from 25-30 feet
	SPT	6	28.5						54			
30												Boring terminated at 30' below ground surface.
35												

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TEST PIT LOG

LOCATION OF TEST PIT:	JOB NO.	CLIENT	LOCATION
WHITE TANKS FRS #3	15448-007-058	FCDMC	BUCKEYE, AZ

EXCAVATION METHOD:	INTERVAL:	CONTRACTOR:	TEST PIT NO.
BACKHOE	0'-16'	ATL	TP1
			SHEET 1 OF 1

SAMPLING METHOD:	INTERVAL:
BULK SAMPLING	

EXPLORATION	
START	FINISH
TIME	TIME
DATE 11/9/99	DATE 11/9/99

LOGGED BY: BKW & PLG	WATER LEVEL	NA	
CHECKED BY: SGN	TIME		
	DATE		
DATUM: ELEVATION:	SHORING		

SURFACE CONDITIONS: SPARSLEY VEGETATED, MINIMAL SIGNS OF DISTURBANCE

DEPTH IN FEET	SAMPLER TYPE	SAMPLE NO.	INTERVAL (FT)	LABORATORY TESTS: % PASSING #200 SIEVE	LIQUID LIMIT %	PLASTICITY INDEX %	WATER CONTENT %	DRY DENS. (kg/m³)	GRAPHIC LOG	USCS	DESCRIPTION
	BULK	1	0-4	60.9	21	3				ML	SANDY SILT: Light brown, dry, soft, sand is fine, few (15%) coarse, very few fine gravels easily excavatable
1											
2											
3											
4											
5											
6											
7											
8											
9											
10										ML	SANDY SILT: Brown, dry, loose, sand is fine to coarse, few gravels are fine to coarse, few cobbles
11											
12											
13	BULK	2	13	41.1							Signs of classification moderately cemented easily excavated dry to slightly damp
14										SM	SILTY SAND, TRACE GRAVELS: Light brown, dry, soft, sand is fine, few (15%) coarse, very few fine gravels easily excavatable
15											
16											Test pit TD = 16' Note: Moderately well cemented moderately high effort to excavate
17											
18											
19											

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TEST PIT LOG

LOCATION OF TEST PIT:	JOB NO.	CLIENT FCDMC	LOCATION BUCKEYE, AZ
WHITE TANKS FRS #3	15448-007-058		

EXCAVATION METHOD:	INTERVAL:	CONTRACTOR:	TEST PIT NO.
BACKHOE	0'-17.5'	ALT	TP2
			SHEET 1 OF 1

SAMPLING METHOD:	INTERVAL:	EXPLORATION START	EXPLORATION FINISH
BULK SAMPLING		TIME	TIME

LOGGED BY: BKW & PLG	WATER LEVEL	NA			
CHECKED BY: SGN	TIME				
	DATE			DATE 11/10/99	DATE 11/10/99
DATUM: ELEVATION:	SHORING				

SURFACE CONDITIONS: SPARSELY VEGETATED MINIMAL SIGNS OF DISTURBANCE

DEPTH IN FEET	SAMPLER TYPE	SAMPLE NO.	INTERVAL (FT)	% PASSING #200 SIEVE	LIQUID LIMIT %	PLASTICITY INDEX %	WATER CONTENT %	DRY DENS. (kg/m³)	USCS	DESCRIPTION
	BULK	1	0-3	53.6	31	11			CL	CLAY WITH SILT: Light brown, dry, hard, sand is fine to medium, few fine gravels, moderate effort to excavate
1										
2										
3										
4										
5										
6										
7									SW	WELL GRADED SANDS AND GRAVELS, TRACE SILT: Sand is fine to coarse, gravel is fine to coarse and well graded, fines are silts. Many cobbles 8" max.
8										
9										
10										
11										
12										Few boulders
13										
14										WELL GRADED GRAVELLY SAND, TRACE SILT: Light brown, dry, dense, sands are fine to coarse; gravels are fine to coarse; moderate effort to excavate
15										
16	BULK	3	16-16.5	8.9						
17										
18										Test pit TD = 17.5'.
19										

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TEST PIT LOG

LOCATION OF TEST PIT:	JOB NO.	CLIENT	LOCATION
WHITE TANKS FRS #3	15448-007-058	FCDMC	BUCKEYE, AZ

EXCAVATION METHOD:	INTERVAL:	CONTRACTOR:	TEST PIT NO.
BACKHOE	0'-20'	ATL	TP3
			SHEET 1 OF 1

SAMPLING METHOD:	INTERVAL:
BULK SAMPLING	

				EXPLORATION START TIME	EXPLORATION FINISH TIME
LOGGED BY: PLG	WATER LEVEL	NA			
CHECKED BY: SGN	TIME				
	DATE			DATE 11/10/99	DATE 11/10/99
DATUM: ELEVATION:	SHORING				

SURFACE CONDITIONS: SPARSLEY VEGATATED MINIMAL SIGNS OF DISTURBANCE

DEPTH IN FEET	SAMPLER TYPE	SAMPLE NO.	INTERVAL (FT)	LABORATORY TESTS: % PASSING #200 SIEVE	LIQUID LIMIT %	PLASTICITY INDEX %	WATER CONTENT %	DRY DENS. (kg/m³)	GRAPHIC LOG	USCS	DESCRIPTION
	BULK	1	0-4	54.9	22	5				CL ML	CLAY WITH SANDY SILT: Light brown, dry, medium dense, sand is fine easily excavated, powder
1											
2											
3											
4											Some slight cementation
5											
6											
7											
8											
9											Becomes moderately to well cemented, brown with small amount of white pockets, becomes dense
10											
11	BULK	2	11-11.5	18.6	27	7				SM	SILTY SAND WITH GRAVEL AND COBBLES, TRACE CLAYS: Dry, light brown, dense, sand is fine to coarse, cobbles are semi-rounded, moderate cementation, moderate effort to excavate
12											
13											
14											
15											
16											
17											
18											
19											Test pit TD = 20'

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DAMES & MOORE

Hasbrouck Geophysics, Inc.
Mining, Groundwater, Environmental & Engineering

Letter Report

Maricopa County Dam Site Refraction Seismic Survey

for

Dames & Moore
Phoenix, Arizona

James C. Hasbrouck
November 22, 1999

2307 James Street
Montrose, Colorado 81401-5287 USA
970-252-8768 (Telephone and Fax)
jim@hasgeo.com (E-Mail)
http://www.hasgeo.com (Homepage)

A refraction seismic survey was conducted for Dames & Moore (D&M) over six lines at a proposed dam site in Maricopa County, Arizona, near the White Tank Mountains west of Phoenix. The objective of the survey was to determine seismic velocities for rippability purposes to aid in the construction project. The seismic data were acquired by Bird Seismic Services, Inc. of Globe, Arizona, and processed and interpreted by Jim Hasbrouck of Hasbrouck Geophysics, Inc. This letter report includes interpreted depth profiles along each line and relevant supporting documentation. A map indicating the relative positions of the lines was not available.

The 24-channel refraction seismic data were acquired with a Bison *Spectra* signal-enhancement seismograph, Sensor model SM-11 30-Hz geophones, and a 16-pound sledgehammer source. The geophones were located 5 feet apart and source impacts were made at various distances offset and along the seismic profiles. The geophones were located on nominally straight lines and distances were measured with a tape. The seismic data were stacked nominally six times (depending upon offset and noise) at each source point to increase the signal-to-noise ratio. Stacking, or signal enhancement, involved repeated source impacts at the same point into the same set of geophones. For each source point, the stacked data were recorded into the same seismic data file, or record, and, theoretically, the seismic signal arrived at the same time from each impact, and thus was enhanced, while noise was random and tended to be reduced or canceled. Overall, the quality of the seismic data was excellent and identifiable first breaks (first arrival of seismic energy) were present.

The refraction seismic data were processed and interpreted using the *SIP* (version 4-1) set of computer programs from Rimrock Geophysics Inc., Lakewood, Colorado. The general processing and interpretation flow consisted of the initial selection, or "picking", of the seismic first breaks with the *BSIPIK* program, creation of data files for input into the interpretation program with the *SIPIN* program, and interpretation of the data using modeling and iterative ray-tracing techniques with the *SIPT2* program. The *SIPT2* program uses the delay-time method to obtain a first-approximation depth model, which is then trimmed up by a series of ray-tracing and model adjustment iterations to minimize any discrepancies between the picked arrival times and corresponding times traced through a 2.5-dimensional model. Arrival times at two geophones, separated by some variable XY-distance, are used in refractor velocity analyses and time-depth calculations. Using the principle of migration and iterative ray-tracing within the *SIPT2* program, forward and reverse seismic rays emerge from essentially the same point on the reflector, thus requiring the reflector to be plane over only a very small distance. The ray-tracing procedure tests and corrects the estimated migrated position of points representing the locations of ray entry and emergence from the refracting horizon and takes into account the dip of the refracting horizon <u>at</u> those emergence points, therefore enabling accurate representation of steeply dipping horizons.

For any refraction seismic data analysis, it is important to determine accurate velocities. The *SIPT2* program employs several routines for selection of the proper velocities. For the direct arrivals through the first layer, the velocity is computed by dividing the distances from each source point to each geophone by the corresponding arrival times. These individual velocities are averaged for each source point, and a weighted average is computed. For layers beneath the first layer, velocities are computed by two methods: 1) Regression, in which a straight line is fit by least squares to the arrival times representing the velocity layer and average velocities are computed by taking the reciprocals of the weighted average of the slopes of the regression lines,

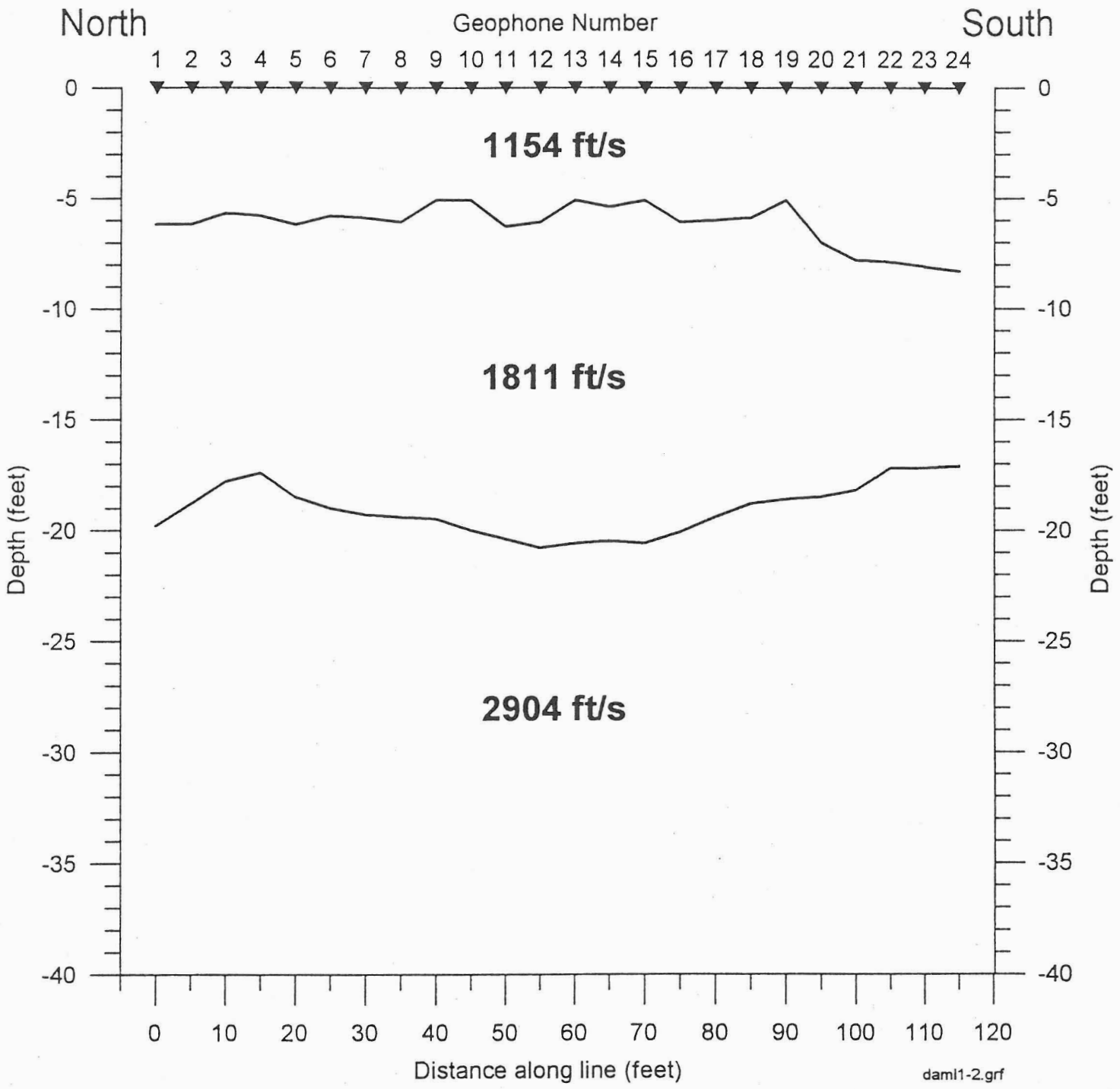
and 2) the Hobson-Overton method wherein velocities are computed if there are reciprocal arrivals from two opposing source points at two or more geophones. Final velocities used in the *SIPT2* inversion process are computed by taking an average of the two methods or assigning override values under certain circumstances.

Included within this report are depth versus distance refraction seismic models for each line, with annotated average velocities for each layer, and tables listing the data used to construct the depth models. Also attached, within the Appendix, is output from the *SIPT2* program that includes a listing of the input data (source point and geophone locations and elevations, arrival times picked for each geophone, and the layer assigned to each arrival time for the interpretation), velocity analysis tables, a time-distance (T-D) plot indicating the picked arrival times and layer assignments, and a depth model plot for each source point and geophone. On the *SIPT2* depth model plots, the positions of the emergent rays along each refracting horizon are indicated by letters corresponding to the appropriate source points with questionable points, if any, highlighted by a question mark.

Three seismically distinct layers are identified along each of the lines as shown in the attached depth models and detailed within Tables 1 through 6. Layer #1 varies in depth from approximately 2 to 10 feet (with predominant values closer to 5 feet) with an average seismic velocity of around 1160 feet per second, which is interpreted to correspond to loose, unconsolidated, dry material. The depth to the top of the third layer (or thickness of layers #1 and #2 combined) varies from approximately 17 to 32 feet, with the values more in the 20 feet range for lines 1, 2, 3 and 5, and deeper values to around 30 feet for lines 4 and 6. The average velocity for layer #2 is approximately 1990 feet per second which corresponds to dry and unconsolidated sediments. The third layer (or bedrock for this survey as designed) has an average velocity of approximately 2920 feet per second (with line 6 higher at 3233 feet per second), which corresponds to dry, unconsolidated sediments with perhaps more gravel present. Note that while boreholes and a test pit are present within the general survey area, data from those sources are not available therefore direct correlation to geologic units is not possible, nor are model constraints from known data points available. Tables available from the Caterpillar Tractor Company for models D7, D8 and D9 rippers indicate that sediments with velocities less than approximately 4000 feet per second are rippable. Given the velocities found within this survey area, I expect even a smaller ripper than a D7 could be used although tables for those model rippers are not available.

Geophysics is not an exact science, therefore calculated velocity depth values must be taken as interpreted, not absolute. The geophysical data within this project were acquired, processed, and interpreted using state-of-the-art instrumentation and software. Ken Bernstein of Bird Seismic has been involved in seismic data acquisition since the early 1980s and Jim Hasbrouck of Hasbrouck Geophysics has processed and interpreted hundreds of refraction seismic surveys over the course of almost 30 years within the geophysical industry. However, it must be reiterated that the velocities and depths obtained from the geophysical data are interpretations and the actual values may be more or less than what are shown on the models.

Maricopa County Dam Site
Refraction Seismic Line 1



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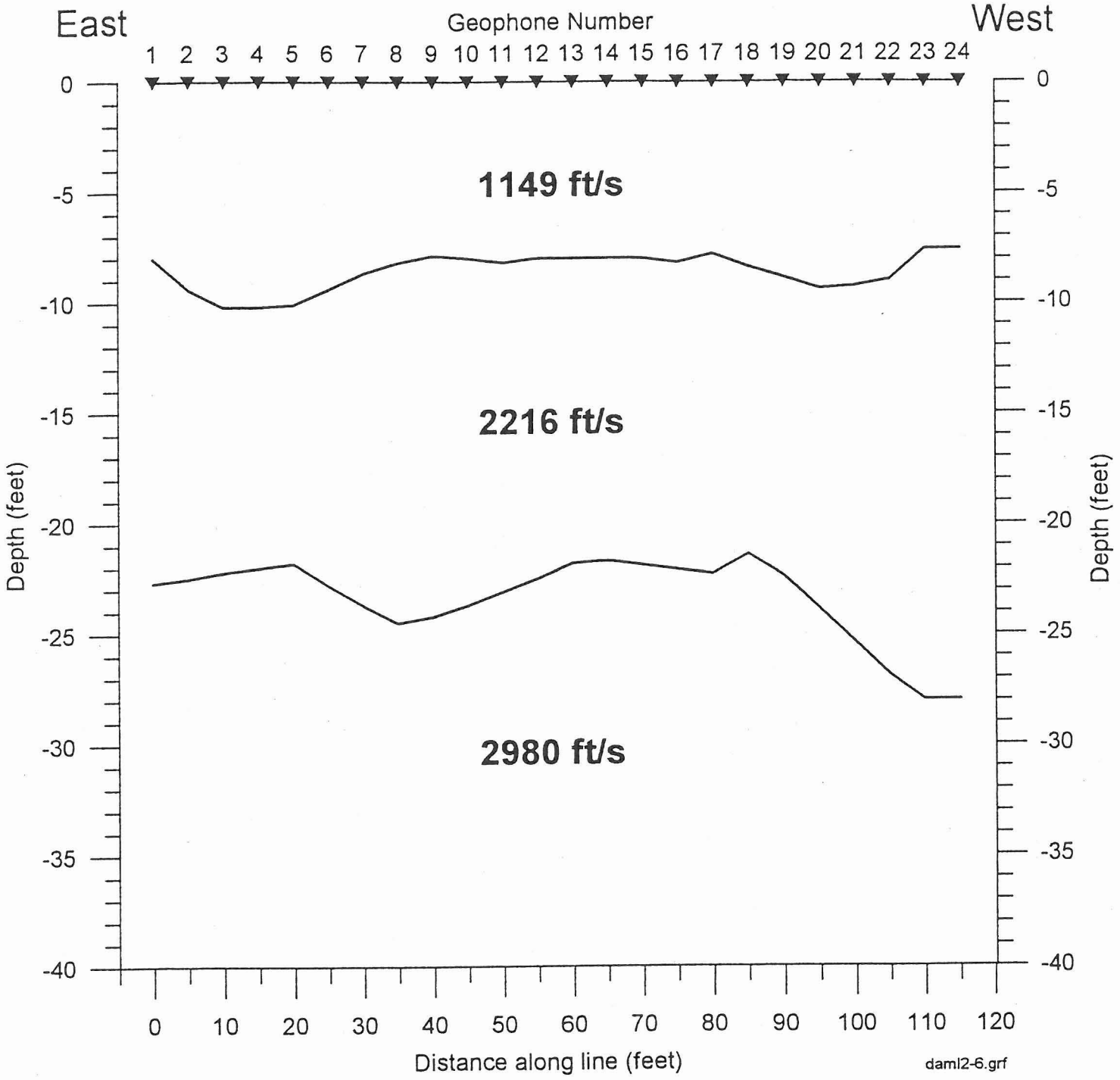
Montrose, Colorado
November 1999

Maricopa County Dam Site
Refraction Seismic Line 2



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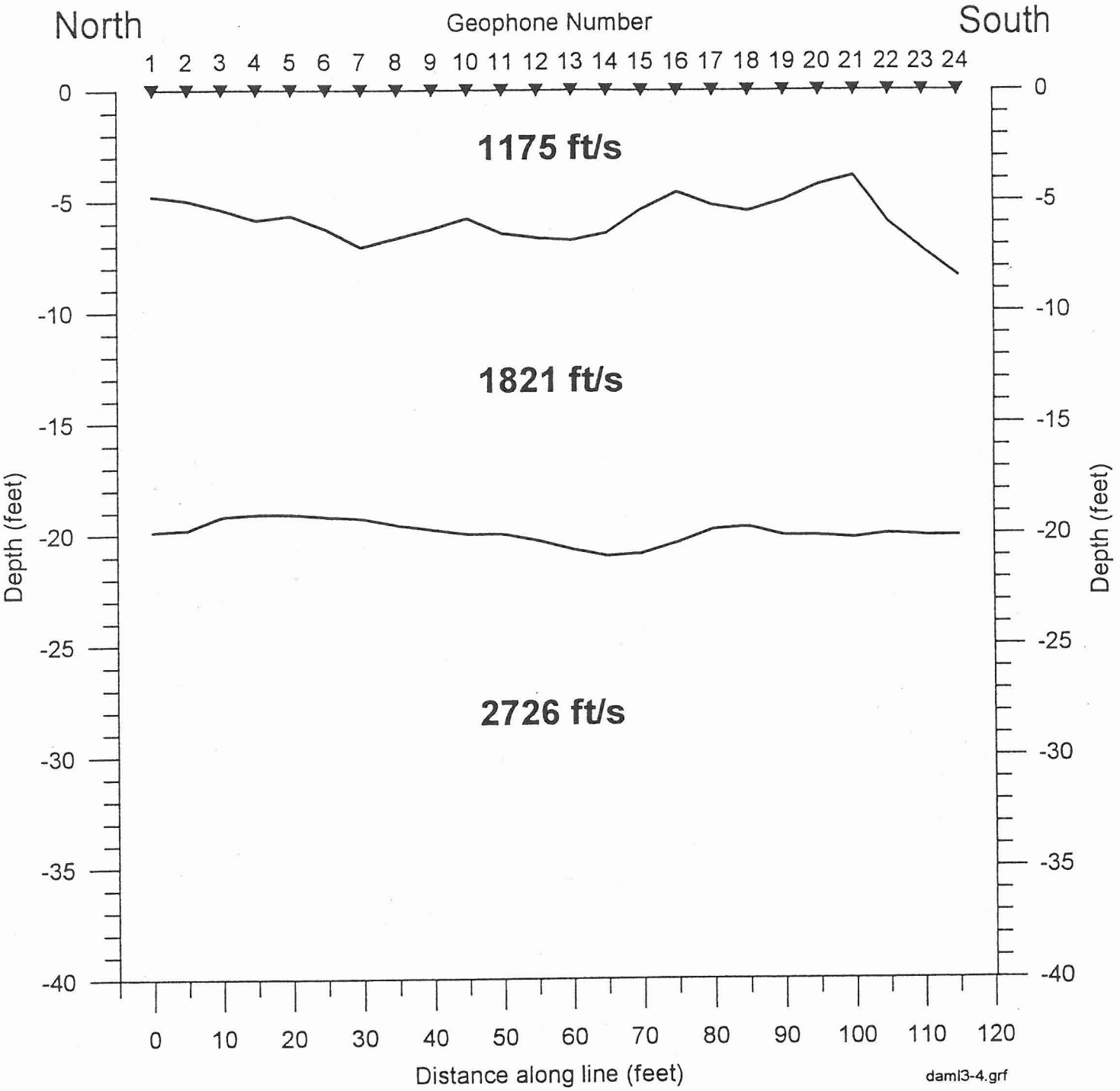
Maricopa County Dam Site
Refraction Seismic Line 3



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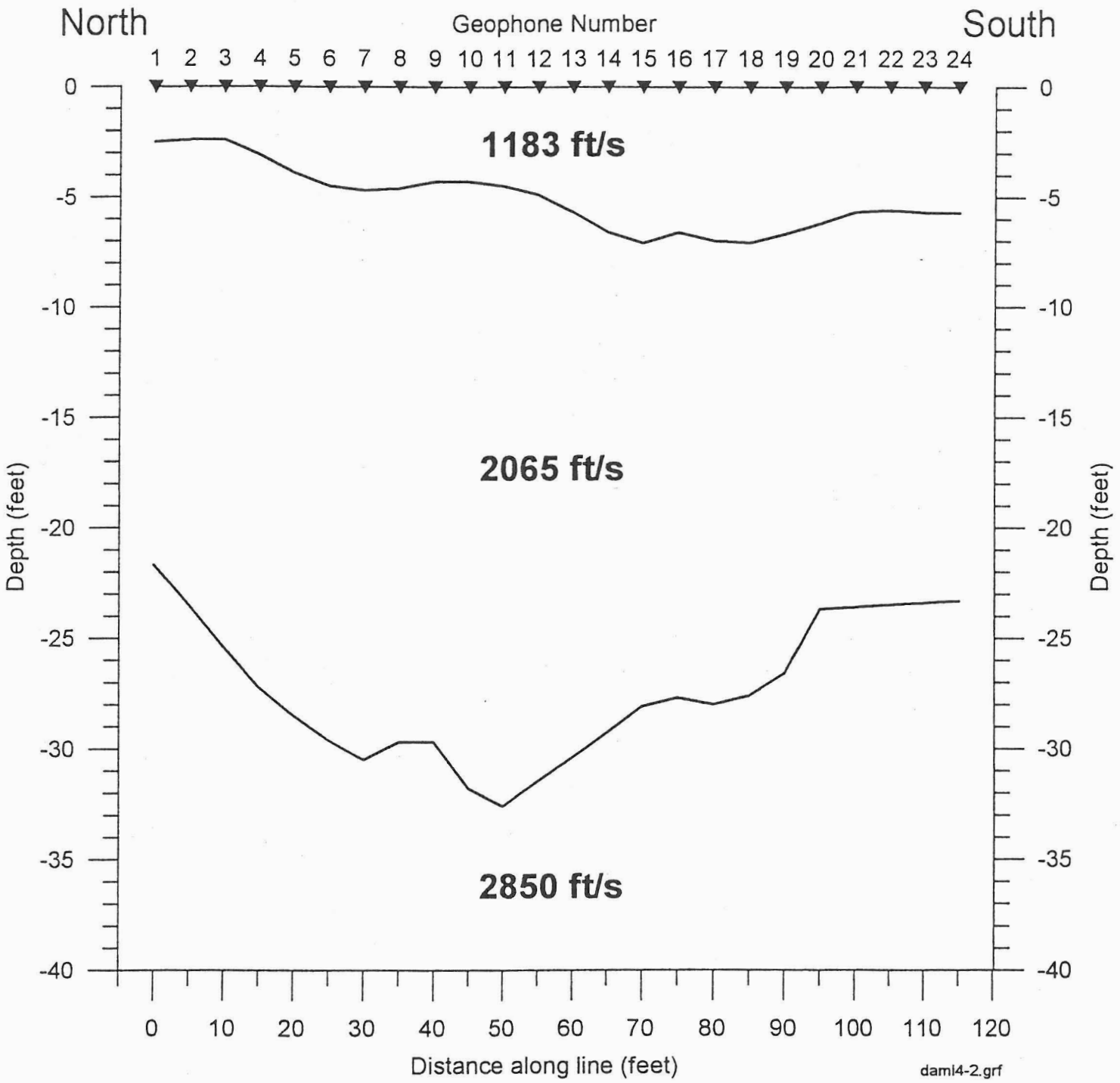
Maricopa County Dam Site
Refraction Seismic Line 4



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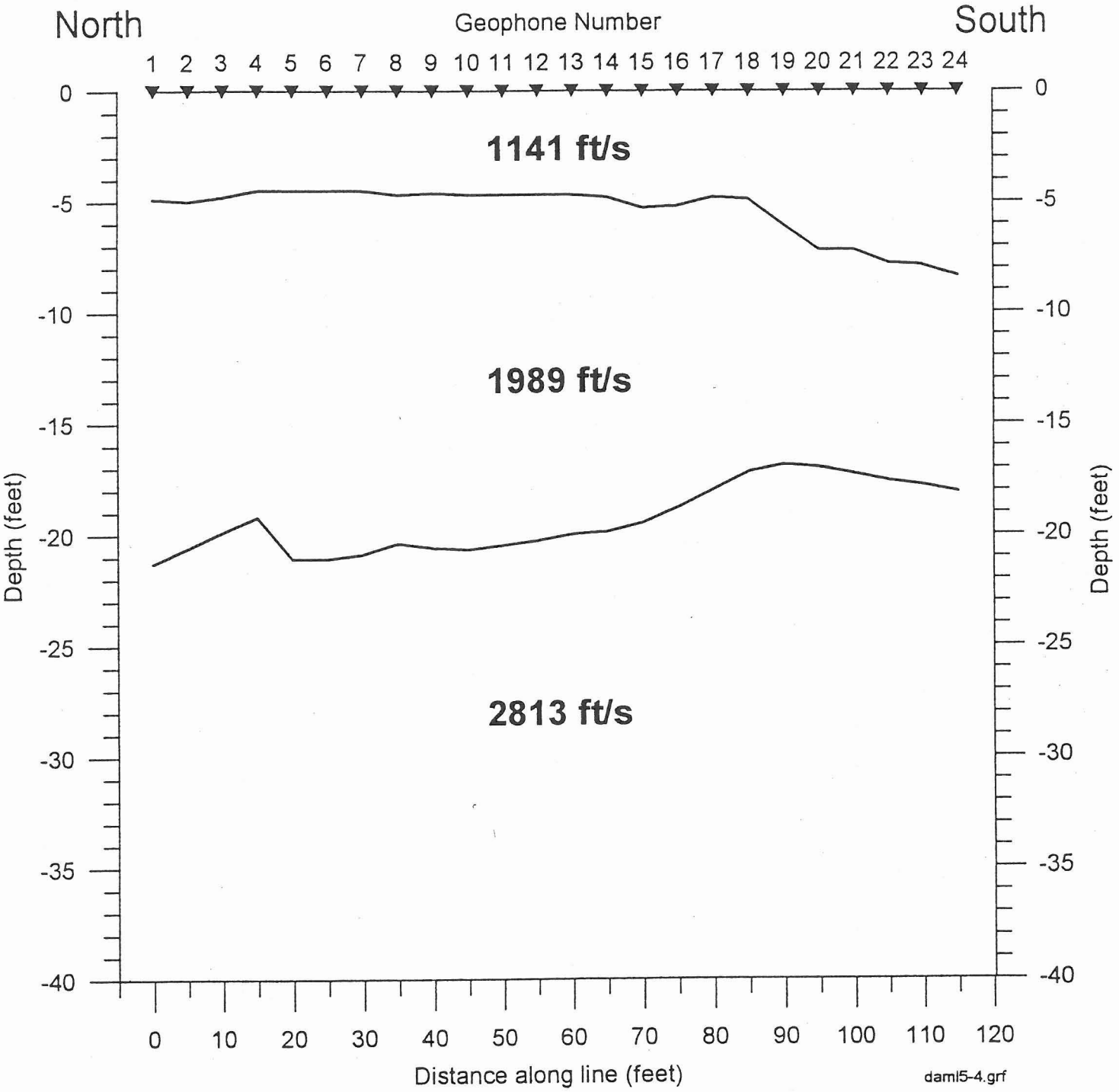
Maricopa County Dam Site
Refraction Seismic Line 5



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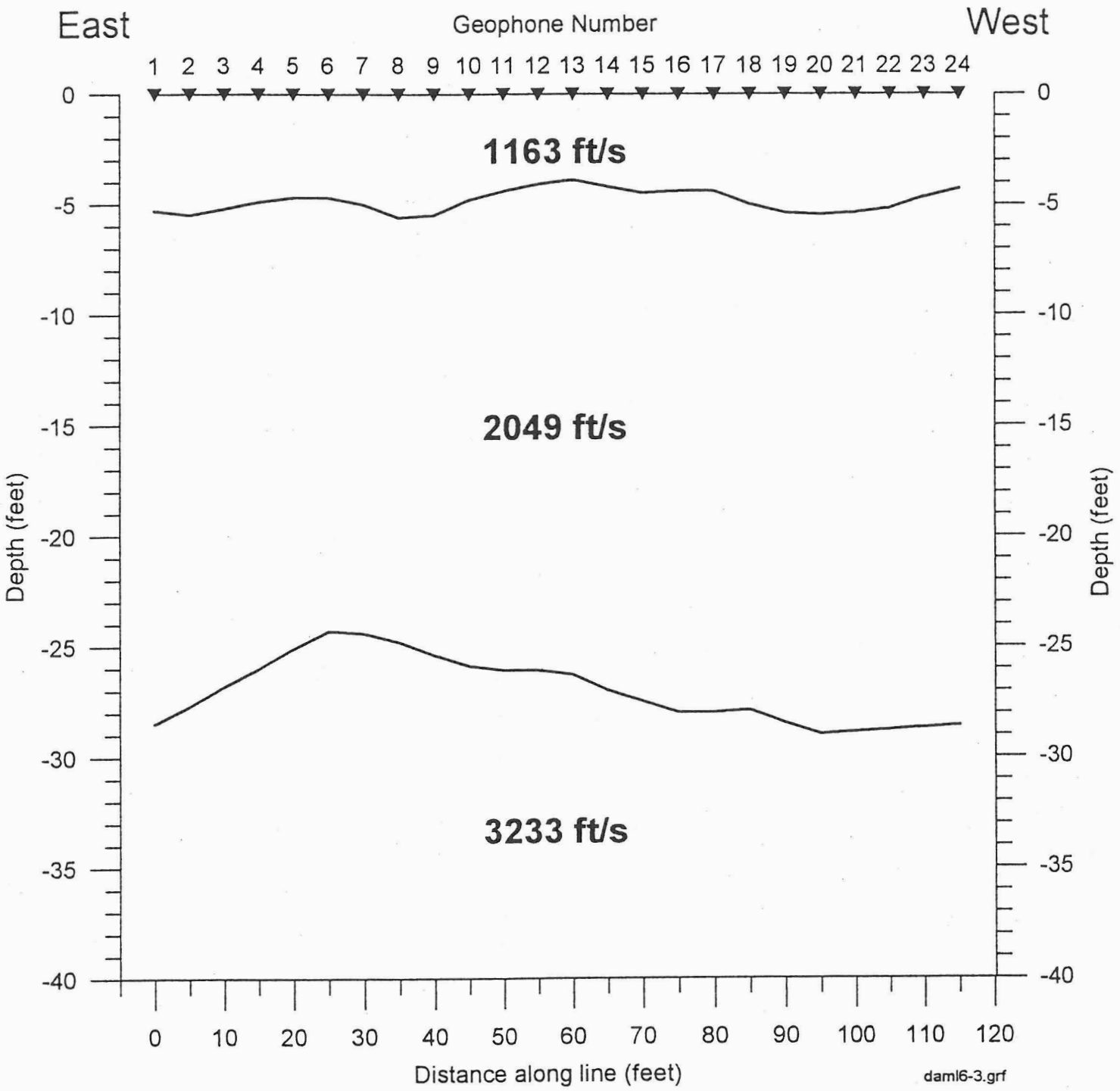
Maricopa County Dam Site
Refraction Seismic Line 6



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Montrose, Colorado
November 1999

Table 1: Line 1 Refraction Seismic Interpretation Results

Geophone Number	Distance along line (ft)	Depth to Layer #2 (ft)	Depth to Layer #3 (ft)	Layer #1 Thickness (ft)	Layer #2 Thickness (ft)	Layer #1 Velocity (ft/s)	Layer #2 Velocity (ft/s)	Layer #3 Velocity (ft/s)
1	0	-6.2	-19.8	6.2	13.6	1154	1811	2904
2	5	-6.2	-18.8	6.2	12.6	1154	1811	2904
3	10	-5.7	-17.8	5.7	12.1	1154	1811	2904
4	15	-5.8	-17.4	5.8	11.6	1154	1811	2904
5	20	-6.2	-18.5	6.2	12.3	1154	1811	2904
6	25	-5.8	-19	5.8	13.2	1154	1811	2904
7	30	-5.9	-19.3	5.9	13.4	1154	1811	2904
8	35	-6.1	-19.4	6.1	13.3	1154	1811	2904
9	40	-5.1	-19.5	5.1	14.4	1154	1811	2904
10	45	-5.1	-20	5.1	14.9	1154	1811	2904
11	50	-6.3	-20.4	6.3	14.1	1154	1811	2904
12	55	-6.1	-20.8	6.1	14.7	1154	1811	2904
13	60	-5.1	-20.6	5.1	15.5	1154	1811	2904
14	65	-5.4	-20.5	5.4	15.1	1154	1811	2904
15	70	-5.1	-20.6	5.1	15.5	1154	1811	2904
16	75	-6.1	-20.1	6.1	14	1154	1811	2904
17	80	-6	-19.4	6	13.4	1154	1811	2904
18	85	-5.9	-18.8	5.9	12.9	1154	1811	2904
19	90	-5.1	-18.6	5.1	13.5	1154	1811	2904
20	95	-7	-18.5	7	11.5	1154	1811	2904
21	100	-7.8	-18.2	7.8	10.4	1154	1811	2904
22	105	-7.9	-17.2	7.9	9.3	1154	1811	2904
23	110	-8.1	-17.2	8.1	9.1	1154	1811	2904
24	115	-8.3	-17.1	8.3	8.8	1154	1811	2904

Table 2: Line 2 Refraction Seismic Interpretation Results

Geophone Number	Distance along line (ft)	Depth to Layer #2 (ft)	Depth to Layer #3 (ft)	Layer #1 Thickness (ft)	Layer #2 Thickness (ft)	Layer #1 Velocity (ft/s)	Layer #2 Velocity (ft/s)	Layer #3 Velocity (ft/s)
1	0	-8	-22.7	8	14.7	1149	2216	2980
2	5	-9.4	-22.5	9.4	13.1	1149	2216	2980
3	10	-10.2	-22.2	10.2	12	1149	2216	2980
4	15	-10.2	-22	10.2	11.8	1149	2216	2980
5	20	-10.1	-21.8	10.1	11.7	1149	2216	2980
6	25	-9.4	-22.8	9.4	13.4	1149	2216	2980
7	30	-8.7	-23.7	8.7	15	1149	2216	2980
8	35	-8.2	-24.5	8.2	16.3	1149	2216	2980
9	40	-7.9	-24.2	7.9	16.3	1149	2216	2980
10	45	-8	-23.7	8	15.7	1149	2216	2980
11	50	-8.2	-23.1	8.2	14.9	1149	2216	2980
12	55	-8	-22.5	8	14.5	1149	2216	2980
13	60	-8	-21.8	8	13.8	1149	2216	2980
14	65	-8	-21.7	8	13.7	1149	2216	2980
15	70	-8	-21.9	8	13.9	1149	2216	2980
16	75	-8.2	-22.1	8.2	13.9	1149	2216	2980
17	80	-7.8	-22.3	7.8	14.5	1149	2216	2980
18	85	-8.4	-21.4	8.4	13	1149	2216	2980
19	90	-8.9	-22.4	8.9	13.5	1149	2216	2980
20	95	-9.4	-23.9	9.4	14.5	1149	2216	2980
21	100	-9.3	-25.4	9.3	16.1	1149	2216	2980
22	105	-9	-26.9	9	17.9	1149	2216	2980
23	110	-7.6	-28	7.6	20.4	1149	2216	2980
24	115	-7.6	-28	7.6	20.4	1149	2216	2980

Table 3: Line 3 Refraction Seismic Interpretation Results

Geophone Number	Distance along line (ft)	Depth to Layer #2 (ft)	Depth to Layer #3 (ft)	Layer #1 Thickness (ft)	Layer #2 Thickness (ft)	Layer #1 Velocity (ft/s)	Layer #2 Velocity (ft/s)	Layer #3 Velocity (ft/s)
1	0	-4.8	-19.9	4.8	15.1	1175	1821	2726
2	5	-5	-19.8	5	14.8	1175	1821	2726
3	10	-5.4	-19.2	5.4	13.8	1175	1821	2726
4	15	-5.9	-19.1	5.9	13.2	1175	1821	2726
5	20	-5.7	-19.1	5.7	13.4	1175	1821	2726
6	25	-6.3	-19.2	6.3	12.9	1175	1821	2726
7	30	-7.1	-19.3	7.1	12.2	1175	1821	2726
8	35	-6.7	-19.6	6.7	12.9	1175	1821	2726
9	40	-6.3	-19.8	6.3	13.5	1175	1821	2726
10	45	-5.8	-20	5.8	14.2	1175	1821	2726
11	50	-6.5	-20	6.5	13.5	1175	1821	2726
12	55	-6.7	-20.3	6.7	13.6	1175	1821	2726
13	60	-6.8	-20.7	6.8	13.9	1175	1821	2726
14	65	-6.5	-21	6.5	14.5	1175	1821	2726
15	70	-5.4	-20.9	5.4	15.5	1175	1821	2726
16	75	-4.6	-20.4	4.6	15.8	1175	1821	2726
17	80	-5.2	-19.8	5.2	14.6	1175	1821	2726
18	85	-5.5	-19.7	5.5	14.2	1175	1821	2726
19	90	-5	-20.1	5	15.1	1175	1821	2726
20	95	-4.3	-20.1	4.3	15.8	1175	1821	2726
21	100	-3.9	-20.2	3.9	16.3	1175	1821	2726
22	105	-6	-20	6	14	1175	1821	2726
23	110	-7.2	-20.1	7.2	12.9	1175	1821	2726
24	115	-8.4	-20.1	8.4	11.7	1175	1821	2726

Table 4: Line 4 Refraction Seismic Interpretation Results

Geophone Number	Distance along line (ft)	Depth to Layer #2 (ft)	Depth to Layer #3 (ft)	Layer #1 Thickness (ft)	Layer #2 Thickness (ft)	Layer #1 Velocity (ft/s)	Layer #2 Velocity (ft/s)	Layer #3 Velocity (ft/s)
1	0	-2.5	-21.7	2.5	19.2	1183	2065	2850
2	5	-2.4	-23.5	2.4	21.1	1183	2065	2850
3	10	-2.4	-25.4	2.4	23	1183	2065	2850
4	15	-3.1	-27.2	3.1	24.1	1183	2065	2850
5	20	-3.9	-28.5	3.9	24.6	1183	2065	2850
6	25	-4.5	-29.6	4.5	25.1	1183	2065	2850
7	30	-4.7	-30.5	4.7	25.8	1183	2065	2850
8	35	-4.6	-29.7	4.6	25.1	1183	2065	2850
9	40	-4.3	-29.7	4.3	25.4	1183	2065	2850
10	45	-4.3	-31.8	4.3	27.5	1183	2065	2850
11	50	-4.5	-32.6	4.5	28.1	1183	2065	2850
12	55	-4.9	-31.5	4.9	26.6	1183	2065	2850
13	60	-5.7	-30.4	5.7	24.7	1183	2065	2850
14	65	-6.6	-29.3	6.6	22.7	1183	2065	2850
15	70	-7.1	-28.1	7.1	21	1183	2065	2850
16	75	-6.6	-27.7	6.6	21.1	1183	2065	2850
17	80	-7	-28	7	21	1183	2065	2850
18	85	-7.1	-27.6	7.1	20.5	1183	2065	2850
19	90	-6.7	-26.6	6.7	19.9	1183	2065	2850
20	95	-6.2	-23.7	6.2	17.5	1183	2065	2850
21	100	-5.7	-23.6	5.7	17.9	1183	2065	2850
22	105	-5.6	-23.5	5.6	17.9	1183	2065	2850
23	110	-5.7	-23.4	5.7	17.7	1183	2065	2850
24	115	-5.7	-23.3	5.7	17.6	1183	2065	2850

Table 5: Line 5 Refraction Seismic Interpretation Results

Geophone Number	Distance along line (ft)	Depth to Layer #2 (ft)	Depth to Layer #3 (ft)	Layer #1 Thickness (ft)	Layer #2 Thickness (ft)	Layer #1 Velocity (ft/s)	Layer #2 Velocity (ft/s)	Layer #3 Velocity (ft/s)
1	0	-4.9	-21.3	4.9	16.4	1141	1989	2813
2	5	-5	-20.6	5	15.6	1141	1989	2813
3	10	-4.8	-19.9	4.8	15.1	1141	1989	2813
4	15	-4.5	-19.2	4.5	14.7	1141	1989	2813
5	20	-4.5	-21.1	4.5	16.6	1141	1989	2813
6	25	-4.5	-21.1	4.5	16.6	1141	1989	2813
7	30	-4.5	-20.9	4.5	16.4	1141	1989	2813
8	35	-4.7	-20.4	4.7	15.7	1141	1989	2813
9	40	-4.6	-20.6	4.6	16	1141	1989	2813
10	45	-4.7	-20.7	4.7	16	1141	1989	2813
11	50	-4.7	-20.5	4.7	15.8	1141	1989	2813
12	55	-4.7	-20.3	4.7	15.6	1141	1989	2813
13	60	-4.7	-20	4.7	15.3	1141	1989	2813
14	65	-4.8	-19.9	4.8	15.1	1141	1989	2813
15	70	-5.3	-19.5	5.3	14.2	1141	1989	2813
16	75	-5.2	-18.8	5.2	13.6	1141	1989	2813
17	80	-4.8	-18	4.8	13.2	1141	1989	2813
18	85	-4.9	-17.2	4.9	12.3	1141	1989	2813
19	90	-6.1	-16.9	6.1	10.8	1141	1989	2813
20	95	-7.2	-17	7.2	9.8	1141	1989	2813
21	100	-7.2	-17.3	7.2	10.1	1141	1989	2813
22	105	-7.8	-17.6	7.8	9.8	1141	1989	2813
23	110	-7.9	-17.8	7.9	9.9	1141	1989	2813
24	115	-8.4	-18.1	8.4	9.7	1141	1989	2813

Table 6: Line 6 Refraction Seismic Interpretation Results

Geophone Number	Distance along line (ft)	Depth to Layer #2 (ft)	Depth to Layer #3 (ft)	Layer #1 Thickness (ft)	Layer #2 Thickness (ft)	Layer #1 Velocity (ft/s)	Layer #2 Velocity (ft/s)	Layer #3 Velocity (ft/s)
1	0	-5.3	-28.5	5.3	23.2	1163	2049	3233
2	5	-5.5	-27.7	5.5	22.2	1163	2049	3233
3	10	-5.2	-26.8	5.2	21.6	1163	2049	3233
4	15	-4.9	-26	4.9	21.1	1163	2049	3233
5	20	-4.7	-25.1	4.7	20.4	1163	2049	3233
6	25	-4.7	-24.3	4.7	19.6	1163	2049	3233
7	30	-5	-24.4	5	19.4	1163	2049	3233
8	35	-5.6	-24.8	5.6	19.2	1163	2049	3233
9	40	-5.5	-25.4	5.5	19.9	1163	2049	3233
10	45	-4.8	-25.9	4.8	21.1	1163	2049	3233
11	50	-4.4	-26.1	4.4	21.7	1163	2049	3233
12	55	-4.1	-26.1	4.1	22	1163	2049	3233
13	60	-3.9	-26.3	3.9	22.4	1163	2049	3233
14	65	-4.2	-27	4.2	22.8	1163	2049	3233
15	70	-4.5	-27.5	4.5	23	1163	2049	3233
16	75	-4.4	-28	4.4	23.6	1163	2049	3233
17	80	-4.4	-28	4.4	23.6	1163	2049	3233
18	85	-5	-27.9	5	22.9	1163	2049	3233
19	90	-5.4	-28.5	5.4	23.1	1163	2049	3233
20	95	-5.5	-29	5.5	23.5	1163	2049	3233
21	100	-5.4	-28.9	5.4	23.5	1163	2049	3233
22	105	-5.2	-28.8	5.2	23.6	1163	2049	3233
23	110	-4.7	-28.7	4.7	24	1163	2049	3233
24	115	-4.3	-28.6	4.3	24.3	1163	2049	3233

Appendix

INPUT DATA FILE for DAML1-2.SIP

TITLE FOR SIPT2/SIPLUS INPUT DATA SET for DAML1-2.SIP

D&M MARICOPA COUNTY DAM SITE LINE 1

PROGRAM CONTROL DATA

Prl	Exit	Layrs	VOver	PRINTER PLOT SCALES Elev ft/col	Horiz ft/row	Time ms/col	DATUM CONTROL Pt 1 Elev/X	Pt 2 Elev/X	PLOT CONTROL Elevations Top	Bottom	BLim	TLim	Trace	OffSP	LDip
.	6	3	0	0.0	0.0	0.0	0.0 0.0	0.0 0.0	0	0	0.5	10.0	0	0	0

SHOTPOINT AND GEOPHONE DATA

Spread A, 7 SP's, 24 Geo's, X-Shift = 0.0, X-True = 1, Units: Feet.

SP	Elev	X-Loc	Y-Loc	Depth	Uphole T	Fudge T	End SP
A	0.0	-50.0	0.0	0.0	0.0	0.0	0
B	0.0	-25.0	0.0	0.0	0.0	0.0	1
C	0.0	27.5	0.0	0.0	0.0	0.0	0
D	0.0	57.5	0.0	0.0	0.0	0.0	0
E	0.0	87.5	0.0	0.0	0.0	0.0	0
F	0.0	140.0	0.0	0.0	0.0	0.0	2
G	0.0	165.0	0.0	0.0	0.0	0.0	0

ARRIVAL TIMES AND LAYERS REPRESENTED

Geo	Elev	X-Loc	Y	SP A	L	SP B	L	SP C	L	SP D	L	SP E	L	SP F	L	SP G	L
1	0.0	0.0	0.0	38.8	3	19.4	1	22.6	2	38.2	3	49.6	0	67.8	3	78.0	0
2	0.0	5.0	0.0	40.8	3	23.4	1	19.6	2	36.6	3	48.8	0	66.6	3	77.4	3
3	0.0	10.0	0.0	42.6	3	26.8	1	15.8	1	35.2	2	48.4	3	64.6	3	75.4	3
4	0.0	15.0	0.0	45.6	3	29.8	2	11.0	1	32.6	2	46.6	3	64.0	3	74.4	3
5	0.0	20.0	0.0	46.8	3	31.8	2	6.6	1	29.6	2	43.8	3	61.8	3	71.2	3
6	0.0	25.0	0.0	48.4	3	35.8	2	2.2	1	26.4	2	42.0	3	61.0	3	70.8	3
7	0.0	30.0	0.0	50.4	3	37.6	2	2.0	1	23.6	2	41.0	3	58.8	3	68.4	3
8	0.0	35.0	0.0	53.0	3	40.8	2	6.4	1	20.2	1	39.4	3	57.6	3	66.4	3
9	0.0	40.0	0.0	54.8	3	42.4	2	10.6	1	15.8	1	38.2	2	56.2	3	65.0	3
10	0.0	45.0	0.0	57.2	3	45.6	2	15.4	1	11.4	1	36.4	2	55.0	3	63.4	3
11	0.0	50.0	0.0	58.8	3	48.0	2	19.8	1	6.8	1	33.2	2	53.0	3	63.4	3
12	0.0	55.0	0.0	59.6	3	49.6	3	23.0	1	2.6	1	28.8	1	52.0	3	61.8	3
13	0.0	60.0	0.0	61.6	3	51.8	3	26.0	1	2.2	1	24.8	1	50.0	3	59.8	3
14	0.0	65.0	0.0	63.4	3	53.4	3	28.6	2	6.8	1	19.6	1	47.2	3	57.2	3
15	0.0	70.0	0.0	65.2	3	56.4	3	32.0	2	10.6	1	15.4	1	44.2	3	54.6	3
16	0.0	75.0	0.0	65.8	3	57.2	3	34.8	2	15.2	1	10.8	1	43.2	3	54.4	3
17	0.0	80.0	0.0	67.6	3	58.2	3	39.0	2	19.4	1	6.4	1	41.0	3	52.8	3
18	0.0	85.0	0.0	69.8	3	60.4	3	40.8	2	23.8	1	2.0	1	39.8	3	51.6	3

19	0.0	90.0	0.0	71.0	3	61.2	3	41.2	2	28.6	1	2.2	1	37.6	2	49.0	3
0	0.0	95.0	0.0	72.0	3	62.6	3	43.0	2	31.0	2	6.8	1	34.4	2	47.6	2
21	0.0	100.0	0.0	74.6	3	65.2	3	46.4	3	34.6	2	11.0	1	30.4	2	45.0	2
22	0.0	105.0	0.0	76.0	3	67.0	3	47.8	3	37.8	2	15.4	1	28.0	2	41.2	2
3	0.0	110.0	0.0	77.6	3	68.4	3	50.0	3	39.2	2	19.6	1	26.2	2	37.8	2
4	0.0	115.0	0.0	79.0	3	71.0	3	50.8	3	41.6	2	24.0	1	22.0	0	34.8	2

VELOCITY ANALYSIS TABLES for DAML1-2.SIP

Layer 1 Velocity from direct arrivals

Spread A	SP	Geo	DD	V	Avg V
	B	1	25.0	1289	
	B	2	30.0	1282	
	B	3	35.0	1306	
					1292
	C	3	17.5	1108	
	C	4	12.5	1136	
	C	5	7.5	1136	
	C	6	2.5	1136	
	C	7	2.5	1250	
	C	8	7.5	1172	
	C	9	12.5	1179	
	C	10	17.5	1136	
	C	11	22.5	1136	
	C	12	27.5	1196	
	C	13	32.5	1250	
					1167
	D	8	22.5	1114	
	D	9	17.5	1108	
	D	10	12.5	1096	
	D	11	7.5	1103	
	D	12	2.5	962	
	D	13	2.5	1136	
	D	14	7.5	1103	
	D	15	12.5	1179	
	D	16	17.5	1151	
	D	17	22.5	1160	
	D	18	27.5	1155	
	D	19	32.5	1136	
					1117
	E	12	32.5	1128	
	E	13	27.5	1109	
	E	14	22.5	1148	
	E	15	17.5	1136	
	E	16	12.5	1157	
	E	17	7.5	1172	
	E	18	2.5	1250	
	E	19	2.5	1136	
	E	20	7.5	1103	
	E	21	12.5	1136	
	E	22	17.5	1136	
	E	23	22.5	1148	
	E	24	27.5	1146	
					1147

Wtd Avg Velocity computed for Layer 1 = 1154

ayer 2 Velocity computed by regression of raw uncorrected arrivals

Spread A

V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts
			B	4 11	8.9	1914	1914	8.9	8
1667	6.1	1 2	C	14 20	11.7	2071	1965	8.9	9
1701	7.4	3 7	D	20 24	12.3	1938	1812	9.9	10
2000	14.7	9 11	E				2000	14.7	3
1712	8.0	19 23	F				1712	8.0	5
1524	1.9	20 24	G				1524	1.9	5
						Avg =	1820	for	40 Pts

ayer 2 Velocity computed by Hobson-Overton method

Spread A			Avg	Std Err	4 Highest Std Err at geophones							
SPs	Geos	V	TdSP	Overall	Err	Geo	Err	Geo	Err	Geo	Err	Geo
B D	4 7	1736	-1.5	0.546	0.820	6	-0.620	5	-0.340	7	0.140	4
B E	9 11	1887	-5.2	0.141	-0.200	10	0.100	9	0.100	11		
C F	19 20	2000	-2.6	0.000	0.000	19	-0.000	20				
D F	20 23	1825	1.8	1.101	1.160	22	-1.120	23	-1.080	20	1.040	21
D G	20 24	1706	2.9	0.551	1.040	22	-0.480	24	-0.440	20	-0.100	21
	Avg =	1802	for	18 Pts								

Wtd Avg Velocity computed for Layer 2 = 1811

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ayer 3 Velocity computed by regression of raw uncorrected arrivals

Spread A

V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts
			A	1 24	22.9	2894	2894	22.9	24
			B	12 24	23.2	2974	2974	23.2	13
			C	21 24	24.1	3247	3247	24.1	4
3125	19.8	1 2	D				3125	19.8	2
2752	19.9	3 8	E				2752	19.9	6
3003	22.2	1 18	F				3003	22.2	18
3082	25.0	2 19	G				3082	25.0	18
						Avg =	2977	for	85 Pts

ayer 3 Velocity computed by Hobson-Overton method

Spread A				Avg	Std Err	4 Highest Std Err at geophones							
SPs	Geos		V	TdSP	Overall	Err	Geo	Err	Geo	Err	Geo	Err	Geo
. D	1	2	2778	3.3	0.000	0.000	1	-0.000	2				
A E	3	8	2660	1.4	0.463	-0.667	3	0.613	5	-0.507	7	0.373	4
. F	1	18	2878	2.1	0.603	1.532	15	-1.443	12	-0.918	13	-0.793	6
. G	2	19	2945	0.4	1.004	1.864	10	1.689	15	1.454	8	-1.375	2
B F	12	18	2602	0.3	0.998	2.257	15	-0.871	18	-0.814	12	-0.457	13
B G	12	19	2964	-0.8	1.096	2.612	15	-1.267	12	-0.536	17	-0.510	18
			2852										

Avg = 2852 for 59 Pts

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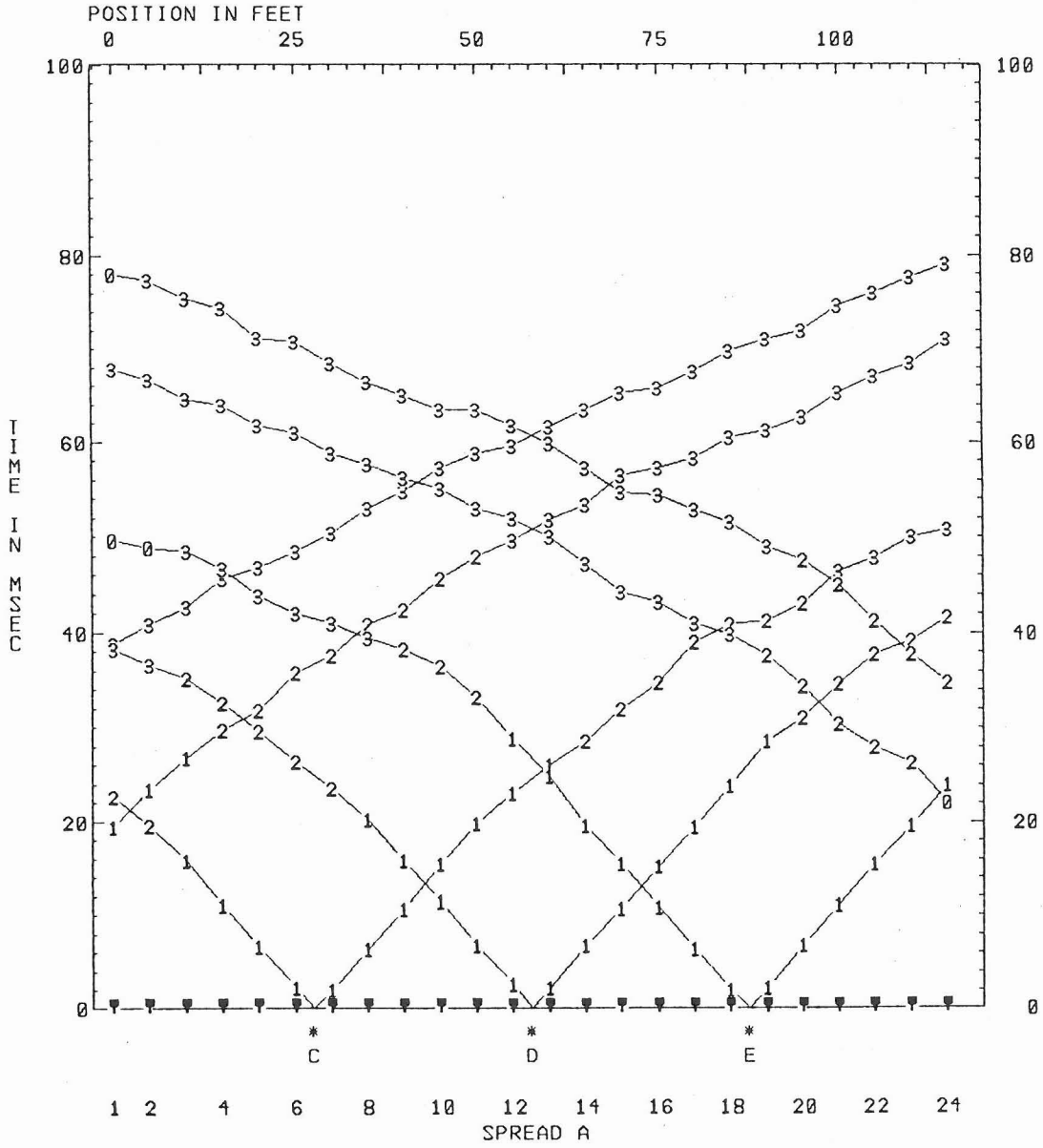
ltd Avg Velocity computed for Layer 3 = 2904

FILE DAML1-2.SIP
D&M MARICOPA COUNTY DAM SITE LINE 1 - RAW ARRIVAL TIMES



DEPTH MODEL TABLES for DAML1-2.SIP

Spread A Depth and Elev of layers directly beneath SPs and Geos

SP	Surface X-Loc	Surface Elev	Layer 2 Depth	Layer 2 Elev	Layer 3 Depth	Layer 3 Elev
B	-25.0	0.0	6.3	-6.3	21.8	-21.8
C	27.5	0.0	5.9	-5.9	19.2	-19.2
D	57.5	0.0	5.6	-5.6	20.7	-20.7
E	87.5	0.0	5.5	-5.5	18.7	-18.7
F	140.0	0.0	9.5	-9.5	17.1	-17.1

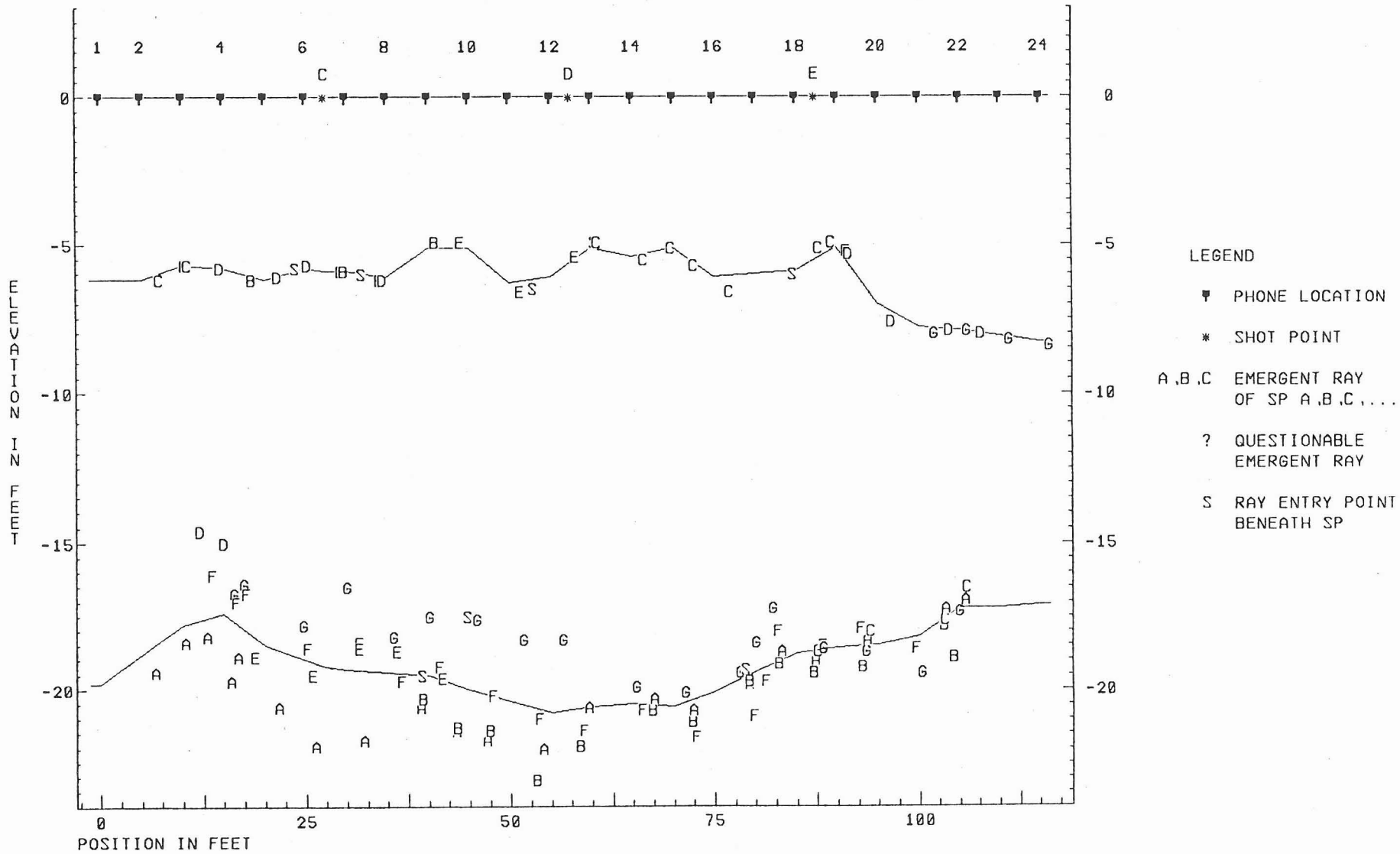
Geo	Surface X-Loc	Surface Elev	Layer 2 Depth	Layer 2 Elev	Layer 3 Depth	Layer 3 Elev
1	0.0	0.0	6.2	-6.2	19.8	-19.8
2	5.0	0.0	6.2	-6.2	18.8	-18.8
3	10.0	0.0	5.7	-5.7	17.8	-17.8
4	15.0	0.0	5.8	-5.8	17.4	-17.4
5	20.0	0.0	6.2	-6.2	18.5	-18.5
6	25.0	0.0	5.8	-5.8	19.0	-19.0
7	30.0	0.0	5.9	-5.9	19.3	-19.3
8	35.0	0.0	6.1	-6.1	19.4	-19.4
9	40.0	0.0	5.1	-5.1	19.5	-19.5
10	45.0	0.0	5.1	-5.1	20.0	-20.0
11	50.0	0.0	6.3	-6.3	20.4	-20.4
12	55.0	0.0	6.1	-6.1	20.8	-20.8
13	60.0	0.0	5.1	-5.1	20.6	-20.6
14	65.0	0.0	5.4	-5.4	20.5	-20.5
15	70.0	0.0	5.1	-5.1	20.6	-20.6
16	75.0	0.0	6.1	-6.1	20.1	-20.1
17	80.0	0.0	6.0	-6.0	19.4	-19.4
18	85.0	0.0	5.9	-5.9	18.8	-18.8
19	90.0	0.0	5.1	-5.1	18.6	-18.6
20	95.0	0.0	7.0	-7.0	18.5	-18.5
21	100.0	0.0	7.8	-7.8	18.2	-18.2
22	105.0	0.0	7.9	-7.9	17.2	-17.2
23	110.0	0.0	8.1	-8.1	17.2	-17.2
24	115.0	0.0	8.3	-8.3	17.1	-17.1

elocities used to formulate the Depth Model

Spread A	Layer 1	Layer 2	Layer 3
Vertical	1154	1811	
Horizontal		1811	2904

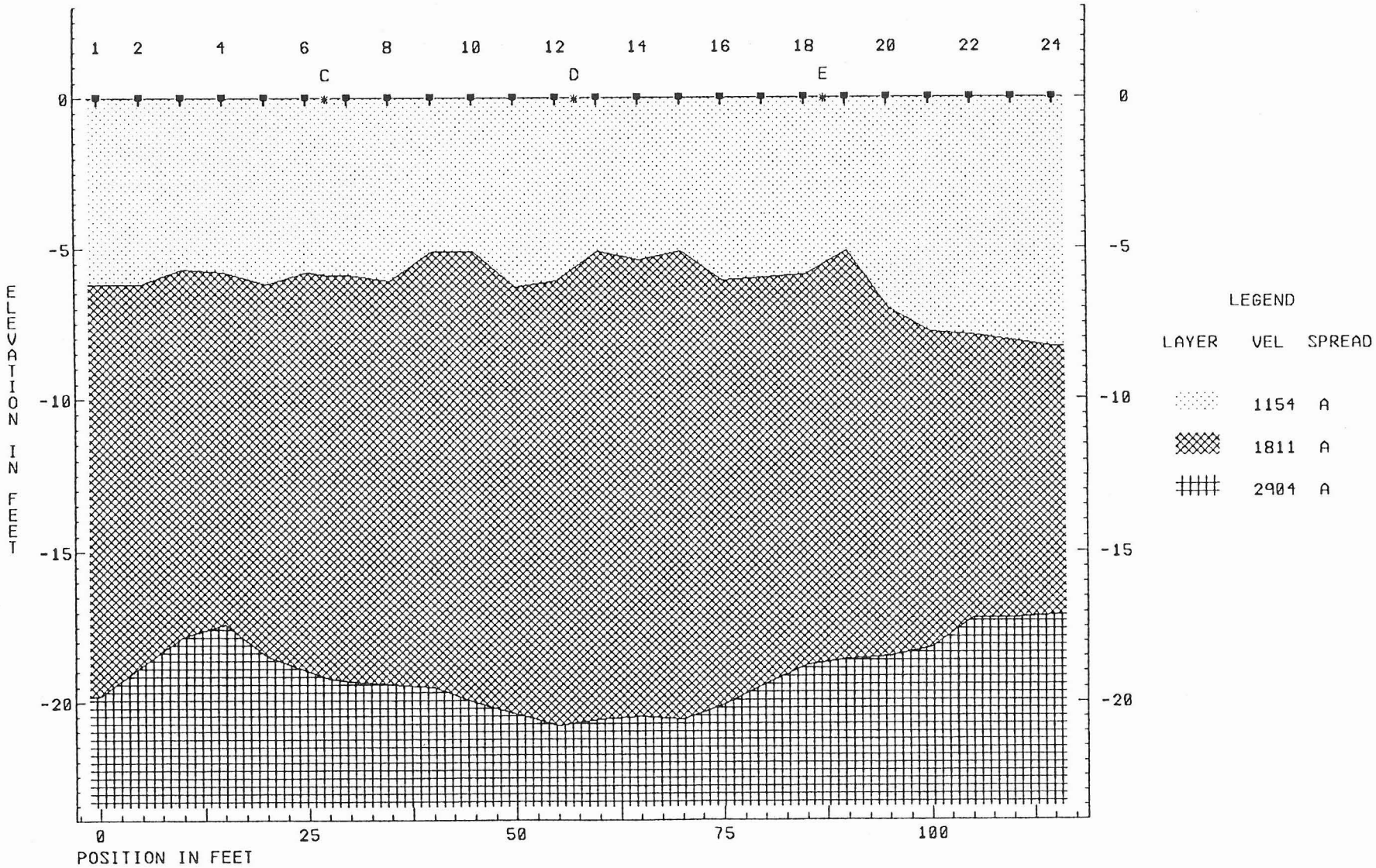
FILE DAML1-2.SIP
D&M MARICOPA COUNTY DAM SITE LINE 1

SPREAD A



FILE DAML1-2.SIP
D&M MARICOPA COUNTY DAM SITE LINE 1

SPREAD A



INPUT DATA FILE for DAML2-6.SIP

TITLE FOR SIPT2/SIPLUS INPUT DATA SET for DAML2-6.SIP

D&M MARICOPA COUNTY DAM SITE LINE 2

PROGRAM CONTROL DATA

Prints	Exits	Layers	Over	PRINTER PLOT SCALES Elev ft/col	Horiz ft/row	Time ms/col	DATUM CONTROL Pt 1 Elev/X	Pt 2 Elev/X	PLOT CONTROL Elevations Top	Bottom	BLim	TLim	Trace	OfSP	LDip
.	6	3	0	0.0	0.0	0.0	0.0 0.0	0.0 0.0	0	0	0.5	10.0	0	0	0

SHOTPOINT AND GEOPHONE DATA

Spread A, 7 SP's, 24 Geo's, X-Shift = 0.0, X-True = 1, Units: Feet.

SP	Elev	X-Loc	Y-Loc	Depth	Uphole T	Fudge T	End SP
A	0.0	-75.0	0.0	0.0	0.0	0.0	0
B	0.0	-25.0	0.0	0.0	0.0	0.0	1
C	0.0	27.5	0.0	0.0	0.0	0.0	0
D	0.0	57.5	0.0	0.0	0.0	0.0	0
E	0.0	87.5	0.0	0.0	0.0	0.0	0
F	0.0	140.0	0.0	0.0	0.0	0.0	2
G	0.0	190.0	0.0	0.0	0.0	0.0	0

ARRIVAL TIMES AND LAYERS REPRESENTED

Geo	Elev	X-Loc	Y	SP A	L	SP B	L	SP C	L	SP D	L	SP E	L	SP F	L	SP G	L
1	0.0	0.0	0.0	47.0	2	21.6	0	24.8	1	41.8	2	51.2	0	70.8	3	88.6	3
2	0.0	5.0	0.0	51.0	0	25.4	2	20.2	1	40.8	2	51.0	2	69.4	3	88.6	3
3	0.0	10.0	0.0	54.2	0	29.8	2	15.4	1	38.6	2	47.4	2	67.6	3	86.2	3
4	0.0	15.0	0.0	56.2	0	32.6	2	11.4	1	36.0	2	47.0	2	66.4	3	86.2	3
5	0.0	20.0	0.0	57.6	0	34.6	2	5.4	1	33.2	2	43.4	2	65.4	3	83.8	3
6	0.0	25.0	0.0	58.2	0	36.6	2	2.2	1	29.4	1	41.6	2	62.2	3	82.6	3
7	0.0	30.0	0.0	59.6	2	38.6	2	2.2	1	24.4	1	38.8	2	60.2	3	79.4	3
8	0.0	35.0	0.0	61.4	2	40.0	2	5.4	1	20.0	1	36.6	2	56.6	0	78.0	3
9	0.0	40.0	0.0	62.0	2	42.0	2	11.0	1	15.4	1	33.6	2	55.2	0	76.0	3
10	0.0	45.0	0.0	65.0	2	44.4	2	14.8	1	11.0	1	32.0	2	54.4	2	74.2	3
11	0.0	50.0	0.0	67.0	2	47.2	2	19.4	1	7.0	1	30.0	2	51.4	2	74.2	3
12	0.0	55.0	0.0	70.0	2	50.4	2	24.8	1	2.4	1	27.6	2	51.2	2	71.8	3
13	0.0	60.0	0.0	71.2	3	51.8	3	27.4	1	2.4	1	24.0	1	48.6	2	70.2	3
14	0.0	65.0	0.0	71.6	3	52.4	3	30.8	2	6.6	1	19.2	1	45.4	2	67.4	3
15	0.0	70.0	0.0	73.0	3	54.0	3	32.4	2	11.0	1	14.8	1	43.8	2	65.8	3
16	0.0	75.0	0.0	75.0	3	54.8	3	35.2	2	15.0	1	10.4	1	41.2	2	63.8	2
17	0.0	80.0	0.0	75.2	0	57.6	3	39.0	2	19.8	1	6.6	1	39.2	2	61.6	2
18	0.0	85.0	0.0	75.8	0	58.6	3	40.0	2	24.2	1	2.0	1	37.8	2	59.8	2

'9	0.0	90.0	0.0	77.6	0	59.8	3	42.2	2	27.8	2	2.2	1	34.4	2	57.8	2
0	0.0	95.0	0.0	81.6	3	62.4	3	44.2	2	29.2	2	6.8	1	32.0	2	55.8	2
21	0.0	100.0	0.0	83.4	3	64.6	3	46.4	2	32.4	2	11.0	1	31.4	2	53.6	2
22	0.0	105.0	0.0	85.4	3	65.8	3	48.0	2	36.4	2	14.6	1	27.8	2	51.0	2
3	0.0	110.0	0.0	88.2	3	68.6	3	50.2	2	39.0	2	20.0	1	25.8	2	50.2	2
-4	0.0	115.0	0.0	92.0	0	71.4	0	53.8	0	41.4	2	24.8	1	22.0	0	47.2	2

VELOCITY ANALYSIS TABLES for DAML2-6.SIP

Layer 1 Velocity from direct arrivals

Spread A	SP	Geo	DD	V	Avg V
	C	1	27.5	1109	
	C	2	22.5	1114	
	C	3	17.5	1136	
	C	4	12.5	1096	
	C	5	7.5	1389	
	C	6	2.5	1136	
	C	7	2.5	1136	
	C	8	7.5	1389	
	C	9	12.5	1136	
	C	10	17.5	1182	
	C	11	22.5	1160	
	C	12	27.5	1109	
	C	13	32.5	1186	
					1175
	D	6	32.5	1105	
	D	7	27.5	1127	
	D	8	22.5	1125	
	D	9	17.5	1136	
	D	10	12.5	1136	
	D	11	7.5	1071	
	D	12	2.5	1042	
	D	13	2.5	1042	
	D	14	7.5	1136	
	D	15	12.5	1136	
	D	16	17.5	1167	
	D	17	22.5	1136	
	D	18	27.5	1136	
					1115
	E	13	27.5	1146	
	E	14	22.5	1172	
	E	15	17.5	1182	
	E	16	12.5	1202	
	E	17	7.5	1136	
	E	18	2.5	1250	
	E	19	2.5	1136	
	E	20	7.5	1103	
	E	21	12.5	1136	
	E	22	17.5	1199	
	E	23	22.5	1125	
	E	24	27.5	1109	
					1158

Wtd Avg Velocity computed for Layer 1 = 1149

Layer 2 Velocity computed by regression of raw uncorrected arrivals

Spread A

V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts
			A	1 12	16.5	2467	2467	16.5	7
			B	2 12	13.5	2216	2216	13.5	11
			C	14 23	14.8	2307	2307	14.8	10
2273	17.2	1 5	D	19 24	8.3	1726	1938	12.7	11
2147	12.2	2 12	E				2147	12.2	11
2273	12.8	10 23	F				2273	12.8	14
2451	16.9	16 24	G				2451	16.9	9
						Avg =	2228	for	73 Pts

Layer 2 Velocity computed by Hobson-Overton method

Spread A			Avg	Std Err	4 Highest Std Err at geophones							
SPs	Geos	V	TdSP	Overall	Err	Geo	Err	Geo	Err	Geo	Err	Geo
A E	2 12	2346	0.2	0.440	0.676	12	-0.535	9	-0.461	11	0.390	7
A F	10 12	2439	0.6	0.424	0.600	11	-0.300	12	-0.300	10		
B D	2 5	1792	-2.4	0.455	0.540	3	-0.480	2	-0.420	5	0.360	4
B E	2 12	2181	0.5	0.886	-2.000	2	1.415	3	1.044	5	-0.684	10
B F	10 12	2174	1.9	0.566	0.800	11	-0.400	10	-0.400	12		
C F	14 23	2292	1.7	0.718	1.385	17	-1.087	15	-0.869	21	0.695	20
C G	16 23	2471	-0.4	0.571	1.069	17	-0.883	16	-0.617	23	0.431	22
D F	19 23	1961	1.4	0.958	-1.680	21	0.920	19	0.820	22	-0.380	20
D G	19 24	2014	2.9	0.706	1.150	22	-0.918	20	0.648	19	-0.484	21
	Avg =	2208	for	56 Pts								

Wtd Avg Velocity computed for Layer 2 = 2216

Layer 3 Velocity computed by regression of raw uncorrected arrivals

Spread A

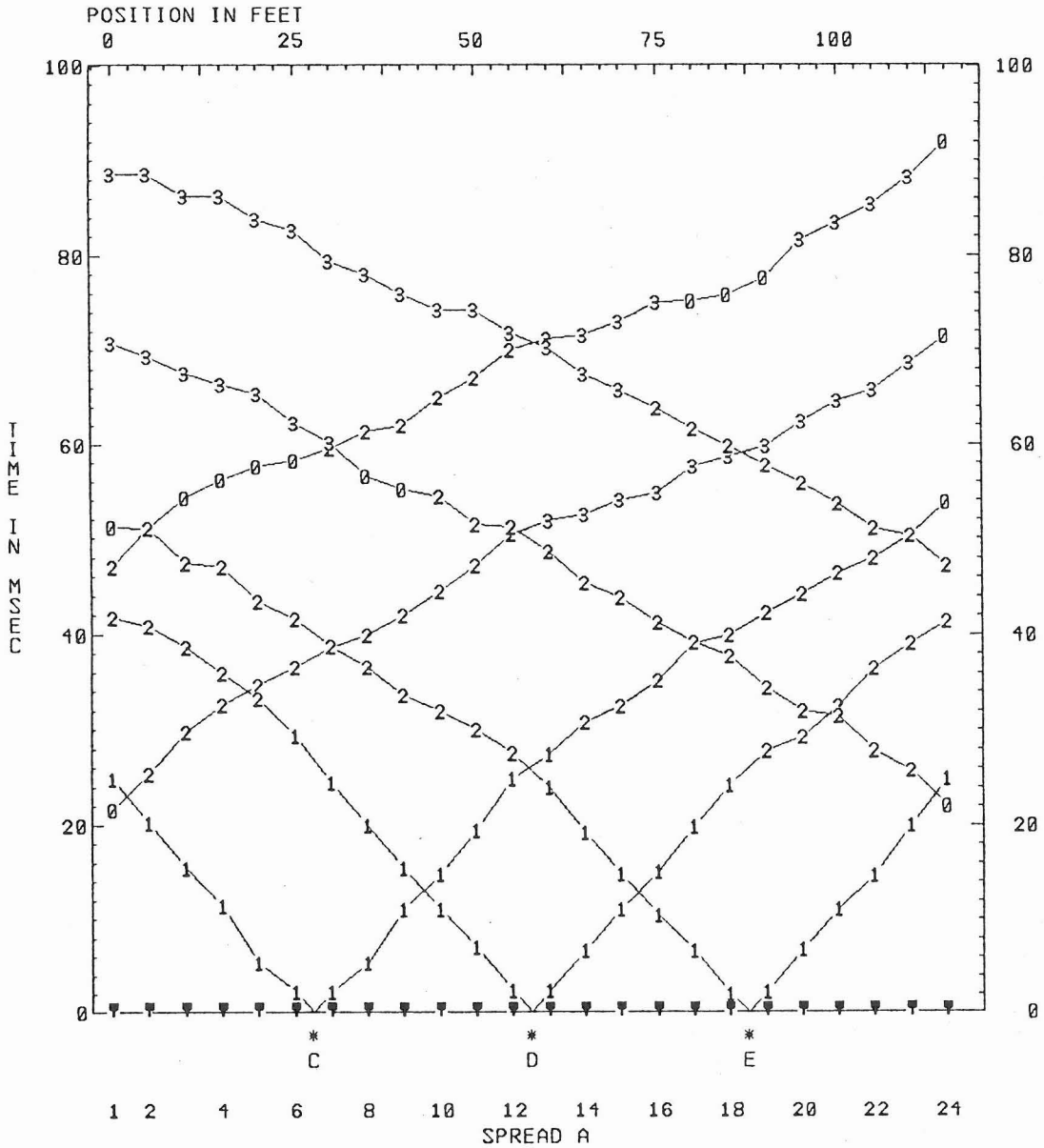
V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts
			A	13 23	24.0	2925	2925	24.0	8
			B	13 23	21.8	2944	2944	21.8	11
2893	22.8	1 7	F				2893	22.8	7
2957	25.8	1 15	G				2957	25.8	15
						Avg =	2936	for	41 Pts

Layer 3 Velocity computed by Hobson-Overton method

Spread A SPs	Geos	V	Avg TdSP	Std Err Overall	4 Highest Std Err at geophones Err	Geo	Err	Geo	Err	Geo	Err	Geo
A G	13 15	3226	-0.5	0.047	0.067	14	-0.033	13	-0.033	15		
B G	13 15	3030	-3.5	0.047	0.067	14	-0.033	15	-0.033	13		
Avg =		3128	for	6 Pts								

Wtd Avg Velocity computed for Layer 3 = 2980

FILE DAML2-6.SIP
D&M MARICOPA COUNTY DAM SITE LINE 2 - RAW ARRIVAL TIMES



DEPTH MODEL TABLES for DAML2-6.SIP

Spread A Depth and Elev of layers directly beneath SPs and Geos

SP	Surface X-Loc	Surface Elev	Layer 2 Depth	Layer 2 Elev	Layer 3 Depth	Layer 3 Elev
B	-25.0	0.0	1.1	-1.1	23.0	-23.0
C	27.5	0.0	9.1	-9.1	23.2	-23.2
D	57.5	0.0	8.0	-8.0	22.2	-22.2
E	87.5	0.0	8.7	-8.7	21.9	-21.9
F	140.0	0.0	7.8	-7.8	28.0	-28.0

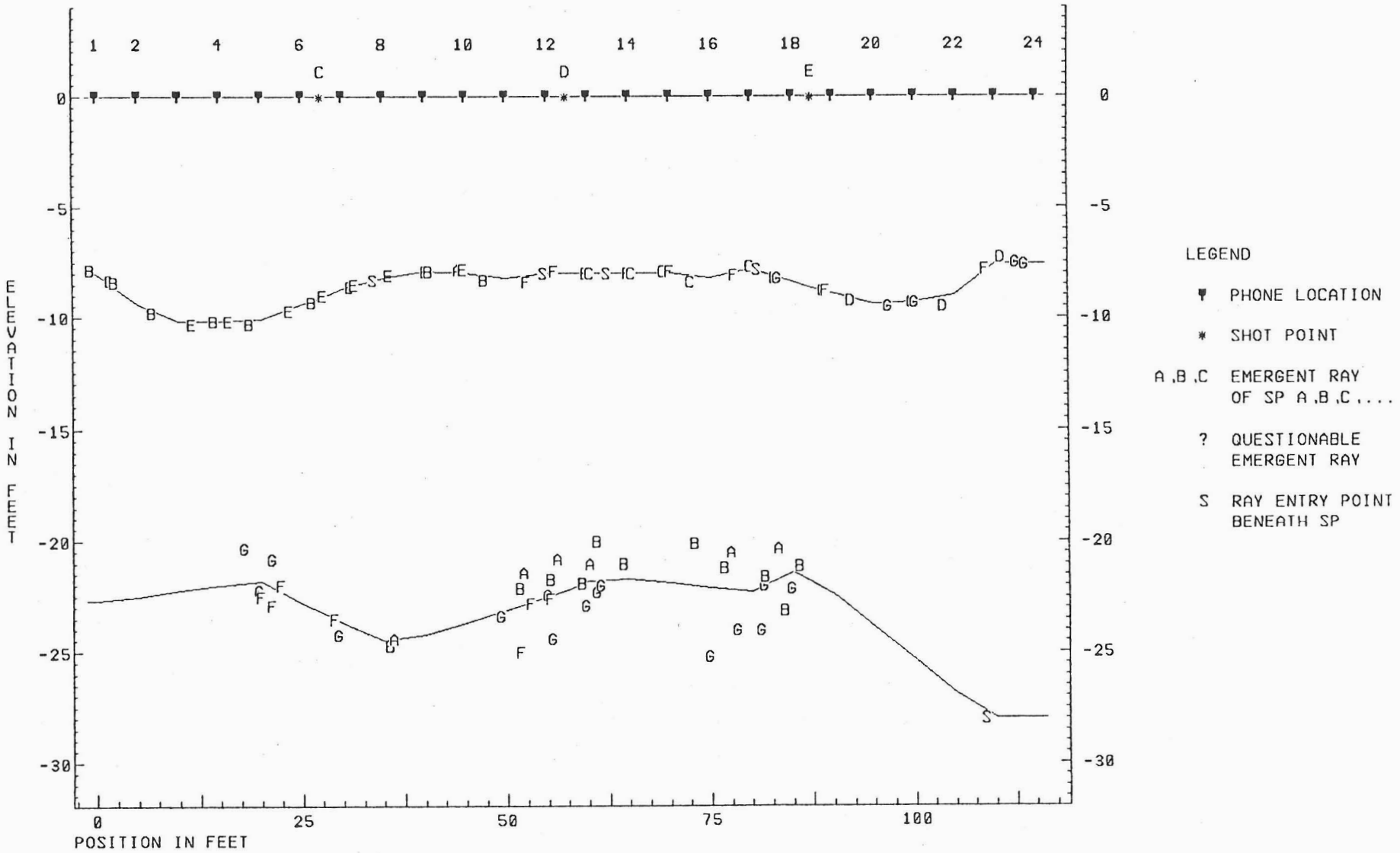
Geo	Surface X-Loc	Surface Elev	Layer 2 Depth	Layer 2 Elev	Layer 3 Depth	Layer 3 Elev
1	0.0	0.0	8.0	-8.0	22.7	-22.7
2	5.0	0.0	9.4	-9.4	22.5	-22.5
3	10.0	0.0	10.2	-10.2	22.2	-22.2
4	15.0	0.0	10.2	-10.2	22.0	-22.0
5	20.0	0.0	10.1	-10.1	21.8	-21.8
6	25.0	0.0	9.4	-9.4	22.8	-22.8
7	30.0	0.0	8.7	-8.7	23.7	-23.7
8	35.0	0.0	8.2	-8.2	24.5	-24.5
9	40.0	0.0	7.9	-7.9	24.2	-24.2
10	45.0	0.0	8.0	-8.0	23.7	-23.7
11	50.0	0.0	8.2	-8.2	23.1	-23.1
12	55.0	0.0	8.0	-8.0	22.5	-22.5
13	60.0	0.0	8.0	-8.0	21.8	-21.8
14	65.0	0.0	8.0	-8.0	21.7	-21.7
15	70.0	0.0	8.0	-8.0	21.9	-21.9
16	75.0	0.0	8.2	-8.2	22.1	-22.1
17	80.0	0.0	7.8	-7.8	22.3	-22.3
18	85.0	0.0	8.4	-8.4	21.4	-21.4
19	90.0	0.0	8.9	-8.9	22.4	-22.4
20	95.0	0.0	9.4	-9.4	23.9	-23.9
21	100.0	0.0	9.3	-9.3	25.4	-25.4
22	105.0	0.0	9.0	-9.0	26.9	-26.9
23	110.0	0.0	7.6	-7.6	28.0	-28.0
24	115.0	0.0	7.6	-7.6	28.0	-28.0

Velocities used to formulate the Depth Model

Spread A	Layer 1	Layer 2	Layer 3
Vertical	1149	2216	
Horizontal		2216	2980

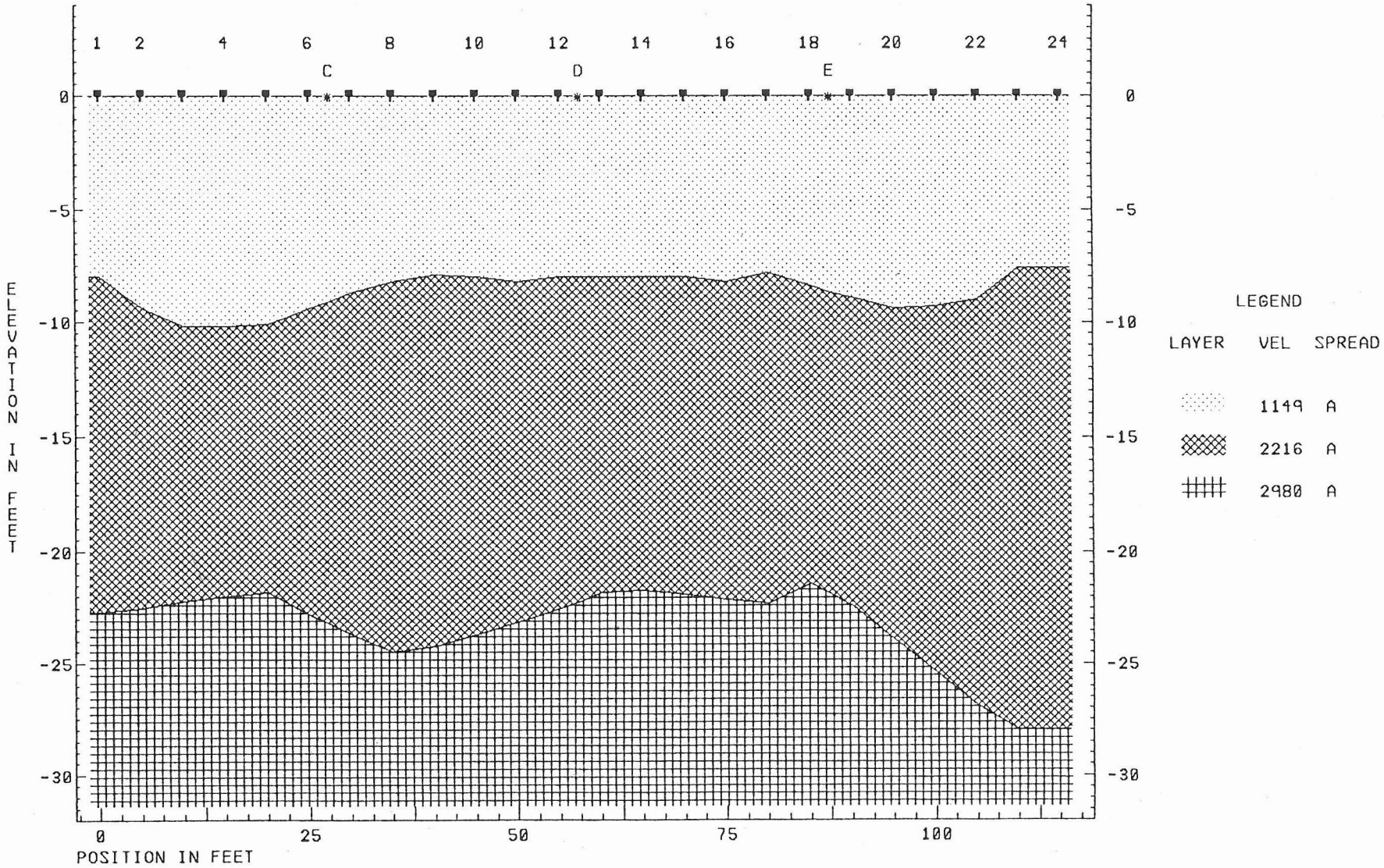
FILE DAML2-6.SIP
D&M MARICOPA COUNTY DAM SITE LINE 2

SPREAD A



FILE DAML2-6.SIP
D&M MARICOPA COUNTY DAM SITE LINE 2

SPREAD A



INPUT DATA FILE for DAML3-4.SIP

TITLE FOR SIPT2/SIPLUS INPUT DATA SET for DAML3-4.SIP

D&M MARICOPA COUNTY DAM SITE LINE 3

PROGRAM CONTROL DATA

Prints	Exit	Layers	Vover	PRINTER PLOT SCALES Elev ft/col	Horiz ft/row	Time ms/col	DATUM CONTROL Pt 1 Elev/X	Pt 2 Elev/X	PLOT CONTROL Elevations Top	Bottom	BLim	TLim	Trace	OfSP	LDip
-	6	3	0	0.0	0.0	0.0	0.0	0.0	0	0	0.5	10.0	0	0	0
							0.0	0.0							

SHOTPOINT AND GEOPHONE DATA

Spread A, 7 SP's, 24 Geo's, X-Shift = 0.0, X-True = 1, Units: Feet.

SP	Elev	X-Loc	Y-Loc	Depth	Uphole T	Fudge T	End SP
A	0.0	-75.0	0.0	0.0	0.0	0.0	0
B	-5.0	-25.0	0.0	0.0	0.0	0.0	1
C	0.0	27.5	0.0	0.0	0.0	0.0	0
D	0.0	57.5	0.0	0.0	0.0	0.0	0
E	0.0	87.5	0.0	0.0	0.0	0.0	0
F	0.0	140.0	0.0	0.0	0.0	0.0	2
G	0.0	190.0	0.0	0.0	0.0	0.0	0

ARRIVAL TIMES AND LAYERS REPRESENTED

Geo	Elev	X-Loc	Y	SP A	L	SP B	L	SP C	L	SP D	L	SP E	L	SP F	L	SP G	L
1	0.0	0.0	0.0	45.8	3	22.2	2	24.2	1	40.8	2	52.4	3	71.2	3	82.8	3
2	0.0	5.0	0.0	46.8	3	26.6	2	19.8	1	38.4	2	51.2	3	71.4	3	82.4	3
3	0.0	10.0	0.0	50.0	3	29.4	2	15.8	1	37.0	2	49.4	3	70.8	3	81.6	3
4	0.0	15.0	0.0	51.4	3	30.6	3	11.0	1	33.0	2	47.2	3	66.8	3	78.0	3
5	0.0	20.0	0.0	54.0	3	31.4	3	7.0	1	30.8	2	45.2	3	67.2	3	77.6	3
6	0.0	25.0	0.0	56.2	3	35.0	3	2.0	1	28.2	1	43.8	3	64.6	3	78.2	3
7	0.0	30.0	0.0	58.0	3	36.8	3	1.8	1	24.6	1	42.2	3	63.8	3	76.0	3
8	0.0	35.0	0.0	59.2	3	38.0	3	7.0	1	20.0	1	38.8	2	60.8	3	73.2	3
9	0.0	40.0	0.0	60.4	3	39.8	3	10.6	1	13.6	1	36.0	2	58.6	3	71.0	3
10	0.0	45.0	0.0	62.4	3	42.0	3	15.0	1	11.4	1	33.4	2	55.0	3	69.0	3
11	0.0	50.0	0.0	63.8	3	43.8	3	19.6	1	6.8	1	31.2	2	54.2	3	67.8	3
12	0.0	55.0	0.0	64.2	3	46.2	3	24.0	1	1.4	1	28.8	2	52.4	3	65.6	3
13	0.0	60.0	0.0	67.0	3	47.4	3	28.0	1	1.4	1	24.2	1	50.6	3	65.0	3
14	0.0	65.0	0.0	68.8	3	49.8	3	31.6	1	6.4	1	20.0	1	47.6	3	62.8	3
15	0.0	70.0	0.0	71.6	3	52.2	3	34.8	2	11.0	1	15.6	1	46.2	3	60.8	3
16	0.0	75.0	0.0	73.4	3	54.4	3	36.4	2	15.4	1	11.2	1	45.0	3	59.8	3
17	0.0	80.0	0.0	75.8	3	56.6	3	37.8	2	19.8	1	7.0	1	43.4	3	57.8	3
18	0.0	85.0	0.0	78.2	3	59.4	3	40.0	2	24.4	1	2.6	1	42.0	3	57.4	3

19	0.0	90.0	0.0	79.6	3	61.2	3	43.0	2	28.8	2	2.6	1	39.6	3	54.6	3
20	0.0	95.0	0.0	78.8	3	61.8	3	43.8	0	30.4	2	6.4	1	36.0	2	50.6	3
21	0.0	100.0	0.0	80.0	3	61.0	3	44.8	0	31.2	2	10.0	1	33.4	2	49.0	3
22	0.0	105.0	0.0	83.4	3	64.4	3	47.4	0	35.2	2	15.2	1	30.6	2	49.0	3
23	0.0	110.0	0.0	85.4	3	68.2	3	50.8	0	37.6	2	19.2	1	26.0	2	47.4	3
24	0.0	115.0	0.0	86.8	3	67.0	3	51.8	0	39.0	2	24.2	1	21.6	2	45.4	3

VELOCITY ANALYSIS TABLES for DAML3-4.SIP

Layer 1 Velocity from direct arrivals

Spread A	SP	Geo	DD	V	Avg V
	C	1	27.5	1136	
	C	2	22.5	1136	
	C	3	17.5	1108	
	C	4	12.5	1136	
	C	5	7.5	1071	
	C	6	2.5	1250	
	C	7	2.5	1389	
	C	8	7.5	1071	
	C	9	12.5	1179	
	C	10	17.5	1167	
	C	11	22.5	1148	
	C	12	27.5	1146	
	C	13	32.5	1161	
	C	14	37.5	1187	
					1163
	D	6	32.5	1152	
	D	7	27.5	1118	
	D	8	22.5	1125	
	D	9	17.5	1287	
	D	10	12.5	1096	
	D	11	7.5	1103	
	D	12	2.5	1786	
	D	13	2.5	1786	
	D	14	7.5	1172	
	D	15	12.5	1136	
	D	16	17.5	1136	
	D	17	22.5	1136	
	D	18	27.5	1127	
					1243
	E	13	27.5	1136	
	E	14	22.5	1125	
	E	15	17.5	1122	
	E	16	12.5	1116	
	E	17	7.5	1071	
	E	18	2.5	962	
	E	19	2.5	962	
	E	20	7.5	1172	
	E	21	12.5	1250	
	E	22	17.5	1151	
	E	23	22.5	1172	
	E	24	27.5	1136	
					1115

Wtd Avg Velocity computed for Layer 1 = 1175

Layer 2 Velocity computed by regression of raw uncorrected arrivals

Spread A

V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts
			B	1 3	3.9	1370	1370	3.9	3
			C	15 19	17.4	2500	2500	17.4	5
1969	11.9	1 5	D	19 24	14.0	2285	2129	12.9	11
2016	12.6	8 12	E				2016	12.6	5
1381	4.2	20 24	F				1381	4.2	5
						Avg =	1876	for	29 Pts

Layer 2 Velocity computed by Hobson-Overton method

Spread A			Avg	Std Err	4 Highest Std Err at geophones							
SPs	Geos	V	TdSP	Overall	Err	Geo	Err	Geo	Err	Geo	Err	Geo
B D	1 3	1806	-0.4	0.616	0.871	2	-0.436	1	-0.435	3		
D F	20 24	1672	-2.3	0.889	-1.380	21	1.200	20	-0.560	22	0.460	23
	Avg =	1722	for	8 Pts								

Wtd Avg Velocity computed for Layer 2 = 1821

Layer 3 Velocity computed by regression of raw uncorrected arrivals

Spread A

V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts
			A	1 24	19.7	2821	2821	19.7	24
			B	4 24	15.2	2598	2598	15.2	21
2823	21.7	1 7	E				2823	21.7	7
2649	20.5	1 19	F				2649	20.5	19
2951	20.2	1 24	G				2951	20.2	24
						Avg =	2763	for	95 Pts

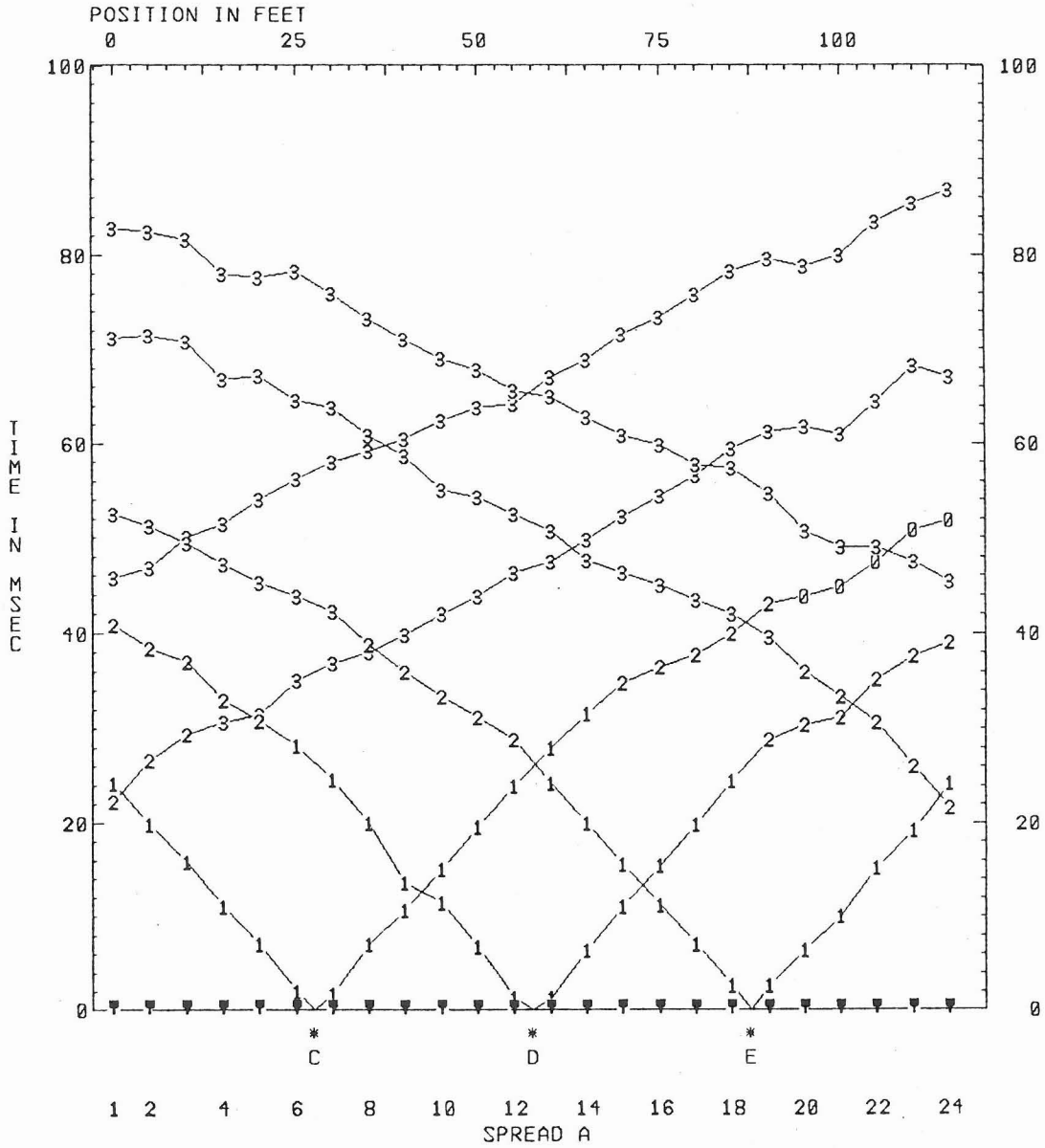
·ayer 3 Velocity computed by Hobson-Overton method

Spread A				Avg	Std Err	4 Highest Std Err at geophones							
SPs		Geos		V	TdSP	Overall	Err	Geo	Err	Geo	Err	Geo	Err	Geo
--		-----		------	----	-------	---------		---------		---------		---------	
.	E	1	7	2569	-2.4	0.524	-1.014	2	0.679	1	0.507	5	-0.279	7
A	F	1	19	2685	-3.2	0.864	2.044	1	-1.722	12	1.326	10	-0.880	2
·.	G	1	24	2884	1.6	0.721	-1.325	13	1.281	1	1.280	4	-1.258	12
	E	4	7	2583	-4.5	0.450	-0.719	5	0.421	6	0.339	4	-0.041	7
B	F	4	19	2518	-4.4	0.829	1.858	4	-1.700	5	1.282	10	-0.823	7
B	G	4	24	2739	-0.1	1.011	2.120	20	-2.081	24	1.870	4	-1.211	6

		Avg =		2707	for	91 Pts								

!td Avg Velocity computed for Layer 3 = 2726

FILE DAML3-4.SIP
D&M MARICOPA COUNTY DAM SITE LINE 3 - RAW ARRIVAL TIMES



DEPTH MODEL TABLES for DAML3-4.SIP

Spread A Depth and Elev of layers directly beneath SPs and Geos

SP	Surface X-Loc	Surface Elev	Layer 2 Depth	Layer 2 Elev	Layer 3 Depth	Layer 3 Elev
B	-25.0	-5.0	0.0	-5.0	15.2	-20.2
C	27.5	0.0	6.7	-6.7	19.3	-19.3
D	57.5	0.0	6.8	-6.8	20.5	-20.5
E	87.5	0.0	5.2	-5.2	19.9	-19.9
F	140.0	0.0	14.6	-14.6	20.1	-20.1

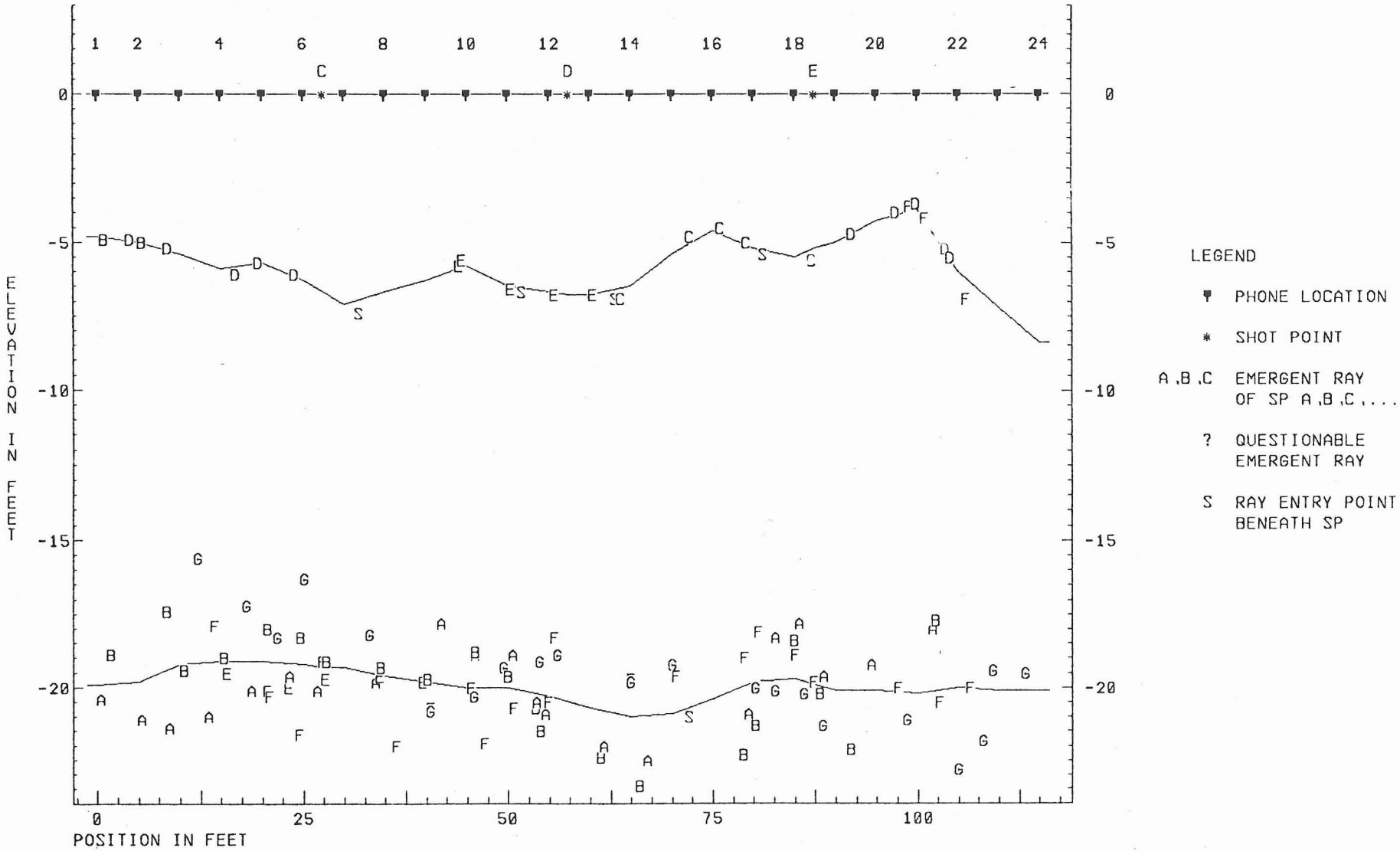
Geo	Surface X-Loc	Surface Elev	Layer 2 Depth	Layer 2 Elev	Layer 3 Depth	Layer 3 Elev
1	0.0	0.0	4.8	-4.8	19.9	-19.9
2	5.0	0.0	5.0	-5.0	19.8	-19.8
3	10.0	0.0	5.4	-5.4	19.2	-19.2
4	15.0	0.0	5.9	-5.9	19.1	-19.1
5	20.0	0.0	5.7	-5.7	19.1	-19.1
6	25.0	0.0	6.3	-6.3	19.2	-19.2
7	30.0	0.0	7.1	-7.1	19.3	-19.3
8	35.0	0.0	6.7	-6.7	19.6	-19.6
9	40.0	0.0	6.3	-6.3	19.8	-19.8
10	45.0	0.0	5.8	-5.8	20.0	-20.0
11	50.0	0.0	6.5	-6.5	20.0	-20.0
12	55.0	0.0	6.7	-6.7	20.3	-20.3
13	60.0	0.0	6.8	-6.8	20.7	-20.7
14	65.0	0.0	6.5	-6.5	21.0	-21.0
15	70.0	0.0	5.4	-5.4	20.9	-20.9
16	75.0	0.0	4.6	-4.6	20.4	-20.4
17	80.0	0.0	5.2	-5.2	19.8	-19.8
18	85.0	0.0	5.5	-5.5	19.7	-19.7
19	90.0	0.0	5.0	-5.0	20.1	-20.1
20	95.0	0.0	4.3	-4.3	20.1	-20.1
21	100.0	0.0	3.9	-3.9	20.2	-20.2
22	105.0	0.0	6.0	-6.0	20.0	-20.0
23	110.0	0.0	7.2	-7.2	20.1	-20.1
24	115.0	0.0	8.4	-8.4	20.1	-20.1

Velocities used to formulate the Depth Model

Spread A	Layer 1	Layer 2	Layer 3
Vertical	1175	1821	
Horizontal		1821	2726

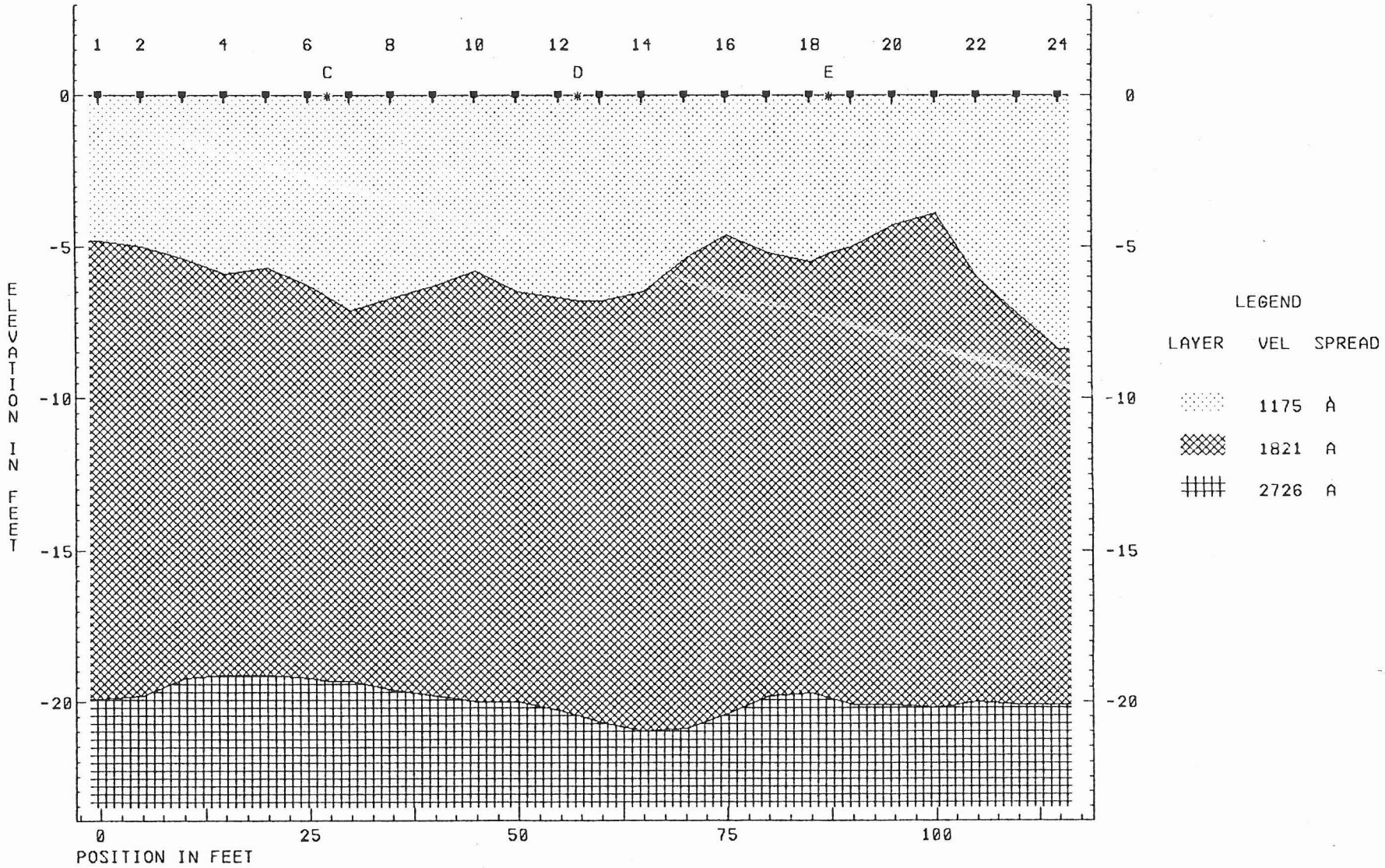
FILE DAML3-4.SIP
D&M MARICOPA COUNTY DAM SITE LINE 3

SPREAD A



FILE DAML3-4.SIP
D&M MARICOPA COUNTY DAM SITE LINE 3

SPREAD A



INPUT DATA FILE for DAML4-2.SIP

TITLE FOR SIPT2/SIPLUS INPUT DATA SET for DAML4-2.SIP

D&M MARICOPA COUNTY DAM SITE LINE 4

PROGRAM CONTROL DATA

Prints	Exits	Layers	Over	PRINTER PLOT SCALES Elev ft/col	Horiz ft/row	Time ms/col	DATUM CONTROL Pt 1 Elev/X	Pt 2 Elev/X	PLOT CONTROL Elevations Top	Bottom	BLim	TLim	Trace	OffSP	LDip
.	6	3	0	0.0	0.0	0.0	0.0 0.0	0.0 0.0	0	0	0.5	10.0	0	0	0

SHOTPOINT AND GEOPHONE DATA

Spread A, 7 SP's, 24 Geo's, X-Shift = 0.0, X-True = 1, Units: Feet.

SP	Elev	X-Loc	Y-Loc	Depth	Uphole T	Fudge T	End SP
A	0.0	-50.0	0.0	0.0	0.0	0.0	0
B	0.0	-25.0	0.0	0.0	0.0	0.0	1
C	0.0	27.5	0.0	0.0	0.0	0.0	0
D	0.0	57.5	0.0	0.0	0.0	0.0	0
E	0.0	87.5	0.0	0.0	0.0	0.0	0
F	0.0	140.0	0.0	0.0	0.0	0.0	2
G	0.0	165.0	0.0	0.0	0.0	0.0	0

ARRIVAL TIMES AND LAYERS REPRESENTED

Geo	Elev	X-Loc	Y	SP A	L	SP B	L	SP C	L	SP D	L	SP E	L	SP F	L	SP G	L
1	0.0	0.0	0.0	30.2	2	15.6	2	19.4	2	34.6	2	48.4	2	70.8	3	81.4	3
2	0.0	5.0	0.0	33.4	2	16.6	2	17.0	2	32.2	2	45.8	2	70.2	3	79.8	3
3	0.0	10.0	0.0	35.2	2	18.8	2	15.2	2	30.8	2	43.6	2	68.8	3	79.2	3
4	0.0	15.0	0.0	38.2	2	20.8	2	11.0	1	29.0	2	42.6	2	67.4	3	77.8	3
5	0.0	20.0	0.0	41.8	2	23.8	2	6.6	1	26.8	2	41.6	2	66.0	3	76.6	3
6	0.0	25.0	0.0	44.4	2	25.4	2	2.2	1	24.6	2	39.0	2	62.8	3	74.2	3
7	0.0	30.0	0.0	47.2	2	29.0	2	2.2	1	21.6	2	37.0	2	60.8	2	72.0	3
8	0.0	35.0	0.0	48.8	2	32.2	2	6.6	1	18.0	2	33.4	2	57.6	2	71.0	3
9	0.0	40.0	0.0	51.2	2	35.2	2	10.6	1	15.2	1	30.8	2	56.0	2	67.6	3
10	0.0	45.0	0.0	54.0	2	37.6	2	14.8	1	11.2	1	28.0	2	53.6	2	64.8	3
11	0.0	50.0	0.0	55.6	2	39.2	2	17.2	2	6.6	1	25.4	2	51.2	2	63.6	3
12	0.0	55.0	0.0	58.0	2	43.4	2	20.2	2	2.0	1	24.4	2	50.2	2	62.4	3
13	0.0	60.0	0.0	59.6	2	45.6	2	22.0	2	1.8	1	21.8	1	47.0	2	61.0	2
14	0.0	65.0	0.0	62.0	3	48.4	2	25.8	2	6.0	1	19.2	1	45.0	2	59.8	2
15	0.0	70.0	0.0	64.4	3	51.0	2	29.4	2	10.4	1	14.4	1	42.8	2	55.6	2
16	0.0	75.0	0.0	66.2	3	53.8	2	31.6	2	15.2	1	10.8	1	40.8	2	55.2	2
17	0.0	80.0	0.0	67.6	3	55.2	2	34.4	2	19.2	2	6.0	1	39.2	2	52.4	2
18	0.0	85.0	0.0	69.4	3	57.2	3	36.0	2	21.6	2	1.8	1	35.8	2	49.8	2

'9	0.0	90.0	0.0	71.0	3	59.2	3	38.2	2	23.6	2	2.2	1	32.2	2	46.8	2
0	0.0	95.0	0.0	72.2	3	61.6	3	40.4	2	27.6	2	7.0	1	29.4	2	43.4	2
21	0.0	100.0	0.0	73.6	3	63.8	3	42.6	2	29.2	2	11.2	1	27.0	2	41.0	2
22	0.0	105.0	0.0	73.8	0	66.0	3	44.4	2	31.8	2	15.8	1	22.4	2	38.6	2
3	0.0	110.0	0.0	77.0	3	68.0	3	48.0	2	34.4	2	19.0	2	21.8	2	37.0	2
.4	0.0	115.0	0.0	78.4	3	68.8	3	49.4	2	35.4	2	21.8	2	19.8	2	33.4	2

VELOCITY ANALYSIS TABLES for DAML4-2.SIP

Layer 1 Velocity from direct arrivals

Spread A	SP	Geo	DD	V	Avg V
	C	4	12.5	1136	
	C	5	7.5	1136	
	C	6	2.5	1136	
	C	7	2.5	1136	
	C	8	7.5	1136	
	C	9	12.5	1179	
	C	10	17.5	1182	
					1149
	D	9	17.5	1151	
	D	10	12.5	1116	
	D	11	7.5	1136	
	D	12	2.5	1250	
	D	13	2.5	1389	
	D	14	7.5	1250	
	D	15	12.5	1202	
	D	16	17.5	1151	
					1206
	E	13	27.5	1261	
	E	14	22.5	1172	
	E	15	17.5	1215	
	E	16	12.5	1157	
	E	17	7.5	1250	
	E	18	2.5	1389	
	E	19	2.5	1136	
	E	20	7.5	1071	
	E	21	12.5	1116	
	E	22	17.5	1108	
					1188

Wtd Avg Velocity computed for Layer 1 = 1183

Layer 2 Velocity computed by regression of raw uncorrected arrivals

Spread A

V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts
			A	1 13	6.3	2015	2015	6.3	13
			B	1 17	0.5	1897	1897	0.5	17
2381	7.8	1 3	C	11 24	7.2	2031	2085	7.5	17
2211	9.1	1 8	D	17 24	8.5	2063	2134	8.8	16
2226	9.7	1 12	E	23 24	6.4	1786	2150	8.1	14
2052	7.8	7 24	F				2052	7.8	18
1962	8.3	13 24	G				1962	8.3	12
						Avg =	2040	for	107 Pts

Layer 2 Velocity computed by Hobson-Overton method

Spread A SPs	Geos	V	Avg TdSP	Std Err Overall	4 Highest Std Err at geophones Err	Geo	Err	Geo	Err	Geo	Err	Geo
A C	1 3	2174	0.8	0.471	0.667	2	-0.333	1	-0.333	3		
A D	1 8	1998	-1.1	0.663	1.012	2	-0.998	4	-0.793	3	0.583	8
A E	1 12	2090	-0.2	0.613	1.087	10	0.964	2	-0.882	12	-0.790	5
A F	7 13	2314	-0.3	0.396	0.686	10	-0.557	12	0.364	11	-0.350	7
B C	1 3	2703	-3.0	0.141	-0.200	2	0.100	3	0.100	1		
B D	1 8	2148	-5.6	1.369	2.333	8	-1.757	6	1.717	1	-1.448	4
B E	1 12	2066	-4.9	1.485	-2.647	6	2.349	1	-2.008	5	-1.886	7
B F	7 17	2079	-4.3	0.645	-1.355	17	-1.064	7	0.527	8	-0.500	11
B G	13 17	2155	-6.0	0.746	1.400	15	-0.760	14	-0.480	17	-0.120	13
C E	11 12	2500	-2.2	0.000	0.000	11	-0.000	12				
C F	11 24	1992	-0.5	0.635	-1.246	24	1.195	22	0.936	15	-0.623	13
C G	13 24	2028	-2.4	0.748	2.041	15	-0.897	13	-0.828	14	0.587	20
D F	17 24	1904	0.7	1.255	-2.183	24	2.121	22	1.426	20	-1.017	17
D G	17 24	1964	-1.0	0.809	1.695	20	-0.867	24	-0.614	19	0.605	21
E F	23 24	2083	0.8	0.000	0.000	24	-0.000	23				
E G	23 24	1563	2.8	0.000	-0.000	24	0.000	23				

Avg =		2077 for 117 Pts										

Wtd Avg Velocity computed for Layer 2 = 2065

Layer 3 Velocity computed by regression of raw uncorrected arrivals

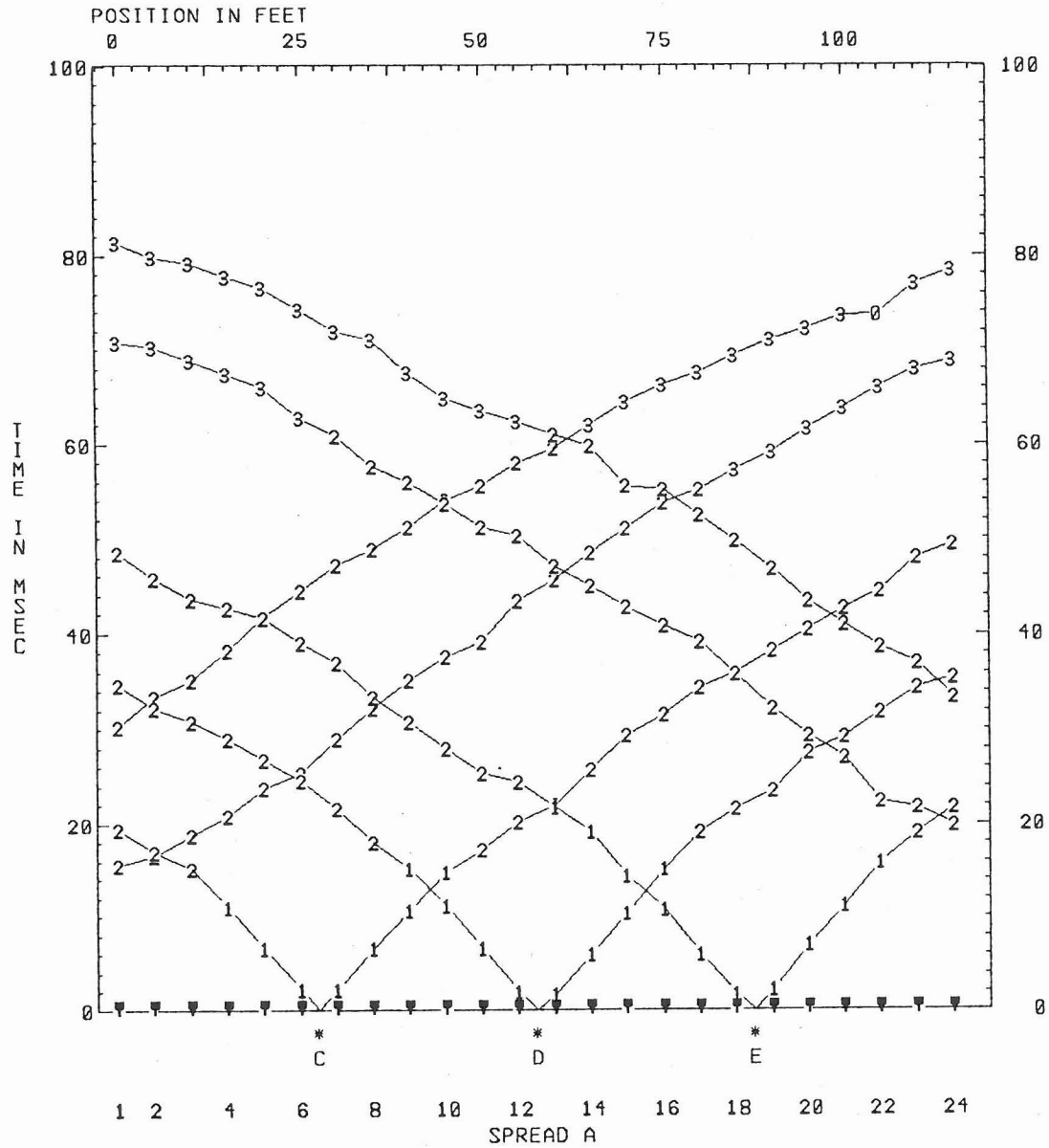
Spread A V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts
			A	14 24	26.1	3145	3145	26.1	10
			B	18 24	12.8	2465	2465	12.8	7
3241	28.3	1 6	F				3241	28.3	6
2721	22.0	1 12	G				2721	22.0	12
							---		---
						Avg =	2850	for	35 Pts

Layer 3 Velocity computed by Hobson-Overton method

Not enough points.

Wtd Avg Velocity computed for Layer 3 = 2850

FILE DAML4-2.SIP
D&M MARICOPA COUNTY DAM SITE LINE 4 - RAW ARRIVAL TIMES



DEPTH MODEL TABLES for DAML4-2.SIP

Spread A Depth and Elev of layers directly beneath SPs and Geos

SP	Surface X-Loc	Surface Elev	Layer 2 Depth	Layer 2 Elev	Layer 3 Depth	Layer 3 Elev
B	-25.0	0.0	3.0	-3.0	16.9	-16.9
C	27.5	0.0	4.6	-4.6	30.1	-30.1
D	57.5	0.0	5.3	-5.3	31.0	-31.0
E	87.5	0.0	6.9	-6.9	27.1	-27.1
F	140.0	0.0	5.3	-5.3	23.2	-23.2

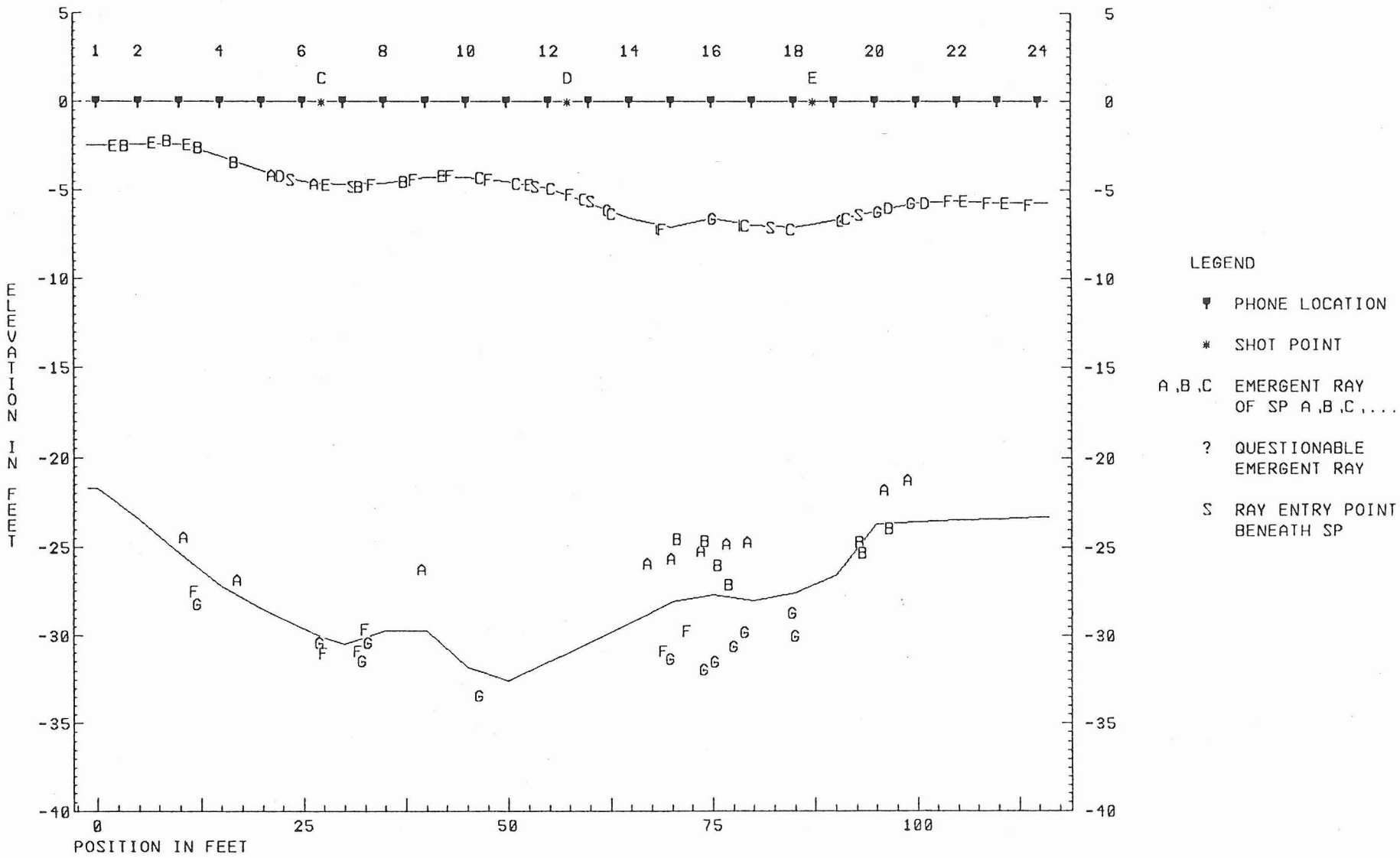
Geo	Surface X-Loc	Surface Elev	Layer 2 Depth	Layer 2 Elev	Layer 3 Depth	Layer 3 Elev
1	0.0	0.0	2.5	-2.5	21.7	-21.7
2	5.0	0.0	2.4	-2.4	23.5	-23.5
3	10.0	0.0	2.4	-2.4	25.4	-25.4
4	15.0	0.0	3.1	-3.1	27.2	-27.2
5	20.0	0.0	3.9	-3.9	28.5	-28.5
6	25.0	0.0	4.5	-4.5	29.6	-29.6
7	30.0	0.0	4.7	-4.7	30.5	-30.5
8	35.0	0.0	4.6	-4.6	29.7	-29.7
9	40.0	0.0	4.3	-4.3	29.7	-29.7
10	45.0	0.0	4.3	-4.3	31.8	-31.8
11	50.0	0.0	4.5	-4.5	32.6	-32.6
12	55.0	0.0	4.9	-4.9	31.5	-31.5
13	60.0	0.0	5.7	-5.7	30.4	-30.4
14	65.0	0.0	6.6	-6.6	29.3	-29.3
15	70.0	0.0	7.1	-7.1	28.1	-28.1
16	75.0	0.0	6.6	-6.6	27.7	-27.7
17	80.0	0.0	7.0	-7.0	28.0	-28.0
18	85.0	0.0	7.1	-7.1	27.6	-27.6
19	90.0	0.0	6.7	-6.7	26.6	-26.6
20	95.0	0.0	6.2	-6.2	23.7	-23.7
21	100.0	0.0	5.7	-5.7	23.6	-23.6
22	105.0	0.0	5.6	-5.6	23.5	-23.5
23	110.0	0.0	5.7	-5.7	23.4	-23.4
24	115.0	0.0	5.7	-5.7	23.3	-23.3

Velocities used to formulate the Depth Model

Spread A	Layer 1	Layer 2	Layer 3
Vertical	1183	2065	
Horizontal		2065	2850

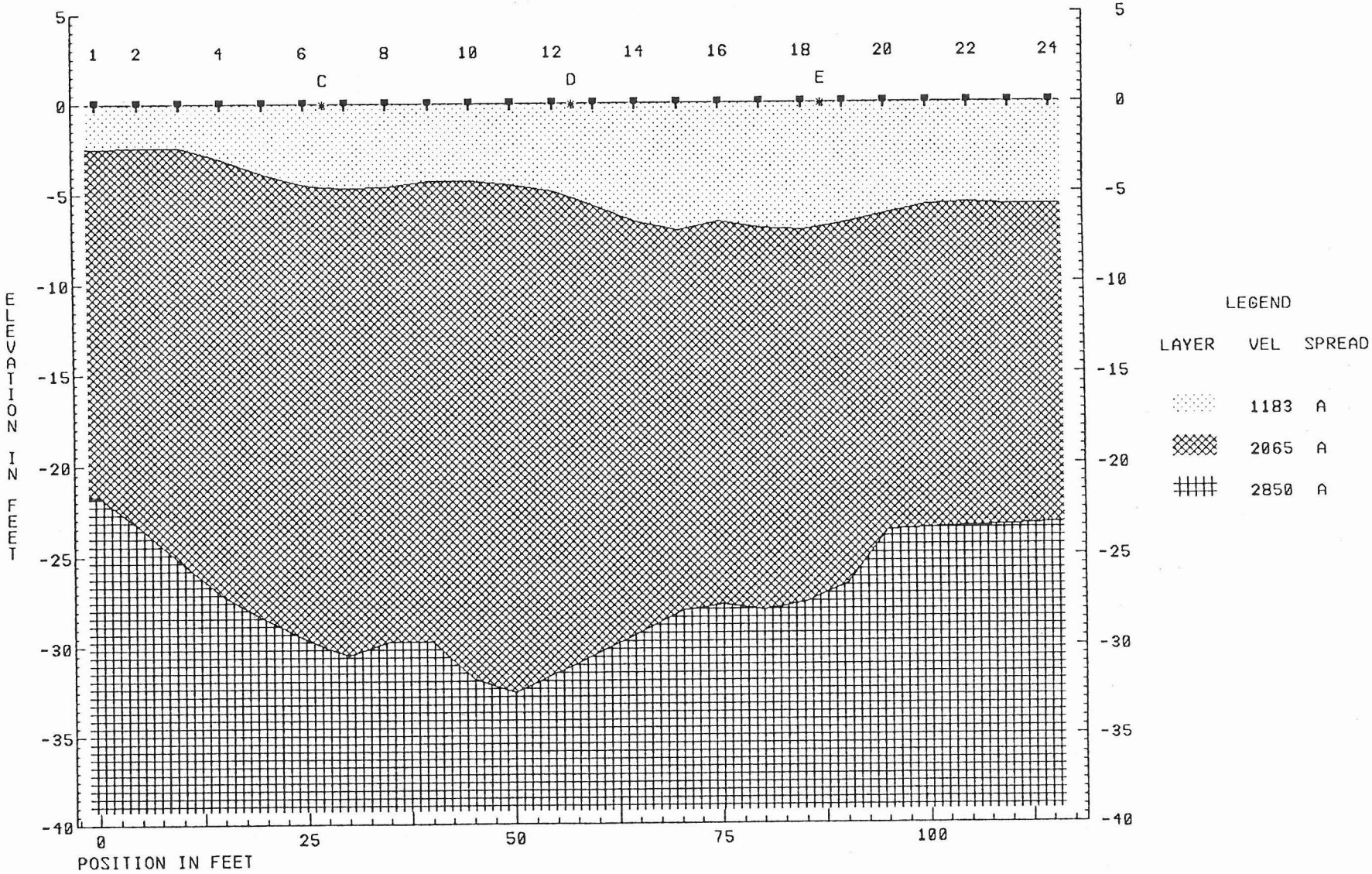
FILE DAML4-2.SIP
D&M MARICOPA COUNTY DAM SITE LINE 4

SPREAD A



FILE DAML4-2.SIP
D&M MARICOPA COUNTY DAM SITE LINE 4

SPREAD A



INPUT DATA FILE for DAML5-4.SIP

TITLE FOR SIPT2/SIPLUS INPUT DATA SET for DAML5-4.SIP

D&M MARICOPA COUNTY DAM SITE LINE 5

PROGRAM CONTROL DATA

Spris	Exit	Layrs	VOver	PRINTER PLOT SCALES Elev ft/col	Horiz ft/row	Time ms/col	DATUM CONTROL Pt 1 Elev/X	Pt 2 Elev/X	PLOT CONTROL Elevations Top	Bottom	BLim	TLim	Trace	OffSP	LDip
-	6	3	0	0.0	0.0	0.0	0.0 0.0	0.0 0.0	0	0	0.5	10.0	0	0	0

SHOTPOINT AND GEOPHONE DATA

Spread A, 7 SP's, 24 Geo's, X-Shift = 0.0, X-True = 1, Units: Feet.

SP	Elev	X-Loc	Y-Loc	Depth	Uphole T	Fudge T	End SP
A	0.0	-50.0	0.0	0.0	0.0	0.0	0
B	0.0	-25.0	0.0	0.0	0.0	0.0	1
C	0.0	27.5	0.0	0.0	0.0	0.0	0
D	0.0	57.5	0.0	0.0	0.0	0.0	0
E	0.0	87.5	0.0	0.0	0.0	0.0	0
F	0.0	140.0	0.0	0.0	0.0	0.0	2
G	0.0	165.0	0.0	0.0	0.0	0.0	0

ARRIVAL TIMES AND LAYERS REPRESENTED

Geo	Elev	X-Loc	Y	SP A	L	SP B	L	SP C	L	SP D	L	SP E	L	SP F	L	SP G	L
1	0.0	0.0	0.0	29.4	2	20.2	2	24.0	1	40.0	2	51.0	3	68.8	3	77.2	0
2	0.0	5.0	0.0	31.0	2	22.2	2	19.6	1	37.8	2	49.0	3	66.6	0	75.6	0
3	0.0	10.0	0.0	32.8	2	24.6	2	15.6	1	35.6	2	46.8	3	65.4	0	74.6	3
4	0.0	15.0	0.0	34.8	2	26.2	2	11.0	1	32.8	2	44.4	3	64.0	3	72.0	0
5	0.0	20.0	0.0	38.0	2	28.8	2	6.6	1	30.6	2	42.4	3	62.6	3	71.4	3
6	0.0	25.0	0.0	40.6	2	31.0	2	1.8	1	28.6	1	40.8	3	61.0	3	69.8	3
7	0.0	30.0	0.0	43.4	2	34.2	2	2.0	1	24.0	1	38.8	2	59.8	3	68.6	3
8	0.0	35.0	0.0	44.8	2	36.2	2	6.6	1	20.0	1	34.6	2	57.8	3	67.0	3
9	0.0	40.0	0.0	47.8	2	38.2	2	10.8	1	15.6	1	31.8	2	56.6	3	65.4	3
10	0.0	45.0	0.0	51.0	2	41.2	2	15.0	1	11.2	1	29.0	2	54.8	3	64.0	3
11	0.0	50.0	0.0	52.6	2	43.6	2	19.6	1	6.4	1	26.2	2	53.0	3	62.6	3
12	0.0	55.0	0.0	56.0	2	46.0	2	23.8	1	2.6	1	23.6	2	50.2	3	59.4	3
13	0.0	60.0	0.0	58.0	2	48.4	2	26.6	2	2.6	1	22.4	2	48.0	3	57.8	3
14	0.0	65.0	0.0	59.4	2	50.0	2	29.2	2	6.2	1	19.6	1	45.6	3	55.6	3
15	0.0	70.0	0.0	60.8	3	51.2	2	31.2	2	10.8	1	15.2	1	43.8	3	53.4	3
16	0.0	75.0	0.0	62.8	3	54.0	2	33.8	2	15.0	1	10.4	1	42.2	3	52.2	3
17	0.0	80.0	0.0	64.6	3	56.2	3	35.2	2	19.4	1	6.4	1	40.0	3	51.2	3
18	0.0	85.0	0.0	65.8	3	57.6	3	37.4	2	20.6	2	2.6	1	39.2	3	48.8	3

19	0.0	90.0	0.0	68.4	3	60.2	3	40.0	2	23.8	2	2.6	1	36.4	2	46.4	3
20	0.0	95.0	0.0	70.2	3	62.4	3	43.0	2	27.6	2	6.4	1	34.6	2	44.6	2
21	0.0	100.0	0.0	71.4	0	63.6	3	46.4	2	29.8	2	11.0	1	31.2	2	41.2	2
22	0.0	105.0	0.0	72.4	0	65.2	3	48.2	2	32.2	2	15.2	1	28.2	2	38.4	2
23	0.0	110.0	0.0	74.2	0	66.2	0	50.2	2	34.0	2	19.8	1	25.4	2	36.0	2
24	0.0	115.0	0.0	75.6	0	67.0	0	51.0	0	36.8	2	22.6	1	21.4	2	34.2	2

VELOCITY ANALYSIS TABLES for DAML5-4.SIP

Layer 1 Velocity from direct arrivals

Spread A	SP	Geo	DD	V	Avg V
	C	1	27.5	1146	
	C	2	22.5	1148	
	C	3	17.5	1122	
	C	4	12.5	1136	
	C	5	7.5	1136	
	C	6	2.5	1389	
	C	7	2.5	1250	
	C	8	7.5	1136	
	C	9	12.5	1157	
	C	10	17.5	1167	
	C	11	22.5	1148	
	C	12	27.5	1155	
					1174
	D	6	32.5	1136	
	D	7	27.5	1146	
	D	8	22.5	1125	
	D	9	17.5	1122	
	D	10	12.5	1116	
	D	11	7.5	1172	
	D	12	2.5	962	
	D	13	2.5	962	
	D	14	7.5	1210	
	D	15	12.5	1157	
	D	16	17.5	1167	
	D	17	22.5	1160	
					1119
	E	14	22.5	1148	
	E	15	17.5	1151	
	E	16	12.5	1202	
	E	17	7.5	1172	
	E	18	2.5	962	
	E	19	2.5	962	
	E	20	7.5	1172	
	E	21	12.5	1136	
	E	22	17.5	1151	
	E	23	22.5	1136	
	E	24	27.5	1217	
					1128

Wtd Avg Velocity computed for Layer 1 = 1141

Layer 2 Velocity computed by regression of raw uncorrected arrivals

Spread A

V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts
			A	1 14	4.1	2053	2053	4.1	14
			B	1 16	8.4	2166	2166	8.4	16
			C	13 23	10.8	2093	2093	10.8	1[illegible]
2101	12.8	1 5	D	18 24	6.9	1902	1980	9.8	1[illegible]
1823	6.2	7 13	E				1823	6.2	7
1657	6.9	19 24	F				1657	6.9	6
1923	7.7	20 24	G				1923	7.7	5
						Avg =	1995	for	[illegible]1 Pts

Layer 2 Velocity computed by Hobson-Overton method

Spread A

SPs	Geos	V	Avg TdSP	Std Err Overall	4 Highest Std Err at geophones Err	Geo	Err	Geo	Err	Geo	Err	Geo
A D	1 5	2232	-7.8	0.483	-0.640	3	0.600	5	0.520	1	-0.320	4
A E	7 13	1894	-6.7	0.727	-1.264	13	0.971	10	0.814	12	-0.593	7
B D	1 5	2222	-5.3	0.136	0.160	5	0.160	1	-0.140	2	-0.140	4
B E	7 13	1939	-2.6	0.631	-1.100	13	-0.757	7	0.614	11	0.571	10
C F	19 23	1852	-3.2	0.490	0.800	21	-0.600	20	-0.400	23	0.200	22
C G	20 23	1923	0.4	0.640	0.900	21	-0.700	20	-0.500	23	0.300	22
D F	19 24	1821	-3.0	0.397	-0.804	23	0.505	24	0.179	21	0.088	22
D G	20 24	2058	-0.7	0.391	0.600	22	-0.480	20	-0.320	24	0.260	21
	Avg =	1983	for	44 Pts								

Wtd Avg Velocity computed for Layer 2 = 1989

Layer 3 Velocity computed by regression of raw uncorrected arrivals

Spread A

V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts
			A	15 20	16.2	2692	2692	16.2	6
			B	17 22	17.1	2684	2684	17.1	6
2391	14.4	1 6	E				2391	14.4	6
2732	18.9	1 18	F				2732	18.9	16
2818	20.5	3 19	G				2818	20.5	16
						Avg =	2702	for	50 Pts

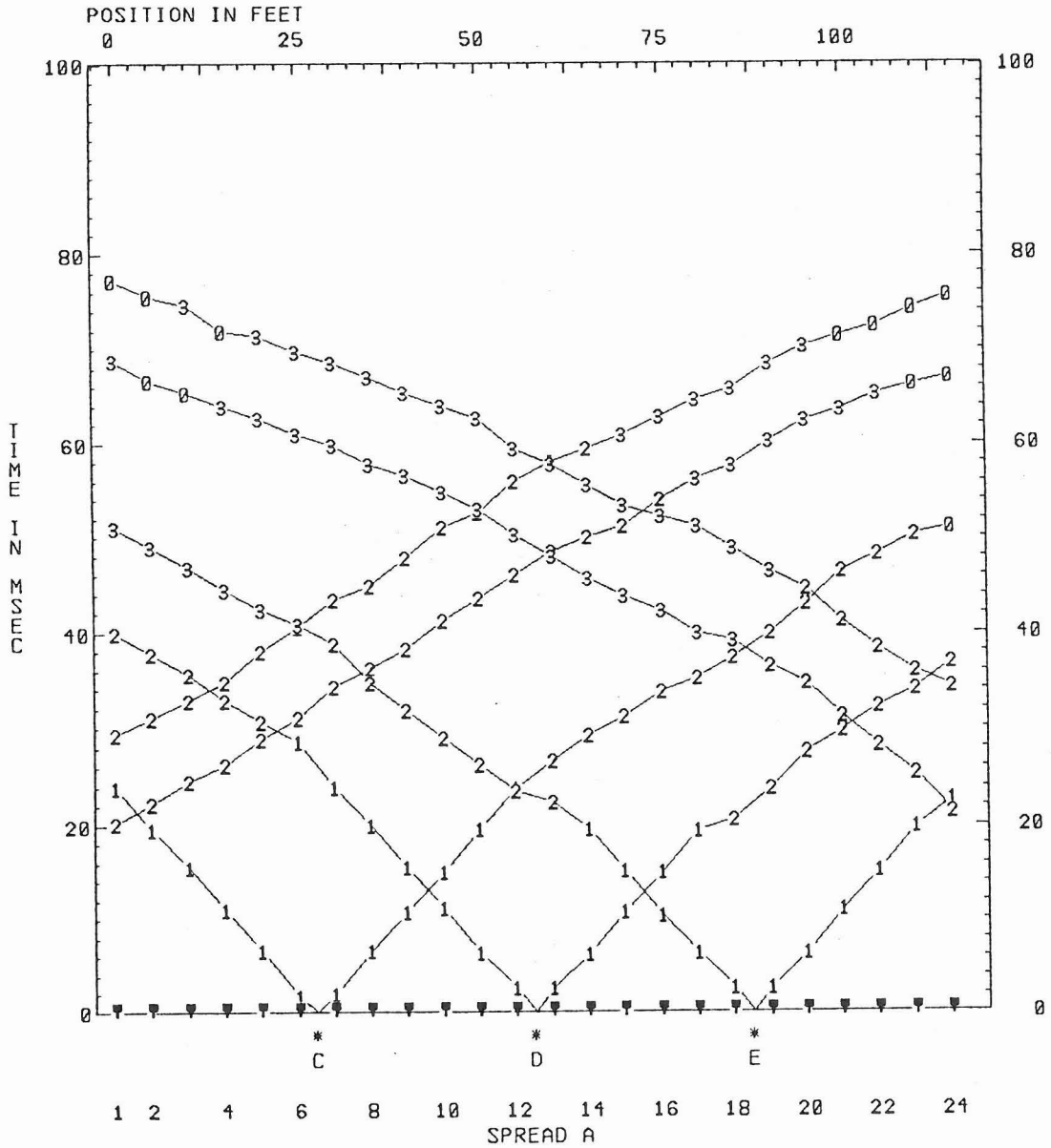
Layer 3 Velocity computed by Hobson-Overton method

Spread A SPs	Geos	V	Avg TdSP	Std Err Overall	4 Highest Std Err at geophones Err	Geo	Err	Geo	Err	Geo	Err	Geo
A F 15	18	3049	0.9	0.482	0.760	17	-0.520	18	-0.280	15	0.040	16
A G 15	19	2809	-1.9	0.585	0.800	19	-0.680	17	-0.640	18	0.440	15
B F 17	18	4545	6.3	0.000	-0.000	17	0.000	18				
B G 17	19	2273	-4.0	0.283	-0.400	18	0.200	19	0.200	17		

Avg =		3011 for 14 Pts										

Wtd Avg Velocity computed for Layer 3 = 2813

FILE DAML5-4.SIP
D&M MARICOPA COUNTY DAM SITE LINE 5 - RAW ARRIVAL TIMES



DEPTH MODEL TABLES for DAML5-4.SIP

Spread A Depth and Elev of layers directly beneath SPs and Geos

SP	Surface X-Loc	Surface Elev	Layer 2 Depth	Layer 2 Elev	Layer 3 Depth	Layer 3 Elev
B	-25.0	0.0	5.0	-5.0	22.0	-22.0
C	27.5	0.0	4.5	-4.5	21.0	-21.0
D	57.5	0.0	4.7	-4.7	20.2	-20.2
E	87.5	0.0	5.5	-5.5	17.0	-17.0
F	140.0	0.0	10.2	-10.2	18.7	-18.7

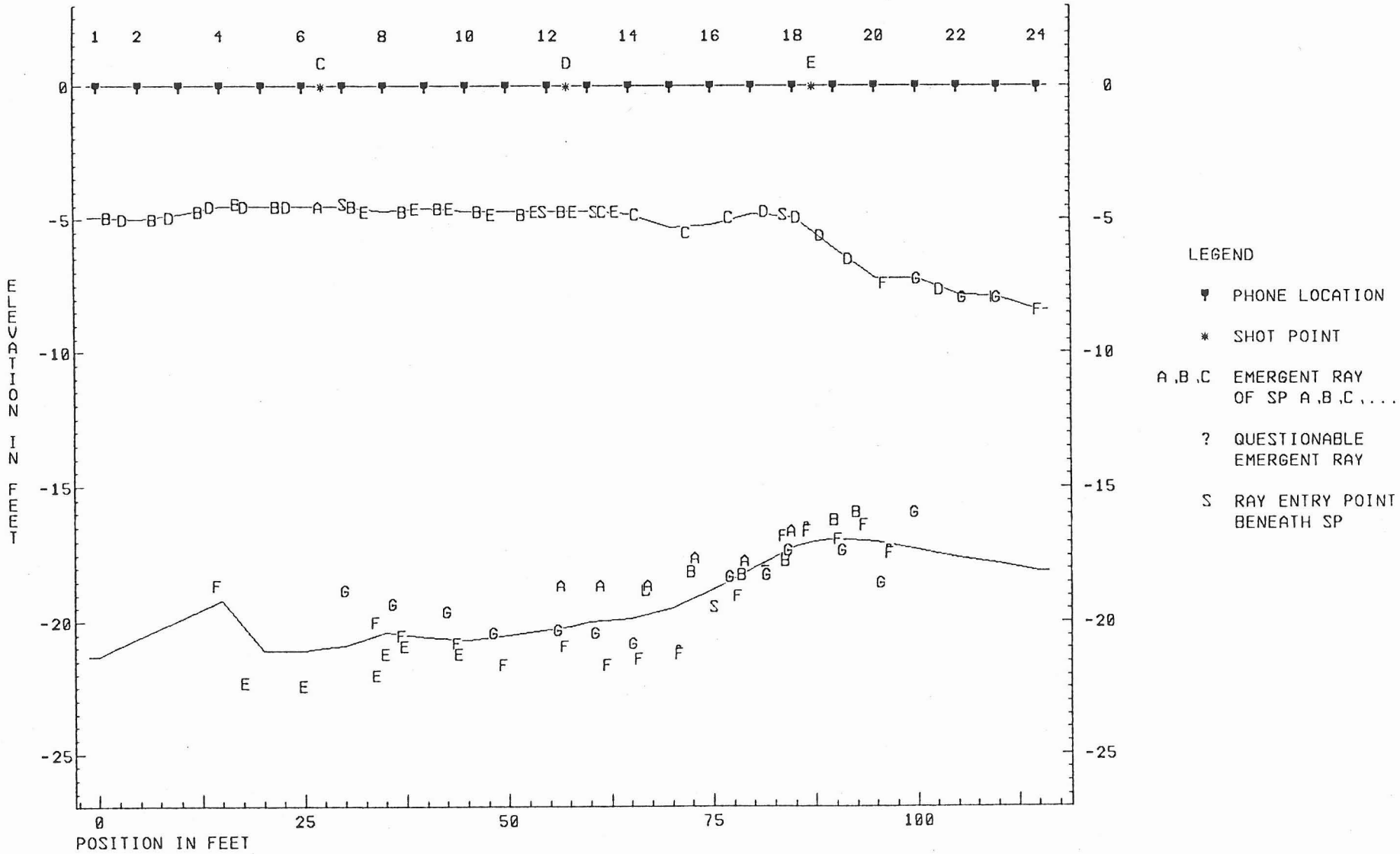
Geo	Surface X-Loc	Surface Elev	Layer 2 Depth	Layer 2 Elev	Layer 3 Depth	Layer 3 Elev
1	0.0	0.0	4.9	-4.9	21.3	-21.3
2	5.0	0.0	5.0	-5.0	20.6	-20.6
3	10.0	0.0	4.8	-4.8	19.9	-19.9
4	15.0	0.0	4.5	-4.5	19.2	-19.2
5	20.0	0.0	4.5	-4.5	21.1	-21.1
6	25.0	0.0	4.5	-4.5	21.1	-21.1
7	30.0	0.0	4.5	-4.5	20.9	-20.9
8	35.0	0.0	4.7	-4.7	20.4	-20.4
9	40.0	0.0	4.6	-4.6	20.6	-20.6
10	45.0	0.0	4.7	-4.7	20.7	-20.7
11	50.0	0.0	4.7	-4.7	20.5	-20.5
12	55.0	0.0	4.7	-4.7	20.3	-20.3
13	60.0	0.0	4.7	-4.7	20.0	-20.0
14	65.0	0.0	4.8	-4.8	19.9	-19.9
15	70.0	0.0	5.3	-5.3	19.5	-19.5
16	75.0	0.0	5.2	-5.2	18.8	-18.8
17	80.0	0.0	4.8	-4.8	18.0	-18.0
18	85.0	0.0	4.9	-4.9	17.2	-17.2
19	90.0	0.0	6.1	-6.1	16.9	-16.9
20	95.0	0.0	7.2	-7.2	17.0	-17.0
21	100.0	0.0	7.2	-7.2	17.3	-17.3
22	105.0	0.0	7.8	-7.8	17.6	-17.6
23	110.0	0.0	7.9	-7.9	17.8	-17.8
24	115.0	0.0	8.4	-8.4	18.1	-18.1

Velocities used to formulate the Depth Model

Spread A	Layer 1	Layer 2	Layer 3
Vertical	1141	1989	
Horizontal		1989	2813

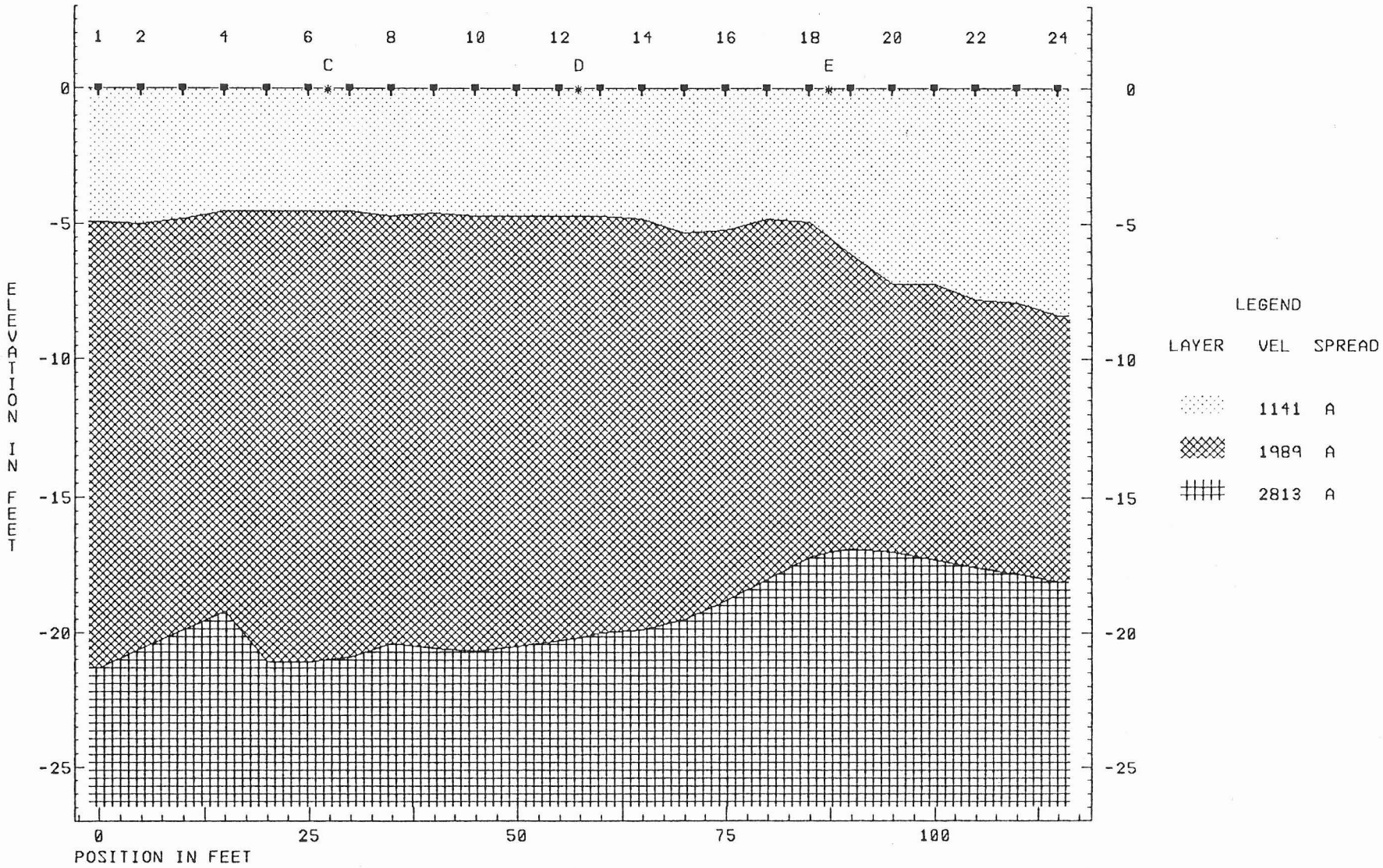
FILE DAML5-4.SIP
D&M MARICOPA COUNTY DAM SITE LINE 5

SPREAD A



FILE DAML5-4.SIP
D&M MARICOPA COUNTY DAM SITE LINE 5

SPREAD A



INPUT DATA FILE for DAML6-3.SIP

TITLE FOR SIPT2/SIPLUS INPUT DATA SET for DAML6-3.SIP

D&M MARICOPA COUNTY DAM SITE LINE 6

PROGRAM CONTROL DATA

Spris	Exit	Layrs	VOver	PRINTER PLOT SCALES Elev ft/col	Horiz ft/row	Time ms/col	DATUM CONTROL Pt 1 Elev/X	Pt 2 Elev/X	PLOT CONTROL Elevations Top	Bottom	BLim	TLim	Trace	OffSP	LDip
.	6	3	0	0.0	0.0	0.0	0.0 0.0	0.0 0.0	0	0	0.5	10.0	0	0	0

SHOTPOINT AND GEOPHONE DATA

Spread A, 7 SP's, 24 Geo's, X-Shift = 0.0, X-True = 1, Units: Feet.

SP	Elev	X-Loc	Y-Loc	Depth	Uphole T	Fudge T	End SP
A	0.0	-50.0	0.0	0.0	0.0	0.0	0
B	0.0	-25.0	0.0	0.0	0.0	0.0	1
C	0.0	27.5	0.0	0.0	0.0	0.0	0
D	0.0	57.5	0.0	0.0	0.0	0.0	0
E	0.0	87.5	0.0	0.0	0.0	0.0	0
F	0.0	140.0	0.0	0.0	0.0	0.0	2
G	0.0	165.0	0.0	0.0	0.0	0.0	0

ARRIVAL TIMES AND LAYERS REPRESENTED

Geo	Elev	X-Loc	Y	SP A		SP B		SP C		SP D		SP E		SP F		SP G	
					L		L		L		L		L		L		L
1	0.0	0.0	0.0	32.0	2	19.8	2	20.8	0	34.6	2	52.0	0	68.2	3	78.8	3
2	0.0	5.0	0.0	35.4	2	22.6	2	18.6	1	31.8	2	48.8	0	65.8	3	77.0	3
3	0.0	10.0	0.0	38.0	2	25.6	2	15.2	1	28.8	2	46.0	0	65.2	3	75.0	3
4	0.0	15.0	0.0	39.2	2	28.2	2	10.8	1	26.4	2	43.0	0	63.2	3	74.0	3
5	0.0	20.0	0.0	42.0	2	30.2	2	7.0	1	23.6	2	40.0	2	61.0	3	72.4	3
6	0.0	25.0	0.0	43.2	2	32.0	2	2.4	1	20.8	2	36.8	2	60.6	3	71.4	3
7	0.0	30.0	0.0	46.4	2	34.8	2	2.4	1	19.4	2	35.4	2	58.8	3	70.4	3
8	0.0	35.0	0.0	49.6	2	37.8	2	7.0	1	16.0	2	32.0	2	56.6	3	69.0	3
9	0.0	40.0	0.0	52.2	2	40.6	2	11.2	1	14.2	2	28.8	2	54.4	3	66.6	3
10	0.0	45.0	0.0	55.2	2	43.2	2	15.2	1	11.0	1	25.6	2	50.0	2	63.0	2
11	0.0	50.0	0.0	55.8	2	45.0	2	18.6	1	6.6	1	23.2	2	47.0	2	60.6	2
12	0.0	55.0	0.0	58.2	2	47.2	2	20.0	2	2.4	1	20.8	2	44.6	2	57.2	2
13	0.0	60.0	0.0	58.8	2	48.4	2	21.6	2	2.2	1	17.6	2	41.8	2	55.0	2
14	0.0	65.0	0.0	60.4	2	50.8	2	23.8	2	6.4	1	17.0	2	40.4	2	52.6	2
15	0.0	70.0	0.0	63.4	2	53.8	2	27.0	2	10.8	1	15.0	1	38.6	2	50.6	2
16	0.0	75.0	0.0	66.2	3	55.6	2	30.8	2	14.4	2	10.8	1	35.6	2	47.4	2
17	0.0	80.0	0.0	67.0	3	57.4	2	32.4	2	15.8	2	7.0	1	32.2	2	43.0	2
18	0.0	85.0	0.0	68.2	3	59.2	3	35.4	2	19.0	2	1.8	1	29.8	2	41.2	2

9	0.0	90.0	0.0	70.0	3	61.2	3	39.6	2	21.2	2	1.6	1	27.8	2	39.4	2
0	0.0	95.0	0.0	71.8	3	63.4	3	42.6	2	23.4	2	6.6	1	24.4	2	36.6	2
21	0.0	100.0	0.0	73.6	3	65.0	3	46.0	2	26.4	2	10.4	1	22.6	2	33.8	2
22	0.0	105.0	0.0	74.2	3	66.0	3	49.2	2	28.8	2	15.0	1	20.8	2	31.6	2
3	0.0	110.0	0.0	76.2	3	67.4	3	50.8	2	31.8	2	18.4	1	19.8	2	29.4	2
4	0.0	115.0	0.0	78.6	3	69.2	3	52.2	2	34.2	2	20.6	0	17.4	2	26.8	2

VELOCITY ANALYSIS TABLES for DAML6-3.SIP

Layer 1 Velocity from direct arrivals

Spread A	SP	Geo	DD	V	Avg V
	C	2	22.5	1210	
	C	3	17.5	1151	
	C	4	12.5	1157	
	C	5	7.5	1071	
	C	6	2.5	1042	
	C	7	2.5	1042	
	C	8	7.5	1071	
	C	9	12.5	1116	
	C	10	17.5	1151	
	C	11	22.5	1210	
					1122
	D	10	12.5	1136	
	D	11	7.5	1136	
	D	12	2.5	1042	
	D	13	2.5	1136	
	D	14	7.5	1172	
	D	15	12.5	1157	
					1130
	E	15	17.5	1167	
	E	16	12.5	1157	
	E	17	7.5	1071	
	E	18	2.5	1389	
	E	19	2.5	1563	
	E	20	7.5	1136	
	E	21	12.5	1202	
	E	22	17.5	1167	
	E	23	22.5	1223	
					1231

Wtd Avg Velocity computed for Layer 1 = 1163

Layer 2 Velocity computed by regression of raw uncorrected arrivals

Spread A

V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts
			A	1 15	10.9	2254	2254	10.9	15
			B	1 17	9.1	2129	2129	9.1	17
			C	12 24	2.9	1722	1722	2.9	13
1956	4.8	1 9	D	16 24	4.9	1974	1965	4.8	18
1858	3.5	5 14	E				1858	3.5	10
2113	4.5	10 24	F				2113	4.5	15
1918	0.2	10 24	G				1918	0.2	15
						Avg =	1994	for	103 Pts

Layer 2 Velocity computed by Hobson-Overton method

Spread A SPs		Geos		V	Avg TdSP	Std Err Overall	4 Highest Std Err at geophones Err	Geo	Err	Geo	Err	Geo	Err	Geo
A	D	1	9	2016	1.9	0.664	1.076	3	-0.964	7	-0.804	1	0.676	8
A	E	5	14	2064	1.4	1.502	-2.862	14	2.718	10	1.362	9	-1.348	7
A	F	10	15	2593	5.3	0.421	-0.686	14	0.629	12	-0.314	11	0.257	15
A	G	10	15	2437	2.1	0.593	0.918	12	-0.779	11	-0.488	14	0.410	15
B	D	1	9	1971	2.4	0.553	-0.969	7	-0.729	1	0.724	3	0.651	4
B	E	5	14	1987	2.0	1.104	-2.127	14	1.804	10	-1.298	7	1.036	9
B	F	10	17	2236	4.4	0.416	-0.736	14	0.650	17	0.407	12	-0.407	15
B	G	10	17	2085	3.7	0.640	1.117	17	-0.702	13	-0.698	14	0.693	12
C	E	12	14	2632	1.4	0.471	0.667	13	-0.333	14	-0.333	12		
C	F	12	24	1906	4.5	1.348	-2.499	24	1.890	20	1.843	21	-1.674	15
C	G	12	24	1823	6.7	1.031	-1.890	24	-1.509	15	1.370	21	1.352	12
D	F	16	24	2104	1.9	0.503	0.758	21	0.711	20	-0.549	23	-0.502	24
D	G	16	24	2000	3.6	0.366	-0.511	19	-0.511	20	0.489	18	0.489	17
				Avg = 2075 for 113 Pts										

Wtd Avg Velocity computed for Layer 2 = 2049

Layer 3 Velocity computed by regression of raw uncorrected arrivals

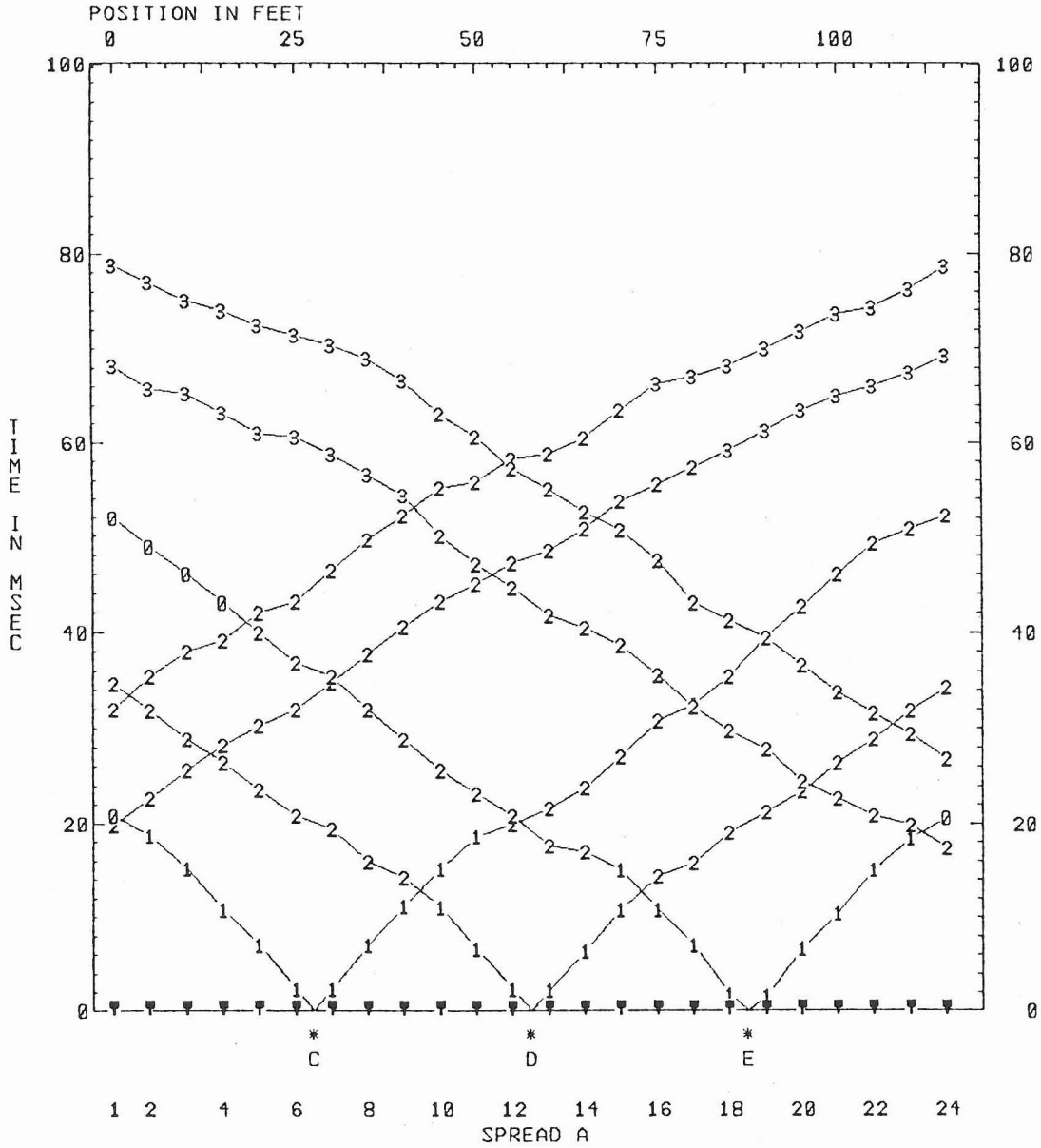
Spread A V	Ti	Geos		<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts
				A	16 24	26.9	3233	3233	26.9	9
				B	18 24	24.3	3111	3111	24.3	7
3055	22.3	1	9	F				3055	22.3	9
3546	31.8	1	9	G				3546	31.8	9
							Avg =	3233	for	34 Pts

Layer 3 Velocity computed by Hobson-Overton method

Not enough points.

Wtd Avg Velocity computed for Layer 3 = 3233

FILE DAML6-3.SIP
D&M MARICOPA COUNTY DAM SITE LINE 6 - RAW ARRIVAL TIMES



DEPTH MODEL TABLES for DAML6-3.SIP

Spread A Depth and Elev of layers directly beneath SPs and Geos

SP	Surface X-Loc	Surface Elev	Layer 2 Depth	Layer 2 Elev	Layer 3 Depth	Layer 3 Elev
B	-25.0	0.0	5.7	-5.7	29.0	-29.0
C	27.5	0.0	4.9	-4.9	24.3	-24.3
D	57.5	0.0	4.0	-4.0	26.2	-26.2
E	87.5	0.0	5.2	-5.2	28.2	-28.2
F	140.0	0.0	2.5	-2.5	28.6	-28.6

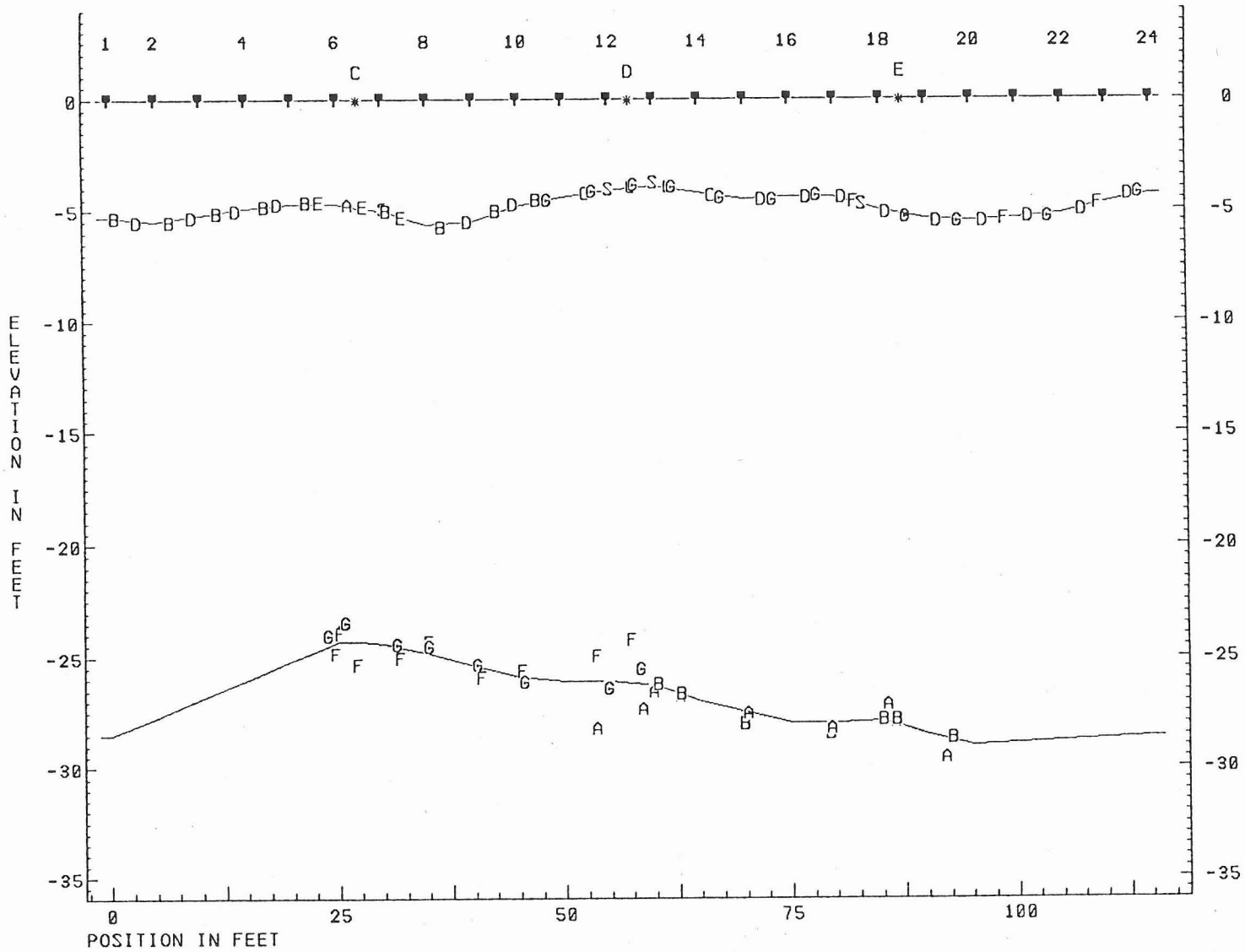
Geo	Surface X-Loc	Surface Elev	Layer 2 Depth	Layer 2 Elev	Layer 3 Depth	Layer 3 Elev
1	0.0	0.0	5.3	-5.3	28.5	-28.5
2	5.0	0.0	5.5	-5.5	27.7	-27.7
3	10.0	0.0	5.2	-5.2	26.8	-26.8
4	15.0	0.0	4.9	-4.9	26.0	-26.0
5	20.0	0.0	4.7	-4.7	25.1	-25.1
6	25.0	0.0	4.7	-4.7	24.3	-24.3
7	30.0	0.0	5.0	-5.0	24.4	-24.4
8	35.0	0.0	5.6	-5.6	24.8	-24.8
9	40.0	0.0	5.5	-5.5	25.4	-25.4
10	45.0	0.0	4.8	-4.8	25.9	-25.9
11	50.0	0.0	4.4	-4.4	26.1	-26.1
12	55.0	0.0	4.1	-4.1	26.1	-26.1
13	60.0	0.0	3.9	-3.9	26.3	-26.3
14	65.0	0.0	4.2	-4.2	27.0	-27.0
15	70.0	0.0	4.5	-4.5	27.5	-27.5
16	75.0	0.0	4.4	-4.4	28.0	-28.0
17	80.0	0.0	4.4	-4.4	28.0	-28.0
18	85.0	0.0	5.0	-5.0	27.9	-27.9
19	90.0	0.0	5.4	-5.4	28.5	-28.5
20	95.0	0.0	5.5	-5.5	29.0	-29.0
21	100.0	0.0	5.4	-5.4	28.9	-28.9
22	105.0	0.0	5.2	-5.2	28.8	-28.8
23	110.0	0.0	4.7	-4.7	28.7	-28.7
24	115.0	0.0	4.3	-4.3	28.6	-28.6

Velocities used to formulate the Depth Model

Spread A	Layer 1	Layer 2	Layer 3
Vertical	1163	2049	
Horizontal		2049	3233

FILE DAML6-3.SIP
D&M MARICOPA COUNTY DAM SITE LINE 6

SPREAD A

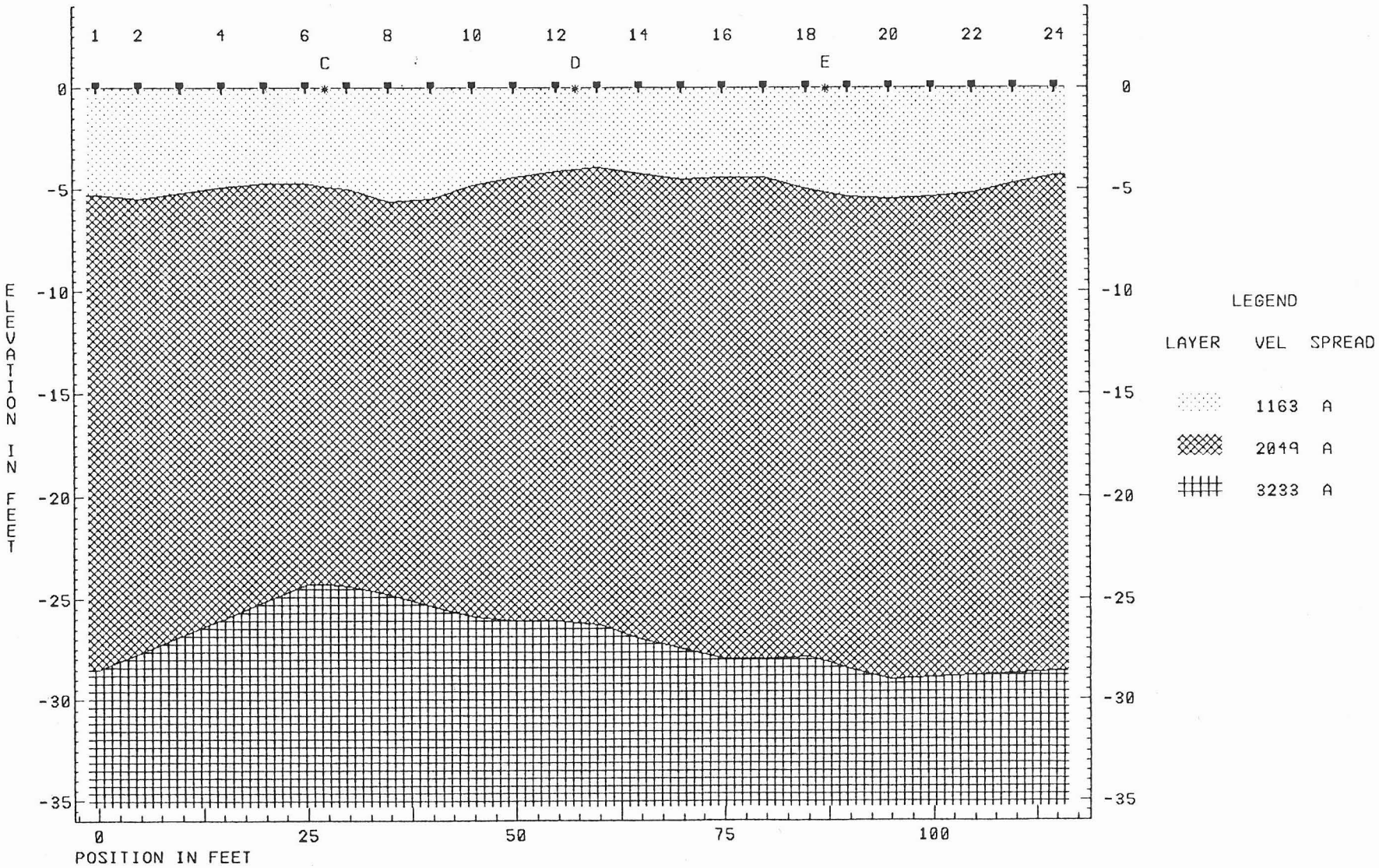


LEGEND

- PHONE LOCATION
- * SHOT POINT
- A,B,C EMERGENT RAY OF SP A,B,C,...
- ? QUESTIONABLE EMERGENT RAY
- S RAY ENTRY POINT BENEATH SP

FILE DAML6-3.SIP
D&M MARICOPA COUNTY DAM SITE LINE 6

SPREAD A



January 28, 2000

FEB 2000
Received
Dames & Moore Phx

Dames and Moore
Attn.: Kevin Somerville
7500 North Dreamy Draw Drive
Suite 145
Phoenix, AZ 85020

Dear Kevin,

This letter is a follow-up to the site visit with you to the White Tanks ARS #3 Flood Control District last Friday. We understand that this information is being solicited by Dams & Moore on behalf of the Maricopa County Flood Control District

The material at the site would not be suitable for production of sand and gravel. At least the top fifteen feet of material is silty soil which also could contain clay, or overburden.

It may be possible that non-spec ABC could be produced with the material that is fifteen to eighteen feet below the surface, however, that would also depend on what the plasticity and clay content is at that level.

There is also a possibility that after removing the overburden, there may be sand under the overburden, however, the cost of removal would make the cost of the sand and gravel higher than average by today's standards.

Due to the large amount of overburden present, we would not be interested in this material as a commercial sand and gravel operator, however, we would be willing to give you an estimate on the cost of removing this material and stockpiling it to another location on your site. We may be able to buy some back from you at a later time if a fill or borrow job came up in the immediate area.

We would be more than willing to work with you on this project. If you have any questions, please feel free to call me at 480-926-8200.

Sincerely,

David Sawyers
Vice President

PIONEER
SAND COMPANY

745 N. Gilbert #124-360 • Gilbert, Arizona 85234 • (480) 926-8200 • Fax (480) 668-8929

APPENDIX D

CALCULATION PACKAGES

List of calculation packages:

1. HEC-1 Analysis for FRS #3 Watershed
2. Channel Sizing Evaluation
3. Runoff Volume Estimates
4. Basin Dimensions Optimization
5. Basin Excavation Volumes
6. Sediment Basins Sizing
7. Side-Channel Weir Design
8. Channel Design

DAMES & MOORE

CALCULATIONS COVER SHEET

SUBJECT: FCDMC FRS#3

PROJECT NO. 15448-007-058

SHEET 1 OF

HEC-1 Analysis for FRS#3 Watershed

TITLE OF CALCULATIONS/DOCUMENT

CALCULATIONS/DOCUMENT BY:

Muawieh Radaideh

PRINT NAME

MK Radaideh

SIGNATURE

7-11-00

DATE

ASSUMPTIONS CHECKED BY CONSULTANT/SENIOR PERSONNEL:

Todd Ringsmuth

PRINT NAME

SIGNATURE

8-1-00

DATE

CALCULATIONS/DOCUMENT CHECKED BY:

Patrick Gorman

PRINT NAME

SIGNATURE

31 July 00

DATE

APPROVED BY:
(PRINCIPAL INVESTIGATOR, CONSULTANT, OR PM)

Todd Ringsmuth

PRINT NAME

SIGNATURE

1-10-01

DATE

Approval Notice: If Calculations/Document are only spot checked, do not require checking, or are assumed to be correct by experience of engineering judgement, it should be noted here.

Revision Number	Date	By	Checked By	Approval
1				
2				
3				
4				

INITIALS

CALCULATION CHECKING CRITERIA

1. Is the calculation method appropriate?
2. Are the results and conclusions reasonable when compared with the design input and the project objectives?
3. Are the results and conclusions reasonably within the project construction budget?
4. Is the calculation complete in format with all sections included?

   - Problem Statement & Calculation Objectives
   - Data Available
   - Design Criteria
   - Assumptions
   - Analysis and Conclusions
   - Attachments

5. Does the calculation conform with:

   - Codes
   - Project Design Criteria
   - Project Procedures?

6. Are the mathematics of the calculation accurate?
7. Are computer programs used in the calculation appropriate for use in this application?
8. Is the computer input correct?
9. Is the computer output correct and reasonable?
10. Are all sheets completely filled out?

    - Project number?
    - File number?
    - Sheet ? of ?
    - By ? Date ?
    - Checked By ?

11. Are the calculations neat and legible?

EXHIBIT D

FCDMC, White Tanks FRS #3 Modification Design

HEC-1 Hydrographs to be Used in Estimating Required Basins' Storage Volumes

15448-007-058

OBJECTIVE:

To generate hydrographs for 6 inflow locations, which will be utilized in calculating storage volumes for the basins of the 3 alternatives.

REFERENCES:

-Hydrologic Analysis for White Tanks Flood Retarding Structure #3 Watershed, FCDMC, March 29, 2000.

-Watershed delineated by the FCDMC as shown in Figure 1.

-HEC-1 hydrologic model, US Army Corps of Engineers.

-HEC-1 Flood Hydrograph Package, Users Manual, US Army Corps of Engineers, 1985.

ASSUMPTIONS:

- Flow diverted from Waterfall Wash to McMicken is that from subbasin 1 and half of subbasin 2. Total volume is 333 ac-ft = (229 ac-ft for subbasin 1 + 207/2 for ½ of subbasin 2).

- Remaining half of subbasin 2 has an area of 0.81 mi2, which is similar to that of subbasin 8. Hence, unit hydrograph of subbasin 8 was used for remaining area of subbasin 2 and adjusted to produce the balance for the total volume for the watershed.

- Channel loss record (RL) was included in the HEC-1 input file but deactivated to produce an added factor of safety for basin sizing.

CALCULATION APPROACH:

HEC-1 model was ran for the 100-year, 24-hour were generated for the following:

1- Total Waterfall Wash Flow: contributing subbasins are 1, 2, 3A, and 3.

2- Remaining Waterfall Wash Flow after Diversion to McMicken Dam: contributing subbasins are ½ of subbasin 2 and subbasins 3A and 3.

3- Cholla Wash Flow: contributing subbasins are 4 through 10.

4- Additional Flow to the North Inlet: subbasins 12 and WT3.

5- Middle Inlet Flow: subbasins 11 and 13.

6- South Inlet Flow: subbasins 14 through 17.

Total volume of 1,968 ac-ft from *the Hydrologic Analysis for White Tanks Flood Retarding Structure #3 Watershed* report was used to check for accuracy of HEC-1 models and calculations.

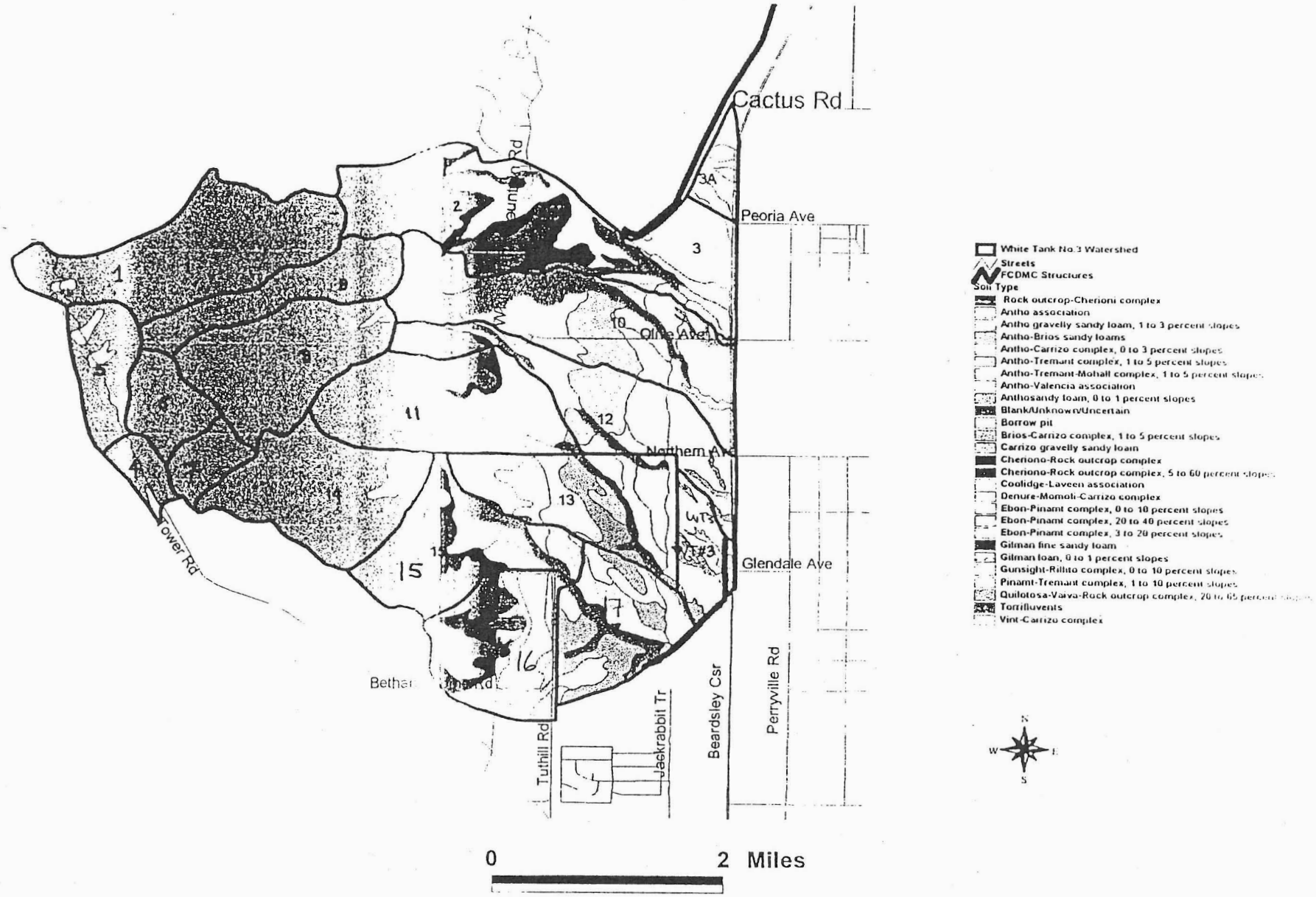
RESULTS:

HEC-1 input and output files were printed out and are included. Only the runoff summary and interpolated final combination stations were printed out from the output files. Results are summarized in the following table. Detailed output files can be made available upon request.

Flow Location	Contributing Subbasins	Peak Flow (cfs)	Volume (ac-ft)
Total Waterfall Wash	1, 2, 3A, 3	4,279	502
Waterfall Wash after Diversion to McMicken	½ of 2, 3A, 3	2,442	172

Cholla Wash	4 through 10	6,512	616
Additional Flow to North Inlet	12, WT3	1,431	132
Middle Inlet	11, 13	2,720	246
South Inlet	14 through 17	5,016	469

FIGURE 1: Soil Types for White Tank No.3 Watershed.



1) **TOTAL WATERFALL WASH FLOW**
SUBBASINS 1, 2, 3A, AND 3

```
ID        White Tanks #3 future condition (Beardsley Canal Wash Improvement)
ID        May, 1999, FCDMC
ID        Remove borrow pit routing at sub-basin 16, fcdmc, July, 1999
*DIAGRAM
IT     5  1JAN94       0     600
IO     1
IN    15  1JAN94       0
JD  4.03   0.001
* precip1
PC     0   0.002   0.005   0.008   0.011   0.014   0.017    0.02   0.023   0.026
PC 0.029   0.032   0.035   0.038   0.041   0.044   0.048   0.052   0.056    0.06
PC 0.064   0.068   0.072   0.076    0.08   0.085    0.09   0.095     0.1   0.105
PC  0.11   0.115    0.12   0.126   0.133    0.14   0.147   0.155   0.163   0.172
PC 0.181   0.191   0.203   0.218   0.236   0.257   0.283   0.387   0.663   0.707
PC 0.735   0.758   0.776   0.791   0.804   0.815   0.825   0.834   0.842   0.849
PC 0.856   0.863   0.869   0.875   0.881   0.887   0.893   0.898   0.903   0.908
PC 0.913   0.918   0.922   0.926    0.93   0.934   0.938   0.942   0.946    0.95
PC 0.953   0.956   0.959   0.962   0.965   0.968   0.971   0.974   0.977    0.98
PC 0.983   0.986   0.989   0.992   0.995   0.998       1       1       1       1
JD  3.99      10
JD  3.83      50
JD  3.76     100
JD   3.7     200
KK     1
KM         RUNOFF HYDROGRAPH FROM SUB-BASIN 1.
BA  1.94
LG  0.35    0.15   7.981   0.082  19.802
* ui1
UI   182     326     742     974    1186    1502    2185    1957    1537    1243
UI   989     751     417     308     230     182      64      56      56      56
UI    56       0       0       0       0       0       0       0       0       0
UI     0       0       0       0       0       0       0       0       0       0
KK  RCP1   CNAME      1C
KM         ROUTE FLOW FROM CP1 TO CP2.
* RL   0       0       1    1428
RS     3    STOR      -1       0
RC  0.06    0.04    0.06   17800  0.0469       0
* rxry1
RX  1000    1125    1300    1390    1405    1490    1590    1750
RY  1440    1439    1437    1428    1428    1439    1442    1444
KK     2
KM         RUNOFF HYDROGRAPH FROM SUB-BASIN 2.
BA  1.82
LG  0.35   0.154   6.959   0.119  21.855
* ui2
UI   115     115     259     442     556     642     727     849    1013    1346
UI  1419    1145     985     864     735     634     545     405     268     202
UI   189     144     115     103      35      35      35      35      35      35
UI    35       0       0       0       0       0       0       0       0       0
UI     0       0       0       0       0       0       0       0       0       0
KK   CP2   CNAME    RCP2
KM         ADD HYDROGRAPHS AT CP2.
HC     2
KK  RCP2   CNAME     CP2
```

```
KM          ROUTE COMBINED HYDROGRAPHS AT CP2 TO CP3.
* RL    0       0     1.5    1298
RS      2    STOR      -1       0
RC   0.06   0.035    0.06    4500  0.0111       0
* rxry2
RX   1000    1100    1350    1705    1735    1780    1850    2000
RY   1304    1302    1302    1298    1298    1303    1302    1305
KK     3A
KM          RUNOFF HYDROGRAPH FROM SUB-BASIN 3A
BA   0.29
LG 0.336     0.24    4.14   0.432       0
* ui3
UI     34      89     165     212     286     410     314     242     182     124
UI     62      48      33      10      10      10      10       0       0       0
UI      0       0       0       0       0       0       0       0       0       0
KK RCP3A    CNAME      3C
KM          ROUTE FLOW FROM CP3A TO CP3
* RL    0       0     1.5    1284
RS      2    STOR      -1       0
RC   0.03    0.03    0.05    5300   0.006       0
* rxry3
RX   1000    1023    1032    1046    1058    1067    1250    1540
RY   1289    1288    1286    1284    1284    1286    1288    1291
KK      3
KM          RUNOFF HYDROGRAPH FROM SUB-BASIN 3.
BA   0.81
LG 0.339   0.242   4.441   0.362       0
* ui4
UI     91     228     430     554     725    1088     908     700     535     396
UI    205     152      95      57      28      28      28       0       0       0
UI      0       0       0       0       0       0       0       0       0       0
KK I1CP3    CNAME      4R
KM          ADD HYDROGRAPHS AT CP3.
HC      2
KK CMBN3
KM          ADD HYDROGRAPHS AT CP3.
KO      0       0       0       0      22
HC      2
ZZ
```

INTERPOLATED HYDROGRAPH AT CMBN3

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1	JAN	0440	57	25.	1	JAN	1710	207	52.	2	JAN	0540	357	0.	2	JAN	1810	507	0.
1	JAN	0445	58	25.	1	JAN	1715	208	51.	2	JAN	0545	358	0.	2	JAN	1815	508	0.
1	JAN	0450	59	25.	1	JAN	1720	209	50.	2	JAN	0550	359	0.	2	JAN	1820	509	0.
1	JAN	0455	60	25.	1	JAN	1725	210	49.	2	JAN	0555	360	0.	2	JAN	1825	510	0.
1	JAN	0500	61	26.	1	JAN	1730	211	49.	2	JAN	0600	361	0.	2	JAN	1830	511	0.
1	JAN	0505	62	26.	1	JAN	1735	212	48.	2	JAN	0605	362	0.	2	JAN	1835	512	0.
1	JAN	0510	63	26.	1	JAN	1740	213	47.	2	JAN	0610	363	0.	2	JAN	1840	513	0.
1	JAN	0515	64	27.	1	JAN	1745	214	47.	2	JAN	0615	364	0.	2	JAN	1845	514	0.
1	JAN	0520	65	27.	1	JAN	1750	215	46.	2	JAN	0620	365	0.	2	JAN	1850	515	0.
1	JAN	0525	66	28.	1	JAN	1755	216	45.	2	JAN	0625	366	0.	2	JAN	1855	516	0.
1	JAN	0530	67	28.	1	JAN	1800	217	45.	2	JAN	0630	367	0.	2	JAN	1900	517	0.
1	JAN	0535	68	28.	1	JAN	1805	218	44.	2	JAN	0635	368	0.	2	JAN	1905	518	0.
1	JAN	0540	69	29.	1	JAN	1810	219	44.	2	JAN	0640	369	0.	2	JAN	1910	519	0.
1	JAN	0545	70	29.	1	JAN	1815	220	43.	2	JAN	0645	370	0.	2	JAN	1915	520	0.
1	JAN	0550	71	29.	1	JAN	1820	221	43.	2	JAN	0650	371	0.	2	JAN	1920	521	0.
1	JAN	0555	72	30.	1	JAN	1825	222	42.	2	JAN	0655	372	0.	2	JAN	1925	522	0.
1	JAN	0600	73	30.	1	JAN	1830	223	42.	2	JAN	0700	373	0.	2	JAN	1930	523	0.
1	JAN	0605	74	30.	1	JAN	1835	224	41.	2	JAN	0705	374	0.	2	JAN	1935	524	0.
1	JAN	0610	75	31.	1	JAN	1840	225	41.	2	JAN	0710	375	0.	2	JAN	1940	525	0.
1	JAN	0615	76	31.	1	JAN	1845	226	40.	2	JAN	0715	376	0.	2	JAN	1945	526	0.
1	JAN	0620	77	31.	1	JAN	1850	227	39.	2	JAN	0720	377	0.	2	JAN	1950	527	0.
1	JAN	0625	78	31.	1	JAN	1855	228	39.	2	JAN	0725	378	0.	2	JAN	1955	528	0.

1 JAN 0630	79	31.	*	1 JAN 1900	229	38.	*	2 JAN 0730	379	0.	*	2 JAN 2000	529	0.
1 JAN 0635	80	31.	*	1 JAN 1905	230	38.	*	2 JAN 0735	380	0.	*	2 JAN 2005	530	0.
1 JAN 0640	81	32.	*	1 JAN 1910	231	37.	*	2 JAN 0740	381	0.	*	2 JAN 2010	531	0.
1 JAN 0645	82	32.	*	1 JAN 1915	232	37.	*	2 JAN 0745	382	0.	*	2 JAN 2015	532	0.
1 JAN 0650	83	32.	*	1 JAN 1920	233	36.	*	2 JAN 0750	383	0.	*	2 JAN 2020	533	0.
1 JAN 0655	84	32.	*	1 JAN 1925	234	36.	*	2 JAN 0755	384	0.	*	2 JAN 2025	534	0.
1 JAN 0700	85	33.	*	1 JAN 1930	235	35.	*	2 JAN 0800	385	0.	*	2 JAN 2030	535	0.
1 JAN 0705	86	33.	*	1 JAN 1935	236	35.	*	2 JAN 0805	386	0.	*	2 JAN 2035	536	0.
1 JAN 0710	87	34.	*	1 JAN 1940	237	34.	*	2 JAN 0810	387	0.	*	2 JAN 2040	537	0.
1 JAN 0715	88	34.	*	1 JAN 1945	238	34.	*	2 JAN 0815	388	0.	*	2 JAN 2045	538	0.
1 JAN 0720	89	35.	*	1 JAN 1950	239	34.	*	2 JAN 0820	389	0.	*	2 JAN 2050	539	0.
1 JAN 0725	90	36.	*	1 JAN 1955	240	34.	*	2 JAN 0825	390	0.	*	2 JAN 2055	540	0.
1 JAN 0730	91	36.	*	1 JAN 2000	241	33.	*	2 JAN 0830	391	0.	*	2 JAN 2100	541	0.
1 JAN 0735	92	37.	*	1 JAN 2005	242	33.	*	2 JAN 0835	392	0.	*	2 JAN 2105	542	0.
1 JAN 0740	93	37.	*	1 JAN 2010	243	33.	*	2 JAN 0840	393	0.	*	2 JAN 2110	543	0.
1 JAN 0745	94	37.	*	1 JAN 2015	244	33.	*	2 JAN 0845	394	0.	*	2 JAN 2115	544	0.
1 JAN 0750	95	38.	*	1 JAN 2020	245	33.	*	2 JAN 0850	395	0.	*	2 JAN 2120	545	0.
1 JAN 0755	96	38.	*	1 JAN 2025	246	33.	*	2 JAN 0855	396	0.	*	2 JAN 2125	546	0.
1 JAN 0800	97	38.	*	1 JAN 2030	247	32.	*	2 JAN 0900	397	0.	*	2 JAN 2130	547	0.
1 JAN 0805	98	39.	*	1 JAN 2035	248	32.	*	2 JAN 0905	398	0.	*	2 JAN 2135	548	0.
1 JAN 0810	99	39.	*	1 JAN 2040	249	32.	*	2 JAN 0910	399	0.	*	2 JAN 2140	549	0.
1 JAN 0815	100	39.	*	1 JAN 2045	250	32.	*	2 JAN 0915	400	0.	*	2 JAN 2145	550	0.
1 JAN 0820	101	39.	*	1 JAN 2050	251	31.	*	2 JAN 0920	401	0.	*	2 JAN 2150	551	0.
1 JAN 0825	102	40.	*	1 JAN 2055	252	31.	*	2 JAN 0925	402	0.	*	2 JAN 2155	552	0.
1 JAN 0830	103	40.	*	1 JAN 2100	253	31.	*	2 JAN 0930	403	0.	*	2 JAN 2200	553	0.
1 JAN 0835	104	40.	*	1 JAN 2105	254	30.	*	2 JAN 0935	404	0.	*	2 JAN 2205	554	0.
1 JAN 0840	105	40.	*	1 JAN 2110	255	30.	*	2 JAN 0940	405	0.	*	2 JAN 2210	555	0.
1 JAN 0845	106	41.	*	1 JAN 2115	256	30.	*	2 JAN 0945	406	0.	*	2 JAN 2215	556	0.
1 JAN 0850	107	41.	*	1 JAN 2120	257	29.	*	2 JAN 0950	407	0.	*	2 JAN 2220	557	0.
1 JAN 0855	108	41.	*	1 JAN 2125	258	29.	*	2 JAN 0955	408	0.	*	2 JAN 2225	558	0.
1 JAN 0900	109	42.	*	1 JAN 2130	259	28.	*	2 JAN 1000	409	0.	*	2 JAN 2230	559	0.
1 JAN 0905	110	43.	*	1 JAN 2135	260	28.	*	2 JAN 1005	410	0.	*	2 JAN 2235	560	0.
1 JAN 0910	111	43.	*	1 JAN 2140	261	28.	*	2 JAN 1010	411	0.	*	2 JAN 2240	561	0.
1 JAN 0915	112	44.	*	1 JAN 2145	262	27.	*	2 JAN 1015	412	0.	*	2 JAN 2245	562	0.
1 JAN 0920	113	45.	*	1 JAN 2150	263	27.	*	2 JAN 1020	413	0.	*	2 JAN 2250	563	0.
1 JAN 0925	114	46.	*	1 JAN 2155	264	27.	*	2 JAN 1025	414	0.	*	2 JAN 2255	564	0.
1 JAN 0930	115	47.	*	1 JAN 2200	265	26.	*	2 JAN 1030	415	0.	*	2 JAN 2300	565	0.
1 JAN 0935	116	48.	*	1 JAN 2205	266	26.	*	2 JAN 1035	416	0.	*	2 JAN 2305	566	0.
1 JAN 0940	117	49.	*	1 JAN 2210	267	26.	*	2 JAN 1040	417	0.	*	2 JAN 2310	567	0.
1 JAN 0945	118	50.	*	1 JAN 2215	268	26.	*	2 JAN 1045	418	0.	*	2 JAN 2315	568	0.
1 JAN 0950	119	51.	*	1 JAN 2220	269	25.	*	2 JAN 1050	419	0.	*	2 JAN 2320	569	0.
1 JAN 0955	120	52.	*	1 JAN 2225	270	25.	*	2 JAN 1055	420	0.	*	2 JAN 2325	570	0.
1 JAN 1000	121	53.	*	1 JAN 2230	271	25.	*	2 JAN 1100	421	0.	*	2 JAN 2330	571	0.
1 JAN 1005	122	54.	*	1 JAN 2235	272	25.	*	2 JAN 1105	422	0.	*	2 JAN 2335	572	0.
1 JAN 1010	123	55.	*	1 JAN 2240	273	25.	*	2 JAN 1110	423	0.	*	2 JAN 2340	573	0.
1 JAN 1015	124	57.	*	1 JAN 2245	274	25.	*	2 JAN 1115	424	0.	*	2 JAN 2345	574	0.
1 JAN 1020	125	58.	*	1 JAN 2250	275	25.	*	2 JAN 1120	425	0.	*	2 JAN 2350	575	0.
1 JAN 1025	126	59.	*	1 JAN 2255	276	25.	*	2 JAN 1125	426	0.	*	2 JAN 2355	576	0.
1 JAN 1030	127	60.	*	1 JAN 2300	277	25.	*	2 JAN 1130	427	0.	*	3 JAN 0000	577	0.
1 JAN 1035	128	61.	*	1 JAN 2305	278	24.	*	2 JAN 1135	428	0.	*	3 JAN 0005	578	0.
1 JAN 1040	129	63.	*	1 JAN 2310	279	24.	*	2 JAN 1140	429	0.	*	3 JAN 0010	579	0.
1 JAN 1045	130	64.	*	1 JAN 2315	280	24.	*	2 JAN 1145	430	0.	*	3 JAN 0015	580	0.
1 JAN 1050	131	65.	*	1 JAN 2320	281	24.	*	2 JAN 1150	431	0.	*	3 JAN 0020	581	0.
1 JAN 1055	132	67.	*	1 JAN 2325	282	24.	*	2 JAN 1155	432	0.	*	3 JAN 0025	582	0.
1 JAN 1100	133	69.	*	1 JAN 2330	283	24.	*	2 JAN 1200	433	0.	*	3 JAN 0030	583	0.
1 JAN 1105	134	71.	*	1 JAN 2335	284	24.	*	2 JAN 1205	434	0.	*	3 JAN 0035	584	0.
1 JAN 1110	135	73.	*	1 JAN 2340	285	24.	*	2 JAN 1210	435	0.	*	3 JAN 0040	585	0.
1 JAN 1115	136	76.	*	1 JAN 2345	286	24.	*	2 JAN 1215	436	0.	*	3 JAN 0045	586	0.
1 JAN 1120	137	79.	*	1 JAN 2350	287	24.	*	2 JAN 1220	437	0.	*	3 JAN 0050	587	0.
1 JAN 1125	138	82.	*	1 JAN 2355	288	24.	*	2 JAN 1225	438	0.	*	3 JAN 0055	588	0.
1 JAN 1130	139	86.	*	2 JAN 0000	289	24.	*	2 JAN 1230	439	0.	*	3 JAN 0100	589	0.
1 JAN 1135	140	98.	*	2 JAN 0005	290	24.	*	2 JAN 1235	440	0.	*	3 JAN 0105	590	0.
1 JAN 1140	141	122.	*	2 JAN 0010	291	24.	*	2 JAN 1240	441	0.	*	3 JAN 0110	591	0.
1 JAN 1145	142	166.	*	2 JAN 0015	292	24.	*	2 JAN 1245	442	0.	*	3 JAN 0115	592	0.
1 JAN 1150	143	249.	*	2 JAN 0020	293	24.	*	2 JAN 1250	443	0.	*	3 JAN 0120	593	0.
1 JAN 1155	144	400.	*	2 JAN 0025	294	24.	*	2 JAN 1255	444	0.	*	3 JAN 0125	594	0.
1 JAN 1200	145	655.	*	2 JAN 0030	295	24.	*	2 JAN 1300	445	0.	*	3 JAN 0130	595	0.
1 JAN 1205	146	959.	*	2 JAN 0035	296	23.	*	2 JAN 1305	446	0.	*	3 JAN 0135	596	0.
1 JAN 1210	147	1340.	*	2 JAN 0040	297	23.	*	2 JAN 1310	447	0.	*	3 JAN 0140	597	0.
1 JAN 1215	148	1841.	*	2 JAN 0045	298	23.	*	2 JAN 1315	448	0.	*	3 JAN 0145	598	0.
1 JAN 1220	149	2364.	*	2 JAN 0050	299	22.	*	2 JAN 1320	449	0.	*	3 JAN 0150	599	0.
1 JAN 1225	150	2862.	*	2 JAN 0055	300	22.	*	2 JAN 1325	450	0.	*	3 JAN 0155	600	0.
			*				*				*			

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW					
			6-HR	24-HR	72-HR	49.92-HR	(CFS)	(HR)
		(CFS)	4279.	12.83		913.	253.	122.	122.
		(INCHES)	1.747	1.932	1.936	1.936		
		(AC-FT)	453.	501.	502.	502.		

CUMULATIVE AREA = 4.86 SQ MI

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

6-HOUR	OPERATION 24-HOUR	STATION 72-HOUR	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
	HYDROGRAPH AT			1	2645.	12.42	414.	115.	56.	1.94
	ROUTED TO			RCP1	2306.	12.67	413.	115.	56.	1.94
	HYDROGRAPH AT			2	1862.	12.75	369.	104.	50.	1.82
	2 COMBINED AT			CP2	4148.	12.67	781.	219.	106.	3.76
	ROUTED TO			RCP2	3966.	12.83	781.	219.	106.	3.76
	HYDROGRAPH AT			3A	339.	12.33	34.	9.	4.	0.29
	ROUTED TO			RCP3A	273.	12.50	34.	9.	4.	0.29
	HYDROGRAPH AT			3	959.	12.33	100.	25.	12.	0.81
	2 COMBINED AT			I1CP3	1164.	12.42	134.	33.	16.	1.10
	2 COMBINED AT			CMBN3	4279.	12.83	913.	253.	122.	4.86

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

2) **REMAINING FROM WATERFALL AFTER DIVERSION TO McMICKEN DAM**
SUBBASINS ½ OF 2, 3A, AND 3

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ID        White Tanks #3 future condition (Beardsley Canal Wash Improvement)
ID        May, 1999, FCDMC
ID        Remove borrow pit routing at sub-basin 16, fcdmc, July, 1999
*DIAGRAM
IT     5  1JAN94       0     600
IO     1
IN    15  1JAN94       0
JD  4.03   0.001
* precip1
PC     0   0.002   0.005   0.008   0.011   0.014   0.017    0.02   0.023   0.026
PC 0.029   0.032   0.035   0.038   0.041   0.044   0.048   0.052   0.056    0.06
PC 0.064   0.068   0.072   0.076    0.08   0.085    0.09   0.095     0.1   0.105
PC  0.11   0.115    0.12   0.126   0.133    0.14   0.147   0.155   0.163   0.172
PC 0.181   0.191   0.203   0.218   0.236   0.257   0.283   0.387   0.663   0.707
PC 0.735   0.758   0.776   0.791   0.804   0.815   0.825   0.834   0.842   0.849
PC 0.856   0.863   0.869   0.875   0.881   0.887   0.893   0.898   0.903   0.908
PC 0.913   0.918   0.922   0.926    0.93   0.934   0.938   0.942   0.946    0.95
PC 0.953   0.956   0.959   0.962   0.965   0.968   0.971   0.974   0.977    0.98
PC 0.983   0.986   0.989   0.992   0.995   0.998       1       1       1       1
JD  3.99      10
JD  3.83      50
JD  3.76     100
JD   3.7     200
VS   CP3
VV     2
KK     2
KM         RUNOFF HYDROGRAPH FROM SUB-BASIN 2.
KO     0       0       0       0      22
BA  0.91
LG  0.35   0.154   6.959   0.119  21.855
* ui2
UI   117     360     613     807    1209    1307     943     697     483     238
UI   168     110      36      36      36       0       0       0       0       0
UI     0       0       0       0       0       0       0       0       0       0
KK  RCP2   CNAME     CP2
KM         ROUTE COMBINED HYDROGRAPHS AT CP2 TO CP3.
KO     0       0       0       0      22
* RL   0       0     1.5    1298
RS     2    STOR      -1       0
RC  0.06   0.035    0.06    4500  0.0111       0
* rxry2
RX  1000    1100    1350    1705    1735    1780    1850    2000
RY  1304    1302    1302    1298    1298    1303    1302    1305
KK    3A
KM         RUNOFF HYDROGRAPH FROM SUB-BASIN 3A
KO     0       0       0       0      22
BA  0.29
LG 0.336    0.24    4.14   0.432       0
* ui3
UI    34      89     165     212     286     410     314     242     182     124
UI    62      48      33      10      10      10      10       0       0       0
UI     0       0       0       0       0       0       0       0       0       0
KK RCP3A   CNAME      2C
KM         ROUTE FLOW FROM CP3A TO CP3
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KO      0        0        0        0       22
* RL    0        0      1.5     1284
RS      2     STOR       -1        0
RC   0.03     0.03     0.05     5300    0.006        0
* rxry3
RX   1000     1023     1032     1046     1058     1067     1250     1540
RY   1289     1288     1286     1284     1284     1286     1288     1291
KK      3
KM          RUNOFF HYDROGRAPH FROM SUB-BASIN 3.
KO      0        0        0        0       22
BA   0.81
LG 0.339    0.242    4.441    0.362        0
* ui4
UI     91      228      430      554      725     1088      908      700      535      396
UI    205      152       95       57       28       28       28        0        0        0
UI      0        0        0        0        0        0        0        0        0        0
KK I1CP3    CNAME       3R
KM          ADD HYDROGRAPHS AT CP3.
KO      0        0        0        0       22
HC      2
KK    CP3   CNAME       4R
KM          ADD HYDROGRAPHS AT CP3.
KO      0        0        0        0       22
HC      2
KK     4R   CNAME      CP3
KO      0        0        0        0       22
RN     4R
ZZ
```

INTERPOLATED HYDROGRAPH AT 4R

DA MON HRMN	ORD	FLOW	DA MON HRMN	ORD	FLOW	DA MON HRMN	ORD	FLOW	DA MON HRMN	ORD	FLOW
1 JAN 0000	1	0.	1 JAN 1230	151	2279.	2 JAN 0100	301	3.	2 JAN 1330	451	0.
1 JAN 0005	2	0.	1 JAN 1235	152	1986.	2 JAN 0105	302	3.	2 JAN 1335	452	0.
1 JAN 0010	3	0.	1 JAN 1240	153	1624.	2 JAN 0110	303	2.	2 JAN 1340	453	0.
1 JAN 0015	4	0.	1 JAN 1245	154	1281.	2 JAN 0115	304	2.	2 JAN 1345	454	0.
1 JAN 0020	5	0.	1 JAN 1250	155	972.	2 JAN 0120	305	2.	2 JAN 1350	455	0.
1 JAN 0025	6	0.	1 JAN 1255	156	754.	2 JAN 0125	306	1.	2 JAN 1355	456	0.
1 JAN 0030	7	0.	1 JAN 1300	157	576.	2 JAN 0130	307	1.	2 JAN 1400	457	0.
1 JAN 0035	8	0.	1 JAN 1305	158	443.	2 JAN 0135	308	1.	2 JAN 1405	458	0.
1 JAN 0040	9	1.	1 JAN 1310	159	355.	2 JAN 0140	309	1.	2 JAN 1410	459	0.
1 JAN 0045	10	1.	1 JAN 1315	160	284.	2 JAN 0145	310	1.	2 JAN 1415	460	0.
1 JAN 0050	11	2.	1 JAN 1320	161	224.	2 JAN 0150	311	1.	2 JAN 1420	461	0.
1 JAN 0055	12	2.	1 JAN 1325	162	176.	2 JAN 0155	312	0.	2 JAN 1425	462	0.
1 JAN 0100	13	2.	1 JAN 1330	163	147.	2 JAN 0200	313	0.	2 JAN 1430	463	0.
1 JAN 0105	14	3.	1 JAN 1335	164	125.	2 JAN 0205	314	0.	2 JAN 1435	464	0.
1 JAN 0110	15	3.	1 JAN 1340	165	106.	2 JAN 0210	315	0.	2 JAN 1440	465	0.
1 JAN 0115	16	4.	1 JAN 1345	166	90.	2 JAN 0215	316	0.	2 JAN 1445	466	0.
1 JAN 0120	17	4.	1 JAN 1350	167	77.	2 JAN 0220	317	0.	2 JAN 1450	467	0.
1 JAN 0125	18	4.	1 JAN 1355	168	66.	2 JAN 0225	318	0.	2 JAN 1455	468	0.
1 JAN 0130	19	5.	1 JAN 1400	169	58.	2 JAN 0230	319	0.	2 JAN 1500	469	0.
1 JAN 0135	20	5.	1 JAN 1405	170	51.	2 JAN 0235	320	0.	2 JAN 1505	470	0.
1 JAN 0140	21	5.	1 JAN 1410	171	45.	2 JAN 0240	321	0.	2 JAN 1510	471	0.
1 JAN 0145	22	5.	1 JAN 1415	172	40.	2 JAN 0245	322	0.	2 JAN 1515	472	0.
1 JAN 0150	23	5.	1 JAN 1420	173	37.	2 JAN 0250	323	0.	2 JAN 1520	473	0.
1 JAN 0155	24	6.	1 JAN 1425	174	35.	2 JAN 0255	324	0.	2 JAN 1525	474	0.
1 JAN 0200	25	6.	1 JAN 1430	175	33.	2 JAN 0300	325	0.	2 JAN 1530	475	0.
1 JAN 0205	26	6.	1 JAN 1435	176	31.	2 JAN 0305	326	0.	2 JAN 1535	476	0.
1 JAN 0210	27	6.	1 JAN 1440	177	29.	2 JAN 0310	327	0.	2 JAN 1540	477	0.
1 JAN 0215	28	6.	1 JAN 1445	178	28.	2 JAN 0315	328	0.	2 JAN 1545	478	0.
1 JAN 0220	29	6.	1 JAN 1450	179	26.	2 JAN 0320	329	0.	2 JAN 1550	479	0.
1 JAN 0225	30	6.	1 JAN 1455	180	25.	2 JAN 0325	330	0.	2 JAN 1555	480	0.
1 JAN 0230	31	6.	1 JAN 1500	181	24.	2 JAN 0330	331	0.	2 JAN 1600	481	0.
1 JAN 0235	32	6.	1 JAN 1505	182	23.	2 JAN 0335	332	0.	2 JAN 1605	482	0.
1 JAN 0240	33	6.	1 JAN 1510	183	22.	2 JAN 0340	333	0.	2 JAN 1610	483	0.
1 JAN 0245	34	6.	1 JAN 1515	184	21.	2 JAN 0345	334	0.	2 JAN 1615	484	0.
1 JAN 0250	35	6.	1 JAN 1520	185	20.	2 JAN 0350	335	0.	2 JAN 1620	485	0.
1 JAN 0255	36	6.	1 JAN 1525	186	19.	2 JAN 0355	336	0.	2 JAN 1625	486	0.
1 JAN 0300	37	6.	1 JAN 1530	187	18.	2 JAN 0400	337	0.	2 JAN 1630	487	0.
1 JAN 0305	38	6.	1 JAN 1535	188	18.	2 JAN 0405	338	0.	2 JAN 1635	488	0.
1 JAN 0310	39	6.	1 JAN 1540	189	17.	2 JAN 0410	339	0.	2 JAN 1640	489	0.
1 JAN 0315	40	6.	1 JAN 1545	190	17.	2 JAN 0415	340	0.	2 JAN 1645	490	0.
1 JAN 0320	41	6.	1 JAN 1550	191	16.	2 JAN 0420	341	0.	2 JAN 1650	491	0.
1 JAN 0325	42	6.	1 JAN 1555	192	16.	2 JAN 0425	342	0.	2 JAN 1655	492	0.
1 JAN 0330	43	6.	1 JAN 1600	193	15.	2 JAN 0430	343	0.	2 JAN 1700	493	0.
1 JAN 0335	44	6.	1 JAN 1605	194	15.	2 JAN 0435	344	0.	2 JAN 1705	494	0.
1 JAN 0340	45	6.	1 JAN 1610	195	15.	2 JAN 0440	345	0.	2 JAN 1710	495	0.
1 JAN 0345	46	6.	1 JAN 1615	196	14.	2 JAN 0445	346	0.	2 JAN 1715	496	0.
1 JAN 0350	47	6.	1 JAN 1620	197	14.	2 JAN 0450	347	0.	2 JAN 1720	497	0.
1 JAN 0355	48	6.	1 JAN 1625	198	14.	2 JAN 0455	348	0.	2 JAN 1725	498	0.
1 JAN 0400	49	6.	1 JAN 1630	199	14.	2 JAN 0500	349	0.	2 JAN 1730	499	0.
1 JAN 0405	50	6.	1 JAN 1635	200	13.	2 JAN 0505	350	0.	2 JAN 1735	500	0.
1 JAN 0410	51	6.	1 JAN 1640	201	13.	2 JAN 0510	351	0.	2 JAN 1740	501	0.
1 JAN 0415	52	6.	1 JAN 1645	202	13.	2 JAN 0515	352	0.	2 JAN 1745	502	0.
1 JAN 0420	53	6.	1 JAN 1650	203	13.	2 JAN 0520	353	0.	2 JAN 1750	503	0.
1 JAN 0425	54	7.	1 JAN 1655	204	13.	2 JAN 0525	354	0.	2 JAN 1755	504	0.
1 JAN 0430	55	7.	1 JAN 1700	205	13.	2 JAN 0530	355	0.	2 JAN 1800	505	0.
1 JAN 0435	56	7.	1 JAN 1705	206	13.	2 JAN 0535	356	0.	2 JAN 1805	506	0.
1 JAN 0440	57	7.	1 JAN 1710	207	12.	2 JAN 0540	357	0.	2 JAN 1810	507	0.
1 JAN 0445	58	7.	1 JAN 1715	208	12.	2 JAN 0545	358	0.	2 JAN 1815	508	0.
1 JAN 0450	59	7.	1 JAN 1720	209	12.	2 JAN 0550	359	0.	2 JAN 1820	509	0.
1 JAN 0455	60	7.	1 JAN 1725	210	12.	2 JAN 0555	360	0.	2 JAN 1825	510	0.
1 JAN 0500	61	8.	1 JAN 1730	211	12.	2 JAN 0600	361	0.	2 JAN 1830	511	0.
1 JAN 0505	62	8.	1 JAN 1735	212	11.	2 JAN 0605	362	0.	2 JAN 1835	512	0.
1 JAN 0510	63	8.	1 JAN 1740	213	11.	2 JAN 0610	363	0.	2 JAN 1840	513	0.
1 JAN 0515	64	8.	1 JAN 1745	214	11.	2 JAN 0615	364	0.	2 JAN 1845	514	0.
1 JAN 0520	65	8.	1 JAN 1750	215	11.	2 JAN 0620	365	0.	2 JAN 1850	515	0.
1 JAN 0525	66	8.	1 JAN 1755	216	11.	2 JAN 0625	366	0.	2 JAN 1855	516	0.
1 JAN 0530	67	8.	1 JAN 1800	217	11.	2 JAN 0630	367	0.	2 JAN 1900	517	0.
1 JAN 0535	68	8.	1 JAN 1805	218	11.	2 JAN 0635	368	0.	2 JAN 1905	518	0.
1 JAN 0540	69	8.	1 JAN 1810	219	11.	2 JAN 0640	369	0.	2 JAN 1910	519	0.
1 JAN 0545	70	8.	1 JAN 1815	220	11.	2 JAN 0645	370	0.	2 JAN 1915	520	0.
1 JAN 0550	71	8.	1 JAN 1820	221	10.	2 JAN 0650	371	0.	2 JAN 1920	521	0.
1 JAN 0555	72	8.	1 JAN 1825	222	10.	2 JAN 0655	372	0.	2 JAN 1925	522	0.
1 JAN 0600	73	8.	1 JAN 1830	223	10.	2 JAN 0700	373	0.	2 JAN 1930	523	0.
1 JAN 0605	74	8.	1 JAN 1835	224	10.	2 JAN 0705	374	0.	2 JAN 1935	524	0.
1 JAN 0610	75	8.	1 JAN 1840	225	10.	2 JAN 0710	375	0.	2 JAN 1940	525	0.
1 JAN 0615	76	8.	1 JAN 1845	226	10.	2 JAN 0715	376	0.	2 JAN 1945	526	0.
1 JAN 0620	77	8.	1 JAN 1850	227	9.	2 JAN 0720	377	0.	2 JAN 1950	527	0.
1 JAN 0625	78	8.	1 JAN 1855	228	9.	2 JAN 0725	378	0.	2 JAN 1955	528	0.

1	JAN	0630	79	8.	*	1	JAN	1900	229	9.	*	2	JAN	0730	379	0.	*	2	JAN	2000	529	0.
1	JAN	0635	80	9.	*	1	JAN	1905	230	9.	*	2	JAN	0735	380	0.	*	2	JAN	2005	530	0.
1	JAN	0640	81	9.	*	1	JAN	1910	231	9.	*	2	JAN	0740	381	0.	*	2	JAN	2010	531	0.
1	JAN	0645	82	9.	*	1	JAN	1915	232	9.	*	2	JAN	0745	382	0.	*	2	JAN	2015	532	0.
1	JAN	0650	83	9.	*	1	JAN	1920	233	9.	*	2	JAN	0750	383	0.	*	2	JAN	2020	533	0.
1	JAN	0655	84	9.	*	1	JAN	1925	234	9.	*	2	JAN	0755	384	0.	*	2	JAN	2025	534	0.
1	JAN	0700	85	9.	*	1	JAN	1930	235	9.	*	2	JAN	0800	385	0.	*	2	JAN	2030	535	0.
1	JAN	0705	86	9.	*	1	JAN	1935	236	9.	*	2	JAN	0805	386	0.	*	2	JAN	2035	536	0.
1	JAN	0710	87	10.	*	1	JAN	1940	237	9.	*	2	JAN	0810	387	0.	*	2	JAN	2040	537	0.
1	JAN	0715	88	10.	*	1	JAN	1945	238	8.	*	2	JAN	0815	388	0.	*	2	JAN	2045	538	0.
1	JAN	0720	89	10.	*	1	JAN	1950	239	8.	*	2	JAN	0820	389	0.	*	2	JAN	2050	539	0.
1	JAN	0725	90	10.	*	1	JAN	1955	240	8.	*	2	JAN	0825	390	0.	*	2	JAN	2055	540	0.
1	JAN	0730	91	10.	*	1	JAN	2000	241	8.	*	2	JAN	0830	391	0.	*	2	JAN	2100	541	0.
1	JAN	0735	92	10.	*	1	JAN	2005	242	8.	*	2	JAN	0835	392	0.	*	2	JAN	2105	542	0.
1	JAN	0740	93	10.	*	1	JAN	2010	243	8.	*	2	JAN	0840	393	0.	*	2	JAN	2110	543	0.
1	JAN	0745	94	10.	*	1	JAN	2015	244	8.	*	2	JAN	0845	394	0.	*	2	JAN	2115	544	0.
1	JAN	0750	95	10.	*	1	JAN	2020	245	8.	*	2	JAN	0850	395	0.	*	2	JAN	2120	545	0.
1	JAN	0755	96	10.	*	1	JAN	2025	246	8.	*	2	JAN	0855	396	0.	*	2	JAN	2125	546	0.
1	JAN	0800	97	10.	*	1	JAN	2030	247	8.	*	2	JAN	0900	397	0.	*	2	JAN	2130	547	0.
1	JAN	0805	98	10.	*	1	JAN	2035	248	8.	*	2	JAN	0905	398	0.	*	2	JAN	2135	548	0.
1	JAN	0810	99	10.	*	1	JAN	2040	249	8.	*	2	JAN	0910	399	0.	*	2	JAN	2140	549	0.
1	JAN	0815	100	10.	*	1	JAN	2045	250	7.	*	2	JAN	0915	400	0.	*	2	JAN	2145	550	0.
1	JAN	0820	101	10.	*	1	JAN	2050	251	7.	*	2	JAN	0920	401	0.	*	2	JAN	2150	551	0.
1	JAN	0825	102	10.	*	1	JAN	2055	252	7.	*	2	JAN	0925	402	0.	*	2	JAN	2155	552	0.
1	JAN	0830	103	11.	*	1	JAN	2100	253	7.	*	2	JAN	0930	403	0.	*	2	JAN	2200	553	0.
1	JAN	0835	104	11.	*	1	JAN	2105	254	7.	*	2	JAN	0935	404	0.	*	2	JAN	2205	554	0.
1	JAN	0840	105	11.	*	1	JAN	2110	255	7.	*	2	JAN	0940	405	0.	*	2	JAN	2210	555	0.
1	JAN	0845	106	11.	*	1	JAN	2115	256	7.	*	2	JAN	0945	406	0.	*	2	JAN	2215	556	0.
1	JAN	0850	107	11.	*	1	JAN	2120	257	7.	*	2	JAN	0950	407	0.	*	2	JAN	2220	557	0.
1	JAN	0855	108	12.	*	1	JAN	2125	258	7.	*	2	JAN	0955	408	0.	*	2	JAN	2225	558	0.
1	JAN	0900	109	12.	*	1	JAN	2130	259	7.	*	2	JAN	1000	409	0.	*	2	JAN	2230	559	0.
1	JAN	0905	110	12.	*	1	JAN	2135	260	6.	*	2	JAN	1005	410	0.	*	2	JAN	2235	560	0.
1	JAN	0910	111	12.	*	1	JAN	2140	261	6.	*	2	JAN	1010	411	0.	*	2	JAN	2240	561	0.
1	JAN	0915	112	13.	*	1	JAN	2145	262	6.	*	2	JAN	1015	412	0.	*	2	JAN	2245	562	0.
1	JAN	0920	113	13.	*	1	JAN	2150	263	6.	*	2	JAN	1020	413	0.	*	2	JAN	2250	563	0.
1	JAN	0925	114	13.	*	1	JAN	2155	264	6.	*	2	JAN	1025	414	0.	*	2	JAN	2255	564	0.
1	JAN	0930	115	14.	*	1	JAN	2200	265	6.	*	2	JAN	1030	415	0.	*	2	JAN	2300	565	0.
1	JAN	0935	116	14.	*	1	JAN	2205	266	6.	*	2	JAN	1035	416	0.	*	2	JAN	2305	566	0.
1	JAN	0940	117	14.	*	1	JAN	2210	267	6.	*	2	JAN	1040	417	0.	*	2	JAN	2310	567	0.
1	JAN	0945	118	14.	*	1	JAN	2215	268	6.	*	2	JAN	1045	418	0.	*	2	JAN	2315	568	0.
1	JAN	0950	119	15.	*	1	JAN	2220	269	6.	*	2	JAN	1050	419	0.	*	2	JAN	2320	569	0.
1	JAN	0955	120	15.	*	1	JAN	2225	270	6.	*	2	JAN	1055	420	0.	*	2	JAN	2325	570	0.
1	JAN	1000	121	15.	*	1	JAN	2230	271	6.	*	2	JAN	1100	421	0.	*	2	JAN	2330	571	0.
1	JAN	1005	122	16.	*	1	JAN	2235	272	6.	*	2	JAN	1105	422	0.	*	2	JAN	2335	572	0.
1	JAN	1010	123	16.	*	1	JAN	2240	273	6.	*	2	JAN	1110	423	0.	*	2	JAN	2340	573	0.
1	JAN	1015	124	16.	*	1	JAN	2245	274	6.	*	2	JAN	1115	424	0.	*	2	JAN	2345	574	0.
1	JAN	1020	125	17.	*	1	JAN	2250	275	6.	*	2	JAN	1120	425	0.	*	2	JAN	2350	575	0.
1	JAN	1025	126	17.	*	1	JAN	2255	276	6.	*	2	JAN	1125	426	0.	*	2	JAN	2355	576	0.
1	JAN	1030	127	17.	*	1	JAN	2300	277	6.	*	2	JAN	1130	427	0.	*	3	JAN	0000	577	0.
1	JAN	1035	128	18.	*	1	JAN	2305	278	6.	*	2	JAN	1135	428	0.	*	3	JAN	0005	578	0.
1	JAN	1040	129	18.	*	1	JAN	2310	279	6.	*	2	JAN	1140	429	0.	*	3	JAN	0010	579	0.
1	JAN	1045	130	19.	*	1	JAN	2315	280	6.	*	2	JAN	1145	430	0.	*	3	JAN	0015	580	0.
1	JAN	1050	131	19.	*	1	JAN	2320	281	6.	*	2	JAN	1150	431	0.	*	3	JAN	0020	581	0.
1	JAN	1055	132	20.	*	1	JAN	2325	282	6.	*	2	JAN	1155	432	0.	*	3	JAN	0025	582	0.
1	JAN	1100	133	21.	*	1	JAN	2330	283	6.	*	2	JAN	1200	433	0.	*	3	JAN	0030	583	0.
1	JAN	1105	134	21.	*	1	JAN	2335	284	6.	*	2	JAN	1205	434	0.	*	3	JAN	0035	584	0.
1	JAN	1110	135	23.	*	1	JAN	2340	285	6.	*	2	JAN	1210	435	0.	*	3	JAN	0040	585	0.
1	JAN	1115	136	24.	*	1	JAN	2345	286	6.	*	2	JAN	1215	436	0.	*	3	JAN	0045	586	0.
1	JAN	1120	137	25.	*	1	JAN	2350	287	6.	*	2	JAN	1220	437	0.	*	3	JAN	0050	587	0.
1	JAN	1125	138	27.	*	1	JAN	2355	288	6.	*	2	JAN	1225	438	0.	*	3	JAN	0055	588	0.
1	JAN	1130	139	29.	*	2	JAN	0000	289	6.	*	2	JAN	1230	439	0.	*	3	JAN	0100	589	0.
1	JAN	1135	140	38.	*	2	JAN	0005	290	6.	*	2	JAN	1235	440	0.	*	3	JAN	0105	590	0.
1	JAN	1140	141	63.	*	2	JAN	0010	291	6.	*	2	JAN	1240	441	0.	*	3	JAN	0110	591	0.
1	JAN	1145	142	109.	*	2	JAN	0015	292	6.	*	2	JAN	1245	442	0.	*	3	JAN	0115	592	0.
1	JAN	1150	143	198.	*	2	JAN	0020	293	6.	*	2	JAN	1250	443	0.	*	3	JAN	0120	593	0.
1	JAN	1155	144	355.	*	2	JAN	0025	294	6.	*	2	JAN	1255	444	0.	*	3	JAN	0125	594	0.
1	JAN	1200	145	649.	*	2	JAN	0030	295	5.	*	2	JAN	1300	445	0.	*	3	JAN	0130	595	0.
1	JAN	1205	146	1010.	*	2	JAN	0035	296	5.	*	2	JAN	1305	446	0.	*	3	JAN	0135	596	0.
1	JAN	1210	147	1431.	*	2	JAN	0040	297	5.	*	2	JAN	1310	447	0.	*	3	JAN	0140	597	0.
1	JAN	1215	148	1916.	*	2	JAN	0045	298	4.	*	2	JAN	1315	448	0.	*	3	JAN	0145	598	0.
1	JAN	1220	149	2286.	*	2	JAN	0050	299	4.	*	2	JAN	1320	449	0.	*	3	JAN	0150	599	0.
1	JAN	1225	150	2442.	*	2	JAN	0055	300	3.	*	2	JAN	1325	450	0.	*	3	JAN	0155	600	0.
					*						*						*					

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PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW						
		6-HR	24-HR	72-HR	49.92-HR	(CFS)	(HR)	
	(CFS)	2442.	12.42		321.	87.	42.	42.
	(INCHES)	1.484	1.601	1.602	1.602			
	(AC-FT)	159.	172.	172.	172.			

CUMULATIVE AREA = 2.01 SQ MI

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

6-HOUR	OPERATION 24-HOUR	STATION 72-HOUR	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
	HYDROGRAPH AT			2	1475.	12.25	188.	53.	26.	0.91
	ROUTED TO			RCP2	1288.	12.50	188.	53.	26.	0.91
	HYDROGRAPH AT			3A	339.	12.33	34.	9.	4.	0.29
	ROUTED TO			RCP3A	273.	12.50	34.	9.	4.	0.29
	HYDROGRAPH AT			3	959.	12.33	100.	25.	12.	0.81
	2 COMBINED AT			I1CP3	1164.	12.42	134.	33.	16.	1.10
	2 COMBINED AT			CP3	2442.	12.42	321.	87.	42.	2.01
	ROUTED TO			4R	2442.	12.42	321.	87.	42.	2.01

3) **CHOLLA WASH**

SUBBASINS 4 THROUGH 10

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ID        White Tanks #3 future condition (Beardsley Canal Wash Improvement)
ID        May, 1999, FCDMC
ID        Remove borrow pit routing at sub-basin 16, fcdmc, July, 1999
*DIAGRAM
IT     5  1JAN94       0     600
IO     1
IN    15  1JAN94       0
JD  4.03   0.001
* precip1
PC     0   0.002   0.005   0.008   0.011   0.014   0.017    0.02   0.023   0.026
PC 0.029   0.032   0.035   0.038   0.041   0.044   0.048   0.052   0.056    0.06
PC 0.064   0.068   0.072   0.076    0.08   0.085    0.09   0.095     0.1   0.105
PC  0.11   0.115    0.12   0.126   0.133    0.14   0.147   0.155   0.163   0.172
PC 0.181   0.191   0.203   0.218   0.236   0.257   0.283   0.387   0.663   0.707
PC 0.735   0.758   0.776   0.791   0.804   0.815   0.825   0.834   0.842   0.849
PC 0.856   0.863   0.869   0.875   0.881   0.887   0.893   0.898   0.903   0.908
PC 0.913   0.918   0.922   0.926    0.93   0.934   0.938   0.942   0.946    0.95
PC 0.953   0.956   0.959   0.962   0.965   0.968   0.971   0.974   0.977    0.98
PC 0.983   0.986   0.989   0.992   0.995   0.998       1       1       1       1
JD  3.99      10
JD  3.83      50
JD  3.76     100
JD   3.7     200
VS   CP10
VV     2
KK     4
KM         RUNOFF HYDROGRAPH FORM SUB-BASIN 4.
KO     0       0       0       0      22
BA   0.3
LG  0.35    0.15    8.01   0.081  18.504
* ui1
UI    48     192     287     444     512     346     236     115      67      35
UI    14      14       0       0       0       0       0       0       0       0
UI     0       0       0       0       0       0       0       0       0       0
KK     5
KM         RUNOFF HYDROGRAPH FROM SUB-BASIN 5.
KO     0       0       0       0      22
BA  0.72
LG  0.35    0.15   8.023   0.081  17.926
* ui2
UI   110     437     658     992    1242     849     591     315     174     101
UI    34      34      34       0       0       0       0       0       0       0
UI     0       0       0       0       0       0       0       0       0       0
KK   CP5   CNAME    RCP5
KM         ADD HYDROGRAPHS AT CP5.
KO     0       0       0       0      22
HC     2
KK  RCP5   CNAME     CP5
KM         ROUTE COMBINED HYDROGRAPHS AT CP5 TO CP7.
KO     0       0       0       0      22
* RL   0       0     0.5    2800
RS     1    STOR      -1       0
RC  0.08    0.05    0.08    4800  0.0833       0
* rxry1
```

```
RX   955     970     985    1000    1020    1035    1050    1065
RY  2815    2810    2805    2800    2800    2805    2810    2815
KK     6
KM         RUNOFF HYDROGRAPH FROM SUB-BASIN 6.
KO     0       0       0       0      22
BA  0.45
LG  0.35    0.15   7.976   0.082      20
* ui3
UI   204     622    1139     837     427     155      54      33       0       0
UI     0       0       0       0       0       0       0       0       0       0
KK I1CP7   CNAME      2R
KM         ADD HYDROGRAPHS AT CP7.
KO     0       0       0       0      22
HC     2
KK     7
KM         RUNOFF HYDROGRAPH FROM SUB-BASIN 7.
KO     0       0       0       0      22
BA  0.31
LG  0.35    0.15   7.976   0.082      20
* ui4
UI   126     387     716     606     343     129      52      22       0       0
UI     0       0       0       0       0       0       0       0       0       0
KK   CP7   CNAME    RCP7
KM         ADD HYDROGRAPHS AT CP7.
KO     0       0       0       0      22
HC     2
KK  RCP7   CNAME     CP7
KM         ROUTE COMBINED HYDROGRAPHS AT CP7 TO CP9.
KO     0       0       0       0      22
* RL    0       0     0.5    1838
RS     2    STOR      -1       0
RC  0.08    0.05    0.08   10200  0.0775       0
* rxry2
RX  1000    1045    1120    1195    1230    1300    1350    1450
RY  1910    1880    1850    1838    1838    1850    1880    1910
KK     9
KM         RUNOFF HYDROGRAPH FROM SUB-BASIN 9.
KO     0       0       0       0      22
BA   1.4
LG  0.35    0.15   7.909   0.084  19.572
* ui5
UI   155     381     727     935    1216    1832    1591    1224     938     705
UI   386     261     177     115      47      47      47      47       0       0
UI     0       0       0       0       0       0       0       0       0       0
KK I1CP9   CNAME      4R
KM         ADD HYDROGRAPHS AT CP9.
KO     0       0       0       0      22
HC     2
KK     8
KM         RUNOFF HYDROGRAPH FROM SUB-BASIN 8.
KO     0       0       0       0      22
BA  0.81
LG  0.35    0.15   7.976   0.082      20
* ui6
UI   102     313     535     703    1054    1140     822     608     421     208
UI   147      96      31      31      31       0       0       0       0       0
UI     0       0       0       0       0       0       0       0       0       0
```

```
KK   CP9   CNAME    RCP9
KM         ADD HYDROGRAPHS AT CP9.
KO     0       0       0       0      22
HC     2
KK  RCP9   CNAME     CP9
KM         ROUTE COMBINED HYDROGRAPHS AT CP9 TO CP10.
KO     0       0       0       0      22
* RL   0       0     1.5    1308
RS     4    STOR      -1       0
RC  0.06   0.035    0.06   19200  0.0232       0
* rxry3
RX  1000    1085    1310    1395    1415    1450    1630    1665
RY  1317    1314    1311    1308    1308    1314    1314    1317
KK    10
KM         RUNOFF HYDROGRAPH FROM SUB-BASIN 10.
KO     0       0       0       0      22
BA  2.02
LG 0.347   0.248   5.124   0.254    4.52
* ui7
UI   119     119     218     427     546     632     708     812     929    1148
UI  1499    1393    1156    1006     894     765     669     577     475     325
UI   210     201     193     119     119      86      36      36      36      36
UI    36      36      36      36       0       0       0       0       0       0
UI     0       0       0       0       0       0       0       0       0       0
KKI1CP10   CNAME      6R
KM         ADD HYDROGRAPHS AT CP10
KO     0       0       0       0      22
HC     2
KK    7R   CNAME    CP10
KO     0       0       0       0      22
RN    7R
ZZ
```

INTERPOLATED HYDROGRAPH AT 7R

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1	JAN	0000	1	0.	1	JAN	1230	151	5246.	2	JAN	0100	301	23.	2	JAN	1330	451	0.
1	JAN	0005	2	0.	1	JAN	1235	152	5973.	2	JAN	0105	302	22.	2	JAN	1335	452	0.
1	JAN	0010	3	0.	1	JAN	1240	153	6439.	2	JAN	0110	303	22.	2	JAN	1340	453	0.
1	JAN	0015	4	0.	1	JAN	1245	154	6512.	2	JAN	0115	304	21.	2	JAN	1345	454	0.
1	JAN	0020	5	0.	1	JAN	1250	155	6175.	2	JAN	0120	305	20.	2	JAN	1350	455	0.
1	JAN	0025	6	0.	1	JAN	1255	156	5492.	2	JAN	0125	306	19.	2	JAN	1355	456	0.
1	JAN	0030	7	0.	1	JAN	1300	157	4708.	2	JAN	0130	307	18.	2	JAN	1400	457	0.
1	JAN	0035	8	0.	1	JAN	1305	158	3950.	2	JAN	0135	308	17.	2	JAN	1405	458	0.
1	JAN	0040	9	1.	1	JAN	1310	159	3268.	2	JAN	0140	309	16.	2	JAN	1410	459	0.
1	JAN	0045	10	1.	1	JAN	1315	160	2698.	2	JAN	0145	310	15.	2	JAN	1415	460	0.
1	JAN	0050	11	1.	1	JAN	1320	161	2269.	2	JAN	0150	311	13.	2	JAN	1420	461	0.
1	JAN	0055	12	2.	1	JAN	1325	162	1899.	2	JAN	0155	312	12.	2	JAN	1425	462	0.
1	JAN	0100	13	2.	1	JAN	1330	163	1565.	2	JAN	0200	313	11.	2	JAN	1430	463	0.
1	JAN	0105	14	3.	1	JAN	1335	164	1305.	2	JAN	0205	314	10.	2	JAN	1435	464	0.
1	JAN	0110	15	3.	1	JAN	1340	165	1110.	2	JAN	0210	315	10.	2	JAN	1440	465	0.
1	JAN	0115	16	4.	1	JAN	1345	166	951.	2	JAN	0215	316	9.	2	JAN	1445	466	0.
1	JAN	0120	17	5.	1	JAN	1350	167	823.	2	JAN	0220	317	8.	2	JAN	1450	467	0.
1	JAN	0125	18	6.	1	JAN	1355	168	703.	2	JAN	0225	318	7.	2	JAN	1455	468	0.
1	JAN	0130	19	7.	1	JAN	1400	169	605.	2	JAN	0230	319	6.	2	JAN	1500	469	0.
1	JAN	0135	20	8.	1	JAN	1405	170	518.	2	JAN	0235	320	6.	2	JAN	1505	470	0.
1	JAN	0140	21	9.	1	JAN	1410	171	451.	2	JAN	0240	321	5.	2	JAN	1510	471	0.
1	JAN	0145	22	10.	1	JAN	1415	172	411.	2	JAN	0245	322	5.	2	JAN	1515	472	0.
1	JAN	0150	23	11.	1	JAN	1420	173	374.	2	JAN	0250	323	4.	2	JAN	1520	473	0.
1	JAN	0155	24	12.	1	JAN	1425	174	337.	2	JAN	0255	324	4.	2	JAN	1525	474	0.
1	JAN	0200	25	13.	1	JAN	1430	175	304.	2	JAN	0300	325	3.	2	JAN	1530	475	0.
1	JAN	0205	26	14.	1	JAN	1435	176	274.	2	JAN	0305	326	3.	2	JAN	1535	476	0.
1	JAN	0210	27	15.	1	JAN	1440	177	239.	2	JAN	0310	327	3.	2	JAN	1540	477	0.
1	JAN	0215	28	16.	1	JAN	1445	178	208.	2	JAN	0315	328	2.	2	JAN	1545	478	0.
1	JAN	0220	29	17.	1	JAN	1450	179	180.	2	JAN	0320	329	2.	2	JAN	1550	479	0.
1	JAN	0225	30	18.	1	JAN	1455	180	168.	2	JAN	0325	330	2.	2	JAN	1555	480	0.
1	JAN	0230	31	19.	1	JAN	1500	181	156.	2	JAN	0330	331	2.	2	JAN	1600	481	0.
1	JAN	0235	32	19.	1	JAN	1505	182	144.	2	JAN	0335	332	1.	2	JAN	1605	482	0.
1	JAN	0240	33	20.	1	JAN	1510	183	134.	2	JAN	0340	333	1.	2	JAN	1610	483	0.
1	JAN	0245	34	21.	1	JAN	1515	184	125.	2	JAN	0345	334	1.	2	JAN	1615	484	0.
1	JAN	0250	35	21.	1	JAN	1520	185	117.	2	JAN	0350	335	1.	2	JAN	1620	485	0.
1	JAN	0255	36	22.	1	JAN	1525	186	109.	2	JAN	0355	336	1.	2	JAN	1625	486	0.
1	JAN	0300	37	23.	1	JAN	1530	187	102.	2	JAN	0400	337	1.	2	JAN	1630	487	0.
1	JAN	0305	38	23.	1	JAN	1535	188	96.	2	JAN	0405	338	1.	2	JAN	1635	488	0.
1	JAN	0310	39	23.	1	JAN	1540	189	90.	2	JAN	0410	339	0.	2	JAN	1640	489	0.
1	JAN	0315	40	24.	1	JAN	1545	190	86.	2	JAN	0415	340	0.	2	JAN	1645	490	0.
1	JAN	0320	41	24.	1	JAN	1550	191	82.	2	JAN	0420	341	0.	2	JAN	1650	491	0.
1	JAN	0325	42	24.	1	JAN	1555	192	78.	2	JAN	0425	342	0.	2	JAN	1655	492	0.
1	JAN	0330	43	25.	1	JAN	1600	193	75.	2	JAN	0430	343	0.	2	JAN	1700	493	0.
1	JAN	0335	44	25.	1	JAN	1605	194	72.	2	JAN	0435	344	0.	2	JAN	1705	494	0.
1	JAN	0340	45	25.	1	JAN	1610	195	70.	2	JAN	0440	345	0.	2	JAN	1710	495	0.
1	JAN	0345	46	25.	1	JAN	1615	196	67.	2	JAN	0445	346	0.	2	JAN	1715	496	0.
1	JAN	0350	47	25.	1	JAN	1620	197	65.	2	JAN	0450	347	0.	2	JAN	1720	497	0.
1	JAN	0355	48	26.	1	JAN	1625	198	64.	2	JAN	0455	348	0.	2	JAN	1725	498	0.
1	JAN	0400	49	26.	1	JAN	1630	199	62.	2	JAN	0500	349	0.	2	JAN	1730	499	0.
1	JAN	0405	50	26.	1	JAN	1635	200	61.	2	JAN	0505	350	0.	2	JAN	1735	500	0.
1	JAN	0410	51	26.	1	JAN	1640	201	60.	2	JAN	0510	351	0.	2	JAN	1740	501	0.
1	JAN	0415	52	26.	1	JAN	1645	202	59.	2	JAN	0515	352	0.	2	JAN	1745	502	0.
1	JAN	0420	53	26.	1	JAN	1650	203	58.	2	JAN	0520	353	0.	2	JAN	1750	503	0.
1	JAN	0425	54	26.	1	JAN	1655	204	57.	2	JAN	0525	354	0.	2	JAN	1755	504	0.
1	JAN	0430	55	27.	1	JAN	1700	205	56.	2	JAN	0530	355	0.	2	JAN	1800	505	0.
1	JAN	0435	56	27.	1	JAN	1705	206	55.	2	JAN	0535	356	0.	2	JAN	1805	506	0.
1	JAN	0440	57	27.	1	JAN	1710	207	55.	2	JAN	0540	357	0.	2	JAN	1810	507	0.
1	JAN	0445	58	27.	1	JAN	1715	208	54.	2	JAN	0545	358	0.	2	JAN	1815	508	0.
1	JAN	0450	59	28.	1	JAN	1720	209	53.	2	JAN	0550	359	0.	2	JAN	1820	509	0.
1	JAN	0455	60	28.	1	JAN	1725	210	53.	2	JAN	0555	360	0.	2	JAN	1825	510	0.
1	JAN	0500	61	28.	1	JAN	1730	211	52.	2	JAN	0600	361	0.	2	JAN	1830	511	0.
1	JAN	0505	62	28.	1	JAN	1735	212	51.	2	JAN	0605	362	0.	2	JAN	1835	512	0.
1	JAN	0510	63	29.	1	JAN	1740	213	51.	2	JAN	0610	363	0.	2	JAN	1840	513	0.
1	JAN	0515	64	29.	1	JAN	1745	214	50.	2	JAN	0615	364	0.	2	JAN	1845	514	0.
1	JAN	0520	65	30.	1	JAN	1750	215	50.	2	JAN	0620	365	0.	2	JAN	1850	515	0.
1	JAN	0525	66	30.	1	JAN	1755	216	49.	2	JAN	0625	366	0.	2	JAN	1855	516	0.
1	JAN	0530	67	30.	1	JAN	1800	217	49.	2	JAN	0630	367	0.	2	JAN	1900	517	0.
1	JAN	0535	68	31.	1	JAN	1805	218	49.	2	JAN	0635	368	0.	2	JAN	1905	518	0.
1	JAN	0540	69	31.	1	JAN	1810	219	48.	2	JAN	0640	369	0.	2	JAN	1910	519	0.
1	JAN	0545	70	31.	1	JAN	1815	220	48.	2	JAN	0645	370	0.	2	JAN	1915	520	0.
1	JAN	0550	71	32.	1	JAN	1820	221	48.	2	JAN	0650	371	0.	2	JAN	1920	521	0.
1	JAN	0555	72	32.	1	JAN	1825	222	48.	2	JAN	0655	372	0.	2	JAN	1925	522	0.
1	JAN	0600	73	32.	1	JAN	1830	223	47.	2	JAN	0700	373	0.	2	JAN	1930	523	0.
1	JAN	0605	74	33.	1	JAN	1835	224	47.	2	JAN	0705	374	0.	2	JAN	1935	524	0.
1	JAN	0610	75	33.	1	JAN	1840	225	46.	2	JAN	0710	375	0.	2	JAN	1940	525	0.
1	JAN	0615	76	33.	1	JAN	1845	226	46.	2	JAN	0715	376	0.	2	JAN	1945	526	0.
1	JAN	0620	77	33.	1	JAN	1850	227	46.	2	JAN	0720	377	0.	2	JAN	1950	527	0.
1	JAN	0625	78	34.	1	JAN	1855	228	45.	2	JAN	0725	378	0.	2	JAN	1955	528	0.

1	JAN	0630	79	34.	*	1	JAN	1900	229	45.	*	2	JAN	0730	379	0.	*	2	JAN 2000 529 0.
1	JAN	0635	80	34.	*	1	JAN	1905	230	44.	*	2	JAN	0735	380	0.	*	2	JAN 2005 530 0.
1	JAN	0640	81	34.	*	1	JAN	1910	231	44.	*	2	JAN	0740	381	0.	*	2	JAN 2010 531 0.
1	JAN	0645	82	35.	*	1	JAN	1915	232	43.	*	2	JAN	0745	382	0.	*	2	JAN 2015 532 0.
1	JAN	0650	83	35.	*	1	JAN	1920	233	43.	*	2	JAN	0750	383	0.	*	2	JAN 2020 533 0.
1	JAN	0655	84	35.	*	1	JAN	1925	234	42.	*	2	JAN	0755	384	0.	*	2	JAN 2025 534 0.
1	JAN	0700	85	36.	*	1	JAN	1930	235	42.	*	2	JAN	0800	385	0.	*	2	JAN 2030 535 0.
1	JAN	0705	86	36.	*	1	JAN	1935	236	41.	*	2	JAN	0805	386	0.	*	2	JAN 2035 536 0.
1	JAN	0710	87	36.	*	1	JAN	1940	237	41.	*	2	JAN	0810	387	0.	*	2	JAN 2040 537 0.
1	JAN	0715	88	37.	*	1	JAN	1945	238	40.	*	2	JAN	0815	388	0.	*	2	JAN 2045 538 0.
1	JAN	0720	89	37.	*	1	JAN	1950	239	40.	*	2	JAN	0820	389	0.	*	2	JAN 2050 539 0.
1	JAN	0725	90	37.	*	1	JAN	1955	240	40.	*	2	JAN	0825	390	0.	*	2	JAN 2055 540 0.
1	JAN	0730	91	38.	*	1	JAN	2000	241	39.	*	2	JAN	0830	391	0.	*	2	JAN 2100 541 0.
1	JAN	0735	92	38.	*	1	JAN	2005	242	39.	*	2	JAN	0835	392	0.	*	2	JAN 2105 542 0.
1	JAN	0740	93	39.	*	1	JAN	2010	243	38.	*	2	JAN	0840	393	0.	*	2	JAN 2110 543 0.
1	JAN	0745	94	39.	*	1	JAN	2015	244	38.	*	2	JAN	0845	394	0.	*	2	JAN 2115 544 0.
1	JAN	0750	95	39.	*	1	JAN	2020	245	38.	*	2	JAN	0850	395	0.	*	2	JAN 2120 545 0.
1	JAN	0755	96	40.	*	1	JAN	2025	246	37.	*	2	JAN	0855	396	0.	*	2	JAN 2125 546 0.
1	JAN	0800	97	40.	*	1	JAN	2030	247	37.	*	2	JAN	0900	397	0.	*	2	JAN 2130 547 0.
1	JAN	0805	98	40.	*	1	JAN	2035	248	37.	*	2	JAN	0905	398	0.	*	2	JAN 2135 548 0.
1	JAN	0810	99	41.	*	1	JAN	2040	249	36.	*	2	JAN	0910	399	0.	*	2	JAN 2140 549 0.
1	JAN	0815	100	41.	*	1	JAN	2045	250	36.	*	2	JAN	0915	400	0.	*	2	JAN 2145 550 0.
1	JAN	0820	101	41.	*	1	JAN	2050	251	36.	*	2	JAN	0920	401	0.	*	2	JAN 2150 551 0.
1	JAN	0825	102	42.	*	1	JAN	2055	252	35.	*	2	JAN	0925	402	0.	*	2	JAN 2155 552 0.
1	JAN	0830	103	42.	*	1	JAN	2100	253	35.	*	2	JAN	0930	403	0.	*	2	JAN 2200 553 0.
1	JAN	0835	104	42.	*	1	JAN	2105	254	34.	*	2	JAN	0935	404	0.	*	2	JAN 2205 554 0.
1	JAN	0840	105	43.	*	1	JAN	2110	255	34.	*	2	JAN	0940	405	0.	*	2	JAN 2210 555 0.
1	JAN	0845	106	43.	*	1	JAN	2115	256	33.	*	2	JAN	0945	406	0.	*	2	JAN 2215 556 0.
1	JAN	0850	107	44.	*	1	JAN	2120	257	33.	*	2	JAN	0950	407	0.	*	2	JAN 2220 557 0.
1	JAN	0855	108	44.	*	1	JAN	2125	258	33.	*	2	JAN	0955	408	0.	*	2	JAN 2225 558 0.
1	JAN	0900	109	44.	*	1	JAN	2130	259	32.	*	2	JAN	1000	409	0.	*	2	JAN 2230 559 0.
1	JAN	0905	110	45.	*	1	JAN	2135	260	32.	*	2	JAN	1005	410	0.	*	2	JAN 2235 560 0.
1	JAN	0910	111	46.	*	1	JAN	2140	261	31.	*	2	JAN	1010	411	0.	*	2	JAN 2240 561 0.
1	JAN	0915	112	46.	*	1	JAN	2145	262	31.	*	2	JAN	1015	412	0.	*	2	JAN 2245 562 0.
1	JAN	0920	113	47.	*	1	JAN	2150	263	31.	*	2	JAN	1020	413	0.	*	2	JAN 2250 563 0.
1	JAN	0925	114	48.	*	1	JAN	2155	264	30.	*	2	JAN	1025	414	0.	*	2	JAN 2255 564 0.
1	JAN	0930	115	49.	*	1	JAN	2200	265	30.	*	2	JAN	1030	415	0.	*	2	JAN 2300 565 0.
1	JAN	0935	116	51.	*	1	JAN	2205	266	30.	*	2	JAN	1035	416	0.	*	2	JAN 2305 566 0.
1	JAN	0940	117	53.	*	1	JAN	2210	267	29.	*	2	JAN	1040	417	0.	*	2	JAN 2310 567 0.
1	JAN	0945	118	55.	*	1	JAN	2215	268	29.	*	2	JAN	1045	418	0.	*	2	JAN 2315 568 0.
1	JAN	0950	119	57.	*	1	JAN	2220	269	29.	*	2	JAN	1050	419	0.	*	2	JAN 2320 569 0.
1	JAN	0955	120	58.	*	1	JAN	2225	270	29.	*	2	JAN	1055	420	0.	*	2	JAN 2325 570 0.
1	JAN	1000	121	60.	*	1	JAN	2230	271	28.	*	2	JAN	1100	421	0.	*	2	JAN 2330 571 0.
1	JAN	1005	122	61.	*	1	JAN	2235	272	28.	*	2	JAN	1105	422	0.	*	2	JAN 2335 572 0.
1	JAN	1010	123	63.	*	1	JAN	2240	273	28.	*	2	JAN	1110	423	0.	*	2	JAN 2340 573 0.
1	JAN	1015	124	64.	*	1	JAN	2245	274	28.	*	2	JAN	1115	424	0.	*	2	JAN 2345 574 0.
1	JAN	1020	125	66.	*	1	JAN	2250	275	28.	*	2	JAN	1120	425	0.	*	2	JAN 2350 575 0.
1	JAN	1025	126	67.	*	1	JAN	2255	276	28.	*	2	JAN	1125	426	0.	*	2	JAN 2355 576 0.
1	JAN	1030	127	69.	*	1	JAN	2300	277	27.	*	2	JAN	1130	427	0.	*	3	JAN 0000 577 0.
1	JAN	1035	128	70.	*	1	JAN	2305	278	27.	*	2	JAN	1135	428	0.	*	3	JAN 0005 578 0.
1	JAN	1040	129	72.	*	1	JAN	2310	279	27.	*	2	JAN	1140	429	0.	*	3	JAN 0010 579 0.
1	JAN	1045	130	73.	*	1	JAN	2315	280	27.	*	2	JAN	1145	430	0.	*	3	JAN 0015 580 0.
1	JAN	1050	131	75.	*	1	JAN	2320	281	27.	*	2	JAN	1150	431	0.	*	3	JAN 0020 581 0.
1	JAN	1055	132	77.	*	1	JAN	2325	282	27.	*	2	JAN	1155	432	0.	*	3	JAN 0025 582 0.
1	JAN	1100	133	79.	*	1	JAN	2330	283	27.	*	2	JAN	1200	433	0.	*	3	JAN 0030 583 0.
1	JAN	1105	134	82.	*	1	JAN	2335	284	27.	*	2	JAN	1205	434	0.	*	3	JAN 0035 584 0.
1	JAN	1110	135	85.	*	1	JAN	2340	285	27.	*	2	JAN	1210	435	0.	*	3	JAN 0040 585 0.
1	JAN	1115	136	88.	*	1	JAN	2345	286	27.	*	2	JAN	1215	436	0.	*	3	JAN 0045 586 0.
1	JAN	1120	137	93.	*	1	JAN	2350	287	27.	*	2	JAN	1220	437	0.	*	3	JAN 0050 587 0.
1	JAN	1125	138	98.	*	1	JAN	2355	288	27.	*	2	JAN	1225	438	0.	*	3	JAN 0055 588 0.
1	JAN	1130	139	105.	*	2	JAN	0000	289	27.	*	2	JAN	1230	439	0.	*	3	JAN 0100 589 0.
1	JAN	1135	140	123.	*	2	JAN	0005	290	27.	*	2	JAN	1235	440	0.	*	3	JAN 0105 590 0.
1	JAN	1140	141	145.	*	2	JAN	0010	291	27.	*	2	JAN	1240	441	0.	*	3	JAN 0110 591 0.
1	JAN	1145	142	181.	*	2	JAN	0015	292	27.	*	2	JAN	1245	442	0.	*	3	JAN 0115 592 0.
1	JAN	1150	143	271.	*	2	JAN	0020	293	26.	*	2	JAN	1250	443	0.	*	3	JAN 0120 593 0.
1	JAN	1155	144	394.	*	2	JAN	0025	294	26.	*	2	JAN	1255	444	0.	*	3	JAN 0125 594 0.
1	JAN	1200	145	592.	*	2	JAN	0030	295	26.	*	2	JAN	1300	445	0.	*	3	JAN 0130 595 0.
1	JAN	1205	146	893.	*	2	JAN	0035	296	26.	*	2	JAN	1305	446	0.	*	3	JAN 0135 596 0.
1	JAN	1210	147	1399.	*	2	JAN	0040	297	25.	*	2	JAN	1310	447	0.	*	3	JAN 0140 597 0.
1	JAN	1215	148	2171.	*	2	JAN	0045	298	25.	*	2	JAN	1315	448	0.	*	3	JAN 0145 598 0.
1	JAN	1220	149	3194.	*	2	JAN	0050	299	25.	*	2	JAN	1320	449	0.	*	3	JAN 0150 599 0.
1	JAN	1225	150	4295.	*	2	JAN	0055	300	24.	*	2	JAN	1325	450	0.	*	3	JAN 0155 600 0.
					*						*						*		

****
*

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW						
		6-HR	24-HR	72-HR	49.92-HR	(CFS)	(HR)	
	(CFS)	6512.	12.75		1134.	310.	149.	149.
	(INCHES)	1.754	1.917	1.921	1.921			
	(AC-FT)	562.	615.	616.	616.			

CUMULATIVE AREA = 6.01 SQ MI

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

6-HOUR	OPERATION 24-HOUR	STATION 72-HOUR	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
	HYDROGRAPH AT			4	541.	12.17	64.	18.	8.	0.30
	HYDROGRAPH AT			5	1284.	12.25	153.	42.	20.	0.72
	2 COMBINED AT			CP5	1821.	12.25	216.	60.	29.	1.02
	ROUTED TO			RCP5	1780.	12.25	216.	60.	29.	1.02
	HYDROGRAPH AT			6	1010.	12.08	96.	27.	13.	0.45
	2 COMBINED AT			I1CP7	2519.	12.17	312.	86.	42.	1.47
	HYDROGRAPH AT			7	677.	12.08	66.	18.	9.	0.31
	2 COMBINED AT			CP7	3156.	12.17	378.	105.	50.	1.78
	ROUTED TO			RCP7	2737.	12.33	377.	105.	50.	1.78
	HYDROGRAPH AT			9	2111.	12.33	297.	83.	40.	1.40
	2 COMBINED AT			I1CP9	4844.	12.33	674.	187.	90.	3.18
	HYDROGRAPH AT			8	1309.	12.25	173.	48.	23.	0.81
	2 COMBINED AT			CP9	6141.	12.33	846.	235.	113.	3.99
	ROUTED TO			RCP9	4934.	12.67	846.	235.	113.	3.99
	HYDROGRAPH AT			10	1620.	12.75	289.	75.	36.	2.02
	2 COMBINED AT			I1CP10	6512.	12.75	1134.	310.	149.	6.01
	ROUTED TO			7R	6512.	12.75	1134.	310.	149.	6.01

4) ADDITIONAL FLOW TO THE NORTH INLET

SUBBASINS 12 AND WT3

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ID        White Tanks #3 future condition (Beardsley Canal Wash Improvement)
ID        May, 1999, FCDMC
ID        Remove borrow pit routing at sub-basin 16, fcdmc, July, 1999
*DIAGRAM
IT     5  1JAN94       0     600
IO     1
IN    15  1JAN94       0
JD  4.03   0.001
* precip1
PC     0   0.002   0.005   0.008   0.011   0.014   0.017    0.02   0.023   0.026
PC 0.029   0.032   0.035   0.038   0.041   0.044   0.048   0.052   0.056    0.06
PC 0.064   0.068   0.072   0.076    0.08   0.085    0.09   0.095     0.1   0.105
PC  0.11   0.115    0.12   0.126   0.133    0.14   0.147   0.155   0.163   0.172
PC 0.181   0.191   0.203   0.218   0.236   0.257   0.283   0.387   0.663   0.707
PC 0.735   0.758   0.776   0.791   0.804   0.815   0.825   0.834   0.842   0.849
PC 0.856   0.863   0.869   0.875   0.881   0.887   0.893   0.898   0.903   0.908
PC 0.913   0.918   0.922   0.926    0.93   0.934   0.938   0.942   0.946    0.95
PC 0.953   0.956   0.959   0.962   0.965   0.968   0.971   0.974   0.977    0.98
PC 0.983   0.986   0.989   0.992   0.995   0.998       1       1       1       1
JD  3.99      10
JD  3.83      50
JD  3.76     100
JD   3.7     200
VS   CPWT3
VV     2
KK    12
KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 12.
KO     0       0       0       0      22
BA  1.38
LG 0.346   0.247   5.232   0.241   5.217
* ui1
UI   111     129     393     535     636     758     930    1311    1277    1008
UI   850     697     574     445     264     191     169     111      92      34
UI    34      34      34      34      34       0       0       0       0       0
UI     0       0       0       0       0       0       0       0       0       0
KK RCP12   CNAME    CP12
KM        ROUTE COMBINED HYDROGRAPHS AT CP12 TO CPWT3
KO     0       0       0       0      22
* RL   0       0       2    1196
RS     2    STOR      -1       0
RC  0.03    0.03    0.04    4800  0.0031       0
* rxry1
RX   995    1000    1020    1080    1200    1530    1665    1760
RY  1211    1211    1210    1196    1196    1200    1204    1204
KK   WT3
KM        RUNOFF HYDROGRAPH FROM SUB-BASIN WT3
KO     0       0       0       0      22
BA  0.44
LG 0.344   0.246   4.577    0.33       0
* ui2
UI    36      44     128     175     207     249     308     436     399     318
UI   267     220     179     133      78      61      49      36      23      11
UI    11      11      11      11       0       0       0       0       0       0
UI     0       0       0       0       0       0       0       0       0       0
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```
KKI1CWT3   CNAME      2R
KM         ADD HYDROGRAPHS AT CPWT3
KO     0       0       0       0      22
HC     2
KK    3R   CNAME   CPWT3
KO     1       0       0       0       0
RN    3R
ZZ
```

INTERPOLATED HYDROGRAPH AT 3R

DA MON HRMN	ORD	FLOW	DA MON HRMN	ORD	FLOW	DA MON HRMN	ORD	FLOW	DA MON HRMN	ORD	FLOW
1 JAN 0000	1	0.	1 JAN 1230	151	1126.	2 JAN 0100	301	1.	2 JAN 1330	451	0.
1 JAN 0005	2	0.	1 JAN 1235	152	1300.	2 JAN 0105	302	1.	2 JAN 1335	452	0.
1 JAN 0010	3	0.	1 JAN 1240	153	1409.	2 JAN 0110	303	1.	2 JAN 1340	453	0.
1 JAN 0015	4	0.	1 JAN 1245	154	1431.	2 JAN 0115	304	1.	2 JAN 1345	454	0.
1 JAN 0020	5	0.	1 JAN 1250	155	1379.	2 JAN 0120	305	1.	2 JAN 1350	455	0.
1 JAN 0025	6	0.	1 JAN 1255	156	1266.	2 JAN 0125	306	1.	2 JAN 1355	456	0.
1 JAN 0030	7	0.	1 JAN 1300	157	1119.	2 JAN 0130	307	1.	2 JAN 1400	457	0.
1 JAN 0035	8	0.	1 JAN 1305	158	972.	2 JAN 0135	308	1.	2 JAN 1405	458	0.
1 JAN 0040	9	0.	1 JAN 1310	159	839.	2 JAN 0140	309	1.	2 JAN 1410	459	0.
1 JAN 0045	10	0.	1 JAN 1315	160	713.	2 JAN 0145	310	0.	2 JAN 1415	460	0.
1 JAN 0050	11	0.	1 JAN 1320	161	592.	2 JAN 0150	311	0.	2 JAN 1420	461	0.
1 JAN 0055	12	0.	1 JAN 1325	162	482.	2 JAN 0155	312	0.	2 JAN 1425	462	0.
1 JAN 0100	13	0.	1 JAN 1330	163	392.	2 JAN 0200	313	0.	2 JAN 1430	463	0.
1 JAN 0105	14	1.	1 JAN 1335	164	322.	2 JAN 0205	314	0.	2 JAN 1435	464	0.
1 JAN 0110	15	1.	1 JAN 1340	165	268.	2 JAN 0210	315	0.	2 JAN 1440	465	0.
1 JAN 0115	16	1.	1 JAN 1345	166	240.	2 JAN 0215	316	0.	2 JAN 1445	466	0.
1 JAN 0120	17	1.	1 JAN 1350	167	212.	2 JAN 0220	317	0.	2 JAN 1450	467	0.
1 JAN 0125	18	1.	1 JAN 1355	168	186.	2 JAN 0225	318	0.	2 JAN 1455	468	0.
1 JAN 0130	19	1.	1 JAN 1400	169	161.	2 JAN 0230	319	0.	2 JAN 1500	469	0.
1 JAN 0135	20	1.	1 JAN 1405	170	141.	2 JAN 0235	320	0.	2 JAN 1505	470	0.
1 JAN 0140	21	2.	1 JAN 1410	171	123.	2 JAN 0240	321	0.	2 JAN 1510	471	0.
1 JAN 0145	22	2.	1 JAN 1415	172	106.	2 JAN 0245	322	0.	2 JAN 1515	472	0.
1 JAN 0150	23	2.	1 JAN 1420	173	91.	2 JAN 0250	323	0.	2 JAN 1520	473	0.
1 JAN 0155	24	2.	1 JAN 1425	174	78.	2 JAN 0255	324	0.	2 JAN 1525	474	0.
1 JAN 0200	25	2.	1 JAN 1430	175	66.	2 JAN 0300	325	0.	2 JAN 1530	475	0.
1 JAN 0205	26	2.	1 JAN 1435	176	56.	2 JAN 0305	326	0.	2 JAN 1535	476	0.
1 JAN 0210	27	2.	1 JAN 1440	177	48.	2 JAN 0310	327	0.	2 JAN 1540	477	0.
1 JAN 0215	28	2.	1 JAN 1445	178	41.	2 JAN 0315	328	0.	2 JAN 1545	478	0.
1 JAN 0220	29	2.	1 JAN 1450	179	35.	2 JAN 0320	329	0.	2 JAN 1550	479	0.
1 JAN 0225	30	2.	1 JAN 1455	180	30.	2 JAN 0325	330	0.	2 JAN 1555	480	0.
1 JAN 0230	31	2.	1 JAN 1500	181	26.	2 JAN 0330	331	0.	2 JAN 1600	481	0.
1 JAN 0235	32	2.	1 JAN 1505	182	22.	2 JAN 0335	332	0.	2 JAN 1605	482	0.
1 JAN 0240	33	2.	1 JAN 1510	183	19.	2 JAN 0340	333	0.	2 JAN 1610	483	0.
1 JAN 0245	34	2.	1 JAN 1515	184	17.	2 JAN 0345	334	0.	2 JAN 1615	484	0.
1 JAN 0250	35	2.	1 JAN 1520	185	15.	2 JAN 0350	335	0.	2 JAN 1620	485	0.
1 JAN 0255	36	2.	1 JAN 1525	186	13.	2 JAN 0355	336	0.	2 JAN 1625	486	0.
1 JAN 0300	37	2.	1 JAN 1530	187	12.	2 JAN 0400	337	0.	2 JAN 1630	487	0.
1 JAN 0305	38	2.	1 JAN 1535	188	10.	2 JAN 0405	338	0.	2 JAN 1635	488	0.
1 JAN 0310	39	2.	1 JAN 1540	189	10.	2 JAN 0410	339	0.	2 JAN 1640	489	0.
1 JAN 0315	40	2.	1 JAN 1545	190	9.	2 JAN 0415	340	0.	2 JAN 1645	490	0.
1 JAN 0320	41	2.	1 JAN 1550	191	8.	2 JAN 0420	341	0.	2 JAN 1650	491	0.
1 JAN 0325	42	2.	1 JAN 1555	192	8.	2 JAN 0425	342	0.	2 JAN 1655	492	0.
1 JAN 0330	43	2.	1 JAN 1600	193	7.	2 JAN 0430	343	0.	2 JAN 1700	493	0.
1 JAN 0335	44	2.	1 JAN 1605	194	7.	2 JAN 0435	344	0.	2 JAN 1705	494	0.
1 JAN 0340	45	2.	1 JAN 1610	195	6.	2 JAN 0440	345	0.	2 JAN 1710	495	0.
1 JAN 0345	46	2.	1 JAN 1615	196	6.	2 JAN 0445	346	0.	2 JAN 1715	496	0.
1 JAN 0350	47	2.	1 JAN 1620	197	6.	2 JAN 0450	347	0.	2 JAN 1720	497	0.
1 JAN 0355	48	2.	1 JAN 1625	198	6.	2 JAN 0455	348	0.	2 JAN 1725	498	0.
1 JAN 0400	49	2.	1 JAN 1630	199	5.	2 JAN 0500	349	0.	2 JAN 1730	499	0.
1 JAN 0405	50	2.	1 JAN 1635	200	5.	2 JAN 0505	350	0.	2 JAN 1735	500	0.
1 JAN 0410	51	2.	1 JAN 1640	201	5.	2 JAN 0510	351	0.	2 JAN 1740	501	0.
1 JAN 0415	52	2.	1 JAN 1645	202	5.	2 JAN 0515	352	0.	2 JAN 1745	502	0.
1 JAN 0420	53	2.	1 JAN 1650	203	5.	2 JAN 0520	353	0.	2 JAN 1750	503	0.
1 JAN 0425	54	2.	1 JAN 1655	204	5.	2 JAN 0525	354	0.	2 JAN 1755	504	0.
1 JAN 0430	55	2.	1 JAN 1700	205	5.	2 JAN 0530	355	0.	2 JAN 1800	505	0.
1 JAN 0435	56	2.	1 JAN 1705	206	5.	2 JAN 0535	356	0.	2 JAN 1805	506	0.
1 JAN 0440	57	2.	1 JAN 1710	207	5.	2 JAN 0540	357	0.	2 JAN 1810	507	0.
1 JAN 0445	58	2.	1 JAN 1715	208	5.	2 JAN 0545	358	0.	2 JAN 1815	508	0.
1 JAN 0450	59	2.	1 JAN 1720	209	4.	2 JAN 0550	359	0.	2 JAN 1820	509	0.
1 JAN 0455	60	3.	1 JAN 1725	210	4.	2 JAN 0555	360	0.	2 JAN 1825	510	0.
1 JAN 0500	61	3.	1 JAN 1730	211	4.	2 JAN 0600	361	0.	2 JAN 1830	511	0.
1 JAN 0505	62	3.	1 JAN 1735	212	4.	2 JAN 0605	362	0.	2 JAN 1835	512	0.
1 JAN 0510	63	3.	1 JAN 1740	213	4.	2 JAN 0610	363	0.	2 JAN 1840	513	0.
1 JAN 0515	64	3.	1 JAN 1745	214	4.	2 JAN 0615	364	0.	2 JAN 1845	514	0.
1 JAN 0520	65	3.	1 JAN 1750	215	4.	2 JAN 0620	365	0.	2 JAN 1850	515	0.
1 JAN 0525	66	3.	1 JAN 1755	216	4.	2 JAN 0625	366	0.	2 JAN 1855	516	0.
1 JAN 0530	67	3.	1 JAN 1800	217	4.	2 JAN 0630	367	0.	2 JAN 1900	517	0.
1 JAN 0535	68	3.	1 JAN 1805	218	4.	2 JAN 0635	368	0.	2 JAN 1905	518	0.
1 JAN 0540	69	3.	1 JAN 1810	219	4.	2 JAN 0640	369	0.	2 JAN 1910	519	0.
1 JAN 0545	70	3.	1 JAN 1815	220	4.	2 JAN 0645	370	0.	2 JAN 1915	520	0.
1 JAN 0550	71	3.	1 JAN 1820	221	4.	2 JAN 0650	371	0.	2 JAN 1920	521	0.
1 JAN 0555	72	3.	1 JAN 1825	222	4.	2 JAN 0655	372	0.	2 JAN 1925	522	0.
1 JAN 0600	73	3.	1 JAN 1830	223	4.	2 JAN 0700	373	0.	2 JAN 1930	523	0.
1 JAN 0605	74	3.	1 JAN 1835	224	4.	2 JAN 0705	374	0.	2 JAN 1935	524	0.
1 JAN 0610	75	3.	1 JAN 1840	225	4.	2 JAN 0710	375	0.	2 JAN 1940	525	0.
1 JAN 0615	76	3.	1 JAN 1845	226	4.	2 JAN 0715	376	0.	2 JAN 1945	526	0.
1 JAN 0620	77	3.	1 JAN 1850	227	4.	2 JAN 0720	377	0.	2 JAN 1950	527	0.
1 JAN 0625	78	3.	1 JAN 1855	228	3.	2 JAN 0725	378	0.	2 JAN 1955	528	0.
1 JAN 0630	79	3.	1 JAN 1900	229	3.	2 JAN 0730	379	0.	2 JAN 2000	529	0.

1 JAN 0635	80	3.	*	1 JAN 1905	230	3.	*	2 JAN 0735	380	0.	*	2 JAN 2005	530	0.
1 JAN 0640	81	3.	*	1 JAN 1910	231	3.	*	2 JAN 0740	381	0.	*	2 JAN 2010	531	0.
1 JAN 0645	82	3.	*	1 JAN 1915	232	3.	*	2 JAN 0745	382	0.	*	2 JAN 2015	532	0.
1 JAN 0650	83	3.	*	1 JAN 1920	233	3.	*	2 JAN 0750	383	0.	*	2 JAN 2020	533	0.
1 JAN 0655	84	3.	*	1 JAN 1925	234	3.	*	2 JAN 0755	384	0.	*	2 JAN 2025	534	0.
1 JAN 0700	85	3.	*	1 JAN 1930	235	3.	*	2 JAN 0800	385	0.	*	2 JAN 2030	535	0.
1 JAN 0705	86	3.	*	1 JAN 1935	236	3.	*	2 JAN 0805	386	0.	*	2 JAN 2035	536	0.
1 JAN 0710	87	3.	*	1 JAN 1940	237	3.	*	2 JAN 0810	387	0.	*	2 JAN 2040	537	0.
1 JAN 0715	88	3.	*	1 JAN 1945	238	3.	*	2 JAN 0815	388	0.	*	2 JAN 2045	538	0.
1 JAN 0720	89	3.	*	1 JAN 1950	239	3.	*	2 JAN 0820	389	0.	*	2 JAN 2050	539	0.
1 JAN 0725	90	3.	*	1 JAN 1955	240	3.	*	2 JAN 0825	390	0.	*	2 JAN 2055	540	0.
1 JAN 0730	91	3.	*	1 JAN 2000	241	3.	*	2 JAN 0830	391	0.	*	2 JAN 2100	541	0.
1 JAN 0735	92	3.	*	1 JAN 2005	242	3.	*	2 JAN 0835	392	0.	*	2 JAN 2105	542	0.
1 JAN 0740	93	4.	*	1 JAN 2010	243	3.	*	2 JAN 0840	393	0.	*	2 JAN 2110	543	0.
1 JAN 0745	94	4.	*	1 JAN 2015	244	3.	*	2 JAN 0845	394	0.	*	2 JAN 2115	544	0.
1 JAN 0750	95	4.	*	1 JAN 2020	245	3.	*	2 JAN 0850	395	0.	*	2 JAN 2120	545	0.
1 JAN 0755	96	4.	*	1 JAN 2025	246	3.	*	2 JAN 0855	396	0.	*	2 JAN 2125	546	0.
1 JAN 0800	97	4.	*	1 JAN 2030	247	3.	*	2 JAN 0900	397	0.	*	2 JAN 2130	547	0.
1 JAN 0805	98	4.	*	1 JAN 2035	248	3.	*	2 JAN 0905	398	0.	*	2 JAN 2135	548	0.
1 JAN 0810	99	4.	*	1 JAN 2040	249	3.	*	2 JAN 0910	399	0.	*	2 JAN 2140	549	0.
1 JAN 0815	100	4.	*	1 JAN 2045	250	3.	*	2 JAN 0915	400	0.	*	2 JAN 2145	550	0.
1 JAN 0820	101	4.	*	1 JAN 2050	251	3.	*	2 JAN 0920	401	0.	*	2 JAN 2150	551	0.
1 JAN 0825	102	4.	*	1 JAN 2055	252	3.	*	2 JAN 0925	402	0.	*	2 JAN 2155	552	0.
1 JAN 0830	103	4.	*	1 JAN 2100	253	3.	*	2 JAN 0930	403	0.	*	2 JAN 2200	553	0.
1 JAN 0835	104	4.	*	1 JAN 2105	254	3.	*	2 JAN 0935	404	0.	*	2 JAN 2205	554	0.
1 JAN 0840	105	4.	*	1 JAN 2110	255	3.	*	2 JAN 0940	405	0.	*	2 JAN 2210	555	0.
1 JAN 0845	106	4.	*	1 JAN 2115	256	2.	*	2 JAN 0945	406	0.	*	2 JAN 2215	556	0.
1 JAN 0850	107	4.	*	1 JAN 2120	257	2.	*	2 JAN 0950	407	0.	*	2 JAN 2220	557	0.
1 JAN 0855	108	4.	*	1 JAN 2125	258	2.	*	2 JAN 0955	408	0.	*	2 JAN 2225	558	0.
1 JAN 0900	109	4.	*	1 JAN 2130	259	2.	*	2 JAN 1000	409	0.	*	2 JAN 2230	559	0.
1 JAN 0905	110	4.	*	1 JAN 2135	260	2.	*	2 JAN 1005	410	0.	*	2 JAN 2235	560	0.
1 JAN 0910	111	4.	*	1 JAN 2140	261	2.	*	2 JAN 1010	411	0.	*	2 JAN 2240	561	0.
1 JAN 0915	112	4.	*	1 JAN 2145	262	2.	*	2 JAN 1015	412	0.	*	2 JAN 2245	562	0.
1 JAN 0920	113	4.	*	1 JAN 2150	263	2.	*	2 JAN 1020	413	0.	*	2 JAN 2250	563	0.
1 JAN 0925	114	4.	*	1 JAN 2155	264	2.	*	2 JAN 1025	414	0.	*	2 JAN 2255	564	0.
1 JAN 0930	115	5.	*	1 JAN 2200	265	2.	*	2 JAN 1030	415	0.	*	2 JAN 2300	565	0.
1 JAN 0935	116	5.	*	1 JAN 2205	266	2.	*	2 JAN 1035	416	0.	*	2 JAN 2305	566	0.
1 JAN 0940	117	5.	*	1 JAN 2210	267	2.	*	2 JAN 1040	417	0.	*	2 JAN 2310	567	0.
1 JAN 0945	118	5.	*	1 JAN 2215	268	2.	*	2 JAN 1045	418	0.	*	2 JAN 2315	568	0.
1 JAN 0950	119	5.	*	1 JAN 2220	269	2.	*	2 JAN 1050	419	0.	*	2 JAN 2320	569	0.
1 JAN 0955	120	5.	*	1 JAN 2225	270	2.	*	2 JAN 1055	420	0.	*	2 JAN 2325	570	0.
1 JAN 1000	121	5.	*	1 JAN 2230	271	2.	*	2 JAN 1100	421	0.	*	2 JAN 2330	571	0.
1 JAN 1005	122	5.	*	1 JAN 2235	272	2.	*	2 JAN 1105	422	0.	*	2 JAN 2335	572	0.
1 JAN 1010	123	5.	*	1 JAN 2240	273	2.	*	2 JAN 1110	423	0.	*	2 JAN 2340	573	0.
1 JAN 1015	124	5.	*	1 JAN 2245	274	2.	*	2 JAN 1115	424	0.	*	2 JAN 2345	574	0.
1 JAN 1020	125	6.	*	1 JAN 2250	275	2.	*	2 JAN 1120	425	0.	*	2 JAN 2350	575	0.
1 JAN 1025	126	6.	*	1 JAN 2255	276	2.	*	2 JAN 1125	426	0.	*	2 JAN 2355	576	0.
1 JAN 1030	127	6.	*	1 JAN 2300	277	2.	*	2 JAN 1130	427	0.	*	3 JAN 0000	577	0.
1 JAN 1035	128	6.	*	1 JAN 2305	278	2.	*	2 JAN 1135	428	0.	*	3 JAN 0005	578	0.
1 JAN 1040	129	6.	*	1 JAN 2310	279	2.	*	2 JAN 1140	429	0.	*	3 JAN 0010	579	0.
1 JAN 1045	130	6.	*	1 JAN 2315	280	2.	*	2 JAN 1145	430	0.	*	3 JAN 0015	580	0.
1 JAN 1050	131	6.	*	1 JAN 2320	281	2.	*	2 JAN 1150	431	0.	*	3 JAN 0020	581	0.
1 JAN 1055	132	7.	*	1 JAN 2325	282	2.	*	2 JAN 1155	432	0.	*	3 JAN 0025	582	0.
1 JAN 1100	133	7.	*	1 JAN 2330	283	2.	*	2 JAN 1200	433	0.	*	3 JAN 0030	583	0.
1 JAN 1105	134	7.	*	1 JAN 2335	284	2.	*	2 JAN 1205	434	0.	*	3 JAN 0035	584	0.
1 JAN 1110	135	7.	*	1 JAN 2340	285	2.	*	2 JAN 1210	435	0.	*	3 JAN 0040	585	0.
1 JAN 1115	136	7.	*	1 JAN 2345	286	2.	*	2 JAN 1215	436	0.	*	3 JAN 0045	586	0.
1 JAN 1120	137	8.	*	1 JAN 2350	287	2.	*	2 JAN 1220	437	0.	*	3 JAN 0050	587	0.
1 JAN 1125	138	8.	*	1 JAN 2355	288	2.	*	2 JAN 1225	438	0.	*	3 JAN 0055	588	0.
1 JAN 1130	139	9.	*	2 JAN 0000	289	2.	*	2 JAN 1230	439	0.	*	3 JAN 0100	589	0.
1 JAN 1135	140	12.	*	2 JAN 0005	290	2.	*	2 JAN 1235	440	0.	*	3 JAN 0105	590	0.
1 JAN 1140	141	16.	*	2 JAN 0010	291	2.	*	2 JAN 1240	441	0.	*	3 JAN 0110	591	0.
1 JAN 1145	142	28.	*	2 JAN 0015	292	2.	*	2 JAN 1245	442	0.	*	3 JAN 0115	592	0.
1 JAN 1150	143	55.	*	2 JAN 0020	293	2.	*	2 JAN 1250	443	0.	*	3 JAN 0120	593	0.
1 JAN 1155	144	91.	*	2 JAN 0025	294	2.	*	2 JAN 1255	444	0.	*	3 JAN 0125	594	0.
1 JAN 1200	145	157.	*	2 JAN 0030	295	2.	*	2 JAN 1300	445	0.	*	3 JAN 0130	595	0.
1 JAN 1205	146	239.	*	2 JAN 0035	296	2.	*	2 JAN 1305	446	0.	*	3 JAN 0135	596	0.
1 JAN 1210	147	356.	*	2 JAN 0040	297	2.	*	2 JAN 1310	447	0.	*	3 JAN 0140	597	0.
1 JAN 1215	148	483.	*	2 JAN 0045	298	2.	*	2 JAN 1315	448	0.	*	3 JAN 0145	598	0.
1 JAN 1220	149	661.	*	2 JAN 0050	299	2.	*	2 JAN 1320	449	0.	*	3 JAN 0150	599	0.
1 JAN 1225	150	906.	*	2 JAN 0055	300	2.	*	2 JAN 1325	450	0.	*	3 JAN 0155	600	0.
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PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW					
		6-HR	24-HR	72-HR	49.92-HR	(CFS)	(HR)
	(CFS)	1431.	12.75		257.	67.	32.	32.
	(INCHES)	1.314	1.360	1.360	1.360		
	(AC-FT)	128.	132.	132.	132.		

CUMULATIVE AREA = 1.82 SQ MI

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

6-HOUR	OPERATION 24-HOUR	STATION 72-HOUR	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
	HYDROGRAPH AT			12	1413.	12.50	202.	53.	25.	1.38
	ROUTED TO			RCP12	1145.	12.75	202.	53.	25.	1.38
	HYDROGRAPH AT			WT3	421.	12.50	56.	14.	7.	0.44
	2 COMBINED AT			I1CWT3	1431.	12.75	257.	67.	32.	1.82
	ROUTED TO			3R	1431.	12.75	257.	67.	32.	1.82

5) **MIDDLE INLET FLOW**
SUBBASINS 11 AND 13

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ID        White Tanks #3 future condition (Beardsley Canal Wash Improvement)
ID        May, 1999, FCDMC
ID        Remove borrow pit routing at sub-basin 16, fcdmc, July, 1999
*DIAGRAM
IT     5  1JAN94       0     600
IO     1
IN    15  1JAN94       0
JD  4.03   0.001
* precip1
PC     0   0.002   0.005   0.008   0.011   0.014   0.017    0.02   0.023   0.026
PC 0.029   0.032   0.035   0.038   0.041   0.044   0.048   0.052   0.056    0.06
PC 0.064   0.068   0.072   0.076    0.08   0.085    0.09   0.095     0.1   0.105
PC  0.11   0.115    0.12   0.126   0.133    0.14   0.147   0.155   0.163   0.172
PC 0.181   0.191   0.203   0.218   0.236   0.257   0.283   0.387   0.663   0.707
PC 0.735   0.758   0.776   0.791   0.804   0.815   0.825   0.834   0.842   0.849
PC 0.856   0.863   0.869   0.875   0.881   0.887   0.893   0.898   0.903   0.908
PC 0.913   0.918   0.922   0.926    0.93   0.934   0.938   0.942   0.946    0.95
PC 0.953   0.956   0.959   0.962   0.965   0.968   0.971   0.974   0.977    0.98
PC 0.983   0.986   0.989   0.992   0.995   0.998       1       1       1       1
JD  3.99      10
JD  3.83      50
JD  3.76     100
JD   3.7     200
VS   CP13
VV     2
KK    11
KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 11.
KO     0       0       0       0      22
BA  1.56
LG  0.35    0.15    7.25   0.107  13.299
* ui1
UI   143     245     571     755     913    1142    1648    1623    1254    1026
UI   821     643     394     248     210     143      86      44      44      44
UI    44       0       0       0       0       0       0       0       0       0
UI     0       0       0       0       0       0       0       0       0       0
KK RCP11   CNAME      1C
KM        ROUTE HYROGRAPH FROM CP11 TO CP13.
KO     0       0       0       0      22
* RL   0       0     1.5    1196
RS     4    STOR      -1       0
RC  0.06   0.035    0.06   10200  0.0098       0
* rxry1
RX  1000    1070    1300    1480    1510    1525    1555    1600
RY  1233    1232    1230    1222    1222    1230    1232    1233
KK    13
KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 13.
KO     0       0       0       0      22
BA   1.3
LG  0.35    0.25    4.62   0.322       0
* ui2
UI   120     210     485     639     774     973    1416    1333    1039     847
UI   674     527     303     206     167     120      60      37      37      37
UI    37       0       0       0       0       0       0       0       0       0
UI     0       0       0       0       0       0       0       0       0       0
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KK  CP13   CNAME      2R
KM         ADD HYDROGRAPHS AT CP13.
KO     0       0       0       0      22
HC     2
KK    2R   CNAME    CP13
KO     0       0       0       0      22
RN    2R
ZZ
```

INTERPOLATED HYDROGRAPH AT 2R

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1	JAN	0000	1	0.	1	JAN	1230	151	2654.	2	JAN	0100	301	6.	2	JAN	1330	451	0.
1	JAN	0005	2	0.	1	JAN	1235	152	2720.	2	JAN	0105	302	5.	2	JAN	1335	452	0.
1	JAN	0010	3	0.	1	JAN	1240	153	2658.	2	JAN	0110	303	5.	2	JAN	1340	453	0.
1	JAN	0015	4	0.	1	JAN	1245	154	2520.	2	JAN	0115	304	5.	2	JAN	1345	454	0.
1	JAN	0020	5	0.	1	JAN	1250	155	2259.	2	JAN	0120	305	4.	2	JAN	1350	455	0.
1	JAN	0025	6	0.	1	JAN	1255	156	1947.	2	JAN	0125	306	4.	2	JAN	1355	456	0.
1	JAN	0030	7	0.	1	JAN	1300	157	1627.	2	JAN	0130	307	4.	2	JAN	1400	457	0.
1	JAN	0035	8	0.	1	JAN	1305	158	1361.	2	JAN	0135	308	3.	2	JAN	1405	458	0.
1	JAN	0040	9	0.	1	JAN	1310	159	1132.	2	JAN	0140	309	3.	2	JAN	1410	459	0.
1	JAN	0045	10	0.	1	JAN	1315	160	922.	2	JAN	0145	310	2.	2	JAN	1415	460	0.
1	JAN	0050	11	0.	1	JAN	1320	161	754.	2	JAN	0150	311	2.	2	JAN	1420	461	0.
1	JAN	0055	12	0.	1	JAN	1325	162	629.	2	JAN	0155	312	2.	2	JAN	1425	462	0.
1	JAN	0100	13	0.	1	JAN	1330	163	528.	2	JAN	0200	313	2.	2	JAN	1430	463	0.
1	JAN	0105	14	1.	1	JAN	1335	164	437.	2	JAN	0205	314	1.	2	JAN	1435	464	0.
1	JAN	0110	15	1.	1	JAN	1340	165	366.	2	JAN	0210	315	1.	2	JAN	1440	465	0.
1	JAN	0115	16	1.	1	JAN	1345	166	300.	2	JAN	0215	316	1.	2	JAN	1445	466	0.
1	JAN	0120	17	1.	1	JAN	1350	167	253.	2	JAN	0220	317	1.	2	JAN	1450	467	0.
1	JAN	0125	18	2.	1	JAN	1355	168	215.	2	JAN	0225	318	1.	2	JAN	1455	468	0.
1	JAN	0130	19	2.	1	JAN	1400	169	186.	2	JAN	0230	319	1.	2	JAN	1500	469	0.
1	JAN	0135	20	3.	1	JAN	1405	170	163.	2	JAN	0235	320	1.	2	JAN	1505	470	0.
1	JAN	0140	21	3.	1	JAN	1410	171	141.	2	JAN	0240	321	0.	2	JAN	1510	471	0.
1	JAN	0145	22	3.	1	JAN	1415	172	120.	2	JAN	0245	322	0.	2	JAN	1515	472	0.
1	JAN	0150	23	4.	1	JAN	1420	173	103.	2	JAN	0250	323	0.	2	JAN	1520	473	0.
1	JAN	0155	24	4.	1	JAN	1425	174	88.	2	JAN	0255	324	0.	2	JAN	1525	474	0.
1	JAN	0200	25	4.	1	JAN	1430	175	76.	2	JAN	0300	325	0.	2	JAN	1530	475	0.
1	JAN	0205	26	4.	1	JAN	1435	176	67.	2	JAN	0305	326	0.	2	JAN	1535	476	0.
1	JAN	0210	27	5.	1	JAN	1440	177	60.	2	JAN	0310	327	0.	2	JAN	1540	477	0.
1	JAN	0215	28	5.	1	JAN	1445	178	55.	2	JAN	0315	328	0.	2	JAN	1545	478	0.
1	JAN	0220	29	5.	1	JAN	1450	179	52.	2	JAN	0320	329	0.	2	JAN	1550	479	0.
1	JAN	0225	30	5.	1	JAN	1455	180	50.	2	JAN	0325	330	0.	2	JAN	1555	480	0.
1	JAN	0230	31	6.	1	JAN	1500	181	47.	2	JAN	0330	331	0.	2	JAN	1600	481	0.
1	JAN	0235	32	6.	1	JAN	1505	182	44.	2	JAN	0335	332	0.	2	JAN	1605	482	0.
1	JAN	0240	33	6.	1	JAN	1510	183	41.	2	JAN	0340	333	0.	2	JAN	1610	483	0.
1	JAN	0245	34	6.	1	JAN	1515	184	38.	2	JAN	0345	334	0.	2	JAN	1615	484	0.
1	JAN	0250	35	6.	1	JAN	1520	185	36.	2	JAN	0350	335	0.	2	JAN	1620	485	0.
1	JAN	0255	36	6.	1	JAN	1525	186	34.	2	JAN	0355	336	0.	2	JAN	1625	486	0.
1	JAN	0300	37	6.	1	JAN	1530	187	31.	2	JAN	0400	337	0.	2	JAN	1630	487	0.
1	JAN	0305	38	6.	1	JAN	1535	188	29.	2	JAN	0405	338	0.	2	JAN	1635	488	0.
1	JAN	0310	39	6.	1	JAN	1540	189	28.	2	JAN	0410	339	0.	2	JAN	1640	489	0.
1	JAN	0315	40	6.	1	JAN	1545	190	26.	2	JAN	0415	340	0.	2	JAN	1645	490	0.
1	JAN	0320	41	6.	1	JAN	1550	191	24.	2	JAN	0420	341	0.	2	JAN	1650	491	0.
1	JAN	0325	42	6.	1	JAN	1555	192	23.	2	JAN	0425	342	0.	2	JAN	1655	492	0.
1	JAN	0330	43	6.	1	JAN	1600	193	22.	2	JAN	0430	343	0.	2	JAN	1700	493	0.
1	JAN	0335	44	6.	1	JAN	1605	194	21.	2	JAN	0435	344	0.	2	JAN	1705	494	0.
1	JAN	0340	45	6.	1	JAN	1610	195	20.	2	JAN	0440	345	0.	2	JAN	1710	495	0.
1	JAN	0345	46	6.	1	JAN	1615	196	19.	2	JAN	0445	346	0.	2	JAN	1715	496	0.
1	JAN	0350	47	6.	1	JAN	1620	197	18.	2	JAN	0450	347	0.	2	JAN	1720	497	0.
1	JAN	0355	48	6.	1	JAN	1625	198	18.	2	JAN	0455	348	0.	2	JAN	1725	498	0.
1	JAN	0400	49	6.	1	JAN	1630	199	17.	2	JAN	0500	349	0.	2	JAN	1730	499	0.
1	JAN	0405	50	6.	1	JAN	1635	200	16.	2	JAN	0505	350	0.	2	JAN	1735	500	0.
1	JAN	0410	51	6.	1	JAN	1640	201	16.	2	JAN	0510	351	0.	2	JAN	1740	501	0.
1	JAN	0415	52	6.	1	JAN	1645	202	16.	2	JAN	0515	352	0.	2	JAN	1745	502	0.
1	JAN	0420	53	6.	1	JAN	1650	203	15.	2	JAN	0520	353	0.	2	JAN	1750	503	0.
1	JAN	0425	54	6.	1	JAN	1655	204	15.	2	JAN	0525	354	0.	2	JAN	1755	504	0.
1	JAN	0430	55	6.	1	JAN	1700	205	15.	2	JAN	0530	355	0.	2	JAN	1800	505	0.
1	JAN	0435	56	6.	1	JAN	1705	206	14.	2	JAN	0535	356	0.	2	JAN	1805	506	0.
1	JAN	0440	57	7.	1	JAN	1710	207	14.	2	JAN	0540	357	0.	2	JAN	1810	507	0.
1	JAN	0445	58	7.	1	JAN	1715	208	14.	2	JAN	0545	358	0.	2	JAN	1815	508	0.
1	JAN	0450	59	7.	1	JAN	1720	209	14.	2	JAN	0550	359	0.	2	JAN	1820	509	0.
1	JAN	0455	60	7.	1	JAN	1725	210	13.	2	JAN	0555	360	0.	2	JAN	1825	510	0.
1	JAN	0500	61	7.	1	JAN	1730	211	13.	2	JAN	0600	361	0.	2	JAN	1830	511	0.
1	JAN	0505	62	7.	1	JAN	1735	212	13.	2	JAN	0605	362	0.	2	JAN	1835	512	0.
1	JAN	0510	63	7.	1	JAN	1740	213	13.	2	JAN	0610	363	0.	2	JAN	1840	513	0.
1	JAN	0515	64	7.	1	JAN	1745	214	13.	2	JAN	0615	364	0.	2	JAN	1845	514	0.
1	JAN	0520	65	7.	1	JAN	1750	215	12.	2	JAN	0620	365	0.	2	JAN	1850	515	0.
1	JAN	0525	66	7.	1	JAN	1755	216	12.	2	JAN	0625	366	0.	2	JAN	1855	516	0.
1	JAN	0530	67	8.	1	JAN	1800	217	12.	2	JAN	0630	367	0.	2	JAN	1900	517	0.
1	JAN	0535	68	8.	1	JAN	1805	218	12.	2	JAN	0635	368	0.	2	JAN	1905	518	0.
1	JAN	0540	69	8.	1	JAN	1810	219	12.	2	JAN	0640	369	0.	2	JAN	1910	519	0.
1	JAN	0545	70	8.	1	JAN	1815	220	12.	2	JAN	0645	370	0.	2	JAN	1915	520	0.
1	JAN	0550	71	8.	1	JAN	1820	221	12.	2	JAN	0650	371	0.	2	JAN	1920	521	0.
1	JAN	0555	72	8.	1	JAN	1825	222	11.	2	JAN	0655	372	0.	2	JAN	1925	522	0.
1	JAN	0600	73	8.	1	JAN	1830	223	11.	2	JAN	0700	373	0.	2	JAN	1930	523	0.
1	JAN	0605	74	8.	1	JAN	1835	224	11.	2	JAN	0705	374	0.	2	JAN	1935	524	0.
1	JAN	0610	75	8.	1	JAN	1840	225	11.	2	JAN	0710	375	0.	2	JAN	1940	525	0.
1	JAN	0615	76	8.	1	JAN	1845	226	11.	2	JAN	0715	376	0.	2	JAN	1945	526	0.
1	JAN	0620	77	8.	1	JAN	1850	227	11.	2	JAN	0720	377	0.	2	JAN	1950	527	0.
1	JAN	0625	78	8.	1	JAN	1855	228	11.	2	JAN	0725	378	0.	2	JAN	1955	528	0.

1	JAN	0630	79	8.	*	1 JAN	1900	229	10.	*	2 JAN	0730	379	0.	*	2 JAN	2000	529	0.
1	JAN	0635	80	8.	*	1 JAN	1905	230	10.	*	2 JAN	0735	380	0.	*	2 JAN	2005	530	0.
1	JAN	0640	81	8.	*	1 JAN	1910	231	10.	*	2 JAN	0740	381	0.	*	2 JAN	2010	531	0.
1	JAN	0645	82	9.	*	1 JAN	1915	232	10.	*	2 JAN	0745	382	0.	*	2 JAN	2015	532	0.
1	JAN	0650	83	9.	*	1 JAN	1920	233	10.	*	2 JAN	0750	383	0.	*	2 JAN	2020	533	0.
1	JAN	0655	84	9.	*	1 JAN	1925	234	10.	*	2 JAN	0755	384	0.	*	2 JAN	2025	534	0.
1	JAN	0700	85	9.	*	1 JAN	1930	235	10.	*	2 JAN	0800	385	0.	*	2 JAN	2030	535	0.
1	JAN	0705	86	9.	*	1 JAN	1935	236	9.	*	2 JAN	0805	386	0.	*	2 JAN	2035	536	0.
1	JAN	0710	87	9.	*	1 JAN	1940	237	9.	*	2 JAN	0810	387	0.	*	2 JAN	2040	537	0.
1	JAN	0715	88	9.	*	1 JAN	1945	238	9.	*	2 JAN	0815	388	0.	*	2 JAN	2045	538	0.
1	JAN	0720	89	9.	*	1 JAN	1950	239	9.	*	2 JAN	0820	389	0.	*	2 JAN	2050	539	0.
1	JAN	0725	90	9.	*	1 JAN	1955	240	9.	*	2 JAN	0825	390	0.	*	2 JAN	2055	540	0.
1	JAN	0730	91	9.	*	1 JAN	2000	241	9.	*	2 JAN	0830	391	0.	*	2 JAN	2100	541	0.
1	JAN	0735	92	9.	*	1 JAN	2005	242	9.	*	2 JAN	0835	392	0.	*	2 JAN	2105	542	0.
1	JAN	0740	93	10.	*	1 JAN	2010	243	9.	*	2 JAN	0840	393	0.	*	2 JAN	2110	543	0.
1	JAN	0745	94	10.	*	1 JAN	2015	244	9.	*	2 JAN	0845	394	0.	*	2 JAN	2115	544	0.
1	JAN	0750	95	10.	*	1 JAN	2020	245	9.	*	2 JAN	0850	395	0.	*	2 JAN	2120	545	0.
1	JAN	0755	96	10.	*	1 JAN	2025	246	9.	*	2 JAN	0855	396	0.	*	2 JAN	2125	546	0.
1	JAN	0800	97	10.	*	1 JAN	2030	247	9.	*	2 JAN	0900	397	0.	*	2 JAN	2130	547	0.
1	JAN	0805	98	10.	*	1 JAN	2035	248	9.	*	2 JAN	0905	398	0.	*	2 JAN	2135	548	0.
1	JAN	0810	99	10.	*	1 JAN	2040	249	8.	*	2 JAN	0910	399	0.	*	2 JAN	2140	549	0.
1	JAN	0815	100	10.	*	1 JAN	2045	250	8.	*	2 JAN	0915	400	0.	*	2 JAN	2145	550	0.
1	JAN	0820	101	10.	*	1 JAN	2050	251	8.	*	2 JAN	0920	401	0.	*	2 JAN	2150	551	0.
1	JAN	0825	102	10.	*	1 JAN	2055	252	8.	*	2 JAN	0925	402	0.	*	2 JAN	2155	552	0.
1	JAN	0830	103	10.	*	1 JAN	2100	253	8.	*	2 JAN	0930	403	0.	*	2 JAN	2200	553	0.
1	JAN	0835	104	10.	*	1 JAN	2105	254	8.	*	2 JAN	0935	404	0.	*	2 JAN	2205	554	0.
1	JAN	0840	105	11.	*	1 JAN	2110	255	8.	*	2 JAN	0940	405	0.	*	2 JAN	2210	555	0.
1	JAN	0845	106	11.	*	1 JAN	2115	256	8.	*	2 JAN	0945	406	0.	*	2 JAN	2215	556	0.
1	JAN	0850	107	11.	*	1 JAN	2120	257	8.	*	2 JAN	0950	407	0.	*	2 JAN	2220	557	0.
1	JAN	0855	108	11.	*	1 JAN	2125	258	7.	*	2 JAN	0955	408	0.	*	2 JAN	2225	558	0.
1	JAN	0900	109	11.	*	1 JAN	2130	259	7.	*	2 JAN	1000	409	0.	*	2 JAN	2230	559	0.
1	JAN	0905	110	11.	*	1 JAN	2135	260	7.	*	2 JAN	1005	410	0.	*	2 JAN	2235	560	0.
1	JAN	0910	111	11.	*	1 JAN	2140	261	7.	*	2 JAN	1010	411	0.	*	2 JAN	2240	561	0.
1	JAN	0915	112	11.	*	1 JAN	2145	262	7.	*	2 JAN	1015	412	0.	*	2 JAN	2245	562	0.
1	JAN	0920	113	12.	*	1 JAN	2150	263	7.	*	2 JAN	1020	413	0.	*	2 JAN	2250	563	0.
1	JAN	0925	114	12.	*	1 JAN	2155	264	7.	*	2 JAN	1025	414	0.	*	2 JAN	2255	564	0.
1	JAN	0930	115	12.	*	1 JAN	2200	265	7.	*	2 JAN	1030	415	0.	*	2 JAN	2300	565	0.
1	JAN	0935	116	12.	*	1 JAN	2205	266	7.	*	2 JAN	1035	416	0.	*	2 JAN	2305	566	0.
1	JAN	0940	117	12.	*	1 JAN	2210	267	7.	*	2 JAN	1040	417	0.	*	2 JAN	2310	567	0.
1	JAN	0945	118	13.	*	1 JAN	2215	268	7.	*	2 JAN	1045	418	0.	*	2 JAN	2315	568	0.
1	JAN	0950	119	13.	*	1 JAN	2220	269	7.	*	2 JAN	1050	419	0.	*	2 JAN	2320	569	0.
1	JAN	0955	120	13.	*	1 JAN	2225	270	7.	*	2 JAN	1055	420	0.	*	2 JAN	2325	570	0.
1	JAN	1000	121	14.	*	1 JAN	2230	271	7.	*	2 JAN	1100	421	0.	*	2 JAN	2330	571	0.
1	JAN	1005	122	14.	*	1 JAN	2235	272	7.	*	2 JAN	1105	422	0.	*	2 JAN	2335	572	0.
1	JAN	1010	123	14.	*	1 JAN	2240	273	6.	*	2 JAN	1110	423	0.	*	2 JAN	2340	573	0.
1	JAN	1015	124	14.	*	1 JAN	2245	274	6.	*	2 JAN	1115	424	0.	*	2 JAN	2345	574	0.
1	JAN	1020	125	15.	*	1 JAN	2250	275	6.	*	2 JAN	1120	425	0.	*	2 JAN	2350	575	0.
1	JAN	1025	126	15.	*	1 JAN	2255	276	6.	*	2 JAN	1125	426	0.	*	2 JAN	2355	576	0.
1	JAN	1030	127	15.	*	1 JAN	2300	277	6.	*	2 JAN	1130	427	0.	*	3 JAN	0000	577	0.
1	JAN	1035	128	16.	*	1 JAN	2305	278	6.	*	2 JAN	1135	428	0.	*	3 JAN	0005	578	0.
1	JAN	1040	129	16.	*	1 JAN	2310	279	6.	*	2 JAN	1140	429	0.	*	3 JAN	0010	579	0.
1	JAN	1045	130	16.	*	1 JAN	2315	280	6.	*	2 JAN	1145	430	0.	*	3 JAN	0015	580	0.
1	JAN	1050	131	17.	*	1 JAN	2320	281	6.	*	2 JAN	1150	431	0.	*	3 JAN	0020	581	0.
1	JAN	1055	132	17.	*	1 JAN	2325	282	6.	*	2 JAN	1155	432	0.	*	3 JAN	0025	582	0.
1	JAN	1100	133	17.	*	1 JAN	2330	283	6.	*	2 JAN	1200	433	0.	*	3 JAN	0030	583	0.
1	JAN	1105	134	18.	*	1 JAN	2335	284	6.	*	2 JAN	1205	434	0.	*	3 JAN	0035	584	0.
1	JAN	1110	135	18.	*	1 JAN	2340	285	6.	*	2 JAN	1210	435	0.	*	3 JAN	0040	585	0.
1	JAN	1115	136	19.	*	1 JAN	2345	286	6.	*	2 JAN	1215	436	0.	*	3 JAN	0045	586	0.
1	JAN	1120	137	19.	*	1 JAN	2350	287	6.	*	2 JAN	1220	437	0.	*	3 JAN	0050	587	0.
1	JAN	1125	138	20.	*	1 JAN	2355	288	6.	*	2 JAN	1225	438	0.	*	3 JAN	0055	588	0.
1	JAN	1130	139	21.	*	2 JAN	0000	289	6.	*	2 JAN	1230	439	0.	*	3 JAN	0100	589	0.
1	JAN	1135	140	31.	*	2 JAN	0005	290	6.	*	2 JAN	1235	440	0.	*	3 JAN	0105	590	0.
1	JAN	1140	141	48.	*	2 JAN	0010	291	6.	*	2 JAN	1240	441	0.	*	3 JAN	0110	591	0.
1	JAN	1145	142	87.	*	2 JAN	0015	292	6.	*	2 JAN	1245	442	0.	*	3 JAN	0115	592	0.
1	JAN	1150	143	167.	*	2 JAN	0020	293	6.	*	2 JAN	1250	443	0.	*	3 JAN	0120	593	0.
1	JAN	1155	144	282.	*	2 JAN	0025	294	6.	*	2 JAN	1255	444	0.	*	3 JAN	0125	594	0.
1	JAN	1200	145	487.	*	2 JAN	0030	295	6.	*	2 JAN	1300	445	0.	*	3 JAN	0130	595	0.
1	JAN	1205	146	763.	*	2 JAN	0035	296	6.	*	2 JAN	1305	446	0.	*	3 JAN	0135	596	0.
1	JAN	1210	147	1082.	*	2 JAN	0040	297	6.	*	2 JAN	1310	447	0.	*	3 JAN	0140	597	0.
1	JAN	1215	148	1428.	*	2 JAN	0045	298	6.	*	2 JAN	1315	448	0.	*	3 JAN	0145	598	0.
1	JAN	1220	149	1899.	*	2 JAN	0050	299	6.	*	2 JAN	1320	449	0.	*	3 JAN	0150	599	0.
1	JAN	1225	150	2346.	*	2 JAN	0055	300	6.	*	2 JAN	1325	450	0.	*	3 JAN	0155	600	0.
					*					*					*				

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW					
			6-HR	24-HR	72-HR	49.92-HR	(CFS)	(HR)
		(CFS)	2720.	12.58		470.	124.	60. 60.
		(INCHES)	1.527	1.610	1.612	1.612		
		(AC-FT)	233.	246.	246.	246.		

CUMULATIVE AREA = 2.86 SQ MI

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	11	2040.	12.42	305.	83.	40.	1.56		
ROUTED TO	RCP11	1808.	12.75	305.	83.	40.	1.56		
HYDROGRAPH AT	13	1367.	12.42	165.	41.	20.	1.30		
2 COMBINED AT	CP13	2720.	12.58	470.	124.	60.	2.86		
ROUTED TO	2R	2720.	12.58	470.	124.	60.	2.86		

6) **SOUTH INLET**

SUBBASINS 14 THROUGH 17

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ID        White Tanks #3 future condition (Beardsley Canal Wash Improvement)
ID        May, 1999, FCDMC
ID        Remove borrow pit routing at sub-basin 16, fcdmc, July, 1999
*DIAGRAM
IT     5  1JAN94       0     600
IO     1
IN    15  1JAN94       0
JD  4.03   0.001
* precip1
PC     0   0.002   0.005   0.008   0.011   0.014   0.017    0.02   0.023   0.026
PC 0.029   0.032   0.035   0.038   0.041   0.044   0.048   0.052   0.056    0.06
PC 0.064   0.068   0.072   0.076    0.08   0.085    0.09   0.095     0.1   0.105
PC  0.11   0.115    0.12   0.126   0.133    0.14   0.147   0.155   0.163   0.172
PC 0.181   0.191   0.203   0.218   0.236   0.257   0.283   0.387   0.663   0.707
PC 0.735   0.758   0.776   0.791   0.804   0.815   0.825   0.834   0.842   0.849
PC 0.856   0.863   0.869   0.875   0.881   0.887   0.893   0.898   0.903   0.908
PC 0.913   0.918   0.922   0.926    0.93   0.934   0.938   0.942   0.946    0.95
PC 0.953   0.956   0.959   0.962   0.965   0.968   0.971   0.974   0.977    0.98
PC 0.983   0.986   0.989   0.992   0.995   0.998       1       1       1       1
JD  3.99      10
JD  3.83      50
JD  3.76     100
JD   3.7     200
VS   CP17
VV     2
KK    14
KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 14.
KO     0       0       0       0      22
BA  1.47
LG  0.35    0.15   7.974   0.082  18.195
* ui1
UI   166     421     790    1019    1341    1998    1636    1264     961     699
UI   362     274     166      93      51      51      51       0       0       0
UI     0       0       0       0       0       0       0       0       0       0
KK RCP14   CNAME      1C
KM        ROUTE FLOW FROM CP14 TO CP15.
KO     0       0       0       0      22
* RL   0       0       2    1194
RS     2    STOR      -1       0
RC  0.06   0.035    0.06    8800  0.0256       0
* rxry1
RX  1000    1030    1075    1200    1220    1280    1415    1480
RY  1296    1295    1294    1288    1288    1294    1296    1300
KK    15
KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 15.
KO     0       0       0       0      22
BA  1.26
LG  0.35   0.194   6.561   0.142   15.67
* ui2
UI   130     281     577     747     938    1321    1552    1156     920     713
UI   519     277     217     138      93      40      40      40      40       0
UI     0       0       0       0       0       0       0       0       0       0
UI     0       0       0       0       0       0       0       0       0       0
KKI1CP15   CNAME      2R
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```
KM          ADD HYDROGRAPHS AT CP15
KO     0        0       0       0      22
HC     2
KK    16
KM          RUNOFF HYDROGRAPH FROM SUB-BASIN 16.
KO     1        0       0       0       0
BA  1.13
LG  0.35    0.25   5.676   0.201  19.953
* ui3
UI   115     240     503     652     814    1126    1393    1049     839     655
UI   497     268     194     137     101      35      35      35      35       0
UI     0       0       0       0       0       0       0       0       0       0
UI     0       0       0       0       0       0       0       0       0       0
KK  CP15    CNAME   RCP15
KM          ADD HYDROGRAPHS AT CP15.
KO     0        0       0       0      22
HC     2
KK RCP15    CNAME    CP15
KM          ROUTE COMBINED HYDROGRAPHS AT CP15 TO CP17.
KO     0        0       0       0      22
* RL    0        0       2    1226
RS     2     STOR      -1       0
RC  0.06    0.035    0.06    6800  0.0079       0
* rxry2
RX  1000     1310    1380    1540    1640    1670    1700    1910
RY  1234     1232    1228    1226    1226    1228    1232    1235
KK    17
KM          RUNOFFF HYDROGRAPH FROM SUB-BASIN 17.
KO     0        0       0       0      22
BA  1.07
LG  0.35    0.25   4.121   0.438       0
* ui4
UI   117     254     572     810    1052    1196     753     635     540     450
UI   353     287     254     194     149     129     103      90      64      57
UI    57      26      22      22      22      22      22      22       0       0
UI     0       0       0       0       0       0       0       0       0       0
KKI1CP17    CNAME      4R
KM          ADD HYDROGRAPHS AT CP17.
KO     0        0       0       0      22
HC     2
KK    5R    CNAME    CP17
KO     0        0       0       0      22
RN    5R
ZZ
```

INTERPOLATED HYDROGRAPH AT 5R

DA MON HRMN	ORD	FLOW	DA MON HRMN	ORD	FLOW	DA MON HRMN	ORD	FLOW	DA MON HRMN	ORD	FLOW
1 JAN 0000	1	0.	1 JAN 1230	151	4724.	2 JAN 0100	301	16.	2 JAN 1330	451	0.
1 JAN 0005	2	0.	1 JAN 1235	152	5016.	2 JAN 0105	302	15.	2 JAN 1335	452	0.
1 JAN 0010	3	0.	1 JAN 1240	153	4871.	2 JAN 0110	303	14.	2 JAN 1340	453	0.
1 JAN 0015	4	0.	1 JAN 1245	154	4440.	2 JAN 0115	304	13.	2 JAN 1345	454	0.
1 JAN 0020	5	0.	1 JAN 1250	155	3909.	2 JAN 0120	305	12.	2 JAN 1350	455	0.
1 JAN 0025	6	0.	1 JAN 1255	156	3321.	2 JAN 0125	306	11.	2 JAN 1355	456	0.
1 JAN 0030	7	0.	1 JAN 1300	157	2773.	2 JAN 0130	307	11.	2 JAN 1400	457	0.
1 JAN 0035	8	0.	1 JAN 1305	158	2320.	2 JAN 0135	308	10.	2 JAN 1405	458	0.
1 JAN 0040	9	1.	1 JAN 1310	159	1925.	2 JAN 0140	309	9.	2 JAN 1410	459	0.
1 JAN 0045	10	1.	1 JAN 1315	160	1626.	2 JAN 0145	310	8.	2 JAN 1415	460	0.
1 JAN 0050	11	2.	1 JAN 1320	161	1392.	2 JAN 0150	311	7.	2 JAN 1420	461	0.
1 JAN 0055	12	2.	1 JAN 1325	162	1184.	2 JAN 0155	312	6.	2 JAN 1425	462	0.
1 JAN 0100	13	3.	1 JAN 1330	163	1005.	2 JAN 0200	313	6.	2 JAN 1430	463	0.
1 JAN 0105	14	4.	1 JAN 1335	164	862.	2 JAN 0205	314	5.	2 JAN 1435	464	0.
1 JAN 0110	15	5.	1 JAN 1340	165	738.	2 JAN 0210	315	5.	2 JAN 1440	465	0.
1 JAN 0115	16	6.	1 JAN 1345	166	628.	2 JAN 0215	316	4.	2 JAN 1445	466	0.
1 JAN 0120	17	7.	1 JAN 1350	167	542.	2 JAN 0220	317	4.	2 JAN 1450	467	0.
1 JAN 0125	18	8.	1 JAN 1355	168	471.	2 JAN 0225	318	3.	2 JAN 1455	468	0.
1 JAN 0130	19	9.	1 JAN 1400	169	416.	2 JAN 0230	319	3.	2 JAN 1500	469	0.
1 JAN 0135	20	10.	1 JAN 1405	170	373.	2 JAN 0235	320	2.	2 JAN 1505	470	0.
1 JAN 0140	21	11.	1 JAN 1410	171	328.	2 JAN 0240	321	2.	2 JAN 1510	471	0.
1 JAN 0145	22	12.	1 JAN 1415	172	288.	2 JAN 0245	322	2.	2 JAN 1515	472	0.
1 JAN 0150	23	13.	1 JAN 1420	173	251.	2 JAN 0250	323	2.	2 JAN 1520	473	0.
1 JAN 0155	24	13.	1 JAN 1425	174	224.	2 JAN 0255	324	1.	2 JAN 1525	474	0.
1 JAN 0200	25	14.	1 JAN 1430	175	202.	2 JAN 0300	325	1.	2 JAN 1530	475	0.
1 JAN 0205	26	15.	1 JAN 1435	176	182.	2 JAN 0305	326	1.	2 JAN 1535	476	0.
1 JAN 0210	27	16.	1 JAN 1440	177	165.	2 JAN 0310	327	1.	2 JAN 1540	477	0.
1 JAN 0215	28	16.	1 JAN 1445	178	151.	2 JAN 0315	328	1.	2 JAN 1545	478	0.
1 JAN 0220	29	17.	1 JAN 1450	179	139.	2 JAN 0320	329	1.	2 JAN 1550	479	0.
1 JAN 0225	30	17.	1 JAN 1455	180	130.	2 JAN 0325	330	1.	2 JAN 1555	480	0.
1 JAN 0230	31	18.	1 JAN 1500	181	121.	2 JAN 0330	331	1.	2 JAN 1600	481	0.
1 JAN 0235	32	18.	1 JAN 1505	182	116.	2 JAN 0335	332	0.	2 JAN 1605	482	0.
1 JAN 0240	33	18.	1 JAN 1510	183	112.	2 JAN 0340	333	0.	2 JAN 1610	483	0.
1 JAN 0245	34	19.	1 JAN 1515	184	108.	2 JAN 0345	334	0.	2 JAN 1615	484	0.
1 JAN 0250	35	19.	1 JAN 1520	185	103.	2 JAN 0350	335	0.	2 JAN 1620	485	0.
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1 JAN 0300	37	20.	1 JAN 1530	187	95.	2 JAN 0400	337	0.	2 JAN 1630	487	0.
1 JAN 0305	38	20.	1 JAN 1535	188	91.	2 JAN 0405	338	0.	2 JAN 1635	488	0.
1 JAN 0310	39	20.	1 JAN 1540	189	88.	2 JAN 0410	339	0.	2 JAN 1640	489	0.
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1 JAN 0410	51	21.	1 JAN 1640	201	56.	2 JAN 0510	351	0.	2 JAN 1740	501	0.
1 JAN 0415	52	21.	1 JAN 1645	202	55.	2 JAN 0515	352	0.	2 JAN 1745	502	0.
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1 JAN 0455	60	23.	1 JAN 1725	210	46.	2 JAN 0555	360	0.	2 JAN 1825	510	0.
1 JAN 0500	61	24.	1 JAN 1730	211	45.	2 JAN 0600	361	0.	2 JAN 1830	511	0.
1 JAN 0505	62	24.	1 JAN 1735	212	44.	2 JAN 0605	362	0.	2 JAN 1835	512	0.
1 JAN 0510	63	24.	1 JAN 1740	213	44.	2 JAN 0610	363	0.	2 JAN 1840	513	0.
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1 JAN 0555	72	27.	1 JAN 1825	222	38.	2 JAN 0655	372	0.	2 JAN 1925	522	0.
1 JAN 0600	73	27.	1 JAN 1830	223	38.	2 JAN 0700	373	0.	2 JAN 1930	523	0.
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1 JAN 0610	75	27.	1 JAN 1840	225	37.	2 JAN 0710	375	0.	2 JAN 1940	525	0.
1 JAN 0615	76	27.	1 JAN 1845	226	36.	2 JAN 0715	376	0.	2 JAN 1945	526	0.
1 JAN 0620	77	27.	1 JAN 1850	227	36.	2 JAN 0720	377	0.	2 JAN 1950	527	0.

1	JAN	0625	78	28.	*	1	JAN	1855	228	35.	*	2	JAN	0725	378	0.	*	2	JAN 1955 528 0.
1	JAN	0630	79	28.	*	1	JAN	1900	229	35.	*	2	JAN	0730	379	0.	*	2	JAN 2000 529 0.
1	JAN	0635	80	28.	*	1	JAN	1905	230	34.	*	2	JAN	0735	380	0.	*	2	JAN 2005 530 0.
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1	JAN	0645	82	28.	*	1	JAN	1915	232	33.	*	2	JAN	0745	382	0.	*	2	JAN 2015 532 0.
1	JAN	0650	83	29.	*	1	JAN	1920	233	33.	*	2	JAN	0750	383	0.	*	2	JAN 2020 533 0.
1	JAN	0655	84	29.	*	1	JAN	1925	234	32.	*	2	JAN	0755	384	0.	*	2	JAN 2025 534 0.
1	JAN	0700	85	29.	*	1	JAN	1930	235	32.	*	2	JAN	0800	385	0.	*	2	JAN 2030 535 0.
1	JAN	0705	86	30.	*	1	JAN	1935	236	32.	*	2	JAN	0805	386	0.	*	2	JAN 2035 536 0.
1	JAN	0710	87	30.	*	1	JAN	1940	237	31.	*	2	JAN	0810	387	0.	*	2	JAN 2040 537 0.
1	JAN	0715	88	30.	*	1	JAN	1945	238	31.	*	2	JAN	0815	388	0.	*	2	JAN 2045 538 0.
1	JAN	0720	89	31.	*	1	JAN	1950	239	31.	*	2	JAN	0820	389	0.	*	2	JAN 2050 539 0.
1	JAN	0725	90	31.	*	1	JAN	1955	240	30.	*	2	JAN	0825	390	0.	*	2	JAN 2055 540 0.
1	JAN	0730	91	32.	*	1	JAN	2000	241	30.	*	2	JAN	0830	391	0.	*	2	JAN 2100 541 0.
1	JAN	0735	92	32.	*	1	JAN	2005	242	30.	*	2	JAN	0835	392	0.	*	2	JAN 2105 542 0.
1	JAN	0740	93	32.	*	1	JAN	2010	243	30.	*	2	JAN	0840	393	0.	*	2	JAN 2110 543 0.
1	JAN	0745	94	32.	*	1	JAN	2015	244	29.	*	2	JAN	0845	394	0.	*	2	JAN 2115 544 0.
1	JAN	0750	95	33.	*	1	JAN	2020	245	29.	*	2	JAN	0850	395	0.	*	2	JAN 2120 545 0.
1	JAN	0755	96	33.	*	1	JAN	2025	246	29.	*	2	JAN	0855	396	0.	*	2	JAN 2125 546 0.
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1	JAN	0805	98	34.	*	1	JAN	2035	248	28.	*	2	JAN	0905	398	0.	*	2	JAN 2135 548 0.
1	JAN	0810	99	34.	*	1	JAN	2040	249	28.	*	2	JAN	0910	399	0.	*	2	JAN 2140 549 0.
1	JAN	0815	100	34.	*	1	JAN	2045	250	28.	*	2	JAN	0915	400	0.	*	2	JAN 2145 550 0.
1	JAN	0820	101	34.	*	1	JAN	2050	251	27.	*	2	JAN	0920	401	0.	*	2	JAN 2150 551 0.
1	JAN	0825	102	34.	*	1	JAN	2055	252	27.	*	2	JAN	0925	402	0.	*	2	JAN 2155 552 0.
1	JAN	0830	103	35.	*	1	JAN	2100	253	26.	*	2	JAN	0930	403	0.	*	2	JAN 2200 553 0.
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1	JAN	0840	105	35.	*	1	JAN	2110	255	26.	*	2	JAN	0940	405	0.	*	2	JAN 2210 555 0.
1	JAN	0845	106	35.	*	1	JAN	2115	256	25.	*	2	JAN	0945	406	0.	*	2	JAN 2215 556 0.
1	JAN	0850	107	36.	*	1	JAN	2120	257	25.	*	2	JAN	0950	407	0.	*	2	JAN 2220 557 0.
1	JAN	0855	108	36.	*	1	JAN	2125	258	25.	*	2	JAN	0955	408	0.	*	2	JAN 2225 558 0.
1	JAN	0900	109	37.	*	1	JAN	2130	259	24.	*	2	JAN	1000	409	0.	*	2	JAN 2230 559 0.
1	JAN	0905	110	37.	*	1	JAN	2135	260	24.	*	2	JAN	1005	410	0.	*	2	JAN 2235 560 0.
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1	JAN	0940	117	43.	*	1	JAN	2210	267	23.	*	2	JAN	1040	417	0.	*	2	JAN 2310 567 0.
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1	JAN	0950	119	44.	*	1	JAN	2220	269	22.	*	2	JAN	1050	419	0.	*	2	JAN 2320 569 0.
1	JAN	0955	120	45.	*	1	JAN	2225	270	22.	*	2	JAN	1055	420	0.	*	2	JAN 2325 570 0.
1	JAN	1000	121	46.	*	1	JAN	2230	271	22.	*	2	JAN	1100	421	0.	*	2	JAN 2330 571 0.
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1	JAN	1010	123	48.	*	1	JAN	2240	273	22.	*	2	JAN	1110	423	0.	*	2	JAN 2340 573 0.
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1	JAN	1020	125	50.	*	1	JAN	2250	275	22.	*	2	JAN	1120	425	0.	*	2	JAN 2350 575 0.
1	JAN	1025	126	51.	*	1	JAN	2255	276	22.	*	2	JAN	1125	426	0.	*	2	JAN 2355 576 0.
1	JAN	1030	127	52.	*	1	JAN	2300	277	22.	*	2	JAN	1130	427	0.	*	3	JAN 0000 577 0.
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1	JAN	1110	135	63.	*	1	JAN	2340	285	21.	*	2	JAN	1210	435	0.	*	3	JAN 0040 585 0.
1	JAN	1115	136	66.	*	1	JAN	2345	286	21.	*	2	JAN	1215	436	0.	*	3	JAN 0045 586 0.
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1	JAN	1125	138	71.	*	1	JAN	2355	288	21.	*	2	JAN	1225	438	0.	*	3	JAN 0055 588 0.
1	JAN	1130	139	74.	*	2	JAN	0000	289	21.	*	2	JAN	1230	439	0.	*	3	JAN 0100 589 0.
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1	JAN	1220	149	3368.	*	2	JAN	0050	299	18.	*	2	JAN	1320	449	0.	*	3	JAN 0150 599 0.
1	JAN	1225	150	4182.	*	2	JAN	0055	300	17.	*	2	JAN	1325	450	0.	*	3	JAN 0155 600 0.
					*						*						*		

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*

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW					
			6-HR	24-HR	72-HR	49.92-HR	(CFS)	(HR)
		(CFS)	5016.	12.58		858.	236.	114. 114.
		(INCHES)	1.618	1.781	1.784	1.784		
		(AC-FT)	426.	468.	469.	469.		

CUMULATIVE AREA = 4.93 SQ MI

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

6-HOUR	OPERATION 24-HOUR	STATION 72-HOUR	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
	HYDROGRAPH AT			14	2244.	12.33	310.	86.	41.	1.47
	ROUTED TO			RCP14	2002.	12.50	310.	86.	41.	1.47
	HYDROGRAPH AT			15	1723.	12.42	231.	64.	31.	1.26
	2 COMBINED AT			I1CP15	3610.	12.42	540.	149.	72.	2.73
	HYDROGRAPH AT			16	1464.	12.42	197.	56.	27.	1.13
	2 COMBINED AT			CP15	5069.	12.42	737.	206.	99.	3.86
	ROUTED TO			RCP15	4480.	12.58	735.	205.	99.	3.86
	HYDROGRAPH AT			17	1027.	12.25	123.	31.	15.	1.07
	2 COMBINED AT			I1CP17	5016.	12.58	858.	236.	114.	4.93
	ROUTED TO			5R	5016.	12.58	858.	236.	114.	4.93

DAMES & MOORE

CALCULATIONS COVER SHEET

SUBJECT: White Tanks Diversion Ditches

PROJECT NO. 15448-007

SHEET 1 OF 19

Channel Sizing Evaluation

TITLE OF CALCULATIONS/DOCUMENT

CALCULATIONS/DOCUMENT BY: Mike Radaideh

PRINT NAME

M. R. Radaideh — 7-14-00

SIGNATURE — DATE

ASSUMPTIONS CHECKED BY CONSULTANT/SENIOR PERSONNEL: Todd Ringsmuth

PRINT NAME

8-10-00

SIGNATURE — DATE

CALCULATIONS/DOCUMENT CHECKED BY: Bonnie Whitley

PRINT NAME

Bonnie Whitley — 7/14/00

SIGNATURE — DATE

APPROVED BY: (PRINCIPAL INVESTIGATOR, CONSULTANT, OR PM) Todd Ringsmuth

PRINT NAME

1-9-01

SIGNATURE — DATE

Approval Notice: If Calculations/Document are only spot checked, do not require checking, or are assumed to be correct by experience of engineering judgement, it should be noted here.

Revision Number	Date	By	Checked By	Approval
1				
2				
3				
4			INITIALS	

CALCULATION CHECKING CRITERIA

1. Is the calculation method appropriate?
2. Are the results and conclusions reasonable when compared with the design input and the project objectives?
3. Are the results and conclusions reasonably within the project construction budget?
4. Is the calculation complete in format with all sections included?

   - Problem Statement & Calculation Objectives
   - Data Available
   - Design Criteria
   - Assumptions
   - Analysis and Conclusions
   - Attachments

5. Does the calculation conform with:

   - Codes
   - Project Design Criteria
   - Project Procedures?

6. Are the mathematics of the calculation accurate?
7. Are computer programs used in the calculation appropriate for use in this application?
8. Is the computer input correct?
9. Is the computer output correct and reasonable?
10. Are all sheets completely filled out?

    - Project number?
    - File number?
    - Sheet ? of ?
    - By ? Date ?
    - Checked By ?

11. Are the calculations neat and legible?

EXHIBIT D

FCDMC, White Tanks FRS #3 Modification Design

Design of Cholla and Waterfall Diversion Ditches

15448-007-058

Objective:

To design the channels that will be used to divert flows from Cholla and Waterfall washes into McMicken Dam.

Calculation Details and Assumptions:

-Choose alignment for diversion channels to provide milder slopes, smoother diversion, and shorter distances. The locations of the diversions are shown in Figure 1.

-Calculate Manning's coefficient (n) for the excavated channels. Cowan's method (1956) was used as outlined in the U.S. Department of Transportation's *"Guide for Selecting Manning's Coefficient for Natural Channels and Flood Plains"*.

-From HEC-1 hydrographs, calculate peak flows expected in the diversion channels.

-Using peak flows, Manning's n, and a suitable cross-section; calculate the normal depth, velocity, and critical depth in the channels. Excel spreadsheet detailing the calculation is attached.

Results Summary:

Manning's n = 0.043 (used for both waterfall and Cholla)

Wash	Flow (cfs)	Width (ft)	Slope (%)	Normal Depth (ft)	Critical Depth (ft)
Waterfall	3,370	250	0.5	2.7	1.7
Cholla	6,512	300	0.5	3.6	2.4

Calculations for Waterfall & Cholla Wash*

Manning's Eqn

$$Q = \frac{1.486}{n} A R^{2/3} S^{1/2}$$

n Values

Cowan (1956)

$$n = (n_b + n_1 + n_2 + n_3 + n_4)\, m$$

where:

n_b = a base value for n for a straight, uniform, smooth channel in natural material.

n_1 = a correction factor for surface irregularities

n_2 = for variations in shape and size of channel x-section

n_3 = for obstructions

n_4 = for vegetation

- After excavation of ditch, material should be of Coarse sand to gravel. From Table 1 (Guide to Manning's...) P4

n_b for Coarse sand = 0.026 → 0.035 (avg = 0.03)

n_b for gravel = 0.028 → 0.035 (avg = 0.032)

Avg = 0.031

* **Use 0.031 for n_b** ✓

* Manning's n should be similar for both washes since they

- n_1 for surface irregularities

  irregularities should be smooth to minor since ditch is to be excavated

$$n_1 = 0.000 \rightarrow 0.005$$

$$\Rightarrow \text{use } \boxed{n_1 = 0.002} \checkmark$$

- n_2 for variations in channel cross section.

  Cross section will be alternating gradually to occasionally, i.e. $0.000 \rightarrow 0.005$

$$\Rightarrow \text{use } \boxed{n_2 = 0.002} \checkmark$$

- n_3 ~ Effect of obstruction is negligible (scattered abstructi like debris deposits, stumps, exposed roots, logs, piers, or isolate bolders occupying < 5% of the cross sectional area)

$$n_3 = 0.000 \rightarrow 0.004$$

$$\Rightarrow \text{use } \boxed{n_3 = 0.002} \checkmark$$

- n_4 ~ Amount of vegetation is small

$$n_4 = 0.002 - 0.01$$

$$\Rightarrow \text{use } \boxed{n_4 = 0.006} \checkmark$$

- Degree of meandering (m) is minor since the ditch is manmade and most likely to follow straight lines.

$$\Rightarrow \text{use } \boxed{m = 1.00} \checkmark$$

<u>Finally</u>

$$n = (n_b + n_1 + n_2 + n_3 + n_4)\, m$$

$$= (0.031 + 0.002 + 0.002 + 0.002 + 0.006) * 1.00$$

$$\boxed{n = 0.043}$$ ✓

Inflows: (100 yr, 24-hr)

HEC-I Results from FCD's "Hydrologic Analysis for White Tank FRS #3 Watershed" report:

Waterfall Wash

subbasin 1 + ½ * Subbasin 2 = 3,370 cfs ✓

Cholla Wash

subbasins 4, 5, 6, 7, 8, 9, & 10 = 6,512 cfs ✓

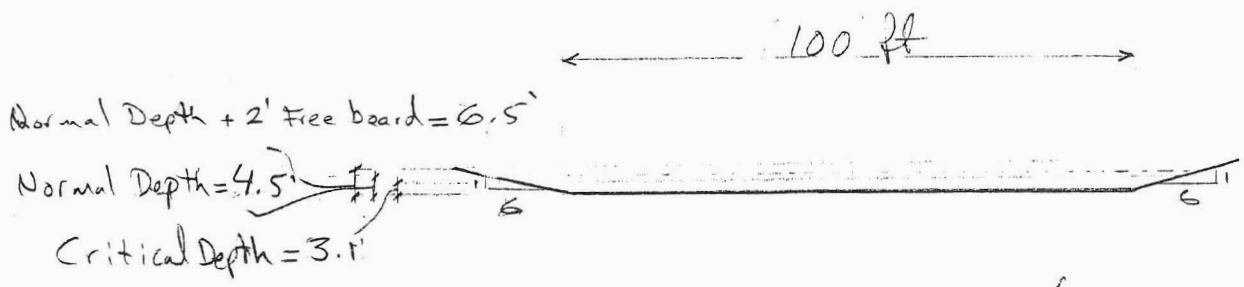
Diversion Channels Calculations and Cross Sections:

see attached spread sheet

Waterfall Wash

Channel slope = 0.5% (Length & orientation shown on topo map)

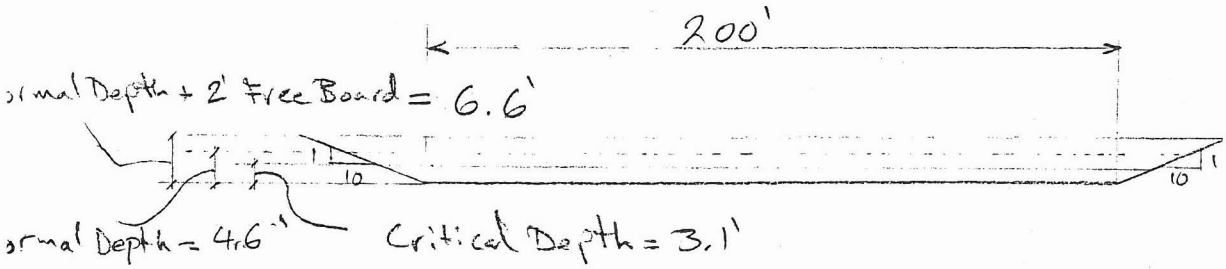
Cross Section



* Not to scale

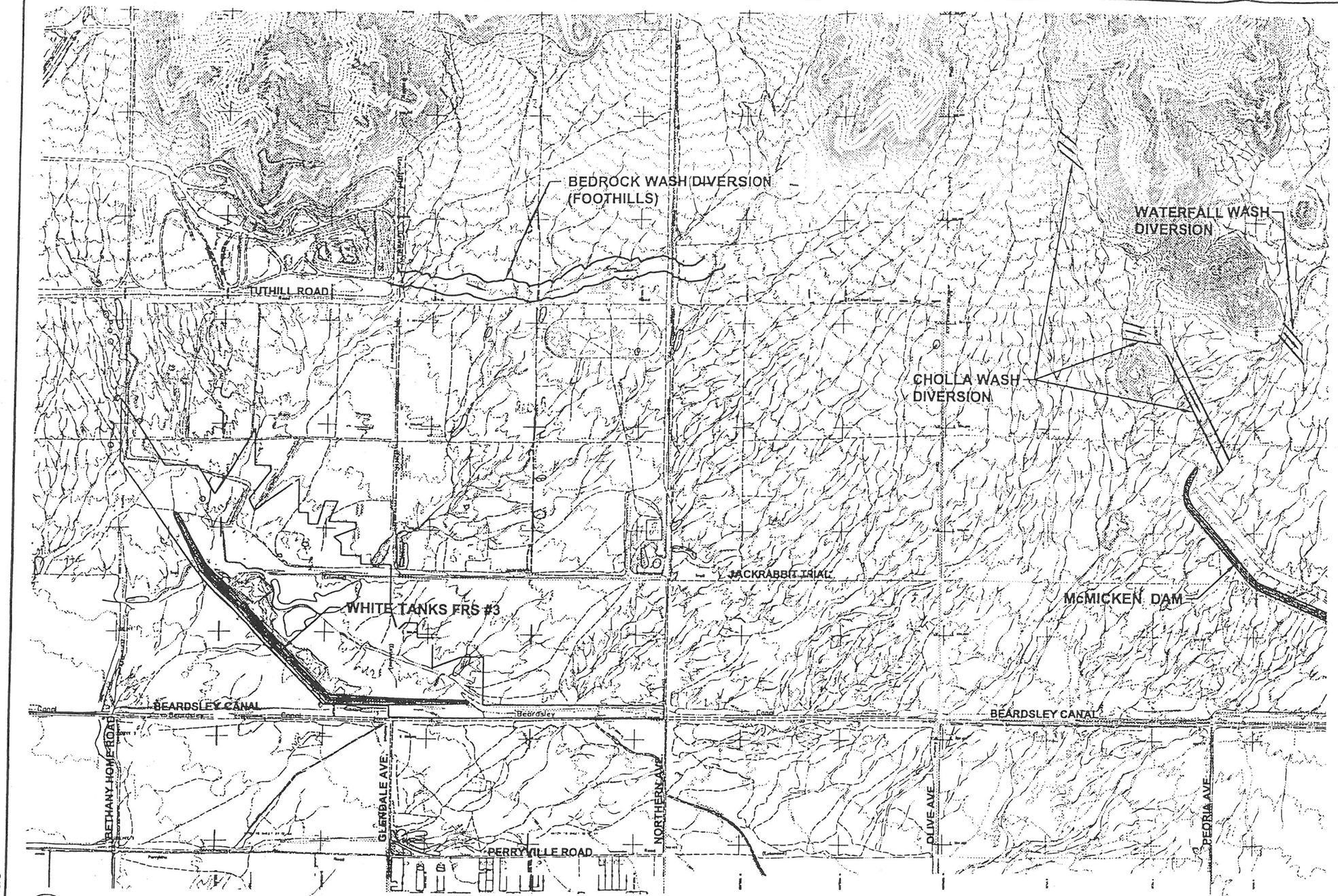
Cholla Wash

Channel Slope = 0.5%



* Not to Scale

9-18-2000



Wat. Fall
1, 1/2, 2 (333 ac-ft)

Cholla
4, 5, 6, 7, 7, 8, 10 (616 ac-ft)

Bedrock
→ 11, 13, 14, 15, 16 (543)
(0+00 station)
→ 13, 14, 15, 16 (379)
(35+00 station)

Flood Control District of Maricopa County

SOURCE:
BASE MAP OF WHITE TANKS/AGUA FRIA A.D.M.S. TOPOGRAPHIC MAPS, FLOWN 12/22/89 BY COOPER AERIAL OF PHOENIX, INC. FOR THE WLB GROUP INC., AREA DRAINAGE MASTER STUDY

DAMES & MOORE

A13680 DWG 2-8-00 XREF-VTOPO

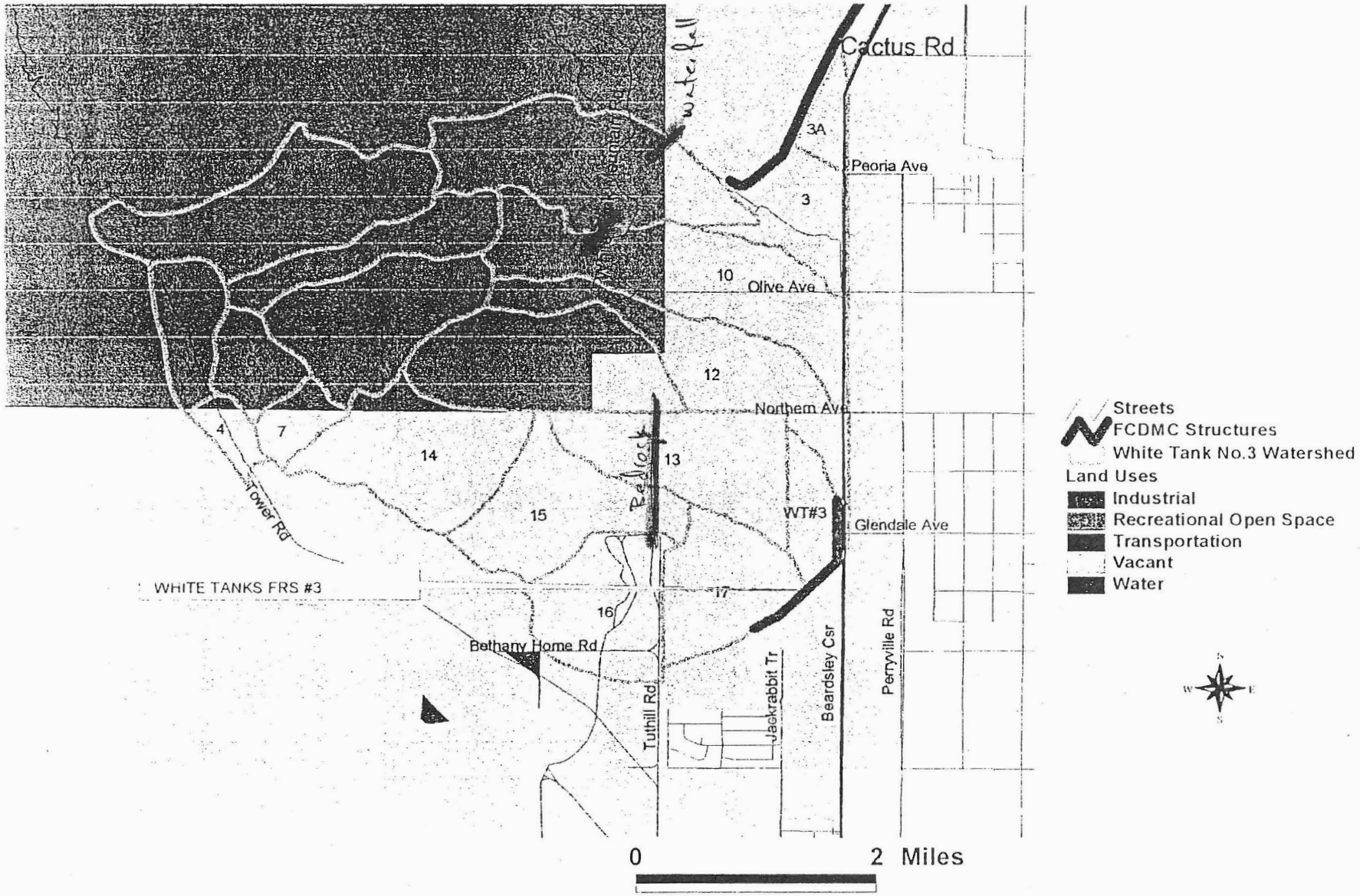
WHITE TANKS FRS #3

Dames & Moore Job No. 15448-007-058

Diversion Ditch Locations

Figure 1

Figure 4. Land Uses for White Tank No.3 Watershed



Peak Flows for Waterfall and Cholla Diversions

A	B	C	D	E	F	G	H	I	J	K
	ORD	DAY	MON	HRMN	Total Waterfall Flow	Waterfall Flow after Diversion	Diverted Flow to McMicken Dam	Volume	Total Cholla Flow	Volume
					cfs	cfs		ac-ft	(cfs)	ac-ft
					4279	2442	3370	333	6512	616
	1	1	JAN	0	0	0	0	0	0	0
	2	1	JAN	5	0	0	0	0	0	0
	3	1	JAN	10	0	0	0	0	0	0
	4	1	JAN	15	0	0	0	0	0	0

Peak Flows for Waterfall and Cholla Diversions

	A	B	C	D	E	F	G	H	I	J	K
1											
2											
3											
4		ORD	DAY	MON	HRMN	Total Waterfall Flow	Waterfall Flow after Diversion	Diverted Flow to McMicken Dam	Volume	Total Cholla Flow	Volume
5						cfs	cfs		ac-ft	(cfs)	ac-ft
6						=MAX(F8:F607)	=MAX(G8:G607)	=MAX(H8:H607)	=MAX(I8:I607)	=MAX(J8:J607)	=MAX(K8:K607)
7											
8		1	1	JAN	0	0	0	=F8-G8	=I7+H8*5*60/43560	0	=K7+J8*5*60/43560
9		2	1	JAN	5	0	0	=F9-G9	=I8+H9*5*60/43560	0	=K8+J9*5*60/43560
10		3	1	JAN	10	0	0	=F10-G10	=I9+H10*5*60/43560	0	=K9+J10*5*60/43560
11		4	1	JAN	15	0	0	=F11-G11	=I10+H11*5*60/43560	0	=K10+J11*5*60/43560

Waterfall and Cholla Diversion Channels Design

A	B	C	D	E	F	G	H	I	J	K	L	M	N
	Wash	Normal Depth	Bottom width	Left side slope	Right side slope	Manning's n	Flow Area	Wetted Perimeter	Hydraulic Radius	Slope	Flow Velocity	Flow, Q	Peak Flow
		(ft)	(ft)	(z:1)	(z:1)		(ft^2)	(ft)	(ft)	(percent)	(ft/s)	(cfs)	(cfs)
	Waterfall Wash	2.72	250.00	10.00	10.00	0.04	753.85	304.66	2.47	0.50	4.47	3370.00	3370
	Cholla Wash	3.609	300.00	10.00	10.00	0.04	1213.05	372.55	3.26	0.50	5.37	6512.00	6512

Critical Depth

Wash	Critical Depth	Bottom Width	Left Side Slope	Right Side Slope	Channel Top Width, T	Flow Area	Flow, Q	Q^2/g	A^3/T
	(ft)	(ft)	(z:1)	(z:1)	(ft)	(sq ft)	(cfs)		
Waterfall Wash	1.74	250.00	10.00	10.00	284.77	464.84	3370.00	352698.76	352698.76
Cholla Wash	2.380	300.00	10.00	10.00	347.60	770.70	6512.00	1316960.99	1316960.99

Flow Area / wetted Perimeter

Waterfall and Cholla Diversion Channels Design

A	B	C	D	E	F	G	H	I	J	K	L	M	N
	Wash	Normal Depth	Bottom width	Left side slope	Right side slope	Manning's n	Flow Area	Wetted Perimeter	Hydraulic Radius	Slope	Flow Velocity	Flow, Q	Peak Flow
		(ft)	(ft)	(z:1)	(z:1)		(ft^2)	(ft)	(ft)	(percent)	(ft/s)	(cfs)	(cfs)
	Waterfall Wash	2.719555	250	10	10	0.043	=D7*C7+0.5*C7*C7*E7+0.5*C7*C7*F7	=(D7+((C7^2)+((E7*C7)^2))^0.5)+(((C7^2)+((F7*C7)^2))^0.5)	=H7/I7	0.5	=M7/H7	=(1.486/G7)*(H7)*(J7^(2/3))*(K7/100)^0.5	3370
	Cholla Wash	3.609275	300	10	10	0.043	=D8*C8+0.5*C8*C8*E8+0.5*C8*C8*F8	=(D8+((C8^2)+((E8*C8)^2))^0.5)+(((C8^2)+((F8*C8)^2))^0.5)	=H8/I8	0.5	=M8/H8	=(1.486/G8)*(H8)*(J8^(2/3))*(K8/100)^0.5	6512

Y_n B Z_1 Z_2 n

$B * Y_n + \frac{1}{2} * Y_n * (Y_n * Z_1) + \frac{1}{2} * Y_n * (Y_n * Z_2)$

$B + ((Y_n^2) + ((Y_n * Z_1)^2)^{0.5} + ((Y_n^2) + ((Z_2 * Y_n)^2)^{0.5})$

Flow / Area

$= \frac{1.49}{n} A R^{2/3} S^{1/2}$

manning's Equation

Critical Depth

Wash	Critical Depth	Bottom Width	Left Side Slope	Right Side Slope	Channel Top Width, T	Flow Area	Flow, Q	Q^2/g	A^3/T
	(ft)	(ft)	(z:1)	(z:1)	(ft)	(sq ft)	(cfs)		
=B7	1.738451	250	10	10	=D15+C15*E15+C15*F15	=D15*C15+0.5*C15*C15*E15+0.5*C15*C15*F15	3370	=(I15^2)/32.2	=(H15^3)/G15
=B8	2.380182	300	10	10	=D16+C16*E16+C16*F16	=D16*C16+0.5*C16*C16*E16+0.5*C16*C16*F16	6512	=(I16^2)/32.2	=(H16^3)/G16

Y_c

Bottom width $+ Y_c * Z_1 + Y_c * Z_2$

$B * Y_c + \frac{1}{2} * (Y_c * Z_1) * (Y_c) + \frac{1}{2} * (Y_c * Z_2) * (Y_c)$

$\frac{Flow^2}{g} = \frac{area^3}{Top\ width}$

Solve for Y_c

Guide for Selecting Manning's Roughness Coefficients for Natural Channels and Flood Plains

By GEORGE J. ARCEMENT, JR., and VERNE R. SCHNEIDER

Prepared in cooperation with the
U.S. Department of Transportation,
Federal Highway Administration

A guide presenting step-by-step procedures for selecting Manning's roughness coefficient, *n*, for natural channels and flood plains. Photographs of flood-plain segments can be used for comparison with similar flood plains to aid in assigning *n* values

U.S. GEOLOGICAL SURVEY WATER-SUPPLY PAPER 2339

Table 1. Base values of Manning's n

[Modified from Aldridge and Garrett, 1973, table 1; —, no data]

Bed material	Median size of bed material (in millimeters)	Base n value: Straight uniform channel[1]	Base n value: Smooth channel[2]
Sand channels			
Sand[3]	0.2	0.012	—
	.3	.017	—
	.4	.020	—
	.5	.022	—
	.6	.023	—
	.8	.025	—
	1.0	.026	—
Stable channels and flood plains			
Concrete	—	0.012–0.018	0.011
Rock cut	—	—	.025
Firm soil	—	0.025–0.032	.020
Coarse sand	1–2	0.026–0.035	—
Fine gravel	—	—	.024
Gravel	2–64	0.028–0.035	—
Coarse gravel	—	—	.026
Cobble	64–256	0.030–0.050	—
Boulder	>256	0.040–0.070	—

[1] Benson and Dalrymple (1967).
[2] For indicated material; Chow (1959).
[3] Only for upper regime flow where grain roughness is predominant.

moves easily and takes on different configurations or bed forms. Bed form is a function of velocity of flow, grain size, bed shear, and temperature. The flows that produce the bed forms are classified as lower regime flow and upper regime flow, according to the relation between depth and discharge (fig. 2). The lower regime flow occurs during low discharges, and the upper regime flow occurs during high discharges. An unstable discontinuity, called a transitional zone, appears between the two regimes in the depth to discharge relation (fig. 3). In lower regime flow, the bed may have a plane surface and no movement of sediment, or the bed may be deformed and have small uniform waves or large irregular saw-toothed waves formed by sediment moving downstream. The smaller waves are known as ripples, and the larger waves are known as dunes. In upper regime flow, the bed may have a plane surface and sediment movement or long, smooth sand waves that are in phase with the surface waves. These waves are known as standing waves and antidunes. Bed forms on dry beds are remnants of the bed forms that existed during receding flows and may not represent flood stages.

The flow regime is governed by the size of the bed materials and the stream power, which is a measure of energy transfer. Stream power (SP) is computed by the formula:

$$SP = 62\, RS_w V \qquad (4)$$

where

62 = specific weight of water, in pounds per cubic foot,
R = hydraulic radius, in feet,
S_w = water-surface slope, in feet per foot, and
V = mean velocity, in feet per second.

The values in table 1 for sand channels are for upper regime flows and are based on extensive laboratory and field data obtained by the U.S. Geological Survey. When using these values, a check must be made to ensure that the stream power is large enough to produce upper regime flow (fig. 2). Although the base n values given in table 1 for stable channels are from verification studies, the values have a wide range because the effects of bed roughness are extremely difficult to separate from the effects of other roughness factors. The choice of n values selected from table 1 will be influenced by personal judgment and experience. The n values for lower and transitional-regime flows are much larger generally than the values given in table 1 for upper regime flow. Simons, Li, and Associates (1982) give a range of n values commonly found for different bed forms.

The n value for a sand channel is assigned for upper regime flow by using table 1, which shows the relation between median grain size and the n value. The flow regime is checked by computing the velocity and stream power that correspond to the assigned n value. The computed stream power is compared with the value that is necessary to cause upper regime flow (see fig. 2, from Simons and Richardson, 1966, fig. 28). If the computed stream power is not large enough to produce upper regime flow (an indication of lower regime or transitional-zone flow), a reliable value of n cannot be assigned. The evaluation of n is complicated by bed-form drag. Different equations are needed to describe the bed forms. The total n value for lower and transitional-regime flows can vary greatly and depends on the bed forms present at a particular time. Figure 3 illustrates how the total resistance in a channel varies for different bed forms.

Limerinos (1970) related n to hydraulic radius and particle size on the basis of samples from 11 stream channels having bed material ranging from small gravel to medium-sized boulders. Particles have three dimensions—length, width, and thickness—and are oriented so that length and width are parallel to the plane of the streambed. Limerinos related n to minimum diameter (thickness) and to intermediate diameter (width). His equation using intermediate diameter appears to be the most useful because this dimension is the most easy to measure in the field and to estimate from photographs.

The equation for n using intermediate diameter is

$$n = \frac{(0.0926)\, R^{1/6}}{1.16 + 2.0 \log\left(\frac{R}{d_{84}}\right)} \qquad (5)$$

Table 2. Adjustment values for factors that affect the roughness of a channel

[Modified from Aldridge and Garrett, 1973, table 2]

Channel conditions		*n* value adjustment[1]	Example
Degree of irregularity (n_1)	Smooth	0.000	Compares to the smoothest channel attainable in a given bed material.
	Minor	0.001–0.005	Compares to carefully dredged channels in good condition but having slightly eroded or scoured side slopes.
	Moderate	0.006–0.010	Compares to dredged channels having moderate to considerable bed roughness and moderately sloughed or eroded side slopes.
	Severe	0.011–0.020	Badly sloughed or scalloped banks of natural streams; badly eroded or sloughed sides of canals or drainage channels; unshaped, jagged, and irregular surfaces of channels in rock.
Variation in channel cross section (n_2)	Gradual	0.000	Size and shape of channel cross sections change gradually.
	Alternating occasionally	0.001–0.005	Large and small cross sections alternate occasionally, or the main flow occasionally shifts from side to side owing to changes in cross-sectional shape.
	Alternating frequently	0.010–0.015	Large and small cross sections alternate frequently, or the main flow frequently shifts from side to side owing to changes in cross-sectional shape.
Effect of obstruction (n_3)	Negligible	0.000–0.004	A few scattered obstructions, which include debris deposits, stumps, exposed roots, logs, piers, or isolated boulders, that occupy less than 5 percent of the cross-sectional area.
	Minor	0.005–0.015	Obstructions occupy less than 15 percent of the cross-sectional area, and the spacing between obstructions is such that the sphere of influence around one obstruction does not extend to the sphere of influence around another obstruction. Smaller adjustments are used for curved smooth-surfaced objects than are used for sharp-edged angular objects.
	Appreciable	0.020–0.030	Obstructions occupy from 15 to 50 percent of the cross-sectional area, or the space between obstructions is small enough to cause the effects of several obstructions to be additive, thereby blocking an equivalent part of a cross section.
	Severe	0.040–0.050	Obstructions occupy more than 50 percent of the cross-sectional area, or the space between obstructions is small enough to cause turbulence across most of the cross section.
Amount of vegetation (n_4)	Small	0.002–0.010	Dense growths of flexible turf grass, such as Bermuda, or weeds growing where the average depth of flow is at least two times the height of the vegetation; supple tree seedlings such as willow, cottonwood, arrowweed, or saltcedar growing where the average depth of flow is at least three times the height of the vegetation.
	Medium	0.010–0.025	Turf grass growing where the average depth of flow is from one to two times the height of the vegetation; moderately dense stemmy grass, weeds, or tree seedlings growing where the average depth of flow is from two to three times the height of the vegetation; brushy, moderately dense vegetation, similar to 1- to 2-year-old willow trees in the dormant season, growing along the banks, and no significant vegetation is evident along the channel bottoms where the hydraulic radius exceeds 2 ft.
	Large	0.025–0.050	Turf grass growing where the average depth of flow is about equal to the height of the vegetation; 8- to 10-year-old willow or cottonwood trees intergrown with some weeds and brush (none of the vegetation in foliage) where the hydraulic radius exceeds 2 ft; bushy willows about 1 year old intergrown with some weeds along side slopes (all vegetation in full foliage), and no significant vegetation exists along channel bottoms where the hydraulic radius is greater than 2 ft.
	Very large	0.050–0.100	Turf grass growing where the average depth of flow is less than half the height of the vegetation; bushy willow trees about 1 year old intergrown with weeds along side slopes (all vegetation in full foliage), or dense cattails growing along channel bottom; trees intergrown with weeds and brush (all vegetation in full foliage).
Degree of meandering[2] (m)	Minor	1.00	Ratio of the channel length to valley length is 1.0 to 1.2.
	Appreciable	1.15	Ratio of the channel length to valley length is 1.2 to 1.5.
	Severe	1.30	Ratio of the channel length to valley length is greater than 1.5.

[1] Adjustments for degree of irregularity, variations in cross section, effect of obstructions, and vegetation are added to the base *n* value (table 1) before multiplying by the adjustment for meander.

[2] Adjustment values apply to flow confined in the channel and do not apply where downvalley flow crosses meanders.

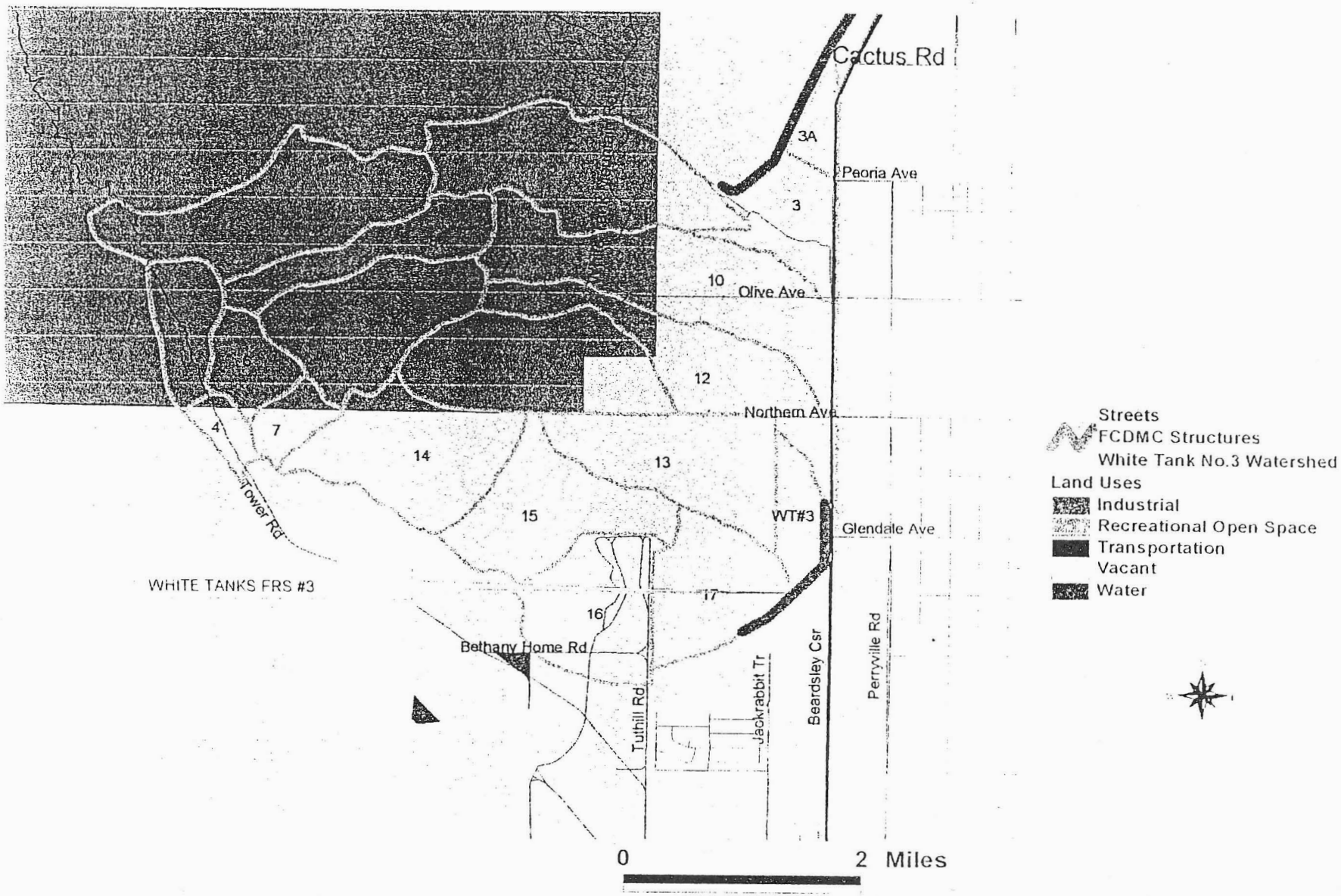
Hydrologic Analysis
for
White Tank Flood Retarding Structure No. 3 Watershed

Engineering Division
Flood Control District of Maricopa County
2801 W. Durango Street
Phoenix, AZ 85009

October 19, 1999

Registered Professional Engineer (Civil)
CERTIFICATE NO
32345
BING
ZHAO
Date Signed 10/26/99
ARIZONA U.S.A.

Figure 4. Land Uses for White Tank No.3 Watershed



DAMES & MOORE

CALCULATIONS COVER SHEET

SUBJECT: FDMC FRS #3

PROJECT NO. 15448-007-058

SHEET 1 OF 16

FRS #3 Basin Alternatives

TITLE OF CALCULATIONS/DOCUMENT

Runoff Volume Estimates

CALCULATIONS/DOCUMENT BY: Muawieh Radaideh

PRINT NAME

SIGNATURE

DATE: 7-10-00

ASSUMPTIONS CHECKED BY CONSULTANT/SENIOR PERSONNEL: Todd Ringsmuth

PRINT NAME

SIGNATURE

DATE: 8-10-00

CALCULATIONS/DOCUMENT CHECKED BY: Bonnie Whitley

PRINT NAME

SIGNATURE

DATE: 7/14/00

APPROVED BY: (PRINCIPAL INVESTIGATOR, CONSULTANT, OR PM) Todd Ringsmuth

PRINT NAME

SIGNATURE

DATE: 1-9-01

Approval Notice: If Calculations/Document are only spot checked, do not require checking, or are assumed to be correct by experience of engineering judgement, it should be noted here.

Revision Number	Date	By	Checked By	Approval
1				
2				
3				
4				

INITIALS

CALCULATION CHECKING CRITERIA

1. Is the calculation method appropriate?
2. Are the results and conclusions reasonable when compared with the design input and the project objectives?
3. Are the results and conclusions reasonably within the project construction budget?
4. Is the calculation complete in format with all sections included?

   - Problem Statement & Calculation Objectives
   - Data Available
   - Design Criteria
   - Assumptions
   - Analysis and Conclusions
   - Attachments

5. Does the calculation conform with:

   - Codes
   - Project Design Criteria
   - Project Procedures?

6. Are the mathematics of the calculation accurate?
7. Are computer programs used in the calculation appropriate for use in this application?
8. Is the computer input correct?
9. Is the computer output correct and reasonable?
10. Are all sheets completely filled out?

    - Project number?
    - File number?
    - Sheet ? of ?
    - By ? Date ?
    - Checked By ?

11. Are the calculations neat and legible?

EXHIBIT D

FCDMC, White Tanks FRS #3 Modification Design

Estimating Basins Volumes for the Three Alternatives

15448-007-058

OBJECTIVE:

To estimate the inflow volumes, which will be used in calculating the necessary storage capacity for the basins suggested in the three design alternatives.

REFERENCES:

-Hydrologic Analysis for White Tanks Flood Retarding Structure #3 Watershed, FCDMC, March 29, 2000.

-Watershed delineated by the FCDMC as shown in Figure 1.

-HEC-1 hydrologic model, US Army Corps of Engineers.

-HEC-1 Flood Hydrograph Package, Users Manual, US Army Corps of Engineers, 1985.

ASSUMPTIONS:

- Flow diverted from Waterfall Wash to McMicken is that from subbasin 1 and half of subbasin 2. Total volume is 333 ac-ft = 229 ac-ft for subbasin 1 + 207/2 for ½ of subbasin 2.

- Remaining half of subbasin 2 has an area of 0.81 mi2, which is similar to that of subbasin 8. Hence, unit hydrograph of subbasin 8 was used for remaining area of subbasin 2 and adjusted to produce the balance for the total volume for the watershed.

- Channel loss record (RL) was included in the HEC-1 input file but deactivated to produce an added factor of safety for basin sizing.

CALCULATION APPROACH:

Hydrographs for the 100-year, 24-hour were generated for the following:

1- Total Waterfall Wash Flow: contributing subbasins are 1, 2, 3A, and 3.

2- Remaining Waterfall Wash Flow after Diversion to McMicken Dam: contributing subbasins are ½ of subbasin 2 and subbasins 3A and 3.

3- Cholla Wash Flow: contributing subbasins are 4 through 10.

4- Additional Flow to the North Inlet: subbasins 12 and WT3.

5- Middle Inlet Flow: subbasins 11 and 13.

6- South Inlet Flow: subbasins 14 through 17.

Hydrographs were added and volumes calculated for each of the three alternatives as shown in the attached tables. Total volume of 1,968 ac-ft from *the Hydrologic Analysis for White Tanks Flood Retarding Structure #3 Watershed* report was used to check for accuracy of HEC-1 models and calculations.

RESULTS:

- Different flows and volumes for each alternative are shown in Figures 2, 3, and 4.

- Minimum basin storage volumes are summarized in the following table:

ALTERNATIVE 1	Main Basin Volume = 1,634 ac-ft
ALTERNATIVE 2	Upper Basin Volume = 531 ac-ft Lower Basin Volume = 478 ac-ft
ALTERNATIVE 3	Main Basin Volume = 1,158 ac-ft Olive Basin Volume = 502 ac-ft

ALTERNATIVE 1

Alternative 1 includes Waterfall Diversion to McMicken leaving 2,442 cfs to flow to Beardsley Channel. No diversion to Northern Avenue is included in this alternative. Remaining Waterfall flow (2,442 cfs) combines with Cholla flow (6,512 cfs) to produce a total flow of 8,063 cfs and a total volume of 788 ac-ft. The total volume for the basin is 1,634 ac-ft which is the total of inflow volumes from the North, Middle, and South Inlets.

				E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
ORD	DAY	MON	HRMN	Waterfall Flow after Diversion	Volume	Cholla Flow to Main Basin	Volume	Total Flow to Main Basin (remaining Waterfall & all of Cholla)	Flow from 12 & WT3	Volume	Total North Inlet Flow	Volume	Flow from Middle Inlet	Volume	Flow From South Inlet	Volume	Total Inflow into the Basin	Volume
				cfs	ac-ft	cfs	ac-ft	cfs	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
				2,442	172	6,512	616	8,063	1,431	132	9,472	920	2,720	246	5,016	469	17,001	1,634
1	1	JAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	1	JAN	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	1	JAN	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1	JAN	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1	JAN	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	1	JAN	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	1	JAN	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	1	JAN	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	1	JAN	40	1	0.00688705	1	0.00688705	2	0	0	2	0.0137741	0	0	1	0.00688705	3	0.02066116
10	1	JAN	45	1	0.0137741	1	0.0137741	2	0	0	2	0.02754821	0	0	1	0.0137741	3	0.04132231
11	1	JAN	50	2	0.02754821	1	0.02066116	3	0	0	3	0.04820937	0	0	2	0.02754821	5	0.07575758
12	1	JAN	55	2	0.04132231	2	0.03443526	4	0	0	4	0.07575758	0	0	2	0.04132231	6	0.11707989

Alternative 1

Alternative 1 includes Waterfall Diversion to McMicken leaving 2,442 cfs to flow to Beardsley Channel. No diversion to Northern Avenue is included in this alternative. Remaining Waterfall flow (2,442 cfs) combines with Cholla flow (6,512 cfs) to produce a total flow of 8,063 cfs and a total volume of 788 ac-ft. The total volume for the basin is 1,634 ac-ft which is the total of inflow volumes from the North, Middle, and South Inlets.

					E	F	G	H	I	J
13	ORD	DAY	MON	HRMN	Waterfall Flow after Diversion	Volume	Cholla Flow to Main Basin	Volume	Total Flow to Main Basin (remaining Waterfall & all of Cholla)	Flow from 12 & WT3
14					cfs	ac-ft	cfs	ac-ft	cfs	cfs
15					=MAX(F16:F615)	=MAX(G16:G615)	=MAX(H16:H615)	=MAX(I16:I615)	=MAX(J16:J615)	=MAX(K16:K615)
16										
17	1	1	JAN	0	0	=G15+(F16*5*60/43560)	0	=I15+(H16*5*60/43560)	=F16+H16	0
18	2	1	JAN	5	0	=G16+(F17*5*60/43560)	0	=I16+(H17*5*60/43560)	=F17+H17	0
19	3	1	JAN	10	0	=G17+(F18*5*60/43560)	0	=I17+(H18*5*60/43560)	=F18+H18	0
20	4	1	JAN	15	0	=G18+(F19*5*60/43560)	0	=I18+(H19*5*60/43560)	=F19+H19	0
21	5	1	JAN	20	0	=G19+(F20*5*60/43560)	0	=I19+(H20*5*60/43560)	=F20+H20	0
22	6	1	JAN	25	0	=G20+(F21*5*60/43560)	0	=I20+(H21*5*60/43560)	=F21+H21	0
23	7	1	JAN	30	0	=G21+(F22*5*60/43560)	0	=I21+(H22*5*60/43560)	=F22+H22	0
24	8	1	JAN	35	0	=G22+(F23*5*60/43560)	0	=I22+(H23*5*60/43560)	=F23+H23	0
25	9	1	JAN	40	1	=G23+(F24*5*60/43560)	1	=I23+(H24*5*60/43560)	=F24+H24	0
26	10	1	JAN	45	1	=G24+(F25*5*60/43560)	1	=I24+(H25*5*60/43560)	=F25+H25	0
27	11	1	JAN	50	2	=G25+(F26*5*60/43560)	1	=I25+(H26*5*60/43560)	=F26+H26	0
28	12	1	JAN	55	2	=G26+(F27*5*60/43560)	2	=I26+(H27*5*60/43560)	=F27+H27	0

Cont./ Alternative 1

K	L	M	N	O	P	Q	R	S
Volume	Total North Inlet Flow	Volume	Flow from Middle Inlet	Volume	Flow From South Inlet	Volume	Total Inflow into the Basin	Volume
ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
=MAX(L16:L615)	=MAX(M16:M615)	=MAX(N16:N615)	=MAX(O16:O615)	=MAX(P16:P615)	=MAX(Q16:Q615)	=MAX(R16:R615)	=MAX(S16:S615)	=MAX(T16:T615)
=L15+(K16*5*60/43560)	=J16+K16	=N15+(M16*5*60/43560)	0	=P15+(O16*5*60/43560)	0	=R15+(Q16*5*60/43560)	=J16+K16+O16+Q16	=T15+(S16*5*60/43560)
=L16+(K17*5*60/43560)	=J17+K17	=N16+(M17*5*60/43560)	0	=P16+(O17*5*60/43560)	0	=R16+(Q17*5*60/43560)	=J17+K17+O17+Q17	=T16+(S17*5*60/43560)
=L17+(K18*5*60/43560)	=J18+K18	=N17+(M18*5*60/43560)	0	=P17+(O18*5*60/43560)	0	=R17+(Q18*5*60/43560)	=J18+K18+O18+Q18	=T17+(S18*5*60/43560)
=L18+(K19*5*60/43560)	=J19+K19	=N18+(M19*5*60/43560)	0	=P18+(O19*5*60/43560)	0	=R18+(Q19*5*60/43560)	=J19+K19+O19+Q19	=T18+(S19*5*60/43560)
=L19+(K20*5*60/43560)	=J20+K20	=N19+(M20*5*60/43560)	0	=P19+(O20*5*60/43560)	0	=R19+(Q20*5*60/43560)	=J20+K20+O20+Q20	=T19+(S20*5*60/43560)
=L20+(K21*5*60/43560)	=J21+K21	=N20+(M21*5*60/43560)	0	=P20+(O21*5*60/43560)	0	=R20+(Q21*5*60/43560)	=J21+K21+O21+Q21	=T20+(S21*5*60/43560)
=L21+(K22*5*60/43560)	=J22+K22	=N21+(M22*5*60/43560)	0	=P21+(O22*5*60/43560)	0	=R21+(Q22*5*60/43560)	=J22+K22+O22+Q22	=T21+(S22*5*60/43560)
=L22+(K23*5*60/43560)	=J23+K23	=N22+(M23*5*60/43560)	0	=P22+(O23*5*60/43560)	0	=R22+(Q23*5*60/43560)	=J23+K23+O23+Q23	=T22+(S23*5*60/43560)
=L23+(K24*5*60/43560)	=J24+K24	=N23+(M24*5*60/43560)	0	=P23+(O24*5*60/43560)	1	=R23+(Q24*5*60/43560)	=J24+K24+O24+Q24	=T23+(S24*5*60/43560)
=L24+(K25*5*60/43560)	=J25+K25	=N24+(M25*5*60/43560)	0	=P24+(O25*5*60/43560)	1	=R24+(Q25*5*60/43560)	=J25+K25+O25+Q25	=T24+(S25*5*60/43560)
=L25+(K26*5*60/43560)	=J26+K26	=N25+(M26*5*60/43560)	0	=P25+(O26*5*60/43560)	2	=R25+(Q26*5*60/43560)	=J26+K26+O26+Q26	=T25+(S26*5*60/43560)
=L26+(K27*5*60/43560)	=J27+K27	=N26+(M27*5*60/43560)	0	=P26+(O27*5*60/43560)	2	=R26+(Q27*5*60/43560)	=J27+K27+O27+Q27	=T26+(S27*5*60/43560)

Alternative 2

Alternative 2 includes Waterfall Diversion to McMicken leaving 2,442 cfs to flow to Beardsley Channel, 1300 cfs of which is diverted across Beardsley Canal at Olive Avenue. The remaining flow combines with Cholla flow at Beardsley (6512 cfs) to produce a total flow of 6,763 cfs. This total flow combines with flow from subbasins 12 and WT3, 770 cfs of which will be conveyed in a channel to the intersection of Beardsley Canal and Bethany Home Road. Flows of 255 cfs and 445

				F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
ORD	DAY	MON	HRMN	Waterfall Flow after Diversion	Volume	Flow Diverted at Olive to Northern Avenue	Volume	Flow Remaining from Waterfall	Volume	Cholla Flow to North Basin	Volume	Total Flow to North Basin (remaining Waterfall & all of Cholla)	Volume	Flow from 12 & WT3	Volume	Total Flow from North Inlet	Volume	770 cfs bypass	770 cfs Volume	Total Flow from North Inlet less 770 cfs	Volume of Upper Basin	Flow from Middle Inlet
				cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs
				2442	172	1300	138	1142	33	6512	616	6763	649	1431	132	8172	781	770	250	7402	531	2720
1	1	JAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	1	JAN	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	1	JAN	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1	JAN	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1	JAN	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	1	JAN	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	1	JAN	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	1	JAN	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	1	JAN	40	1	0	1	0	0	0	1	0	1	0	0	0	1	0	1	0	0	0	0
10	1	JAN	45	1	0	1	0	0	0	1	0	1	0	0	0	1	0	1	0	0	0	0
11	1	JAN	50	2	0	2	0	0	0	1	0	1	0	0	0	1	0	1	0	0	0	0
12	1	JAN	55	2	0	2	0	0	0	2	0	2	0	0	0	2	0	2	0	0	0	0
13	1	JAN	100	2	0	2	0	0	0	2	0	2	0	0	0	2	0	2	0	0	0	0
14	1	JAN	105	3	0	3	0	0	0	3	0	3	0	1	0	4	0	4	0	0	0	1

Cont. / ALTERNATIVE 2

Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ
Volume	255 cfs bypass	255 cfs Volume	Flow from Middle Inlet less 255 cfs	Volume	Flow from South Inlet	Volume	475 cfs bypass	475 cfs Volume	Flow from South Inlet less 475 cfs	Volume	Total Volume Entering the Lower Basin	Total Flow Bypassing the Lower Basin	Total Volume of Bypassing Flows	Total Flow Entering the Lower Basin	South Basin Volume	Total Flow Directed to Camelback	Total Volume Directed to Camelback	Total Volume
ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs		
246	255	72	2465	174	5016	469	475	165	4541	304	478	730	237	7006	478	1500	487	1634
0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	
0	0	0	0	0	1	0	1	0	0	0		1	0	0	0	2	0	
0	0	0	0	0	1	0	1	0	0	0		1	0	0	0	2	0	
0	0	0	0	0	2	0	2	0	0	0		2	0	0	0	3	0	
0	0	0	0	0	2	0	2	0	0	0		2	0	0	0	4	0	
0	0	0	0	0	3	0	3	0	0	0		3	0	0	0	5	0	
0	1	0	0	0	4	0	4	0	0	0		5	0	0	0	9	0	

Alternative 2

Alternative 2 includes Waterfall Diversion to McMicken leaving 2,442 cfs to flow to Beardsley Channel, 1300 cfs of which is diverted across Beardsley Canal at Olive Avenue. The remaining flow combines with Cholla flow at Beardsley (6512 cfs) to produce a total flow of 6,763 cfs. This total flow combines with flow from subbasins 12 and WT3, 770 cfs of which will be conveyed in a channel to the intersection of Beardsley Canal and Bethany Home Road. Flows of 255 cfs and 445 cfs will also be deducted from the Middle and South Inlets consecutively and carried to the same intersection. The combined flow of 1,500 cfs will be carried south to Camelback Road and over Beardsley Canal via an overchute.

					F	G	H	I	J	K	L	M	N
ORD	DAY	MON	HRMN		Waterfall Flow after Diversion	Volume	Flow Diverted at Olive to Northern Avenue	Volume	Flow Remaining from Waterfall	Volume	Cholla Flow to North Basin	Volume	Total Flow to North Basin (remaining Waterfall & all of Cholla)
					cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs
					=MAX(F16:F615)	=MAX(G16:G615)	=MAX(H16:H615)	=MAX(I16:I615)	=MAX(J16:J615)	=MAX(K16:K615)	=MAX(L16:L615)	=MAX(M16:M615)	=MAX(N16:N615)
1	1	JAN	0		0	=G15+(F16*5*60/43560)	=F16-J16	=I15+(H16*5*60/43560)	=IF(F16>1300,F16-1300,0)	=K15+(J16*5*60/43560)	0	=M15+(L16*5*60/43560)	=J16+L16
2	1	JAN	5		0	=G16+(F17*5*60/43560)	=F17-J17	=I16+(H17*5*60/43560)	=IF(F17>1300,F17-1300,0)	=K16+(J17*5*60/43560)	0	=M16+(L17*5*60/43560)	=J17+L17
3	1	JAN	10		0	=G17+(F18*5*60/43560)	=F18-J18	=I17+(H18*5*60/43560)	=IF(F18>1300,F18-1300,0)	=K17+(J18*5*60/43560)	0	=M17+(L18*5*60/43560)	=J18+L18
4	1	JAN	15		0	=G18+(F19*5*60/43560)	=F19-J19	=I18+(H19*5*60/43560)	=IF(F19>1300,F19-1300,0)	=K18+(J19*5*60/43560)	0	=M18+(L19*5*60/43560)	=J19+L19
5	1	JAN	20		0	=G19+(F20*5*60/43560)	=F20-J20	=I19+(H20*5*60/43560)	=IF(F20>1300,F20-1300,0)	=K19+(J20*5*60/43560)	0	=M19+(L20*5*60/43560)	=J20+L20
6	1	JAN	25		0	=G20+(F21*5*60/43560)	=F21-J21	=I20+(H21*5*60/43560)	=IF(F21>1300,F21-1300,0)	=K20+(J21*5*60/43560)	0	=M20+(L21*5*60/43560)	=J21+L21
7	1	JAN	30		0	=G21+(F22*5*60/43560)	=F22-J22	=I21+(H22*5*60/43560)	=IF(F22>1300,F22-1300,0)	=K21+(J22*5*60/43560)	0	=M21+(L22*5*60/43560)	=J22+L22
8	1	JAN	35		0	=G22+(F23*5*60/43560)	=F23-J23	=I22+(H23*5*60/43560)	=IF(F23>1300,F23-1300,0)	=K22+(J23*5*60/43560)	0	=M22+(L23*5*60/43560)	=J23+L23
9	1	JAN	40		1	=G23+(F24*5*60/43560)	=F24-J24	=I23+(H24*5*60/43560)	=IF(F24>1300,F24-1300,0)	=K23+(J24*5*60/43560)	1	=M23+(L24*5*60/43560)	=J24+L24
10	1	JAN	45		1	=G24+(F25*5*60/43560)	=F25-J25	=I24+(H25*5*60/43560)	=IF(F25>1300,F25-1300,0)	=K24+(J25*5*60/43560)	1	=M24+(L25*5*60/43560)	=J25+L25
11	1	JAN	50		2	=G25+(F26*5*60/43560)	=F26-J26	=I25+(H26*5*60/43560)	=IF(F26>1300,F26-1300,0)	=K25+(J26*5*60/43560)	1	=M25+(L26*5*60/43560)	=J26+L26
12	1	JAN	55		2	=G26+(F27*5*60/43560)	=F27-J27	=I26+(H27*5*60/43560)	=IF(F27>1300,F27-1300,0)	=K26+(J27*5*60/43560)	2	=M26+(L27*5*60/43560)	=J27+L27
13	1	JAN	100		2	=G27+(F28*5*60/43560)	=F28-J28	=I27+(H28*5*60/43560)	=IF(F28>1300,F28-1300,0)	=K27+(J28*5*60/43560)	2	=M27+(L28*5*60/43560)	=J28+L28
14	1	JAN	105		3	=G28+(F29*5*60/43560)	=F29-J29	=I28+(H29*5*60/43560)	=IF(F29>1300,F29-1300,0)	=K28+(J29*5*60/43560)	3	=M28+(L29*5*60/43560)	=J29+L29

Cont./ Alternative 2

O	P	Q	R	S	T	U	V	W	X	Y
Volume	Flow from 12 & WT3	Volume	Total Flow from North Inlet	Volume	770 cfs bypass	770 cfs Volume	Total Flow from North Inlet less 770 cfs	Volume of Upper Basin	Flow from Middle Inlet	Volume
ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
=MAX(O16:O615)	=MAX(P16:P615)	=MAX(Q16:Q615)	=MAX(R16:R615)	=MAX(S16:S615)	=MAX(T16:T615)	=MAX(U16:U615)	=MAX(V16:V615)	=MAX(W16:W615)	=MAX(X16:X615)	=MAX(Y16:Y615)
=O15+(N16*5*60/43560)	0	=Q15+(P16*5*60/43560)	=N16+P16	=S15+(R16*5*60/43560)	=R16-V16	=U15+(T16*5*60/43560)	=IF(R16>770,R16-770,0)	=W15+(V16*5*60/43560)	0	=Y15+(X16*5*60/43560)
=O16+(N17*5*60/43560)	0	=Q16+(P17*5*60/43560)	=N17+P17	=S16+(R17*5*60/43560)	=R17-V17	=U16+(T17*5*60/43560)	=IF(R17>770,R17-770,0)	=W16+(V17*5*60/43560)	0	=Y16+(X17*5*60/43560)
=O17+(N18*5*60/43560)	0	=Q17+(P18*5*60/43560)	=N18+P18	=S17+(R18*5*60/43560)	=R18-V18	=U17+(T18*5*60/43560)	=IF(R18>770,R18-770,0)	=W17+(V18*5*60/43560)	0	=Y17+(X18*5*60/43560)
=O18+(N19*5*60/43560)	0	=Q18+(P19*5*60/43560)	=N19+P19	=S18+(R19*5*60/43560)	=R19-V19	=U18+(T19*5*60/43560)	=IF(R19>770,R19-770,0)	=W18+(V19*5*60/43560)	0	=Y18+(X19*5*60/43560)
=O19+(N20*5*60/43560)	0	=Q19+(P20*5*60/43560)	=N20+P20	=S19+(R20*5*60/43560)	=R20-V20	=U19+(T20*5*60/43560)	=IF(R20>770,R20-770,0)	=W19+(V20*5*60/43560)	0	=Y19+(X20*5*60/43560)
=O20+(N21*5*60/43560)	0	=Q20+(P21*5*60/43560)	=N21+P21	=S20+(R21*5*60/43560)	=R21-V21	=U20+(T21*5*60/43560)	=IF(R21>770,R21-770,0)	=W20+(V21*5*60/43560)	0	=Y20+(X21*5*60/43560)
=O21+(N22*5*60/43560)	0	=Q21+(P22*5*60/43560)	=N22+P22	=S21+(R22*5*60/43560)	=R22-V22	=U21+(T22*5*60/43560)	=IF(R22>770,R22-770,0)	=W21+(V22*5*60/43560)	0	=Y21+(X22*5*60/43560)
=O22+(N23*5*60/43560)	0	=Q22+(P23*5*60/43560)	=N23+P23	=S22+(R23*5*60/43560)	=R23-V23	=U22+(T23*5*60/43560)	=IF(R23>770,R23-770,0)	=W22+(V23*5*60/43560)	0	=Y22+(X23*5*60/43560)
=O23+(N24*5*60/43560)	0	=Q23+(P24*5*60/43560)	=N24+P24	=S23+(R24*5*60/43560)	=R24-V24	=U23+(T24*5*60/43560)	=IF(R24>770,R24-770,0)	=W23+(V24*5*60/43560)	0	=Y23+(X24*5*60/43560)
=O24+(N25*5*60/43560)	0	=Q24+(P25*5*60/43560)	=N25+P25	=S24+(R25*5*60/43560)	=R25-V25	=U24+(T25*5*60/43560)	=IF(R25>770,R25-770,0)	=W24+(V25*5*60/43560)	0	=Y24+(X25*5*60/43560)
=O25+(N26*5*60/43560)	0	=Q25+(P26*5*60/43560)	=N26+P26	=S25+(R26*5*60/43560)	=R26-V26	=U25+(T26*5*60/43560)	=IF(R26>770,R26-770,0)	=W25+(V26*5*60/43560)	0	=Y25+(X26*5*60/43560)
=O26+(N27*5*60/43560)	0	=Q26+(P27*5*60/43560)	=N27+P27	=S26+(R27*5*60/43560)	=R27-V27	=U26+(T27*5*60/43560)	=IF(R27>770,R27-770,0)	=W26+(V27*5*60/43560)	0	=Y26+(X27*5*60/43560)
=O27+(N28*5*60/43560)	0	=Q27+(P28*5*60/43560)	=N28+P28	=S27+(R28*5*60/43560)	=R28-V28	=U27+(T28*5*60/43560)	=IF(R28>770,R28-770,0)	=W27+(V28*5*60/43560)	0	=Y27+(X28*5*60/43560)
=O28+(N29*5*60/43560)	1	=Q28+(P29*5*60/43560)	=N29+P29	=S28+(R29*5*60/43560)	=R29-V29	=U28+(T29*5*60/43560)	=IF(R29>770,R29-770,0)	=W28+(V29*5*60/43560)	1	=Y28+(X29*5*60/43560)

Cont./ Alternative 2

Z	AA	AB	AC	AD	AE	AF	AG	AH
255 cfs bypass	255 cfs Volume	Flow from Middle Inlet less 255 cfs	Volume	Flow from South Inlet	Volume	475 cfs bypass	475 cfs Volume	Flow from South Inlet less 475 cfs
cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs
=MAX(Z16:Z615)	=MAX(AA16:AA615)	=MAX(AB16:AB615)	=MAX(AC16:AC615)	=MAX(AD16:AD615)	=MAX(AE16:AE615)	=MAX(AF16:AF615)	=MAX(AG16:AG615)	=MAX(AH16:AH615)
=X16-AB16	=AA15+(Z16*5*60/43560)	=IF(X16>255,X16-255,0)	=AC15+(AB16*5*60/43560)	0	=AE15+(AD16*5*60/43560)	=AD16-AH16	=AG15+(AF16*5*60/43560)	=IF(AD16>475,AD16-475,0)
=X17-AB17	=AA16+(Z17*5*60/43560)	=IF(X17>255,X17-255,0)	=AC16+(AB17*5*60/43560)	0	=AE16+(AD17*5*60/43560)	=AD17-AH17	=AG16+(AF17*5*60/43560)	=IF(AD17>475,AD17-475,0)
=X18-AB18	=AA17+(Z18*5*60/43560)	=IF(X18>255,X18-255,0)	=AC17+(AB18*5*60/43560)	0	=AE17+(AD18*5*60/43560)	=AD18-AH18	=AG17+(AF18*5*60/43560)	=IF(AD18>475,AD18-475,0)
=X19-AB19	=AA18+(Z19*5*60/43560)	=IF(X19>255,X19-255,0)	=AC18+(AB19*5*60/43560)	0	=AE18+(AD19*5*60/43560)	=AD19-AH19	=AG18+(AF19*5*60/43560)	=IF(AD19>475,AD19-475,0)
=X20-AB20	=AA19+(Z20*5*60/43560)	=IF(X20>255,X20-255,0)	=AC19+(AB20*5*60/43560)	0	=AE19+(AD20*5*60/43560)	=AD20-AH20	=AG19+(AF20*5*60/43560)	=IF(AD20>475,AD20-475,0)
=X21-AB21	=AA20+(Z21*5*60/43560)	=IF(X21>255,X21-255,0)	=AC20+(AB21*5*60/43560)	0	=AE20+(AD21*5*60/43560)	=AD21-AH21	=AG20+(AF21*5*60/43560)	=IF(AD21>475,AD21-475,0)
=X22-AB22	=AA21+(Z22*5*60/43560)	=IF(X22>255,X22-255,0)	=AC21+(AB22*5*60/43560)	0	=AE21+(AD22*5*60/43560)	=AD22-AH22	=AG21+(AF22*5*60/43560)	=IF(AD22>475,AD22-475,0)
=X23-AB23	=AA22+(Z23*5*60/43560)	=IF(X23>255,X23-255,0)	=AC22+(AB23*5*60/43560)	0	=AE22+(AD23*5*60/43560)	=AD23-AH23	=AG22+(AF23*5*60/43560)	=IF(AD23>475,AD23-475,0)
=X24-AB24	=AA23+(Z24*5*60/43560)	=IF(X24>255,X24-255,0)	=AC23+(AB24*5*60/43560)	1	=AE23+(AD24*5*60/43560)	=AD24-AH24	=AG23+(AF24*5*60/43560)	=IF(AD24>475,AD24-475,0)
=X25-AB25	=AA24+(Z25*5*60/43560)	=IF(X25>255,X25-255,0)	=AC24+(AB25*5*60/43560)	1	=AE24+(AD25*5*60/43560)	=AD25-AH25	=AG24+(AF25*5*60/43560)	=IF(AD25>475,AD25-475,0)
=X26-AB26	=AA25+(Z26*5*60/43560)	=IF(X26>255,X26-255,0)	=AC25+(AB26*5*60/43560)	2	=AE25+(AD26*5*60/43560)	=AD26-AH26	=AG25+(AF26*5*60/43560)	=IF(AD26>475,AD26-475,0)
=X27-AB27	=AA26+(Z27*5*60/43560)	=IF(X27>255,X27-255,0)	=AC26+(AB27*5*60/43560)	2	=AE26+(AD27*5*60/43560)	=AD27-AH27	=AG26+(AF27*5*60/43560)	=IF(AD27>475,AD27-475,0)
=X28-AB28	=AA27+(Z28*5*60/43560)	=IF(X28>255,X28-255,0)	=AC27+(AB28*5*60/43560)	3	=AE27+(AD28*5*60/43560)	=AD28-AH28	=AG27+(AF28*5*60/43560)	=IF(AD28>475,AD28-475,0)
=X29-AB29	=AA28+(Z29*5*60/43560)	=IF(X29>255,X29-255,0)	=AC28+(AB29*5*60/43560)	4	=AE28+(AD29*5*60/43560)	=AD29-AH29	=AG28+(AF29*5*60/43560)	=IF(AD29>475,AD29-475,0)

Cont./ Alternative 2

AI	AJ	AK	AL	AM	AN	AO	AP	AQ
Volume	Total Volume Entering the Lower Basin	Total Flow Bypassing the Lower Basin	Total Volume of Bypassing Flows	Total Flow Entering the Lower Basin	South Basin Volume	Total Flow Directed to Camelback	Total Volume Directed to Camelback	Total Volume
ac-ft	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs		
=MAX(AI16:AI615)	=AC14+AI14	=MAX(AK16:AK615)	=MAX(AL16:AL615)	=MAX(AM16:AM615)	=MAX(AN16:AN615)	=MAX(AO16:AO615)	=MAX(AP16:AP615)	=G14+M14+Q14+Y14+AE14
=AI15+(AH16*5*60/43560)		=Z16+AF16	=AL15+(AK16*5*60/43560)	=AB16+AH16	=AN15+AM16*5*60/43560	=T16+AK16	=AP15+AO16*5*60/43560	
=AI16+(AH17*5*60/43560)		=Z17+AF17	=AL16+(AK17*5*60/43560)	=AB17+AH17	=AN16+AM17*5*60/43560	=T17+AK17	=AP16+AO17*5*60/43560	
=AI17+(AH18*5*60/43560)		=Z18+AF18	=AL17+(AK18*5*60/43560)	=AB18+AH18	=AN17+AM18*5*60/43560	=T18+AK18	=AP17+AO18*5*60/43560	
=AI18+(AH19*5*60/43560)		=Z19+AF19	=AL18+(AK19*5*60/43560)	=AB19+AH19	=AN18+AM19*5*60/43560	=T19+AK19	=AP18+AO19*5*60/43560	
=AI19+(AH20*5*60/43560)		=Z20+AF20	=AL19+(AK20*5*60/43560)	=AB20+AH20	=AN19+AM20*5*60/43560	=T20+AK20	=AP19+AO20*5*60/43560	
=AI20+(AH21*5*60/43560)		=Z21+AF21	=AL20+(AK21*5*60/43560)	=AB21+AH21	=AN20+AM21*5*60/43560	=T21+AK21	=AP20+AO21*5*60/43560	
=AI21+(AH22*5*60/43560)		=Z22+AF22	=AL21+(AK22*5*60/43560)	=AB22+AH22	=AN21+AM22*5*60/43560	=T22+AK22	=AP21+AO22*5*60/43560	
=AI22+(AH23*5*60/43560)		=Z23+AF23	=AL22+(AK23*5*60/43560)	=AB23+AH23	=AN22+AM23*5*60/43560	=T23+AK23	=AP22+AO23*5*60/43560	
=AI23+(AH24*5*60/43560)		=Z24+AF24	=AL23+(AK24*5*60/43560)	=AB24+AH24	=AN23+AM24*5*60/43560	=T24+AK24	=AP23+AO24*5*60/43560	
=AI24+(AH25*5*60/43560)		=Z25+AF25	=AL24+(AK25*5*60/43560)	=AB25+AH25	=AN24+AM25*5*60/43560	=T25+AK25	=AP24+AO25*5*60/43560	
=AI25+(AH26*5*60/43560)		=Z26+AF26	=AL25+(AK26*5*60/43560)	=AB26+AH26	=AN25+AM26*5*60/43560	=T26+AK26	=AP25+AO26*5*60/43560	
=AI26+(AH27*5*60/43560)		=Z27+AF27	=AL26+(AK27*5*60/43560)	=AB27+AH27	=AN26+AM27*5*60/43560	=T27+AK27	=AP26+AO27*5*60/43560	
=AI27+(AH28*5*60/43560)		=Z28+AF28	=AL27+(AK28*5*60/43560)	=AB28+AH28	=AN27+AM28*5*60/43560	=T28+AK28	=AP27+AO28*5*60/43560	
=AI28+(AH29*5*60/43560)		=Z29+AF29	=AL28+(AK29*5*60/43560)	=AB29+AH29	=AN28+AM29*5*60/43560	=T29+AK29	=AP28+AO29*5*60/43560	

ALTERNATIVE 3

Alternative 3 has no diversion to McMicken Dam. All of Waterfall Wash flow (4,279 cfs) will be diverted by an overchute into Olive Basin. 1300 cfs of Cholla Wash flow will be diverted across Beardsley Canal at Northern Avenue, leaving 5,212 cfs to flow south to combine with flow from subbasins 12 and WT3 and flow from middle washes into the main basin, producing a volume of 689 ac-ft. Flow volume from the South Inlet 409 ac-ft, which combines with volumes from North Inlet to increase basin-storage requirements to 1,158 ac-ft.

					F	G	H	I	J	K	L	M	N	O	P	Q	R	S			T	U	V
12	ORD	DA	MON	HRMN	Total Waterfall Flow	Volume for Olive Basin	Total Cholla Flow	Volume	Flow Diverted at Northern Avenue	Volume	Flow to Main Basin less 1,300 cfs	Volume	Flow from 12 & WT3	Volume	North Inflow	Volume into Main Basin from North Inflow	Flow from Middle	Volume	Total Flow into the North Inlet	Volume	Flow from South Inlet	Volume into Main Basin from South Inlet	Total Main Basin Volume
13					cfs	ac-ft	(cfs)	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	ac-ft
14					4279	502	6512	616	1300	305	5212	311	1431	132	6643	443	2720	246	9206	689	5016	469	1158
15																							
16	1	1	JAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17	2	1	JAN	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
18	3	1	JAN	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
19	4	1	JAN	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
20	5	1	JAN	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
21	6	1	JAN	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22	7	1	JAN	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
23	8	1	JAN	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
24	9	1	JAN	40	0	0	1	0.00689	1	0.00689	0	0	0	0	0	0	0	0	0	0	1	0.006887052	
25	10	1	JAN	45	1	0.006887052	1	0.01377	1	0.01377	0	0	0	0	0	0	0	0	0	0	1	0.013774105	
26	11	1	JAN	50	1	0.013774105	1	0.02066	1	0.02066	0	0	0	0	0	0	0	0	0	0	2	0.027548209	
27	12	1	JAN	55	1	0.020661157	2	0.03444	2	0.03444	0	0	0	0	0	0	0	0	0	0	2	0.041322314	
28	13	1	JAN	100	2	0.034435262	2	0.04821	2	0.04821	0	0	0	0	0	0	0	0	0	0	3	0.061983471	

ALTERNATIVE 3

Alternative 3 has no diversion to McMicken Dam. All of Waterfall Wash flow (4,279 cfs) will be diverted by an overchute into Olive Basin. 1300 cfs of Cholla Wash flow will be diverted across Beardsley Canal at Northern Avenue, leaving 5,212 cfs to flow south to combine with flow from subbasins 12 and WT3 and flow from middle washes into the main basin, producing a volume of 689 ac-ft. Flow volume from the South Inlet 409 ac-ft, which combines with volumes from North Inlet to increase basin-storage requirements to 1,158 ac-ft.

					F	G	H	I	J
12	ORD	DA	MON	HRMN	Total Waterfall Flow	Volume for Olive Basin	Total Cholla Flow	Volume	Flow Diverted at Northern Avenue
13					cfs	ac-ft	(cfs)	ac-ft	cfs
14					=MAX(F18:F617)	=MAX(G18:G617)	=MAX(H18:H617)	=MAX(I18:I617)	=MAX(J18:J617)
15									
16	1	1	JAN	0	0	=G17+F18*5*60/43560	0	=I17+H18*5*60/43560	=H18-L18
17	2	1	JAN	5	0	=G18+F19*5*60/43560	0	=I18+H19*5*60/43560	=H19-L19
18	3	1	JAN	10	0	=G19+F20*5*60/43560	0	=I19+H20*5*60/43560	=H20-L20
19	4	1	JAN	15	0	=G20+F21*5*60/43560	0	=I20+H21*5*60/43560	=H21-L21
20	5	1	JAN	20	0	=G21+F22*5*60/43560	0	=I21+H22*5*60/43560	=H22-L22
21	6	1	JAN	25	0	=G22+F23*5*60/43560	0	=I22+H23*5*60/43560	=H23-L23
22	7	1	JAN	30	0	=G23+F24*5*60/43560	0	=I23+H24*5*60/43560	=H24-L24
23	8	1	JAN	35	0	=G24+F25*5*60/43560	0	=I24+H25*5*60/43560	=H25-L25
24	9	1	JAN	40	0	=G25+F26*5*60/43560	1	=I25+H26*5*60/43560	=H26-L26
25	10	1	JAN	45	1	=G26+F27*5*60/43560	1	=I26+H27*5*60/43560	=H27-L27
26	11	1	JAN	50	1	=G27+F28*5*60/43560	1	=I27+H28*5*60/43560	=H28-L28
27	12	1	JAN	55	1	=G28+F29*5*60/43560	2	=I28+H29*5*60/43560	=H29-L29
28	13	1	JAN	100	2	=G29+F30*5*60/43560	2	=I29+H30*5*60/43560	=H30-L30

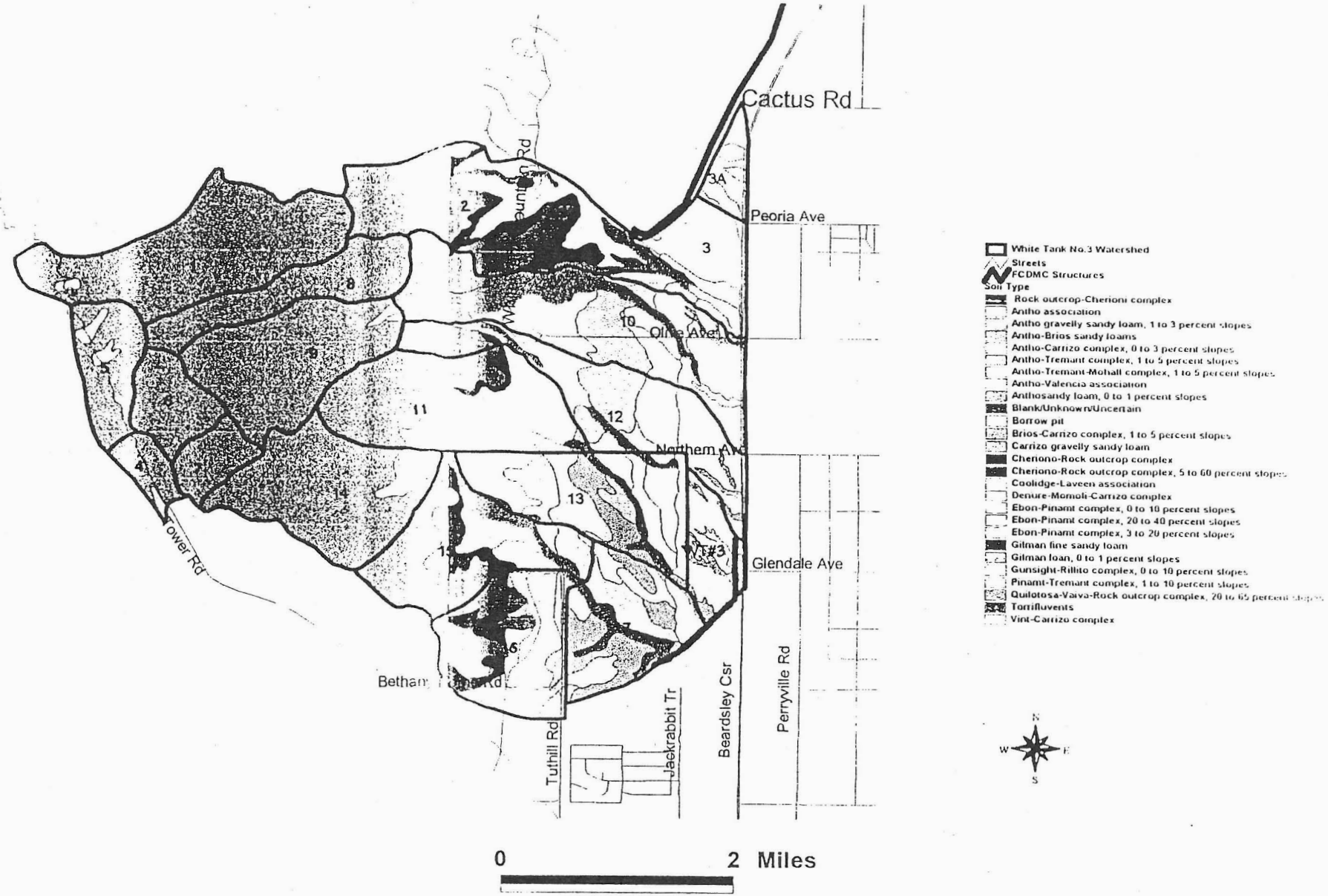
Cont./ ALTERNATIVE 3

K	L	M	N	O	P	Q
Volume	Flow to Main Basin less 1,300 cfs	Volume	Flow from 12 & WT3	Volume	North Inflow	Volume into Main Basin from North Inflow
ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
=MAX(K18:K617)	=MAX(L18:L617)	=MAX(M18:M617)	=MAX(N18:N617)	=MAX(O18:O617)	=MAX(P18:P617)	=MAX(Q18:Q617)
=K17+(J18*5*60/43560)	=IF(H18>1300,H18-1300,0)	=M17+(L18*5*60/43560)	0	=O17+(N18*5*60/43560)	=L18+N18	=Q17+P18*5*60/43560
=K18+(J19*5*60/43560)	=IF(H19>1300,H19-1300,0)	=M18+(L19*5*60/43560)	0	=O18+(N19*5*60/43560)	=L19+N19	=Q18+P19*5*60/43560
=K19+(J20*5*60/43560)	=IF(H20>1300,H20-1300,0)	=M19+(L20*5*60/43560)	0	=O19+(N20*5*60/43560)	=L20+N20	=Q19+P20*5*60/43560
=K20+(J21*5*60/43560)	=IF(H21>1300,H21-1300,0)	=M20+(L21*5*60/43560)	0	=O20+(N21*5*60/43560)	=L21+N21	=Q20+P21*5*60/43560
=K21+(J22*5*60/43560)	=IF(H22>1300,H22-1300,0)	=M21+(L22*5*60/43560)	0	=O21+(N22*5*60/43560)	=L22+N22	=Q21+P22*5*60/43560
=K22+(J23*5*60/43560)	=IF(H23>1300,H23-1300,0)	=M22+(L23*5*60/43560)	0	=O22+(N23*5*60/43560)	=L23+N23	=Q22+P23*5*60/43560
=K23+(J24*5*60/43560)	=IF(H24>1300,H24-1300,0)	=M23+(L24*5*60/43560)	0	=O23+(N24*5*60/43560)	=L24+N24	=Q23+P24*5*60/43560
=K24+(J25*5*60/43560)	=IF(H25>1300,H25-1300,0)	=M24+(L25*5*60/43560)	0	=O24+(N25*5*60/43560)	=L25+N25	=Q24+P25*5*60/43560
=K25+(J26*5*60/43560)	=IF(H26>1300,H26-1300,0)	=M25+(L26*5*60/43560)	0	=O25+(N26*5*60/43560)	=L26+N26	=Q25+P26*5*60/43560
=K26+(J27*5*60/43560)	=IF(H27>1300,H27-1300,0)	=M26+(L27*5*60/43560)	0	=O26+(N27*5*60/43560)	=L27+N27	=Q26+P27*5*60/43560
=K27+(J28*5*60/43560)	=IF(H28>1300,H28-1300,0)	=M27+(L28*5*60/43560)	0	=O27+(N28*5*60/43560)	=L28+N28	=Q27+P28*5*60/43560
=K28+(J29*5*60/43560)	=IF(H29>1300,H29-1300,0)	=M28+(L29*5*60/43560)	0	=O28+(N29*5*60/43560)	=L29+N29	=Q28+P29*5*60/43560
=K29+(J30*5*60/43560)	=IF(H30>1300,H30-1300,0)	=M29+(L30*5*60/43560)	0	=O29+(N30*5*60/43560)	=L30+N30	=Q29+P30*5*60/43560

Cont./ ALTERNATIVE 3

R	S			T	U	V
Flow from Middle	Volume	Total Flow into the North Inlet	Volume	Flow from South Inlet	Volume into Main Basin from South Inlet	Total Main Basin Volume
cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	ac-ft
=MAX(R18:R617)	=MAX(S18:S617)	=MAX(T18:T617)	=MAX(U18:U617)	=MAX(V18:V617)	=MAX(W18:W617)	=Q16+S16+W16
0	=S17+R18*5*60/43560	=P18+R18	=U17+T18*5*60/43560	0	=W17+V18*5*60/43560	
0	=S18+R19*5*60/43560	=P19+R19	=U18+T19*5*60/43560	0	=W18+V19*5*60/43560	
0	=S19+R20*5*60/43560	=P20+R20	=U19+T20*5*60/43560	0	=W19+V20*5*60/43560	
0	=S20+R21*5*60/43560	=P21+R21	=U20+T21*5*60/43560	0	=W20+V21*5*60/43560	
0	=S21+R22*5*60/43560	=P22+R22	=U21+T22*5*60/43560	0	=W21+V22*5*60/43560	
0	=S22+R23*5*60/43560	=P23+R23	=U22+T23*5*60/43560	0	=W22+V23*5*60/43560	
0	=S23+R24*5*60/43560	=P24+R24	=U23+T24*5*60/43560	0	=W23+V24*5*60/43560	
0	=S24+R25*5*60/43560	=P25+R25	=U24+T25*5*60/43560	0	=W24+V25*5*60/43560	
0	=S25+R26*5*60/43560	=P26+R26	=U25+T26*5*60/43560	1	=W25+V26*5*60/43560	
0	=S26+R27*5*60/43560	=P27+R27	=U26+T27*5*60/43560	1	=W26+V27*5*60/43560	
0	=S27+R28*5*60/43560	=P28+R28	=U27+T28*5*60/43560	2	=W27+V28*5*60/43560	
0	=S28+R29*5*60/43560	=P29+R29	=U28+T29*5*60/43560	2	=W28+V29*5*60/43560	
0	=S29+R30*5*60/43560	=P30+R30	=U29+T30*5*60/43560	3	=W29+V30*5*60/43560	

FIGURE 1: Soil Types for White Tank No.3 Watershed.



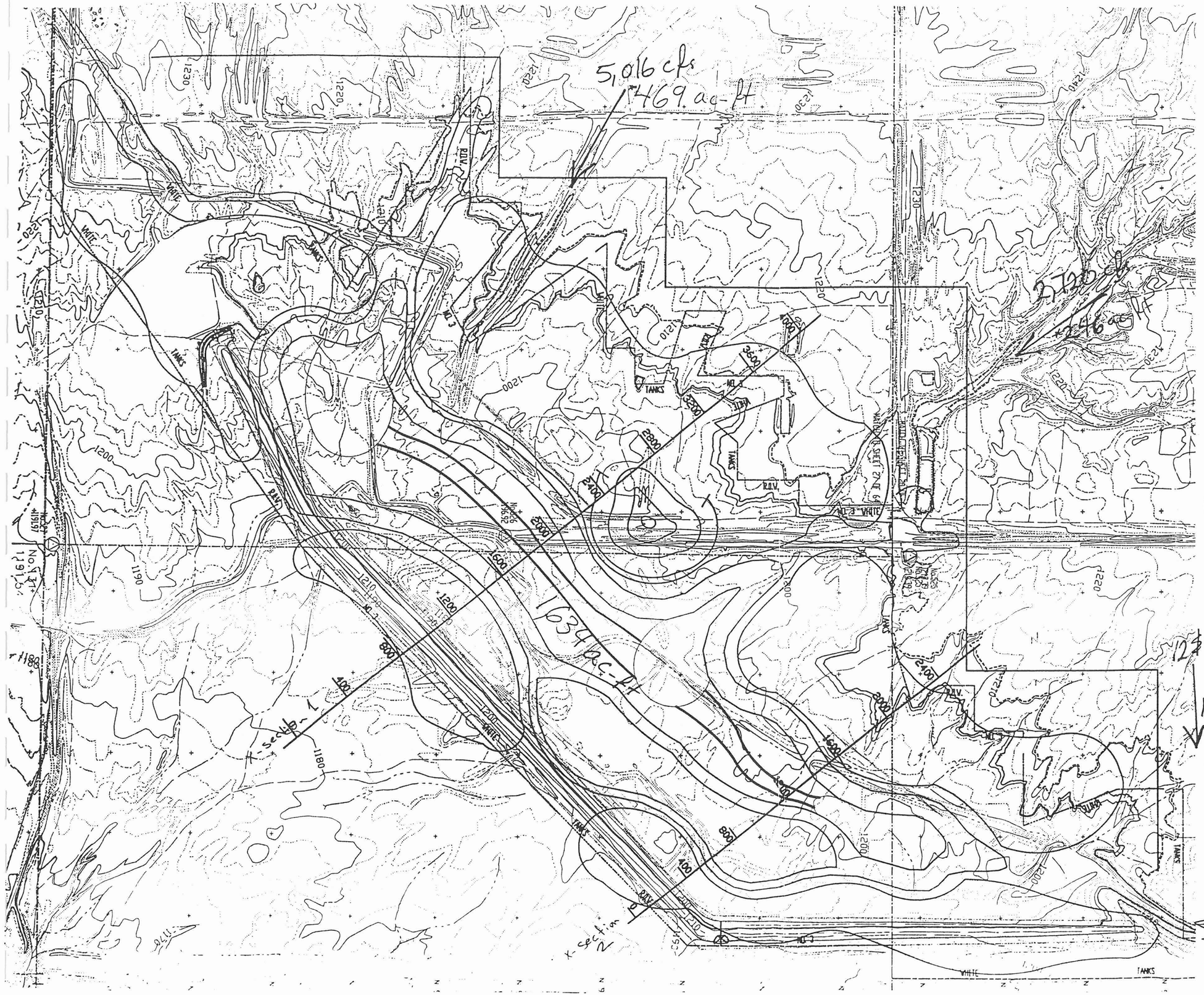


FIGURE 2:
ALTERNATIVE 1
PASSIVE USE
(LOW COST)

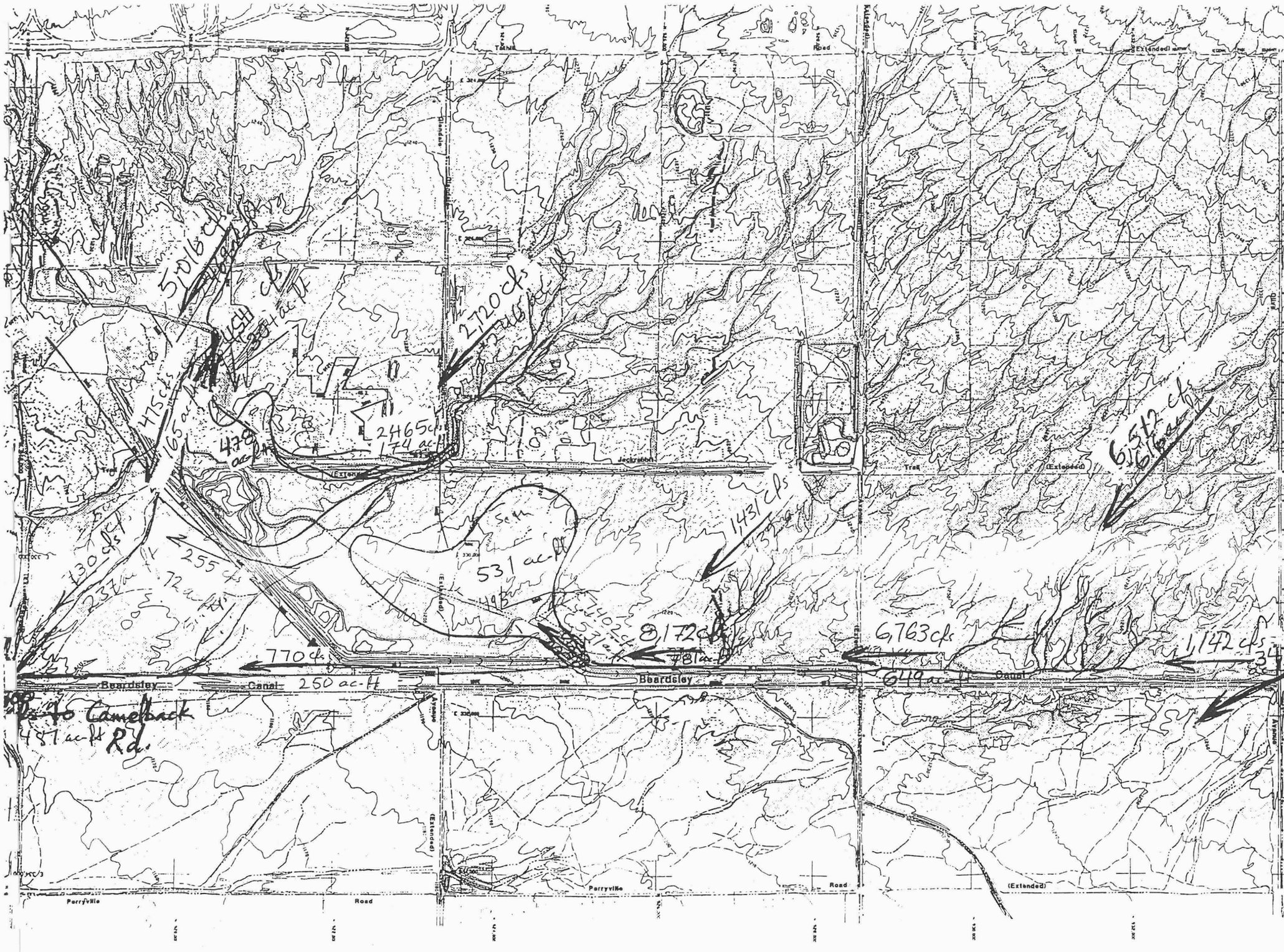


FIGURE 3:
ALTERNATIVE 2
ACTIVE USE
(ACTIVE RECLAMATION AND PARTNERING OPPURTUNITIES

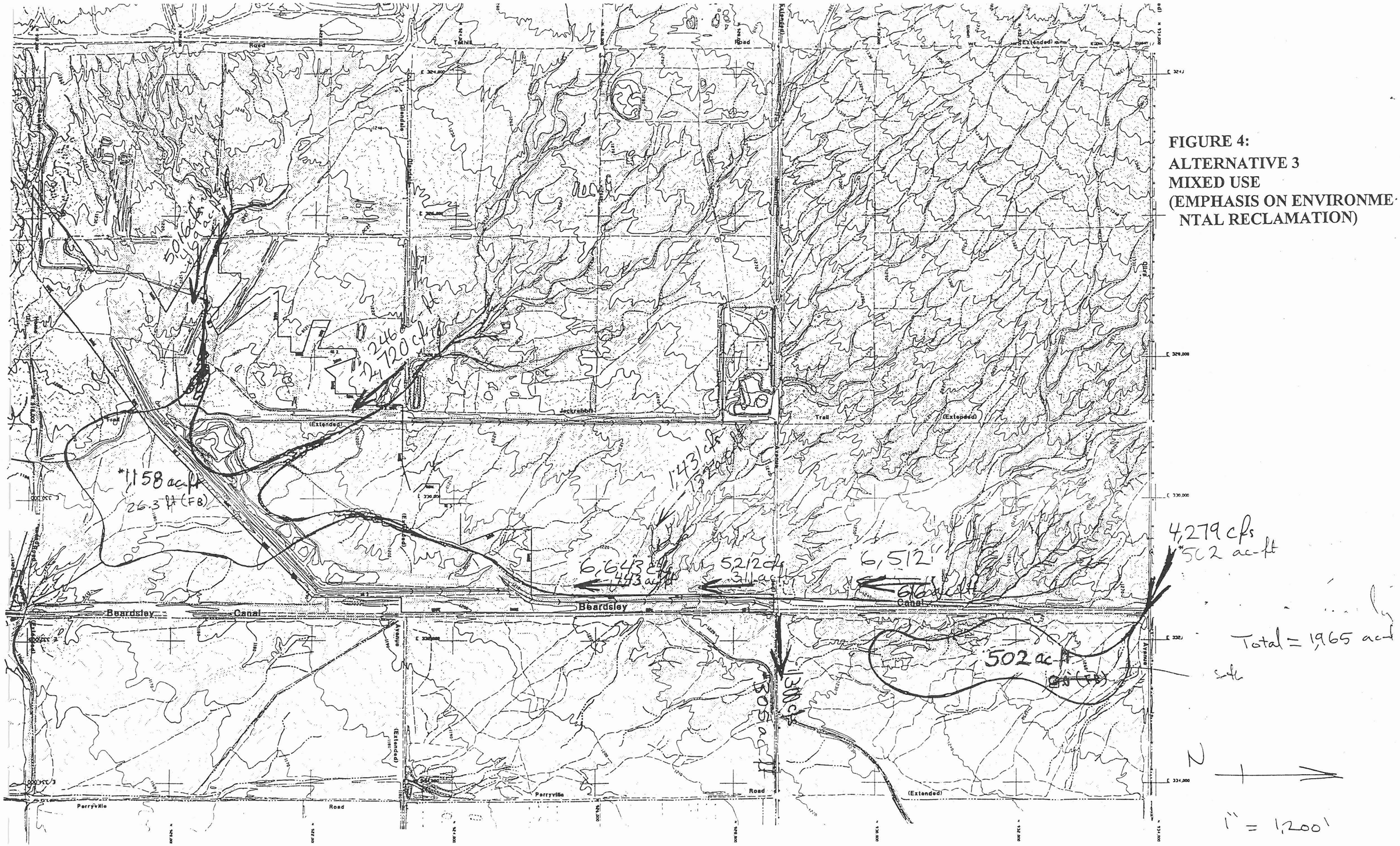


FIGURE 4:
ALTERNATIVE 3
MIXED USE
(EMPHASIS ON ENVIRONMENTAL RECLAMATION)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	1													
2	2													
3	3													
4	4											ALTERNATIVE 1		
5	5													
6	6													
7	7													
8	8					Alternative 1 includes Waterfall Diversion to McMicken leaving 2,442 cfs to flow to Beardsley Channel. No diversion to Northern Avenue is include								
9	9					(6,512 cfs) to produce a total flow of 8,063 cfs and a total volume of 788 ac-ft. The total volume for the basin is 1,634 ac-ft which is the total of infl								
10	10													
11	11													
12	12					E	F	G	H	I	J	K	L	M
13	13	ORD	DAY	MON	HRMN	Waterfall Flow after Diversion	Volume	Cholla Flow to Main Basin	Volume	Basin (remaining Waterfall & all of Cholla)	Flow from 12 & WT3	Volume	Total North Inlet Flow	Volume
14	14					cfs	ac-ft	cfs	ac-ft	cfs	cfs	ac-ft	cfs	ac-ft
15	15					2,442	172	6,512	616	8,063	1,431	132	9,472	920
16	16													
17	17	1	1	JAN	0	0	0	0	0	0	0	0	0	0
18	18	2	1	JAN	5	0	0	0	0	0	0	0	0	0
19	19	3	1	JAN	10	0	0	0	0	0	0	0	0	0
20	20	4	1	JAN	15	0	0	0	0	0	0	0	0	0
21	21	5	1	JAN	20	0	0	0	0	0	0	0	0	0
22	22	6	1	JAN	25	0	0	0	0	0	0	0	0	0
23	23	7	1	JAN	30	0	0	0	0	0	0	0	0	0
24	24	8	1	JAN	35	0	0	0	0	0	0	0	0	0
25	25	9	1	JAN	40	1	0.006887052	1	0.006887052	2	0	0	2	0.013774105
26	26	10	1	JAN	45	1	0.013774105	1	0.013774105	2	0	0	2	0.027548209
27	27	11	1	JAN	50	2	0.027548209	1	0.020661157	3	0	0	3	0.048209366
28	28	12	1	JAN	55	2	0.041322314	2	0.034435262	4	0	0	4	0.075757576
29		13	1	JAN	100	2	0.055096419	2	0.048209366	4	0	0	4	0.103305785
30		14	1	JAN	105	3	0.075757576	3	0.068870523	6	1	0.00688705	7	0.151515152
31		15	1	JAN	110	3	0.096418733	3	0.08953168	6	1	0.0137741	7	0.199724518
32		16	1	JAN	115	4	0.123966942	4	0.11707989	8	1	0.02066116	9	0.261707989
33		17	1	JAN	120	4	0.151515152	5	0.151515152	9	1	0.02754821	10	0.330578512
34		18	1	JAN	125	4	0.179063361	6	0.192837466	10	1	0.03443526	11	0.406336088
35		19	1	JAN	130	5	0.213498623	7	0.241046832	12	1	0.04132231	13	0.495867769
36		20	1	JAN	135	5	0.247933884	8	0.296143251	13	1	0.04820937	14	0.592286501
37		21	1	JAN	140	5	0.282369146	9	0.358126722	14	2	0.06198347	16	0.702479339
38		22	1	JAN	145	5	0.316804408	10	0.426997245	15	2	0.07575758	17	0.819559229
39		23	1	JAN	150	5	0.351239669	11	0.502754821	16	2	0.08953168	18	0.943526171

	O	P	Q	R	S	T
1						
2						
3						
4						
5						
6						
7						
8	d in this alternative. Remaining Waterfall flow (2,442 cfs) combines with Cholla flow					
9	w volumes from the North, Middle, and South Inlets.					
10						
11						
12	N	O	P	Q	R	S
13	Flow from Middle Inlet	Volume	Flow From South Inlet	Volume	Total Inflow into the Basin	Volume
14	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
15	2,720	246	5,016	469	17,001	1,634
16						
17	0	0	0	0	0	0
18	0	0	0	0	0	0
19	0	0	0	0	0	0
20	0	0	0	0	0	0
21	0	0	0	0	0	0
22	0	0	0	0	0	0
23	0	0	0	0	0	0
24	0	0	0	0	0	0
25	0	0	1	0.0068871	3	0.02066116
26	0	0	1	0.0137741	3	0.04132231
27	0	0	2	0.0275482	5	0.07575758
28	0	0	2	0.0413223	6	0.11707989
29	0	0	3	0.0619835	7	0.16528926
30	1	0.0068871	4	0.0895317	12	0.24793388
31	1	0.0137741	5	0.1239669	13	0.33746556
32	1	0.0206612	6	0.1652893	16	0.4476584
33	1	0.0275482	7	0.2134986	18	0.57162534
34	2	0.0413223	8	0.268595	21	0.71625344
35	2	0.0550964	9	0.3305785	24	0.8815427
36	3	0.0757576	10	0.399449	27	1.06749311
37	3	0.0964187	11	0.4752066	30	1.27410468
38	3	0.1170799	12	0.5578512	32	1.49449036
39	4	0.1446281	13	0.6473829	35	1.73553719

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
40		24	1	JAN	155	6	0.392561983	12	0.585399449	18	2	0.10330579	20	1.081267218
41		25	1	JAN	200	6	0.433884298	13	0.674931129	19	2	0.11707989	21	1.225895317
42		26	1	JAN	205	6	0.475206612	14	0.771349862	20	2	0.13085399	22	1.377410468
43		27	1	JAN	210	6	0.516528926	15	0.874655647	21	2	0.1446281	23	1.535812672
44		28	1	JAN	215	6	0.55785124	16	0.984848485	22	2	0.1584022	24	1.701101928
45		29	1	JAN	220	6	0.599173554	17	1.101928375	23	2	0.17217631	25	1.873278237
46		30	1	JAN	225	6	0.640495868	18	1.225895317	24	2	0.18595041	26	2.052341598
47		31	1	JAN	230	6	0.681818182	19	1.356749311	25	2	0.19972452	27	2.238292011
48		32	1	JAN	235	6	0.723140496	19	1.487603306	25	2	0.21349862	27	2.424242424
49		33	1	JAN	240	6	0.76446281	20	1.625344353	26	2	0.22727273	28	2.61707989
50		34	1	JAN	245	6	0.805785124	21	1.769972452	27	2	0.24104683	29	2.816804408
51		35	1	JAN	250	6	0.847107438	21	1.914600551	27	2	0.25482094	29	3.016528926
52		36	1	JAN	255	6	0.888429752	22	2.066115702	28	2	0.26859504	30	3.223140496
53		37	1	JAN	300	6	0.929752066	23	2.224517906	29	2	0.28236915	31	3.436639118
54		38	1	JAN	305	6	0.97107438	23	2.38292011	29	2	0.29614325	31	3.650137741
55		39	1	JAN	310	6	1.012396694	23	2.541322314	29	2	0.30991736	31	3.863636364
56		40	1	JAN	315	6	1.053719008	24	2.70661157	30	2	0.32369146	32	4.084022039
57		41	1	JAN	320	6	1.095041322	24	2.871900826	30	2	0.33746556	32	4.304407713
58		42	1	JAN	325	6	1.136363636	24	3.037190083	30	2	0.35123967	32	4.524793388
59		43	1	JAN	330	6	1.17768595	25	3.209366391	31	2	0.36501377	33	4.752066116
60		44	1	JAN	335	6	1.219008264	25	3.3815427	31	2	0.37878788	33	4.979338843
61		45	1	JAN	340	6	1.260330579	25	3.553719008	31	2	0.39256198	33	5.20661157
62		46	1	JAN	345	6	1.301652893	25	3.725895317	31	2	0.40633609	33	5.433884298
63		47	1	JAN	350	6	1.342975207	25	3.898071625	31	2	0.42011019	33	5.661157025
64		48	1	JAN	355	6	1.384297521	26	4.077134986	32	2	0.4338843	34	5.895316804
65		49	1	JAN	400	6	1.425619835	26	4.256198347	32	2	0.4476584	34	6.129476584
66		50	1	JAN	405	6	1.466942149	26	4.435261708	32	2	0.46143251	34	6.363636364
67		51	1	JAN	410	6	1.508264463	26	4.614325069	32	2	0.47520661	34	6.597796143
68		52	1	JAN	415	6	1.549586777	26	4.79338843	32	2	0.48898072	34	6.831955923
69		53	1	JAN	420	6	1.590909091	26	4.972451791	32	2	0.50275482	34	7.066115702
70		54	1	JAN	425	7	1.639118457	26	5.151515152	33	2	0.51652893	35	7.307162534
71		55	1	JAN	430	7	1.687327824	27	5.337465565	34	2	0.53030303	36	7.555096419
72		56	1	JAN	435	7	1.73553719	27	5.523415978	34	2	0.54407713	36	7.803030303
73		57	1	JAN	440	7	1.783746556	27	5.709366391	34	2	0.55785124	36	8.050964187
74		58	1	JAN	445	7	1.831955923	27	5.895316804	34	2	0.57162534	36	8.298898072
75		59	1	JAN	450	7	1.880165289	28	6.08815427	35	2	0.58539945	37	8.553719008
76		60	1	JAN	455	7	1.928374656	28	6.280991736	35	3	0.60606061	38	8.815426997
77		61	1	JAN	500	8	1.983471074	28	6.473829201	36	3	0.62672176	39	9.084022039
78		62	1	JAN	505	8	2.038567493	28	6.666666667	36	3	0.64738292	39	9.35261708
79		63	1	JAN	510	8	2.093663912	29	6.866391185	37	3	0.66804408	40	9.628099174
80		64	1	JAN	515	8	2.148760331	29	7.066115702	37	3	0.68870523	40	9.903581267

	O	P	Q	R	S	T
40	4	0.1721763	13	0.7369146	37	1.99035813
41	4	0.1997245	14	0.8333333	39	2.25895317
42	4	0.2272727	15	0.9366391	41	2.54132231
43	5	0.261708	16	1.046832	44	2.84435262
44	5	0.2961433	16	1.1570248	45	3.15426997
45	5	0.3305785	17	1.2741047	47	3.47796143
46	5	0.3650138	17	1.3911846	48	3.80853994
47	6	0.4063361	18	1.5151515	51	4.15977961
48	6	0.4476584	18	1.6391185	51	4.51101928
49	6	0.4889807	18	1.7630854	52	4.86914601
50	6	0.530303	19	1.8939394	54	5.24104683
51	6	0.5716253	19	2.0247934	54	5.61294766
52	6	0.6129477	19	2.1556474	55	5.99173554
53	6	0.65427	20	2.2933884	57	6.38429752
54	6	0.6955923	20	2.4311295	57	6.7768595
55	6	0.7369146	20	2.5688705	57	7.16942149
56	6	0.7782369	20	2.7066116	58	7.56887052
57	6	0.8195592	20	2.8443526	58	7.96831956
58	6	0.8608815	20	2.9820937	58	8.3677686
59	6	0.9022039	21	3.1267218	60	8.78099174
60	6	0.9435262	21	3.2713499	60	9.19421488
61	6	0.9848485	21	3.415978	60	9.60743802
62	6	1.0261708	21	3.5606061	60	10.0206612
63	6	1.0674931	21	3.7052342	60	10.4338843
64	6	1.1088154	21	3.8498623	61	10.8539945
65	6	1.1501377	21	3.9944904	61	11.2741047
66	6	1.1914601	21	4.1391185	61	11.6942149
67	6	1.2327824	21	4.2837466	61	12.1143251
68	6	1.2741047	21	4.4283747	61	12.5344353
69	6	1.315427	21	4.5730028	61	12.9545455
70	6	1.3567493	21	4.7176309	62	13.3815427
71	6	1.3980716	22	4.869146	64	13.822314
72	6	1.4393939	22	5.0206612	64	14.2630854
73	7	1.4876033	22	5.1721763	65	14.7107438
74	7	1.5358127	22	5.3236915	65	15.1584022
75	7	1.584022	23	5.4820937	67	15.6198347
76	7	1.6322314	23	5.6404959	68	16.0881543
77	7	1.6804408	24	5.8057851	70	16.5702479
78	7	1.7286501	24	5.9710744	70	17.0523416
79	7	1.7768595	24	6.1363636	71	17.5413223
80	7	1.8250689	25	6.3085399	72	18.0371901

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
81		65	1	JAN	520	8	2.203856749	30	7.272727273	38	3	0.70936639	41	10.18595041
82		66	1	JAN	525	8	2.258953168	30	7.479338843	38	3	0.73002755	41	10.46831956
83		67	1	JAN	530	8	2.314049587	30	7.685950413	38	3	0.75068871	41	10.75068871
84		68	1	JAN	535	8	2.369146006	31	7.899449036	39	3	0.77134986	42	11.0399449
85		69	1	JAN	540	8	2.424242424	31	8.112947658	39	3	0.79201102	42	11.3292011
86		70	1	JAN	545	8	2.479338843	31	8.326446281	39	3	0.81267218	42	11.6184573
87		71	1	JAN	550	8	2.534435262	32	8.546831956	40	3	0.83333333	43	11.91460055
88		72	1	JAN	555	8	2.58953168	32	8.767217631	40	3	0.85399449	43	12.2107438
89		73	1	JAN	600	8	2.644628099	32	8.987603306	40	3	0.87465565	43	12.50688705
90		74	1	JAN	605	8	2.699724518	33	9.214876033	41	3	0.8953168	44	12.80991736
91		75	1	JAN	610	8	2.754820937	33	9.44214876	41	3	0.91597796	44	13.11294766
92		76	1	JAN	615	8	2.809917355	33	9.669421488	41	3	0.93663912	44	13.41597796
93		77	1	JAN	620	8	2.865013774	33	9.896694215	41	3	0.95730028	44	13.71900826
94		78	1	JAN	625	8	2.920110193	34	10.13085399	42	3	0.97796143	45	14.02892562
95		79	1	JAN	630	8	2.975206612	34	10.36501377	42	3	0.99862259	45	14.33884298
96		80	1	JAN	635	9	3.037190083	34	10.59917355	43	3	1.01928375	46	14.65564738
97		81	1	JAN	640	9	3.099173554	34	10.83333333	43	3	1.0399449	46	14.97245179
98		82	1	JAN	645	9	3.161157025	35	11.07438017	44	3	1.06060606	47	15.29614325
99		83	1	JAN	650	9	3.223140496	35	11.315427	44	3	1.08126722	47	15.61983471
100		84	1	JAN	655	9	3.285123967	35	11.55647383	44	3	1.10192837	47	15.94352617
101		85	1	JAN	700	9	3.347107438	36	11.80440771	45	3	1.12258953	48	16.27410468
102		86	1	JAN	705	9	3.409090909	36	12.0523416	45	3	1.14325069	48	16.6046832
103		87	1	JAN	710	10	3.477961433	36	12.30027548	46	3	1.16391185	49	16.94214876
104		88	1	JAN	715	10	3.546831956	37	12.55509642	47	3	1.184573	50	17.28650138
105		89	1	JAN	720	10	3.615702479	37	12.80991736	47	3	1.20523416	50	17.63085399
106		90	1	JAN	725	10	3.684573003	37	13.06473829	47	3	1.22589532	50	17.97520661
107		91	1	JAN	730	10	3.753443526	38	13.32644628	48	3	1.24655647	51	18.32644628
108		92	1	JAN	735	10	3.82231405	38	13.58815427	48	3	1.26721763	51	18.67768595
109		93	1	JAN	740	10	3.891184573	39	13.85674931	49	4	1.29476584	53	19.04269972
110		94	1	JAN	745	10	3.960055096	39	14.12534435	49	4	1.32231405	53	19.4077135
111		95	1	JAN	750	10	4.02892562	39	14.39393939	49	4	1.34986226	53	19.77272727
112		96	1	JAN	755	10	4.097796143	40	14.66942149	50	4	1.37741047	54	20.1446281
113		97	1	JAN	800	10	4.166666667	40	14.94490358	50	4	1.40495868	54	20.51652893
114		98	1	JAN	805	10	4.23553719	40	15.22038567	50	4	1.43250689	54	20.88842975
115		99	1	JAN	810	10	4.304407713	41	15.50275482	51	4	1.4600551	55	21.26721763
116		100	1	JAN	815	10	4.373278237	41	15.78512397	51	4	1.48760331	55	21.64600551
117		101	1	JAN	820	10	4.44214876	41	16.06749311	51	4	1.51515152	55	22.02479339
118		102	1	JAN	825	10	4.511019284	42	16.35674931	52	4	1.54269972	56	22.41046832
119		103	1	JAN	830	11	4.58677686	42	16.64600551	53	4	1.57024793	57	22.8030303
120		104	1	JAN	835	11	4.662534435	42	16.93526171	53	4	1.59779614	57	23.19559229
121		105	1	JAN	840	11	4.738292011	43	17.23140496	54	4	1.62534435	58	23.59504132

	O	P	Q	R	S	T
81	7	1.8732782	25	6.4807163	73	18.5399449
82	7	1.9214876	25	6.6528926	73	19.0426997
83	8	1.976584	25	6.8250689	74	19.5523416
84	8	2.0316804	26	7.0041322	76	20.0757576
85	8	2.0867769	26	7.1831956	76	20.5991736
86	8	2.1418733	26	7.362259	76	21.1225895
87	8	2.1969697	26	7.5413223	77	21.6528926
88	8	2.2520661	27	7.7272727	78	22.1900826
89	8	2.3071625	27	7.9132231	78	22.7272727
90	8	2.362259	27	8.0991736	79	23.2713499
91	8	2.4173554	27	8.285124	79	23.815427
92	8	2.4724518	27	8.4710744	79	24.3595041
93	8	2.5275482	27	8.6570248	79	24.9035813
94	8	2.5826446	28	8.8498623	81	25.4614325
95	8	2.637741	28	9.0426997	81	26.0192837
96	8	2.6928375	28	9.2355372	82	26.584022
97	8	2.7479339	28	9.4283747	82	27.1487603
98	9	2.8099174	28	9.6212121	84	27.7272727
99	9	2.8719008	29	9.8209366	85	28.3126722
100	9	2.9338843	29	10.020661	85	28.8980716
101	9	2.9958678	29	10.220386	86	29.4903581
102	9	3.0578512	30	10.426997	87	30.0895317
103	9	3.1198347	30	10.633609	88	30.6955923
104	9	3.1818182	30	10.84022	89	31.3085399
105	9	3.2438017	31	11.053719	90	31.9283747
106	9	3.3057851	31	11.267218	90	32.5482094
107	9	3.3677686	32	11.487603	92	33.1818182
108	9	3.4297521	32	11.707989	92	33.815427
109	10	3.4986226	32	11.928375	95	34.469697
110	10	3.5674931	32	12.14876	95	35.1239669
111	10	3.6363636	33	12.376033	96	35.785124
112	10	3.7052342	33	12.603306	97	36.453168
113	10	3.7741047	33	12.830579	97	37.1212121
114	10	3.8429752	34	13.064738	98	37.7961433
115	10	3.9118457	34	13.298898	99	38.4779614
116	10	3.9807163	34	13.533058	99	39.1597796
117	10	4.0495868	34	13.767218	99	39.8415978
118	10	4.1184573	34	14.001377	100	40.530303
119	10	4.1873278	35	14.242424	102	41.2327824
120	10	4.2561983	35	14.483471	102	41.9352617
121	11	4.3319559	35	14.724518	104	42.6515152

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122		106	1	JAN	845	11	4.814049587	43	17.52754821	54	4	1.65289256	58	23.99449036
123		107	1	JAN	850	11	4.889807163	44	17.83057851	55	4	1.68044077	59	24.40082645
124		108	1	JAN	855	12	4.972451791	44	18.13360882	56	4	1.70798898	60	24.81404959
125		109	1	JAN	900	12	5.055096419	44	18.43663912	56	4	1.73553719	60	25.22727273
126		110	1	JAN	905	12	5.137741047	45	18.74655647	57	4	1.7630854	61	25.64738292
127		111	1	JAN	910	12	5.220385675	46	19.06336088	58	4	1.79063361	62	26.07438017
128		112	1	JAN	915	13	5.309917355	46	19.38016529	59	4	1.81818182	63	26.50826446
129		113	1	JAN	920	13	5.399449036	47	19.70385675	60	4	1.84573003	64	26.94903581
130		114	1	JAN	925	13	5.488980716	48	20.03443526	61	4	1.87327824	65	27.39669421
131		115	1	JAN	930	14	5.585399449	49	20.37190083	63	5	1.9077135	68	27.86501377
132		116	1	JAN	935	14	5.681818182	51	20.7231405	65	5	1.94214876	70	28.34710744
133		117	1	JAN	940	14	5.778236915	53	21.08815427	67	5	1.97658402	72	28.84297521
134		118	1	JAN	945	14	5.874655647	55	21.46694215	69	5	2.01101928	74	29.35261708
135		119	1	JAN	950	15	5.977961433	57	21.85950413	72	5	2.04545455	77	29.88292011
136		120	1	JAN	955	15	6.081267218	58	22.25895317	73	5	2.07988981	78	30.42011019
137		121	1	JAN	1000	15	6.184573003	60	22.67217631	75	5	2.11432507	80	30.97107438
138		122	1	JAN	1005	16	6.29476584	61	23.0922865	77	5	2.14876033	82	31.53581267
139		123	1	JAN	1010	16	6.404958678	63	23.5261708	79	5	2.18319559	84	32.11432507
140		124	1	JAN	1015	16	6.515151515	64	23.96694215	80	5	2.21763085	85	32.69972452
141		125	1	JAN	1020	17	6.632231405	66	24.4214876	83	6	2.25895317	89	33.31267218
142		126	1	JAN	1025	17	6.749311295	67	24.88292011	84	6	2.30027548	90	33.93250689
143		127	1	JAN	1030	17	6.866391185	69	25.35812672	86	6	2.3415978	92	34.5661157
144		128	1	JAN	1035	18	6.990358127	70	25.84022039	88	6	2.38292011	94	35.21349862
145		129	1	JAN	1040	18	7.114325069	72	26.33608815	90	6	2.42424242	96	35.87465565
146		130	1	JAN	1045	19	7.245179063	73	26.83884298	92	6	2.46556474	98	36.54958678
147		131	1	JAN	1050	19	7.376033058	75	27.3553719	94	6	2.50688705	100	37.23829201
148		132	1	JAN	1055	20	7.513774105	77	27.88567493	97	7	2.55509642	104	37.95454545
149		133	1	JAN	1100	21	7.658402204	79	28.42975207	100	7	2.60330579	107	38.69146006
150		134	1	JAN	1105	21	7.803030303	82	28.99449036	103	7	2.65151515	110	39.44903581
151		135	1	JAN	1110	23	7.961432507	85	29.57988981	108	7	2.69972452	115	40.24104683
152		136	1	JAN	1115	24	8.126721763	88	30.18595041	112	7	2.74793388	119	41.06060606
153		137	1	JAN	1120	25	8.298898072	93	30.82644628	118	8	2.8030303	126	41.92837466
154		138	1	JAN	1125	27	8.484848485	98	31.50137741	125	8	2.85812672	133	42.84435262
155		139	1	JAN	1130	29	8.684573003	105	32.22451791	134	9	2.92011019	143	43.8292011
156		140	1	JAN	1135	38	8.946280992	123	33.07162534	161	12	3.00275482	173	45.02066116
157		141	1	JAN	1140	63	9.380165289	145	34.07024793	208	16	3.11294766	224	46.56336088
158		142	1	JAN	1145	109	10.13085399	181	35.31680441	290	28	3.30578512	318	48.75344353
159		143	1	JAN	1150	198	11.49449036	271	37.18319559	469	55	3.684573	524	52.36225895
160		144	1	JAN	1155	355	13.93939394	394	39.89669421	749	91	4.31129477	840	58.14738292
161		145	1	JAN	1200	649	18.40909091	592	43.9738292	1241	157	5.39256198	1398	67.77548209
162		146	1	JAN	1205	1010	25.36501377	893	50.12396694	1903	239	7.03856749	2142	82.52754821

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122	11	4.4077135	35	14.965565	104	43.3677686
123	11	4.4834711	36	15.213499	106	44.0977961
124	11	4.5592287	36	15.461433	107	44.8347107
125	11	4.6349862	37	15.716253	108	45.5785124
126	11	4.7107438	37	15.971074	109	46.3292011
127	11	4.7865014	38	16.232782	111	47.0936639
128	11	4.862259	39	16.501377	113	47.8719008
129	12	4.9449036	39	16.769972	115	48.6639118
130	12	5.0275482	40	17.045455	117	49.469697
131	12	5.1101928	41	17.327824	121	50.3030303
132	12	5.1928375	42	17.61708	124	51.1570248
133	12	5.2754821	43	17.913223	127	52.0316804
134	13	5.3650138	43	18.209366	130	52.9269972
135	13	5.4545455	44	18.512397	134	53.8498623
136	13	5.5440771	45	18.822314	136	54.7865014
137	14	5.6404959	46	19.139118	140	55.7506887
138	14	5.7369146	47	19.46281	143	56.7355372
139	14	5.8333333	48	19.793388	146	57.7410468
140	14	5.9297521	49	20.130854	148	58.7603306
141	15	6.0330579	50	20.475207	154	59.8209366
142	15	6.1363636	51	20.826446	156	60.8953168
143	15	6.2396694	52	21.184573	159	61.9903581
144	16	6.3498623	53	21.549587	163	63.1129477
145	16	6.4600551	54	21.921488	166	64.2561983
146	16	6.5702479	55	22.300275	169	65.4201102
147	17	6.6873278	56	22.68595	173	66.6115702
148	17	6.8044077	58	23.085399	179	67.8443526
149	17	6.9214876	59	23.491736	183	69.1046832
150	18	7.0454545	61	23.911846	189	70.4063361
151	18	7.1694215	63	24.34573	196	71.7561983
152	19	7.3002755	66	24.800275	204	73.161157
153	19	7.4311295	68	25.268595	213	74.6280992
154	20	7.5688705	71	25.757576	224	76.1707989
155	21	7.7134986	74	26.267218	238	77.8099174
156	31	7.9269972	85	26.852617	289	79.8002755
157	48	8.2575758	105	27.575758	377	82.3966942
158	87	8.8567493	149	28.601928	554	86.2121212
159	167	10.006887	246	30.296143	937	92.6652893
160	282	11.949036	432	33.27135	1554	103.367769
161	487	15.30303	757	38.484848	2642	121.563361
162	763	20.557851	1180	46.61157	4085	149.69697

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163		147	1	JAN	1210	1431	35.22038567	1399	59.75895317	2830	356	9.49035813	3186	104.469697
164		148	1	JAN	1215	1916	48.41597796	2171	74.7107438	4087	483	12.8168044	4570	135.9435262
165		149	1	JAN	1220	2286	64.15977961	3194	96.70798898	5480	661	17.369146	6141	178.2369146
166		150	1	JAN	1225	2442	80.97796143	4295	126.2878788	6737	906	23.6088154	7643	230.8746556
167		151	1	JAN	1230	2279	96.67355372	5246	162.4173554	7525	1126	31.3636364	8651	290.4545455
168		152	1	JAN	1235	1986	110.3512397	5973	203.553719	7959	1300	40.3168044	9259	354.2217631
169		153	1	JAN	1240	1624	121.5358127	6439	247.899449	8063	1409	50.0206612	9472	419.4559229
170		154	1	JAN	1245	1281	130.3581267	6512	292.7479339	7793	1431	59.8760331	9224	482.9820937
171		155	1	JAN	1250	972	137.0523416	6175	335.2754821	7147	1379	69.3732782	8526	541.7011019
172		156	1	JAN	1255	754	142.2451791	5492	373.0991736	6246	1266	78.0922865	7512	593.4366391
173		157	1	JAN	1300	576	146.2121212	4708	405.523416	5284	1119	85.7988981	6403	637.5344353
174		158	1	JAN	1305	443	149.2630854	3950	432.7272727	4393	972	92.4931129	5365	674.4834711
175		159	1	JAN	1310	355	151.707989	3268	455.2341598	3623	839	98.2713499	4462	705.2134986
176		160	1	JAN	1315	284	153.6639118	2698	473.815427	2982	713	103.181818	3695	730.661157
177		161	1	JAN	1320	224	155.2066116	2269	489.4421488	2493	592	107.258953	3085	751.9077135
178		162	1	JAN	1325	176	156.4187328	1899	502.5206612	2075	482	110.578512	2557	769.5179063
179		163	1	JAN	1330	147	157.4311295	1565	513.2988981	1712	392	113.278237	2104	784.0082645
180		164	1	JAN	1335	125	158.292011	1305	522.2865014	1430	322	115.495868	1752	796.0743802
181		165	1	JAN	1340	106	159.0220386	1110	529.9311295	1216	268	117.341598	1484	806.2947658
182		166	1	JAN	1345	90	159.6418733	951	536.4807163	1041	240	118.99449	1281	815.1170799
183		167	1	JAN	1350	77	160.1721763	823	542.1487603	900	212	120.454545	1112	822.7754821
184		168	1	JAN	1355	66	160.6267218	703	546.9903581	769	186	121.735537	955	829.3526171
185		169	1	JAN	1400	58	161.0261708	605	551.1570248	663	161	122.844353	824	835.0275482
186		170	1	JAN	1405	51	161.3774105	518	554.7245179	569	141	123.815427	710	839.9173554
187		171	1	JAN	1410	45	161.6873278	451	557.8305785	496	123	124.662534	619	844.1804408
188		172	1	JAN	1415	40	161.9628099	411	560.661157	451	106	125.392562	557	848.0165289
189		173	1	JAN	1420	37	162.2176309	374	563.2369146	411	91	126.019284	502	851.4738292
190		174	1	JAN	1425	35	162.4586777	337	565.5578512	372	78	126.556474	450	854.5730028
191		175	1	JAN	1430	33	162.6859504	304	567.6515152	337	66	127.011019	403	857.3484848
192		176	1	JAN	1435	31	162.899449	274	569.5385675	305	56	127.396694	361	859.8347107
193		177	1	JAN	1440	29	163.0991736	239	571.184573	268	48	127.727273	316	862.0110193
194		178	1	JAN	1445	28	163.292011	208	572.6170799	236	41	128.009642	277	863.9187328
195		179	1	JAN	1450	26	163.4710744	180	573.8567493	206	35	128.250689	241	865.5785124
196		180	1	JAN	1455	25	163.6432507	168	575.0137741	193	30	128.4573	223	867.1143251
197		181	1	JAN	1500	24	163.8085399	156	576.0881543	180	26	128.636364	206	868.5330579
198		182	1	JAN	1505	23	163.9669421	144	577.0798898	167	22	128.787879	189	869.8347107
199		183	1	JAN	1510	22	164.1184573	134	578.0027548	156	19	128.918733	175	871.0399449
200		184	1	JAN	1515	21	164.2630854	125	578.8636364	146	17	129.035813	163	872.1625344
201		185	1	JAN	1520	20	164.4008264	117	579.6694215	137	15	129.139118	152	873.2093664
202		186	1	JAN	1525	19	164.5316804	109	580.4201102	128	13	129.22865	141	874.1804408
203		187	1	JAN	1530	18	164.6556474	102	581.1225895	120	12	129.311295	132	875.0895317

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163	1082	28.009642	1778	58.856749	6046	191.336088
164	1428	37.844353	2525	76.246556	8523	250.034435
165	1899	50.922865	3368	99.442149	11408	328.601928
166	2346	67.07989	4182	128.2438	14171	426.198347
167	2654	85.358127	4724	160.77824	16029	536.590909
168	2720	104.09091	5016	195.32369	16995	653.636364
169	2658	122.39669	4871	228.87052	17001	770.72314
170	2520	139.75207	4440	259.44904	16184	882.183196
171	2259	155.30992	3909	286.37052	14694	983.381543
172	1947	168.71901	3321	309.24242	12780	1071.39807
173	1627	179.92424	2773	328.34022	10803	1145.7989
174	1361	189.29752	2320	344.31818	9046	1208.09917
175	1132	197.09366	1925	357.57576	7519	1259.88292
176	922	203.44353	1626	368.7741	6243	1302.87879
177	754	208.63636	1392	378.36088	5231	1338.90496
178	629	212.96832	1184	386.51515	4370	1369.00138
179	528	216.60468	1005	393.43664	3637	1394.04959
180	437	219.61433	862	399.37328	3051	1415.06198
181	366	222.13499	738	404.45592	2588	1432.88567
182	300	224.2011	628	408.78099	2209	1448.09917
183	253	225.94353	542	412.51377	1907	1461.23278
184	215	227.42424	471	415.75758	1641	1472.53444
185	186	228.70523	416	418.62259	1426	1482.35537
186	163	229.82782	373	421.19146	1246	1490.93664
187	141	230.7989	328	423.45041	1088	1498.42975
188	120	231.62534	288	425.43388	965	1505.07576
189	103	232.33471	251	427.16253	856	1510.97107
190	88	232.94077	224	428.70523	762	1516.21901
191	76	233.46419	202	430.09642	681	1520.90909
192	67	233.92562	182	431.34986	610	1525.11019
193	60	234.33884	165	432.48623	541	1528.83609
194	55	234.71763	151	433.52617	483	1532.16253
195	52	235.07576	139	434.48347	432	1535.13774
196	50	235.42011	130	435.37879	403	1537.91322
197	47	235.7438	121	436.21212	374	1540.48898
198	44	236.04683	116	437.01102	349	1542.89256
199	41	236.3292	112	437.78237	328	1545.15152
200	38	236.59091	108	438.52617	309	1547.27961
201	36	236.83884	103	439.23554	291	1549.28375
202	34	237.073	99	439.91736	274	1551.1708
203	31	237.2865	95	440.57163	258	1552.94766

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
204		188	1	JAN	1535	18	164.7796143	96	581.7837466	114	10	129.380165	124	875.9435262
205		189	1	JAN	1540	17	164.8966942	90	582.4035813	107	10	129.449036	117	876.7493113
206		190	1	JAN	1545	17	165.0137741	86	582.9958678	103	9	129.511019	112	877.5206612
207		191	1	JAN	1550	16	165.1239669	82	583.5606061	98	8	129.566116	106	878.2506887
208		192	1	JAN	1555	16	165.2341598	78	584.0977961	94	8	129.621212	102	878.953168
209		193	1	JAN	1600	15	165.3374656	75	584.6143251	90	7	129.669421	97	879.6212121
210		194	1	JAN	1605	15	165.4407713	72	585.1101928	87	7	129.717631	94	880.268595
211		195	1	JAN	1610	15	165.5440771	70	585.5922865	85	6	129.758953	91	880.8953168
212		196	1	JAN	1615	14	165.6404959	67	586.053719	81	6	129.800275	87	881.4944904
213		197	1	JAN	1620	14	165.7369146	65	586.5013774	79	6	129.841598	85	882.0798898
214		198	1	JAN	1625	14	165.8333333	64	586.9421488	78	6	129.88292	84	882.6584022
215		199	1	JAN	1630	14	165.9297521	62	587.369146	76	5	129.917355	81	883.2162534
216		200	1	JAN	1635	13	166.0192837	61	587.7892562	74	5	129.951791	79	883.7603306
217		201	1	JAN	1640	13	166.1088154	60	588.2024793	73	5	129.986226	78	884.2975207
218		202	1	JAN	1645	13	166.1983471	59	588.6088154	72	5	130.020661	77	884.8278237
219		203	1	JAN	1650	13	166.2878788	58	589.0082645	71	5	130.055096	76	885.3512397
220		204	1	JAN	1655	13	166.3774105	57	589.4008264	70	5	130.089532	75	885.8677686
221		205	1	JAN	1700	13	166.4669421	56	589.7865014	69	5	130.123967	74	886.3774105
222		206	1	JAN	1705	13	166.5564738	55	590.1652893	68	5	130.158402	73	886.8801653
223		207	1	JAN	1710	12	166.6391185	55	590.5440771	67	5	130.192837	72	887.3760331
224		208	1	JAN	1715	12	166.7217631	54	590.915978	66	5	130.227273	71	887.8650138
225		209	1	JAN	1720	12	166.8044077	53	591.2809917	65	4	130.254821	69	888.3402204
226		210	1	JAN	1725	12	166.8870523	53	591.6460055	65	4	130.282369	69	888.815427
227		211	1	JAN	1730	12	166.969697	52	592.0041322	64	4	130.309917	68	889.2837466
228		212	1	JAN	1735	11	167.0454545	51	592.3553719	62	4	130.337466	66	889.738292
229		213	1	JAN	1740	11	167.1212121	51	592.7066116	62	4	130.365014	66	890.1928375
230		214	1	JAN	1745	11	167.1969697	50	593.0509642	61	4	130.392562	65	890.6404959
231		215	1	JAN	1750	11	167.2727273	50	593.3953168	61	4	130.42011	65	891.0881543
232		216	1	JAN	1755	11	167.3484848	49	593.7327824	60	4	130.447658	64	891.5289256
233		217	1	JAN	1800	11	167.4242424	49	594.0702479	60	4	130.475207	64	891.969697
234		218	1	JAN	1805	11	167.5	49	594.4077135	60	4	130.502755	64	892.4104683
235		219	1	JAN	1810	11	167.5757576	48	594.738292	59	4	130.530303	63	892.8443526
236		220	1	JAN	1815	11	167.6515152	48	595.0688705	59	4	130.557851	63	893.2782369
237		221	1	JAN	1820	10	167.7203857	48	595.399449	58	4	130.585399	62	893.7052342
238		222	1	JAN	1825	10	167.7892562	48	595.7300275	58	4	130.612948	62	894.1322314
239		223	1	JAN	1830	10	167.8581267	47	596.053719	57	4	130.640496	61	894.5523416
240		224	1	JAN	1835	10	167.9269972	47	596.3774105	57	4	130.668044	61	894.9724518
241		225	1	JAN	1840	10	167.9958678	46	596.6942149	56	4	130.695592	60	895.3856749
242		226	1	JAN	1845	10	168.0647383	46	597.0110193	56	4	130.72314	60	895.7988981
243		227	1	JAN	1850	9	168.1267218	46	597.3278237	55	4	130.750689	59	896.2052342
244		228	1	JAN	1855	9	168.1887052	45	597.637741	54	3	130.77135	57	896.5977961

	O	P	Q	R	S	T
204	29	237.48623	91	441.19835	244	1554.6281
205	28	237.67906	88	441.80441	233	1556.23278
206	26	237.85813	84	442.38292	222	1557.76171
207	24	238.02342	81	442.94077	211	1559.21488
208	23	238.18182	77	443.47107	202	1560.60606
209	22	238.33333	74	443.98072	193	1561.93526
210	21	238.47796	71	444.4697	186	1563.21625
211	20	238.6157	69	444.9449	180	1564.45592
212	19	238.74656	66	445.39945	172	1565.6405
213	18	238.87052	64	445.84022	167	1566.79063
214	18	238.99449	62	446.26722	164	1567.92011
215	17	239.11157	60	446.68044	158	1569.00826
216	16	239.22176	58	447.07989	153	1570.06198
217	16	239.33196	56	447.46556	150	1571.09504
218	16	239.44215	55	447.84435	148	1572.11433
219	15	239.54545	53	448.20937	144	1573.10606
220	15	239.64876	52	448.56749	142	1574.08402
221	15	239.75207	51	448.91873	140	1575.04821
222	14	239.84848	50	449.26309	137	1575.99174
223	14	239.9449	49	449.60055	135	1576.92149
224	14	240.04132	48	449.93113	133	1577.83747
225	14	240.13774	47	450.25482	130	1578.73278
226	13	240.22727	46	450.57163	128	1579.61433
227	13	240.3168	45	450.88154	126	1580.48209
228	13	240.40634	44	451.18457	123	1581.3292
229	13	240.49587	44	451.4876	123	1582.17631
230	13	240.5854	43	451.78375	121	1583.00964
231	12	240.66804	42	452.073	119	1583.8292
232	12	240.75069	42	452.36226	118	1584.64187
233	12	240.83333	41	452.64463	117	1585.44766
234	12	240.91598	40	452.92011	116	1586.24656
235	12	240.99862	40	453.19559	115	1587.03857
236	12	241.08127	39	453.46419	114	1587.82369
237	12	241.16391	39	453.73278	113	1588.60193
238	11	241.23967	38	453.99449	111	1589.36639
239	11	241.31543	38	454.2562	110	1590.12397
240	11	241.39118	37	454.51102	109	1590.87466
241	11	241.46694	37	454.76584	108	1591.61846
242	11	241.5427	36	455.01377	107	1592.35537
243	11	241.61846	36	455.26171	106	1593.0854
244	11	241.69421	35	455.50275	103	1593.79477

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
245		229	1	JAN	1900	9	168.2506887	45	597.9476584	54	3	130.792011	57	896.9903581
246		230	1	JAN	1905	9	168.3126722	44	598.2506887	53	3	130.812672	56	897.3760331
247		231	1	JAN	1910	9	168.3746556	44	598.553719	53	3	130.833333	56	897.761708
248		232	1	JAN	1915	9	168.4366391	43	598.8498623	52	3	130.853994	55	898.1404959
249		233	1	JAN	1920	9	168.4986226	43	599.1460055	52	3	130.874656	55	898.5192837
250		234	1	JAN	1925	9	168.5606061	42	599.4352617	51	3	130.895317	54	898.8911846
251		235	1	JAN	1930	9	168.6225895	42	599.7245179	51	3	130.915978	54	899.2630854
252		236	1	JAN	1935	9	168.684573	41	600.0068871	50	3	130.936639	53	899.6280992
253		237	1	JAN	1940	9	168.7465565	41	600.2892562	50	3	130.9573	53	899.9931129
254		238	1	JAN	1945	8	168.8016529	40	600.5647383	48	3	130.977961	51	900.3443526
255		239	1	JAN	1950	8	168.8567493	40	600.8402204	48	3	130.998623	51	900.6955923
256		240	1	JAN	1955	8	168.9118457	40	601.1157025	48	3	131.019284	51	901.046832
257		241	1	JAN	2000	8	168.9669421	39	601.3842975	47	3	131.039945	50	901.3911846
258		242	1	JAN	2005	8	169.0220386	39	601.6528926	47	3	131.060606	50	901.7355372
259		243	1	JAN	2010	8	169.077135	38	601.9146006	46	3	131.081267	49	902.0730028
260		244	1	JAN	2015	8	169.1322314	38	602.1763085	46	3	131.101928	49	902.4104683
261		245	1	JAN	2020	8	169.1873278	38	602.4380165	46	3	131.12259	49	902.7479339
262		246	1	JAN	2025	8	169.2424242	37	602.6928375	45	3	131.143251	48	903.0785124
263		247	1	JAN	2030	8	169.2975207	37	602.9476584	45	3	131.163912	48	903.4090909
264		248	1	JAN	2035	8	169.3526171	37	603.2024793	45	3	131.184573	48	903.7396694
265		249	1	JAN	2040	8	169.4077135	36	603.4504132	44	3	131.205234	47	904.0633609
266		250	1	JAN	2045	7	169.4559229	36	603.6983471	43	3	131.225895	46	904.3801653
267		251	1	JAN	2050	7	169.5041322	36	603.946281	43	3	131.246556	46	904.6969697
268		252	1	JAN	2055	7	169.5523416	35	604.1873278	42	3	131.267218	45	905.0068871
269		253	1	JAN	2100	7	169.600551	35	604.4283747	42	3	131.287879	45	905.3168044
270		254	1	JAN	2105	7	169.6487603	34	604.6625344	41	3	131.30854	44	905.6198347
271		255	1	JAN	2110	7	169.6969697	34	604.8966942	41	3	131.329201	44	905.922865
272		256	1	JAN	2115	7	169.7451791	33	605.1239669	40	2	131.342975	42	906.2121212
273		257	1	JAN	2120	7	169.7933884	33	605.3512397	40	2	131.356749	42	906.5013774
274		258	1	JAN	2125	7	169.8415978	33	605.5785124	40	2	131.370523	42	906.7906336
275		259	1	JAN	2130	7	169.8898072	32	605.7988981	39	2	131.384298	41	907.0730028
276		260	1	JAN	2135	6	169.9311295	32	606.0192837	38	2	131.398072	40	907.3484848
277		261	1	JAN	2140	6	169.9724518	31	606.2327824	37	2	131.411846	39	907.6170799
278		262	1	JAN	2145	6	170.0137741	31	606.446281	37	2	131.42562	39	907.8856749
279		263	1	JAN	2150	6	170.0550964	31	606.6597796	37	2	131.439394	39	908.15427
280		264	1	JAN	2155	6	170.0964187	30	606.8663912	36	2	131.453168	38	908.415978
281		265	1	JAN	2200	6	170.137741	30	607.0730028	36	2	131.466942	38	908.677686
282		266	1	JAN	2205	6	170.1790634	30	607.2796143	36	2	131.480716	38	908.9393939
283		267	1	JAN	2210	6	170.2203857	29	607.4793388	35	2	131.49449	37	909.1942149
284		268	1	JAN	2215	6	170.261708	29	607.6790634	35	2	131.508264	37	909.4490358
285		269	1	JAN	2220	6	170.3030303	29	607.8787879	35	2	131.522039	37	909.7038567

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245	10	241.76309	35	455.7438	102	1594.49725
246	10	241.83196	34	455.97796	100	1595.18595
247	10	241.90083	34	456.21212	100	1595.87466
248	10	241.9697	33	456.43939	98	1596.54959
249	10	242.03857	33	456.66667	98	1597.22452
250	10	242.10744	32	456.88705	96	1597.88567
251	10	242.17631	32	457.10744	96	1598.54683
252	9	242.23829	32	457.32782	94	1599.19421
253	9	242.30028	31	457.54132	93	1599.83471
254	9	242.36226	31	457.75482	91	1600.46143
255	9	242.42424	31	457.96832	91	1601.08815
256	9	242.48623	30	458.17493	90	1601.70799
257	9	242.54821	30	458.38154	89	1602.32094
258	9	242.61019	30	458.58815	89	1602.93388
259	9	242.67218	30	458.79477	88	1603.53994
260	9	242.73416	29	458.99449	87	1604.13912
261	9	242.79614	29	459.19421	87	1604.73829
262	9	242.85813	29	459.39394	86	1605.33058
263	9	242.92011	29	459.59366	86	1605.92287
264	9	242.98209	28	459.7865	85	1606.50826
265	8	243.03719	28	459.97934	83	1607.07989
266	8	243.09229	28	460.17218	82	1607.64463
267	8	243.14738	27	460.35813	81	1608.20248
268	8	243.20248	27	460.54408	80	1608.75344
269	8	243.25758	26	460.72314	79	1609.29752
270	8	243.31267	26	460.9022	78	1609.83471
271	8	243.36777	26	461.08127	78	1610.3719
272	8	243.42287	25	461.25344	75	1610.88843
273	8	243.47796	25	461.42562	75	1611.40496
274	7	243.52617	25	461.5978	74	1611.9146
275	7	243.57438	24	461.76309	72	1612.41047
276	7	243.62259	24	461.92837	71	1612.89945
277	7	243.6708	24	462.09366	70	1613.38154
278	7	243.71901	23	462.25207	69	1613.85675
279	7	243.76722	23	462.41047	69	1614.33196
280	7	243.81543	23	462.56887	68	1614.80028
281	7	243.86364	23	462.72727	68	1615.2686
282	7	243.91185	23	462.88567	68	1615.73691
283	7	243.96006	23	463.04408	67	1616.19835
284	7	244.00826	22	463.19559	66	1616.65289
285	7	244.05647	22	463.34711	66	1617.10744

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
286		270	1	JAN	2225	6	170.3443526	29	608.0785124	35	2	131.535813	37	909.9586777
287		271	1	JAN	2230	6	170.3856749	28	608.2713499	34	2	131.549587	36	910.2066116
288		272	1	JAN	2235	6	170.4269972	28	608.4641873	34	2	131.563361	36	910.4545455
289		273	1	JAN	2240	6	170.4683196	28	608.6570248	34	2	131.577135	36	910.7024793
290		274	1	JAN	2245	6	170.5096419	28	608.8498623	34	2	131.590909	36	910.9504132
291		275	1	JAN	2250	6	170.5509642	28	609.0426997	34	2	131.604683	36	911.1983471
292		276	1	JAN	2255	6	170.5922865	28	609.2355372	34	2	131.618457	36	911.446281
293		277	1	JAN	2300	6	170.6336088	27	609.4214876	33	2	131.632231	35	911.6873278
294		278	1	JAN	2305	6	170.6749311	27	609.607438	33	2	131.646006	35	911.9283747
295		279	1	JAN	2310	6	170.7162534	27	609.7933884	33	2	131.65978	35	912.1694215
296		280	1	JAN	2315	6	170.7575758	27	609.9793388	33	2	131.673554	35	912.4104683
297		281	1	JAN	2320	6	170.7988981	27	610.1652893	33	2	131.687328	35	912.6515152
298		282	1	JAN	2325	6	170.8402204	27	610.3512397	33	2	131.701102	35	912.892562
299		283	1	JAN	2330	6	170.8815427	27	610.5371901	33	2	131.714876	35	913.1336088
300		284	1	JAN	2335	6	170.922865	27	610.7231405	33	2	131.72865	35	913.3746556
301		285	1	JAN	2340	6	170.9641873	27	610.9090909	33	2	131.742424	35	913.6157025
302		286	1	JAN	2345	6	171.0055096	27	611.0950413	33	2	131.756198	35	913.8567493
303		287	1	JAN	2350	6	171.046832	27	611.2809917	33	2	131.769972	35	914.0977961
304		288	1	JAN	2355	6	171.0881543	27	611.4669421	33	2	131.783747	35	914.338843
305		289	2	JAN	0	6	171.1294766	27	611.6528926	33	2	131.797521	35	914.5798898
306		290	2	JAN	5	6	171.1707989	27	611.838843	33	2	131.811295	35	914.8209366
307		291	2	JAN	10	6	171.2121212	27	612.0247934	33	2	131.825069	35	915.0619835
308		292	2	JAN	15	6	171.2534435	27	612.2107438	33	2	131.838843	35	915.3030303
309		293	2	JAN	20	6	171.2947658	26	612.3898072	32	2	131.852617	34	915.5371901
310		294	2	JAN	25	6	171.3360882	26	612.5688705	32	2	131.866391	34	915.7713499
311		295	2	JAN	30	5	171.3705234	26	612.7479339	31	2	131.880165	33	915.9986226
312		296	2	JAN	35	5	171.4049587	26	612.9269972	31	2	131.893939	33	916.2258953
313		297	2	JAN	40	5	171.4393939	25	613.0991736	30	2	131.907713	32	916.446281
314		298	2	JAN	45	4	171.4669421	25	613.2713499	29	2	131.921488	31	916.6597796
315		299	2	JAN	50	4	171.4944904	25	613.4435262	29	2	131.935262	31	916.8732782
316		300	2	JAN	55	3	171.5151515	24	613.6088154	27	2	131.949036	29	917.0730028
317						3	171.5358127	23	613.7672176	26	1	131.955923	27	917.2589532
318						3	171.5564738	22	613.9187328	25	1	131.96281	26	917.4380165
319						2	171.5702479	22	614.0702479	24	1	131.969697	25	917.6101928
320						2	171.584022	21	614.214876	23	1	131.976584	24	917.7754821
321						2	171.5977961	20	614.3526171	22	1	131.983471	23	917.9338843
322						1	171.6046832	19	614.4834711	20	1	131.990358	21	918.0785124
323						1	171.6115702	18	614.607438	19	1	131.997245	20	918.2162534
324						1	171.6184573	17	614.7245179	18	1	132.004132	19	918.3471074
325						1	171.6253444	16	614.8347107	17	1	132.011019	18	918.4710744
326						1	171.6322314	15	614.9380165	16	0	132.011019	16	918.5812672

	O	P	Q	R	S	T
286	7	244.10468	22	463.49862	66	1617.56198
287	7	244.15289	22	463.65014	65	1618.00964
288	7	244.2011	22	463.80165	65	1618.4573
289	6	244.24242	22	463.95317	64	1618.89807
290	6	244.28375	22	464.10468	64	1619.33884
291	6	244.32507	22	464.2562	64	1619.77961
292	6	244.36639	22	464.40771	64	1620.22039
293	6	244.40771	22	464.55923	63	1620.65427
294	6	244.44904	22	464.71074	63	1621.08815
295	6	244.49036	22	464.86226	63	1621.52204
296	6	244.53168	21	465.00689	62	1621.94904
297	6	244.573	21	465.15152	62	1622.37603
298	6	244.61433	21	465.29614	62	1622.80303
299	6	244.65565	21	465.44077	62	1623.23003
300	6	244.69697	21	465.5854	62	1623.65702
301	6	244.73829	21	465.73003	62	1624.08402
302	6	244.77961	21	465.87466	62	1624.51102
303	6	244.82094	21	466.01928	62	1624.93802
304	6	244.86226	21	466.16391	62	1625.36501
305	6	244.90358	21	466.30854	62	1625.79201
306	6	244.9449	21	466.45317	62	1626.21901
307	6	244.98623	21	466.5978	62	1626.64601
308	6	245.02755	21	466.74242	62	1627.073
309	6	245.06887	21	466.88705	61	1627.49311
310	6	245.11019	21	467.03168	61	1627.91322
311	6	245.15152	21	467.17631	60	1628.32645
312	6	245.19284	20	467.31405	59	1628.73278
313	6	245.23416	20	467.45179	58	1629.13223
314	6	245.27548	19	467.58264	56	1629.51791
315	6	245.3168	18	467.70661	55	1629.89669
316	6	245.35813	17	467.82369	52	1630.25482
317	6	245.39945	16	467.93388	49	1630.59229
318	5	245.43388	15	468.03719	46	1630.90909
319	5	245.46832	14	468.13361	44	1631.21212
320	5	245.50275	13	468.22314	42	1631.50138
321	4	245.5303	12	468.30579	39	1631.76997
322	4	245.55785	11	468.38154	36	1632.01791
323	4	245.5854	11	468.4573	35	1632.25895
324	3	245.60606	10	468.52617	32	1632.47934
325	3	245.62672	9	468.58815	30	1632.68595
326	2	245.6405	8	468.64325	26	1632.86501

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
327						1	171.6391185	13	615.0275482	14	0	132.011019	14	918.677686
328						0	171.6391185	12	615.1101928	12	0	132.011019	12	918.7603306
329						0	171.6391185	11	615.1859504	11	0	132.011019	11	918.8360882
330						0	171.6391185	10	615.2548209	10	0	132.011019	10	918.9049587
331						0	171.6391185	10	615.3236915	10	0	132.011019	10	918.9738292
332						0	171.6391185	9	615.3856749	9	0	132.011019	9	919.0358127
333						0	171.6391185	8	615.4407713	8	0	132.011019	8	919.0909091
334						0	171.6391185	7	615.4889807	7	0	132.011019	7	919.1391185
335						0	171.6391185	6	615.530303	6	0	132.011019	6	919.1804408
336						0	171.6391185	6	615.5716253	6	0	132.011019	6	919.2217631
337						0	171.6391185	5	615.6060606	5	0	132.011019	5	919.2561983
338						0	171.6391185	5	615.6404959	5	0	132.011019	5	919.2906336
339						0	171.6391185	4	615.6680441	4	0	132.011019	4	919.3181818
340						0	171.6391185	4	615.6955923	4	0	132.011019	4	919.34573
341						0	171.6391185	3	615.7162534	3	0	132.011019	3	919.3663912
342						0	171.6391185	3	615.7369146	3	0	132.011019	3	919.3870523
343						0	171.6391185	3	615.7575758	3	0	132.011019	3	919.4077135
344						0	171.6391185	2	615.7713499	2	0	132.011019	2	919.4214876
345						0	171.6391185	2	615.785124	2	0	132.011019	2	919.4352617
346						0	171.6391185	2	615.7988981	2	0	132.011019	2	919.4490358
347						0	171.6391185	2	615.8126722	2	0	132.011019	2	919.4628099
348						0	171.6391185	1	615.8195592	1	0	132.011019	1	919.469697
349						0	171.6391185	1	615.8264463	1	0	132.011019	1	919.476584
350						0	171.6391185	1	615.8333333	1	0	132.011019	1	919.4834711
351						0	171.6391185	1	615.8402204	1	0	132.011019	1	919.4903581
352						0	171.6391185	1	615.8471074	1	0	132.011019	1	919.4972452
353						0	171.6391185	1	615.8539945	1	0	132.011019	1	919.5041322
354						0	171.6391185	1	615.8608815	1	0	132.011019	1	919.5110193

	O	P	Q	R	S	T
327	2	245.65427	7	468.69146	23	1633.02342
328	2	245.66804	6	468.73278	20	1633.16116
329	2	245.68182	6	468.7741	19	1633.29201
330	1	245.68871	5	468.80854	16	1633.4022
331	1	245.69559	5	468.84298	16	1633.5124
332	1	245.70248	4	468.87052	14	1633.60882
333	1	245.70937	4	468.89807	13	1633.69835
334	1	245.71625	3	468.91873	11	1633.7741
335	1	245.72314	3	468.93939	10	1633.84298
336	1	245.73003	2	468.95317	9	1633.90496
337	0	245.73003	2	468.96694	7	1633.95317
338	0	245.73003	2	468.98072	7	1634.00138
339	0	245.73003	2	468.99449	6	1634.0427
340	0	245.73003	1	469.00138	5	1634.07713
341	0	245.73003	1	469.00826	4	1634.10468
342	0	245.73003	1	469.01515	4	1634.13223
343	0	245.73003	1	469.02204	4	1634.15978
344	0	245.73003	1	469.02893	3	1634.18044
345	0	245.73003	1	469.03581	3	1634.2011
346	0	245.73003	1	469.0427	3	1634.22176
347	0	245.73003	1	469.04959	3	1634.24242
348	0	245.73003	0	469.04959	1	1634.24931
349	0	245.73003	0	469.04959	1	1634.2562
350	0	245.73003	0	469.04959	1	1634.26309
351	0	245.73003	0	469.04959	1	1634.26997
352	0	245.73003	0	469.04959	1	1634.27686
353	0	245.73003	0	469.04959	1	1634.28375
354	0	245.73003	0	469.04959	1	1634.29063

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	1													
2	2													
3	3													
4	4												**Alternative 2**	
5	5													
6	6					Alternative 2 includes Waterfall Diversion to McMicken leaving 2,442 cfs to flow to Beardsley Channel, 1300 cfs of which is diverted								
7	7					combines with Cholla flow at Beardsley (6512 cfs) to produce a total flow of 6,763 cfs. This total flow combines with flow from subba								
8	8					channel to the intersection of Beardsley Canal and Bethany Home Road. Flows of 255 cfs and 445 cfs will also be deducted from th								
9	9													
10	10					F	G	H	I	J	K	L	M	N
11	11	ORD	DAY	MON	HRMN	Waterfall Flow after Diversion	Volume	Flow Diverted at Olive to Northern Avenue	Volume	Flow Remaining from Waterfall	Volume	Cholla Flow to North Basin	Volume	Total Flow to North Basin (remaining Waterfall & all of Cholla)
12	12					cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs
13	13					2442	172	1300	138	1142	33	6512	616	6763
14	14													
15	15	1	1	JAN	0	0	0	0	0	0	0	0	0	0
16	16	2	1	JAN	5	0	0	0	0	0	0	0	0	0
17	17	3	1	JAN	10	0	0	0	0	0	0	0	0	0
18	18	4	1	JAN	15	0	0	0	0	0	0	0	0	0
19	19	5	1	JAN	20	0	0	0	0	0	0	0	0	0
20	20	6	1	JAN	25	0	0	0	0	0	0	0	0	0
21	21	7	1	JAN	30	0	0	0	0	0	0	0	0	0
22	22	8	1	JAN	35	0	0	0	0	0	0	0	0	0
23	23	9	1	JAN	40	1	0	1	0	0	0	1	0	1
24	24	10	1	JAN	45	1	0	1	0	0	0	1	0	1
25	25	11	1	JAN	50	2	0	2	0	0	0	1	0	1
26	26	12	1	JAN	55	2	0	2	0	0	0	2	0	2
27	27	13	1	JAN	100	2	0	2	0	0	0	2	0	2
28	28	14	1	JAN	105	3	0	3	0	0	0	3	0	3
29		15	1	JAN	110	3	0.096419	3	0.0964187	0	0	3	0.08953168	3
30		16	1	JAN	115	4	0.123967	4	0.1239669	0	0	4	0.11707989	4
31		17	1	JAN	120	4	0.151515	4	0.1515152	0	0	5	0.15151515	5
32		18	1	JAN	125	4	0.179063	4	0.1790634	0	0	6	0.19283747	6
33		19	1	JAN	130	5	0.213499	5	0.2134986	0	0	7	0.24104683	7
34		20	1	JAN	135	5	0.247934	5	0.2479339	0	0	8	0.29614325	8
35		21	1	JAN	140	5	0.282369	5	0.2823691	0	0	9	0.35812672	9
36		22	1	JAN	145	5	0.316804	5	0.3168044	0	0	10	0.42699725	10
37		23	1	JAN	150	5	0.35124	5	0.3512397	0	0	11	0.50275482	11

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
38		24	1	JAN	155	6	0.392562	6	0.392562	0	0	12	0.58539945	12
39		25	1	JAN	200	6	0.433884	6	0.4338843	0	0	13	0.67493113	13
40		26	1	JAN	205	6	0.475207	6	0.4752066	0	0	14	0.77134986	14
41		27	1	JAN	210	6	0.516529	6	0.5165289	0	0	15	0.87465565	15
42		28	1	JAN	215	6	0.557851	6	0.5578512	0	0	16	0.98484848	16
43		29	1	JAN	220	6	0.599174	6	0.5991736	0	0	17	1.10192837	17
44		30	1	JAN	225	6	0.640496	6	0.6404959	0	0	18	1.22589532	18
45		31	1	JAN	230	6	0.681818	6	0.6818182	0	0	19	1.35674931	19
46		32	1	JAN	235	6	0.72314	6	0.7231405	0	0	19	1.48760331	19
47		33	1	JAN	240	6	0.764463	6	0.7644628	0	0	20	1.62534435	20
48		34	1	JAN	245	6	0.805785	6	0.8057851	0	0	21	1.76997245	21
49		35	1	JAN	250	6	0.847107	6	0.8471074	0	0	21	1.91460055	21
50		36	1	JAN	255	6	0.88843	6	0.8884298	0	0	22	2.0661157	22
51		37	1	JAN	300	6	0.929752	6	0.9297521	0	0	23	2.22451791	23
52		38	1	JAN	305	6	0.971074	6	0.9710744	0	0	23	2.38292011	23
53		39	1	JAN	310	6	1.012397	6	1.0123967	0	0	23	2.54132231	23
54		40	1	JAN	315	6	1.053719	6	1.053719	0	0	24	2.70661157	24
55		41	1	JAN	320	6	1.095041	6	1.0950413	0	0	24	2.87190083	24
56		42	1	JAN	325	6	1.136364	6	1.1363636	0	0	24	3.03719008	24
57		43	1	JAN	330	6	1.177686	6	1.177686	0	0	25	3.20936639	25
58		44	1	JAN	335	6	1.219008	6	1.2190083	0	0	25	3.3815427	25
59		45	1	JAN	340	6	1.260331	6	1.2603306	0	0	25	3.55371901	25
60		46	1	JAN	345	6	1.301653	6	1.3016529	0	0	25	3.72589532	25
61		47	1	JAN	350	6	1.342975	6	1.3429752	0	0	25	3.89807163	25
62		48	1	JAN	355	6	1.384298	6	1.3842975	0	0	26	4.07713499	26
63		49	1	JAN	400	6	1.42562	6	1.4256198	0	0	26	4.25619835	26
64		50	1	JAN	405	6	1.466942	6	1.4669421	0	0	26	4.43526171	26
65		51	1	JAN	410	6	1.508264	6	1.5082645	0	0	26	4.61432507	26
66		52	1	JAN	415	6	1.549587	6	1.5495868	0	0	26	4.79338843	26
67		53	1	JAN	420	6	1.590909	6	1.5909091	0	0	26	4.97245179	26
68		54	1	JAN	425	7	1.639118	7	1.6391185	0	0	26	5.15151515	26
69		55	1	JAN	430	7	1.687328	7	1.6873278	0	0	27	5.33746556	27
70		56	1	JAN	435	7	1.735537	7	1.7355372	0	0	27	5.52341598	27
71		57	1	JAN	440	7	1.783747	7	1.7837466	0	0	27	5.70936639	27
72		58	1	JAN	445	7	1.831956	7	1.8319559	0	0	27	5.8953168	27
73		59	1	JAN	450	7	1.880165	7	1.8801653	0	0	28	6.08815427	28
74		60	1	JAN	455	7	1.928375	7	1.9283747	0	0	28	6.28099174	28
75		61	1	JAN	500	8	1.983471	8	1.9834711	0	0	28	6.4738292	28
76		62	1	JAN	505	8	2.038567	8	2.0385675	0	0	28	6.66666667	28
77		63	1	JAN	510	8	2.093664	8	2.0936639	0	0	29	6.86639118	29
78		64	1	JAN	515	8	2.14876	8	2.1487603	0	0	29	7.0661157	29

	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC
38	0.58539945	2	0.10330579	14	0.688705	14	0.688705	0	0	4	0.1721763	4	0.1721763	0	0
39	0.67493113	2	0.11707989	15	0.792011	15	0.792011	0	0	4	0.1997245	4	0.1997245	0	0
40	0.77134986	2	0.13085399	16	0.902204	16	0.902204	0	0	4	0.2272727	4	0.2272727	0	0
41	0.87465565	2	0.1446281	17	1.019284	17	1.019284	0	0	5	0.261708	5	0.261708	0	0
42	0.98484848	2	0.1584022	18	1.143251	18	1.143251	0	0	5	0.2961433	5	0.2961433	0	0
43	1.10192837	2	0.17217631	19	1.274105	19	1.274105	0	0	5	0.3305785	5	0.3305785	0	0
44	1.22589532	2	0.18595041	20	1.411846	20	1.411846	0	0	5	0.3650138	5	0.3650138	0	0
45	1.35674931	2	0.19972452	21	1.556474	21	1.556474	0	0	6	0.4063361	6	0.4063361	0	0
46	1.48760331	2	0.21349862	21	1.701102	21	1.701102	0	0	6	0.4476584	6	0.4476584	0	0
47	1.62534435	2	0.22727273	22	1.852617	22	1.852617	0	0	6	0.4889807	6	0.4889807	0	0
48	1.76997245	2	0.24104683	23	2.011019	23	2.011019	0	0	6	0.530303	6	0.530303	0	0
49	1.91460055	2	0.25482094	23	2.169421	23	2.169421	0	0	6	0.5716253	6	0.5716253	0	0
50	2.0661157	2	0.26859504	24	2.334711	24	2.334711	0	0	6	0.6129477	6	0.6129477	0	0
51	2.22451791	2	0.28236915	25	2.506887	25	2.506887	0	0	6	0.65427	6	0.65427	0	0
52	2.38292011	2	0.29614325	25	2.679063	25	2.679063	0	0	6	0.6955923	6	0.6955923	0	0
53	2.54132231	2	0.30991736	25	2.85124	25	2.85124	0	0	6	0.7369146	6	0.7369146	0	0
54	2.70661157	2	0.32369146	26	3.030303	26	3.030303	0	0	6	0.7782369	6	0.7782369	0	0
55	2.87190083	2	0.33746556	26	3.209366	26	3.209366	0	0	6	0.8195592	6	0.8195592	0	0
56	3.03719008	2	0.35123967	26	3.38843	26	3.38843	0	0	6	0.8608815	6	0.8608815	0	0
57	3.20936639	2	0.36501377	27	3.57438	27	3.57438	0	0	6	0.9022039	6	0.9022039	0	0
58	3.3815427	2	0.37878788	27	3.760331	27	3.760331	0	0	6	0.9435262	6	0.9435262	0	0
59	3.55371901	2	0.39256198	27	3.946281	27	3.946281	0	0	6	0.9848485	6	0.9848485	0	0
60	3.72589532	2	0.40633609	27	4.132231	27	4.132231	0	0	6	1.0261708	6	1.0261708	0	0
61	3.89807163	2	0.42011019	27	4.318182	27	4.318182	0	0	6	1.0674931	6	1.0674931	0	0
62	4.07713499	2	0.4338843	28	4.511019	28	4.511019	0	0	6	1.1088154	6	1.1088154	0	0
63	4.25619835	2	0.4476584	28	4.703857	28	4.703857	0	0	6	1.1501377	6	1.1501377	0	0
64	4.43526171	2	0.46143251	28	4.896694	28	4.896694	0	0	6	1.1914601	6	1.1914601	0	0
65	4.61432507	2	0.47520661	28	5.089532	28	5.089532	0	0	6	1.2327824	6	1.2327824	0	0
66	4.79338843	2	0.48898072	28	5.282369	28	5.282369	0	0	6	1.2741047	6	1.2741047	0	0
67	4.97245179	2	0.50275482	28	5.475207	28	5.475207	0	0	6	1.315427	6	1.315427	0	0
68	5.15151515	2	0.51652893	28	5.668044	28	5.668044	0	0	6	1.3567493	6	1.3567493	0	0
69	5.33746556	2	0.53030303	29	5.867769	29	5.867769	0	0	6	1.3980716	6	1.3980716	0	0
70	5.52341598	2	0.54407713	29	6.067493	29	6.067493	0	0	6	1.4393939	6	1.4393939	0	0
71	5.70936639	2	0.55785124	29	6.267218	29	6.267218	0	0	7	1.4876033	7	1.4876033	0	0
72	5.8953168	2	0.57162534	29	6.466942	29	6.466942	0	0	7	1.5358127	7	1.5358127	0	0
73	6.08815427	2	0.58539945	30	6.673554	30	6.673554	0	0	7	1.584022	7	1.584022	0	0
74	6.28099174	3	0.60606061	31	6.887052	31	6.887052	0	0	7	1.6322314	7	1.6322314	0	0
75	6.4738292	3	0.62672176	31	7.100551	31	7.100551	0	0	7	1.6804408	7	1.6804408	0	0
76	6.66666667	3	0.64738292	31	7.31405	31	7.31405	0	0	7	1.7286501	7	1.7286501	0	0
77	6.86639118	3	0.66804408	32	7.534435	32	7.534435	0	0	7	1.7768595	7	1.7768595	0	0
78	7.0661157	3	0.68870523	32	7.754821	32	7.754821	0	0	7	1.8250689	7	1.8250689	0	0

	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ
38	13	0.73691	13	0.7369146	0	0		17	0.90909091	0	0	31	1.597796143	
39	14	0.83333	14	0.8333333	0	0		18	1.03305785	0	0	33	1.825068871	
40	15	0.93664	15	0.9366391	0	0		19	1.16391185	0	0	35	2.066115702	
41	16	1.04683	16	1.046832	0	0		21	1.30853994	0	0	38	2.327823691	
42	16	1.15702	16	1.1570248	0	0		21	1.45316804	0	0	39	2.596418733	
43	17	1.2741	17	1.2741047	0	0		22	1.6046832	0	0	41	2.878787879	
44	17	1.39118	17	1.3911846	0	0		22	1.75619835	0	0	42	3.168044077	
45	18	1.51515	18	1.5151515	0	0		24	1.9214876	0	0	45	3.477961433	
46	18	1.63912	18	1.6391185	0	0		24	2.08677686	0	0	45	3.787878788	
47	18	1.76309	18	1.7630854	0	0		24	2.25206612	0	0	46	4.104683196	
48	19	1.89394	19	1.8939394	0	0		25	2.42424242	0	0	48	4.435261708	
49	19	2.02479	19	2.0247934	0	0		25	2.59641873	0	0	48	4.76584022	
50	19	2.15565	19	2.1556474	0	0		25	2.76859504	0	0	49	5.103305785	
51	20	2.29339	20	2.2933884	0	0		26	2.9476584	0	0	51	5.454545455	
52	20	2.43113	20	2.4311295	0	0		26	3.12672176	0	0	51	5.805785124	
53	20	2.56887	20	2.5688705	0	0		26	3.30578512	0	0	51	6.157024793	
54	20	2.70661	20	2.7066116	0	0		26	3.48484848	0	0	52	6.515151515	
55	20	2.84435	20	2.8443526	0	0		26	3.66391185	0	0	52	6.873278237	
56	20	2.98209	20	2.9820937	0	0		26	3.84297521	0	0	52	7.231404959	
57	21	3.12672	21	3.1267218	0	0		27	4.02892562	0	0	54	7.603305785	
58	21	3.27135	21	3.2713499	0	0		27	4.21487603	0	0	54	7.975206612	
59	21	3.41598	21	3.415978	0	0		27	4.40082645	0	0	54	8.347107438	
60	21	3.56061	21	3.5606061	0	0		27	4.58677686	0	0	54	8.719008264	
61	21	3.70523	21	3.7052342	0	0		27	4.77272727	0	0	54	9.090909091	
62	21	3.84986	21	3.8498623	0	0		27	4.95867769	0	0	55	9.46969697	
63	21	3.99449	21	3.9944904	0	0		27	5.1446281	0	0	55	9.848484848	
64	21	4.13912	21	4.1391185	0	0		27	5.33057851	0	0	55	10.22727273	
65	21	4.28375	21	4.2837466	0	0		27	5.51652893	0	0	55	10.60606061	
66	21	4.42837	21	4.4283747	0	0		27	5.70247934	0	0	55	10.98484848	
67	21	4.573	21	4.5730028	0	0		27	5.88842975	0	0	55	11.36363636	
68	21	4.71763	21	4.7176309	0	0		27	6.07438017	0	0	55	11.74242424	
69	22	4.86915	22	4.869146	0	0		28	6.26721763	0	0	57	12.13498623	
70	22	5.02066	22	5.0206612	0	0		28	6.4600551	0	0	57	12.52754821	
71	22	5.17218	22	5.1721763	0	0		29	6.65977961	0	0	58	12.92699725	
72	22	5.32369	22	5.3236915	0	0		29	6.85950413	0	0	58	13.32644628	
73	23	5.48209	23	5.4820937	0	0		30	7.0661157	0	0	60	13.73966942	
74	23	5.6405	23	5.6404959	0	0		30	7.27272727	0	0	61	14.15977961	
75	24	5.80579	24	5.8057851	0	0		31	7.4862259	0	0	62	14.58677686	
76	24	5.97107	24	5.9710744	0	0		31	7.69972452	0	0	62	15.0137741	
77	24	6.13636	24	6.1363636	0	0		31	7.91322314	0	0	63	15.4476584	
78	25	6.30854	25	6.3085399	0	0		32	8.13360882	0	0	64	15.88842975	

	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC
79	7.27272727	3	0.70936639	33	7.982094	33	7.982094	0	0	7	1.8732782	7	1.8732782	0	0
80	7.47933884	3	0.73002755	33	8.209366	33	8.209366	0	0	7	1.9214876	7	1.9214876	0	0
81	7.68595041	3	0.75068871	33	8.436639	33	8.436639	0	0	8	1.976584	8	1.976584	0	0
82	7.89944904	3	0.77134986	34	8.670799	34	8.670799	0	0	8	2.0316804	8	2.0316804	0	0
83	8.11294766	3	0.79201102	34	8.904959	34	8.904959	0	0	8	2.0867769	8	2.0867769	0	0
84	8.32644628	3	0.81267218	34	9.139118	34	9.139118	0	0	8	2.1418733	8	2.1418733	0	0
85	8.54683196	3	0.83333333	35	9.380165	35	9.380165	0	0	8	2.1969697	8	2.1969697	0	0
86	8.76721763	3	0.85399449	35	9.621212	35	9.621212	0	0	8	2.2520661	8	2.2520661	0	0
87	8.98760331	3	0.87465565	35	9.862259	35	9.862259	0	0	8	2.3071625	8	2.3071625	0	0
88	9.21487603	3	0.8953168	36	10.11019	36	10.11019	0	0	8	2.362259	8	2.362259	0	0
89	9.44214876	3	0.91597796	36	10.35813	36	10.35813	0	0	8	2.4173554	8	2.4173554	0	0
90	9.66942149	3	0.93663912	36	10.60606	36	10.60606	0	0	8	2.4724518	8	2.4724518	0	0
91	9.89669421	3	0.95730028	36	10.85399	36	10.85399	0	0	8	2.5275482	8	2.5275482	0	0
92	10.130854	3	0.97796143	37	11.10882	37	11.10882	0	0	8	2.5826446	8	2.5826446	0	0
93	10.3650138	3	0.99862259	37	11.36364	37	11.36364	0	0	8	2.637741	8	2.637741	0	0
94	10.5991736	3	1.01928375	37	11.61846	37	11.61846	0	0	8	2.6928375	8	2.6928375	0	0
95	10.8333333	3	1.0399449	37	11.87328	37	11.87328	0	0	8	2.7479339	8	2.7479339	0	0
96	11.0743802	3	1.06060606	38	12.13499	38	12.13499	0	0	9	2.8099174	9	2.8099174	0	0
97	11.315427	3	1.08126722	38	12.39669	38	12.39669	0	0	9	2.8719008	9	2.8719008	0	0
98	11.5564738	3	1.10192837	38	12.6584	38	12.6584	0	0	9	2.9338843	9	2.9338843	0	0
99	11.8044077	3	1.12258953	39	12.927	39	12.927	0	0	9	2.9958678	9	2.9958678	0	0
100	12.0523416	3	1.14325069	39	13.19559	39	13.19559	0	0	9	3.0578512	9	3.0578512	0	0
101	12.3002755	3	1.16391185	39	13.46419	39	13.46419	0	0	9	3.1198347	9	3.1198347	0	0
102	12.5550964	3	1.184573	40	13.73967	40	13.73967	0	0	9	3.1818182	9	3.1818182	0	0
103	12.8099174	3	1.20523416	40	14.01515	40	14.01515	0	0	9	3.2438017	9	3.2438017	0	0
104	13.0647383	3	1.22589532	40	14.29063	40	14.29063	0	0	9	3.3057851	9	3.3057851	0	0
105	13.3264463	3	1.24655647	41	14.573	41	14.573	0	0	9	3.3677686	9	3.3677686	0	0
106	13.5881543	3	1.26721763	41	14.85537	41	14.85537	0	0	9	3.4297521	9	3.4297521	0	0
107	13.8567493	4	1.29476584	43	15.15152	43	15.15152	0	0	10	3.4986226	10	3.4986226	0	0
108	14.1253444	4	1.32231405	43	15.44766	43	15.44766	0	0	10	3.5674931	10	3.5674931	0	0
109	14.3939394	4	1.34986226	43	15.7438	43	15.7438	0	0	10	3.6363636	10	3.6363636	0	0
110	14.6694215	4	1.37741047	44	16.04683	44	16.04683	0	0	10	3.7052342	10	3.7052342	0	0
111	14.9449036	4	1.40495868	44	16.34986	44	16.34986	0	0	10	3.7741047	10	3.7741047	0	0
112	15.2203857	4	1.43250689	44	16.65289	44	16.65289	0	0	10	3.8429752	10	3.8429752	0	0
113	15.5027548	4	1.4600551	45	16.96281	45	16.96281	0	0	10	3.9118457	10	3.9118457	0	0
114	15.785124	4	1.48760331	45	17.27273	45	17.27273	0	0	10	3.9807163	10	3.9807163	0	0
115	16.0674931	4	1.51515152	45	17.58264	45	17.58264	0	0	10	4.0495868	10	4.0495868	0	0
116	16.3567493	4	1.54269972	46	17.89945	46	17.89945	0	0	10	4.1184573	10	4.1184573	0	0
117	16.6460055	4	1.57024793	46	18.21625	46	18.21625	0	0	10	4.1873278	10	4.1873278	0	0
118	16.9352617	4	1.59779614	46	18.53306	46	18.53306	0	0	10	4.2561983	10	4.2561983	0	0
119	17.231405	4	1.62534435	47	18.85675	47	18.85675	0	0	11	4.3319559	11	4.3319559	0	0

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
79		65	1	JAN	520	8	2.203857	8	2.2038567	0	0	30	7.27272727	30
80		66	1	JAN	525	8	2.258953	8	2.2589532	0	0	30	7.47933884	30
81		67	1	JAN	530	8	2.31405	8	2.3140496	0	0	30	7.68595041	30
82		68	1	JAN	535	8	2.369146	8	2.369146	0	0	31	7.89944904	31
83		69	1	JAN	540	8	2.424242	8	2.4242424	0	0	31	8.11294766	31
84		70	1	JAN	545	8	2.479339	8	2.4793388	0	0	31	8.32644628	31
85		71	1	JAN	550	8	2.534435	8	2.5344353	0	0	32	8.54683196	32
86		72	1	JAN	555	8	2.589532	8	2.5895317	0	0	32	8.76721763	32
87		73	1	JAN	600	8	2.644628	8	2.6446281	0	0	32	8.98760331	32
88		74	1	JAN	605	8	2.699725	8	2.6997245	0	0	33	9.21487603	33
89		75	1	JAN	610	8	2.754821	8	2.7548209	0	0	33	9.44214876	33
90		76	1	JAN	615	8	2.809917	8	2.8099174	0	0	33	9.66942149	33
91		77	1	JAN	620	8	2.865014	8	2.8650138	0	0	33	9.89669421	33
92		78	1	JAN	625	8	2.92011	8	2.9201102	0	0	34	10.130854	34
93		79	1	JAN	630	8	2.975207	8	2.9752066	0	0	34	10.3650138	34
94		80	1	JAN	635	9	3.03719	9	3.0371901	0	0	34	10.5991736	34
95		81	1	JAN	640	9	3.099174	9	3.0991736	0	0	34	10.8333333	34
96		82	1	JAN	645	9	3.161157	9	3.161157	0	0	35	11.0743802	35
97		83	1	JAN	650	9	3.22314	9	3.2231405	0	0	35	11.315427	35
98		84	1	JAN	655	9	3.285124	9	3.285124	0	0	35	11.5564738	35
99		85	1	JAN	700	9	3.347107	9	3.3471074	0	0	36	11.8044077	36
100		86	1	JAN	705	9	3.409091	9	3.4090909	0	0	36	12.0523416	36
101		87	1	JAN	710	10	3.477961	10	3.4779614	0	0	36	12.3002755	36
102		88	1	JAN	715	10	3.546832	10	3.546832	0	0	37	12.5550964	37
103		89	1	JAN	720	10	3.615702	10	3.6157025	0	0	37	12.8099174	37
104		90	1	JAN	725	10	3.684573	10	3.684573	0	0	37	13.0647383	37
105		91	1	JAN	730	10	3.753444	10	3.7534435	0	0	38	13.3264463	38
106		92	1	JAN	735	10	3.822314	10	3.822314	0	0	38	13.5881543	38
107		93	1	JAN	740	10	3.891185	10	3.8911846	0	0	39	13.8567493	39
108		94	1	JAN	745	10	3.960055	10	3.9600551	0	0	39	14.1253444	39
109		95	1	JAN	750	10	4.028926	10	4.0289256	0	0	39	14.3939394	39
110		96	1	JAN	755	10	4.097796	10	4.0977961	0	0	40	14.6694215	40
111		97	1	JAN	800	10	4.166667	10	4.1666667	0	0	40	14.9449036	40
112		98	1	JAN	805	10	4.235537	10	4.2355372	0	0	40	15.2203857	40
113		99	1	JAN	810	10	4.304408	10	4.3044077	0	0	41	15.5027548	41
114		100	1	JAN	815	10	4.373278	10	4.3732782	0	0	41	15.785124	41
115		101	1	JAN	820	10	4.442149	10	4.4421488	0	0	41	16.0674931	41
116		102	1	JAN	825	10	4.511019	10	4.5110193	0	0	42	16.3567493	42
117		103	1	JAN	830	11	4.586777	11	4.5867769	0	0	42	16.6460055	42
118		104	1	JAN	835	11	4.662534	11	4.6625344	0	0	42	16.9352617	42
119		105	1	JAN	840	11	4.738292	11	4.738292	0	0	43	17.231405	43

	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ
79	25	6.48072	25	6.4807163	0	0		32	8.35399449	0	0	65	16.33608815	
80	25	6.65289	25	6.6528926	0	0		32	8.57438017	0	0	65	16.78374656	
81	25	6.82507	25	6.8250689	0	0		33	8.80165289	0	0	66	17.23829201	
82	26	7.00413	26	7.0041322	0	0		34	9.03581267	0	0	68	17.70661157	
83	26	7.1832	26	7.1831956	0	0		34	9.26997245	0	0	68	18.17493113	
84	26	7.36226	26	7.362259	0	0		34	9.50413223	0	0	68	18.64325069	
85	26	7.54132	26	7.5413223	0	0		34	9.73829201	0	0	69	19.1184573	
86	27	7.72727	27	7.7272727	0	0		35	9.97933884	0	0	70	19.60055096	
87	27	7.91322	27	7.9132231	0	0		35	10.2203857	0	0	70	20.08264463	
88	27	8.09917	27	8.0991736	0	0		35	10.4614325	0	0	71	20.57162534	
89	27	8.28512	27	8.285124	0	0		35	10.7024793	0	0	71	21.06060606	
90	27	8.47107	27	8.4710744	0	0		35	10.9435262	0	0	71	21.54958678	
91	27	8.65702	27	8.6570248	0	0		35	11.184573	0	0	71	22.03856749	
92	28	8.84986	28	8.8498623	0	0		36	11.4325069	0	0	73	22.54132231	
93	28	9.0427	28	9.0426997	0	0		36	11.6804408	0	0	73	23.04407713	
94	28	9.23554	28	9.2355372	0	0		36	11.9283747	0	0	73	23.54683196	
95	28	9.42837	28	9.4283747	0	0		36	12.1763085	0	0	73	24.04958678	
96	28	9.62121	28	9.6212121	0	0		37	12.4311295	0	0	75	24.5661157	
97	29	9.82094	29	9.8209366	0	0		38	12.6928375	0	0	76	25.08953168	
98	29	10.0207	29	10.020661	0	0		38	12.9545455	0	0	76	25.61294766	
99	29	10.2204	29	10.220386	0	0		38	13.2162534	0	0	77	26.14325069	
100	30	10.427	30	10.426997	0	0		39	13.4848485	0	0	78	26.68044077	
101	30	10.6336	30	10.633609	0	0		39	13.7534435	0	0	78	27.21763085	
102	30	10.8402	30	10.84022	0	0		39	14.0220386	0	0	79	27.76170799	
103	31	11.0537	31	11.053719	0	0		40	14.2975207	0	0	80	28.31267218	
104	31	11.2672	31	11.267218	0	0		40	14.5730028	0	0	80	28.86363636	
105	32	11.4876	32	11.487603	0	0		41	14.8553719	0	0	82	29.42837466	
106	32	11.708	32	11.707989	0	0		41	15.137741	0	0	82	29.99311295	
107	32	11.9284	32	11.928375	0	0		42	15.4269972	0	0	85	30.5785124	
108	32	12.1488	32	12.14876	0	0		42	15.7162534	0	0	85	31.16391185	
109	33	12.376	33	12.376033	0	0		43	16.0123967	0	0	86	31.75619835	
110	33	12.6033	33	12.603306	0	0		43	16.3085399	0	0	87	32.3553719	
111	33	12.8306	33	12.830579	0	0		43	16.6046832	0	0	87	32.95454545	
112	34	13.0647	34	13.064738	0	0		44	16.9077135	0	0	88	33.56060606	
113	34	13.2989	34	13.298898	0	0		44	17.2107438	0	0	89	34.17355372	
114	34	13.5331	34	13.533058	0	0		44	17.5137741	0	0	89	34.78650138	
115	34	13.7672	34	13.767218	0	0		44	17.8168044	0	0	89	35.39944904	
116	34	14.0014	34	14.001377	0	0		44	18.1198347	0	0	90	36.01928375	
117	35	14.2424	35	14.242424	0	0		45	18.4297521	0	0	91	36.64600551	
118	35	14.4835	35	14.483471	0	0		45	18.7396694	0	0	91	37.27272727	
119	35	14.7245	35	14.724518	0	0		46	19.0564738	0	0	93	37.91322314	

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
120		106	1	JAN	845	11	4.81405	11	4.8140496	0	0	43	17.5275482	43
121		107	1	JAN	850	11	4.889807	11	4.8898072	0	0	44	17.8305785	44
122		108	1	JAN	855	12	4.972452	12	4.9724518	0	0	44	18.1336088	44
123		109	1	JAN	900	12	5.055096	12	5.0550964	0	0	44	18.4366391	44
124		110	1	JAN	905	12	5.137741	12	5.137741	0	0	45	18.7465565	45
125		111	1	JAN	910	12	5.220386	12	5.2203857	0	0	46	19.0633609	46
126		112	1	JAN	915	13	5.309917	13	5.3099174	0	0	46	19.3801653	46
127		113	1	JAN	920	13	5.399449	13	5.399449	0	0	47	19.7038567	47
128		114	1	JAN	925	13	5.488981	13	5.4889807	0	0	48	20.0344353	48
129		115	1	JAN	930	14	5.585399	14	5.5853994	0	0	49	20.3719008	49
130		116	1	JAN	935	14	5.681818	14	5.6818182	0	0	51	20.7231405	51
131		117	1	JAN	940	14	5.778237	14	5.7782369	0	0	53	21.0881543	53
132		118	1	JAN	945	14	5.874656	14	5.8746556	0	0	55	21.4669421	55
133		119	1	JAN	950	15	5.977961	15	5.9779614	0	0	57	21.8595041	57
134		120	1	JAN	955	15	6.081267	15	6.0812672	0	0	58	22.2589532	58
135		121	1	JAN	1000	15	6.184573	15	6.184573	0	0	60	22.6721763	60
136		122	1	JAN	1005	16	6.294766	16	6.2947658	0	0	61	23.0922865	61
137		123	1	JAN	1010	16	6.404959	16	6.4049587	0	0	63	23.5261708	63
138		124	1	JAN	1015	16	6.515152	16	6.5151515	0	0	64	23.9669421	64
139		125	1	JAN	1020	17	6.632231	17	6.6322314	0	0	66	24.4214876	66
140		126	1	JAN	1025	17	6.749311	17	6.7493113	0	0	67	24.8829201	67
141		127	1	JAN	1030	17	6.866391	17	6.8663912	0	0	69	25.3581267	69
142		128	1	JAN	1035	18	6.990358	18	6.9903581	0	0	70	25.8402204	70
143		129	1	JAN	1040	18	7.114325	18	7.1143251	0	0	72	26.3360882	72
144		130	1	JAN	1045	19	7.245179	19	7.2451791	0	0	73	26.838843	73
145		131	1	JAN	1050	19	7.376033	19	7.3760331	0	0	75	27.3553719	75
146		132	1	JAN	1055	20	7.513774	20	7.5137741	0	0	77	27.8856749	77
147		133	1	JAN	1100	21	7.658402	21	7.6584022	0	0	79	28.4297521	79
148		134	1	JAN	1105	21	7.80303	21	7.8030303	0	0	82	28.9944904	82
149		135	1	JAN	1110	23	7.961433	23	7.9614325	0	0	85	29.5798898	85
150		136	1	JAN	1115	24	8.126722	24	8.1267218	0	0	88	30.1859504	88
151		137	1	JAN	1120	25	8.298898	25	8.2988981	0	0	93	30.8264463	93
152		138	1	JAN	1125	27	8.484848	27	8.4848485	0	0	98	31.5013774	98
153		139	1	JAN	1130	29	8.684573	29	8.684573	0	0	105	32.2245179	105
154		140	1	JAN	1135	38	8.946281	38	8.946281	0	0	123	33.0716253	123
155		141	1	JAN	1140	63	9.380165	63	9.3801653	0	0	145	34.0702479	145
156		142	1	JAN	1145	109	10.13085	109	10.130854	0	0	181	35.3168044	181
157		143	1	JAN	1150	198	11.49449	198	11.49449	0	0	271	37.1831956	271
158		144	1	JAN	1155	355	13.93939	355	13.939394	0	0	394	39.8966942	394
159		145	1	JAN	1200	649	18.40909	649	18.409091	0	0	592	43.9738292	592
160		146	1	JAN	1205	1010	25.36501	1010	25.365014	0	0	893	50.1239669	893

	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC
120	17.5275482	4	1.65289256	47	19.18044	47	19.18044	0	0	11	4.4077135	11	4.4077135	0	0
121	17.8305785	4	1.68044077	48	19.51102	48	19.51102	0	0	11	4.4834711	11	4.4834711	0	0
122	18.1336088	4	1.70798898	48	19.8416	48	19.8416	0	0	11	4.5592287	11	4.5592287	0	0
123	18.4366391	4	1.73553719	48	20.17218	48	20.17218	0	0	11	4.6349862	11	4.6349862	0	0
124	18.7465565	4	1.7630854	49	20.50964	49	20.50964	0	0	11	4.7107438	11	4.7107438	0	0
125	19.0633609	4	1.79063361	50	20.85399	50	20.85399	0	0	11	4.7865014	11	4.7865014	0	0
126	19.3801653	4	1.81818182	50	21.19835	50	21.19835	0	0	11	4.862259	11	4.862259	0	0
127	19.7038567	4	1.84573003	51	21.54959	51	21.54959	0	0	12	4.9449036	12	4.9449036	0	0
128	20.0344353	4	1.87327824	52	21.90771	52	21.90771	0	0	12	5.0275482	12	5.0275482	0	0
129	20.3719008	5	1.9077135	54	22.27961	54	22.27961	0	0	12	5.1101928	12	5.1101928	0	0
130	20.7231405	5	1.94214876	56	22.66529	56	22.66529	0	0	12	5.1928375	12	5.1928375	0	0
131	21.0881543	5	1.97658402	58	23.06474	58	23.06474	0	0	12	5.2754821	12	5.2754821	0	0
132	21.4669421	5	2.01101928	60	23.47796	60	23.47796	0	0	13	5.3650138	13	5.3650138	0	0
133	21.8595041	5	2.04545455	62	23.90496	62	23.90496	0	0	13	5.4545455	13	5.4545455	0	0
134	22.2589532	5	2.07988981	63	24.33884	63	24.33884	0	0	13	5.5440771	13	5.5440771	0	0
135	22.6721763	5	2.11432507	65	24.7865	65	24.7865	0	0	14	5.6404959	14	5.6404959	0	0
136	23.0922865	5	2.14876033	66	25.24105	66	25.24105	0	0	14	5.7369146	14	5.7369146	0	0
137	23.5261708	5	2.18319559	68	25.70937	68	25.70937	0	0	14	5.8333333	14	5.8333333	0	0
138	23.9669421	5	2.21763085	69	26.18457	69	26.18457	0	0	14	5.9297521	14	5.9297521	0	0
139	24.4214876	6	2.25895317	72	26.68044	72	26.68044	0	0	15	6.0330579	15	6.0330579	0	0
140	24.8829201	6	2.30027548	73	27.1832	73	27.1832	0	0	15	6.1363636	15	6.1363636	0	0
141	25.3581267	6	2.3415978	75	27.69972	75	27.69972	0	0	15	6.2396694	15	6.2396694	0	0
142	25.8402204	6	2.38292011	76	28.22314	76	28.22314	0	0	16	6.3498623	16	6.3498623	0	0
143	26.3360882	6	2.42424242	78	28.76033	78	28.76033	0	0	16	6.4600551	16	6.4600551	0	0
144	26.838843	6	2.46556474	79	29.30441	79	29.30441	0	0	16	6.5702479	16	6.5702479	0	0
145	27.3553719	6	2.50688705	81	29.86226	81	29.86226	0	0	17	6.6873278	17	6.6873278	0	0
146	27.8856749	7	2.55509642	84	30.44077	84	30.44077	0	0	17	6.8044077	17	6.8044077	0	0
147	28.4297521	7	2.60330579	86	31.03306	86	31.03306	0	0	17	6.9214876	17	6.9214876	0	0
148	28.9944904	7	2.65151515	89	31.64601	89	31.64601	0	0	18	7.0454545	18	7.0454545	0	0
149	29.5798898	7	2.69972452	92	32.27961	92	32.27961	0	0	18	7.1694215	18	7.1694215	0	0
150	30.1859504	7	2.74793388	95	32.93388	95	32.93388	0	0	19	7.3002755	19	7.3002755	0	0
151	30.8264463	8	2.8030303	101	33.62948	101	33.62948	0	0	19	7.4311295	19	7.4311295	0	0
152	31.5013774	8	2.85812672	106	34.3595	106	34.3595	0	0	20	7.5688705	20	7.5688705	0	0
153	32.2245179	9	2.92011019	114	35.14463	114	35.14463	0	0	21	7.7134986	21	7.7134986	0	0
154	33.0716253	12	3.00275482	135	36.07438	135	36.07438	0	0	31	7.9269972	31	7.9269972	0	0
155	34.0702479	16	3.11294766	161	37.1832	161	37.1832	0	0	48	8.2575758	48	8.2575758	0	0
156	35.3168044	28	3.30578512	209	38.62259	209	38.62259	0	0	87	8.8567493	87	8.8567493	0	0
157	37.1831956	55	3.684573	326	40.86777	326	40.86777	0	0	167	10.006887	167	10.006887	0	0
158	39.8966942	91	4.31129477	485	44.20799	485	44.20799	0	0	282	11.949036	255	11.763085	27	0.1859504
159	43.9738292	157	5.39256198	749	49.36639	749	49.36639	0	0	487	15.30303	255	13.519284	232	1.7837466
160	50.1239669	239	7.03856749	1132	57.16253	770	54.66942	362	2.493113	763	20.557851	255	15.275482	508	5.2823691

	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ
120	35	14.9656	35	14.965565	0	0		46	19.3732782	0	0	93	38.55371901	
121	36	15.2135	36	15.213499	0	0		47	19.6969697	0	0	95	39.20798898	
122	36	15.4614	36	15.461433	0	0		47	20.0206612	0	0	95	39.86225895	
123	37	15.7163	37	15.716253	0	0		48	20.3512397	0	0	96	40.52341598	
124	37	15.9711	37	15.971074	0	0		48	20.6818182	0	0	97	41.19146006	
125	38	16.2328	38	16.232782	0	0		49	21.0192837	0	0	99	41.87327824	
126	39	16.5014	39	16.501377	0	0		50	21.3636364	0	0	100	42.56198347	
127	39	16.77	39	16.769972	0	0		51	21.714876	0	0	102	43.26446281	
128	40	17.0455	40	17.045455	0	0		52	22.0730028	0	0	104	43.98071625	
129	41	17.3278	41	17.327824	0	0		53	22.4380165	0	0	107	44.71763085	
130	42	17.6171	42	17.61708	0	0		54	22.8099174	0	0	110	45.47520661	
131	43	17.9132	43	17.913223	0	0		55	23.1887052	0	0	113	46.25344353	
132	43	18.2094	43	18.209366	0	0		56	23.5743802	0	0	116	47.0523416	
133	44	18.5124	44	18.512397	0	0		57	23.9669421	0	0	119	47.87190083	
134	45	18.8223	45	18.822314	0	0		58	24.3663912	0	0	121	48.70523416	
135	46	19.1391	46	19.139118	0	0		60	24.7796143	0	0	125	49.5661157	
136	47	19.4628	47	19.46281	0	0		61	25.1997245	0	0	127	50.44077135	
137	48	19.7934	48	19.793388	0	0		62	25.6267218	0	0	130	51.33608815	
138	49	20.1309	49	20.130854	0	0		63	26.0606061	0	0	132	52.24517906	
139	50	20.4752	50	20.475207	0	0		65	26.5082645	0	0	137	53.18870523	
140	51	20.8264	51	20.826446	0	0		66	26.9628099	0	0	139	54.14600551	
141	52	21.1846	52	21.184573	0	0		67	27.4242424	0	0	142	55.12396694	
142	53	21.5496	53	21.549587	0	0		69	27.899449	0	0	145	56.12258953	
143	54	21.9215	54	21.921488	0	0		70	28.3815427	0	0	148	57.14187328	
144	55	22.3003	55	22.300275	0	0		71	28.8705234	0	0	150	58.17493113	
145	56	22.686	56	22.68595	0	0		73	29.3732782	0	0	154	59.23553719	
146	58	23.0854	58	23.085399	0	0		75	29.8898072	0	0	159	60.33057851	
147	59	23.4917	59	23.491736	0	0		76	30.4132231	0	0	162	61.44628099	
148	61	23.9118	61	23.911846	0	0		79	30.9573003	0	0	168	62.60330579	
149	63	24.3457	63	24.34573	0	0		81	31.5151515	0	0	173	63.79476584	
150	66	24.8003	66	24.800275	0	0		85	32.100551	0	0	180	65.03443526	
151	68	25.2686	68	25.268595	0	0		87	32.6997245	0	0	188	66.3292011	
152	71	25.7576	71	25.757576	0	0		91	33.3264463	0	0	197	67.68595041	
153	74	26.2672	74	26.267218	0	0		95	33.9807163	0	0	209	69.12534435	
154	85	26.8526	85	26.852617	0	0		116	34.7796143	0	0	251	70.85399449	
155	105	27.5758	105	27.575758	0	0		153	35.8333333	0	0	314	73.01652893	
156	149	28.6019	149	28.601928	0	0		236	37.4586777	0	0	445	76.08126722	
157	246	30.2961	246	30.296143	0	0		413	40.3030303	0	0	739	81.1707989	
158	432	33.2713	432	33.27135	0	0		687	45.0344353	27	0.18595	1172	89.24242424	
159	757	38.4848	475	36.5427	282	1.9421488		730	50.0619835	514	3.725895	1479	99.42837466	
160	1180	46.6116	475	39.81405	705	6.7975207		730	55.0895317	1213	12.07989	1500	109.7589532	

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
161		147	1	JAN	1210	1431	35.22039	1300	34.318182	131	0.9022039	1399	59.7589532	1530
162		148	1	JAN	1215	1916	48.41598	1300	43.27135	616	5.1446281	2171	74.7107438	2787
163		149	1	JAN	1220	2286	64.15978	1300	52.224518	986	11.935262	3194	96.707989	4180
164		150	1	JAN	1225	2442	80.97796	1300	61.177686	1142	19.800275	4295	126.287879	5437
165		151	1	JAN	1230	2279	96.67355	1300	70.130854	979	26.5427	5246	162.417355	6225
166		152	1	JAN	1235	1986	110.3512	1300	79.084022	686	31.267218	5973	203.553719	6659
167		153	1	JAN	1240	1624	121.5358	1300	88.03719	324	33.498623	6439	247.899449	6763
168		154	1	JAN	1245	1281	130.3581	1281	96.859504	0	33.498623	6512	292.747934	6512
169		155	1	JAN	1250	972	137.0523	972	103.55372	0	33.498623	6175	335.275482	6175
170		156	1	JAN	1255	754	142.2452	754	108.74656	0	33.498623	5492	373.099174	5492
171		157	1	JAN	1300	576	146.2121	576	112.7135	0	33.498623	4708	405.523416	4708
172		158	1	JAN	1305	443	149.2631	443	115.76446	0	33.498623	3950	432.727273	3950
173		159	1	JAN	1310	355	151.708	355	118.20937	0	33.498623	3268	455.23416	3268
174		160	1	JAN	1315	284	153.6639	284	120.16529	0	33.498623	2698	473.815427	2698
175		161	1	JAN	1320	224	155.2066	224	121.70799	0	33.498623	2269	489.442149	2269
176		162	1	JAN	1325	176	156.4187	176	122.92011	0	33.498623	1899	502.520661	1899
177		163	1	JAN	1330	147	157.4311	147	123.93251	0	33.498623	1565	513.298898	1565
178		164	1	JAN	1335	125	158.292	125	124.79339	0	33.498623	1305	522.286501	1305
179		165	1	JAN	1340	106	159.022	106	125.52342	0	33.498623	1110	529.931129	1110
180		166	1	JAN	1345	90	159.6419	90	126.14325	0	33.498623	951	536.480716	951
181		167	1	JAN	1350	77	160.1722	77	126.67355	0	33.498623	823	542.14876	823
182		168	1	JAN	1355	66	160.6267	66	127.1281	0	33.498623	703	546.990358	703
183		169	1	JAN	1400	58	161.0262	58	127.52755	0	33.498623	605	551.157025	605
184		170	1	JAN	1405	51	161.3774	51	127.87879	0	33.498623	518	554.724518	518
185		171	1	JAN	1410	45	161.6873	45	128.18871	0	33.498623	451	557.830579	451
186		172	1	JAN	1415	40	161.9628	40	128.46419	0	33.498623	411	560.661157	411
187		173	1	JAN	1420	37	162.2176	37	128.71901	0	33.498623	374	563.236915	374
188		174	1	JAN	1425	35	162.4587	35	128.96006	0	33.498623	337	565.557851	337
189		175	1	JAN	1430	33	162.686	33	129.18733	0	33.498623	304	567.651515	304
190		176	1	JAN	1435	31	162.8994	31	129.40083	0	33.498623	274	569.538567	274
191		177	1	JAN	1440	29	163.0992	29	129.60055	0	33.498623	239	571.184573	239
192		178	1	JAN	1445	28	163.292	28	129.79339	0	33.498623	208	572.61708	208
193		179	1	JAN	1450	26	163.4711	26	129.97245	0	33.498623	180	573.856749	180
194		180	1	JAN	1455	25	163.6433	25	130.14463	0	33.498623	168	575.013774	168
195		181	1	JAN	1500	24	163.8085	24	130.30992	0	33.498623	156	576.088154	156
196		182	1	JAN	1505	23	163.9669	23	130.46832	0	33.498623	144	577.07989	144
197		183	1	JAN	1510	22	164.1185	22	130.61983	0	33.498623	134	578.002755	134
198		184	1	JAN	1515	21	164.2631	21	130.76446	0	33.498623	125	578.863636	125
199		185	1	JAN	1520	20	164.4008	20	130.9022	0	33.498623	117	579.669421	117
200		186	1	JAN	1525	19	164.5317	19	131.03306	0	33.498623	109	580.42011	109
201		187	1	JAN	1530	18	164.6556	18	131.15702	0	33.498623	102	581.12259	102

	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC
161	60.661157	356	9.49035813	1886	70.15152	770	59.97245	1116	10.17906	1082	28.009642	255	17.03168	827	10.977961
162	79.8553719	483	12.8168044	3270	92.67218	770	65.27548	2500	27.39669	1428	37.844353	255	18.787879	1173	19.056474
163	108.643251	661	17.369146	4841	126.0124	770	70.57851	4071	55.43388	1899	50.922865	255	20.544077	1644	30.378788
164	146.088154	906	23.6088154	6343	169.697	770	75.88154	5573	93.81543	2346	67.07989	255	22.300275	2091	44.779614
165	188.960055	1126	31.3636364	7351	220.3237	770	81.18457	6581	139.1391	2654	85.358127	255	24.056474	2399	61.301653
166	234.820937	1300	40.3168044	7959	275.1377	770	86.4876	7189	188.6501	2720	104.09091	255	25.812672	2465	78.278237
167	281.398072	1409	50.0206612	8172	331.4187	770	91.79063	7402	239.6281	2658	122.39669	255	27.568871	2403	94.827824
168	326.246556	1431	59.8760331	7943	386.1226	770	97.09366	7173	289.0289	2520	139.75207	255	29.325069	2265	110.427
169	368.774105	1379	69.3732782	7554	438.1474	770	102.3967	6784	335.7507	2259	155.30992	255	31.081267	2004	124.22865
170	406.597796	1266	78.0922865	6758	484.6901	770	107.6997	5988	376.9904	1947	168.71901	255	32.837466	1692	135.88154
171	439.022039	1119	85.7988981	5827	524.8209	770	113.0028	5057	411.8182	1627	179.92424	255	34.593664	1372	145.33058
172	466.225895	972	92.4931129	4922	558.719	770	118.3058	4152	440.4132	1361	189.29752	255	36.349862	1106	152.94766
173	488.732782	839	98.2713499	4107	587.0041	770	123.6088	3337	463.3953	1132	197.09366	255	38.106061	877	158.9876
174	507.31405	713	103.181818	3411	610.4959	770	128.9118	2641	481.584	922	203.44353	255	39.862259	667	163.58127
175	522.940771	592	107.258953	2861	630.1997	770	134.2149	2091	495.9848	754	208.63636	255	41.618457	499	167.01791
176	536.019284	482	110.578512	2381	646.5978	770	139.5179	1611	507.0799	629	212.96832	255	43.374656	374	169.59366
177	546.797521	392	113.278237	1957	660.0758	770	144.8209	1187	515.2548	528	216.60468	255	45.130854	273	171.47383
178	555.785124	322	115.495868	1627	671.281	770	150.124	857	521.157	437	219.61433	255	46.887052	182	172.72727
179	563.429752	268	117.341598	1378	680.7713	770	155.427	608	525.3444	366	222.13499	255	48.643251	111	173.49174
180	569.979339	240	118.99449	1191	688.9738	770	160.73	421	528.2438	300	224.2011	255	50.399449	45	173.80165
181	575.647383	212	120.454545	1035	696.1019	770	166.0331	265	530.0689	253	225.94353	253	52.141873	0	173.80165
182	580.488981	186	121.735537	889	702.2245	770	171.3361	119	530.8884	215	227.42424	215	53.62259	0	173.80165
183	584.655647	161	122.844353	766	707.5	766	176.6116	0	530.8884	186	228.70523	186	54.903581	0	173.80165
184	588.22314	141	123.815427	659	712.0386	659	181.1501	0	530.8884	163	229.82782	163	56.026171	0	173.80165
185	591.329201	123	124.662534	574	715.9917	574	185.1033	0	530.8884	141	230.7989	141	56.997245	0	173.80165
186	594.15978	106	125.392562	517	719.5523	517	188.6639	0	530.8884	120	231.62534	120	57.823691	0	173.80165
187	596.735537	91	126.019284	465	722.7548	465	191.8664	0	530.8884	103	232.33471	103	58.533058	0	173.80165
188	599.056474	78	126.556474	415	725.6129	415	194.7245	0	530.8884	88	232.94077	88	59.139118	0	173.80165
189	601.150138	66	127.011019	370	728.1612	370	197.2727	0	530.8884	76	233.46419	76	59.662534	0	173.80165
190	603.03719	56	127.396694	330	730.4339	330	199.5455	0	530.8884	67	233.92562	67	60.123967	0	173.80165
191	604.683196	48	127.727273	287	732.4105	287	201.522	0	530.8884	60	234.33884	60	60.53719	0	173.80165
192	606.115702	41	128.009642	249	734.1253	249	203.2369	0	530.8884	55	234.71763	55	60.915978	0	173.80165
193	607.355372	35	128.250689	215	735.6061	215	204.7176	0	530.8884	52	235.07576	52	61.274105	0	173.80165
194	608.512397	30	128.4573	198	736.9697	198	206.0813	0	530.8884	50	235.42011	50	61.618457	0	173.80165
195	609.586777	26	128.636364	182	738.2231	182	207.3347	0	530.8884	47	235.7438	47	61.942149	0	173.80165
196	610.578512	22	128.787879	166	739.3664	166	208.478	0	530.8884	44	236.04683	44	62.245179	0	173.80165
197	611.501377	19	128.918733	153	740.4201	153	209.5317	0	530.8884	41	236.3292	41	62.527548	0	173.80165
198	612.362259	17	129.035813	142	741.3981	142	210.5096	0	530.8884	38	236.59091	38	62.789256	0	173.80165
199	613.168044	15	129.139118	132	742.3072	132	211.4187	0	530.8884	36	236.83884	36	63.03719	0	173.80165
200	613.918733	13	129.22865	122	743.1474	122	212.259	0	530.8884	34	237.073	34	63.27135	0	173.80165
201	614.621212	12	129.311295	114	743.9325	114	213.0441	0	530.8884	31	237.2865	31	63.484848	0	173.80165

	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ
161	1778	58.8567	475	43.085399	1303	15.77135		730	60.1170799	2130	26.74931	1500	120.0895317	
162	2525	76.2466	475	46.356749	2050	29.889807		730	65.1446281	3223	48.94628	1500	130.4201102	
163	3368	99.4421	475	49.628099	2893	49.81405		730	70.1721763	4537	80.19284	1500	140.7506887	
164	4182	128.244	475	52.899449	3707	75.344353		730	75.1997245	5798	120.124	1500	151.0812672	
165	4724	160.778	475	56.170799	4249	104.60744		730	80.2272727	6648	165.9091	1500	161.4118457	
166	5016	195.324	475	59.442149	4541	135.88154		730	85.2548209	7006	214.1598	1500	171.7424242	
167	4871	228.871	475	62.713499	4396	166.15702		730	90.2823691	6799	260.9848	1500	182.0730028	
168	4440	259.449	475	65.984848	3965	193.46419		730	95.3099174	6230	303.8912	1500	192.4035813	
169	3909	286.371	475	69.256198	3434	217.11433		730	100.337466	5438	341.343	1500	202.7341598	
170	3321	309.242	475	72.527548	2846	236.71488		730	105.365014	4538	372.5964	1500	213.0647383	
171	2773	328.34	475	75.798898	2298	252.54132		730	110.392562	3670	397.8719	1500	223.3953168	
172	2320	344.318	475	79.070248	1845	265.24793		730	115.42011	2951	418.1956	1500	233.7258953	
173	1925	357.576	475	82.341598	1450	275.23416		730	120.447658	2327	434.2218	1500	244.0564738	
174	1626	368.774	475	85.612948	1151	283.16116		730	125.475207	1818	446.7424	1500	254.3870523	
175	1392	378.361	475	88.884298	917	289.47658		730	130.502755	1416	456.4945	1500	264.7176309	
176	1184	386.515	475	92.155647	709	294.3595		730	135.530303	1083	463.9532	1500	275.0482094	
177	1005	393.437	475	95.426997	530	298.00964		730	140.557851	803	469.4835	1500	285.3787879	
178	862	399.373	475	98.698347	387	300.67493		730	145.585399	569	473.4022	1500	295.7093664	
179	738	404.456	475	101.9697	263	302.48623		730	150.612948	374	475.978	1500	306.0399449	
180	628	408.781	475	105.24105	153	303.53994		730	155.640496	198	477.3416	1500	316.3705234	
181	542	412.514	475	108.5124	67	304.00138		728	160.65427	67	477.803	1498	326.6873278	
182	471	415.758	471	111.7562	0	304.00138		686	165.378788	0	477.803	1456	336.714876	
183	416	418.623	416	114.62121	0	304.00138		602	169.524793	0	477.803	1368	346.1363636	
184	373	421.191	373	117.19008	0	304.00138		536	173.216253	0	477.803	1195	354.3663912	
185	328	423.45	328	119.44904	0	304.00138		469	176.446281	0	477.803	1043	361.5495868	
186	288	425.434	288	121.43251	0	304.00138		408	179.256198	0	477.803	925	367.9201102	
187	251	427.163	251	123.16116	0	304.00138		354	181.694215	0	477.803	819	373.5606061	
188	224	428.705	224	124.70386	0	304.00138		312	183.842975	0	477.803	727	378.5674931	
189	202	430.096	202	126.09504	0	304.00138		278	185.757576	0	477.803	648	383.030303	
190	182	431.35	182	127.34848	0	304.00138		249	187.472452	0	477.803	579	387.0179063	
191	165	432.486	165	128.48485	0	304.00138		225	189.022039	0	477.803	512	390.5440771	
192	151	433.526	151	129.52479	0	304.00138		206	190.440771	0	477.803	455	393.677686	
193	139	434.483	139	130.48209	0	304.00138		191	191.756198	0	477.803	406	396.4738292	
194	130	435.379	130	131.37741	0	304.00138		180	192.995868	0	477.803	378	399.077135	
195	121	436.212	121	132.21074	0	304.00138		168	194.152893	0	477.803	350	401.4876033	
196	116	437.011	116	133.00964	0	304.00138		160	195.254821	0	477.803	326	403.7327824	
197	112	437.782	112	133.78099	0	304.00138		153	196.30854	0	477.803	306	405.8402204	
198	108	438.526	108	134.52479	0	304.00138		146	197.31405	0	477.803	288	407.8236915	
199	103	439.236	103	135.23416	0	304.00138		139	198.27135	0	477.803	271	409.6900826	
200	99	439.917	99	135.91598	0	304.00138		133	199.187328	0	477.803	255	411.446281	
201	95	440.572	95	136.57025	0	304.00138		126	200.055096	0	477.803	240	413.0991736	

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
202		188	1	JAN	1535	18	164.7796	18	131.28099	0	33.498623	96	581.783747	96
203		189	1	JAN	1540	17	164.8967	17	131.39807	0	33.498623	90	582.403581	90
204		190	1	JAN	1545	17	165.0138	17	131.51515	0	33.498623	86	582.995868	86
205		191	1	JAN	1550	16	165.124	16	131.62534	0	33.498623	82	583.560606	82
206		192	1	JAN	1555	16	165.2342	16	131.73554	0	33.498623	78	584.097796	78
207		193	1	JAN	1600	15	165.3375	15	131.83884	0	33.498623	75	584.614325	75
208		194	1	JAN	1605	15	165.4408	15	131.94215	0	33.498623	72	585.110193	72
209		195	1	JAN	1610	15	165.5441	15	132.04545	0	33.498623	70	585.592287	70
210		196	1	JAN	1615	14	165.6405	14	132.14187	0	33.498623	67	586.053719	67
211		197	1	JAN	1620	14	165.7369	14	132.23829	0	33.498623	65	586.501377	65
212		198	1	JAN	1625	14	165.8333	14	132.33471	0	33.498623	64	586.942149	64
213		199	1	JAN	1630	14	165.9298	14	132.43113	0	33.498623	62	587.369146	62
214		200	1	JAN	1635	13	166.0193	13	132.52066	0	33.498623	61	587.789256	61
215		201	1	JAN	1640	13	166.1088	13	132.61019	0	33.498623	60	588.202479	60
216		202	1	JAN	1645	13	166.1983	13	132.69972	0	33.498623	59	588.608815	59
217		203	1	JAN	1650	13	166.2879	13	132.78926	0	33.498623	58	589.008264	58
218		204	1	JAN	1655	13	166.3774	13	132.87879	0	33.498623	57	589.400826	57
219		205	1	JAN	1700	13	166.4669	13	132.96832	0	33.498623	56	589.786501	56
220		206	1	JAN	1705	13	166.5565	13	133.05785	0	33.498623	55	590.165289	55
221		207	1	JAN	1710	12	166.6391	12	133.1405	0	33.498623	55	590.544077	55
222		208	1	JAN	1715	12	166.7218	12	133.22314	0	33.498623	54	590.915978	54
223		209	1	JAN	1720	12	166.8044	12	133.30579	0	33.498623	53	591.280992	53
224		210	1	JAN	1725	12	166.8871	12	133.38843	0	33.498623	53	591.646006	53
225		211	1	JAN	1730	12	166.9697	12	133.47107	0	33.498623	52	592.004132	52
226		212	1	JAN	1735	11	167.0455	11	133.54683	0	33.498623	51	592.355372	51
227		213	1	JAN	1740	11	167.1212	11	133.62259	0	33.498623	51	592.706612	51
228		214	1	JAN	1745	11	167.197	11	133.69835	0	33.498623	50	593.050964	50
229		215	1	JAN	1750	11	167.2727	11	133.7741	0	33.498623	50	593.395317	50
230		216	1	JAN	1755	11	167.3485	11	133.84986	0	33.498623	49	593.732782	49
231		217	1	JAN	1800	11	167.4242	11	133.92562	0	33.498623	49	594.070248	49
232		218	1	JAN	1805	11	167.5	11	134.00138	0	33.498623	49	594.407713	49
233		219	1	JAN	1810	11	167.5758	11	134.07713	0	33.498623	48	594.738292	48
234		220	1	JAN	1815	11	167.6515	11	134.15289	0	33.498623	48	595.068871	48
235		221	1	JAN	1820	10	167.7204	10	134.22176	0	33.498623	48	595.399449	48
236		222	1	JAN	1825	10	167.7893	10	134.29063	0	33.498623	48	595.730028	48
237		223	1	JAN	1830	10	167.8581	10	134.3595	0	33.498623	47	596.053719	47
238		224	1	JAN	1835	10	167.927	10	134.42837	0	33.498623	47	596.37741	47
239		225	1	JAN	1840	10	167.9959	10	134.49725	0	33.498623	46	596.694215	46
240		226	1	JAN	1845	10	168.0647	10	134.56612	0	33.498623	46	597.011019	46
241		227	1	JAN	1850	9	168.1267	9	134.6281	0	33.498623	46	597.327824	46
242		228	1	JAN	1855	9	168.1887	9	134.69008	0	33.498623	45	597.637741	45

	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC
202	615.282369	10	129.380165	106	744.6625	106	213.7741	0	530.8884	29	237.48623	29	63.684573	0	173.80165
203	615.902204	10	129.449036	100	745.3512	100	214.4628	0	530.8884	28	237.67906	28	63.87741	0	173.80165
204	616.49449	9	129.511019	95	746.0055	95	215.1171	0	530.8884	26	237.85813	26	64.056474	0	173.80165
205	617.059229	8	129.566116	90	746.6253	90	215.7369	0	530.8884	24	238.02342	24	64.221763	0	173.80165
206	617.596419	8	129.621212	86	747.2176	86	216.3292	0	530.8884	23	238.18182	23	64.380165	0	173.80165
207	618.112948	7	129.669421	82	747.7824	82	216.8939	0	530.8884	22	238.33333	22	64.53168	0	173.80165
208	618.608815	7	129.717631	79	748.3264	79	217.438	0	530.8884	21	238.47796	21	64.676309	0	173.80165
209	619.090909	6	129.758953	76	748.8499	76	217.9614	0	530.8884	20	238.6157	20	64.81405	0	173.80165
210	619.552342	6	129.800275	73	749.3526	73	218.4642	0	530.8884	19	238.74656	19	64.944904	0	173.80165
211	620	6	129.841598	71	749.8416	71	218.9532	0	530.8884	18	238.87052	18	65.068871	0	173.80165
212	620.440771	6	129.88292	70	750.3237	70	219.4353	0	530.8884	18	238.99449	18	65.192837	0	173.80165
213	620.867769	5	129.917355	67	750.7851	67	219.8967	0	530.8884	17	239.11157	17	65.309917	0	173.80165
214	621.287879	5	129.951791	66	751.2397	66	220.3512	0	530.8884	16	239.22176	16	65.42011	0	173.80165
215	621.701102	5	129.986226	65	751.6873	65	220.7989	0	530.8884	16	239.33196	16	65.530303	0	173.80165
216	622.107438	5	130.020661	64	752.1281	64	221.2397	0	530.8884	16	239.44215	16	65.640496	0	173.80165
217	622.506887	5	130.055096	63	752.562	63	221.6736	0	530.8884	15	239.54545	15	65.743802	0	173.80165
218	622.899449	5	130.089532	62	752.989	62	222.1006	0	530.8884	15	239.64876	15	65.847107	0	173.80165
219	623.285124	5	130.123967	61	753.4091	61	222.5207	0	530.8884	15	239.75207	15	65.950413	0	173.80165
220	623.663912	5	130.158402	60	753.8223	60	222.9339	0	530.8884	14	239.84848	14	66.046832	0	173.80165
221	624.0427	5	130.192837	60	754.2355	60	223.3471	0	530.8884	14	239.9449	14	66.143251	0	173.80165
222	624.414601	5	130.227273	59	754.6419	59	223.7534	0	530.8884	14	240.04132	14	66.239669	0	173.80165
223	624.779614	4	130.254821	57	755.0344	57	224.146	0	530.8884	14	240.13774	14	66.336088	0	173.80165
224	625.144628	4	130.282369	57	755.427	57	224.5386	0	530.8884	13	240.22727	13	66.42562	0	173.80165
225	625.502755	4	130.309917	56	755.8127	56	224.9242	0	530.8884	13	240.3168	13	66.515152	0	173.80165
226	625.853994	4	130.337466	55	756.1915	55	225.303	0	530.8884	13	240.40634	13	66.604683	0	173.80165
227	626.205234	4	130.365014	55	756.5702	55	225.6818	0	530.8884	13	240.49587	13	66.694215	0	173.80165
228	626.549587	4	130.392562	54	756.9421	54	226.0537	0	530.8884	13	240.5854	13	66.783747	0	173.80165
229	626.893939	4	130.42011	54	757.314	54	226.4256	0	530.8884	12	240.66804	12	66.866391	0	173.80165
230	627.231405	4	130.447658	53	757.6791	53	226.7906	0	530.8884	12	240.75069	12	66.949036	0	173.80165
231	627.568871	4	130.475207	53	758.0441	53	227.1556	0	530.8884	12	240.83333	12	67.03168	0	173.80165
232	627.906336	4	130.502755	53	758.4091	53	227.5207	0	530.8884	12	240.91598	12	67.114325	0	173.80165
233	628.236915	4	130.530303	52	758.7672	52	227.8788	0	530.8884	12	240.99862	12	67.19697	0	173.80165
234	628.567493	4	130.557851	52	759.1253	52	228.2369	0	530.8884	12	241.08127	12	67.279614	0	173.80165
235	628.898072	4	130.585399	52	759.4835	52	228.595	0	530.8884	12	241.16391	12	67.362259	0	173.80165
236	629.22865	4	130.612948	52	759.8416	52	228.9532	0	530.8884	11	241.23967	11	67.438017	0	173.80165
237	629.552342	4	130.640496	51	760.1928	51	229.3044	0	530.8884	11	241.31543	11	67.513774	0	173.80165
238	629.876033	4	130.668044	51	760.5441	51	229.6556	0	530.8884	11	241.39118	11	67.589532	0	173.80165
239	630.192837	4	130.695592	50	760.8884	50	230	0	530.8884	11	241.46694	11	67.665289	0	173.80165
240	630.509642	4	130.72314	50	761.2328	50	230.3444	0	530.8884	11	241.5427	11	67.741047	0	173.80165
241	630.826446	4	130.750689	50	761.5771	50	230.6887	0	530.8884	11	241.61846	11	67.816804	0	173.80165
242	631.136364	3	130.77135	48	761.9077	48	231.0193	0	530.8884	11	241.69421	11	67.892562	0	173.80165

	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ
202	91	441.198	91	137.19697	0	304.00138		120	200.881543	0	477.803	226	414.6556474	
203	88	441.804	88	137.80303	0	304.00138		116	201.680441	0	477.803	216	416.1432507	
204	84	442.383	84	138.38154	0	304.00138		110	202.438017	0	477.803	205	417.5550964	
205	81	442.941	81	138.93939	0	304.00138		105	203.161157	0	477.803	195	418.8980716	
206	77	443.471	77	139.4697	0	304.00138		100	203.849862	0	477.803	186	420.1790634	
207	74	443.981	74	139.97934	0	304.00138		96	204.511019	0	477.803	178	421.4049587	
208	71	444.47	71	140.46832	0	304.00138		92	205.144628	0	477.803	171	422.5826446	
209	69	444.945	69	140.94353	0	304.00138		89	205.757576	0	477.803	165	423.7190083	
210	66	445.399	66	141.39807	0	304.00138		85	206.342975	0	477.803	158	424.8071625	
211	64	445.84	64	141.83884	0	304.00138		82	206.907713	0	477.803	153	425.8608815	
212	62	446.267	62	142.26584	0	304.00138		80	207.458678	0	477.803	150	426.8939394	
213	60	446.68	60	142.67906	0	304.00138		77	207.988981	0	477.803	144	427.8856749	
214	58	447.08	58	143.07851	0	304.00138		74	208.498623	0	477.803	140	428.8498623	
215	56	447.466	56	143.46419	0	304.00138		72	208.99449	0	477.803	137	429.7933884	
216	55	447.844	55	143.84298	0	304.00138		71	209.483471	0	477.803	135	430.7231405	
217	53	448.209	53	144.20799	0	304.00138		68	209.951791	0	477.803	131	431.6253444	
218	52	448.567	52	144.56612	0	304.00138		67	210.413223	0	477.803	129	432.5137741	
219	51	448.919	51	144.91736	0	304.00138		66	210.867769	0	477.803	127	433.3884298	
220	50	449.263	50	145.26171	0	304.00138		64	211.30854	0	477.803	124	434.2424242	
221	49	449.601	49	145.59917	0	304.00138		63	211.742424	0	477.803	123	435.0895317	
222	48	449.931	48	145.92975	0	304.00138		62	212.169421	0	477.803	121	435.922865	
223	47	450.255	47	146.25344	0	304.00138		61	212.589532	0	477.803	118	436.7355372	
224	46	450.572	46	146.57025	0	304.00138		59	212.995868	0	477.803	116	437.5344353	
225	45	450.882	45	146.88017	0	304.00138		58	213.395317	0	477.803	114	438.3195592	
226	44	451.185	44	147.1832	0	304.00138		57	213.787879	0	477.803	112	439.0909091	
227	44	451.488	44	147.48623	0	304.00138		57	214.180441	0	477.803	112	439.862259	
228	43	451.784	43	147.78237	0	304.00138		56	214.566116	0	477.803	110	440.6198347	
229	42	452.073	42	148.07163	0	304.00138		54	214.938017	0	477.803	108	441.3636364	
230	42	452.362	42	148.36088	0	304.00138		54	215.309917	0	477.803	107	442.100551	
231	41	452.645	41	148.64325	0	304.00138		53	215.674931	0	477.803	106	442.8305785	
232	40	452.92	40	148.91873	0	304.00138		52	216.033058	0	477.803	105	443.553719	
233	40	453.196	40	149.19421	0	304.00138		52	216.391185	0	477.803	104	444.2699725	
234	39	453.464	39	149.46281	0	304.00138		51	216.742424	0	477.803	103	444.9793388	
235	39	453.733	39	149.7314	0	304.00138		51	217.093664	0	477.803	103	445.6887052	
236	38	453.994	38	149.99311	0	304.00138		49	217.431129	0	477.803	101	446.3842975	
237	38	454.256	38	150.25482	0	304.00138		49	217.768595	0	477.803	100	447.0730028	
238	37	454.511	37	150.50964	0	304.00138		48	218.099174	0	477.803	99	447.7548209	
239	37	454.766	37	150.76446	0	304.00138		48	218.429752	0	477.803	98	448.4297521	
240	36	455.014	36	151.0124	0	304.00138		47	218.753444	0	477.803	97	449.0977961	
241	36	455.262	36	151.26033	0	304.00138		47	219.077135	0	477.803	97	449.7658402	
242	35	455.503	35	151.50138	0	304.00138		46	219.393939	0	477.803	94	450.4132231	

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
243		229	1	JAN	1900	9	168.2507	9	134.75207	0	33.498623	45	597.947658	45
244		230	1	JAN	1905	9	168.3127	9	134.81405	0	33.498623	44	598.250689	44
245		231	1	JAN	1910	9	168.3747	9	134.87603	0	33.498623	44	598.553719	44
246		232	1	JAN	1915	9	168.4366	9	134.93802	0	33.498623	43	598.849862	43
247		233	1	JAN	1920	9	168.4986	9	135	0	33.498623	43	599.146006	43
248		234	1	JAN	1925	9	168.5606	9	135.06198	0	33.498623	42	599.435262	42
249		235	1	JAN	1930	9	168.6226	9	135.12397	0	33.498623	42	599.724518	42
250		236	1	JAN	1935	9	168.6846	9	135.18595	0	33.498623	41	600.006887	41
251		237	1	JAN	1940	9	168.7466	9	135.24793	0	33.498623	41	600.289256	41
252		238	1	JAN	1945	8	168.8017	8	135.30303	0	33.498623	40	600.564738	40
253		239	1	JAN	1950	8	168.8567	8	135.35813	0	33.498623	40	600.84022	40
254		240	1	JAN	1955	8	168.9118	8	135.41322	0	33.498623	40	601.115702	40
255		241	1	JAN	2000	8	168.9669	8	135.46832	0	33.498623	39	601.384298	39
256		242	1	JAN	2005	8	169.022	8	135.52342	0	33.498623	39	601.652893	39
257		243	1	JAN	2010	8	169.0771	8	135.57851	0	33.498623	38	601.914601	38
258		244	1	JAN	2015	8	169.1322	8	135.63361	0	33.498623	38	602.176309	38
259		245	1	JAN	2020	8	169.1873	8	135.68871	0	33.498623	38	602.438017	38
260		246	1	JAN	2025	8	169.2424	8	135.7438	0	33.498623	37	602.692837	37
261		247	1	JAN	2030	8	169.2975	8	135.7989	0	33.498623	37	602.947658	37
262		248	1	JAN	2035	8	169.3526	8	135.85399	0	33.498623	37	603.202479	37
263		249	1	JAN	2040	8	169.4077	8	135.90909	0	33.498623	36	603.450413	36
264		250	1	JAN	2045	7	169.4559	7	135.9573	0	33.498623	36	603.698347	36
265		251	1	JAN	2050	7	169.5041	7	136.00551	0	33.498623	36	603.946281	36
266		252	1	JAN	2055	7	169.5523	7	136.05372	0	33.498623	35	604.187328	35
267		253	1	JAN	2100	7	169.6006	7	136.10193	0	33.498623	35	604.428375	35
268		254	1	JAN	2105	7	169.6488	7	136.15014	0	33.498623	34	604.662534	34
269		255	1	JAN	2110	7	169.697	7	136.19835	0	33.498623	34	604.896694	34
270		256	1	JAN	2115	7	169.7452	7	136.24656	0	33.498623	33	605.123967	33
271		257	1	JAN	2120	7	169.7934	7	136.29477	0	33.498623	33	605.35124	33
272		258	1	JAN	2125	7	169.8416	7	136.34298	0	33.498623	33	605.578512	33
273		259	1	JAN	2130	7	169.8898	7	136.39118	0	33.498623	32	605.798898	32
274		260	1	JAN	2135	6	169.9311	6	136.43251	0	33.498623	32	606.019284	32
275		261	1	JAN	2140	6	169.9725	6	136.47383	0	33.498623	31	606.232782	31
276		262	1	JAN	2145	6	170.0138	6	136.51515	0	33.498623	31	606.446281	31
277		263	1	JAN	2150	6	170.0551	6	136.55647	0	33.498623	31	606.65978	31
278		264	1	JAN	2155	6	170.0964	6	136.5978	0	33.498623	30	606.866391	30
279		265	1	JAN	2200	6	170.1377	6	136.63912	0	33.498623	30	607.073003	30
280		266	1	JAN	2205	6	170.1791	6	136.68044	0	33.498623	30	607.279614	30
281		267	1	JAN	2210	6	170.2204	6	136.72176	0	33.498623	29	607.479339	29
282		268	1	JAN	2215	6	170.2617	6	136.76309	0	33.498623	29	607.679063	29
283		269	1	JAN	2220	6	170.303	6	136.80441	0	33.498623	29	607.878788	29

	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC
243	631.446281	3	130.792011	48	762.2383	48	231.3499	0	530.8884	10	241.76309	10	67.961433	0	173.80165
244	631.749311	3	130.812672	47	762.562	47	231.6736	0	530.8884	10	241.83196	10	68.030303	0	173.80165
245	632.052342	3	130.833333	47	762.8857	47	231.9972	0	530.8884	10	241.90083	10	68.099174	0	173.80165
246	632.348485	3	130.853994	46	763.2025	46	232.314	0	530.8884	10	241.9697	10	68.168044	0	173.80165
247	632.644628	3	130.874656	46	763.5193	46	232.6309	0	530.8884	10	242.03857	10	68.236915	0	173.80165
248	632.933884	3	130.895317	45	763.8292	45	232.9408	0	530.8884	10	242.10744	10	68.305785	0	173.80165
249	633.22314	3	130.915978	45	764.1391	45	233.2507	0	530.8884	10	242.17631	10	68.374656	0	173.80165
250	633.50551	3	130.936639	44	764.4421	44	233.5537	0	530.8884	9	242.23829	9	68.436639	0	173.80165
251	633.787879	3	130.9573	44	764.7452	44	233.8567	0	530.8884	9	242.30028	9	68.498623	0	173.80165
252	634.063361	3	130.977961	43	765.0413	43	234.1529	0	530.8884	9	242.36226	9	68.560606	0	173.80165
253	634.338843	3	130.998623	43	765.3375	43	234.449	0	530.8884	9	242.42424	9	68.62259	0	173.80165
254	634.614325	3	131.019284	43	765.6336	43	234.7452	0	530.8884	9	242.48623	9	68.684573	0	173.80165
255	634.88292	3	131.039945	42	765.9229	42	235.0344	0	530.8884	9	242.54821	9	68.746556	0	173.80165
256	635.151515	3	131.060606	42	766.2121	42	235.3237	0	530.8884	9	242.61019	9	68.80854	0	173.80165
257	635.413223	3	131.081267	41	766.4945	41	235.6061	0	530.8884	9	242.67218	9	68.870523	0	173.80165
258	635.674931	3	131.101928	41	766.7769	41	235.8884	0	530.8884	9	242.73416	9	68.932507	0	173.80165
259	635.936639	3	131.12259	41	767.0592	41	236.1708	0	530.8884	9	242.79614	9	68.99449	0	173.80165
260	636.19146	3	131.143251	40	767.3347	40	236.4463	0	530.8884	9	242.85813	9	69.056474	0	173.80165
261	636.446281	3	131.163912	40	767.6102	40	236.7218	0	530.8884	9	242.92011	9	69.118457	0	173.80165
262	636.701102	3	131.184573	40	767.8857	40	236.9972	0	530.8884	9	242.98209	9	69.180441	0	173.80165
263	636.949036	3	131.205234	39	768.1543	39	237.2658	0	530.8884	8	243.03719	8	69.235537	0	173.80165
264	637.19697	3	131.225895	39	768.4229	39	237.5344	0	530.8884	8	243.09229	8	69.290634	0	173.80165
265	637.444904	3	131.246556	39	768.6915	39	237.803	0	530.8884	8	243.14738	8	69.34573	0	173.80165
266	637.68595	3	131.267218	38	768.9532	38	238.0647	0	530.8884	8	243.20248	8	69.400826	0	173.80165
267	637.926997	3	131.287879	38	769.2149	38	238.3264	0	530.8884	8	243.25758	8	69.455923	0	173.80165
268	638.161157	3	131.30854	37	769.4697	37	238.5813	0	530.8884	8	243.31267	8	69.511019	0	173.80165
269	638.395317	3	131.329201	37	769.7245	37	238.8361	0	530.8884	8	243.36777	8	69.566116	0	173.80165
270	638.62259	2	131.342975	35	769.9656	35	239.0771	0	530.8884	8	243.42287	8	69.621212	0	173.80165
271	638.849862	2	131.356749	35	770.2066	35	239.3182	0	530.8884	8	243.47796	8	69.676309	0	173.80165
272	639.077135	2	131.370523	35	770.4477	35	239.5592	0	530.8884	7	243.52617	7	69.724518	0	173.80165
273	639.297521	2	131.384298	34	770.6818	34	239.7934	0	530.8884	7	243.57438	7	69.772727	0	173.80165
274	639.517906	2	131.398072	34	770.916	34	240.0275	0	530.8884	7	243.62259	7	69.820937	0	173.80165
275	639.731405	2	131.411846	33	771.1433	33	240.2548	0	530.8884	7	243.6708	7	69.869146	0	173.80165
276	639.944904	2	131.42562	33	771.3705	33	240.4821	0	530.8884	7	243.71901	7	69.917355	0	173.80165
277	640.158402	2	131.439394	33	771.5978	33	240.7094	0	530.8884	7	243.76722	7	69.965565	0	173.80165
278	640.365014	2	131.453168	32	771.8182	32	240.9298	0	530.8884	7	243.81543	7	70.013774	0	173.80165
279	640.571625	2	131.466942	32	772.0386	32	241.1501	0	530.8884	7	243.86364	7	70.061983	0	173.80165
280	640.778237	2	131.480716	32	772.259	32	241.3705	0	530.8884	7	243.91185	7	70.110193	0	173.80165
281	640.977961	2	131.49449	31	772.4725	31	241.584	0	530.8884	7	243.96006	7	70.158402	0	173.80165
282	641.177686	2	131.508264	31	772.686	31	241.7975	0	530.8884	7	244.00826	7	70.206612	0	173.80165
283	641.37741	2	131.522039	31	772.8994	31	242.011	0	530.8884	7	244.05647	7	70.254821	0	173.80165

	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ
243	35	455.744	35	151.74242	0	304.00138		45	219.703857	0	477.803	93	451.053719	
244	34	455.978	34	151.97658	0	304.00138		44	220.006887	0	477.803	91	451.6804408	
245	34	456.212	34	152.21074	0	304.00138		44	220.309917	0	477.803	91	452.3071625	
246	33	456.439	33	152.43802	0	304.00138		43	220.606061	0	477.803	89	452.9201102	
247	33	456.667	33	152.66529	0	304.00138		43	220.902204	0	477.803	89	453.5330579	
248	32	456.887	32	152.88567	0	304.00138		42	221.19146	0	477.803	87	454.1322314	
249	32	457.107	32	153.10606	0	304.00138		42	221.480716	0	477.803	87	454.731405	
250	32	457.328	32	153.32645	0	304.00138		41	221.763085	0	477.803	85	455.3168044	
251	31	457.541	31	153.53994	0	304.00138		40	222.038567	0	477.803	84	455.8953168	
252	31	457.755	31	153.75344	0	304.00138		40	222.31405	0	477.803	83	456.4669421	
253	31	457.968	31	153.96694	0	304.00138		40	222.589532	0	477.803	83	457.0385675	
254	30	458.175	30	154.17355	0	304.00138		39	222.858127	0	477.803	82	457.6033058	
255	30	458.382	30	154.38017	0	304.00138		39	223.126722	0	477.803	81	458.161157	
256	30	458.588	30	154.58678	0	304.00138		39	223.395317	0	477.803	81	458.7190083	
257	30	458.795	30	154.79339	0	304.00138		39	223.663912	0	477.803	80	459.2699725	
258	29	458.994	29	154.99311	0	304.00138		38	223.92562	0	477.803	79	459.8140496	
259	29	459.194	29	155.19284	0	304.00138		38	224.187328	0	477.803	79	460.3581267	
260	29	459.394	29	155.39256	0	304.00138		38	224.449036	0	477.803	78	460.8953168	
261	29	459.594	29	155.59229	0	304.00138		38	224.710744	0	477.803	78	461.4325069	
262	28	459.787	28	155.78512	0	304.00138		37	224.965565	0	477.803	77	461.9628099	
263	28	459.979	28	155.97796	0	304.00138		36	225.213499	0	477.803	75	462.4793388	
264	28	460.172	28	156.1708	0	304.00138		36	225.461433	0	477.803	75	462.9958678	
265	27	460.358	27	156.35675	0	304.00138		35	225.702479	0	477.803	74	463.5055096	
266	27	460.544	27	156.5427	0	304.00138		35	225.943526	0	477.803	73	464.0082645	
267	26	460.723	26	156.72176	0	304.00138		34	226.177686	0	477.803	72	464.5041322	
268	26	460.902	26	156.90083	0	304.00138		34	226.411846	0	477.803	71	464.9931129	
269	26	461.081	26	157.07989	0	304.00138		34	226.646006	0	477.803	71	465.4820937	
270	25	461.253	25	157.25207	0	304.00138		33	226.873278	0	477.803	68	465.9504132	
271	25	461.426	25	157.42424	0	304.00138		33	227.100551	0	477.803	68	466.4187328	
272	25	461.598	25	157.59642	0	304.00138		32	227.320937	0	477.803	67	466.8801653	
273	24	461.763	24	157.76171	0	304.00138		31	227.534435	0	477.803	65	467.3278237	
274	24	461.928	24	157.927	0	304.00138		31	227.747934	0	477.803	65	467.7754821	
275	24	462.094	24	158.09229	0	304.00138		31	227.961433	0	477.803	64	468.2162534	
276	23	462.252	23	158.25069	0	304.00138		30	228.168044	0	477.803	63	468.6501377	
277	23	462.41	23	158.40909	0	304.00138		30	228.374656	0	477.803	63	469.084022	
278	23	462.569	23	158.56749	0	304.00138		30	228.581267	0	477.803	62	469.5110193	
279	23	462.727	23	158.7259	0	304.00138		30	228.787879	0	477.803	62	469.9380165	
280	23	462.886	23	158.8843	0	304.00138		30	228.99449	0	477.803	62	470.3650138	
281	23	463.044	23	159.0427	0	304.00138		30	229.201102	0	477.803	61	470.785124	
282	22	463.196	22	159.19421	0	304.00138		29	229.400826	0	477.803	60	471.1983471	
283	22	463.347	22	159.34573	0	304.00138		29	229.600551	0	477.803	60	471.6115702	

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
284		270	1	JAN	2225	6	170.3444	6	136.84573	0	33.498623	29	608.078512	29
285		271	1	JAN	2230	6	170.3857	6	136.88705	0	33.498623	28	608.27135	28
286		272	1	JAN	2235	6	170.427	6	136.92837	0	33.498623	28	608.464187	28
287		273	1	JAN	2240	6	170.4683	6	136.9697	0	33.498623	28	608.657025	28
288		274	1	JAN	2245	6	170.5096	6	137.01102	0	33.498623	28	608.849862	28
289		275	1	JAN	2250	6	170.551	6	137.05234	0	33.498623	28	609.0427	28
290		276	1	JAN	2255	6	170.5923	6	137.09366	0	33.498623	28	609.235537	28
291		277	1	JAN	2300	6	170.6336	6	137.13499	0	33.498623	27	609.421488	27
292		278	1	JAN	2305	6	170.6749	6	137.17631	0	33.498623	27	609.607438	27
293		279	1	JAN	2310	6	170.7163	6	137.21763	0	33.498623	27	609.793388	27
294		280	1	JAN	2315	6	170.7576	6	137.25895	0	33.498623	27	609.979339	27
295		281	1	JAN	2320	6	170.7989	6	137.30028	0	33.498623	27	610.165289	27
296		282	1	JAN	2325	6	170.8402	6	137.3416	0	33.498623	27	610.35124	27
297		283	1	JAN	2330	6	170.8815	6	137.38292	0	33.498623	27	610.53719	27
298		284	1	JAN	2335	6	170.9229	6	137.42424	0	33.498623	27	610.72314	27
299		285	1	JAN	2340	6	170.9642	6	137.46556	0	33.498623	27	610.909091	27
300		286	1	JAN	2345	6	171.0055	6	137.50689	0	33.498623	27	611.095041	27
301		287	1	JAN	2350	6	171.0468	6	137.54821	0	33.498623	27	611.280992	27
302		288	1	JAN	2355	6	171.0882	6	137.58953	0	33.498623	27	611.466942	27
303		289	2	JAN	0	6	171.1295	6	137.63085	0	33.498623	27	611.652893	27
304		290	2	JAN	5	6	171.1708	6	137.67218	0	33.498623	27	611.838843	27
305		291	2	JAN	10	6	171.2121	6	137.7135	0	33.498623	27	612.024793	27
306		292	2	JAN	15	6	171.2534	6	137.75482	0	33.498623	27	612.210744	27
307		293	2	JAN	20	6	171.2948	6	137.79614	0	33.498623	26	612.389807	26
308		294	2	JAN	25	6	171.3361	6	137.83747	0	33.498623	26	612.568871	26
309		295	2	JAN	30	5	171.3705	5	137.8719	0	33.498623	26	612.747934	26
310		296	2	JAN	35	5	171.405	5	137.90634	0	33.498623	26	612.926997	26
311		297	2	JAN	40	5	171.4394	5	137.94077	0	33.498623	25	613.099174	25
312		298	2	JAN	45	4	171.4669	4	137.96832	0	33.498623	25	613.27135	25
313		299	2	JAN	50	4	171.4945	4	137.99587	0	33.498623	25	613.443526	25
314		300	2	JAN	55	3	171.5152	3	138.01653	0	33.498623	24	613.608815	24
315						3	171.5358	3	138.03719	0	33.498623	23	613.767218	23
316						3	171.5565	3	138.05785	0	33.498623	22	613.918733	22
317						2	171.5702	2	138.07163	0	33.498623	22	614.070248	22
318						2	171.584	2	138.0854	0	33.498623	21	614.214876	21
319						2	171.5978	2	138.09917	0	33.498623	20	614.352617	20
320						1	171.6047	1	138.10606	0	33.498623	19	614.483471	19
321						1	171.6116	1	138.11295	0	33.498623	18	614.607438	18
322						1	171.6185	1	138.11983	0	33.498623	17	614.724518	17
323						1	171.6253	1	138.12672	0	33.498623	16	614.834711	16
324						1	171.6322	1	138.13361	0	33.498623	15	614.938017	15

	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC
284	641.577135	2	131.535813	31	773.1129	31	242.2245	0	530.8884	7	244.10468	7	70.30303	0	173.80165
285	641.769972	2	131.549587	30	773.3196	30	242.4311	0	530.8884	7	244.15289	7	70.35124	0	173.80165
286	641.96281	2	131.563361	30	773.5262	30	242.6377	0	530.8884	7	244.2011	7	70.399449	0	173.80165
287	642.155647	2	131.577135	30	773.7328	30	242.8444	0	530.8884	6	244.24242	6	70.440771	0	173.80165
288	642.348485	2	131.590909	30	773.9394	30	243.051	0	530.8884	6	244.28375	6	70.482094	0	173.80165
289	642.541322	2	131.604683	30	774.146	30	243.2576	0	530.8884	6	244.32507	6	70.523416	0	173.80165
290	642.73416	2	131.618457	30	774.3526	30	243.4642	0	530.8884	6	244.36639	6	70.564738	0	173.80165
291	642.92011	2	131.632231	29	774.5523	29	243.6639	0	530.8884	6	244.40771	6	70.606061	0	173.80165
292	643.106061	2	131.646006	29	774.7521	29	243.8636	0	530.8884	6	244.44904	6	70.647383	0	173.80165
293	643.292011	2	131.65978	29	774.9518	29	244.0634	0	530.8884	6	244.49036	6	70.688705	0	173.80165
294	643.477961	2	131.673554	29	775.1515	29	244.2631	0	530.8884	6	244.53168	6	70.730028	0	173.80165
295	643.663912	2	131.687328	29	775.3512	29	244.4628	0	530.8884	6	244.573	6	70.77135	0	173.80165
296	643.849862	2	131.701102	29	775.551	29	244.6625	0	530.8884	6	244.61433	6	70.812672	0	173.80165
297	644.035813	2	131.714876	29	775.7507	29	244.8623	0	530.8884	6	244.65565	6	70.853994	0	173.80165
298	644.221763	2	131.72865	29	775.9504	29	245.062	0	530.8884	6	244.69697	6	70.895317	0	173.80165
299	644.407713	2	131.742424	29	776.1501	29	245.2617	0	530.8884	6	244.73829	6	70.936639	0	173.80165
300	644.593664	2	131.756198	29	776.3499	29	245.4614	0	530.8884	6	244.77961	6	70.977961	0	173.80165
301	644.779614	2	131.769972	29	776.5496	29	245.6612	0	530.8884	6	244.82094	6	71.019284	0	173.80165
302	644.965565	2	131.783747	29	776.7493	29	245.8609	0	530.8884	6	244.86226	6	71.060606	0	173.80165
303	645.151515	2	131.797521	29	776.949	29	246.0606	0	530.8884	6	244.90358	6	71.101928	0	173.80165
304	645.337466	2	131.811295	29	777.1488	29	246.2603	0	530.8884	6	244.9449	6	71.143251	0	173.80165
305	645.523416	2	131.825069	29	777.3485	29	246.4601	0	530.8884	6	244.98623	6	71.184573	0	173.80165
306	645.709366	2	131.838843	29	777.5482	29	246.6598	0	530.8884	6	245.02755	6	71.225895	0	173.80165
307	645.88843	2	131.852617	28	777.741	28	246.8526	0	530.8884	6	245.06887	6	71.267218	0	173.80165
308	646.067493	2	131.866391	28	777.9339	28	247.0455	0	530.8884	6	245.11019	6	71.30854	0	173.80165
309	646.246556	2	131.880165	28	778.1267	28	247.2383	0	530.8884	6	245.15152	6	71.349862	0	173.80165
310	646.42562	2	131.893939	28	778.3196	28	247.4311	0	530.8884	6	245.19284	6	71.391185	0	173.80165
311	646.597796	2	131.907713	27	778.5055	27	247.6171	0	530.8884	6	245.23416	6	71.432507	0	173.80165
312	646.769972	2	131.921488	27	778.6915	27	247.803	0	530.8884	6	245.27548	6	71.473829	0	173.80165
313	646.942149	2	131.935262	27	778.8774	27	247.989	0	530.8884	6	245.3168	6	71.515152	0	173.80165
314	647.107438	2	131.949036	26	779.0565	26	248.168	0	530.8884	6	245.35813	6	71.556474	0	173.80165
315	647.26584	1	131.955923	24	779.2218	24	248.3333	0	530.8884	6	245.39945	6	71.597796	0	173.80165
316	647.417355	1	131.96281	23	779.3802	23	248.4917	0	530.8884	5	245.43388	5	71.632231	0	173.80165
317	647.568871	1	131.969697	23	779.5386	23	248.6501	0	530.8884	5	245.46832	5	71.666667	0	173.80165
318	647.713499	1	131.976584	22	779.6901	22	248.8017	0	530.8884	5	245.50275	5	71.701102	0	173.80165
319	647.85124	1	131.983471	21	779.8347	21	248.9463	0	530.8884	4	245.5303	4	71.72865	0	173.80165
320	647.982094	1	131.990358	20	779.9725	20	249.084	0	530.8884	4	245.55785	4	71.756198	0	173.80165
321	648.106061	1	131.997245	19	780.1033	19	249.2149	0	530.8884	4	245.5854	4	71.783747	0	173.80165
322	648.22314	1	132.004132	18	780.2273	18	249.3388	0	530.8884	3	245.60606	3	71.804408	0	173.80165
323	648.333333	1	132.011019	17	780.3444	17	249.4559	0	530.8884	3	245.62672	3	71.825069	0	173.80165
324	648.436639	0	132.011019	15	780.4477	15	249.5592	0	530.8884	2	245.6405	2	71.838843	0	173.80165

	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ
284	22	463.499	22	159.49725	0	304.00138		29	229.800275	0	477.803	60	472.0247934	
285	22	463.65	22	159.64876	0	304.00138		29	230	0	477.803	59	472.4311295	
286	22	463.802	22	159.80028	0	304.00138		29	230.199725	0	477.803	59	472.8374656	
287	22	463.953	22	159.95179	0	304.00138		28	230.392562	0	477.803	58	473.2369146	
288	22	464.105	22	160.10331	0	304.00138		28	230.585399	0	477.803	58	473.6363636	
289	22	464.256	22	160.25482	0	304.00138		28	230.778237	0	477.803	58	474.0358127	
290	22	464.408	22	160.40634	0	304.00138		28	230.971074	0	477.803	58	474.4352617	
291	22	464.559	22	160.55785	0	304.00138		28	231.163912	0	477.803	57	474.8278237	
292	22	464.711	22	160.70937	0	304.00138		28	231.356749	0	477.803	57	475.2203857	
293	22	464.862	22	160.86088	0	304.00138		28	231.549587	0	477.803	57	475.6129477	
294	21	465.007	21	161.00551	0	304.00138		27	231.735537	0	477.803	56	475.9986226	
295	21	465.152	21	161.15014	0	304.00138		27	231.921488	0	477.803	56	476.3842975	
296	21	465.296	21	161.29477	0	304.00138		27	232.107438	0	477.803	56	476.7699725	
297	21	465.441	21	161.43939	0	304.00138		27	232.293388	0	477.803	56	477.1556474	
298	21	465.585	21	161.58402	0	304.00138		27	232.479339	0	477.803	56	477.5413223	
299	21	465.73	21	161.72865	0	304.00138		27	232.665289	0	477.803	56	477.9269972	
300	21	465.875	21	161.87328	0	304.00138		27	232.85124	0	477.803	56	478.3126722	
301	21	466.019	21	162.01791	0	304.00138		27	233.03719	0	477.803	56	478.6983471	
302	21	466.164	21	162.16253	0	304.00138		27	233.22314	0	477.803	56	479.084022	
303	21	466.309	21	162.30716	0	304.00138		27	233.409091	0	477.803	56	479.469697	
304	21	466.453	21	162.45179	0	304.00138		27	233.595041	0	477.803	56	479.8553719	
305	21	466.598	21	162.59642	0	304.00138		27	233.780992	0	477.803	56	480.2410468	
306	21	466.742	21	162.74105	0	304.00138		27	233.966942	0	477.803	56	480.6267218	
307	21	466.887	21	162.88567	0	304.00138		27	234.152893	0	477.803	55	481.0055096	
308	21	467.032	21	163.0303	0	304.00138		27	234.338843	0	477.803	55	481.3842975	
309	21	467.176	21	163.17493	0	304.00138		27	234.524793	0	477.803	55	481.7630854	
310	20	467.314	20	163.31267	0	304.00138		26	234.703857	0	477.803	54	482.1349862	
311	20	467.452	20	163.45041	0	304.00138		26	234.88292	0	477.803	53	482.5	
312	19	467.583	19	163.58127	0	304.00138		25	235.055096	0	477.803	52	482.8581267	
313	18	467.707	18	163.70523	0	304.00138		24	235.220386	0	477.803	51	483.2093664	
314	17	467.824	17	163.82231	0	304.00138		23	235.378788	0	477.803	49	483.546832	
315	16	467.934	16	163.93251	0	304.00138		22	235.530303	0	477.803	46	483.8636364	
316	15	468.037	15	164.03581	0	304.00138		20	235.668044	0	477.803	43	484.1597796	
317	14	468.134	14	164.13223	0	304.00138		19	235.798898	0	477.803	42	484.4490358	
318	13	468.223	13	164.22176	0	304.00138		18	235.922865	0	477.803	40	484.7245179	
319	12	468.306	12	164.30441	0	304.00138		16	236.033058	0	477.803	37	484.9793388	
320	11	468.382	11	164.38017	0	304.00138		15	236.136364	0	477.803	35	485.2203857	
321	11	468.457	11	164.45592	0	304.00138		15	236.239669	0	477.803	34	485.4545455	
322	10	468.526	10	164.52479	0	304.00138		13	236.329201	0	477.803	31	485.6680441	
323	9	468.588	9	164.58678	0	304.00138		12	236.411846	0	477.803	29	485.8677686	
324	8	468.643	8	164.64187	0	304.00138		10	236.480716	0	477.803	25	486.0399449	

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
325						1	171.6391	1	138.1405	0	33.498623	13	615.027548	13
326						0	171.6391	0	138.1405	0	33.498623	12	615.110193	12
327						0	171.6391	0	138.1405	0	33.498623	11	615.18595	11
328						0	171.6391	0	138.1405	0	33.498623	10	615.254821	10
329						0	171.6391	0	138.1405	0	33.498623	10	615.323691	10
330						0	171.6391	0	138.1405	0	33.498623	9	615.385675	9
331						0	171.6391	0	138.1405	0	33.498623	8	615.440771	8
332						0	171.6391	0	138.1405	0	33.498623	7	615.488981	7
333						0	171.6391	0	138.1405	0	33.498623	6	615.530303	6
334						0	171.6391	0	138.1405	0	33.498623	6	615.571625	6
335						0	171.6391	0	138.1405	0	33.498623	5	615.606061	5
336						0	171.6391	0	138.1405	0	33.498623	5	615.640496	5
337						0	171.6391	0	138.1405	0	33.498623	4	615.668044	4
338						0	171.6391	0	138.1405	0	33.498623	4	615.695592	4
339						0	171.6391	0	138.1405	0	33.498623	3	615.716253	3
340						0	171.6391	0	138.1405	0	33.498623	3	615.736915	3
341						0	171.6391	0	138.1405	0	33.498623	3	615.757576	3
342						0	171.6391	0	138.1405	0	33.498623	2	615.77135	2
343						0	171.6391	0	138.1405	0	33.498623	2	615.785124	2
344						0	171.6391	0	138.1405	0	33.498623	2	615.798898	2
345						0	171.6391	0	138.1405	0	33.498623	2	615.812672	2
346						0	171.6391	0	138.1405	0	33.498623	1	615.819559	1
347						0	171.6391	0	138.1405	0	33.498623	1	615.826446	1
348						0	171.6391	0	138.1405	0	33.498623	1	615.833333	1
349						0	171.6391	0	138.1405	0	33.498623	1	615.84022	1
350						0	171.6391	0	138.1405	0	33.498623	1	615.847107	1
351						0	171.6391	0	138.1405	0	33.498623	1	615.853994	1
352						0	171.6391	0	138.1405	0	33.498623	1	615.860882	1

	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC
325	648.526171	0	132.011019	13	780.5372	13	249.6488	0	530.8884	2	245.65427	2	71.852617	0	173.80165
326	648.608815	0	132.011019	12	780.6198	12	249.7314	0	530.8884	2	245.66804	2	71.866391	0	173.80165
327	648.684573	0	132.011019	11	780.6956	11	249.8072	0	530.8884	2	245.68182	2	71.880165	0	173.80165
328	648.753444	0	132.011019	10	780.7645	10	249.876	0	530.8884	1	245.68871	1	71.887052	0	173.80165
329	648.822314	0	132.011019	10	780.8333	10	249.9449	0	530.8884	1	245.69559	1	71.893939	0	173.80165
330	648.884298	0	132.011019	9	780.8953	9	250.0069	0	530.8884	1	245.70248	1	71.900826	0	173.80165
331	648.939394	0	132.011019	8	780.9504	8	250.062	0	530.8884	1	245.70937	1	71.907713	0	173.80165
332	648.987603	0	132.011019	7	780.9986	7	250.1102	0	530.8884	1	245.71625	1	71.914601	0	173.80165
333	649.028926	0	132.011019	6	781.0399	6	250.1515	0	530.8884	1	245.72314	1	71.921488	0	173.80165
334	649.070248	0	132.011019	6	781.0813	6	250.1928	0	530.8884	1	245.73003	1	71.928375	0	173.80165
335	649.104683	0	132.011019	5	781.1157	5	250.2273	0	530.8884	0	245.73003	0	71.928375	0	173.80165
336	649.139118	0	132.011019	5	781.1501	5	250.2617	0	530.8884	0	245.73003	0	71.928375	0	173.80165
337	649.166667	0	132.011019	4	781.1777	4	250.2893	0	530.8884	0	245.73003	0	71.928375	0	173.80165
338	649.194215	0	132.011019	4	781.2052	4	250.3168	0	530.8884	0	245.73003	0	71.928375	0	173.80165
339	649.214876	0	132.011019	3	781.2259	3	250.3375	0	530.8884	0	245.73003	0	71.928375	0	173.80165
340	649.235537	0	132.011019	3	781.2466	3	250.3581	0	530.8884	0	245.73003	0	71.928375	0	173.80165
341	649.256198	0	132.011019	3	781.2672	3	250.3788	0	530.8884	0	245.73003	0	71.928375	0	173.80165
342	649.269972	0	132.011019	2	781.281	2	250.3926	0	530.8884	0	245.73003	0	71.928375	0	173.80165
343	649.283747	0	132.011019	2	781.2948	2	250.4063	0	530.8884	0	245.73003	0	71.928375	0	173.80165
344	649.297521	0	132.011019	2	781.3085	2	250.4201	0	530.8884	0	245.73003	0	71.928375	0	173.80165
345	649.311295	0	132.011019	2	781.3223	2	250.4339	0	530.8884	0	245.73003	0	71.928375	0	173.80165
346	649.318182	0	132.011019	1	781.3292	1	250.4408	0	530.8884	0	245.73003	0	71.928375	0	173.80165
347	649.325069	0	132.011019	1	781.3361	1	250.4477	0	530.8884	0	245.73003	0	71.928375	0	173.80165
348	649.331956	0	132.011019	1	781.343	1	250.4545	0	530.8884	0	245.73003	0	71.928375	0	173.80165
349	649.338843	0	132.011019	1	781.3499	1	250.4614	0	530.8884	0	245.73003	0	71.928375	0	173.80165
350	649.34573	0	132.011019	1	781.3567	1	250.4683	0	530.8884	0	245.73003	0	71.928375	0	173.80165
351	649.352617	0	132.011019	1	781.3636	1	250.4752	0	530.8884	0	245.73003	0	71.928375	0	173.80165
352	649.359504	0	132.011019	1	781.3705	1	250.4821	0	530.8884	0	245.73003	0	71.928375	0	173.80165

	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ
325	7	468.691	7	164.69008	0	304.00138		9	236.5427	0	477.803	22	486.1914601	
326	6	468.733	6	164.7314	0	304.00138		8	236.597796	0	477.803	20	486.3292011	
327	6	468.774	6	164.77273	0	304.00138		8	236.652893	0	477.803	19	486.4600551	
328	5	468.809	5	164.80716	0	304.00138		6	236.694215	0	477.803	16	486.5702479	
329	5	468.843	5	164.8416	0	304.00138		6	236.735537	0	477.803	16	486.6804408	
330	4	468.871	4	164.86915	0	304.00138		5	236.769972	0	477.803	14	486.7768595	
331	4	468.898	4	164.89669	0	304.00138		5	236.804408	0	477.803	13	486.8663912	
332	3	468.919	3	164.91736	0	304.00138		4	236.831956	0	477.803	11	486.9421488	
333	3	468.939	3	164.93802	0	304.00138		4	236.859504	0	477.803	10	487.0110193	
334	2	468.953	2	164.95179	0	304.00138		3	236.880165	0	477.803	9	487.0730028	
335	2	468.967	2	164.96556	0	304.00138		2	236.893939	0	477.803	7	487.1212121	
336	2	468.981	2	164.97934	0	304.00138		2	236.907713	0	477.803	7	487.1694215	
337	2	468.994	2	164.99311	0	304.00138		2	236.921488	0	477.803	6	487.2107438	
338	1	469.001	1	165	0	304.00138		1	236.928375	0	477.803	5	487.2451791	
339	1	469.008	1	165.00689	0	304.00138		1	236.935262	0	477.803	4	487.2727273	
340	1	469.015	1	165.01377	0	304.00138		1	236.942149	0	477.803	4	487.3002755	
341	1	469.022	1	165.02066	0	304.00138		1	236.949036	0	477.803	4	487.3278237	
342	1	469.029	1	165.02755	0	304.00138		1	236.955923	0	477.803	3	487.3484848	
343	1	469.036	1	165.03444	0	304.00138		1	236.96281	0	477.803	3	487.369146	
344	1	469.043	1	165.04132	0	304.00138		1	236.969697	0	477.803	3	487.3898072	
345	1	469.05	1	165.04821	0	304.00138		1	236.976584	0	477.803	3	487.4104683	
346	0	469.05	0	165.04821	0	304.00138		0	236.976584	0	477.803	1	487.4173554	
347	0	469.05	0	165.04821	0	304.00138		0	236.976584	0	477.803	1	487.4242424	
348	0	469.05	0	165.04821	0	304.00138		0	236.976584	0	477.803	1	487.4311295	
349	0	469.05	0	165.04821	0	304.00138		0	236.976584	0	477.803	1	487.4380165	
350	0	469.05	0	165.04821	0	304.00138		0	236.976584	0	477.803	1	487.4449036	
351	0	469.05	0	165.04821	0	304.00138		0	236.976584	0	477.803	1	487.4517906	
352	0	469.05	0	165.04821	0	304.00138		0	236.976584	0	477.803	1	487.4586777	

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	1														
2	2														
3	3														
4	4							**ALTERNATIVE 3**							
5	5														
6	6					Alternative 3 has no diversion to McMicken Dam. All of Waterfall Wash flow (4,279 cfs) will be diverted by an overchu									
7	7					flow south to combine with flow from subbasins 12 and WT3 and flow from middle washes into the main basin, produ									
8	8					basin-storage requirements to 1,158 ac-ft.									
9	9														
10	10														
11	11					F	G	H	I	J	K	L	M	N	O
12	12	ORD	DA	MON	HRMN	Total Waterfall Flow	Volume for Olive Basin	Total Cholla Flow	Volume	Flow Diverted at Northern Avenue	Volume	Flow to Main Basin less 1,300 cfs	Volume	Flow from 12 & WT3	Volume
13	13					cfs	ac-ft	(cfs)	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
14	14					4279	502	6512	616	1300	305	5212	311	1431	132
15	15														
16	16	1	1	JAN	0	0	0	0	0	0	0	0	0	0	0
17	17	2	1	JAN	5	0	0	0	0	0	0	0	0	0	0
18	18	3	1	JAN	10	0	0	0	0	0	0	0	0	0	0
19	19	4	1	JAN	15	0	0	0	0	0	0	0	0	0	0
20	20	5	1	JAN	20	0	0	0	0	0	0	0	0	0	0
21	21	6	1	JAN	25	0	0	0	0	0	0	0	0	0	0
22	22	7	1	JAN	30	0	0	0	0	0	0	0	0	0	0
23	23	8	1	JAN	35	0	0	0	0	0	0	0	0	0	0
24	24	9	1	JAN	40	0	0	1	0.00689	1	0.00689	0	0	0	0
25	25	10	1	JAN	45	1	0.006887052	1	0.01377	1	0.01377	0	0	0	0
26	26	11	1	JAN	50	1	0.013774105	1	0.02066	1	0.02066	0	0	0	0
27	27	12	1	JAN	55	1	0.020661157	2	0.03444	2	0.03444	0	0	0	0
28	28	13	1	JAN	100	2	0.034435262	2	0.04821	2	0.04821	0	0	0	0
29		14	1	JAN	105	2	0.048209366	3	0.06887	3	0.06887	0	0	1	0.00689
30		15	1	JAN	110	3	0.068870523	3	0.08953	3	0.08953	0	0	1	0.01377
31		16	1	JAN	115	4	0.096418733	4	0.11708	4	0.11708	0	0	1	0.02066
32		17	1	JAN	120	5	0.130853994	5	0.15152	5	0.15152	0	0	1	0.02755
33		18	1	JAN	125	6	0.172176309	6	0.19284	6	0.19284	0	0	1	0.03444

	P	Q	R	S	T	U	V	W	X
1									
2									
3									
4									
5									
6	te into Olive Basin. 1300 cfs of Cholla Wash flow will be diverted across Beardsley Canal at Northern Avenue, leaving 5,212 cfs to								
7	cing a volume of 689 ac-ft. Flow volume from the South Inlet 409 ac-ft, which combines with volumes from North Inlet to increase								
8									
9									
10									
11	P	Q	R	S			T	U	V
12	North Inflow	Volume into Main Basin from North Inflow	Flow from Middle	Volume	Total Flow into the North Inlet	Volume	Flow from South Inlet	Volume into Main Basin from South Inlet	Total Main Basin Volume
13	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	ac-ft
14	6643	443	2720	246	9206	689	5016	469	1158
15									
16	0	0	0	0	0	0	0	0	
17	0	0	0	0	0	0	0	0	
18	0	0	0	0	0	0	0	0	
19	0	0	0	0	0	0	0	0	
20	0	0	0	0	0	0	0	0	
21	0	0	0	0	0	0	0	0	
22	0	0	0	0	0	0	0	0	
23	0	0	0	0	0	0	0	0	
24	0	0	0	0	0	0	1	0.006887052	
25	0	0	0	0	0	0	1	0.013774105	
26	0	0	0	0	0	0	2	0.027548209	
27	0	0	0	0	0	0	2	0.041322314	
28	0	0	0	0	0	0	3	0.061983471	
29	1	0.006887052	1	0.006887052	2	0.013774105	4	0.08953168	
30	1	0.013774105	1	0.013774105	2	0.027548209	5	0.123966942	
31	1	0.020661157	1	0.020661157	2	0.041322314	6	0.165289256	
32	1	0.027548209	1	0.027548209	2	0.055096419	7	0.213498623	
33	1	0.034435262	2	0.041322314	3	0.075757576	8	0.268595041	

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
34		19	1	JAN	130	7	0.220385675	7	0.24105	7	0.24105	0	0	1	0.04132
35		20	1	JAN	135	8	0.275482094	8	0.29614	8	0.29614	0	0	1	0.04821
36		21	1	JAN	140	9	0.337465565	9	0.35813	9	0.35813	0	0	2	0.06198
37		22	1	JAN	145	11	0.41322314	10	0.427	10	0.427	0	0	2	0.07576
38		23	1	JAN	150	12	0.495867769	11	0.50275	11	0.50275	0	0	2	0.08953
39		24	1	JAN	155	13	0.585399449	12	0.5854	12	0.5854	0	0	2	0.10331
40		25	1	JAN	200	14	0.681818182	13	0.67493	13	0.67493	0	0	2	0.11708
41		26	1	JAN	205	15	0.785123967	14	0.77135	14	0.77135	0	0	2	0.13085
42		27	1	JAN	210	16	0.895316804	15	0.87466	15	0.87466	0	0	2	0.14463
43		28	1	JAN	215	17	1.012396694	16	0.98485	16	0.98485	0	0	2	0.1584
44		29	1	JAN	220	18	1.136363636	17	1.10193	17	1.10193	0	0	2	0.17218
45		30	1	JAN	225	18	1.260330579	18	1.2259	18	1.2259	0	0	2	0.18595
46		31	1	JAN	230	19	1.391184573	19	1.35675	19	1.35675	0	0	2	0.19972
47		32	1	JAN	235	20	1.52892562	19	1.4876	19	1.4876	0	0	2	0.2135
48		33	1	JAN	240	20	1.666666667	20	1.62534	20	1.62534	0	0	2	0.22727
49		34	1	JAN	245	21	1.811294766	21	1.76997	21	1.76997	0	0	2	0.24105
50		35	1	JAN	250	21	1.955922865	21	1.9146	21	1.9146	0	0	2	0.25482
51		36	1	JAN	255	22	2.107438017	22	2.06612	22	2.06612	0	0	2	0.2686
52		37	1	JAN	300	22	2.258953168	23	2.22452	23	2.22452	0	0	2	0.28237
53		38	1	JAN	305	22	2.41046832	23	2.38292	23	2.38292	0	0	2	0.29614
54		39	1	JAN	310	23	2.568870523	23	2.54132	23	2.54132	0	0	2	0.30992
55		40	1	JAN	315	23	2.727272727	24	2.70661	24	2.70661	0	0	2	0.32369
56		41	1	JAN	320	23	2.885674931	24	2.8719	24	2.8719	0	0	2	0.33747
57		42	1	JAN	325	23	3.044077135	24	3.03719	24	3.03719	0	0	2	0.35124
58		43	1	JAN	330	23	3.202479339	25	3.20937	25	3.20937	0	0	2	0.36501
59		44	1	JAN	335	23	3.360881543	25	3.38154	25	3.38154	0	0	2	0.37879
60		45	1	JAN	340	24	3.526170799	25	3.55372	25	3.55372	0	0	2	0.39256
61		46	1	JAN	345	24	3.691460055	25	3.7259	25	3.7259	0	0	2	0.40634
62		47	1	JAN	350	24	3.856749311	25	3.89807	25	3.89807	0	0	2	0.42011
63		48	1	JAN	355	24	4.022038567	26	4.07713	26	4.07713	0	0	2	0.43388
64		49	1	JAN	400	24	4.187327824	26	4.2562	26	4.2562	0	0	2	0.44766
65		50	1	JAN	405	24	4.35261708	26	4.43526	26	4.43526	0	0	2	0.46143
66		51	1	JAN	410	24	4.517906336	26	4.61433	26	4.61433	0	0	2	0.47521
67		52	1	JAN	415	24	4.683195592	26	4.79339	26	4.79339	0	0	2	0.48898
68		53	1	JAN	420	24	4.848484848	26	4.97245	26	4.97245	0	0	2	0.50275
69		54	1	JAN	425	24	5.013774105	26	5.15152	26	5.15152	0	0	2	0.51653

	P	Q	R	S	T	U	V	W	X
34	1	0.041322314	2	0.055096419	3	0.096418733	9	0.330578512	
35	1	0.048209366	3	0.075757576	4	0.123966942	10	0.399449036	
36	2	0.061983471	3	0.096418733	5	0.158402204	11	0.475206612	
37	2	0.075757576	3	0.11707989	5	0.192837466	12	0.55785124	
38	2	0.08953168	4	0.144628099	6	0.23415978	13	0.64738292	
39	2	0.103305785	4	0.172176309	6	0.275482094	13	0.736914601	
40	2	0.11707989	4	0.199724518	6	0.316804408	14	0.833333333	
41	2	0.130853994	4	0.227272727	6	0.358126722	15	0.936639118	
42	2	0.144628099	5	0.261707989	7	0.406336088	16	1.046831956	
43	2	0.158402204	5	0.296143251	7	0.454545455	16	1.157024793	
44	2	0.172176309	5	0.330578512	7	0.502754821	17	1.274104683	
45	2	0.185950413	5	0.365013774	7	0.550964187	17	1.391184573	
46	2	0.199724518	6	0.406336088	8	0.606060606	18	1.515151515	
47	2	0.213498623	6	0.447658402	8	0.661157025	18	1.639118457	
48	2	0.227272727	6	0.488980716	8	0.716253444	18	1.763085399	
49	2	0.241046832	6	0.53030303	8	0.771349862	19	1.893939394	
50	2	0.254820937	6	0.571625344	8	0.826446281	19	2.024793388	
51	2	0.268595041	6	0.612947658	8	0.8815427	19	2.155647383	
52	2	0.282369146	6	0.654269972	8	0.936639118	20	2.29338843	
53	2	0.296143251	6	0.695592287	8	0.991735537	20	2.431129477	
54	2	0.309917355	6	0.736914601	8	1.046831956	20	2.568870523	
55	2	0.32369146	6	0.778236915	8	1.101928375	20	2.70661157	
56	2	0.337465565	6	0.819559229	8	1.157024793	20	2.844352617	
57	2	0.351239669	6	0.860881543	8	1.212121212	20	2.982093664	
58	2	0.365013774	6	0.902203857	8	1.267217631	21	3.126721763	
59	2	0.378787879	6	0.943526171	8	1.32231405	21	3.271349862	
60	2	0.392561983	6	0.984848485	8	1.377410468	21	3.415977961	
61	2	0.406336088	6	1.026170799	8	1.432506887	21	3.560606061	
62	2	0.420110193	6	1.067493113	8	1.487603306	21	3.70523416	
63	2	0.433884298	6	1.108815427	8	1.542699725	21	3.849862259	
64	2	0.447658402	6	1.150137741	8	1.597796143	21	3.994490358	
65	2	0.461432507	6	1.191460055	8	1.652892562	21	4.139118457	
66	2	0.475206612	6	1.232782369	8	1.707988981	21	4.283746556	
67	2	0.488980716	6	1.274104683	8	1.763085399	21	4.428374656	
68	2	0.502754821	6	1.315426997	8	1.818181818	21	4.573002755	
69	2	0.516528926	6	1.356749311	8	1.873278237	21	4.717630854	

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
70		55	1	JAN	430	24	5.179063361	27	5.33747	27	5.33747	0	0	2	0.5303
71		56	1	JAN	435	24	5.344352617	27	5.52342	27	5.52342	0	0	2	0.54408
72		57	1	JAN	440	25	5.516528926	27	5.70937	27	5.70937	0	0	2	0.55785
73		58	1	JAN	445	25	5.688705234	27	5.89532	27	5.89532	0	0	2	0.57163
74		59	1	JAN	450	25	5.860881543	28	6.08815	28	6.08815	0	0	2	0.5854
75		60	1	JAN	455	25	6.033057851	28	6.28099	28	6.28099	0	0	3	0.60606
76		61	1	JAN	500	26	6.212121212	28	6.47383	28	6.47383	0	0	3	0.62672
77		62	1	JAN	505	26	6.391184573	28	6.66667	28	6.66667	0	0	3	0.64738
78		63	1	JAN	510	26	6.570247934	29	6.86639	29	6.86639	0	0	3	0.66804
79		64	1	JAN	515	27	6.756198347	29	7.06612	29	7.06612	0	0	3	0.68871
80		65	1	JAN	520	27	6.94214876	30	7.27273	30	7.27273	0	0	3	0.70937
81		66	1	JAN	525	28	7.134986226	30	7.47934	30	7.47934	0	0	3	0.73003
82		67	1	JAN	530	28	7.327823691	30	7.68595	30	7.68595	0	0	3	0.75069
83		68	1	JAN	535	28	7.520661157	31	7.89945	31	7.89945	0	0	3	0.77135
84		69	1	JAN	540	29	7.720385675	31	8.11295	31	8.11295	0	0	3	0.79201
85		70	1	JAN	545	29	7.920110193	31	8.32645	31	8.32645	0	0	3	0.81267
86		71	1	JAN	550	29	8.119834711	32	8.54683	32	8.54683	0	0	3	0.83333
87		72	1	JAN	555	30	8.326446281	32	8.76722	32	8.76722	0	0	3	0.85399
88		73	1	JAN	600	30	8.533057851	32	8.9876	32	8.9876	0	0	3	0.87466
89		74	1	JAN	605	30	8.739669421	33	9.21488	33	9.21488	0	0	3	0.89532
90		75	1	JAN	610	31	8.953168044	33	9.44215	33	9.44215	0	0	3	0.91598
91		76	1	JAN	615	31	9.166666667	33	9.66942	33	9.66942	0	0	3	0.93664
92		77	1	JAN	620	31	9.380165289	33	9.89669	33	9.89669	0	0	3	0.9573
93		78	1	JAN	625	31	9.593663912	34	10.1309	34	10.1309	0	0	3	0.97796
94		79	1	JAN	630	31	9.807162534	34	10.365	34	10.365	0	0	3	0.99862
95		80	1	JAN	635	31	10.02066116	34	10.5992	34	10.5992	0	0	3	1.01928
96		81	1	JAN	640	32	10.24104683	34	10.8333	34	10.8333	0	0	3	1.03994
97		82	1	JAN	645	32	10.46143251	35	11.0744	35	11.0744	0	0	3	1.06061
98		83	1	JAN	650	32	10.68181818	35	11.3154	35	11.3154	0	0	3	1.08127
99		84	1	JAN	655	32	10.90220386	35	11.5565	35	11.5565	0	0	3	1.10193
100		85	1	JAN	700	33	11.12947658	36	11.8044	36	11.8044	0	0	3	1.12259
101		86	1	JAN	705	33	11.35674931	36	12.0523	36	12.0523	0	0	3	1.14325
102		87	1	JAN	710	34	11.59090909	36	12.3003	36	12.3003	0	0	3	1.16391
103		88	1	JAN	715	34	11.82506887	37	12.5551	37	12.5551	0	0	3	1.18457
104		89	1	JAN	720	35	12.0661157	37	12.8099	37	12.8099	0	0	3	1.20523
105		90	1	JAN	725	36	12.31404959	37	13.0647	37	13.0647	0	0	3	1.2259

	P	Q	R	S	T	U	V	W	X
70	2	0.53030303	6	1.398071625	8	1.928374656	22	4.869146006	
71	2	0.544077135	6	1.439393939	8	1.983471074	22	5.020661157	
72	2	0.55785124	7	1.487603306	9	2.045454545	22	5.172176309	
73	2	0.571625344	7	1.535812672	9	2.107438017	22	5.32369146	
74	2	0.585399449	7	1.584022039	9	2.169421488	23	5.482093664	
75	3	0.606060606	7	1.632231405	10	2.238292011	23	5.640495868	
76	3	0.626721763	7	1.680440771	10	2.307162534	24	5.805785124	
77	3	0.64738292	7	1.728650138	10	2.376033058	24	5.97107438	
78	3	0.668044077	7	1.776859504	10	2.444903581	24	6.136363636	
79	3	0.688705234	7	1.825068871	10	2.513774105	25	6.308539945	
80	3	0.709366391	7	1.873278237	10	2.582644628	25	6.480716253	
81	3	0.730027548	7	1.921487603	10	2.651515152	25	6.652892562	
82	3	0.750688705	8	1.976584022	11	2.727272727	25	6.825068871	
83	3	0.771349862	8	2.031680441	11	2.803030303	26	7.004132231	
84	3	0.792011019	8	2.08677686	11	2.878787879	26	7.183195592	
85	3	0.812672176	8	2.141873278	11	2.954545455	26	7.362258953	
86	3	0.833333333	8	2.196969697	11	3.03030303	26	7.541322314	
87	3	0.85399449	8	2.252066116	11	3.106060606	27	7.727272727	
88	3	0.874655647	8	2.307162534	11	3.181818182	27	7.91322314	
89	3	0.895316804	8	2.362258953	11	3.257575758	27	8.099173554	
90	3	0.915977961	8	2.417355372	11	3.333333333	27	8.285123967	
91	3	0.936639118	8	2.472451791	11	3.409090909	27	8.47107438	
92	3	0.957300275	8	2.527548209	11	3.484848485	27	8.657024793	
93	3	0.977961433	8	2.582644628	11	3.560606061	28	8.849862259	
94	3	0.99862259	8	2.637741047	11	3.636363636	28	9.042699725	
95	3	1.019283747	8	2.692837466	11	3.712121212	28	9.23553719	
96	3	1.039944904	8	2.747933884	11	3.787878788	28	9.428374656	
97	3	1.060606061	9	2.809917355	12	3.870523416	28	9.621212121	
98	3	1.081267218	9	2.871900826	12	3.953168044	29	9.820936639	
99	3	1.101928375	9	2.933884298	12	4.035812672	29	10.02066116	
100	3	1.122589532	9	2.995867769	12	4.1184573	29	10.22038567	
101	3	1.143250689	9	3.05785124	12	4.201101928	30	10.42699725	
102	3	1.163911846	9	3.119834711	12	4.283746556	30	10.63360882	
103	3	1.184573003	9	3.181818182	12	4.366391185	30	10.84022039	
104	3	1.20523416	9	3.243801653	12	4.449035813	31	11.05371901	
105	3	1.225895317	9	3.305785124	12	4.531680441	31	11.26721763	

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
106		91	1	JAN	730	36	12.56198347	38	13.3264	38	13.3264	0	0	3	1.24656
107		92	1	JAN	735	37	12.81680441	38	13.5882	38	13.5882	0	0	3	1.26722
108		93	1	JAN	740	37	13.07162534	39	13.8567	39	13.8567	0	0	4	1.29477
109		94	1	JAN	745	37	13.32644628	39	14.1253	39	14.1253	0	0	4	1.32231
110		95	1	JAN	750	38	13.58815427	39	14.3939	39	14.3939	0	0	4	1.34986
111		96	1	JAN	755	38	13.84986226	40	14.6694	40	14.6694	0	0	4	1.37741
112		97	1	JAN	800	38	14.11157025	40	14.9449	40	14.9449	0	0	4	1.40496
113		98	1	JAN	805	39	14.38016529	40	15.2204	40	15.2204	0	0	4	1.43251
114		99	1	JAN	810	39	14.64876033	41	15.5028	41	15.5028	0	0	4	1.46006
115		100	1	JAN	815	39	14.91735537	41	15.7851	41	15.7851	0	0	4	1.4876
116		101	1	JAN	820	39	15.18595041	41	16.0675	41	16.0675	0	0	4	1.51515
117		102	1	JAN	825	40	15.46143251	42	16.3567	42	16.3567	0	0	4	1.5427
118		103	1	JAN	830	40	15.7369146	42	16.646	42	16.646	0	0	4	1.57025
119		104	1	JAN	835	40	16.01239669	42	16.9353	42	16.9353	0	0	4	1.5978
120		105	1	JAN	840	40	16.28787879	43	17.2314	43	17.2314	0	0	4	1.62534
121		106	1	JAN	845	41	16.57024793	43	17.5275	43	17.5275	0	0	4	1.65289
122		107	1	JAN	850	41	16.85261708	44	17.8306	44	17.8306	0	0	4	1.68044
123		108	1	JAN	855	41	17.13498623	44	18.1336	44	18.1336	0	0	4	1.70799
124		109	1	JAN	900	42	17.42424242	44	18.4366	44	18.4366	0	0	4	1.73554
125		110	1	JAN	905	43	17.72038567	45	18.7466	45	18.7466	0	0	4	1.76309
126		111	1	JAN	910	43	18.01652893	46	19.0634	46	19.0634	0	0	4	1.79063
127		112	1	JAN	915	44	18.31955923	46	19.3802	46	19.3802	0	0	4	1.81818
128		113	1	JAN	920	45	18.62947658	47	19.7039	47	19.7039	0	0	4	1.84573
129		114	1	JAN	925	46	18.94628099	48	20.0344	48	20.0344	0	0	4	1.87328
130		115	1	JAN	930	47	19.26997245	49	20.3719	49	20.3719	0	0	5	1.90771
131		116	1	JAN	935	48	19.60055096	51	20.7231	51	20.7231	0	0	5	1.94215
132		117	1	JAN	940	49	19.93801653	53	21.0882	53	21.0882	0	0	5	1.97658
133		118	1	JAN	945	50	20.28236915	55	21.4669	55	21.4669	0	0	5	2.01102
134		119	1	JAN	950	51	20.63360882	57	21.8595	57	21.8595	0	0	5	2.04545
135		120	1	JAN	955	52	20.99173554	58	22.259	58	22.259	0	0	5	2.07989
136		121	1	JAN	1000	53	21.35674931	60	22.6722	60	22.6722	0	0	5	2.11433
137		122	1	JAN	1005	54	21.72865014	61	23.0923	61	23.0923	0	0	5	2.14876
138		123	1	JAN	1010	55	22.10743802	63	23.5262	63	23.5262	0	0	5	2.1832
139		124	1	JAN	1015	57	22.5	64	23.9669	64	23.9669	0	0	5	2.21763
140		125	1	JAN	1020	58	22.89944904	66	24.4215	66	24.4215	0	0	6	2.25895
141		126	1	JAN	1025	59	23.30578512	67	24.8829	67	24.8829	0	0	6	2.30028

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106	3	1.246556474	9	3.367768595	12	4.614325069	32	11.48760331	
107	3	1.267217631	9	3.429752066	12	4.696969697	32	11.70798898	
108	4	1.29476584	10	3.49862259	14	4.79338843	32	11.92837466	
109	4	1.32231405	10	3.567493113	14	4.889807163	32	12.14876033	
110	4	1.349862259	10	3.636363636	14	4.986225895	33	12.37603306	
111	4	1.377410468	10	3.70523416	14	5.082644628	33	12.60330579	
112	4	1.404958678	10	3.774104683	14	5.179063361	33	12.83057851	
113	4	1.432506887	10	3.842975207	14	5.275482094	34	13.06473829	
114	4	1.460055096	10	3.91184573	14	5.371900826	34	13.29889807	
115	4	1.487603306	10	3.980716253	14	5.468319559	34	13.53305785	
116	4	1.515151515	10	4.049586777	14	5.564738292	34	13.76721763	
117	4	1.542699725	10	4.1184573	14	5.661157025	34	14.00137741	
118	4	1.570247934	10	4.187327824	14	5.757575758	35	14.24242424	
119	4	1.597796143	10	4.256198347	14	5.85399449	35	14.48347107	
120	4	1.625344353	11	4.331955923	15	5.957300275	35	14.72451791	
121	4	1.652892562	11	4.407713499	15	6.060606061	35	14.96556474	
122	4	1.680440771	11	4.483471074	15	6.163911846	36	15.21349862	
123	4	1.707988981	11	4.55922865	15	6.267217631	36	15.46143251	
124	4	1.73553719	11	4.634986226	15	6.370523416	37	15.71625344	
125	4	1.763085399	11	4.710743802	15	6.473829201	37	15.97107438	
126	4	1.790633609	11	4.786501377	15	6.577134986	38	16.23278237	
127	4	1.818181818	11	4.862258953	15	6.680440771	39	16.50137741	
128	4	1.845730028	12	4.944903581	16	6.790633609	39	16.76997245	
129	4	1.873278237	12	5.027548209	16	6.900826446	40	17.04545455	
130	5	1.907713499	12	5.110192837	17	7.017906336	41	17.32782369	
131	5	1.94214876	12	5.192837466	17	7.134986226	42	17.61707989	
132	5	1.976584022	12	5.275482094	17	7.252066116	43	17.91322314	
133	5	2.011019284	13	5.365013774	18	7.376033058	43	18.20936639	
134	5	2.045454545	13	5.454545455	18	7.5	44	18.51239669	
135	5	2.079889807	13	5.544077135	18	7.623966942	45	18.82231405	
136	5	2.114325069	14	5.640495868	19	7.754820937	46	19.13911846	
137	5	2.148760331	14	5.736914601	19	7.885674931	47	19.46280992	
138	5	2.183195592	14	5.833333333	19	8.016528926	48	19.79338843	
139	5	2.217630854	14	5.929752066	19	8.14738292	49	20.13085399	
140	6	2.258953168	15	6.033057851	21	8.292011019	50	20.47520661	
141	6	2.300275482	15	6.136363636	21	8.436639118	51	20.82644628	

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
142		127	1	JAN	1030	60	23.71900826	69	25.3581	69	25.3581	0	0	6	2.3416
143		128	1	JAN	1035	61	24.13911846	70	25.8402	70	25.8402	0	0	6	2.38292
144		129	1	JAN	1040	63	24.57300275	72	26.3361	72	26.3361	0	0	6	2.42424
145		130	1	JAN	1045	64	25.0137741	73	26.8388	73	26.8388	0	0	6	2.46556
146		131	1	JAN	1050	65	25.46143251	75	27.3554	75	27.3554	0	0	6	2.50689
147		132	1	JAN	1055	67	25.92286501	77	27.8857	77	27.8857	0	0	7	2.5551
148		133	1	JAN	1100	69	26.39807163	79	28.4298	79	28.4298	0	0	7	2.60331
149		134	1	JAN	1105	71	26.88705234	82	28.9945	82	28.9945	0	0	7	2.65152
150		135	1	JAN	1110	73	27.38980716	85	29.5799	85	29.5799	0	0	7	2.69972
151		136	1	JAN	1115	76	27.91322314	88	30.186	88	30.186	0	0	7	2.74793
152		137	1	JAN	1120	79	28.45730028	93	30.8264	93	30.8264	0	0	8	2.80303
153		138	1	JAN	1125	82	29.02203857	98	31.5014	98	31.5014	0	0	8	2.85813
154		139	1	JAN	1130	86	29.61432507	105	32.2245	105	32.2245	0	0	9	2.92011
155		140	1	JAN	1135	98	30.2892562	123	33.0716	123	33.0716	0	0	12	3.00275
156		141	1	JAN	1140	122	31.12947658	145	34.0702	145	34.0702	0	0	16	3.11295
157		142	1	JAN	1145	166	32.27272727	181	35.3168	181	35.3168	0	0	28	3.30579
158		143	1	JAN	1150	249	33.98760331	271	37.1832	271	37.1832	0	0	55	3.68457
159		144	1	JAN	1155	400	36.74242424	394	39.8967	394	39.8967	0	0	91	4.31129
160		145	1	JAN	1200	655	41.25344353	592	43.9738	592	43.9738	0	0	157	5.39256
161		146	1	JAN	1205	959	47.85812672	893	50.124	893	50.124	0	0	239	7.03857
162		147	1	JAN	1210	1340	57.08677686	1399	59.759	1300	59.0771	99	0.68182	356	9.49036
163		148	1	JAN	1215	1841	69.76584022	2171	74.7107	1300	68.0303	871	6.68044	483	12.8168
164		149	1	JAN	1220	2364	86.04683196	3194	96.708	1300	76.9835	1894	19.7245	661	17.3691
165		150	1	JAN	1225	2862	105.7575758	4295	126.288	1300	85.9366	2995	40.3512	906	23.6088
166		151	1	JAN	1230	3253	128.161157	5246	162.417	1300	94.8898	3946	67.5275	1126	31.3636
167		152	1	JAN	1235	3663	153.3884298	5973	203.554	1300	103.843	4673	99.7107	1300	40.3168
168		153	1	JAN	1240	4008	180.9917355	6439	247.899	1300	112.796	5139	135.103	1409	50.0207
169		154	1	JAN	1245	4245	210.2272727	6512	292.748	1300	121.749	5212	170.999	1431	59.876
170		155	1	JAN	1250	4279	239.6969697	6175	335.275	1300	130.702	4875	204.573	1379	69.3733
171		156	1	JAN	1255	4124	268.0991736	5492	373.099	1300	139.656	4192	233.444	1266	78.0923
172		157	1	JAN	1300	3801	294.2768595	4708	405.523	1300	148.609	3408	256.915	1119	85.7989
173		158	1	JAN	1305	3411	317.768595	3950	432.727	1300	157.562	2650	275.165	972	92.4931
174		159	1	JAN	1310	3021	338.5743802	3268	455.234	1300	166.515	1968	288.719	839	98.2713
175		160	1	JAN	1315	2635	356.7217631	2698	473.815	1300	175.468	1398	298.347	713	103.182
176		161	1	JAN	1320	2270	372.3553719	2269	489.442	1300	184.421	969	305.021	592	107.259
177		162	1	JAN	1325	1948	385.7713499	1899	502.521	1300	193.375	599	309.146	482	110.579

	P	Q	R	S	T	U	V	W	X
142	6	2.341597796	15	6.239669421	21	8.581267218	52	21.184573	
143	6	2.38292011	16	6.349862259	22	8.732782369	53	21.54958678	
144	6	2.424242424	16	6.460055096	22	8.884297521	54	21.9214876	
145	6	2.465564738	16	6.570247934	22	9.035812672	55	22.30027548	
146	6	2.506887052	17	6.687327824	23	9.194214876	56	22.68595041	
147	7	2.555096419	17	6.804407713	24	9.359504132	58	23.08539945	
148	7	2.603305785	17	6.921487603	24	9.524793388	59	23.49173554	
149	7	2.651515152	18	7.045454545	25	9.696969697	61	23.91184573	
150	7	2.699724518	18	7.169421488	25	9.869146006	63	24.34573003	
151	7	2.747933884	19	7.300275482	26	10.04820937	66	24.80027548	
152	8	2.803030303	19	7.431129477	27	10.23415978	68	25.26859504	
153	8	2.858126722	20	7.568870523	28	10.42699725	71	25.75757576	
154	9	2.920110193	21	7.713498623	30	10.63360882	74	26.26721763	
155	12	3.002754821	31	7.926997245	43	10.92975207	85	26.85261708	
156	16	3.112947658	48	8.257575758	64	11.37052342	105	27.57575758	
157	28	3.305785124	87	8.856749311	115	12.16253444	149	28.60192837	
158	55	3.684573003	167	10.00688705	222	13.69146006	246	30.29614325	
159	91	4.311294766	282	11.94903581	373	16.26033058	432	33.27134986	
160	157	5.392561983	487	15.3030303	644	20.69559229	757	38.48484848	
161	239	7.038567493	763	20.55785124	1002	27.59641873	1180	46.61157025	
162	455	10.17217631	1082	28.00964187	1537	38.18181818	1778	58.85674931	
163	1354	19.49724518	1428	37.84435262	2782	57.3415978	2525	76.24655647	
164	2555	37.09366391	1899	50.92286501	4454	88.01652893	3368	99.44214876	
165	3901	63.9600551	2346	67.07988981	6247	131.0399449	4182	128.2438017	
166	5072	98.89118457	2654	85.35812672	7726	184.2493113	4724	160.7782369	
167	5973	140.0275482	2720	104.0909091	8693	244.1184573	5016	195.3236915	
168	6548	185.1239669	2658	122.3966942	9206	307.5206612	4871	228.8705234	
169	6643	230.8746556	2520	139.7520661	9163	370.6267218	4440	259.4490358	
170	6254	273.946281	2259	155.3099174	8513	429.2561983	3909	286.3705234	
171	5458	311.5358127	1947	168.7190083	7405	480.2548209	3321	309.2424242	
172	4527	342.7134986	1627	179.9242424	6154	522.637741	2773	328.3402204	
173	3622	367.6584022	1361	189.2975207	4983	556.9559229	2320	344.3181818	
174	2807	386.9903581	1132	197.0936639	3939	584.084022	1925	357.5757576	
175	2111	401.5289256	922	203.4435262	3033	604.9724518	1626	368.7741047	
176	1561	412.2796143	754	208.6363636	2315	620.915978	1392	378.3608815	
177	1081	419.7245179	629	212.9683196	1710	632.6928375	1184	386.5151515	

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
178		163	1	JAN	1330	1657	397.1831956	1565	513.299	1300	202.328	265	310.971	392	113.278
179		164	1	JAN	1335	1415	406.9283747	1305	522.287	1300	211.281	5	311.006	322	115.496
180		165	1	JAN	1340	1205	415.2272727	1110	529.931	1110	218.926	0	311.006	268	117.342
181		166	1	JAN	1345	1030	422.3209366	951	536.481	951	225.475	0	311.006	240	118.994
182		167	1	JAN	1350	895	428.4848485	823	542.149	823	231.143	0	311.006	212	120.455
183		168	1	JAN	1355	775	433.822314	703	546.99	703	235.985	0	311.006	186	121.736
184		169	1	JAN	1400	669	438.4297521	605	551.157	605	240.152	0	311.006	161	122.844
185		170	1	JAN	1405	582	442.4380165	518	554.725	518	243.719	0	311.006	141	123.815
186		171	1	JAN	1410	510	445.9504132	451	557.831	451	246.825	0	311.006	123	124.663
187		172	1	JAN	1415	446	449.0220386	411	560.661	411	249.656	0	311.006	106	125.393
188		173	1	JAN	1420	391	451.714876	374	563.237	374	252.231	0	311.006	91	126.019
189		174	1	JAN	1425	344	454.084022	337	565.558	337	254.552	0	311.006	78	126.556
190		175	1	JAN	1430	306	456.1914601	304	567.652	304	256.646	0	311.006	66	127.011
191		176	1	JAN	1435	274	458.0785124	274	569.539	274	258.533	0	311.006	56	127.397
192		177	1	JAN	1440	244	459.7589532	239	571.185	239	260.179	0	311.006	48	127.727
193		178	1	JAN	1445	217	461.2534435	208	572.617	208	261.612	0	311.006	41	128.01
194		179	1	JAN	1450	195	462.5964187	180	573.857	180	262.851	0	311.006	35	128.251
195		180	1	JAN	1455	176	463.8085399	168	575.014	168	264.008	0	311.006	30	128.457
196		181	1	JAN	1500	161	464.9173554	156	576.088	156	265.083	0	311.006	26	128.636
197		182	1	JAN	1505	148	465.9366391	144	577.08	144	266.074	0	311.006	22	128.788
198		183	1	JAN	1510	137	466.8801653	134	578.003	134	266.997	0	311.006	19	128.919
199		184	1	JAN	1515	129	467.768595	125	578.864	125	267.858	0	311.006	17	129.036
200		185	1	JAN	1520	122	468.6088154	117	579.669	117	268.664	0	311.006	15	129.139
201		186	1	JAN	1525	115	469.4008264	109	580.42	109	269.415	0	311.006	13	129.229
202		187	1	JAN	1530	109	470.1515152	102	581.123	102	270.117	0	311.006	12	129.311
203		188	1	JAN	1535	102	470.8539945	96	581.784	96	270.778	0	311.006	10	129.38
204		189	1	JAN	1540	97	471.5220386	90	582.404	90	271.398	0	311.006	10	129.449
205		190	1	JAN	1545	91	472.1487603	86	582.996	86	271.99	0	311.006	9	129.511
206		191	1	JAN	1550	86	472.7410468	82	583.561	82	272.555	0	311.006	8	129.566
207		192	1	JAN	1555	82	473.3057851	78	584.098	78	273.092	0	311.006	8	129.621
208		193	1	JAN	1600	78	473.8429752	75	584.614	75	273.609	0	311.006	7	129.669
209		194	1	JAN	1605	75	474.3595041	72	585.11	72	274.105	0	311.006	7	129.718
210		195	1	JAN	1610	71	474.8484848	70	585.592	70	274.587	0	311.006	6	129.759
211		196	1	JAN	1615	69	475.3236915	67	586.054	67	275.048	0	311.006	6	129.8
212		197	1	JAN	1620	66	475.7782369	65	586.501	65	275.496	0	311.006	6	129.842
213		198	1	JAN	1625	64	476.2190083	64	586.942	64	275.937	0	311.006	6	129.883

	P	Q	R	S	T	U	V	W	X
178	657	424.2493113	528	216.6046832	1185	640.8539945	1005	393.4366391	
179	327	426.5013774	437	219.6143251	764	646.1157025	862	399.3732782	
180	268	428.3471074	366	222.1349862	634	650.4820937	738	404.4559229	
181	240	430	300	224.2011019	540	654.2011019	628	408.7809917	
182	212	431.4600551	253	225.9435262	465	657.4035813	542	412.5137741	
183	186	432.7410468	215	227.4242424	401	660.1652893	471	415.7575758	
184	161	433.8498623	186	228.7052342	347	662.5550964	416	418.6225895	
185	141	434.8209366	163	229.8278237	304	664.6487603	373	421.1914601	
186	123	435.6680441	141	230.7988981	264	666.4669421	328	423.4504132	
187	106	436.3980716	120	231.6253444	226	668.023416	288	425.4338843	
188	91	437.0247934	103	232.3347107	194	669.3595041	251	427.1625344	
189	78	437.5619835	88	232.9407713	166	670.5027548	224	428.7052342	
190	66	438.0165289	76	233.4641873	142	671.4807163	202	430.0964187	
191	56	438.4022039	67	233.9256198	123	672.3278237	182	431.3498623	
192	48	438.7327824	60	234.338843	108	673.0716253	165	432.4862259	
193	41	439.0151515	55	234.7176309	96	673.7327824	151	433.5261708	
194	35	439.2561983	52	235.0757576	87	674.3319559	139	434.4834711	
195	30	439.4628099	50	235.4201102	80	674.8829201	130	435.3787879	
196	26	439.6418733	47	235.7438017	73	675.3856749	121	436.2121212	
197	22	439.7933884	44	236.046832	66	675.8402204	116	437.0110193	
198	19	439.9242424	41	236.3292011	60	676.2534435	112	437.7823691	
199	17	440.0413223	38	236.5909091	55	676.6322314	108	438.5261708	
200	15	440.1446281	36	236.838843	51	676.9834711	103	439.2355372	
201	13	440.2341598	34	237.0730028	47	677.3071625	99	439.9173554	
202	12	440.3168044	31	237.2865014	43	677.6033058	95	440.5716253	
203	10	440.3856749	29	237.4862259	39	677.8719008	91	441.1983471	
204	10	440.4545455	28	237.6790634	38	678.1336088	88	441.8044077	
205	9	440.5165289	26	237.8581267	35	678.3746556	84	442.3829201	
206	8	440.5716253	24	238.023416	32	678.5950413	81	442.9407713	
207	8	440.6267218	23	238.1818182	31	678.8085399	77	443.4710744	
208	7	440.6749311	22	238.3333333	29	679.0082645	74	443.9807163	
209	7	440.7231405	21	238.4779614	28	679.2011019	71	444.469697	
210	6	440.7644628	20	238.6157025	26	679.3801653	69	444.9449036	
211	6	440.8057851	19	238.7465565	25	679.5523416	66	445.399449	
212	6	440.8471074	18	238.8705234	24	679.7176309	64	445.8402204	
213	6	440.8884298	18	238.9944904	24	679.8829201	62	446.2672176	

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
214		199	1	JAN	1630	62	476.6460055	62	587.369	62	276.364	0	311.006	5	129.917
215		200	1	JAN	1635	60	477.0592287	61	587.789	61	276.784	0	311.006	5	129.952
216		201	1	JAN	1640	58	477.4586777	60	588.202	60	277.197	0	311.006	5	129.986
217		202	1	JAN	1645	57	477.8512397	59	588.609	59	277.603	0	311.006	5	130.021
218		203	1	JAN	1650	55	478.2300275	58	589.008	58	278.003	0	311.006	5	130.055
219		204	1	JAN	1655	54	478.6019284	57	589.401	57	278.395	0	311.006	5	130.09
220		205	1	JAN	1700	53	478.9669421	56	589.787	56	278.781	0	311.006	5	130.124
221		206	1	JAN	1705	52	479.3250689	55	590.165	55	279.16	0	311.006	5	130.158
222		207	1	JAN	1710	52	479.6831956	55	590.544	55	279.539	0	311.006	5	130.193
223		208	1	JAN	1715	51	480.0344353	54	590.916	54	279.91	0	311.006	5	130.227
224		209	1	JAN	1720	50	480.3787879	53	591.281	53	280.275	0	311.006	4	130.255
225		210	1	JAN	1725	49	480.7162534	53	591.646	53	280.64	0	311.006	4	130.282
226		211	1	JAN	1730	49	481.053719	52	592.004	52	280.999	0	311.006	4	130.31
227		212	1	JAN	1735	48	481.3842975	51	592.355	51	281.35	0	311.006	4	130.337
228		213	1	JAN	1740	47	481.707989	51	592.707	51	281.701	0	311.006	4	130.365
229		214	1	JAN	1745	47	482.0316804	50	593.051	50	282.045	0	311.006	4	130.393
230		215	1	JAN	1750	46	482.3484848	50	593.395	50	282.39	0	311.006	4	130.42
231		216	1	JAN	1755	45	482.6584022	49	593.733	49	282.727	0	311.006	4	130.448
232		217	1	JAN	1800	45	482.9683196	49	594.07	49	283.065	0	311.006	4	130.475
233		218	1	JAN	1805	44	483.2713499	49	594.408	49	283.402	0	311.006	4	130.503
234		219	1	JAN	1810	44	483.5743802	48	594.738	48	283.733	0	311.006	4	130.53
235		220	1	JAN	1815	43	483.8705234	48	595.069	48	284.063	0	311.006	4	130.558
236		221	1	JAN	1820	43	484.1666667	48	595.399	48	284.394	0	311.006	4	130.585
237		222	1	JAN	1825	42	484.4559229	48	595.73	48	284.725	0	311.006	4	130.613
238		223	1	JAN	1830	42	484.7451791	47	596.054	47	285.048	0	311.006	4	130.64
239		224	1	JAN	1835	41	485.0275482	47	596.377	47	285.372	0	311.006	4	130.668
240		225	1	JAN	1840	41	485.3099174	46	596.694	46	285.689	0	311.006	4	130.696
241		226	1	JAN	1845	40	485.5853994	46	597.011	46	286.006	0	311.006	4	130.723
242		227	1	JAN	1850	39	485.8539945	46	597.328	46	286.322	0	311.006	4	130.751
243		228	1	JAN	1855	39	486.1225895	45	597.638	45	286.632	0	311.006	3	130.771
244		229	1	JAN	1900	38	486.3842975	45	597.948	45	286.942	0	311.006	3	130.792
245		230	1	JAN	1905	38	486.6460055	44	598.251	44	287.245	0	311.006	3	130.813
246		231	1	JAN	1910	37	486.9008264	44	598.554	44	287.548	0	311.006	3	130.833
247		232	1	JAN	1915	37	487.1556474	43	598.85	43	287.844	0	311.006	3	130.854
248		233	1	JAN	1920	36	487.4035813	43	599.146	43	288.14	0	311.006	3	130.875
249		234	1	JAN	1925	36	487.6515152	42	599.435	42	288.43	0	311.006	3	130.895

	P	Q	R	S	T	U	V	W	X
214	5	440.922865	17	239.1115702	22	680.0344353	60	446.6804408	
215	5	440.9573003	16	239.2217631	21	680.1790634	58	447.0798898	
216	5	440.9917355	16	239.3319559	21	680.3236915	56	447.4655647	
217	5	441.0261708	16	239.4421488	21	680.4683196	55	447.8443526	
218	5	441.0606061	15	239.5454545	20	680.6060606	53	448.2093664	
219	5	441.0950413	15	239.6487603	20	680.7438017	52	448.5674931	
220	5	441.1294766	15	239.7520661	20	680.8815427	51	448.9187328	
221	5	441.1639118	14	239.8484848	19	681.0123967	50	449.2630854	
222	5	441.1983471	14	239.9449036	19	681.1432507	49	449.600551	
223	5	441.2327824	14	240.0413223	19	681.2741047	48	449.9311295	
224	4	441.2603306	14	240.137741	18	681.3980716	47	450.2548209	
225	4	441.2878788	13	240.2272727	17	681.5151515	46	450.5716253	
226	4	441.315427	13	240.3168044	17	681.6322314	45	450.8815427	
227	4	441.3429752	13	240.4063361	17	681.7493113	44	451.184573	
228	4	441.3705234	13	240.4958678	17	681.8663912	44	451.4876033	
229	4	441.3980716	13	240.5853994	17	681.9834711	43	451.7837466	
230	4	441.4256198	12	240.6680441	16	682.0936639	42	452.0730028	
231	4	441.453168	12	240.7506887	16	682.2038567	42	452.362259	
232	4	441.4807163	12	240.8333333	16	682.3140496	41	452.6446281	
233	4	441.5082645	12	240.915978	16	682.4242424	40	452.9201102	
234	4	441.5358127	12	240.9986226	16	682.5344353	40	453.1955923	
235	4	441.5633609	12	241.0812672	16	682.6446281	39	453.4641873	
236	4	441.5909091	12	241.1639118	16	682.7548209	39	453.7327824	
237	4	441.6184573	11	241.2396694	15	682.8581267	38	453.9944904	
238	4	441.6460055	11	241.315427	15	682.9614325	38	454.2561983	
239	4	441.6735537	11	241.3911846	15	683.0647383	37	454.5110193	
240	4	441.7011019	11	241.4669421	15	683.1680441	37	454.7658402	
241	4	441.7286501	11	241.5426997	15	683.2713499	36	455.0137741	
242	4	441.7561983	11	241.6184573	15	683.3746556	36	455.261708	
243	3	441.7768595	11	241.6942149	14	683.4710744	35	455.5027548	
244	3	441.7975207	10	241.7630854	13	683.5606061	35	455.7438017	
245	3	441.8181818	10	241.8319559	13	683.6501377	34	455.9779614	
246	3	441.838843	10	241.9008264	13	683.7396694	34	456.2121212	
247	3	441.8595041	10	241.969697	13	683.8292011	33	456.4393939	
248	3	441.8801653	10	242.0385675	13	683.9187328	33	456.6666667	
249	3	441.9008264	10	242.107438	13	684.0082645	32	456.8870523	

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
250		235	1	JAN	1930	35	487.892562	42	599.725	42	288.719	0	311.006	3	130.916
251		236	1	JAN	1935	35	488.1336088	41	600.007	41	289.001	0	311.006	3	130.937
252		237	1	JAN	1940	34	488.3677686	41	600.289	41	289.284	0	311.006	3	130.957
253		238	1	JAN	1945	34	488.6019284	40	600.565	40	289.559	0	311.006	3	130.978
254		239	1	JAN	1950	34	488.8360882	40	600.84	40	289.835	0	311.006	3	130.999
255		240	1	JAN	1955	34	489.0702479	40	601.116	40	290.11	0	311.006	3	131.019
256		241	1	JAN	2000	33	489.2975207	39	601.384	39	290.379	0	311.006	3	131.04
257		242	1	JAN	2005	33	489.5247934	39	601.653	39	290.647	0	311.006	3	131.061
258		243	1	JAN	2010	33	489.7520661	38	601.915	38	290.909	0	311.006	3	131.081
259		244	1	JAN	2015	33	489.9793388	38	602.176	38	291.171	0	311.006	3	131.102
260		245	1	JAN	2020	33	490.2066116	38	602.438	38	291.433	0	311.006	3	131.123
261		246	1	JAN	2025	33	490.4338843	37	602.693	37	291.687	0	311.006	3	131.143
262		247	1	JAN	2030	32	490.65427	37	602.948	37	291.942	0	311.006	3	131.164
263		248	1	JAN	2035	32	490.8746556	37	603.202	37	292.197	0	311.006	3	131.185
264		249	1	JAN	2040	32	491.0950413	36	603.45	36	292.445	0	311.006	3	131.205
265		250	1	JAN	2045	32	491.315427	36	603.698	36	292.693	0	311.006	3	131.226
266		251	1	JAN	2050	31	491.5289256	36	603.946	36	292.941	0	311.006	3	131.247
267		252	1	JAN	2055	31	491.7424242	35	604.187	35	293.182	0	311.006	3	131.267
268		253	1	JAN	2100	31	491.9559229	35	604.428	35	293.423	0	311.006	3	131.288
269		254	1	JAN	2105	30	492.1625344	34	604.663	34	293.657	0	311.006	3	131.309
270		255	1	JAN	2110	30	492.369146	34	604.897	34	293.891	0	311.006	3	131.329
271		256	1	JAN	2115	30	492.5757576	33	605.124	33	294.118	0	311.006	2	131.343
272		257	1	JAN	2120	29	492.7754821	33	605.351	33	294.346	0	311.006	2	131.357
273		258	1	JAN	2125	29	492.9752066	33	605.579	33	294.573	0	311.006	2	131.371
274		259	1	JAN	2130	28	493.1680441	32	605.799	32	294.793	0	311.006	2	131.384
275		260	1	JAN	2135	28	493.3608815	32	606.019	32	295.014	0	311.006	2	131.398
276		261	1	JAN	2140	28	493.553719	31	606.233	31	295.227	0	311.006	2	131.412
277		262	1	JAN	2145	27	493.7396694	31	606.446	31	295.441	0	311.006	2	131.426
278		263	1	JAN	2150	27	493.9256198	31	606.66	31	295.654	0	311.006	2	131.439
279		264	1	JAN	2155	27	494.1115702	30	606.866	30	295.861	0	311.006	2	131.453
280		265	1	JAN	2200	26	494.2906336	30	607.073	30	296.067	0	311.006	2	131.467
281		266	1	JAN	2205	26	494.469697	30	607.28	30	296.274	0	311.006	2	131.481
282		267	1	JAN	2210	26	494.6487603	29	607.479	29	296.474	0	311.006	2	131.494
283		268	1	JAN	2215	26	494.8278237	29	607.679	29	296.674	0	311.006	2	131.508
284		269	1	JAN	2220	25	495	29	607.879	29	296.873	0	311.006	2	131.522
285		270	1	JAN	2225	25	495.1721763	29	608.079	29	297.073	0	311.006	2	131.536

	P	Q	R	S	T	U	V	W	X
250	3	441.9214876	10	242.1763085	13	684.0977961	32	457.107438	
251	3	441.9421488	9	242.238292	12	684.1804408	32	457.3278237	
252	3	441.9628099	9	242.3002755	12	684.2630854	31	457.5413223	
253	3	441.9834711	9	242.362259	12	684.34573	31	457.7548209	
254	3	442.0041322	9	242.4242424	12	684.4283747	31	457.9683196	
255	3	442.0247934	9	242.4862259	12	684.5110193	30	458.1749311	
256	3	442.0454545	9	242.5482094	12	684.5936639	30	458.3815427	
257	3	442.0661157	9	242.6101928	12	684.6763085	30	458.5881543	
258	3	442.0867769	9	242.6721763	12	684.7589532	30	458.7947658	
259	3	442.107438	9	242.7341598	12	684.8415978	29	458.9944904	
260	3	442.1280992	9	242.7961433	12	684.9242424	29	459.1942149	
261	3	442.1487603	9	242.8581267	12	685.0068871	29	459.3939394	
262	3	442.1694215	9	242.9201102	12	685.0895317	29	459.5936639	
263	3	442.1900826	9	242.9820937	12	685.1721763	28	459.7865014	
264	3	442.2107438	8	243.0371901	11	685.2479339	28	459.9793388	
265	3	442.231405	8	243.0922865	11	685.3236915	28	460.1721763	
266	3	442.2520661	8	243.1473829	11	685.399449	27	460.3581267	
267	3	442.2727273	8	243.2024793	11	685.4752066	27	460.5440771	
268	3	442.2933884	8	243.2575758	11	685.5509642	26	460.7231405	
269	3	442.3140496	8	243.3126722	11	685.6267218	26	460.9022039	
270	3	442.3347107	8	243.3677686	11	685.7024793	26	461.0812672	
271	2	442.3484848	8	243.422865	10	685.7713499	25	461.2534435	
272	2	442.362259	8	243.4779614	10	685.8402204	25	461.4256198	
273	2	442.3760331	7	243.5261708	9	685.9022039	25	461.5977961	
274	2	442.3898072	7	243.5743802	9	685.9641873	24	461.7630854	
275	2	442.4035813	7	243.6225895	9	686.0261708	24	461.9283747	
276	2	442.4173554	7	243.6707989	9	686.0881543	24	462.0936639	
277	2	442.4311295	7	243.7190083	9	686.1501377	23	462.2520661	
278	2	442.4449036	7	243.7672176	9	686.2121212	23	462.4104683	
279	2	442.4586777	7	243.815427	9	686.2741047	23	462.5688705	
280	2	442.4724518	7	243.8636364	9	686.3360882	23	462.7272727	
281	2	442.4862259	7	243.9118457	9	686.3980716	23	462.8856749	
282	2	442.5	7	243.9600551	9	686.4600551	23	463.0440771	
283	2	442.5137741	7	244.0082645	9	686.5220386	22	463.1955923	
284	2	442.5275482	7	244.0564738	9	686.584022	22	463.3471074	
285	2	442.5413223	7	244.1046832	9	686.6460055	22	463.4986226	

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
286		271	1	JAN	2230	25	495.3443526	28	608.271	28	297.266	0	311.006	2	131.55
287		272	1	JAN	2235	25	495.5165289	28	608.464	28	297.459	0	311.006	2	131.563
288		273	1	JAN	2240	25	495.6887052	28	608.657	28	297.652	0	311.006	2	131.577
289		274	1	JAN	2245	25	495.8608815	28	608.85	28	297.844	0	311.006	2	131.591
290		275	1	JAN	2250	25	496.0330579	28	609.043	28	298.037	0	311.006	2	131.605
291		276	1	JAN	2255	25	496.2052342	28	609.236	28	298.23	0	311.006	2	131.618
292		277	1	JAN	2300	25	496.3774105	27	609.421	27	298.416	0	311.006	2	131.632
293		278	1	JAN	2305	24	496.5426997	27	609.607	27	298.602	0	311.006	2	131.646
294		279	1	JAN	2310	24	496.707989	27	609.793	27	298.788	0	311.006	2	131.66
295		280	1	JAN	2315	24	496.8732782	27	609.979	27	298.974	0	311.006	2	131.674
296		281	1	JAN	2320	24	497.0385675	27	610.165	27	299.16	0	311.006	2	131.687
297		282	1	JAN	2325	24	497.2038567	27	610.351	27	299.346	0	311.006	2	131.701
298		283	1	JAN	2330	24	497.369146	27	610.537	27	299.532	0	311.006	2	131.715
299		284	1	JAN	2335	24	497.5344353	27	610.723	27	299.718	0	311.006	2	131.729
300		285	1	JAN	2340	24	497.6997245	27	610.909	27	299.904	0	311.006	2	131.742
301		286	1	JAN	2345	24	497.8650138	27	611.095	27	300.09	0	311.006	2	131.756
302		287	1	JAN	2350	24	498.030303	27	611.281	27	300.275	0	311.006	2	131.77
303		288	1	JAN	2355	24	498.1955923	27	611.467	27	300.461	0	311.006	2	131.784
304		289	2	JAN	0	24	498.3608815	27	611.653	27	300.647	0	311.006	2	131.798
305		290	2	JAN	5	24	498.5261708	27	611.839	27	300.833	0	311.006	2	131.811
306		291	2	JAN	10	24	498.6914601	27	612.025	27	301.019	0	311.006	2	131.825
307		292	2	JAN	15	24	498.8567493	27	612.211	27	301.205	0	311.006	2	131.839
308		293	2	JAN	20	24	499.0220386	26	612.39	26	301.384	0	311.006	2	131.853
309		294	2	JAN	25	24	499.1873278	26	612.569	26	301.563	0	311.006	2	131.866
310		295	2	JAN	30	24	499.3526171	26	612.748	26	301.742	0	311.006	2	131.88
311		296	2	JAN	35	23	499.5110193	26	612.927	26	301.921	0	311.006	2	131.894
312		297	2	JAN	40	23	499.6694215	25	613.099	25	302.094	0	311.006	2	131.908
313		298	2	JAN	45	23	499.8278237	25	613.271	25	302.266	0	311.006	2	131.921
314		299	2	JAN	50	22	499.9793388	25	613.444	25	302.438	0	311.006	2	131.935
315		300	2	JAN	55	22	500.130854	24	613.609	24	302.603	0	311.006	2	131.949
316						21	500.2754821	23	613.767	23	302.762	0	311.006	1	131.956
317						20	500.4132231	22	613.919	22	302.913	0	311.006	1	131.963
318						19	500.5440771	22	614.07	22	303.065	0	311.006	1	131.97
319						18	500.6680441	21	614.215	21	303.209	0	311.006	1	131.977
320						17	500.785124	20	614.353	20	303.347	0	311.006	1	131.983
321						16	500.8953168	19	614.483	19	303.478	0	311.006	1	131.99

	P	Q	R	S	T	U	V	W	X
286	2	442.5550964	7	244.1528926	9	686.707989	22	463.6501377	
287	2	442.5688705	7	244.2011019	9	686.7699725	22	463.8016529	
288	2	442.5826446	6	244.2424242	8	686.8250689	22	463.953168	
289	2	442.5964187	6	244.2837466	8	686.8801653	22	464.1046832	
290	2	442.6101928	6	244.3250689	8	686.9352617	22	464.2561983	
291	2	442.6239669	6	244.3663912	8	686.9903581	22	464.4077135	
292	2	442.637741	6	244.4077135	8	687.0454545	22	464.5592287	
293	2	442.6515152	6	244.4490358	8	687.100551	22	464.7107438	
294	2	442.6652893	6	244.4903581	8	687.1556474	22	464.862259	
295	2	442.6790634	6	244.5316804	8	687.2107438	21	465.0068871	
296	2	442.6928375	6	244.5730028	8	687.2658402	21	465.1515152	
297	2	442.7066116	6	244.6143251	8	687.3209366	21	465.2961433	
298	2	442.7203857	6	244.6556474	8	687.3760331	21	465.4407713	
299	2	442.7341598	6	244.6969697	8	687.4311295	21	465.5853994	
300	2	442.7479339	6	244.738292	8	687.4862259	21	465.7300275	
301	2	442.761708	6	244.7796143	8	687.5413223	21	465.8746556	
302	2	442.7754821	6	244.8209366	8	687.5964187	21	466.0192837	
303	2	442.7892562	6	244.862259	8	687.6515152	21	466.1639118	
304	2	442.8030303	6	244.9035813	8	687.7066116	21	466.3085399	
305	2	442.8168044	6	244.9449036	8	687.761708	21	466.453168	
306	2	442.8305785	6	244.9862259	8	687.8168044	21	466.5977961	
307	2	442.8443526	6	245.0275482	8	687.8719008	21	466.7424242	
308	2	442.8581267	6	245.0688705	8	687.9269972	21	466.8870523	
309	2	442.8719008	6	245.1101928	8	687.9820937	21	467.0316804	
310	2	442.8856749	6	245.1515152	8	688.0371901	21	467.1763085	
311	2	442.899449	6	245.1928375	8	688.0922865	20	467.3140496	
312	2	442.9132231	6	245.2341598	8	688.1473829	20	467.4517906	
313	2	442.9269972	6	245.2754821	8	688.2024793	19	467.5826446	
314	2	442.9407713	6	245.3168044	8	688.2575758	18	467.7066116	
315	2	442.9545455	6	245.3581267	8	688.3126722	17	467.8236915	
316	1	442.9614325	6	245.399449	7	688.3608815	16	467.9338843	
317	1	442.9683196	5	245.4338843	6	688.4022039	15	468.0371901	
318	1	442.9752066	5	245.4683196	6	688.4435262	14	468.1336088	
319	1	442.9820937	5	245.5027548	6	688.4848485	13	468.2231405	
320	1	442.9889807	4	245.530303	5	688.5192837	12	468.3057851	
321	1	442.9958678	4	245.5578512	5	688.553719	11	468.3815427	

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
322						15	500.9986226	18	614.607	18	303.602	0	311.006	1	131.997
323						14	501.0950413	17	614.725	17	303.719	0	311.006	1	132.004
324						12	501.177686	16	614.835	16	303.829	0	311.006	1	132.011
325						11	501.2534435	15	614.938	15	303.933	0	311.006	0	132.011
326						10	501.322314	13	615.028	13	304.022	0	311.006	0	132.011
327						9	501.3842975	12	615.11	12	304.105	0	311.006	0	132.011
328						8	501.4393939	11	615.186	11	304.18	0	311.006	0	132.011
329						7	501.4876033	10	615.255	10	304.249	0	311.006	0	132.011
330						7	501.5358127	10	615.324	10	304.318	0	311.006	0	132.011
331						6	501.577135	9	615.386	9	304.38	0	311.006	0	132.011
332						5	501.6115702	8	615.441	8	304.435	0	311.006	0	132.011
333						4	501.6391185	7	615.489	7	304.483	0	311.006	0	132.011
334						4	501.6666667	6	615.53	6	304.525	0	311.006	0	132.011
335						3	501.6873278	6	615.572	6	304.566	0	311.006	0	132.011
336						3	501.707989	5	615.606	5	304.601	0	311.006	0	132.011
337						3	501.7286501	5	615.64	5	304.635	0	311.006	0	132.011
338						2	501.7424242	4	615.668	4	304.663	0	311.006	0	132.011
339						2	501.7561983	4	615.696	4	304.69	0	311.006	0	132.011
340						2	501.7699725	3	615.716	3	304.711	0	311.006	0	132.011
341						1	501.7768595	3	615.737	3	304.731	0	311.006	0	132.011
342						1	501.7837466	3	615.758	3	304.752	0	311.006	0	132.011
343						1	501.7906336	2	615.771	2	304.766	0	311.006	0	132.011
344						1	501.7975207	2	615.785	2	304.78	0	311.006	0	132.011
345						1	501.8044077	2	615.799	2	304.793	0	311.006	0	132.011
346						1	501.8112948	2	615.813	2	304.807	0	311.006	0	132.011

	P	Q	R	S	T	U	V	W	X
322	1	443.0027548	4	245.5853994	5	688.5881543	11	468.4573003	
323	1	443.0096419	3	245.6060606	4	688.6157025	10	468.5261708	
324	1	443.0165289	3	245.6267218	4	688.6432507	9	468.5881543	
325	0	443.0165289	2	245.6404959	2	688.6570248	8	468.6432507	
326	0	443.0165289	2	245.65427	2	688.6707989	7	468.6914601	
327	0	443.0165289	2	245.6680441	2	688.684573	6	468.7327824	
328	0	443.0165289	2	245.6818182	2	688.6983471	6	468.7741047	
329	0	443.0165289	1	245.6887052	1	688.7052342	5	468.8085399	
330	0	443.0165289	1	245.6955923	1	688.7121212	5	468.8429752	
331	0	443.0165289	1	245.7024793	1	688.7190083	4	468.8705234	
332	0	443.0165289	1	245.7093664	1	688.7258953	4	468.8980716	
333	0	443.0165289	1	245.7162534	1	688.7327824	3	468.9187328	
334	0	443.0165289	1	245.7231405	1	688.7396694	3	468.9393939	
335	0	443.0165289	1	245.7300275	1	688.7465565	2	468.953168	
336	0	443.0165289	0	245.7300275	0	688.7465565	2	468.9669421	
337	0	443.0165289	0	245.7300275	0	688.7465565	2	468.9807163	
338	0	443.0165289	0	245.7300275	0	688.7465565	2	468.9944904	
339	0	443.0165289	0	245.7300275	0	688.7465565	1	469.0013774	
340	0	443.0165289	0	245.7300275	0	688.7465565	1	469.0082645	
341	0	443.0165289	0	245.7300275	0	688.7465565	1	469.0151515	
342	0	443.0165289	0	245.7300275	0	688.7465565	1	469.0220386	
343	0	443.0165289	0	245.7300275	0	688.7465565	1	469.0289256	
344	0	443.0165289	0	245.7300275	0	688.7465565	1	469.0358127	
345	0	443.0165289	0	245.7300275	0	688.7465565	1	469.0426997	
346	0	443.0165289	0	245.7300275	0	688.7465565	1	469.0495868	

DAMES & MOORE

CALCULATIONS COVER SHEET

SUBJECT: FCDMC FRS #3

PROJECT NO. 15448-007-058

SHEET 1 OF 9

Basins Dimensions Optimization

TITLE OF CALCULATIONS/DOCUMENT

CALCULATIONS/DOCUMENT BY:

Muawieh Radaideh

PRINT NAME

SIGNATURE

7-11-00

DATE

ASSUMPTIONS CHECKED BY CONSULTANT/SENIOR PERSONNEL:

Todd Ringsmuth

PRINT NAME

SIGNATURE

1-9-01

DATE

CALCULATIONS/DOCUMENT CHECKED BY:

Bonnie Whitley

PRINT NAME

SIGNATURE

7/14/00

DATE

APPROVED BY:
(PRINCIPAL INVESTIGATOR, CONSULTANT, OR PM)

Todd Ringsmuth

PRINT NAME

SIGNATURE

1-9-01

DATE

Approval Notice: If Calculations/Document are only spot checked, do not require checking, or are assumed to be correct by experience of engineering judgement, it should be noted here.

Revision Number	Date	By	Checked By	Approval
1				
2				
3				
4			INITIALS	

CALCULATION CHECKING CRITERIA

1. Is the calculation method appropriate?
2. Are the results and conclusions reasonable when compared with the design input and the project objectives?
3. Are the results and conclusions reasonably within the project construction budget?
4. Is the calculation complete in format with all sections included?

   - Problem Statement & Calculation Objectives
   - Data Available
   - Design Criteria
   - Assumptions
   - Analysis and Conclusions
   - Attachments

5. Does the calculation conform with:

   - Codes
   - Project Design Criteria
   - Project Procedures?

6. Are the mathematics of the calculation accurate?
7. Are computer programs used in the calculation appropriate for use in this application?
8. Is the computer input correct?
9. Is the computer output correct and reasonable?
10. Are all sheets completely filled out?

    - Project number?
    - File number?
    - Sheet ? of ?
    - By ? Date ?
    - Checked By ?

11. Are the calculations neat and legible?

EXHIBIT D

FCDMC, White Tanks FRS #3 Modification Design

Basin Dimensions Optimization

15448-007-058

OBJECTIVE:

To evaluate different basin dimensions for optimal excavation volumes and cost to achieve the required storage volume.

REFERENCES:

Calculation packages titled HEC-1 Analysis and FRS #3 Basin Alternatives Volume Calculation.

ASSUMPTIONS:

- Ground slope in the areas were the basins will be located is approximately 1 percent.
- Basin side slopes are proposed to be 6 horizontal to 1 vertical.
- Bottom of the basin will be flat.
- Freeboard requirements will be met by adding 1 ft to the calculated basin depth.

CALCULATION APPROACH:

- Basin(s)-layouts for each of the alternatives were developed by BRW and used as reference layouts for dimensions comparison purposes.
- For each basin, three scenarios were analyzed for optimal solutions:

a) Comparable BRW Area: dimensions similar to the BRW layout. Solution is sought for basin depth to achieve the storage volume.

b) Optimization 1: basin length similar to that of the layout and optimization is conducted for width and depth of basin to produce the required storage volume.

c) Optimization 3: basin dimensions are not set. Optimization is carried out for length, width, and depth of the basin to achieve the required storage volume.

- Microsoft's Excel Solver was used to conduct the optimization analysis.

- Once dimensions for each of the scenarios are calculated, Excel Goal Seek was used to add 1 ft of freeboard to the resulting basin depth.

- Excavation volumes and basin dimensions were used to compare the results and choose an optimal solution.

- The optimal solution is then used to develop new basin layout drawings, from which more accurate excavation volumes are calculated using cross sections.

RESULTS:

The attached tables show the results of the optimization and the addition of the 1-ft freeboard. The basins dimensions chosen for creating the new layouts and cut volumes are highlighted.

Basins Dimensions Optimization

No Free Board

Alternative 1

Optimization	top length	top width	top area	base length	base width	bottom area	minimum depth	dam height	freeboard	internal slope	ground slope	base excavation	slope excavation	total excavation for this basin	storage volume	Cost for basin[d]
	Lt	Wt	A_T	Lb	Wb	A_b	d	h	f	s	g	V1	V2	V1+V2	V3	
	ft	ft	ft^2	ft	ft	ft^2	ft	ft	ft	H:V	V:H	cy	cy	cy	ac-ft	$
Comparable BRW area[a]	5,100	900	4,590,000	4,885	685	3,344,685	17.94	0.0	0.0	6.00	0.010	2,636,072	813,830	3,449,902	1,634	$8,762,751
Optimization 1[b]	5,100	914	4,663,841	4,889	704	3,440,532	17.57	0.0	0.0	6.00	0.010	2,636,187	840,225	3,476,412	1,634	$8,830,086
Optimization 2[c]	9,882	419	4,143,639	9,511	48	3,834,799	30.96	0.0	0.0	6.00	0.010	2,636,187	342,285	2,978,472	1,634	$7,565,319

Alternative 2

Optimization	top length	top width	top area	base length	base width	bottom area	minimum depth	dam height	freeboard	internal slope	ground slope	base excavation	slope excavation	total excavation for this basin	storage volume	Cost for basin[d]
	Lt	Wt	A_T	Lb	Wb	A_b	d	h	f	s	g	V1	V2	V1+V2	V3	
	ft	ft	ft^2	ft	ft	ft^2	ft	ft	ft	H:V	V:H	cy	cy	cy	ac-ft	$
Upper Basin																
Optimization 1	2,200	1,750	3,850,000	2,125	1,675	3,559,681	6.2	0	0	6.0	0.010	856,680	1,327,325	2,184,005	531	$5,547,372
Optimization 2	2,200	1,336	2,940,010	2,100	1,236	2,595,417	8.4	0	0	6.0	0.010	856,680	774,022	1,630,702	531	$4,141,983
Optimization 3	2,000	1,250	2,500,007	1,890	1,130	2,124,267	10.0	0	0	6.0	0.010	856,680	615,648	1,472,328	531	$3,739,714
Lower Basin																
Optimization 1	3,400	1,250	4,250,000	3,339	1,189	3,971,042	5.1	0	0	6.0	0.010	771,173	1,046,592	1,817,765	478	$4,617,123
Optimization 2	3,400	1,491	5,070,115	3,350	1,441	4,825,667	4.2	0	0	6.0	0.010	771,173	1,489,482	2,260,655	478	$5,742,063
Optimization 3	2,000	1,250	2,499,948	1,893	1,143	2,163,150	8.9	0	0	6.0	0.010	771,173	615,623	1,386,797	478	$3,522,463

Alternative 3

Optimization	top length	top width	top area	base length	base width	bottom area	minimum depth	dam height	freeboard	internal slope	ground slope	base excavation	slope excavation	total excavation for this basin	storage volume	Cost for basin[d]
	Lt	Wt	A_T	Lb	Wb	A_b	d	h	f	s	g	V1	V2	V1+V2	V3	
	ft	ft	ft^2	ft	ft	ft^2	ft	ft	ft	H:V	V:H	cy	cy	cy	ac-ft	$
Main Basin																
Comparable BRW Area[a]	4,250	2,375	10,093,750	4,189	2,314	9,692,136	5.1	0	0	6.0	0.010	1,868,240	4,722,746	6,590,986	1,158	$16,741,103
Optimization 1[b]	4,250	1,154	4,903,355	4,095	857	3,509,953	12.92	0.0	0.0	6.00	0.010	1,868,240	857,672	2,725,912	1,158	$6,923,817
Optimization 2[c]	3,380	997	3,370,861	3,193	810	2,584,691	16.77	0.0	0.0	6.00	0.010	1,868,240	683,197	2,551,437	1,158	$6,480,651
Olive Basin																
Comparable BRW Area[a]	2,300	1,150	2,645,000	2,194	1,044	2,289,377	8.9	0	0	6.0	0.010	809,893	599,242	1,409,135	502	$3,579,203
Optimization 1[b]	2,300	1,289	2,964,729	2,206	1,195	2,637,277	7.81	0.0	0.0	6.00	0.010	809,893	752,871	1,562,764	502	$3,969,422
Optimization 2[c]	5,280	660	3,483,385	5,199	579	3,009,845	6.74	0.0	0.0	6.00	0.010	809,893	452,741	1,262,634	502	$3,207,091

Notes:

- a) From original concepts. Concept 5 is reference concept for Alternative 1,Concept 3 is reference concept for Alternative 2, and Concept 2 is reference concept for Alternative 3.
  b) Optimaization 1 consists of setting the top length value similar to that of the reference concepts, and optimizing the other dimentions.
  c) Optimization 2 has no fixed values.
  d) Based on $2.54/cy priliminary cost estimate.
- Highlighted rows include chosen dimensions for basins.

Basins Dimensions Optimization

A B C D E F G H I J K L M

Alternative 1

	Optimization	top length	top width	top area	base length	base width	bottom area	minimum depth	dam height	freeboard	internal slope	ground slope	base excavation
		Lt	Wt	A_T	Lb	Wb	A_b	d	h	f	s	g	V1
		ft	ft	ft^2	ft	ft	ft^2	ft	ft	ft	H:V	V:H	cy
6	Comparable BRW area[a]	5100	900	=B6*C6	=B6-(K6*2*H6)	=C6-(K6*2*H6)	=E6*F6	17.94	0	0	6	0.01	=(F6*E6*H6+F6*K6*H6^2+E6*K6*H6^2+2*H6^3*K6^2)/27
7	Optimization 1[b]	5100	914.4787	=B7*C7	=B7-(K7*2*H7)	=C7-(K7*2*H7)	=E7*F7	17.565094	0	0	6	0.01	=(F7*E7*H7+F7*K7*H7^2+E7*K7*H7^2+2*H7^3*K7^2)/27
8	Optimization 2[c]	9882.203	419.3031	=B8*C8	=B8-(K8*2*H8)	=C8-(K8*2*H8)	3834798.9	30.957353	0	0	6	0.01	=(F8*E8*H8+F8*K8*H8^2+E8*K8*H8^2+2*H8^3*K8^2)/27

Alternative 2

Optimization	top length	top width	top area	base length	base width	bottom area	minimum depth	dam height	freeboard	internal slope	ground slope	base excavation
	Lt	Wt	A_T	Lb	Wb	A_b	d	h	f	s	g	V1
	ft	ft	ft^2	ft	ft	ft^2	ft	ft	ft	H:V	V:H	cy

Upper Basin

Optimization 1	2200	1750	=B19*C19	=B19-(K19*2*H19)	=C19-(K19*2*H19)	=E19*F19	6.2432805	0	0	6	0.01	=(F19*E19*H19+F19*K19*H19^2+E19*K19*H19^2+2*H19^3*K19^2)/27
Optimization 2	2200	1336.368	=B20*C20	=B20-(K20*2*H20)	=C20-(K20*2*H20)	=E20*F20	8.3572082	0	0	6	0.01	=(F20*E20*H20+F20*K20*H20^2+E20*K20*H20^2+2*H20^3*K20^2)/27
Optimization 3	1999.991	1250.008	=B21*C21	=B21-(K21*2*H21)	=C21-(K21*2*H21)	=E21*F21	10.003888	0	0	6	0.01	=(F21*E21*H21+F21*K21*H21^2+E21*K21*H21^2+2*H21^3*K21^2)/27

Lower Basin

Optimization 1	3400	1250	=B25*C25	=B25-(K25*2*H25)	=C25-(K25*2*H25)	=E25*F25	5.0654599	0	0	6	0.01	=(F25*E25*H25+F25*K25*H25^2+E25*K25*H25^2+2*H25^3*K25^2)/27
Optimization 2	3400	1491.210	=B26*C26	=B26-(K26*2*H26)	=C26-(K26*2*H26)	=E26*F26	4.2081926	0	0	6	0.01	=(F26*E26*H26+F26*K26*H26^2+E26*K26*H26^2+2*H26^3*K26^2)/27
Optimization 3	1999.978	1249.987	=B27*C27	=B27-(K27*2*H27)	=C27-(K27*2*H27)	=E27*F27	8.9304083	0	0	6	0.01	=(F27*E27*H27+F27*K27*H27^2+E27*K27*H27^2+2*H27^3*K27^2)/27

Alternative 3

Optimization	top length	top width	top area	base length	base width	bottom area	minimum depth	dam height	freeboard	internal slope	ground slope	base excavation
	Lt	Wt	A_T	Lb	Wb	A_b	d	h	f	s	g	V1
	ft	ft	ft^2	ft	ft	ft^2	ft	ft	ft	H:V	V:H	cy

Main Basin

Comparable BRW Area[a]	4250	2375	=B38*C38	=B38-(K38*2*H38)	=C38-(K38*2*H38)	=E38*F38	5.0988344	0	0	6	0.01	=(F38*E38*H38+F38*K38*H38^2+E38*K38*H38^2+2*H38^3*K38^2)/27
Optimization 1[b]	4250	1153.730	=B39*C39	=B39-(K39*2*H39)	857.127432501593	=E39*F39	12.9150710	0	0	6	0.01	=(F39*E39*H39+F39*K39*H39^2+E39*K39*H39^2+2*H39^3*K39^2)/27
Optimization 2[c]	3380.177	997.2438	=B40*C40	3192.52736029197	809.606457887372	=E40*F40	16.771290	0	0	6	0.01	=(F40*E40*H40+F40*K40*H40^2+E40*K40*H40^2+2*H40^3*K40^2)/27

Olive Basin

Comparable BRW Area[a]	2300	1150	=B44*C44	=B44-(K44*2*H44)	=C44-(K44*2*H44)	=E44*F44	8.8831742	0	0	6	0.01	=(F44*E44*H44+F44*K44*H44^2+E44*K44*H44^2+2*H44^3*K44^2)/27
Optimization 1[b]	2300	1289.012	=B45*C45	=B45-(K45*2*H45)	=C45-(K45*2*H45)	=E45*F45	7.8068886	0	0	6	0.01	=(F45*E45*H45+F45*K45*H45^2+E45*K45*H45^2+2*H45^3*K45^2)/27
Optimization 2[c]	5279.970	659.7356	=B46*C46	=B46-(K46*2*H46)	=C46-(K46*2*H46)	=E46*F46	6.7353594	0	0	6	0.01	=(F46*E46*H46+F46*K46*H46^2+E46*K46*H46^2+2*H46^3*K46^2)/27

Notes:
- a) From original concepts
  b) Optimaization 1 consis
  c) Optimization 2 has no f
  d) Based on $2.54/cy prili
-Highlighted rows include cl

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Basins Dimensions Optimization

Cont./ Alternative 1

slope excavation	total excavation for this basin	storage volume	Cost for basin[d]
V2	V1+V2	V3	
cy	cy	ac-ft	$
=(F6+2*H6*K6)*(E6+2*H6*K6)*(L6*F6+2*L6*H6*K6)/(2-2*K6*L6)/27	=M6+N6	=(F6*E6+(F6+2*K6*(H6+I6-J6))*(E6+2*K6*(H6+I6-J6)))/2*(H6+I6-J6)/43560	=O6*2.54
=(F7+2*H7*K7)*(E7+2*H7*K7)*(L7*F7+2*L7*H7*K7)/(2-2*K7*L7)/27	=M7+N7	=(F7*E7+(F7+2*K7*(H7+I7-J7))*(E7+2*K7*(H7+I7-J7)))/2*(H7+I7-J7)/43560	=O7*2.54
=(F8+2*H8*K8)*(E8+2*H8*K8)*(L8*F8+2*L8*H8*K8)/(2-2*K8*L8)/27	=M8+N8	=(F8*E8+(F8+2*K8*(H8+I8-J8))*(E8+2*K8*(H8+I8-J8)))/2*(H8+I8-J8)/43560	=O8*2.54

Cont./ Alternative 2

slope excavation	total excavation for this basin	storage volume	Cost for basin[d]
V2	V1+V2	V3	
cy	cy	ac-ft	$

Cont./ Upper Basin

=(F19+2*H19*K19)*(E19+2*H19*K19)*(L19*F19+2*L19*H19*K19)/(2-2*K19*L19)/27	=M19+N19	=(F19*E19+(F19+2*K19*(H19+I19-J19))*(E19+2*K19*(H19+I19-J19)))/2*(H19+I19-J19)/43560	=O19*2.54
=(F20+2*H20*K20)*(E20+2*H20*K20)*(L20*F20+2*L20*H20*K20)/(2-2*K20*L20)/27	=M20+N20	=(F20*E20+(F20+2*K20*(H20+I20-J20))*(E20+2*K20*(H20+I20-J20)))/2*(H20+I20-J20)/43560	=O20*2.54
=(F21+2*H21*K21)*(E21+2*H21*K21)*(L21*F21+2*L21*H21*K21)/(2-2*K21*L21)/27	=M21+N21	=(F21*E21+(F21+2*K21*(H21+I21-J21))*(E21+2*K21*(H21+I21-J21)))/2*(H21+I21-J21)/43560	=O21*2.54

Cont./ Lower Basin

=(F25+2*H25*K25)*(E25+2*H25*K25)*(L25*F25+2*L25*H25*K25)/(2-2*K25*L25)/27	=M25+N25	=(F25*E25+(F25+2*K25*(H25+I25-J25))*(E25+2*K25*(H25+I25-J25)))/2*(H25+I25-J25)/43560	=O25*2.54
=(F26+2*H26*K26)*(E26+2*H26*K26)*(L26*F26+2*L26*H26*K26)/(2-2*K26*L26)/27	=M26+N26	=(F26*E26+(F26+2*K26*(H26+I26-J26))*(E26+2*K26*(H26+I26-J26)))/2*(H26+I26-J26)/43560	=O26*2.54
=(F27+2*H27*K27)*(E27+2*H27*K27)*(L27*F27+2*L27*H27*K27)/(2-2*K27*L27)/27	=M27+N27	=(F27*E27+(F27+2*K27*(H27+I27-J27))*(E27+2*K27*(H27+I27-J27)))/2*(H27+I27-J27)/43560	=O27*2.54

Cont./ Alternative 3

slope excavation	total excavation for this basin	storage volume	Cost for basin[d]
V2	V1+V2	V3	
cy	cy	ac-ft	$

Cont./ Main Basin

=(F38+2*H38*K38)*(E38+2*H38*K38)*(L38*F38+2*L38*H38*K38)/(2-2*K38*L38)/27	=M38+N38	=(F38*E38+(F38+2*K38*(H38+I38-J38))*(E38+2*K38*(H38+I38-J38)))/2*(H38+I38-J38)/43560	=O38*2.54
=(F39+2*H39*K39)*(E39+2*H39*K39)*(L39*F39+2*L39*H39*K39)/(2-2*K39*L39)/27	=M39+N39	=(F39*E39+(F39+2*K39*(H39+I39-J39))*(E39+2*K39*(H39+I39-J39)))/2*(H39+I39-J39)/43560	=O39*2.54
=(F40+2*H40*K40)*(E40+2*H40*K40)*(L40*F40+2*L40*H40*K40)/(2-2*K40*L40)/27	=M40+N40	=(F40*E40+(F40+2*K40*(H40+I40-J40))*(E40+2*K40*(H40+I40-J40)))/2*(H40+I40-J40)/43560	=O40*2.54

Cont./ Olive Basin

=(F44+2*H44*K44)*(E44+2*H44*K44)*(L44*F44+2*L44*H44*K44)/(2-2*K44*L44)/27	=M44+N44	=(F44*E44+(F44+2*K44*(H44+I44-J44))*(E44+2*K44*(H44+I44-J44)))/2*(H44+I44-J44)/43560	=O44*2.54
=(F45+2*H45*K45)*(E45+2*H45*K45)*(L45*F45+2*L45*H45*K45)/(2-2*K45*L45)/27	=M45+N45	=(F45*E45+(F45+2*K45*(H45+I45-J45))*(E45+2*K45*(H45+I45-J45)))/2*(H45+I45-J45)/43560	=O45*2.54
=(F46+2*H46*K46)*(E46+2*H46*K46)*(L46*F46+2*L46*H46*K46)/(2-2*K46*L46)/27	=M46+N46	=(F46*E46+(F46+2*K46*(H46+I46-J46))*(E46+2*K46*(H46+I46-J46)))/2*(H46+I46-J46)/43560	=O46*2.54

Table 3: xx
Basins-Dimensions Optimization

1-ft Freeboard

Alternative 1

Optimization	top length	top width	top area	base length	base width	bottom area	minimum depth	dam height	freeboard	internal slope	ground slope	base excavation	slope excavation	total excavation for this basin	storage volume	Cost for basin[d]
	Lt	Wt	A_T	Lb	Wb	A_b	d	h	f	s	g	V1	V2	V1+V2	V3	
	ft	ft	ft^2	ft	ft	ft^2	ft	ft	ft	H:V	V:H	cy	cy	cy	ac-ft	$
Reference Concept[a]	5,100	900	4,590,000	4,868	668	3,252,790	19.3	0.0	1.0	6.0	0.01	2,805,800	813,830	3,619,630	1,634	$9,193,859
Optimization 1[b]	5,100	914	4,663,841	4,873	687	3,349,473	18.9	0.0	1.0	6.0	0.01	2,808,492	840,225	3,648,718	1,634	$9,267,743
Optimization 2[c]	9,882	419	4,143,639	425	-9,038	3,834,799	788.1	0.0	1.0	6.0	0.01	4,441,612	342,285	4,783,897	1,634	$12,151,100

Alternative 2

Optimization	top length	top width	top area	base length	base width	bottom area	minimum depth	dam height	freeboard	internal slope	ground slope	base excavation	slope excavation	total excavation for this basin	storage volume	Cost for basin[d]
	Lt	Wt	A_T	Lb	Wb	A_b	d	h	f	s	g	V1	V2	V1+V2	V3	
	ft	ft	ft^2	ft	ft	ft^2	ft	ft	ft	H:V	V:H	cy	cy	cy	ac-ft	$
Upper Basin																
Optimization 1	2,200	1,750	3,850,000	2,112	1,662	3,510,494	7.3	0.0	1.0	6.0	0.01	998,520	1,327,325	2,325,845	531	$5,907,646
Optimization 2	2,200	1,336	2,940,010	2,086	1,222	2,550,200	9.5	0.0	1.0	6.0	0.01	965,001	774,022	1,739,023	531	$4,417,118
Optimization 3	2,000	1,250	2,500,007	1,868	1,116	2,081,887	11.2	0.0	1.0	6.0	0.01	948,857	615,648	1,564,505	531	$3,973,843
Lower Basin																
Optimization 1	3,400	1,250	4,250,000	3,326	1,176	3,913,006	6.1	0.0	1.0	6.0	0.01	927,634	1,046,592	1,974,226	478	$5,014,534
Optimization 2	3,400	1,491	5,070,115	3,337	1,428	4,765,404	5.3	0.0	1.0	6.0	0.01	957,931	1,489,482	2,447,412	478	$6,216,427
Optimization 3	2,000	1,250	2,499,948	1,879	1,129	2,121,177	10.1	0.0	1.0	6.0	0.01	863,289	615,623	1,478,912	478	$3,756,436

Alternative 3

Optimization	top length	top width	top area	base length	base width	bottom area	minimum depth	dam height	freeboard	internal slope	ground slope	base excavation	slope excavation	total excavation for this basin	storage volume	Cost for basin[d]
	Lt	Wt	A_T	Lb	Wb	A_b	d	h	f	s	g	V1	V2	V1+V2	V3	
	ft	ft	ft^2	ft	ft	ft^2	ft	ft	ft	H:V	V:H	cy	cy	cy	ac-ft	$
Main Basin																
Reference Concept[a]	4,250	2,375	10,093,750	4,176	2,301	9,611,008	6.1	0.0	1.0	6.0	0.01	2,240,696	4,722,746	6,963,441	1,158	$17,687,141
Optimization 1[b]	4,250	1,154	4,903,355	4,083	857	3,499,309	13.9	0.0	1.0	6.0	0.01	2,028,820	878,848	2,907,668	1,158	$7,385,477
Optimization 2[c]	3,380	997	3,370,861	3,193	810	2,584,691	17.8	0.0	1.0	6.0	0.01	1,997,077	701,988	2,899,065	1,158	$6,855,624
Olive Basin																
Reference Concept[a]	2,300	1,150	2,645,000	2,180	1,030	2,244,613	10.0	0.0	1.0	6.0	0.01	907,333	599,242	1,506,575	502	$3,826,700
Optimization 1[b]	2,300	1,289	2,964,729	2,193	1,182	2,591,514	8.9	0.0	1.0	6.0	0.01	919,092	752,871	1,671,963	502	$4,246,786
Optimization 2[c]	5,280	660	3,483,385	5,185	565	2,929,551	7.9	0.0	1.0	6.0	0.01	937,736	452,741	1,390,477	502	$3,531,811

Notes:
- a) From original concepts. Concept 5 is reference concept for Alternative 1,Concept 3 is reference concept for Alternative 2, and Concept 2 is reference concept for Alternative 3.
  b) Optimaization 1 consists of setting the top length value similar to that of the reference concepts, and optimizing the other dimentions.
  c) Optimization 2 has no fixed values.
  d) Based on $2.54/cy priliminary cost estimate.
- Highlighted rows include chosen dimensions for basins.

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Table 3: xx
Basins-Dimensions Optimization

Alternative 1

Optimization	top length	top width	top area	base length	base width	bottom area	minimum depth	dam height	freeboard	internal slope	ground slope	base excavation
	Lt	Wt	A_T	Lb	Wb	A_b	d	h	f	s	g	V1
	ft	ft	ft^2	ft	ft	ft^2	ft	ft	ft	H:V	V:H	cy
Reference Concept[a]	5100	900	=B6*C6	=B6-(K6*2*H6)	=C6-(K6*2*H6)	=E6*F6	19.3187852079934	0	1	6	0.01	=(F6*E6*H6+F6*K6*H6^2+E6*K6*H6^2+2*H6^3*K6^2)/27
Optimization 1[b]	5100	914.478	=B7*C7	=B7-(K7*2*H7)	=C7-(K7*2*H7)	=E7*F7	18.9258255698792	0	1	6	0.01	=(F7*E7*H7+F7*K7*H7^2+E7*K7*H7^2+2*H7^3*K7^2)/27
Optimization 2[c]	9882.203	419.303	=B8*C8	=B8-(K8*2*H8)	=C8-(K8*2*H8)	3834798.9015	788.117702057836	0	1	6	0.01	=(F8*E8*H8+F8*K8*H8^2+E8*K8*H8^2+2*H8^3*K8^2)/27

Alternative 2

Optimization	top length	top width	top area	base length	base width	bottom area	minimum depth	dam height	freeboard	internal slope	ground slope	base excavation
	Lt	Wt	A_T	Lb	Wb	A_b	d	h	f	s	g	V1
	ft	ft	ft^2	ft	ft	ft^2	ft	ft	ft	H:V	V:H	cy
Upper Basin												
Optimization 1	2200	1750	=B19*C19	=B19-(K19*2*H19)	=C19-(K19*2*H19)	=E19*F19	7.32560793143503	0	1	6	0.01	=(F19*E19*H19+F19*K19*H19^2+E19*K19*H19^2+2*H19^3*K19^2)/27
Optimization 2	2200	1336.36	=B20*C20	=B20-(K20*2*H20)	=C20-(K20*2*H20)	=E20*F20	9.49144812049104	0	1	6	0.01	=(F20*E20*H20+F20*K20*H20^2+E20*K20*H20^2+2*H20^3*K20^2)/27
Optimization 3	1999.991	1250.00	=B21*C21	=B21-(K21*2*H21)	=C21-(K21*2*H21)	=E21*F21	11.1827713535554	0	1	6	0.01	=(F21*E21*H21+F21*K21*H21^2+E21*K21*H21^2+2*H21^3*K21^2)/27
Lower Basin												
Optimization 1	3400	1250	=B24*C24	=B24-(K24*2*H24)	=C24-(K24*2*H24)	=E24*F24	6.1364945678419	0	1	6	0.01	=(F24*E24*H24+F24*K24*H24^2+E24*K24*H24^2+2*H24^3*K24^2)/27
Optimization 2	3400	1491.21	=B25*C25	=B25-(K25*2*H25)	=C25-(K25*2*H25)	=E25*F25	5.25933231399966	0	1	6	0.01	=(F25*E25*H25+F25*K25*H25^2+E25*K25*H25^2+2*H25^3*K25^2)/27
Optimization 3	1999.978	1249.98	=B26*C26	=B26-(K26*2*H26)	=C26-(K26*2*H26)	=E26*F26	10.0879314647943	0	1	6	0.01	=(F26*E26*H26+F26*K26*H26^2+E26*K26*H26^2+2*H26^3*K26^2)/27

Alternative 3

Optimization	top length	top width	top area	base length	base width	bottom area	minimum depth	dam height	freeboard	internal slope	ground slope	base excavation
	Lt	Wt	A_T	Lb	Wb	A_b	d	h	f	s	g	V1
	ft	ft	ft^2	ft	ft	ft^2	ft	ft	ft	H:V	V:H	cy
Main Basin												
Reference Concept[a]	4250	2375	=B37*C37	=B37-(K37*2*H37)	=C37-(K37*2*H37)	=E37*F37	6.14052606121689	0	1	6	0.01	=(F37*E37*H37+F37*K37*H37^2+E37*K37*H37^2+2*H37^3*K37^2)/27
Optimization 1[b]	4250	1153.73	=B38*C38	=B38-(K38*2*H38)	857.127432501593	=E38*F38	13.949913861224	0	1	6	0.01	=(F38*E38*H38+F38*K38*H38^2+E38*K38*H38^2+2*H38^3*K38^2)/27
Optimization 2[c]	3380.177	997.243	=B39*C39	3192.52736029197	809.606457887372	=E39*F39	17.7712906230798	0	1	6	0.01	=(F39*E39*H39+F39*K39*H39^2+E39*K39*H39^2+2*H39^3*K39^2)/27
Olive Basin												
Reference Concept[a]	2300	1150	=B42*C42	=B42-(K42*2*H42)	=C42-(K42*2*H42)	=E42*F42	10.0204218543465	0	1	6	0.01	=(F42*E42*H42+F42*K42*H42^2+E42*K42*H42^2+2*H42^3*K42^2)/27
Optimization 1[b]	2300	1289.01	=B43*C43	=B43-(K43*2*H43)	=C43-(K43*2*H43)	=E43*F43	8.93246661289657	0	1	6	0.01	=(F43*E43*H43+F43*K43*H43^2+E43*K43*H43^2+2*H43^3*K43^2)/27
Optimization 2[c]	5279.970	659.735	=B44*C44	=B44-(K44*2*H44)	=C44-(K44*2*H44)	=E44*F44	7.89618264621271	0	1	6	0.01	=(F44*E44*H44+F44*K44*H44^2+E44*K44*H44^2+2*H44^3*K44^2)/27

Notes:
- a) From original concept
  b) Optimaization 1 consis
  c) Optimization 2 has no
  d) Based on $2.54/cy prit
-Highlighted rows include c

Table 3: xx
Basins-Dimensions Optimization

Cont./ Alternative 1

slope excavation	total excavation for this basin	storage volume	Cost for basin[d]
V2	V1+V2	V3	
cy	cy	ac-ft	$
=(F6+2*H6*K6)*(E6+2*H6*K6)*(L6*F6+2*L6*H6*K6)/(2-2*K6*L6)/27	=M6+N6	=(F6*E6+(F6+2*K6*(H6+I6-J6))*(E6+2*K6*(H6+I6-J6)))/2*(H6+I6-J6)/43560	=O6*2.54
=(F7+2*H7*K7)*(E7+2*H7*K7)*(L7*F7+2*L7*H7*K7)/(2-2*K7*L7)/27	=M7+N7	=(F7*E7+(F7+2*K7*(H7+I7-J7))*(E7+2*K7*(H7+I7-J7)))/2*(H7+I7-J7)/43560	=O7*2.54
=(F8+2*H8*K8)*(E8+2*H8*K8)*(L8*F8+2*L8*H8*K8)/(2-2*K8*L8)/27	=M8+N8	=(F8*E8+(F8+2*K8*(H8+I8-J8))*(E8+2*K8*(H8+I8-J8)))/2*(H8+I8-J8)/43560	=O8*2.54

Cont./ Alternative 2

slope excavation	total excavation for this basin	storage volume	Cost for basin[d]
V2	V1+V2	V3	
cy	cy	ac-ft	$

Cont./ Upper Basin

=(F19+2*H19*K19)*(E19+2*H19*K19)*(L19*F19+2*L19*H19*K19)/(2-2*K19*L19)/27	=M19+N19	=(F19*E19+(F19+2*K19*(H19+I19-J19))*(E19+2*K19*(H19+I19-J19)))/2*(H19+I19-J19)/43560	=O19*2.54
=(F20+2*H20*K20)*(E20+2*H20*K20)*(L20*F20+2*L20*H20*K20)/(2-2*K20*L20)/27	=M20+N20	=(F20*E20+(F20+2*K20*(H20+I20-J20))*(E20+2*K20*(H20+I20-J20)))/2*(H20+I20-J20)/43560	=O20*2.54
=(F21+2*H21*K21)*(E21+2*H21*K21)*(L21*F21+2*L21*H21*K21)/(2-2*K21*L21)/27	=M21+N21	=(F21*E21+(F21+2*K21*(H21+I21-J21))*(E21+2*K21*(H21+I21-J21)))/2*(H21+I21-J21)/43560	=O21*2.54

Cont./ Lower Basin

=(F24+2*H24*K24)*(E24+2*H24*K24)*(L24*F24+2*L24*H24*K24)/(2-2*K24*L24)/27	=M24+N24	=(F24*E24+(F24+2*K24*(H24+I24-J24))*(E24+2*K24*(H24+I24-J24)))/2*(H24+I24-J24)/43560	=O24*2.54
=(F25+2*H25*K25)*(E25+2*H25*K25)*(L25*F25+2*L25*H25*K25)/(2-2*K25*L25)/27	=M25+N25	=(F25*E25+(F25+2*K25*(H25+I25-J25))*(E25+2*K25*(H25+I25-J25)))/2*(H25+I25-J25)/43560	=O25*2.54
=(F26+2*H26*K26)*(E26+2*H26*K26)*(L26*F26+2*L26*H26*K26)/(2-2*K26*L26)/27	=M26+N26	=(F26*E26+(F26+2*K26*(H26+I26-J26))*(E26+2*K26*(H26+I26-J26)))/2*(H26+I26-J26)/43560	=O26*2.54

Cont./ Alternative 3

slope excavation	total excavation for this basin	storage volume	Cost for basin[d]
V2	V1+V2	V3	
cy	cy	ac-ft	$

Cont./ Main Basin

=(F37+2*H37*K37)*(E37+2*H37*K37)*(L37*F37+2*L37*H37*K37)/(2-2*K37*L37)/27	=M37+N37	=(F37*E37+(F37+2*K37*(H37+I37-J37))*(E37+2*K37*(H37+I37-J37)))/2*(H37+I37-J37)/43560	=O37*2.54
=(F38+2*H38*K38)*(E38+2*H38*K38)*(L38*F38+2*L38*H38*K38)/(2-2*K38*L38)/27	=M38+N38	=(F38*E38+(F38+2*K38*(H38+I38-J38))*(E38+2*K38*(H38+I38-J38)))/2*(H38+I38-J38)/43560	=O38*2.54
=(F39+2*H39*K39)*(E39+2*H39*K39)*(L39*F39+2*L39*H39*K39)/(2-2*K39*L39)/27	=M39+N39	=(F39*E39+(F39+2*K39*(H39+I39-J39))*(E39+2*K39*(H39+I39-J39)))/2*(H39+I39-J39)/43560	=O39*2.54

Cont./ Olive Basin

=(F42+2*H42*K42)*(E42+2*H42*K42)*(L42*F42+2*L42*H42*K42)/(2-2*K42*L42)/27	=M42+N42	=(F42*E42+(F42+2*K42*(H42+I42-J42))*(E42+2*K42*(H42+I42-J42)))/2*(H42+I42-J42)/43560	=O42*2.54
=(F43+2*H43*K43)*(E43+2*H43*K43)*(L43*F43+2*L43*H43*K43)/(2-2*K43*L43)/27	=M43+N43	=(F43*E43+(F43+2*K43*(H43+I43-J43))*(E43+2*K43*(H43+I43-J43)))/2*(H43+I43-J43)/43560	=O43*2.54
=(F44+2*H44*K44)*(E44+2*H44*K44)*(L44*F44+2*L44*H44*K44)/(2-2*K44*L44)/27	=M44+N44	=(F44*E44+(F44+2*K44*(H44+I44-J44))*(E44+2*K44*(H44+I44-J44)))/2*(H44+I44-J44)/43560	=O44*2.54

DAMES & MOORE

CALCULATIONS COVER SHEET

PROJECT NO. 15448-007-058

SUBJECT. _____

SHEET 1 OF 24

Estimate Storage Volume and Excavation Volume for Basins

TITLE OF CALCULATIONS/DOCUMENT

CALCULATIONS/DOCUMENT BY: Jian W. Liu
PRINT NAME

Jian Li
SIGNATURE

7-21-00
DATE

ASSUMPTIONS CHECKED BY CONSULTANT/SENIOR PERSONNEL: Todd Ringsmuth
PRINT NAME

SIGNATURE

1-10-01
DATE

CALCULATIONS/DOCUMENT CHECKED BY: CHRIS WIGGINTON
PRINT NAME

SIGNATURE

1/10/01
DATE

APPROVED BY:
(PRINCIPAL INVESTIGATOR, CONSULTANT, OR PM)
Todd Ringsmuth
PRINT NAME

SIGNATURE

1-10-01
DATE

Approval Notice: If Calculations/Document are only spot checked, do not require checking, or are assumed to be correct by experience of engineering judgement, it should be noted here.

Revision Number	Date	By	Checked By	Approval
1				
2				
3				
4				

INITIALS

CALCULATION CHECKING CRITERIA

1. Is the calculation method appropriate?
2. Are the results and conclusions reasonable when compared with the design input and the project objectives?
3. Are the results and conclusions reasonably within the project construction budget?
4. Is the calculation complete in format with all sections included?

   - Problem Statement & Calculation Objectives
   - Data Available
   - Design Criteria
   - Assumptions
   - Analysis and Conclusions
   - Attachments

5. Does the calculation conform with:

   - Codes
   - Project Design Criteria
   - Project Procedures?

6. Are the mathematics of the calculation accurate?
7. Are computer programs used in the calculation appropriate for use in this application?
8. Is the computer input correct?
9. Is the computer output correct and reasonable?
10. Are all sheets completely filled out?

    - Project number?
    - File number?
    - Sheet ? of ?
    - By ? Date ?
    - Checked By ?

11. Are the calculations neat and legible?

EXHIBIT D

Objective: Estimate Storage Volume and Excavation Volume for Basins for All Three Alternatives.

Procedure: (1). Select Basin Dimension based on Design Calculation and Optimization;

(2). Calculate Cross Section Areas Using AutoCAD based on Softdesk generated Cross Sections;

(3) Estimate Storage Volume and Excavation Volume Using Excel.

(4) Original Excavation Volume Calculation Was based on Flat Basin Bottom. Sheet 3 Shows updated Excavation Volumes.

ESTIMATED EXCAVATION VOLUME FOR BASINS

DESCRIPTION	Excavation Volume for Flat Basin Bottom (CY)	QUANTITY Increasing/Decreasing for Slope Bottom (CY)	Excavation Volume for Sediment Basins (CY)	Other Excavation Volume* (CY)	TOTAL Excavation Volume for Basin (CY)
Alternative 1					
One Basin Only	2,977,113	-3,954	72,600	209,616	***3,255,375***
Alternative 2					
Upper Basin	1,444,835	-16,843	25,900	236,334	***1,690,226***
Lower Basin	1,421,827		30,700	236,334	***1,688,861***
Alternative 3					
Olive Basin	3,098,171	100,875	26,700	50,345	***3,276,091***
Main Basin	1,244,469	3,811	58,900	844,708	***2,151,888***

* Including the volume to remove the dam, and cut to finish grade. See BRW calculations.

3 of 24

Results Summary Table

Alternative	Basin	Excavation Volume (yd^3)	Storage Volume (AC-ft)	Design storage Volume (AC-ft)
1		2,977,113	1,650.9	1,634
2	Upper Basin	1,444,835	579.2	531
	Lower Basin (South)	1,421,827	524.2	478
3	Main Basin	3,098,171	1,216.5	1,158
	Olive Basin	1,244,469	516.2	502

White Tank Alt-1: Estimated Storage Volume for Basin With 1-ft Freeboard

Top Elevation: 1,195-ft

Recharge Basin Elevation: 1,187-ft

Bottom Elevation: 1,174-ft

New Bottom Elevation: 1,173-ft

Cross Section	Paper Area (ft2)	True Area(ft2)	Volume (ft3)	Volume (yd3)
4	146,895	7,345	1,468,950	54,406
6	255,676	12,784	2,556,760	94,695
8	410,000	20,500	4,100,000	151,852
10	385,619	19,281	3,856,190	142,822
12	327,333	16,367	3,273,330	121,234
14	280,819	14,041	2,808,190	104,007
16	272,146	13,607	2,721,460	100,795
18	262,362	13,118	2,623,620	97,171
20	253,410	12,671	2,534,100	93,856
22	241,600	12,080	2,416,000	89,481
24	231,048	11,552	2,310,480	85,573
26	218,914	10,946	2,189,140	81,079
28	239,886	11,994	2,398,860	88,847
30	270,337	13,517	2,703,370	1~~00,~~125
32	318,361	15,918	3,183,610	117,911
34	478,715	23,936	4,787,150	177,302
36	429,825	21,491	4,298,250	159,194
38	249,168	12,458	8,720,880	322,996
46	209,502	10,475	5,237,550	193,983
50	167,217	8,361	1,672,170	61,932
52	194,743	9,737	1,947,430	72,127
54	171,371	8,569	1,713,710	63,471
Storage Volume Increased by Changing Basin Depth from 21-ft to 22-ft			2,391,471	88,573
			TOTAL VOLUME	**2,663,432**

1,650.9 ac-ft

Note: Design Storage Volume is 1,634 ac-ft.

White Tank Alt-1: Estimated Cut Volume for Basin

Top Elevation: 1,195-ft

Recharge Basin Elevation: 1,187-ft

Bottom Elevation: 1,174-ft

New Bottom Elevation: 1,173-ft

Cross Section	Paper Area (ft2)	True Area(ft2)	Volume (ft3)	Volume (yd3)
4	220,242	11,012	2,202,420	81,571
6	442,937	22,147	4,429,370	164,051
8	550,773	27,539	5,507,730	203,990
10	431,955	21,598	4,319,550	159,983
12	341,026	17,051	3,410,260	126,306
14	336,898	16,845	3,368,980	124,777
16	319,880	15,994	3,198,800	118,474
18	266,579	13,329	2,665,790	98,733
20	231,178	11,559	2,311,780	85,621
22	218,961	10,948	2,189,610	81,097
24	208,980	10,449	2,089,800	77,400
26	222,689	11,134	2,226,890	82,477
28	257,249	12,862	2,572,490	95,277
30	263,378	13,169	2,633,780	97,547
32	285,052	14,253	2,850,520	105,575
34	468,273	23,414	4,682,730	173,434
36	471,732	23,587	4,717,320	174,716
38	239,919	11,996	8,397,165	311,006
46	265,189	13,259	6,629,725	245,545
50	255,384	12,769	2,553,840	94,587
52	259,108	12,955	2,591,080	95,966
54	244,094	12,205	2,440,940	90,405
Cut Volume Increased by Changing Basin Depth from 21-ft to 22-ft			2,391,471	88,573
			TOTAL VOLUME	**2,977,113**

White Tank Alt-2: Estimated Storage Volume for Upper Basin with 1-ft Freeboard

Top Elevation: 1,211-ft

Soccer Field Elevation: 1,207-ft

Bottom Elevation: 1,199.5-ft

Cross Section	Paper Area (ft2)	True Area(ft2)	Volume (ft3)	Volume (yd3)
4	16,950	848	84,750	3,139
5	30,150	1,508	150,750	5,583
6	37,788	1,889	188,940	6,998
7	106,825	5,341	534,125	19,782
8	149,492	7,475	747,460	27,684
9	183,493	9,175	917,465	33,980
10	210,969	10,548	1,054,845	39,068
11	233,084	11,654	1,165,420	43,164
12	249,892	12,495	1,249,460	46,276
13	257,848	12,892	1,289,240	47,750
14	251,678	12,584	1,258,390	46,607
15	241,106	12,055	1,205,530	44,649
16	233,660	11,683	1,168,300	43,270
17	229,932	11,497	1,149,660	42,580
18	229,810	11,491	1,149,050	42,557
19	233,026	11,651	1,165,130	43,153
20	232,818	11,641	1,164,090	43,114
21	229,979	11,499	1,149,895	42,589
22	223,764	11,188	1,118,820	41,438
23	210,917	10,546	1,054,585	39,059
24	199,124	9,956	995,620	36,875
25	188,287	9,414	941,435	34,868
26	170,566	8,528	852,830	31,586
27	152,067	7,603	760,335	28,161
28	131,729	6,586	658,645	24,394
29	112,551	5,628	562,755	20,843
30	95,737	4,787	478,685	17,729
31	81,707	4,085	408,535	15,131
32	69,219	3,461	346,095	12,818
33	51,782	2,589	258,910	9,589
TOTAL VOLUME				**934,435**

579.2 ac-ft

Note: Design Storage Volume is 531 ac-ft.

White Tank Alt-2: Estimated Cut Volume for Upper Basin

Top Elevation: 1,211-ft

Soccer Field Elevation: 1,207-ft

Bottom Elevation: 1,199.5-ft

Cross Section	Paper Area (ft2)	True Area(ft2)	Volume (ft3)	Volume (yd3)
4	41,153	2,058	205,765	7,621
5	80,377	4,019	401,885	14,885
6	143,650	7,183	718,250	26,602
7	210,403	10,520	1,052,015	38,964
8	258,554	12,928	1,292,770	47,880
9	276,989	13,849	1,384,945	51,294
10	335,868	16,793	1,679,340	62,198
11	385,307	19,265	1,926,535	71,353
12	440,459	22,023	2,202,295	81,566
13	390,300	19,515	1,951,500	72,278
14	309,254	15,463	1,546,270	57,269
15	272,330	13,617	1,361,650	50,431
16	274,271	13,714	1,371,355	50,791
17	250,686	12,534	1,253,430	46,423
18	265,485	13,274	1,327,425	49,164
19	280,898	14,045	1,404,490	52,018
20	295,950	14,798	1,479,750	54,806
21	304,967	15,248	1,524,835	56,475
22	323,549	16,177	1,617,745	59,916
23	333,563	16,678	1,667,815	61,771
24	347,594	17,380	1,737,970	64,369
25	348,009	17,400	1,740,045	64,446
26	323,233	16,162	1,616,165	59,858
27	282,645	14,132	1,413,225	52,342
28	250,342	12,517	1,251,710	46,360
29	184,369	9,218	921,845	34,142
30	158,518	7,926	792,590	29,355
31	150,794	7,540	753,970	27,925
32	147,543	7,377	737,715	27,323
33	135,051	6,753	675,255	25,009
TOTAL VOLUME				**1,444,835**

White Tank Alt-2: Estimated Storage Volume for Lower Basin with 1-ft Freeboard

Top Elevation: 1,186-ft

Bottom Elevation: 1,175.5-ft

Cross Section	Paper Area (ft2)	True Area(ft2)	Volume (ft3)	Volume (yd3)
4	65,298	3,265	326,490	12,092
5	107,225	5,361	536,125	19,856
6	139,515	6,976	697,575	25,836
7	164,088	8,204	820,440	30,387
8	182,896	9,145	914,480	33,870
9	188,597	9,430	942,985	34,925
10	190,664	9,533	953,320	35,308
11	187,434	9,372	937,170	34,710
12	181,925	9,096	909,625	33,690
13	180,140	9,007	900,700	33,359
14	189,979	9,499	949,895	35,181
15	207,223	10,361	1,036,115	38,375
16	225,031	11,252	1,125,155	41,672
17	248,944	12,447	1,244,720	46,101
18	319,583	15,979	1,597,915	59,182
19	345,867	17,293	1,729,335	64,049
20	330,554	16,528	1,652,770	61,214
21	301,037	15,052	1,505,185	55,748
22	276,279	13,814	1,381,395	51,163
23	210,806	10,540	1,054,030	39,038
24	138,890	6,945	694,450	25,720
25	107,446	5,372	537,230	19,897
26	77,540	3,877	387,700	14,359
TOTAL VOLUME				**845,734**

524.2 ac-ft

Note: Design Storage Volume is 478 ac-ft.

White Tank Alt-2: Estimated Cut Volume for Lower Basin

Top Elevation: 1,186-ft

Bottom Elevation: 1,175.5-ft

Cross Section	Paper Area (ft2)	True Area(ft2)	Volume (ft3)	Volume (yd3)
4	39,181	1,959	195,905	7,256
5	74,519	3,726	372,595	13,800
6	108,223	5,411	541,115	20,041
7	149,250	7,463	746,250	27,639
8	182,292	9,115	911,460	33,758
9	193,863	9,693	969,315	35,901
10	212,458	10,623	1,062,290	39,344
11	216,219	10,811	1,081,095	40,041
12	459,178	22,959	2,295,890	85,033
13	559,754	27,988	2,798,770	103,658
14	171,089	8,554	855,445	31,683
15	94,911	4,746	474,555	17,576
16	179,634	8,982	898,170	33,266
17	283,124	14,156	1,415,620	52,430
18	545,175	27,259	2,725,875	100,958
19	626,856	31,343	3,134,280	116,084
20	722,603	36,130	3,613,015	133,815
21	697,104	34,855	3,485,520	129,093
22	665,133	33,257	3,325,665	123,173
23	631,540	31,577	3,157,700	116,952
24	362,448	18,122	1,812,240	67,120
25	277,018	13,851	1,385,090	51,300
26	226,296	11,315	1,131,480	41,907
TOTAL VOLUME				**1,421,827**

White Tank Alt-3: Estimated Storage Volume for Main Basin with 1-ft Freeboard

Top Elevation: 1,173-ft

Bottom Elevation: 1,155-ft

Cross Section	Paper Area (ft2)	True Area(ft2)	Volume (ft3)	Volume (yd3)
4	444,670	22,234	2,223,350	82,346
5	530,437	26,522	2,652,185	98,229
6	577,442	28,872	2,887,210	106,934
7	585,675	29,284	2,928,375	108,458
8	572,986	28,649	2,864,930	106,109
9	556,778	27,839	2,783,890	103,107
10	531,882	26,594	2,659,410	98,497
11	494,069	24,703	2,470,345	91,494
12	446,577	22,329	2,232,885	82,699
13	402,080	20,104	2,010,400	74,459
14	362,672	18,134	1,813,360	67,161
15	333,195	16,660	1,665,975	61,703
16	312,834	15,642	1,564,170	57,932
17	300,656	15,033	1,503,280	55,677
18	295,983	14,799	1,479,915	54,812
19	299,949	14,997	1,499,745	55,546
20	310,246	15,512	1,551,230	57,453
21	320,659	16,033	1,603,295	59,381
22	331,323	16,566	1,656,615	61,356
23	342,385	17,119	1,711,925	63,405
24	354,596	17,730	1,772,980	65,666
25	368,277	18,414	1,841,385	68,199
26	379,876	18,994	1,899,380	70,347
27	389,021	19,451	1,945,105	72,041
28	390,083	19,504	1,950,415	72,238
29	363,724	18,186	1,818,620	67,356
TOTAL VOLUME				**1,962,606**

1,216.5 ac-ft

Note: Design Storage Volume is 1,158 ac-ft.

White Tank Alt-3: Estimated Cut Volume for Main Basin

Top Elevation: 1,173-ft

Bottom Elevation: 1,155-ft

Cross Section	Paper Area (ft2)	True Area(ft2)	Volume (ft3)	Volume (yd3)
4	652,825	32,641	3,264,125	120,894
5	765,846	38,292	3,829,230	141,823
6	806,235	40,312	4,031,175	149,303
7	788,694	39,435	3,943,470	146,054
8	732,777	36,639	3,663,885	135,699
9	733,110	36,656	3,665,550	135,761
10	712,168	35,608	3,560,840	131,883
11	663,016	33,151	3,315,080	122,781
12	611,640	30,582	3,058,200	113,267
13	562,894	28,145	2,814,470	104,240
14	517,917	25,896	2,589,585	95,911
15	477,305	23,865	2,386,525	88,390
16	455,957	22,798	2,279,785	84,436
17	451,390	22,570	2,256,950	83,591
18	456,957	22,848	2,284,785	84,622
19	490,257	24,513	2,451,285	90,788
20	527,147	26,357	2,635,735	97,620
21	565,219	28,261	2,826,095	104,670
22	596,359	29,818	2,981,795	110,437
23	625,092	31,255	3,125,460	115,758
24	660,859	33,043	3,304,295	122,381
25	703,974	35,199	3,519,870	130,366
26	754,519	37,726	3,772,595	139,726
27	801,685	40,084	4,008,425	148,460
28	820,880	41,044	4,104,400	152,015
29	795,402	39,770	3,977,010	147,297
TOTAL VOLUME				**3,098,171**

White Tank Alt-3: Estimated Storage Volume for Olive Basin with 1-ft Freeboard

Top Elevation: 1,253-ft

Bottom Elevation: 1,243-ft

Cross Section	Paper Area (ft2)	Paper Area for Added 2' Deeper Basin (ft2)	Total Paper Area (ft2)	True Area(ft2)	Volume (ft3)	Volume (yd3)
3	41,210	8,198	49,408	2,470	247,040	9,150
4	68,316	16,832	85,148	4,257	425,740	15,768
5	84,014	21,493	105,507	5,275	527,535	19,538
6	97,551	25,405	122,956	6,148	614,780	22,770
7	111,526	29,347	140,873	7,044	704,365	26,088
8	131,069	34,531	165,600	8,280	828,000	30,667
9	149,204	40,530	189,734	9,487	948,670	35,136
10	158,805	43,103	201,908	10,095	1,009,540	37,390
11	163,266	44,358	207,624	10,381	1,038,120	38,449
12	165,998	45,192	211,190	10,560	1,055,950	39,109
13	169,463	46,245	215,708	10,785	1,078,540	39,946
14	173,485	47,425	220,910	11,046	1,104,550	40,909
15	176,740	48,264	225,004	11,250	1,125,020	41,667
16	183,614	50,178	233,792	11,690	1,168,960	43,295
17	196,366	53,674	250,040	12,502	1,250,200	46,304
18	207,486	56,904	264,390	13,220	1,321,950	48,961
19	215,666	59,372	275,038	13,752	1,375,190	50,933
20	222,850	61,178	284,028	14,201	1,420,140	52,598
21	224,588	61,860	286,448	14,322	1,432,240	53,046
22	211,424	57,626	269,050	13,453	1,345,250	49,824
23	154,623	34,496	189,119	9,456	945,595	35,022
24	104,977	26,765	131,742	6,587	658,710	24,397
25	80,514	20,166	100,680	5,034	503,400	18,644
26	57,896	13,542	71,438	3,572	357,190	13,229
TOTAL VOLUME						**832,840**

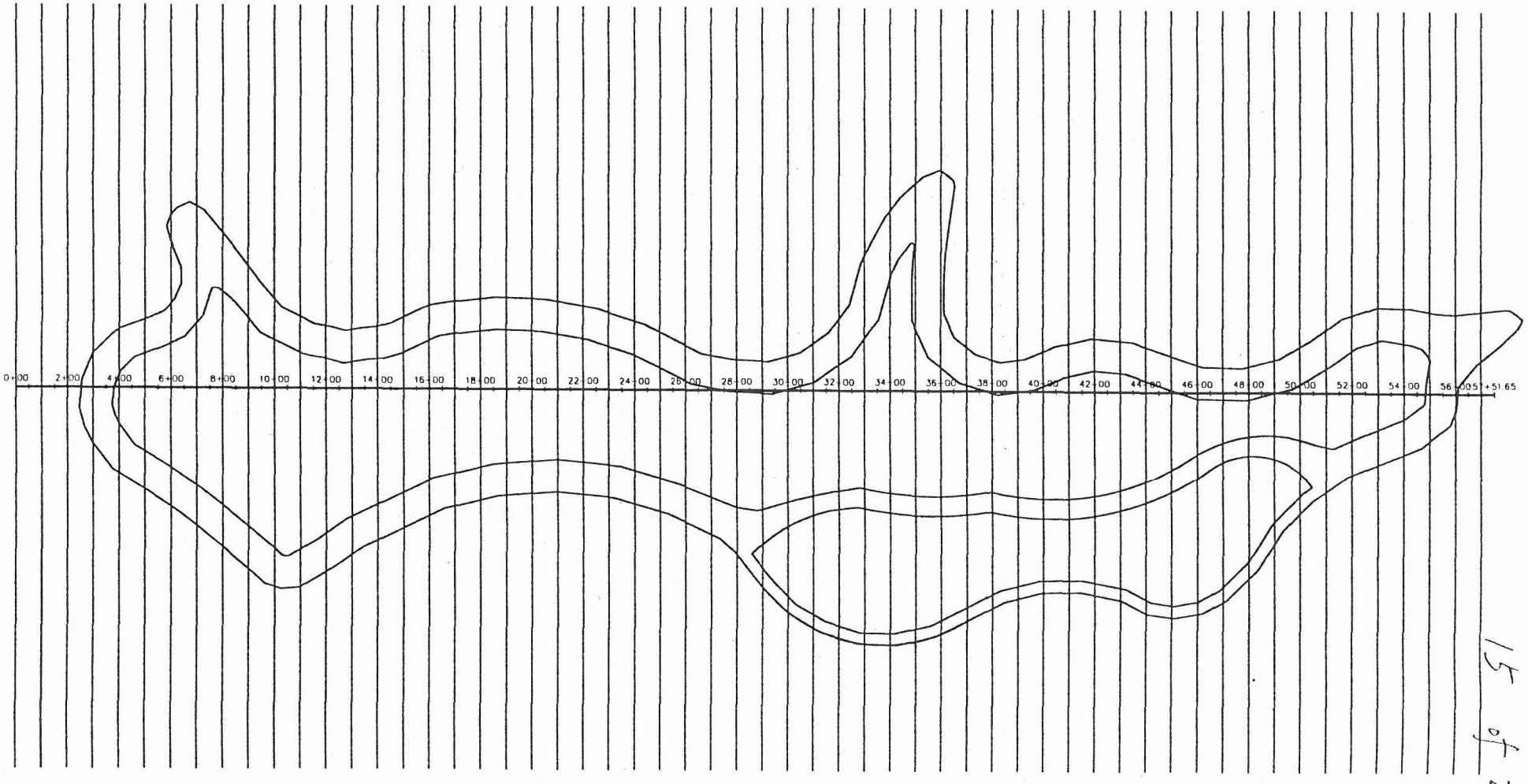
516.2 ac-ft

Note: Design Storage Volume is 502 ac-ft.

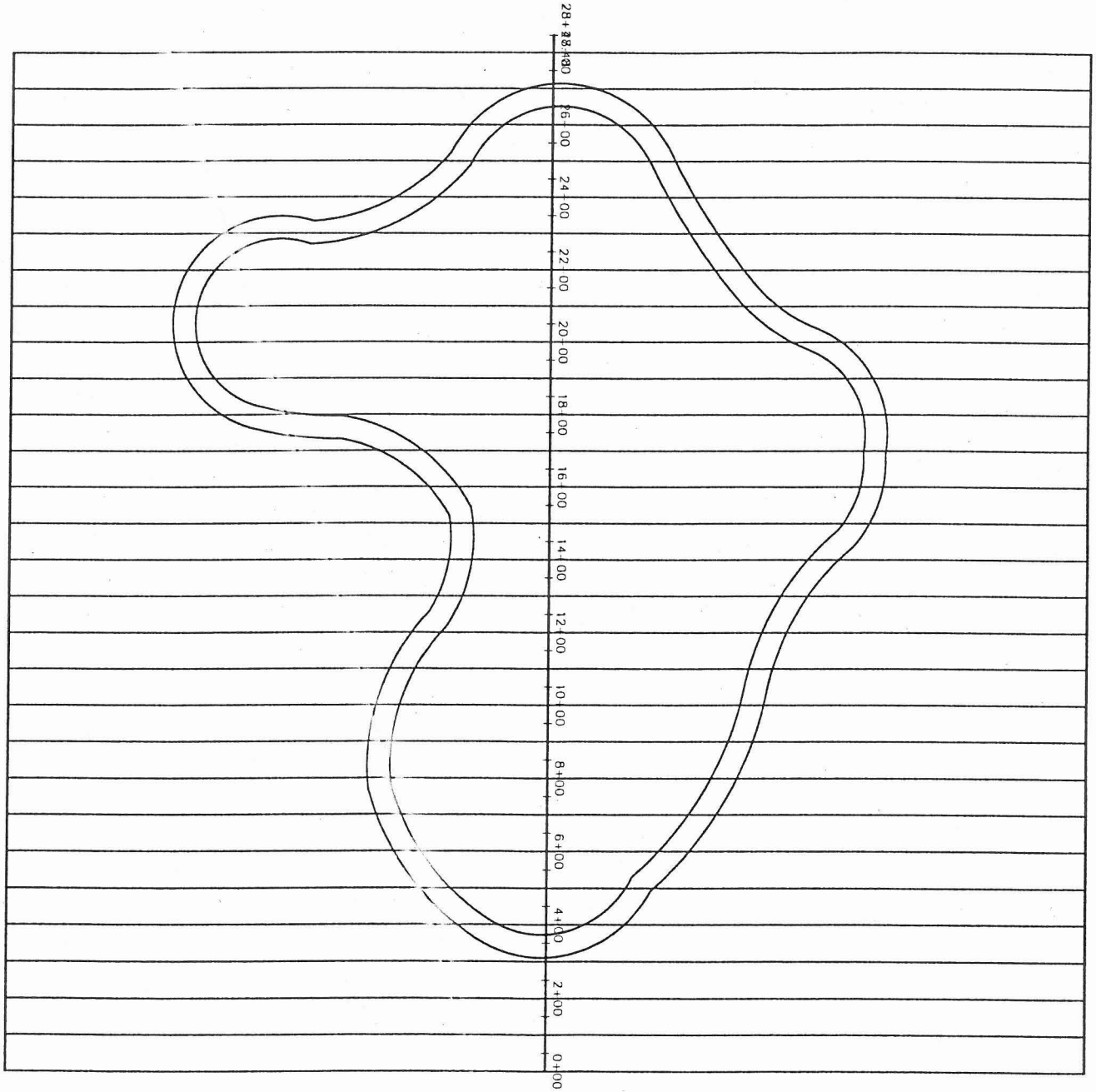
White Tank Alt-3: Estimated Cut Volume for Olive Basin
Top Elevation: 1,253-ft
Bottom Elevation: 1,243-ft

Cross Section	Paper Area (ft2)	Paper Area for Added 2' Deeper Basin (ft2)	Total Paper Area (ft2)	True Area(ft2)	Volume (ft3)	Volume (yd3)
3	28,269	8,198	36,467	1,823	182,335	6,753
4	64,536	16,832	81,368	4,068	406,840	15,068
5	93,043	21,493	114,536	5,727	572,680	21,210
6	118,923	25,405	144,328	7,216	721,640	26,727
7	137,796	29,347	167,143	8,357	835,715	30,952
8	155,802	34,531	190,333	9,517	951,665	35,247
9	189,562	40,530	230,092	11,505	1,150,460	42,610
10	217,325	43,103	260,428	13,021	1,302,140	48,227
11	243,117	44,358	287,475	14,374	1,437,375	53,236
12	243,494	45,192	288,686	14,434	1,443,430	53,460
13	238,658	46,245	284,903	14,245	1,424,515	52,760
14	252,342	47,425	299,767	14,988	1,498,835	55,512
15	257,502	48,264	305,766	15,288	1,528,830	56,623
16	287,335	50,178	337,513	16,876	1,687,565	62,502
17	317,347	53,674	371,021	18,551	1,855,105	68,708
18	348,373	56,904	405,277	20,264	2,026,385	75,051
19	377,331	59,372	436,703	21,835	2,183,515	80,871
20	408,122	61,178	469,300	23,465	2,346,500	86,907
21	426,449	61,860	488,309	24,415	2,441,545	90,428
22	427,975	57,626	485,601	24,280	2,428,005	89,926
23	419,780	34,496	454,276	22,714	2,271,380	84,125
24	217,177	26,765	243,942	12,197	1,219,710	45,174
25	170,132	20,166	190,298	9,515	951,490	35,240
26	133,058	13,542	146,600	7,330	733,000	27,148
TOTAL VOLUME						**1,244,469**

ALTERNATIVE 1: BASIN



ALT2S ALTERNATIVE 2 LOWER BASIN



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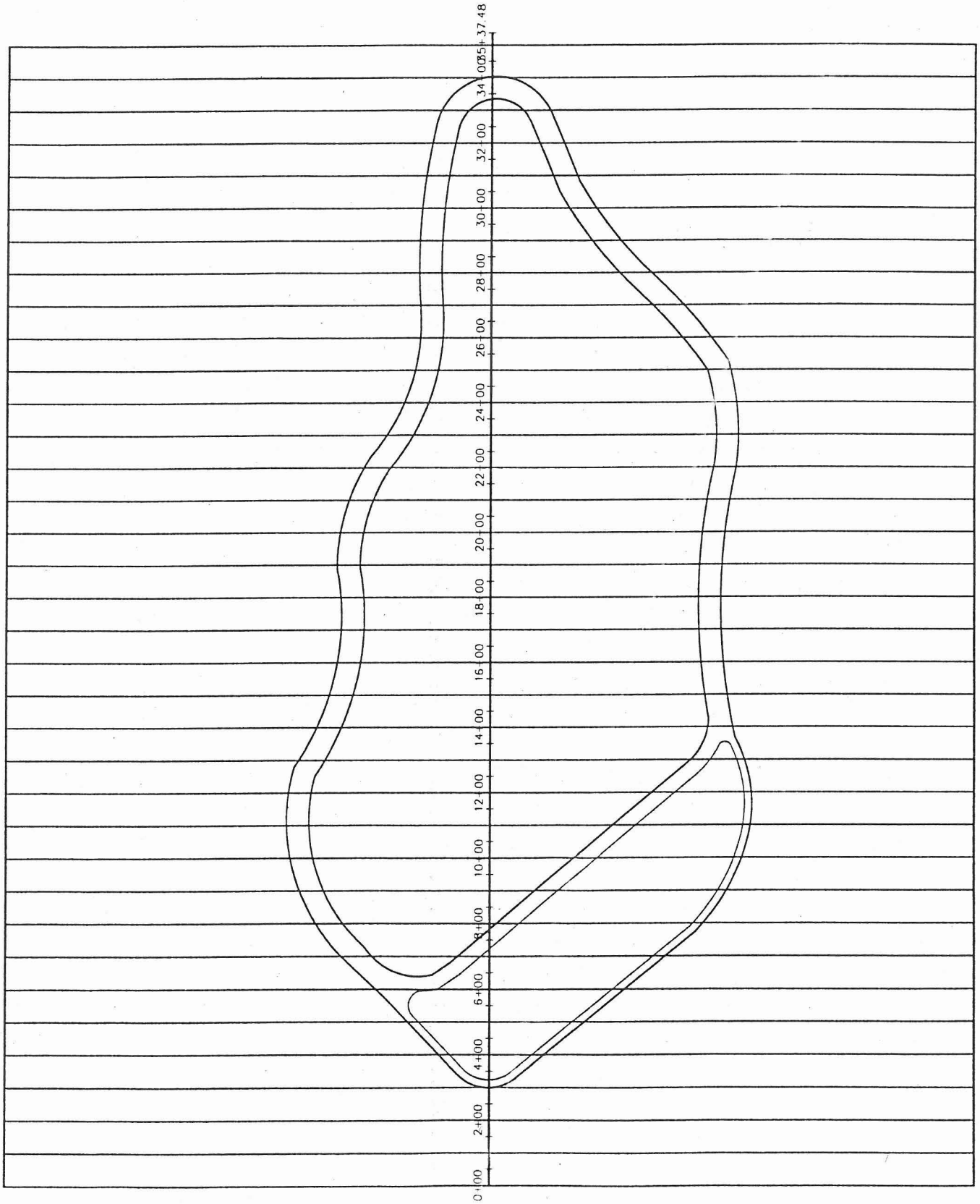

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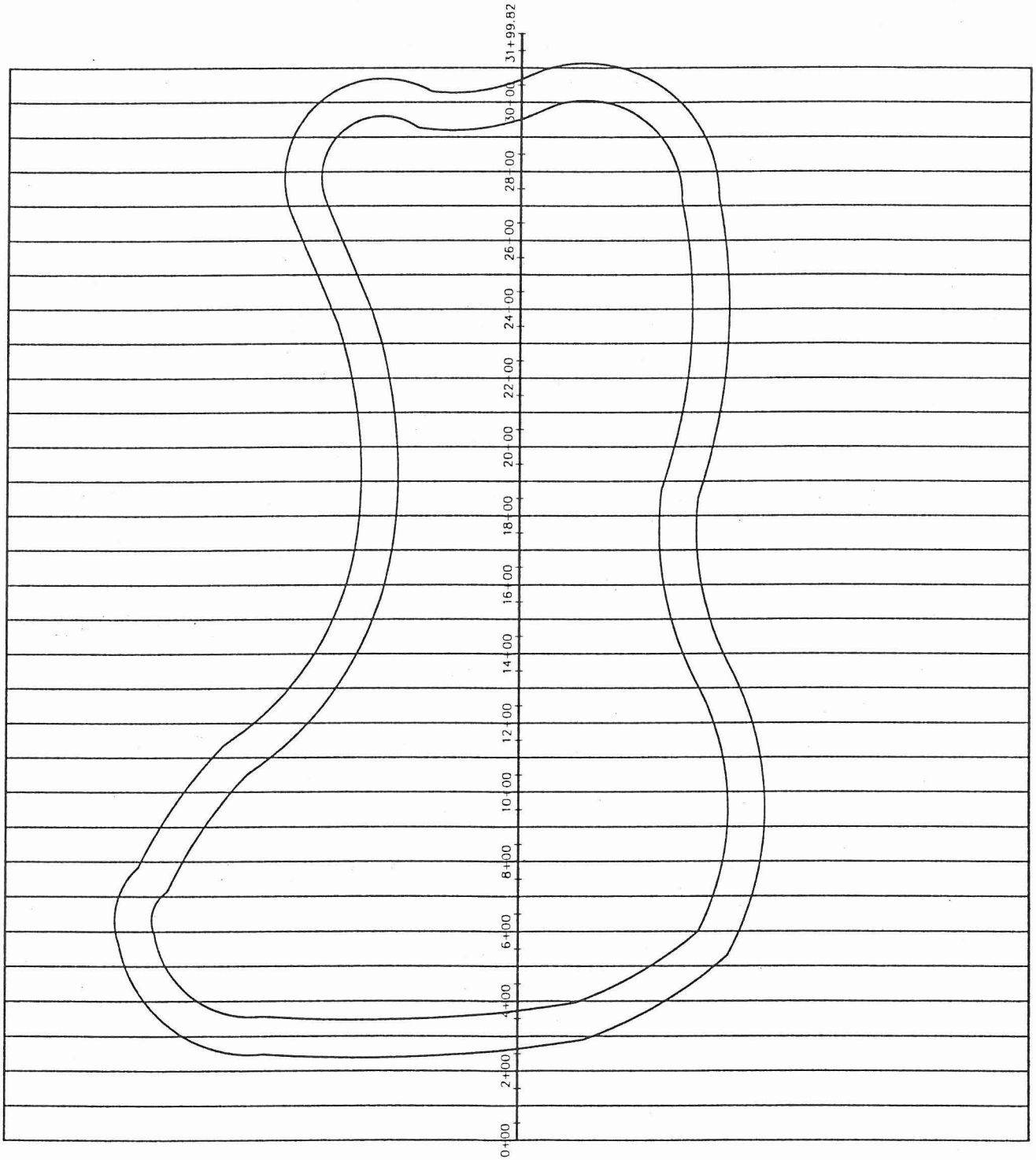
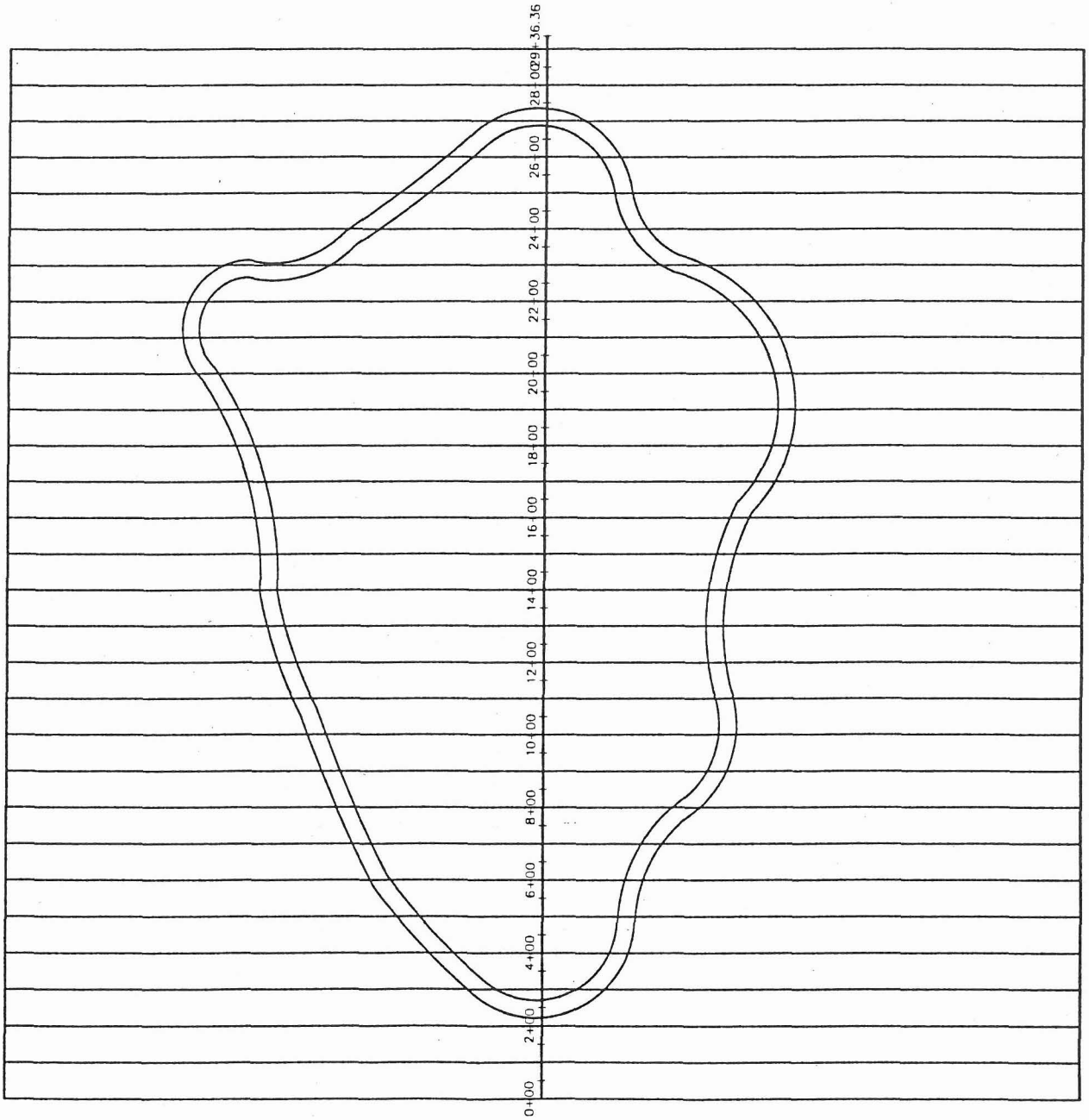


ALT30B ALTERNATIVE 3 OLIVE BASIN



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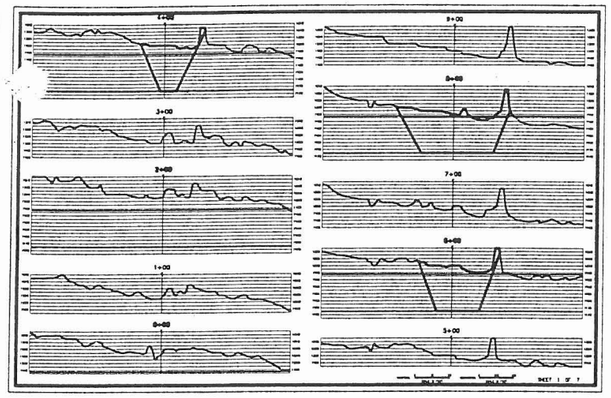
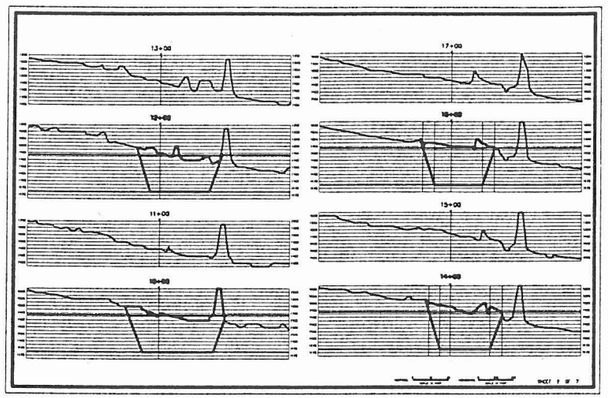
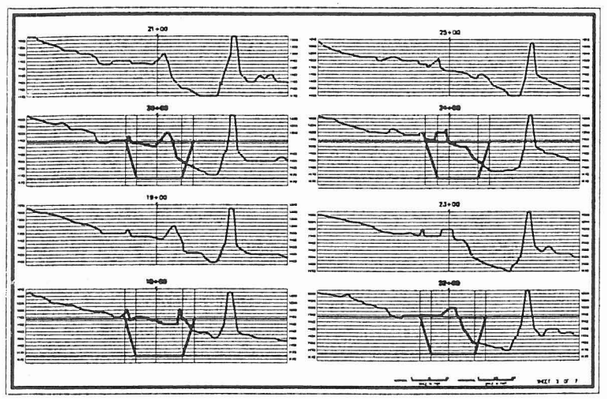
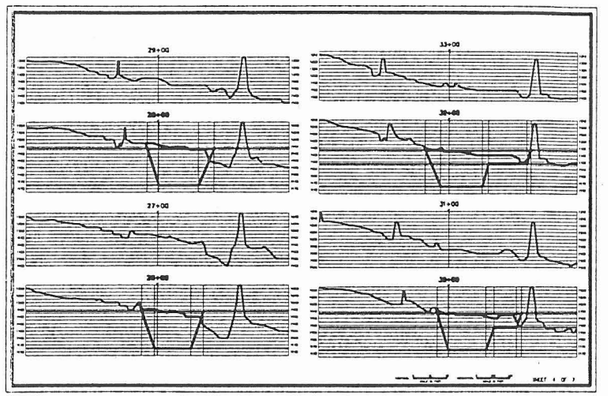
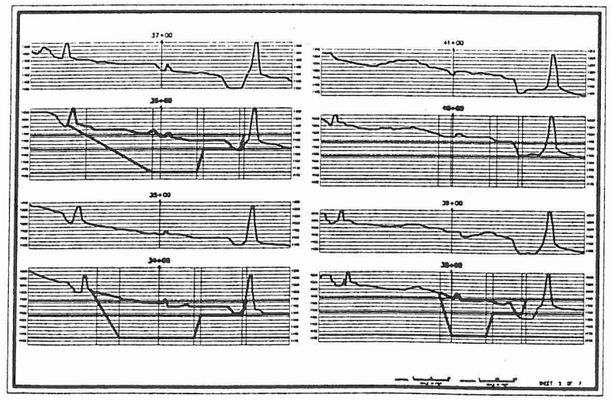
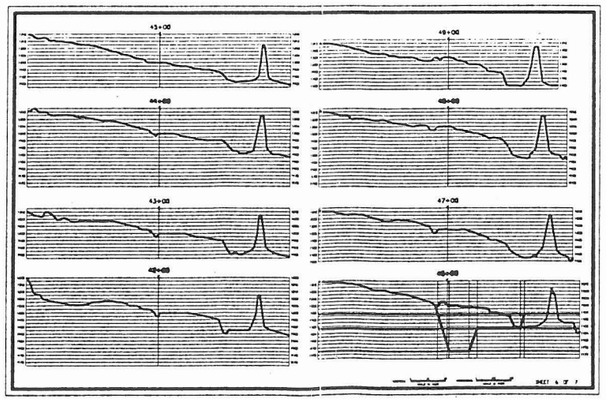


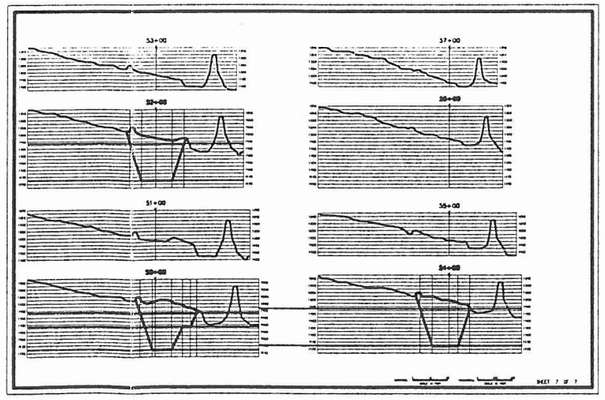




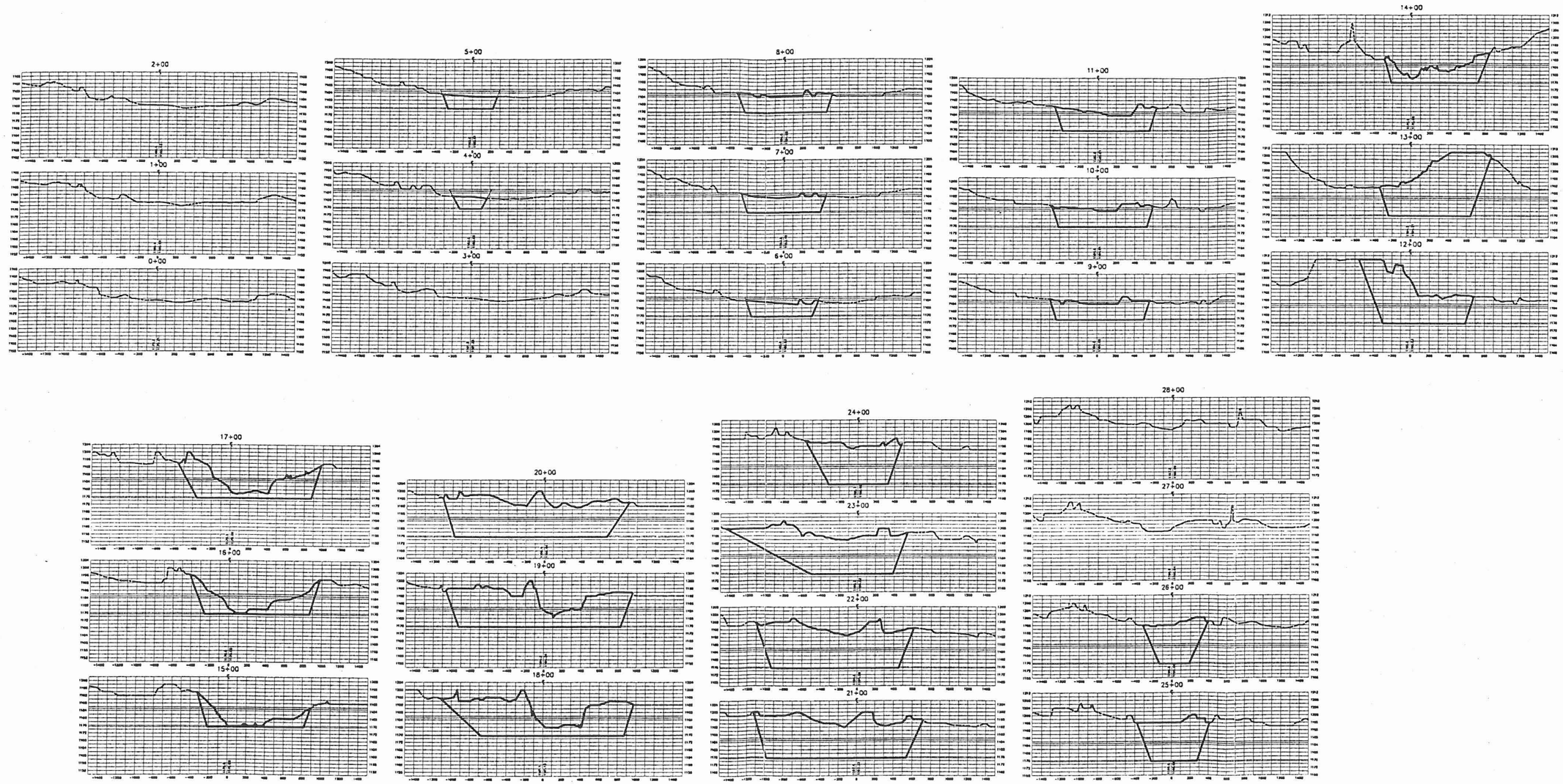




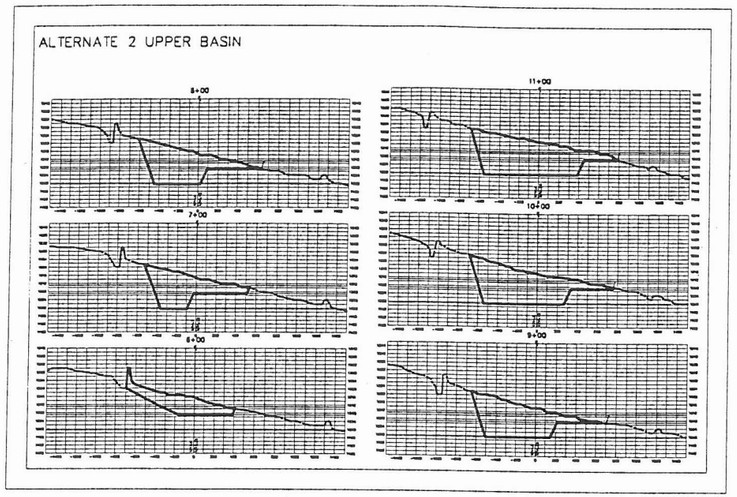


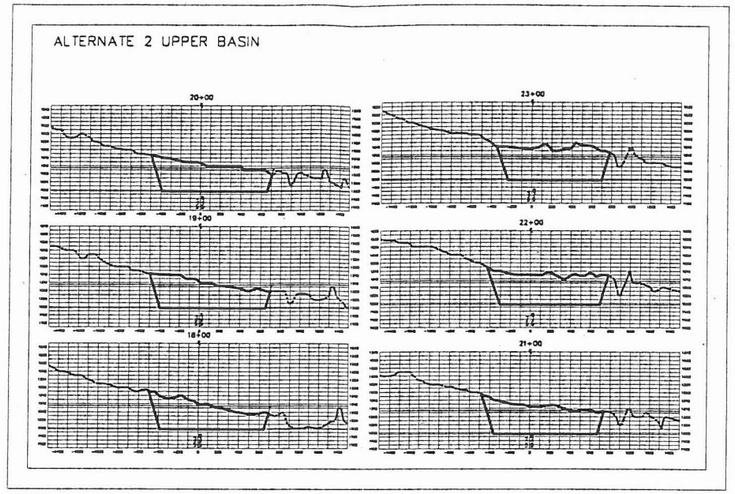


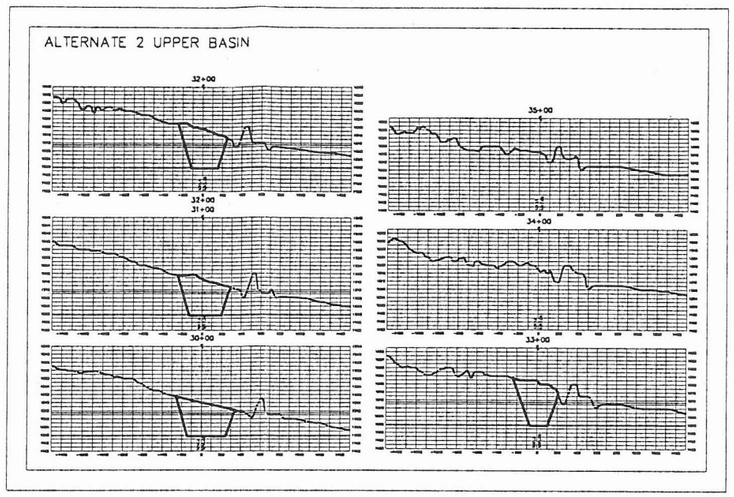
ALT2S ALTERNATIVE 2 LOWER BASIN

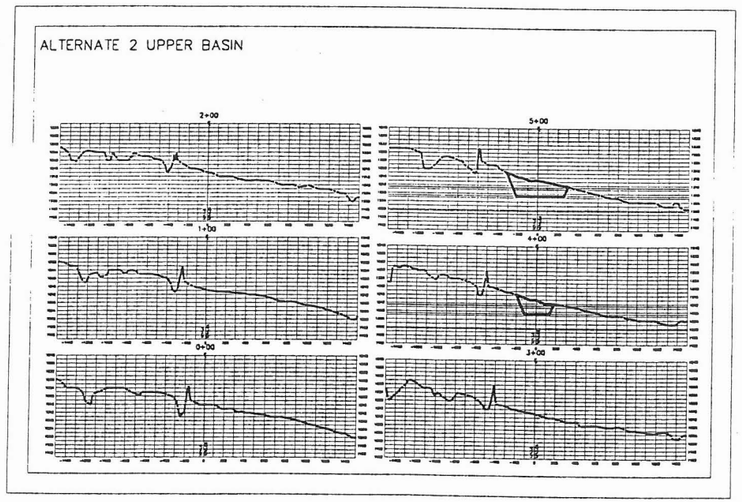


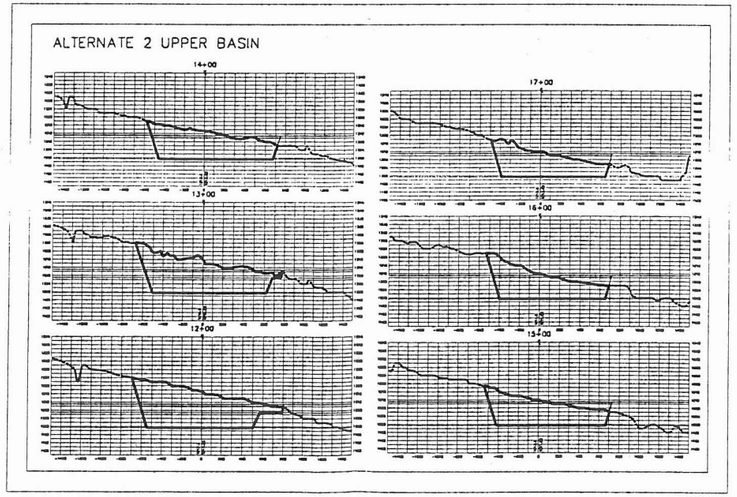
ALT2N ALTERNATIVE UPPER BASIN

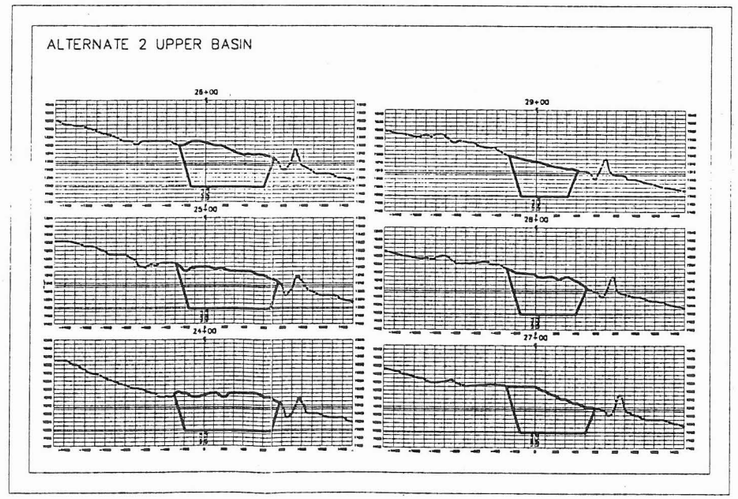




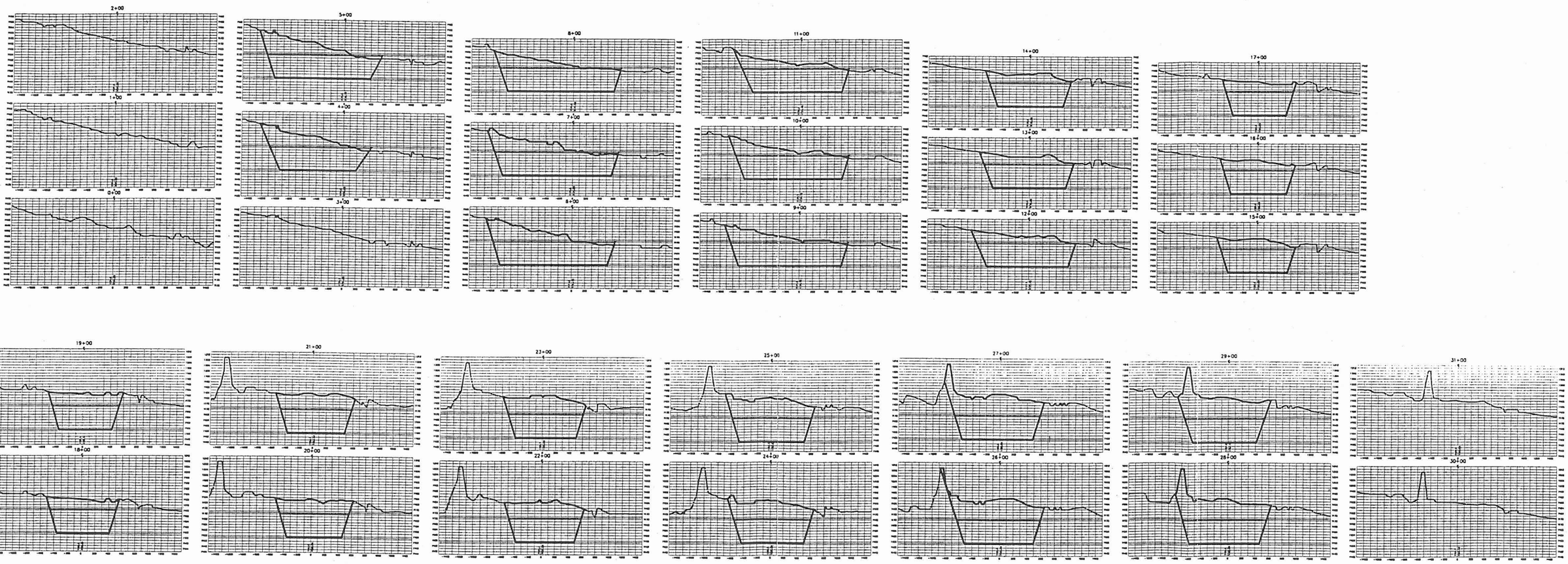




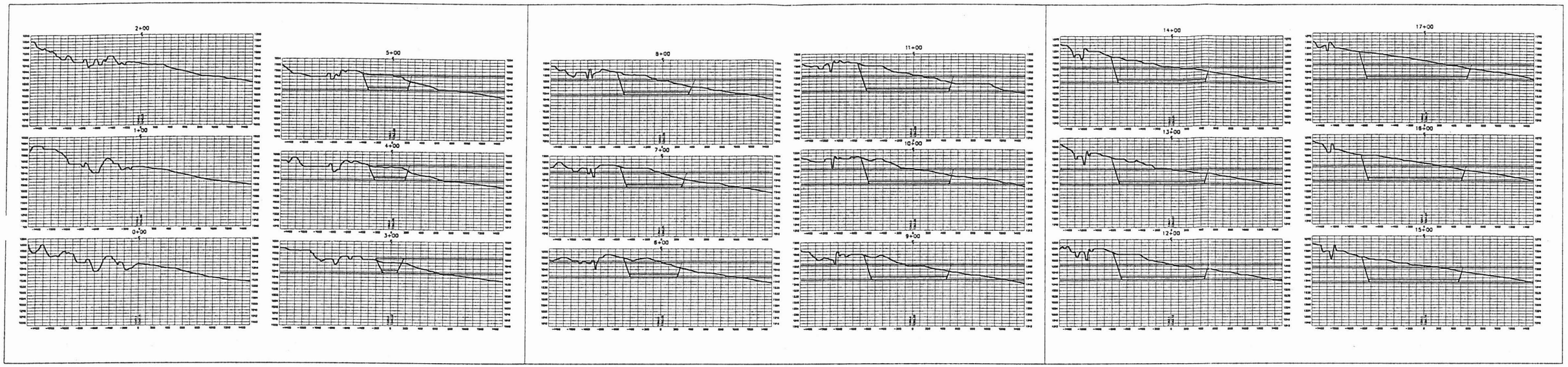


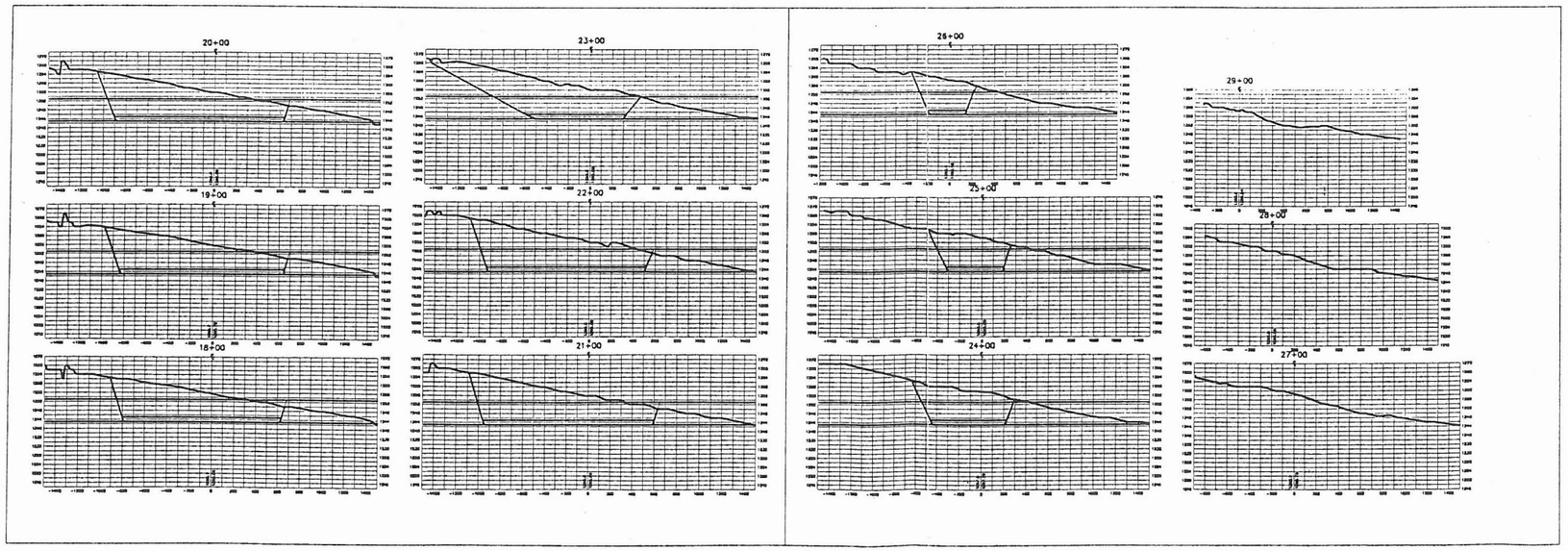


ALT3M ALTERNATIVE 3 MAIN BASIN



ALT30B ALTERNATIVE 3 OLIVE BASIN





DAMES & MOORE

CALCULATIONS COVER SHEET

PROJECT NO. 15448-007

SUBJECT: _____

SHEET _____ OF _____

White Tanks FB # 3

TITLE OF CALCULATIONS/DOCUMENT

CALCULATIONS/DOCUMENT BY: J. Seth Placko (PRINT NAME)

SIGNATURE _____ DATE 7-28-00

ASSUMPTIONS CHECKED BY CONSULTANT/SENIOR PERSONNEL: Todd Ringsmuth (PRINT NAME)

SIGNATURE _____ DATE 1-11-01

CALCULATIONS/DOCUMENT CHECKED BY: Jian Wu Liu (PRINT NAME)

SIGNATURE TGR DATE 1/11/01

APPROVED BY: (PRINCIPAL INVESTIGATOR, CONSULTANT, OR PM) Todd Ringsmuth (PRINT NAME)

SIGNATURE _____ DATE 1-11-01

Approval Notice: If Calculations/Document are only spot checked, do not require checking, or are assumed to be correct by experience of engineering judgement, it should be noted here.

Revision Number	Date	By	Checked By	Approval
1				
2				
3				
4				

INITIALS

CALCULATION CHECKING CRITERIA

1. Is the calculation method appropriate?
2. Are the results and conclusions reasonable when compared with the design input and the project objectives?
3. Are the results and conclusions reasonably within the project construction budget?
4. Is the calculation complete in format with all sections included?

   - Problem Statement & Calculation Objectives
   - Data Available
   - Design Criteria
   - Assumptions
   - Analysis and Conclusions
   - Attachments

5. Does the calculation conform with:

   - Codes
   - Project Design Criteria
   - Project Procedures?

6. Are the mathematics of the calculation accurate?
7. Are computer programs used in the calculation appropriate for use in this application?
8. Is the computer input correct?
9. Is the computer output correct and reasonable?
10. Are all sheets completely filled out?

    - Project number?
    - File number?
    - Sheet ? of ?
    - By ? Date ?
    - Checked By ?

11. Are the calculations neat and legible?

EXHIBIT D

From BRW 7-28-00

WHITE TANKS #3 SPOIL PILE VOLUME ESTIMATE CALCULATION PACKAGE

OBJECTIVE

The objective of this procedure is to measure the volume of spoils being relocated around the site from the excavation of the retention basin and site grading.

ASSUMPTIONS

A 20% factor was used for to account for bulking (swelling) of the excavated soils.
5 foot contour interval were used for the proposed grades.
Basin and excavation volumes was estimated using cross sections as shown in the "Estimate Storage Volume and Excavation Volume for Basins" calculation package.
Final cut volumes would include excavation outside the basins and at the dam.

PROCEDURE

The proposed contours of the spoil piles were designed on paper, these drawings were then scanned and inserted into autocad. The contour lines were drawn in autocad from the scanned image, elevations were assigned to the contours and the contours were tied into existing contours. After this was finished a Digital Terrain Model was created for both the existing topography file and the proposed topography file. Using the DTM we were able to extrapolate a volume difference between the two file by measuring cut & fill. The procedure was repeated until our fill volume corresponded with the bulked volume of the excavated soils.

RESULTS

See Attached

WHITE TANKS #3 SPOIL PILE VOLUME ESTIMATE CALCULATION PACKAGE

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RESULTS

See Attached

White Tanks #3 Site Excavation Calculation

checked by JWL

Alternate 1

Basin Excavation Volume	2,977,133	cy
Non-Basin Excavation Volume	209,616	cy
Sub-Total	3,186,749	cy
Soil Bulking Factor	1.2	
Total Site Excavation Volume (Bulked)	3,824,099	cy
Site Fill Volume	3,683,568	cy
Net Percentage	0.963	

Alternate 2

Basin Excavation Volume	2,866,662	cy
Non-Basin Excavation Volume	472,668	cy
Sub-Total	3,339,330	cy
Soil Bulking Factor	1.2	
Total Site Excavation Volume (Bulked)	4,007,196	cy
Site Fill Volume	4,090,870	cy
Net Percentage	1.021	

Alternate 3- Main Basin

Basin Excavation Volume	3,098,171	cy
Non-Basin Excavation Volume	844,708	cy
Sub-Total	3,942,879	cy
Soil Bulking Factor	1.2	
Total Site Excavation Volume (Bulked)	4,731,455	cy
Site Fill Volume	4,849,054	cy
Net Percentage	1.025	

Alternate 3- Olive Basin

Basin Excavation Volume	1,244,469	cy
Non-Basin Excavation Volume	50,345	cy
Sub-Total	1,294,814	cy
Soil Bulking Factor	1.2	
Total Site Excavation Volume (Bulked)	1,553,777	cy
Site Fill Volume	1,608,104	cy
Net Percentage	1.035	

DAMES & MOORE

CALCULATIONS COVER SHEET

SUBJECT: FCDMC FRS #3

PROJECT NO. 15448-007-058

SHEET 1 OF 12

Sediment Basin Sizing

TITLE OF CALCULATIONS/DOCUMENT

CALCULATIONS/DOCUMENT BY: Muawieh Radaideh

PRINT NAME

SIGNATURE

7-31-00

DATE

ASSUMPTIONS CHECKED BY CONSULTANT/SENIOR PERSONNEL: Todd Ringsmuth

PRINT NAME

SIGNATURE

8-10-01

DATE

CALCULATIONS/DOCUMENT CHECKED BY: Jian W. Liu

PRINT NAME

SIGNATURE

8-8-00

DATE

APPROVED BY: (PRINCIPAL INVESTIGATOR, CONSULTANT, OR PM) Todd Ringsmuth

PRINT NAME

SIGNATURE

1-9-01

DATE

Approval Notice: If Calculations/Document are only spot checked, do not require checking, or are assumed to be correct by experience of engineering judgement, it should be noted here.

Revision Number	Date	By	Checked By	Approval
1				
2				
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10. Are all sheets completely filled out?

    - Project number?
    - File number?
    - Sheet ? of ?
    - By ? Date ?
    - Checked By ?

11. Are the calculations neat and legible?

EXHIBIT D

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A DAMES & MOORE GROUP COMPANY

Sheet No. 2
Calc. No.
Rev. No.
By MRR Date 7-31-00
Chk'd. JWL Date 8-8-00

Job No. Job
Client Subject

Design of Sediment Basins:

Objective: To size sediment basins at basins inlets of each of the 3 alternatives.

References

- NRCS Calculation by Blake Covey, dated Nov 23, 1994 Titled "Pacific Southwest Inter-agency Committee, Sediment Yield Evaluation, White Tanks FRS #3 Mountains"
- Hydrologic Analysis for White Tanks FRS #3 Watershed, May 11, 2000

Calculations

- NRCS calculation devided the watershed into two sites:

Site #1: Mountains & Canyons

Area = 11 mi2

Total Annual Sediment Yield = 3.8 ac-ft

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Sheet No. 3
Calc. No.
Rev. No.
Job No. Job
By WKR Date 7-31-00
Client Subject
Chk'd. JWL Date 8-8-00

Site #2: Alluvial Fans

Area = 9.5 mi²

Total Annual Sediment Yield = 2.1 ac-ft

- 10-yr sediment Volume = (3.8+2.1)*10 = 59 ac-ft
  ↳ to be used per District's recommendation
- Volume of sediments for inlets of each alternatives will be determined using the ratios of inflow volumes at each inlet from the total volume of 1968 ac-ft (total FRS#3 watershed inflow volume as determined in the District's hydrology report.

Alternative 1

$$\frac{\text{North Inlet Volume}}{\text{Total Volume}} * 59 \text{ ac-ft}$$

$$= \frac{920 \text{ ac-ft}}{1968 \text{ ac-ft}} * 59 \text{ ac-ft}$$

$$= 27.6 \text{ ac-ft}$$

use 28 ac-ft

F-132(7/91)

DAMES & MOORE
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Sheet No. 4
Calc. No.
Rev. No.
By MKR Date 7-31-00
Chk'd. JWL Date 8-8-00

Job No. Job
Client Subject

Middle Inlet

$$\frac{246}{1968} * 59 = 7.38 \text{ ac-ft}$$

use 8 ac-ft

South Inlet

$$\frac{469}{1968} * 59 = 14 \text{ ac-ft}$$

Total = 49 ac-ft < 59 ac-ft due to Waterfall Wash diversion to McMicken of 333 ac-ft

$$\frac{333}{1968} * 59 = 10 \text{ ac-ft}$$

F-132(7/91)

DAMES & MOORE
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Sheet No. 5
Calc. No.
Rev. No.
By MKR Date 7-31-00
Chk'd. JWL Date 8-8-00

Job No. Job
Client Subject

Alternative 2

Upper Basin

North Inlet

$\frac{531}{1968} * 59 = 15.9$ ac-ft

use 16 ac-ft

Lower Basin

- Middle Inlet

$\frac{174}{1968} * 59 = 5.2$ ac-ft

Use 6.0 ac-ft

- South Inlet

$\frac{304}{1968} * 59 = 9.1$ ac-ft

- Total = 30.25 ac-ft ~~&~~ 59 ac-ft due to Waterfall Diversion to McMicken Dam & Diversion of 1300 cfs to Northern Avenue In addition to 3 basin bypass Channels

Waterfall Diversion $= \frac{353}{1968} * 59 = 10$

1,300 cfs Diversion $= \frac{138}{1968} * 59 = 4.1$

F-132(7/91)

DAMES & MOORE
A DAMES & MOORE GROUP COMPANY

Sheet No. 6
Calc. No.
Rev. No.
By MKR Date 7-31-00
Chk'd. JWL Date 8-8-00

Job No. Job
Client Subject

Basin Bypass Channel

$$\left(\frac{250}{1968} + \frac{72}{1968} + \frac{165}{1968}\right) * 59 = 14.6$$

Total = 15,945.2 + 9.1 + 10 + 4.1 + 14.6 = 58.9 ac-ft

Alternative 3

Olive Basin

$$\frac{502}{1968} * 59 = 15 \text{ ac-ft}$$

Main Basin

Combined

- North Inlet

$$\frac{443}{1968} * 59 = 13.3 \text{ ac-ft}$$

- Middle Inlet

$$\frac{246}{1968} * 59 = 7.4 \text{ ac-ft}$$

→ Total North & Middle = 20.7 ac-ft Use 21 ac-ft

- South Inlet

$$\frac{469}{1968} * 59 = 14 \text{ ac-ft}$$

- Total = 15 + 13.3 + 7.4 + 14 = 49.7 < 59 due to

F-132(7/91)

DAMES & MOORE
A DAMES & MOORE GROUP COMPANY

Sheet No. 7
Calc. No.
Rev. No.

Job No. Job
By MKR Date 7-31-00
Client Subject
Chk'd. JWL Date 8-8-00

1300 cfs diversion along Northern

$\frac{305}{1968} * 59 = 9.1$

which brings the total to 59 ac-ft

PACIFIC SOUTHWEST INTER-AGENCY COMMITTEE
SEDIMENT YIELD EVALUATION

WHITE TANKS FRS #2 ALLUVIAL FANS

SITE NUMBER = 2

GROSS WATERSHED AREA 9.5 sq.mi.

NET WATERSHED AREA 9.5 sq.mi.

FACTORS AFFECTING SEDIMENT YIELD IN THE PACIFIC SOUTHWEST

FACTORS	RANGE	DEFAULT	VALUE
(A) SURFACE GEOLOGY	(0 to 10)	5	0.0
(B) SOILS	(0 to 10)	5	5.0
(C) CLIMATE	(0 to 10)	5	3.0
(D) RUNOFF	(0 to 10)	5	5.0
(E) TOPOGRAPHY	(0 to 20)	10	5.0
(F) GROUND COVER	(-10 to 10)	0	0.0
(G) LAND USE	(-10 to 10)	0	0.0
(H) UPLAND EROSION	(0 to 25)	10	5.0
(I) CHANNEL EROSION AND SEDIMENT TRANSPORT	(0 to 25)	10	5.0
		TOTAL =	23.0

CLASSIFICATION = 4

ANNUAL SEDIMENT YIELD 0.22 ac.ft./sq.mi.

TOTAL ANNUAL SEDIMENT YIELD 2.1 ac.ft.

BY: BLAKE DINEY DATE: 11-23-1994 DATA FILE: B:\WHTANKS.P

PACIFIC SOUTHWEST INTER-AGENCY COMMITTEE
SEDIMENT YIELD EVALUATION

WHITE TANKS FRS #3 MOUNTAINS

SITE NUMBER = 1

GROSS WATERSHED AREA 11.0 sq.mi.

NET WATERSHED AREA 11.0 sq.mi.

FACTORS AFFECTING SEDIMENT YIELD IN THE PACIFIC SOUTHWEST

FACTORS	RANGE	DEFAULT	VALUE
(A) SURFACE GEOLOGY	(0 to 10)	5	2.0
(B) SOILS	(0 to 10)	5	3.0
(C) CLIMATE	(0 to 10)	5	3.0
(D) RUNOFF	(0 to 10)	5	8.0
(E) TOPOGRAPHY	(0 to 20)	10	15.0
(F) GROUND COVER	(-10 to 10)	0	-5.0
(G) LAND USE	(-10 to 10)	0	-5.0
(H) UPLAND EROSION	(0 to 25)	10	10.0
(I) CHANNEL EROSION AND SEDIMENT TRANSPORT	(0 to 25)	10	10.0
		TOTAL =	41.0

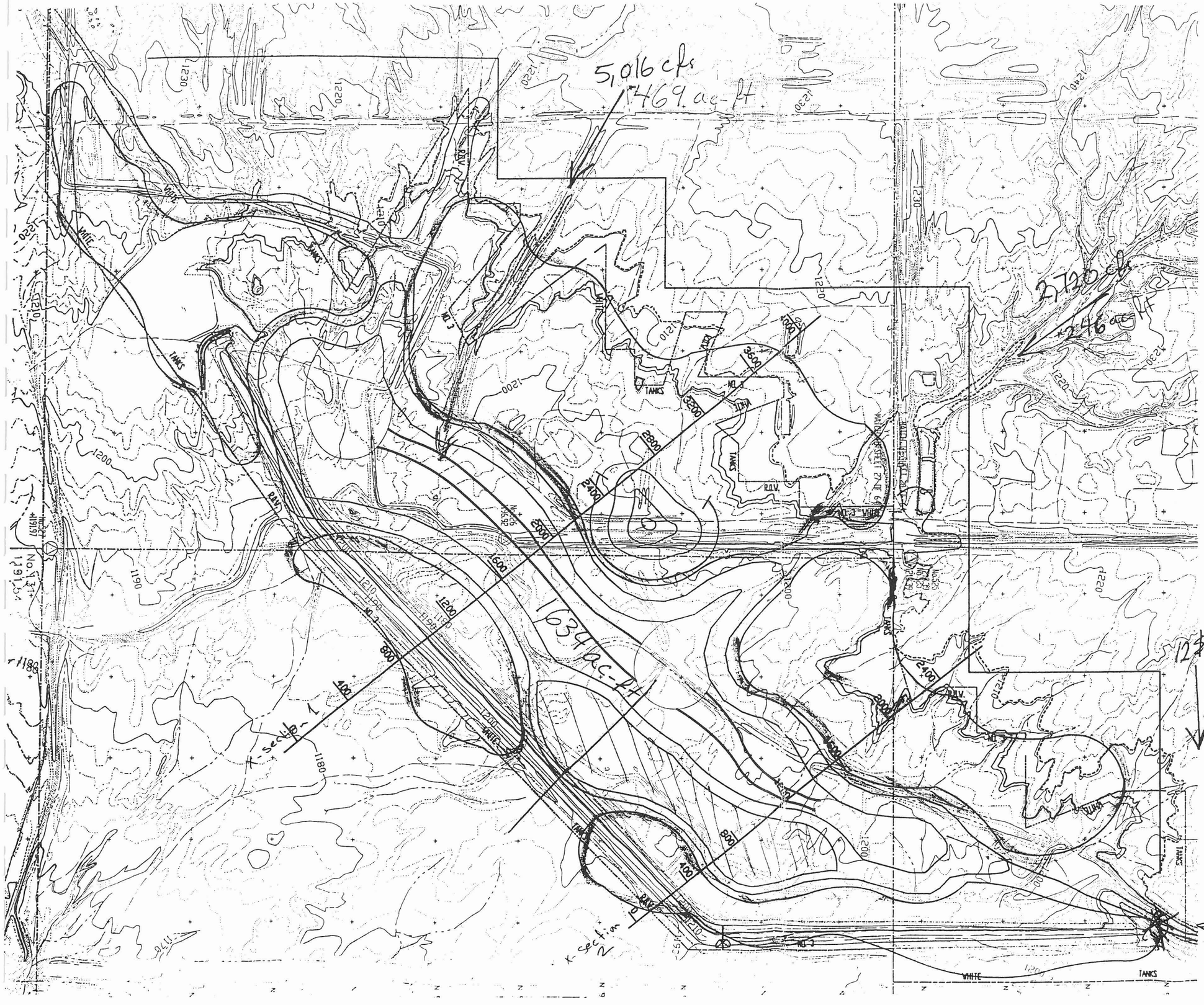
CLASSIFICATION = 4

ANNUAL SEDIMENT YIELD 0.35 ac.ft./sq.mi.

TOTAL ANNUAL SEDIMENT YIELD 3.8 ac.ft.

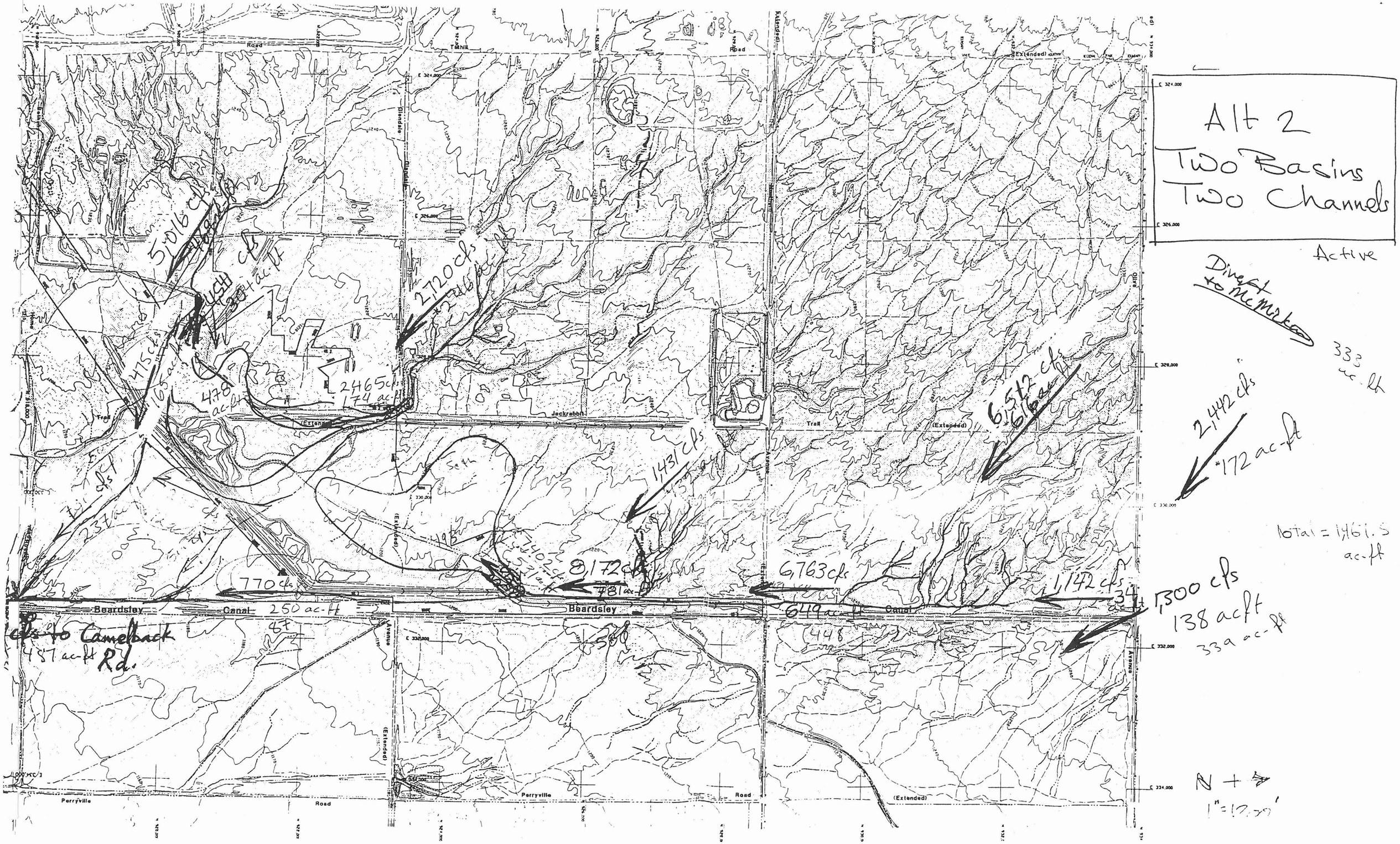
BY: BLAKE COVEY DATE: 11-23-1994 DATA FILE:

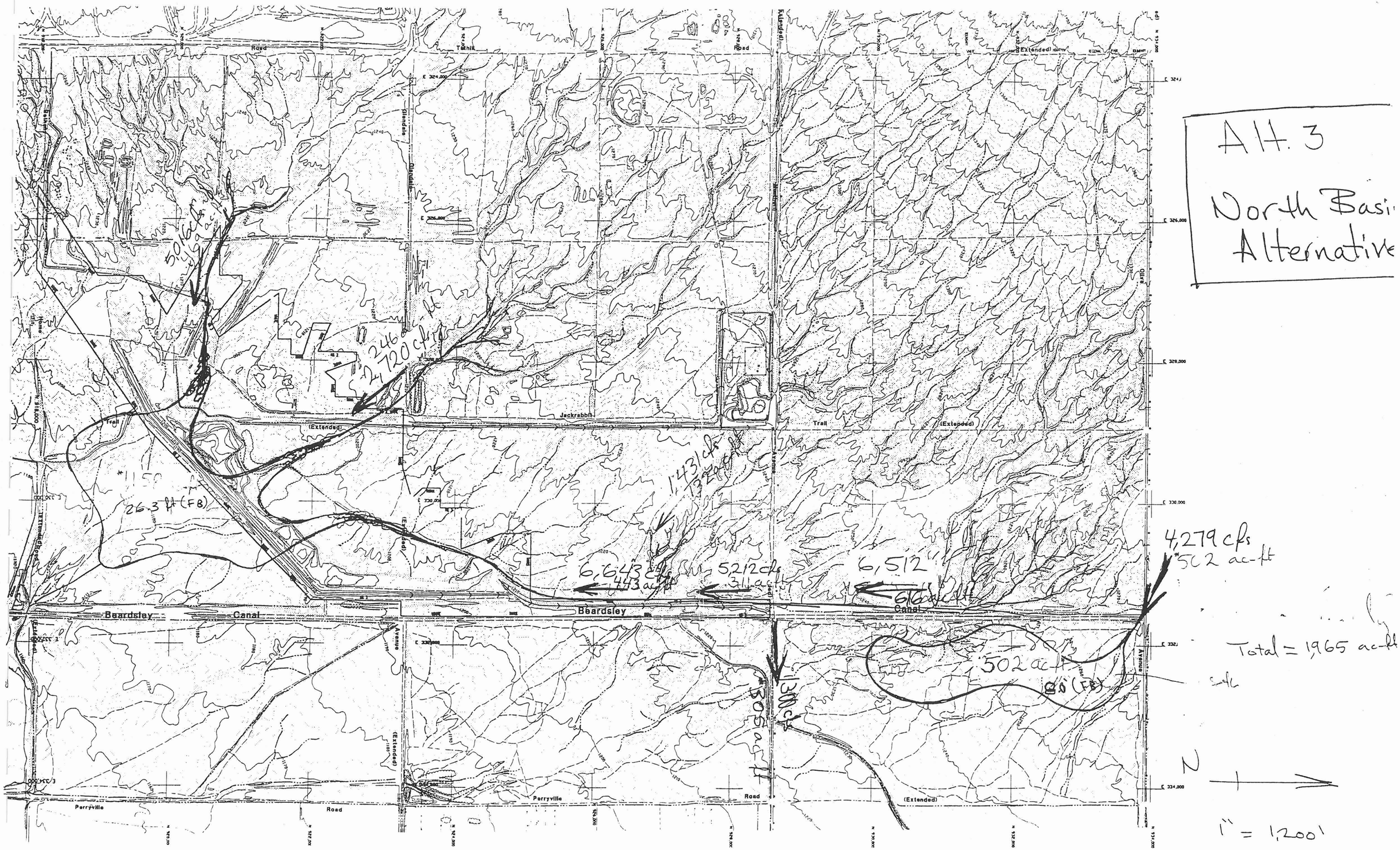
latest



Alt. 1
No Channel Alternative

Total = 1,967.5 ac-ft


Alt 2
Two Basins
Two Channels
Active
Direct to McMicken
333 ac-ft
2,442 cfs
*172 ac-ft
Total = 1,461.5 ac-ft
5,016 cfs
2,720 cfs
2465 cfs
174 ac-ft
478 ac-ft
475 cfs
6,572 cfs
1,431 cfs
8,172 cfs
781 ac-ft
6,763 cfs
649 ac-ft
1,142 cfs
1,300 cfs
138 acft
339 ac-ft
770 cfs
250 ac-ft
457 ac-ft
cfs to Camelback Rd.
Beardsley Canal
Jackrabbit Trail
Perryville Road
Dysart Road
Litchfield Road
Avenue
(Extended)
N
1" = 17,000'


Alt. 3
North Basin Alternative
Road
Tonnik
Road
Extended
Diendale
Diendale
Jackrabbit
Trail
(Extended)
Trail
(Extended)
Avenue
Avenue
Beardsley
Canal
Beardsley
Canal
Perryville
Road
Perryville
Road
(Extended)
(Extended)
(Extended)
E 324,000
E 326,000
E 328,000
E 330,000
E 332,000
E 334,000
N 928,000
N 926,000
N 924,000
N 922,000
N 920,000
N 918,000
N 916,000
N 914,000
50 cfs
246
24,720 cfs
26.3 ft (FB)
1,431 cfs
6,643 cfs
443 ac-ft
5,212 cfs
311 ac-ft
6,512
4,279 cfs
502 ac-ft
130 cfs
505 ac-ft
502 ac-ft
Total = 1,965 ac-ft
N
1" = 1,200'

DAMES & MOORE

CALCULATIONS COVER SHEET

SEP 2000
Received

SUBJECT: _____

PROJECT NO _____
SHEET _____ OF _____

Conceptual Drawings of Drop Structure and Diversion Dam (Side-Channel Weir

TITLE OF CALCULATIONS/DOCUMENT

CALCULATIONS/DOCUMENT BY: John Starbuck (PRINT NAME)
SIGNATURE — DATE: 9/14/00

ASSUMPTIONS CHECKED BY CONSULTANT/SENIOR PERSONNEL: Todd Ringsmuth (PRINT NAME)
SIGNATURE — DATE: 12-20-00

CALCULATIONS/DOCUMENT CHECKED BY: Chris Wiggington (PRINT NAME)
SIGNATURE — DATE: 12/20/00

APPROVED BY: (PRINCIPAL INVESTIGATOR, CONSULTANT, OR PM) Todd Ringsmuth (PRINT NAME)
SIGNATURE — DATE: 1-9-01

Approval Notice: If Calculations/Document are only spot checked, do not require checking, or are assumed to be correct by experience of engineering judgement, it should be noted here.

Revision Number	Date	By	Checked By	Approval
1				
2				
3				
4				

INITIALS

URS Greiner Woodward Clyde

Job IWA | Project No. ____ | Sheet ____ of ____

Description #3 100 year flow = 5016 cfs | Computed by JGS | Date 8/9/00

Checked by ____ | Date ____

Reference

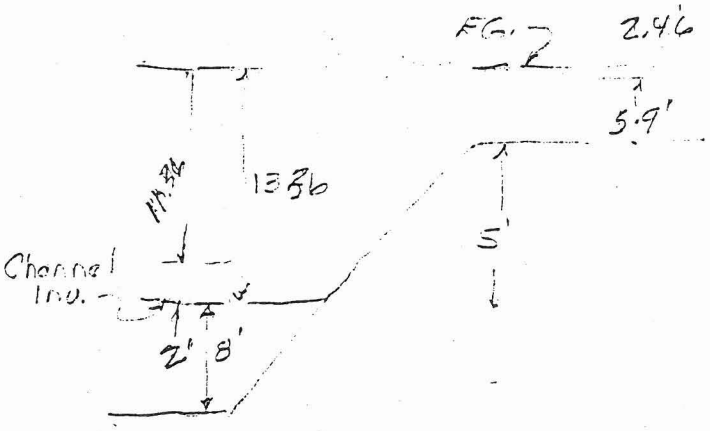
Construct channel 50' wide side slopes = 1V, 3H = 3:1

Q = 5000

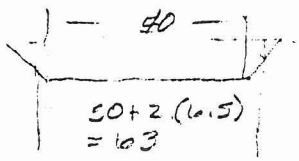
S = .011	S = .015	S = .005
dn = 6.4'	dn = 5.9	dn = 8.0'
n = .040	n = .040	n = .04
S = .011	S = .015	S = .005
W = 50'	W = 50'	W = 50'
SS = 3:1	SS = 3:1	SS = 3:1
A = 442.9 ft²	A = 399	A = 592 ft²
V = 11.3'/sec.	V = 12.6'/sec.	V = 8.4'/sec.

Q = 5000 dn = 6.4' V = 11.3 ft/sec
Q = 2140 dn = 4.0' V = 8.6
Q = 642 dn = 2.0' V = 5.7

Critical depth about 4.6 ±



Estimate depth of water in channel @ 2'



APPROX.

$d_c = 4.6$

$q = 5000/63 = 79.4$

$F/d_c = 11.36/4.6 = 2.4$

$d_1/d_c = .336 \therefore d_1 = 1.54$ $V_1 = 51$ '/sec.

$d_2 = 1.54(6.79) = 10.49'$ Say 10'

Froude # $= \frac{V_1}{\sqrt{g d_1}} = \frac{51}{11.1} = 4.6$

Jump length $L = 3.5(10.1) = 38'$

URS Greiner Woodward Clyde

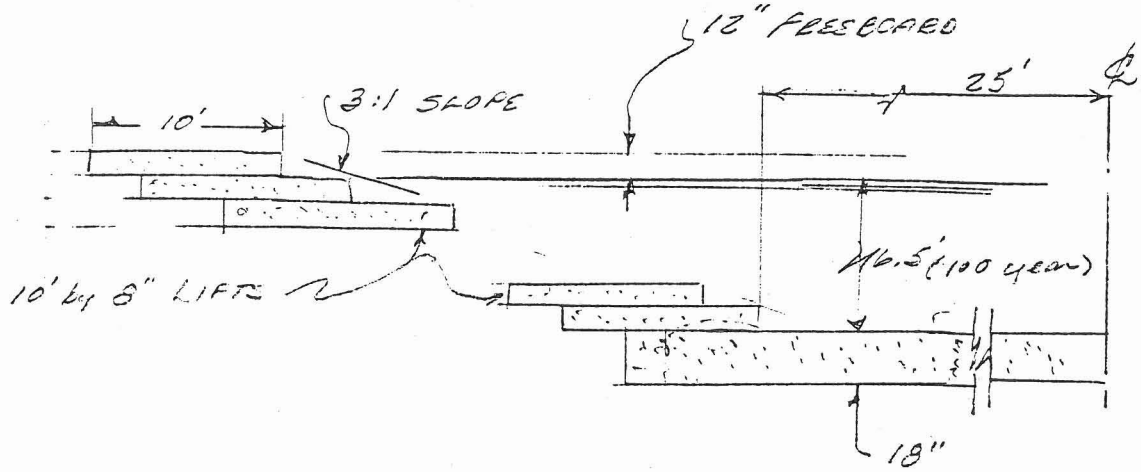
Job IWA | Project No. ____ | Sheet ____ of ____

Description #3 Q100 = 5000 cfs | Computed by JGS | Date 8/9/00

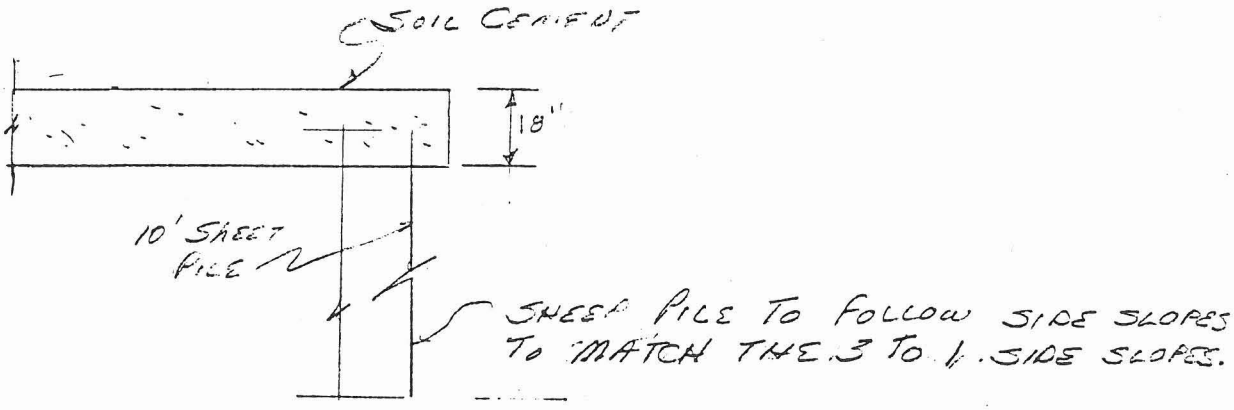
Checked by ____ | Date ____

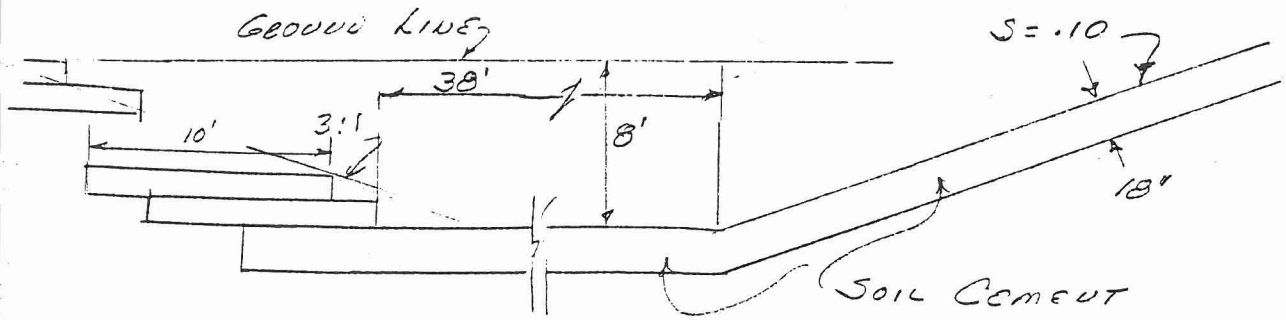
Reference

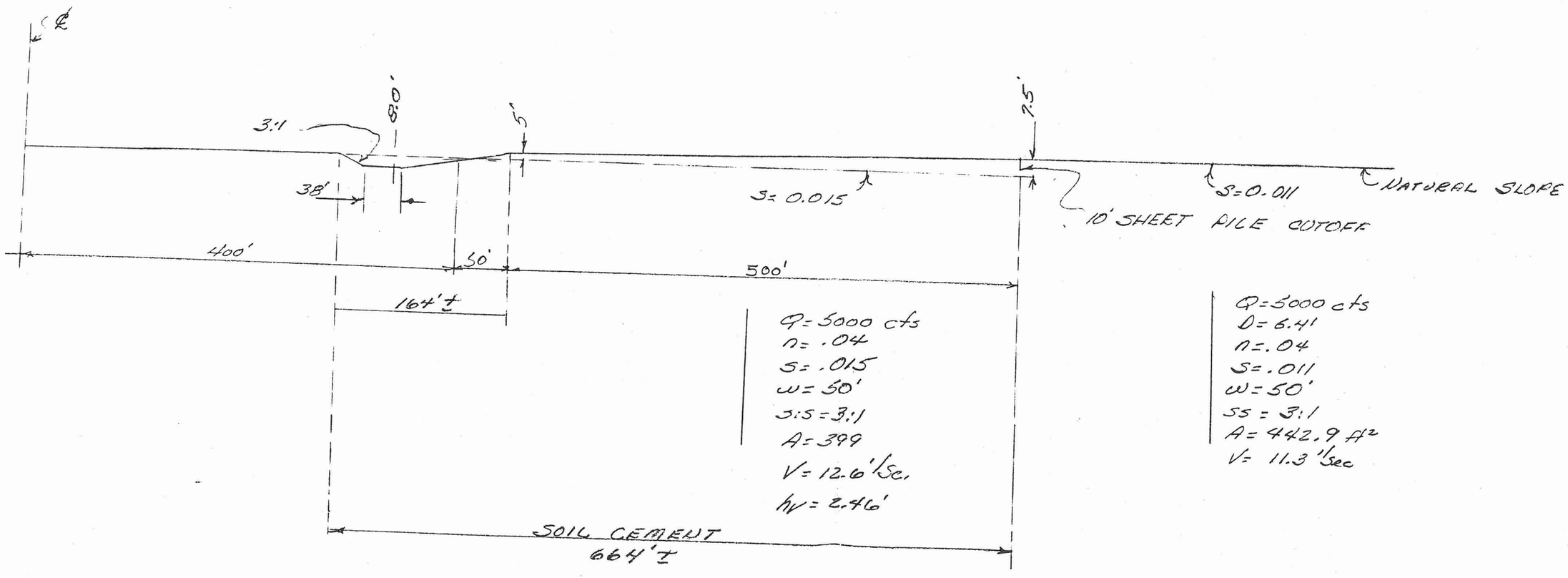
TYPICAL CHANNEL SECTION S=.015 REACH



START OF S=.015 SLOPE






℄
3:1
8.0'
5'
7.5'
38'
S= 0.015
S=0.011
NATURAL SLOPE
10' SHEET PILE CUTOFF
400'
50'
500'
164'±
Q= 5000 cfs
n= .04
S= .015
w= 50'
S:S = 3:1
A= 399
V= 12.6'/Sec.
hv = 2.46'
Q=5000 cfs
D= 6.4'
n=.04
S=.011
w=50'
SS = 3:1
A= 442.9 ft²
V= 11.3'/Sec
SOIL CEMENT
664'±

#3, Q=5016 cfs

URS Greiner Woodward Clyde

Page 1 of ____

Job ____ Project No. ____ Sheet ____ of ____

Description DIVERSION STR. & WEIR Computed by [illegible] Date 9/11/00

Checked by ____ Date ____

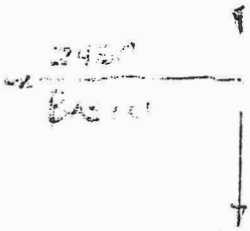
Reference

REFERENCE STATEMENT [illegible]-2000 FROM [illegible]

[illegible]

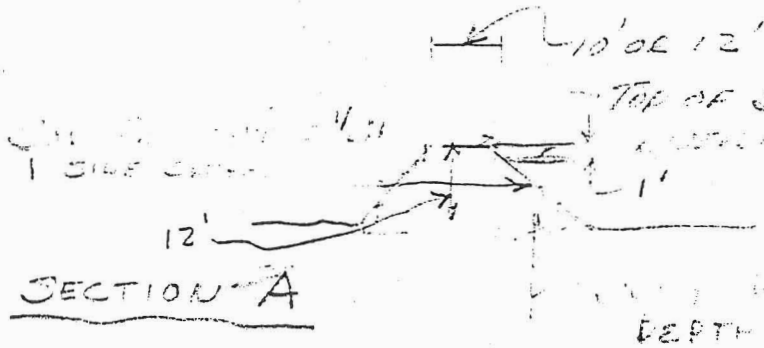
* ALL 3 STRUCTURES A, B & C CAN BE DESIGNED USING THIS DATA.

100 year flow 2900 cfs.
[illegible] 50 to 100' wide



Bypass flow 250 cfs.

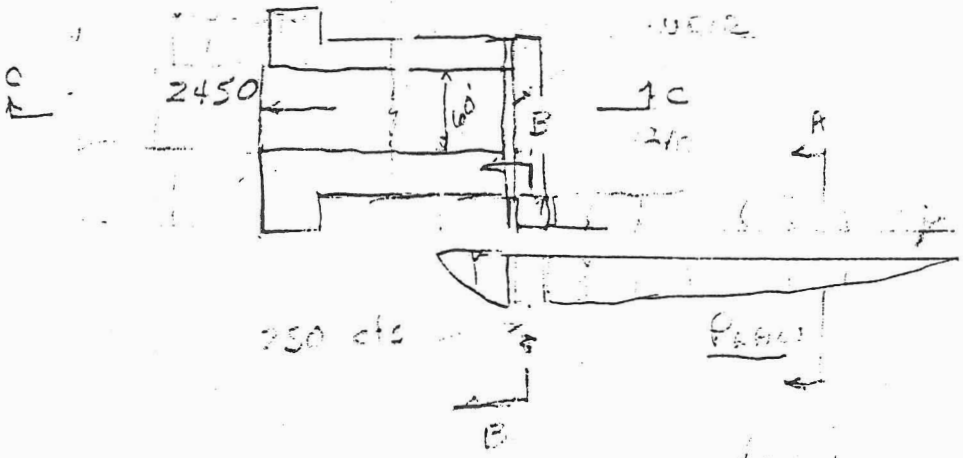
[illegible]



SECTION A

[illegible] To prevent [illegible]
depth [illegible] fall material

CHANNEL



DIVERSION STR. TO SPAN CHANNEL

URS Greiner Woodward Clyde

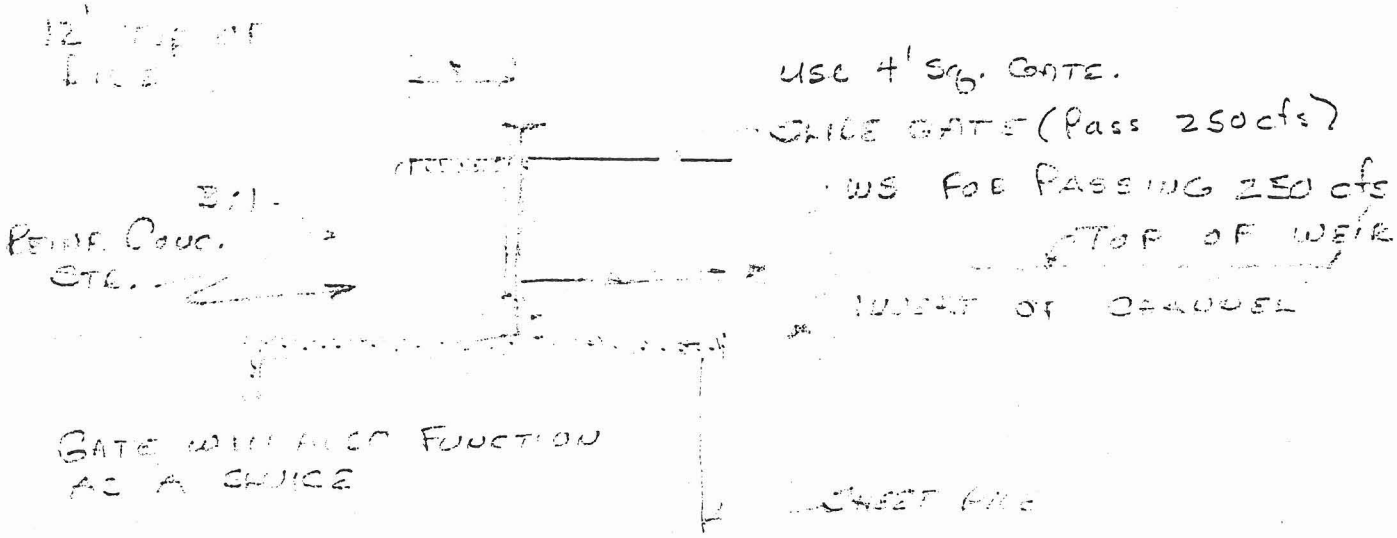
Page ____ of ____

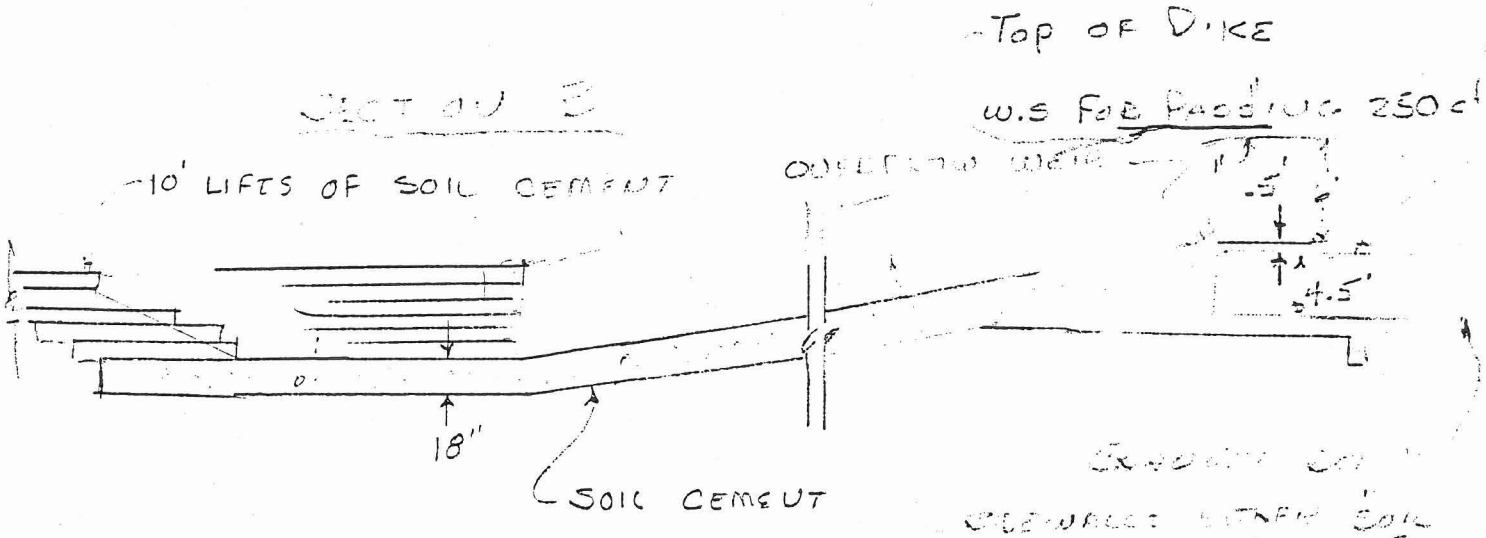
Job ____ Project No. ____ Sheet 2 of ____

Description Diversion Str. & Weir Computed by JGS Date 8/11/00

Checked by ____ Date ____

Reference





Overflow Weir (Pass 2450 cfs)
C = 2.8

Problem

H = 5.0 ∴ L = 30' or q =
H = 6.0 ∴ L = 18 or q =
H = 6.0 ∴ L = 60 or q = 40.8

Diversion Str. Height = 4.5' + .5' + 6' + 1' = 12'
(Above stream bed)

URS Greiner Woodward Clyde

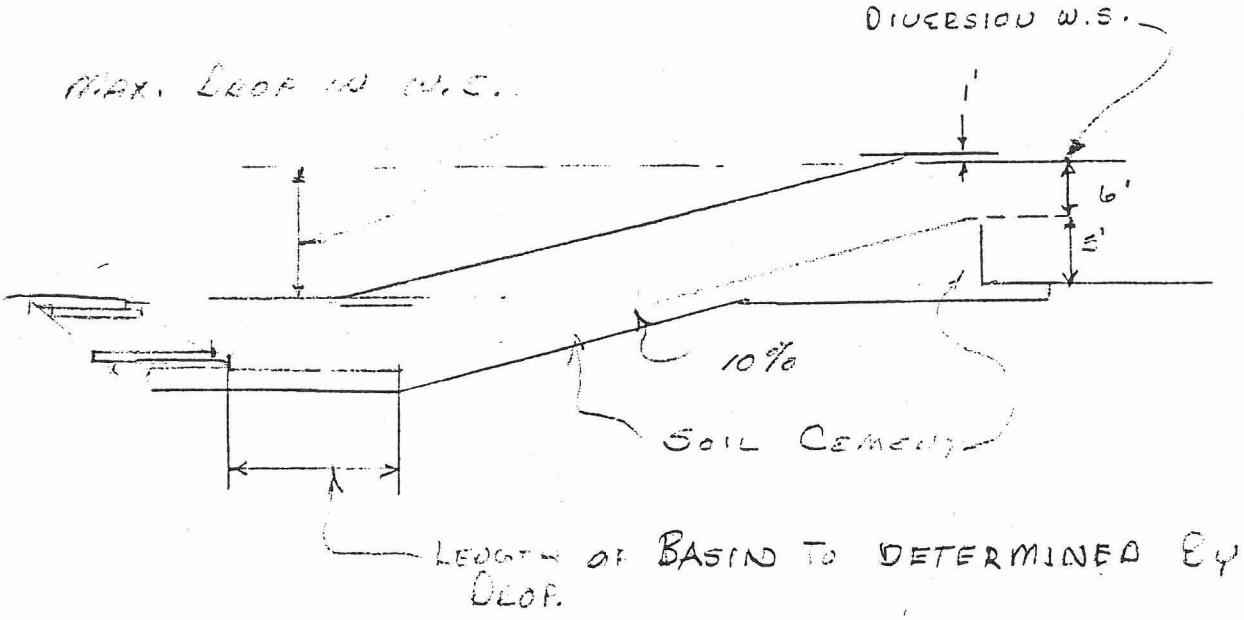
Page ____ of ____

Job ____ Project No. ____ Sheet 3 of ____

Description DIVERSION STR & WEIR Computed by JGS Date 8/11/00

Checked by ____ Date ____

Reference



ALTERNATE DESIGN

- YOU MIGHT STUDY DIVERSION OF THE REQUIRED BYPASS FLOW FROM THE STORAGE POND INSTEAD OF BYPASSING FLOW AT THE DIVERSION STRUCTURE.
  - ADVANTAGE OF BYPASS AT THE DIVERSION STRUCTURE IS SLUICE ACTION OF GRAVEL & SILT.

QUESTION

- YOU WILL HAVE TO CLEAN STORAGE BASINS AFTER FLOODS. YOU NEED TO STUDY BEDLOADS FOR 10, 25 & 50 YEAR FLOWS ALSO.

Sheet 4
2-9-90
8-11-08

ENERGY LOSS IN HYDRAULIC JUMP

Fig. 18 Par. 2.29

F/d_c	0		1		2		3		4		5		6		7		8		9	
	d_2/d_1	d_1/d_c	d_2/d_1	d_1/d_c	d_2/d_1	d_1/d_c	d_2/d_1	d_1/d_c	d_2/d_1	d_1/d_c	d_2/d_1	d_1/d_c	d_2/d_1	d_1/d_c	d_2/d_1	d_1/d_c	d_2/d_1	d_1/d_c	d_2/d_1	d_1/d_c
0	1.0	1.0	2.07	.680	2.48	.614	2.81	.572	3.09	.541	3.35	.516	3.60	.494	3.82	.477	4.04	.461	4.24	.448
1	4.44	.436	4.64	.425	4.82	.415	5.00	.405	5.18	.397	5.36	.389	5.53	.381	5.69	.375	5.86	.368	6.02	.362
2	6.18	.356	6.33	.351	6.49	.345	6.64	.340	6.79	.336	6.94	.331	7.09	.327	7.23	.323	7.38	.319	7.52	.315
3	7.66	.311	7.80	.308	7.94	.304	8.07	.301	8.21	.298	8.34	.295	8.48	.292	8.61	.289	8.74	.286	8.87	.284
4	9.00	.281	9.13	.278	9.26	.276	9.39	.274	9.51	.271	9.64	.269	9.76	.267	9.89	.265	10.01	.263	10.13	.261
5	10.25	.259	10.38	.257	10.50	.255	10.62	.253	10.73	.251	10.85	.250	10.97	.248	11.09	.246	11.21	.244	11.32	.243
6	11.44	.241	11.55	.240	11.67	.238	11.78	.237	11.90	.235	12.01	.234	12.12	.233	12.24	.231	12.35	.230	12.46	.228
7	12.57	.227	12.68	.226	12.79	.225	12.90	.223	13.01	.222	13.12	.221	13.23	.220	13.34	.219	13.45	.218	13.56	.216
8	13.66	.215	13.77	.214	13.88	.213	13.98	.212	14.09	.211	14.19	.210	14.30	.209	14.41	.208	14.51	.207	14.61	.206
9	14.72	.205	14.82	.204	14.93	.203	15.03	.202	15.13	.202	15.23	.201	15.34	.200	15.44	.199	15.54	.198	15.64	.197
10	15.74	.197	15.84	.196	15.95	.195	16.05	.194	16.15	.193	16.25	.193	16.35	.192	16.45	.191	16.54	.191	16.64	.190
11	16.74	.189	16.84	.188	16.94	.187	17.04	.187	17.13	.186	17.23	.185	17.33	.185	17.43	.184	17.52	.183	17.62	.183
12	17.72	.182	17.81	.181	17.91	.181	18.01	.180	18.10	.180	18.20	.179	18.29	.178	18.39	.178	18.48	.177	18.58	.176
13	18.67	.176	18.77	.175	18.86	.175	18.95	.174	19.05	.174	19.14	.173	19.24	.173	19.33	.172	19.42	.171	19.52	.171
14	19.61	.170	19.70	.170	19.79	.169	19.89	.169	19.98	.168	20.07	.168	20.16	.167	20.25	.167	20.34	.166	20.44	.166
15	20.53	.165	20.62	.165	20.71	.164	20.80	.164	20.89	.164	20.98	.163	21.07	.163	21.16	.162	21.25	.162	21.34	.161
16	21.43	.161	21.52	.160	21.61	.160	21.70	.160	21.79	.159	21.88	.159	21.97	.158	22.05	.158	22.14	.157	22.23	.157
17	22.32	.157	22.41	.156	22.50	.156	22.58	.155	22.67	.155	22.76	.155	22.85	.154	22.93	.154	23.02	.154	23.11	.153
18	23.19	.153	23.28	.152	23.37	.152	23.45	.152	23.54	.151	23.63	.151	23.71	.151	23.80	.150	23.89	.150	23.97	.150
19	24.06	.149	24.14	.149	24.23	.148	24.31	.148	24.40	.148	24.49	.147	24.57	.147	24.66	.147	24.74	.146	24.83	.146
20	24.91	.146	24.99	.145	25.08	.145	25.16	.145	25.25	.145	25.33	.144	25.42	.144	25.50	.144	25.58	.143	25.67	.143
21	25.75	.143	25.83	.142	25.92	.142	26.00	.142	26.08	.141	26.17	.141	26.25	.141	26.33	.141	26.42	.140	26.50	.140
22	26.58	.140	26.66	.139	26.75	.139	26.83	.139	26.91	.139	26.99	.138	27.08	.138	27.16	.138	27.24	.138	27.32	.137
23	27.40	.137	27.48	.137	27.57	.136	27.65	.136	27.73	.136	27.81	.136	27.89	.135	27.97	.135	28.05	.135	28.13	.135
24	28.22	.134	28.30	.134	28.38	.134	28.46	.134	28.54	.133	28.62	.133	28.70	.133	28.78	.133	28.86	.132	28.94	.132
25	29.02	.132	29.10	.132	29.18	.131	29.26	.131	29.34	.131	29.42	.131	29.50	.131	29.58	.130	29.66	.130	29.74	.130
26	29.82	.130	29.89	.129	29.97	.129	30.05	.129	30.13	.129	30.21	.128	30.29	.128	30.37	.128	30.45	.128	30.52	.128
27	30.60	.127	30.68	.127	30.76	.127	30.84	.127	30.92	.127	31.00	.126	31.07	.126	31.15	.126	31.23	.126	31.31	.126
28	31.38	.125	31.46	.125	31.54	.125	31.62	.125	31.69	.125	31.77	.124	31.85	.124	31.93	.124	32.00	.124	32.08	.124
29	32.16	.123	32.23	.123	32.31	.123	32.39	.123	32.46	.123	32.54	.122	32.62	.122	32.69	.122	32.77	.122	32.85	.122
30	32.92	.121	33.00	.121	33.08	.121	33.15	.121	33.23	.121	33.31	.121	33.38	.120	33.46	.120	33.53	.120	33.61	.120
31	33.68	.120	33.76	.119	33.84	.119	33.91	.119	33.99	.119	34.06	.119	34.14	.119	34.21	.118	34.29	.118	34.36	.118
32	34.44	.118	34.51	.118	34.59	.118	34.66	.117	34.74	.117	34.81	.117	34.89	.117	34.96	.117	35.04	.117	35.11	.116
33	35.19	.116	35.26	.116	35.34	.116	35.41	.116	35.49	.116	35.56	.115	35.63	.115	35.71	.115	35.78	.115	35.86	.115
34	35.93	.115	36.00	.115	36.08	.114	36.15	.114	36.23	.114	36.30	.114	36.37	.114	36.45	.114	36.52	.113	36.59	.113
35	36.67	.113	36.74	.113	36.81	.113	36.89	.113	36.96	.112	37.03	.112	37.11	.112	37.18	.112	37.25	.112	37.33	.112
36	37.40	.112	37.47	.112	37.55	.111	37.62	.111	37.69	.111	37.76	.111	37.84	.111	37.91	.111	37.98	.111	38.05	.110
37	38.13	.110	38.20	.110	38.27	.110	38.34	.110	38.42	.110	38.49	.110	38.56	.109	38.63	.109	38.70	.109	38.78	.109
38	38.85	.109	38.92	.109	38.99	.109	39.06	.109	39.14	.108	39.21	.108	39.28	.108	39.35	.108	39.42	.108	39.49	.108
39	39.56	.108	39.64	.107	39.71	.107	39.78	.107	39.85	.107	39.92	.107	39.99	.107	40.06	.107	40.14	.107	40.21	.106
40	40.28	.106	40.35	.106	40.42	.106	40.49	.106	40.56	.106	40.63	.106	40.70	.106	40.77	.105	40.84	.105	40.91	.105

Relation of energy loss, critical depth, and depth before and after jump, for hydraulic jumps in rectangular channels with level floor.

F = Difference in energy levels at upstream and downstream ends of jump.

d_c = Critical depth for flow considered based on pool width, $d_c = \sqrt[3]{\frac{q^2}{g}}$

d_1 = Depth at upstream end of jump

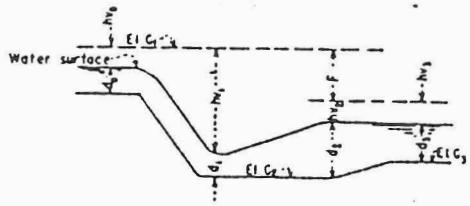
d_2 = Depth at downstream end of jump

$K = d_2 \div d_1$

$El.\ C_2 = El.\ C_1 - (d_1 + hv_1) = El.\ C_1 - (d_2 + hv_2 + F)$

$$\frac{d_1}{d_c} = \sqrt[3]{\frac{2}{K\,(K+1)}}$$

$$\frac{F}{d_c} = \frac{(K-1)^3}{4K}\sqrt[3]{\frac{2}{K\,(K+1)}}$$



Data from memorandum by C.R. Burky, April 6, 1939

ENERGY LOSS IN HYDRAULIC JUMP

FORMERLY 2-D-3479

103-D-289

DAMES & MOORE

CALCULATIONS COVER SHEET

PROJECT NO. 15448-007-058

SUBJECT: _____

SHEET 1 OF 11

Channel Design Calculation

TITLE OF CALCULATIONS/DOCUMENT

CALCULATIONS/DOCUMENT BY: Jian W. Liu (PRINT NAME)

Jian Liu (SIGNATURE) — 11-8-2000 (DATE)

ASSUMPTIONS CHECKED BY CONSULTANT/SENIOR PERSONNEL: Todd Ringsmuth (PRINT NAME)

(SIGNATURE) — 12-1-00 (DATE)

CALCULATIONS/DOCUMENT CHECKED BY: Muawieh Radaideh (PRINT NAME)

(SIGNATURE) — 11-9-00 (DATE)

APPROVED BY: (PRINCIPAL INVESTIGATOR, CONSULTANT, OR PM) Todd Ringsmuth (PRINT NAME)

(SIGNATURE) — 1-9-01 (DATE)

Approval Notice: If Calculations/Document are only spot checked, do not require checking, or are assumed to be correct by experience of engineering judgement, it should be noted here.

Revision Number	Date	By	Checked By	Approval
1				
2				
3				
4				

INITIALS

CALCULATION CHECKING CRITERIA

1. Is the calculation method appropriate?
2. Are the results and conclusions reasonable when compared with the design input and the project objectives?
3. Are the results and conclusions reasonably within the project construction budget?
4. Is the calculation complete in format with all sections included?

   - Problem Statement & Calculation Objectives
   - Data Available
   - Design Criteria
   - Assumptions
   - Analysis and Conclusions
   - Attachments

5. Does the calculation conform with:

   - Codes
   - Project Design Criteria
   - Project Procedures?

6. Are the mathematics of the calculation accurate?
7. Are computer programs used in the calculation appropriate for use in this application?
8. Is the computer input correct?
9. Is the computer output correct and reasonable?
10. Are all sheets completely filled out?

    - Project number?
    - File number?
    - Sheet ? of ?
    - By ? Date ?
    - Checked By ?

11. Are the calculations neat and legible?

EXHIBIT D

Chk'd 2
MSR

White Tanks Basin Design
Alternative 2 Channels Design
15448-007-058

Objective:

Design Alternative 2 channels.

Calculation Method:

- Channel Alignments are shown in sheets ~~***~~. 6, 7, & 8
- The bottom width of each channel was from 100 feet to 200 feet.
- The side slopes were set to 4:1 on both the left and right sides for each channel.
- Manning's n was 0.040. P 12
- Estimated slopes for the channels varied from 0.5% to 0.65%.
- Normal depth was calculated using Manning's equation as follows:
  $Q = (1.49/n)AR^{2/3}S^{1/2}$
  Where: A = Cross sectional area, ft^2
  $A = by + my^2$
  b = Channel bottom width, ft
  y = Normal depth, ft
  m = Side Slope
  R = Hydraulic radius, ft
  $R = b + 2y(1 + m^2)^{1/2}$
- The above information was entered into a spreadsheet and Excel's Goal Seek was used to determine normal depth.

Results were shown in the next table.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	White Tanks Basin Design													
2	Alternative 2 Inlet Channel Design													
3														
4	Wash	Normal Depth	Bottom width	Left side slope	Right side slope	Manning's n	Flow Area	Wetted Perimeter	Hydraulic Radius	Slope	Flow Velocity	Flow, Q	Peak Flow	Minimum Freeboard (subcritical only)
5		(ft)	(ft)	(z:1)	(z:1)		(ft^2)	(ft)	(ft)	(percent)	(ft/s)	(cfs)	(cfs)	(ft)
6	North Inlet Channel - S1	**4.95**	150.00	4.00	4.00	0.040	840.55	190.82	4.40	0.65	8.05	**6765.00**	6765	1.49
7	North Inlet Channel - S2	**4.71**	200.00	4.00	4.00	0.040	1030.08	238.82	4.31	0.65	7.94	**8175.00**	8175	1.42
8	Middle Inlet Channel	**3.93**	100.00	4.00	4.00	0.040	454.82	132.41	3.43	0.50	5.98	**2720.00**	2720	1.12
9	South Inlet Channel	**4.05**	180.00	4.00	4.00	0.040	795.15	213.42	3.73	0.50	6.31	**5020.00**	5020	1.17
10	Bethany Home to Camelback	**3.34**	50.00	4.00	4.00	0.04	257.68	78.11	3.30	0.50	5.82	**1500.00**	1500	1.00
11	***Critical Depth***													
12														
13		Critical Depth	Bottom Width	Left Side Slope	Right Side Slope	Channel Top Width, T	Flow Area	Flow, Q	Q^2/g	A^3/T				
14	Wash	(ft)	(ft)	(z:1)	(z:1)	(ft)	(sq ft)	(cfs)						
15	North Inlet Channel - S1	**3.84**	150.00	4.00	4.00	180.75	635.70	6765	1421280	**1421280**				
16	North Inlet Channel - S2	**3.64**	200.00	4.00	4.00	229.10	780.52	8175	2075485	**2075485**				
17	Middle Inlet Channel	**2.74**	100.00	4.00	4.00	121.90	303.69	2720	229764	**229764**				
18	South Inlet Channel	**2.83**	180.00	4.00	4.00	202.63	541.28	5020	782621	**782621**				
19	Bethany Home to Camelback	**2.80**	50.00	4.00	4.00	72.44	171.70	1500	69876	**69876**				

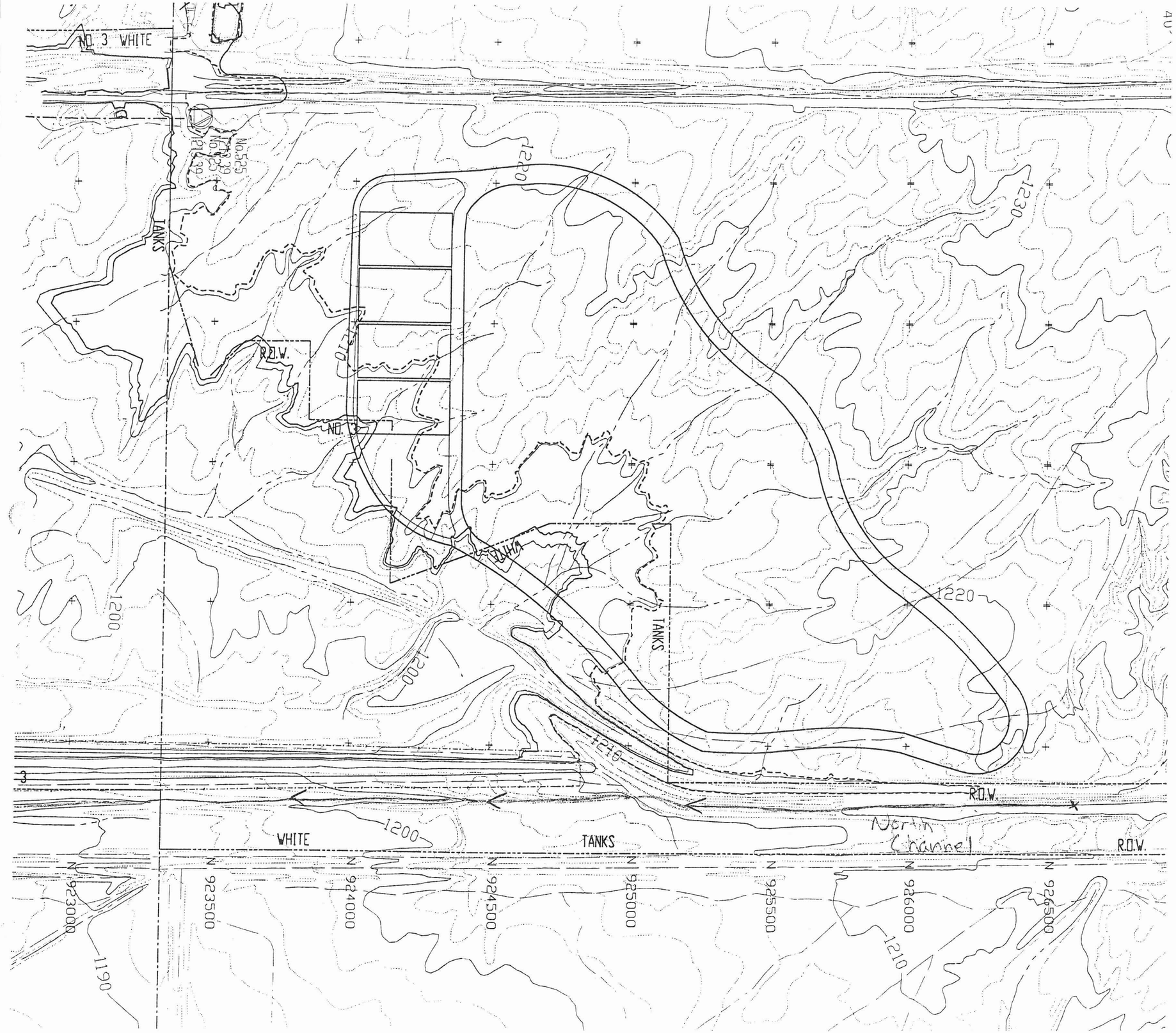
P:\15448\007\design\diversion ditches\Dibar\new-A2-northinletchannels0.65%

Chkd 3
MKP

	A	B	C	D	E	F	G	H
1								
2							**White Tanks Basin Design**	
3							**Alternative 2 Inlet Channel Design**	
4	**Wash**	**Normal Depth**	**Bottom width**	**Left side slope**	**Right side slope**	**Manning's n**	**Flow Area**	**Wetted Perimeter**
5		(ft)	(ft)	(z:1)	(z:1)		(ft^2)	
6	North Inlet Channel - S1	4.950186	150	4	4	0.04	=C6*B6+0.5*D6*B6*B6+0.5*E6*B6*B6	=C6+((B6^2)+((D6*B6)^2))^0.5+((B6^2)+((E6*B6)^2))^0.5
7	North Inlet Channel - S2	4.707221	200	4	4	0.04	=C7*B7+0.5*D7*B7*B7+0.5*E7*B7*B7	=C7+((B7^2)+((D7*B7)^2))^0.5+((B7^2)+((E7*B7)^2))^0.5
8	Middle Inlet Channel	3.930342	100	4	4	0.04	=C8*B8+0.5*D8*B8*B8+0.5*E8*B8*B8	=C8+((B8^2)+((D8*B8)^2))^0.5+((B8^2)+((E8*B8)^2))^0.5
9	South Inlet Channel	4.052536	180	4	4	0.04	=C9*B9+0.5*D9*B9*B9+0.5*E9*B9*B9	=C9+((B9^2)+((D9*B9)^2))^0.5+((B9^2)+((E9*B9)^2))^0.5
10	Bethany Home to Camelback	3.338559	50	4	4	0.04	=(10*2.37+E10*2.37^2)+(C10*B10+E10*B10^2)	=(10+2*2.37*(1+E10^2)^0.5)+((C10-10-2*2.37*E10)+2*B10*(1+E10^2)^0.5)
11	***Critical Depth***							
12								
13		**Critical Depth**	**Bottom Width**	**Left Side Slope**	**Right Side Slope**	**Channel Top Width, T**	**Flow Area**	**Flow, Q**
14	**Wash**	(ft)	(ft)	(z:1)	(z:1)	(ft)	(sq ft)	(cfs)
15	=A6	3.843986	=C6	=D6	=E6	=C15+B15*D15+B15*E15	=C15*B15+0.5*B15*B15*D15+0.5*B15*B15*E15	=M6
16	=A7	3.637908	=C7	=D7	=E7	=C16+B16*D16+B16*E16	=C16*B16+0.5*B16*B16*D16+0.5*B16*B16*E16	=M7
17	=A8	2.737179	=C8	=D8	=E8	=C17+B17*D17+B17*E17	=C17*B17+0.5*B17*B17*D17+0.5*B17*B17*E17	=M8
18	=A9	2.829226	=C9	=D9	=E9	=C18+B18*D18+B18*E18	=C18*B18+0.5*B18*B18*D18+0.5*B18*B18*E18	=M9
19	=A10	2.804656	=C10	=D10	=E10	=C19+B19*D19+B19*E19	=C19*B19+0.5*B19*B19*D19+0.5*B19*B19*E19	=M10

	I	J	K	L	M	N
1						
2						
3						
4	Hydraulic Radius	Slope	Flow Velocity	Flow, Q	Peak Flow	Minimum Freeboard (subcritical only)
5	(ft)	(percent)	(ft/s)	(cfs)	(cfs)	(ft)
6	=G6/H6	0.65	=L6/G6	=(1.486/F6)*(G6)*(I6^(2/3))*(J6/100)^0.5	6765	=IF(0.25*(B6+(K6^2)/(2*32.2))<1,1,0.25*(B6+(K6^2)/(2*32.2)))
7	=G7/H7	0.65	=L7/G7	=(1.486/F7)*(G7)*(I7^(2/3))*(J7/100)^0.5	8175	=IF(0.25*(B7+(K7^2)/(2*32.2))<1,1,0.25*(B7+(K7^2)/(2*32.2)))
8	=G8/H8	0.5	=L8/G8	=(1.486/F8)*(G8)*(I8^(2/3))*(J8/100)^0.5	2720	=IF(0.25*(B8+(K8^2)/(2*32.2))<1,1,0.25*(B8+(K8^2)/(2*32.2)))
9	=G9/H9	0.5	=L9/G9	=(1.486/F9)*(G9)*(I9^(2/3))*(J9/100)^0.5	5020	=IF(0.25*(B9+(K9^2)/(2*32.2))<1,1,0.25*(B9+(K9^2)/(2*32.2)))
10	=G10/H10	0.5	=L10/G10	=(1.486/F10)*(G10)*(I10^(2/3))*(J10/100)^0.5	1500	=IF(0.25*(B10+(K10^2)/(2*32.2))<1,1,0.25*(B10+(K10^2)/(2*32.2)))
11						
12						
13	Q^2/g	A^3/T				
14						
15	=(H15^2)/32.2	=(G15^3)/F15				
16	=(H16^2)/32.2	=(G16^3)/F16				
17	=(H17^2)/32.2	=(G17^3)/F17				
18	=(H18^2)/32.2	=(G18^3)/F18				
19	=(H19^2)/32.2	=(G19^3)/F19				

6
chkd
mks



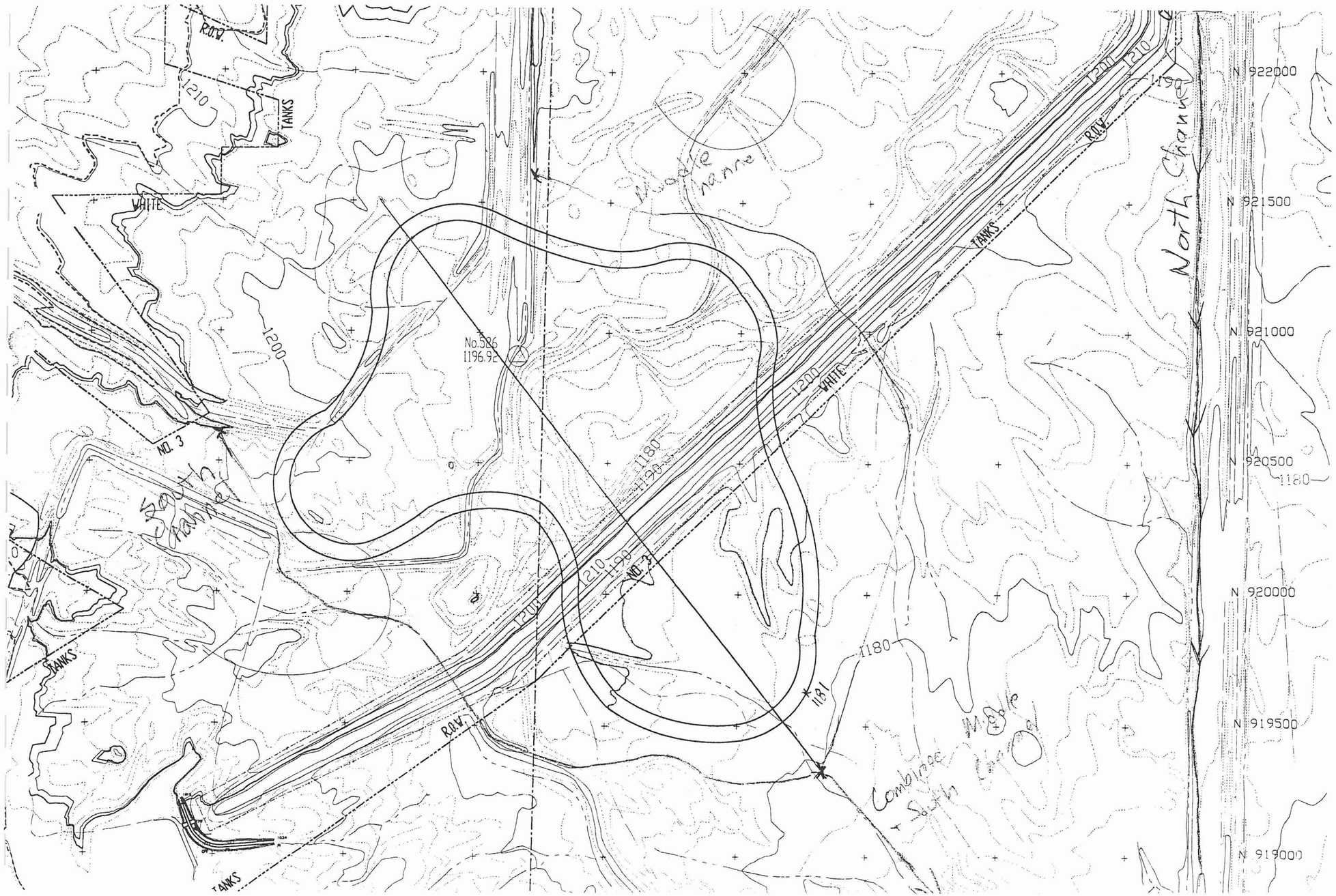
Alt 2

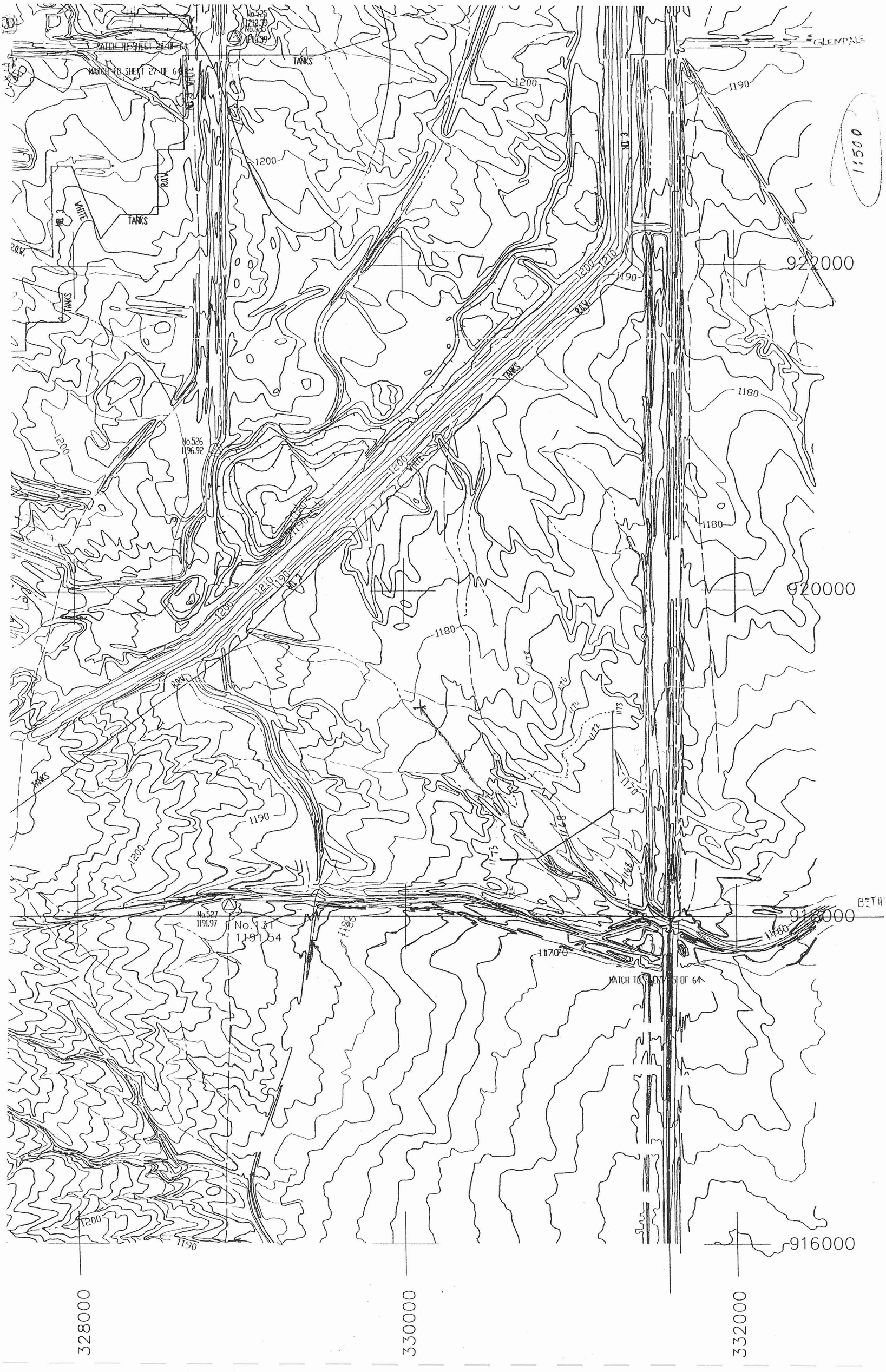
Upper Basin

1181 +5 = 1186 — Top
1186 - 10.5 = 1175.5 — Bottom
vertical scale to 1170

check water

Alt 2
Lower Basin




GLENDALE
MATCH TO SHEET 28 OF 64
MATCH TO SHEET 27 OF 64
MATCH TO SHEET 35 OF 64
TANKS
WHITE
R.O.W.
No.526
1196.92
No.527
1191.97
No.131
1191.54
1200
1190
1180
1210
1170
1173
922000
920000
918000
916000
328000
330000
332000
1:500