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SOFTWARE RELEASE NOTICE

01. SRN Number: PA-SRN-156		
02. Project Title: Revision to EPA & NRC Rule Technical Assistance.		Project No. 20-5708-771
03. SRN Title: PATCHI Version 1.1		
04. Originator/Requestor: Randy Fedors		Date: 8/6/97
05. Summary of Actions		
<input checked="" type="checkbox"/> Release of new software <input type="checkbox"/> Release of modified software: <input type="checkbox"/> Enhancements made <input type="checkbox"/> Corrections made <input type="checkbox"/> Change of access software <input checked="" type="checkbox"/> Software Retirement		
<i>SW 12/5/2001</i>		
06. Persons Authorized Access		
Name	RO/RW	A/C/D
Randy Fedors	Read/Write	A
Amit Armstrong	Read/Write	A
Gordon Wittmeyer	Read/Write	A
James Winterle	Read/Write	A
Robert Baca	Read/Write	A
07. Element Manager Approval: <i>RG Baca</i>		Date: 9/19/97
08. Remarks: This is the PATCHI Source Code Version 1.1 obtained from the U.S. Geological Survey software internet web site.		

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CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

SOFTWARE CONTROL CHECKLIST

Name of Software: PATCHI
Primary User: Randy Fedors

Version: 1.1

- SOFTWARE REQUIREMENTS DESCRIPTION
Documentation
- DESIGN AND DEVELOPMENT
Documentation: Scientific Notebook #232
- DESIGN VERIFICATION
Computer runs uniquely identified
Software analysis tools have been applied and discrepancies resolved
Design Verification Report
- INSTALLATION TESTING
Installation test documentation: See Memo Enclosed
Discrepancy resolution: See Memo Enclosed
- CONFIGURATION CONTROL
Software Summary Form
User's Manual: R. Fedors has User's Manual
Technical Description: See User's Manual
Source Code: N/A
Version Control: N/A
Software Release Notice
- SOFTWARE PROBLEM REPORTING AND RESOLUTION
Software Problem and Change Request
- SOFTWARE VALIDATION
Software Validation Test Plan
Software Validation Test Report
Software Validation Review
- SOFTWARE RETIREMENT
Software Release Notice

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TO: Bruce Mabrito
FROM: R. Fedors *RF*
SUBJECT: Modifications and Installation for PATCHI
DATE: August 6, 1997

PATCHI is one of a series of Fortran source codes made available by the U.S. Geological Survey (USGS) for analytical solutions to the advection-dispersion transport equation. All of the codes are fully documented in Wexler (1992); pertinent pages are attached to the TOP-018 folder. The printout of a readme file which comes with the distribution is also included here. PATCHI is the solution for a 2-dimensional patch source of constant concentration perpendicular to a 1-dimensional flow field. The solution is for 1-dimensional advection and 3-dimensional dispersion along with decay and first order adsorption.

The floppy diskette contains the original source files in UNIX tar and gzip compression form as obtained from the USGS software internet web site: http://water.usgs.gov/software/ground_water.html. Also contained on the diskette are the modifications made to the make file and two of the source code modules (title.f and subs3.f). The modifications are necessary in order to compile the software on a CNWRA SUN workstation. The modifications to the source code are commented, dated, initialed, and described in the source code. The modifications are:

1. Edit the make file so that only the patchi code is compiled and add the compile option "-lv77" to the Fortran command to get the VMS extensions for date and time system calls;
2. Change the system calls for date and time in the "title.f" file;
3. Comment out the graphics call for DISSPLA in the pltnc3 subroutine of the "subs3.f" file.

Note that CNWRA does not have a license for the DISSPLA program.

The installation test included here is "sample11" from the U.S. Geological Survey distribution. The input file is labeled sample11.dat, the USGS output file is labeled sample11.prt, and my installation test output is labeled sample11.out. The output files match exactly indicating a proper installation of the PATCHI code.

Information on Pages 5 through 28 contains Techniques of Water-Resources Investigations of the United States Geological Survey copyright information and is therefore not included in this file.

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sample11.dat

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Sample Problem 11 -- Solute transport in a semi-infinite
 aquifer of infinite width and height with a 'patch' source
 Model Data: Y1=900 ft, Y2=2100 ft, Z1=1350 ft, Z2=1650 ft
 V=1 ft/d, DX=100, DY=20, DZ=20 ft**2/d, DK=6.78E-05 per day
 C0=100.0 mg/L

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27	27	3	1	104	1				
MG/L	FT/D	FT**2/D	PER DAY	FEEET	DAY				
100.0	1.0	100.0	20.0	20.0	6.78E-05				
900.0	2100.0	1350.0	1650.0						
0.0	150.0	300.0	450.0	600.0	750.0	900.0	1050.0		
1200.0	1350.0	1500.0	1650.0	1800.0	1950.0	2100.0	2250.0		
2400.0	2550.0	2700.0	2850.0	3000.0	3150.0	3300.0	3450.0		
3600.0	3750.0	3900.0							
0.0	100.0	200.0	300.0	400.0	500.0	600.0	700.0		
800.0	900.0	1000.0	1100.0	1200.0	1300.0	1400.0	1500.0		
1600.0	1700.0	1800.0	1900.0	2000.0	2100.0	2200.0	2300.0		
2400.0	2500.0	2600.0	2700.0	2800.0	2900.0	3000.0			
1650.0	1700.0	1750.0							
3652.5									
1000.	1000.	0.1							

input file for installation test

→ output file for "sample11.dat"
→ output file as distributed
with source code by U.S.G.S.

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*****
* Sample Problem 11 -- Solute transport in a semi-infinite *
* aquifer of infinite width and height with a 'patch' source *
* Model Data: Y1=900 ft, Y2=2100 ft, Z1=1350 ft, Z2=1650 ft *
* V=1 ft/d, DX=100, DY=20, DZ=20 ft**2/d, DK=6.78E-05 per day *
* C0=100.0 mg/L *
* *
* PROGRAM RUN ON 96/04/02 AT 11:10:19 *
* *
*****

```

ANALYTICAL SOLUTION TO THE THREE-DIMENSIONAL
ADVECTIVE-DISPERSIVE SOLUTE TRANSPORT EQUATION
FOR A SEMI-INFINITE AQUIFER OF INFINITE WIDTH
AND HEIGHT WITH A PATCH SOLUTE SOURCE AT X=0.0

INPUT DATA

```

-----
NUMBER OF X-COORDINATES (NX) = 27
NUMBER OF Y-COORDINATES (NY) = 27
NUMBER OF Z-COORDINATES (NZ) = 3
NUMBER OF TIME VALUES (NT) = 1
NUMBER OF POINTS FOR NUMERICAL INTEGRATION (NMAX) = 104

SOLUTE CONCENTRATION ON MODEL BOUNDARY (C0) = 1.000000E+02 MG/L
GROUND-WATER VELOCITY IN X-DIRECTION (VX) = 1.000000E+00 FT/D
DISPERSION IN THE X-DIRECTION (DX) = 1.000000E+02 FT**2/D
DISPERSION IN THE Y-DIRECTION (DY) = 2.000000E+01 FT**2/D
DISPERSION IN THE Z-DIRECTION (DZ) = 2.000000E+01 FT**2/D
FIRST-ORDER SOLUTE DECAY RATE (DK) = 6.780000E-05 PER DAY

AQUIFER WIDTH (W) AND HEIGHT (H) ARE INFINITE
SOLUTE SOURCE IS LOCATED BETWEEN Y1 = 9.000000E+02 FEET
Y2 = 2.100000E+03 FEET
Z1 = 1.350000E+03 FEET
AND Z2 = 1.650000E+03 FEET

```

X-COORDINATES AT WHICH SOLUTE CONCENTRATIONS WILL BE CALCULATED, IN FEET

```

-----
0.0000 150.0000 300.0000 450.0000 600.0000 750.0000 900.0000 1050.0000
1200.0000 1350.0000 1500.0000 1650.0000 1800.0000 1950.0000 2100.0000 2250.0000
2400.0000 2550.0000 2700.0000 2850.0000 3000.0000 3150.0000 3300.0000 3450.0000
3600.0000 3750.0000 3900.0000

```

Y-COORDINATES AT WHICH SOLUTE CONCENTRATIONS WILL BE CALCULATED, IN FEET

```

-----
0.0000 100.0000 200.0000 300.0000 400.0000 500.0000 600.0000 700.0000
800.0000 900.0000 1000.0000 1100.0000 1200.0000 1300.0000 1400.0000 1500.0000
1600.0000 1700.0000 1800.0000 1900.0000 2000.0000 2100.0000 2200.0000 2300.0000
2400.0000 2500.0000 2600.0000

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Z-COORDINATES AT WHICH SOLUTE CONCENTRATIONS WILL BE CALCULATED, IN FEET

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1650.0000 1700.0000 1750.0000

TIMES AT WHICH SOLUTE CONCENTRATIONS WILL BE CALCULATED, IN DAY

3652.5000

PLOT SCALING FACTOR FOR X (XSCLP) = 1.000000E+03
PLOT SCALING FACTOR FOR Y (YSCLP) = 1.000000E+03
CONTOUR INCREMENT (DELTA) = 1.000000E-01 MG/L

SOLUTE CONCENTRATION AT TIME = 3652.5000 DAY
AND AT Z = 1650.0000 FEET

Table with 10 columns: X-COORDINATE, IN FEET; Y-COORDINATE, IN FEET (0.0000, 100.0000, 200.0000, 300.0000, 400.0000, 500.0000, 600.0000, 700.0000, 800.0000); SOLUTE CONCENTRATION, IN MG/L. Rows range from 0.0000 to 3900.0000 X-coordinate.

SOLUTE CONCENTRATION AT TIME = 3652.5000 DAY (CONTINUED)
AND AT Z = 1650.0000 FEET

Table with 10 columns: X-COORDINATE, IN FEET; Y-COORDINATE, IN FEET (900.0000, 1000.0000, 1100.0000, 1200.0000, 1300.0000, 1400.0000, 1500.0000, 1600.0000, 1700.0000); SOLUTE CONCENTRATION, IN MG/L. Rows range from 0.0000 to 900.0000 X-coordinate.

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1050.0000	20.159862	28.301746	34.322327	37.743847	39.324102	39.935596	40.088345	39.935596	39.324102
1200.0000	19.359626	26.674483	32.314679	35.756069	37.482379	38.203648	38.393020	38.203648	37.482379
1350.0000	18.595877	25.218318	30.490679	33.892916	35.718941	36.532813	36.755751	36.532813	35.718941
1500.0000	17.869150	23.903390	28.829742	32.154718	34.041306	34.928938	35.180894	34.928938	34.041306
1650.0000	17.175944	22.703736	27.308490	30.532029	32.447102	33.389768	33.665402	33.389768	32.447102
1800.0000	16.509854	21.595765	25.902536	29.009422	30.927009	31.907111	32.200829	31.907111	30.927009
1950.0000	15.862211	20.557229	24.587133	27.567624	29.466652	30.468151	30.774448	30.468151	29.466652
2100.0000	15.222536	19.566588	23.337388	26.184815	28.047900	29.056386	29.370043	29.056386	28.047900
2250.0000	14.579000	18.602777	22.128516	24.837628	26.650033	27.652575	27.968732	27.652575	26.650033
2400.0000	13.919070	17.645438	20.936368	23.502250	25.251037	26.235967	26.550137	26.235967	25.251037
2550.0000	13.230397	16.675607	19.738377	22.155819	23.829249	24.785939	25.093986	24.785939	23.829249
2700.0000	12.501986	15.676832	18.514911	20.778168	22.365354	23.284070	23.582194	23.284070	22.365354
2850.0000	11.725524	14.636570	17.250917	19.353818	20.844630	21.716492	22.001225	21.716492	20.844630
3000.0000	10.896732	13.547641	15.937608	17.873959	19.259174	20.076223	20.344466	20.076223	19.259174
3150.0000	10.016490	12.409459	14.573865	16.338094	17.609731	18.365112	18.614189	18.365112	17.609731
3300.0000	9.091507	11.228732	13.167039	14.754973	15.906753	16.594961	16.822704	16.594961	15.906753
3450.0000	8.134340	10.019398	11.732852	13.142514	14.170358	14.787509	14.992345	14.787509	14.170358
3600.0000	7.162648	8.801666	10.294267	11.526575	12.429038	12.973104	13.154126	12.973104	12.429038
3750.0000	6.197726	7.600204	8.879388	9.938621	10.717173	11.188123	11.345138	11.188123	10.717173
3900.0000	5.262496	6.441686	7.518611	8.412575	9.071664	9.471475	9.605000	9.471475	9.071664

SOLUTE CONCENTRATION AT TIME = 3652.5000 DAY (CONTINUED)
AND AT Z = 1650.0000 FEET

X-COORDINATE, IN FEET	Y-COORDINATE, IN FEET									
	1800.0000	1900.0000	2000.0000	2100.0000	2200.0000	2300.0000	2400.0000	2500.0000	2600.0000	
0.0000	50.000000	50.000000	50.000000	25.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
150.0000	49.138889	48.668296	45.610289	24.625858	3.641427	0.583416	0.112806	0.024288	0.005599	
300.0000	47.857044	46.612629	41.077815	24.107242	7.136665	1.601835	0.357355	0.082898	0.019989	
450.0000	46.151813	44.115290	37.513626	23.440716	9.367797	2.766086	0.729389	0.187307	0.048245	
600.0000	44.147449	41.488316	34.643147	22.665942	10.868815	3.843439	1.183911	0.339389	0.094480	
750.0000	42.001178	38.927308	32.226259	21.834798	11.443290	4.742020	1.667355	0.531578	0.160560	
900.0000	39.839726	36.527225	30.136390	20.990075	11.843671	5.452420	2.138462	0.751070	0.245740	
1050.0000	37.743847	34.322327	28.301746	20.159862	12.017822	5.996512	2.572522	0.984221	0.347171	
1200.0000	35.756069	32.314679	26.674483	19.359626	12.044507	6.403117	2.957802	1.219208	0.460749	
1350.0000	33.892916	30.490679	25.218318	18.595877	11.973021	6.698809	3.290682	1.446942	0.581918	
1500.0000	32.154718	28.829742	23.903390	17.869150	11.834286	6.905205	3.571819	1.660910	0.706202	
1650.0000	30.532029	27.308490	22.703736	17.175944	11.647256	7.038657	3.803628	1.856571	0.829462	
1800.0000	29.009422	25.902536	21.595765	16.509854	11.422707	7.110734	3.988763	2.030676	0.947949	
1950.0000	27.567624	24.587133	20.557229	15.862211	11.165554	7.128873	4.129276	2.180671	1.058250	
2100.0000	26.184815	23.337388	19.566588	15.222536	10.876387	7.097059	4.226219	2.304275	1.157187	
2250.0000	24.837628	22.128516	18.602777	14.579000	10.552630	7.016505	4.279569	2.399226	1.241755	
2400.0000	23.502250	20.936368	17.645438	13.919070	10.189595	6.886399	4.288390	2.463222	1.309108	
2550.0000	22.155819	19.738377	16.675607	13.230397	9.781579	6.704745	4.251212	2.494032	1.356633	
2700.0000	20.778168	18.514911	15.676832	12.501986	9.323071	6.469317	4.166579	2.489754	1.382110	
2850.0000	19.353818	17.250917	14.636570	11.725524	8.810021	6.178682	4.033694	2.449180	1.383921	
3000.0000	17.873959	15.937608	13.547641	10.896732	8.241077	5.833186	3.853098	2.372200	1.361306	
3150.0000	16.338094	14.573865	12.409459	10.016490	7.618606	5.435793	3.627249	2.260167	1.314580	
3300.0000	14.754973	13.167039	11.228732	9.091507	6.949332	4.992622	3.360909	2.116136	1.245287	
3450.0000	13.142514	11.732852	10.019398	8.134340	6.244431	4.513063	3.061235	1.944920	1.156223	
3600.0000	11.526575	10.294267	8.801666	7.162648	5.519003	4.009424	2.737529	1.752905	1.051320	
3750.0000	9.938621	8.879388	7.600204	6.197726	4.790956	3.496107	2.400654	1.547651	0.935378	
3900.0000	8.412575	7.518611	6.441686	5.262496	4.079435	2.988442	2.062191	1.337298	0.813673	

SOLUTE CONCENTRATION AT TIME = 3652.5000 DAY
AND AT Z = 1700.0000 FEET

Y-COORDINATE, IN FEET

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X-COORDINATE, IN FEET	0.0000	100.0000	200.0000	300.0000	400.0000	500.0000	600.0000	700.0000	800.0000
0.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
150.0000	0.000020	0.000077	0.000296	0.001161	0.004680	0.019592	0.086366	0.410002	2.146034
300.0000	0.000079	0.000295	0.001114	0.004280	0.016771	0.067311	0.277151	1.161076	4.671373
450.0000	0.000215	0.000790	0.002915	0.010850	0.040716	0.153576	0.575721	2.077468	6.631630
600.0000	0.000493	0.001766	0.006320	0.022586	0.080317	0.281486	0.952499	2.983429	7.999031
750.0000	0.001003	0.003490	0.012041	0.041078	0.137594	0.446261	1.366635	3.787250	8.921862
900.0000	0.001862	0.006271	0.020783	0.067450	0.212358	0.638109	1.783083	4.460404	9.528720
1050.0000	0.003206	0.010427	0.033126	0.102153	0.302500	0.845718	2.178195	5.005318	9.911730
1200.0000	0.005175	0.016240	0.049431	0.144921	0.404663	1.058657	2.538596	5.436071	10.134777
1350.0000	0.007901	0.023916	0.069784	0.194850	0.514910	1.268420	2.858079	5.769242	10.241855
1500.0000	0.011482	0.033548	0.093972	0.250541	0.629215	1.468533	3.134707	6.020038	10.262996
1650.0000	0.015970	0.045092	0.121496	0.310242	0.743731	1.654191	3.368676	6.200871	10.218232
1800.0000	0.021349	0.058349	0.151588	0.371965	0.854876	1.821756	3.560903	6.321002	10.120213
1950.0000	0.027524	0.072963	0.183249	0.433565	0.959317	1.968273	3.712160	6.386622	9.975984
2100.0000	0.034319	0.088426	0.215290	0.492800	1.053909	2.091100	3.822607	6.401152	9.788257
2250.0000	0.041475	0.104102	0.246374	0.547377	1.135652	2.187687	3.891635	6.365678	9.556463
2400.0000	0.048661	0.119252	0.275079	0.595021	1.201696	2.255516	3.917955	6.279524	9.277746
2550.0000	0.055498	0.133082	0.299971	0.633566	1.249419	2.292197	3.899902	6.140975	8.948036
2700.0000	0.061582	0.144800	0.319701	0.661076	1.276576	2.295703	3.835912	5.948129	8.563219
2850.0000	0.066523	0.153681	0.333107	0.675996	1.281513	2.264708	3.725109	5.699840	8.120373
3000.0000	0.069984	0.159140	0.339329	0.677313	1.263393	2.198964	3.567928	5.396637	7.618974
3150.0000	0.071716	0.160791	0.337899	0.664696	1.222419	2.099635	3.366651	5.041520	7.061894
3300.0000	0.071589	0.158498	0.328820	0.638597	1.159966	1.969524	3.125767	4.640461	6.456030
3450.0000	0.069610	0.152397	0.312587	0.600270	1.078614	1.813123	2.852054	4.202525	5.812422
3600.0000	0.065922	0.142891	0.290157	0.551712	0.982033	1.636437	2.554342	3.739532	5.145772
3750.0000	0.060793	0.130610	0.262872	0.495505	0.874728	1.446602	2.242958	3.265291	4.473402
3900.0000	0.054583	0.116345	0.232327	0.434594	0.761671	1.251324	1.928927	2.794490	3.813786

SOLUTE CONCENTRATION AT TIME = 3652.5000 DAY (CONTINUED)
AND AT Z = 1700.0000 FEET

X-COORDINATE, IN FEET	Y-COORDINATE, IN FEET								
	900.0000	1000.0000	1100.0000	1200.0000	1300.0000	1400.0000	1500.0000	1600.0000	1700.0000
0.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
150.0000	9.984679	17.823324	19.559352	19.882973	19.949691	19.964383	19.967038	19.964383	19.949691
300.0000	14.147548	23.623720	27.134002	28.017869	28.227493	28.277214	28.286540	28.277214	28.227493
450.0000	15.820151	25.008664	29.562784	31.064375	31.485945	31.596680	31.618612	31.596680	31.485945
600.0000	16.523838	25.048624	30.064129	32.094704	32.764445	32.961060	33.002523	32.961060	32.764445
750.0000	16.747277	24.572650	29.707062	32.126960	33.044848	33.344963	33.412442	33.344963	33.044848
900.0000	16.701137	23.873473	28.941410	31.617417	32.757982	33.169221	33.267462	33.169221	32.757982
1050.0000	16.495646	23.079418	27.985167	30.810053	32.135311	32.655830	32.787149	32.655830	32.135311
1200.0000	16.194454	22.253890	26.951506	29.845419	31.314296	31.935100	32.099351	31.935100	31.314296
1350.0000	15.835728	21.429219	25.900138	28.805941	30.379588	31.087232	31.282226	31.087232	30.379588
1500.0000	15.442187	20.620804	24.861259	27.738915	29.383029	30.161925	30.384031	30.161925	29.383029
1650.0000	15.026485	19.833912	23.847738	26.669419	28.354791	29.188851	29.433594	29.188851	28.354791
1800.0000	14.594294	19.067234	22.861654	25.607912	27.310073	28.183719	28.446253	28.183719	27.310073
1950.0000	14.146180	18.314861	21.897968	24.554856	26.253325	27.152000	27.427437	27.152000	26.253325
2100.0000	13.678861	17.567522	20.946741	23.503700	25.181128	26.091463	26.375064	26.091463	25.181128
2250.0000	13.186219	16.813568	19.994731	22.443063	24.084422	24.994196	25.281470	24.994196	24.084422
2400.0000	12.660310	16.039988	19.026827	21.358648	22.950546	23.848554	24.135289	23.848554	22.950546
2550.0000	12.092503	15.233613	18.027602	20.235193	21.765378	22.641285	22.923545	22.641285	21.765378
2700.0000	11.474783	14.382556	16.983055	19.058584	20.515651	21.359897	21.634027	21.359897	20.515651
2850.0000	10.801173	13.477816	15.882513	17.818071	19.191402	19.995197	20.257830	19.995197	19.191402
3000.0000	10.069129	12.514852	14.720463	16.508408	17.788316	18.543727	18.791830	18.543727	17.788316

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3150.0000	!	9.280696	11.494904	13.498083	15.131597	16.309647	17.009787	17.240719	17.009787	16.309647
3300.0000	!	8.443214	10.425766	12.224127	13.697921	14.767370	15.406639	15.618238	15.406639	14.767370
3450.0000	!	7.569392	9.321820	10.914952	12.225989	13.182250	13.756604	13.947272	13.756604	13.182250
3600.0000	!	6.676649	8.203192	9.593529	10.741664	11.582716	12.089890	12.258663	12.089890	11.582716
!	!	!	!	!	!	!	!	!	!	!
3750.0000	!	5.785758	7.094092	8.287520	9.275922	10.002574	10.442220	10.588816	10.442220	10.002574
3900.0000	!	4.918974	6.020530	7.026630	7.861924	8.477870	8.851572	8.976389	8.851572	8.477870

SOLUTE CONCENTRATION AT TIME = 3652.5000 DAY (CONTINUED)
AND AT Z = 1700.0000 FEET

		Y-COORDINATE, IN FEET								
		1800.0000	1900.0000	2000.0000	2100.0000	2200.0000	2300.0000	2400.0000	2500.0000	2600.0000
X-COORDINATE, IN FEET	!	SOLUTE CONCENTRATION, IN MG/L								
0.0000	!	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
150.0000	!	19.882973	19.559352	17.823324	9.984679	2.146034	0.410002	0.086366	0.019592	0.004680
300.0000	!	28.017869	27.134002	23.623720	14.147548	4.671373	1.161076	0.277151	0.067311	0.016771
450.0000	!	31.064375	29.562784	25.008664	15.820151	6.631630	2.077468	0.575721	0.153576	0.040716
600.0000	!	32.094704	30.064129	25.048624	16.523838	7.999031	2.983429	0.952499	0.281486	0.080317
!	!	!	!	!	!	!	!	!	!	!
750.0000	!	32.126960	29.707062	24.572650	16.747277	8.921862	3.787250	1.366635	0.446261	0.137594
900.0000	!	31.617417	28.941410	23.873473	16.701137	9.528720	4.460404	1.783083	0.638109	0.212358
1050.0000	!	30.810053	27.985167	23.079418	16.495646	9.911730	5.005318	2.178195	0.845718	0.302500
1200.0000	!	29.845419	26.951506	22.253890	16.194454	10.134777	5.436071	2.538596	1.058657	0.404663
1350.0000	!	28.805941	25.900138	21.429219	15.835728	10.241855	5.769242	2.858079	1.268420	0.514910
!	!	!	!	!	!	!	!	!	!	!
1500.0000	!	27.738915	24.861259	20.620804	15.442187	10.262996	6.020038	3.134707	1.468533	0.629215
1650.0000	!	26.669419	23.847738	19.833912	15.026485	10.218232	6.200871	3.368676	1.654191	0.743731
1800.0000	!	25.607912	22.861654	19.067234	14.594294	10.120213	6.321002	3.560903	1.821756	0.854876
1950.0000	!	24.554856	21.897968	18.314861	14.146180	9.975984	6.386622	3.712160	1.968273	0.959317
2100.0000	!	23.503700	20.946741	17.567522	13.678861	9.788257	6.401152	3.822607	2.091100	1.053909
!	!	!	!	!	!	!	!	!	!	!
2250.0000	!	22.443063	19.994731	16.813568	13.186219	9.556463	6.365678	3.891635	2.187687	1.135652
2400.0000	!	21.358648	19.026827	16.039988	12.660310	9.277746	6.279524	3.917955	2.255516	1.201696
2550.0000	!	20.235193	18.027602	15.233613	12.092503	8.948036	6.140975	3.899902	2.292197	1.249419
2700.0000	!	19.058584	16.983055	14.382556	11.474783	8.563219	5.948129	3.835912	2.295703	1.276576
2850.0000	!	17.818071	15.882513	13.477816	10.801173	8.120373	5.699840	3.725109	2.264708	1.281513
!	!	!	!	!	!	!	!	!	!	!
3000.0000	!	16.508408	14.720463	12.514852	10.069129	7.618974	5.396637	3.567928	2.198964	1.263393
3150.0000	!	15.131597	13.498083	11.494904	9.280696	7.061894	5.041520	3.366651	2.099635	1.222419
3300.0000	!	13.697921	12.224127	10.425766	8.443214	6.456030	4.640461	3.125767	1.969524	1.159966
3450.0000	!	12.225989	10.914952	9.321820	7.569392	5.812422	4.202525	2.852054	1.813123	1.078614
3600.0000	!	10.741664	9.593529	8.203192	6.676649	5.145772	3.739532	2.554342	1.636437	0.982033
!	!	!	!	!	!	!	!	!	!	!
3750.0000	!	9.275922	8.287520	7.094092	5.785758	4.473402	3.265291	2.242958	1.446602	0.874728
3900.0000	!	7.861924	7.026630	6.020530	4.918974	3.813786	2.794490	1.928927	1.251324	0.761671

SOLUTE CONCENTRATION AT TIME = 3652.5000 DAY
AND AT Z = 1750.0000 FEET

		Y-COORDINATE, IN FEET								
		0.0000	100.0000	200.0000	300.0000	400.0000	500.0000	600.0000	700.0000	800.0000
X-COORDINATE, IN FEET	!	SOLUTE CONCENTRATION, IN MG/L								
0.0000	!	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
150.0000	!	0.000018	0.000066	0.000250	0.000955	0.003729	0.014934	0.061649	0.262577	1.113243
300.0000	!	0.000069	0.000254	0.000941	0.003532	0.013429	0.051735	0.201078	0.773173	2.736257
450.0000	!	0.000188	0.000681	0.002471	0.008997	0.032840	0.119481	0.427042	1.447072	4.283524
600.0000	!	0.000432	0.001527	0.005378	0.018843	0.065371	0.222159	0.723651	2.166644	5.544902
!	!	!	!	!	!	!	!	!	!	!
750.0000	!	0.000881	0.003029	0.010296	0.034506	0.113122	0.357575	1.062746	2.850752	6.514288
900.0000	!	0.001640	0.005463	0.017866	0.057079	0.176419	0.518984	1.416613	3.460005	7.238186
1050.0000	!	0.002832	0.009121	0.028637	0.087104	0.253917	0.697633	1.764017	3.981739	7.766991
1200.0000	!	0.004587	0.014267	0.042975	0.124501	0.343063	0.884783	2.090993	4.416954	8.143314
1350.0000	!	0.007027	0.021101	0.061010	0.168613	0.440628	1.072798	2.389400	4.772430	8.400483

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1500.0000	!	0.010246	0.029726	0.082604	0.218304	0.543131	1.255470	2.655021	5.056527	8.563518
1650.0000	!	0.014297	0.040119	0.107351	0.272072	0.647104	1.427887	2.885931	5.277076	8.650497
1800.0000	!	0.019172	0.052117	0.134591	0.328153	0.749208	1.586120	3.081275	5.440387	8.673778
1950.0000	!	0.024791	0.065409	0.163438	0.384598	0.846253	1.726863	3.240454	5.550848	8.641007
2100.0000	!	0.030997	0.079543	0.192814	0.439325	0.935174	1.847139	3.362630	5.610875	8.555965
2250.0000	!	0.037557	0.093940	0.221491	0.490181	1.013017	1.944119	3.446508	5.621086	8.419368
2400.0000	!	0.044170	0.107921	0.248149	0.535006	1.076955	2.015066	3.490356	5.580698	8.229717
2550.0000	!	0.050487	0.120753	0.271444	0.571726	1.124376	2.057425	3.492242	5.488095	7.984257
2700.0000	!	0.056133	0.131696	0.290102	0.598471	1.153030	2.069034	3.450434	5.341569	7.680056
2850.0000	!	0.060747	0.140072	0.303017	0.613723	1.161225	2.048433	3.363923	5.140155	7.315170
3000.0000	!	0.064011	0.145324	0.309357	0.616467	1.148050	1.995205	3.232975	4.884473	6.889777
3150.0000	!	0.065691	0.147081	0.308656	0.606326	1.113573	1.910285	3.059625	4.577450	6.407123
3300.0000	!	0.065661	0.145203	0.300883	0.583655	1.058973	1.796168	2.847997	4.224793	5.874133
3450.0000	!	0.063921	0.139803	0.286466	0.549566	0.986570	1.656952	2.604384	3.835094	5.301534
3600.0000	!	0.060598	0.131240	0.266269	0.505869	0.899718	1.498174	2.337017	3.419523	4.703428
3750.0000	!	0.055936	0.120088	0.241518	0.454933	0.802567	1.326449	2.055553	2.991118	4.096336
3900.0000	!	0.050264	0.107073	0.213680	0.399472	0.699721	1.148955	1.770323	2.563747	3.497840

SOLUTE CONCENTRATION AT TIME = 3652.5000 DAY (CONTINUED)
AND AT Z = 1750.0000 FEET

		Y-COORDINATE, IN FEET								
		900.0000	1000.0000	1100.0000	1200.0000	1300.0000	1400.0000	1500.0000	1600.0000	1700.0000
X-COORDINATE, IN FEET		SOLUTE CONCENTRATION, IN MG/L								
0.0000	!	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
150.0000	!	3.678788	6.244332	7.094994	7.295909	7.342576	7.353597	7.355665	7.353597	7.342576
300.0000	!	7.254845	11.773431	13.736502	14.308546	14.457705	14.495324	14.502629	14.495324	14.457705
450.0000	!	9.607529	14.931526	17.767941	18.787835	19.094904	19.179754	19.197071	19.179754	19.094904
600.0000	!	11.072971	16.601023	19.979195	21.421878	21.922275	22.075213	22.108276	22.075213	21.922275
750.0000	!	11.974444	17.434564	21.097922	22.885302	23.588326	23.825510	23.879917	23.825510	23.588326
900.0000	!	12.509188	17.780118	21.557963	23.600202	24.494009	24.824170	24.904297	24.824170	24.494009
1050.0000	!	12.797570	17.828021	21.612683	23.828437	24.888533	25.312734	25.421080	25.312734	24.888533
1200.0000	!	12.916209	17.688889	21.414278	23.737093	24.933625	25.446638	25.583674	25.446638	24.933625
1350.0000	!	12.915343	17.429860	21.056402	23.434680	24.737210	25.329473	25.493884	25.329473	24.737210
1500.0000	!	12.828186	17.092337	20.597088	22.991765	24.371843	25.031306	25.220433	25.031306	24.371843
1650.0000	!	12.676301	16.701360	20.071608	22.453367	23.885598	24.599153	24.809464	24.599153	23.885598
1800.0000	!	12.472856	16.270903	19.499982	21.846698	23.308921	24.063363	24.290856	24.063363	23.308921
1950.0000	!	12.224719	15.807059	18.891573	21.186177	22.659170	23.441756	23.682253	23.441756	22.659170
2100.0000	!	11.933925	15.310124	18.248080	20.476871	21.943843	22.742544	22.991885	22.742544	21.943843
2250.0000	!	11.598869	14.776183	17.565740	19.717083	21.163125	21.966686	22.220834	21.966686	21.163125
2400.0000	!	11.215441	14.198537	16.837213	18.900602	20.312187	21.110084	21.365178	21.110084	20.312187
2550.0000	!	10.778251	13.569183	16.053443	18.018889	19.383497	20.165871	20.418243	20.165871	19.383497
2700.0000	!	10.281971	12.880425	15.205604	17.063344	18.369251	19.126869	19.373064	19.126869	18.369251
2850.0000	!	9.722767	12.126562	14.287109	16.027616	17.263861	17.988147	18.224948	17.988147	17.263861
3000.0000	!	9.099677	11.305518	13.295518	14.909773	16.066322	16.749470	16.973949	16.749470	16.066322
3150.0000	!	8.415764	10.420192	12.234111	13.714094	14.782144	15.417310	15.626893	15.417310	14.782144
3300.0000	!	7.678832	9.479279	11.112833	12.452148	13.424540	14.006087	14.198639	14.006087	13.424540
3450.0000	!	6.901542	8.497375	9.948418	11.142944	12.014602	12.538353	12.712265	12.538353	12.014602
3600.0000	!	6.100836	7.494259	8.763543	9.812009	10.580319	11.043777	11.198034	11.043777	10.580319
3750.0000	!	5.296714	6.493389	7.585096	8.489459	9.154515	9.556998	9.691225	9.556998	9.154515
3900.0000	!	4.510500	5.519814	6.441754	7.207319	7.771975	8.114632	8.229094	8.114632	7.771975

SOLUTE CONCENTRATION AT TIME = 3652.5000 DAY (CONTINUED)
AND AT Z = 1750.0000 FEET

		Y-COORDINATE, IN FEET								
		1800.0000	1900.0000	2000.0000	2100.0000	2200.0000	2300.0000	2400.0000	2500.0000	2600.0000
X-COORDINATE, IN FEET		SOLUTE CONCENTRATION, IN MG/L								

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0.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
150.0000	7.295909	7.094994	6.244332	3.678788	1.113243	0.262577	0.061649	0.014934	0.003729
300.0000	14.308546	13.736502	11.773431	7.254845	2.736257	0.773173	0.201078	0.051735	0.013429
450.0000	18.787835	17.767941	14.931526	9.607529	4.283524	1.447072	0.427042	0.119481	0.032840
600.0000	21.421878	19.979195	16.601023	11.072971	5.544902	2.166644	0.723651	0.222159	0.065371
750.0000	22.885302	21.097922	17.434564	11.974444	6.514288	2.850752	1.062746	0.357575	0.113122
900.0000	23.600202	21.557963	17.780118	12.509188	7.238186	3.460005	1.416613	0.518984	0.176419
1050.0000	23.828437	21.612683	17.828021	12.797570	7.766991	3.981739	1.764017	0.697633	0.253917
1200.0000	23.737093	21.414278	17.688889	12.916209	8.143314	4.416954	2.090993	0.884783	0.343063
1350.0000	23.434680	21.056402	17.429860	12.915343	8.400483	4.772430	2.389400	1.072798	0.440628
1500.0000	22.991765	20.597088	17.092337	12.828186	8.563518	5.056527	2.655021	1.255470	0.543131
1650.0000	22.453367	20.071608	16.701360	12.676301	8.650497	5.277076	2.885931	1.427887	0.647104
1800.0000	21.846698	19.499982	16.270903	12.472856	8.673778	5.440387	3.081275	1.586120	0.749208
1950.0000	21.186177	18.891573	15.807059	12.224719	8.641007	5.550848	3.240454	1.726863	0.846253
2100.0000	20.476871	18.248080	15.310124	11.933925	8.555965	5.610875	3.362630	1.847139	0.935174
2250.0000	19.717083	17.565740	14.776183	11.598869	8.419368	5.621086	3.446508	1.944119	1.013017
2400.0000	18.900602	16.837213	14.198537	11.215441	8.229717	5.580698	3.490356	2.015066	1.076955
2550.0000	18.018889	16.053443	13.569183	10.778251	7.984257	5.488095	3.492242	2.057425	1.124376
2700.0000	17.063344	15.205604	12.880425	10.281971	7.680056	5.341569	3.450434	2.069034	1.153030
2850.0000	16.027616	14.287109	12.126562	9.722767	7.315170	5.140155	3.363923	2.048433	1.161225
3000.0000	14.909773	13.295518	11.305518	9.099677	6.889777	4.884473	3.232975	1.995205	1.148050
3150.0000	13.714094	12.234111	10.420192	8.415764	6.407123	4.577450	3.059625	1.910285	1.113573
3300.0000	12.452148	11.112833	9.479279	7.678832	5.874133	4.224793	2.847997	1.796168	1.058973
3450.0000	11.142944	9.948418	8.497375	6.901542	5.301534	3.835094	2.604384	1.656952	0.986570
3600.0000	9.812009	8.763543	7.494259	6.100836	4.703428	3.419523	2.337017	1.498174	0.899718
3750.0000	8.489459	7.585096	6.493389	5.296714	4.096336	2.991118	2.055553	1.326449	0.802567
3900.0000	7.207319	6.441754	5.519814	4.510500	3.497840	2.563747	1.770323	1.148955	0.699721

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sample11.out

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*output from installation test
at CNWRA, SUN workstation*

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*****
* Sample Problem 11 -- Solute transport in a semi-infinite *
* aquifer of infinite width and height with a 'patch' source *
* Model Data: Y1=900 ft, Y2=2100 ft, Z1=1350 ft, Z2=1650 ft *
* V=1 ft/d, DX=100, DY=20, DZ=20 ft**2/d, DK=6.78E-05 per day *
* C0=100.0 mg/L *
* *
* PROGRAM RUN ON 97/07/28 AT 10:27:46 *
* *
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ANALYTICAL SOLUTION TO THE THREE-DIMENSIONAL
 ADVECTIVE-DISPERSIVE SOLUTE TRANSPORT EQUATION
 FOR A SEMI-INFINITE AQUIFER OF INFINITE WIDTH
 AND HEIGHT WITH A PATCH SOLUTE SOURCE AT X=0.0

INPUT DATA

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NUMBER OF X-COORDINATES (NX) = 27
NUMBER OF Y-COORDINATES (NY) = 27
NUMBER OF Z-COORDINATES (NZ) = 3
NUMBER OF TIME VALUES (NT) = 1
NUMBER OF POINTS FOR NUMERICAL INTEGRATION (NMAX) = 104

SOLUTE CONCENTRATION ON MODEL BOUNDARY (C0) = 1.000000E+02 MG/L
GROUND-WATER VELOCITY IN X-DIRECTION (VX) = 1.000000E+00 FT/D
DISPERSION IN THE X-DIRECTION (DX) = 1.000000E+02 FT**2/D
DISPERSION IN THE Y-DIRECTION (DY) = 2.000000E+01 FT**2/D
DISPERSION IN THE Z-DIRECTION (DZ) = 2.000000E+01 FT**2/D
FIRST-ORDER SOLUTE DECAY RATE (DK) = 6.780000E-05 PER DAY

AQUIFER WIDTH (W) AND HEIGHT (H) ARE INFINITE
SOLUTE SOURCE IS LOCATED BETWEEN Y1 = 9.000000E+02 FEET
Y2 = 2.100000E+03 FEET
Z1 = 1.350000E+03 FEET
AND Z2 = 1.650000E+03 FEET

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X-COORDINATES AT WHICH SOLUTE CONCENTRATIONS WILL BE CALCULATED, IN FEET

```

-----
0.0000 150.0000 300.0000 450.0000 600.0000 750.0000 900.0000 1050.0000
1200.0000 1350.0000 1500.0000 1650.0000 1800.0000 1950.0000 2100.0000 2250.0000
2400.0000 2550.0000 2700.0000 2850.0000 3000.0000 3150.0000 3300.0000 3450.0000
3600.0000 3750.0000 3900.0000

```

Y-COORDINATES AT WHICH SOLUTE CONCENTRATIONS WILL BE CALCULATED, IN FEET

```

-----
0.0000 100.0000 200.0000 300.0000 400.0000 500.0000 600.0000 700.0000
800.0000 900.0000 1000.0000 1100.0000 1200.0000 1300.0000 1400.0000 1500.0000
1600.0000 1700.0000 1800.0000 1900.0000 2000.0000 2100.0000 2200.0000 2300.0000
2400.0000 2500.0000 2600.0000

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Z-COORDINATES AT WHICH SOLUTE CONCENTRATIONS WILL BE CALCULATED, IN FEET

*37
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1650.0000 1700.0000 1750.0000

TIMES AT WHICH SOLUTE CONCENTRATIONS WILL BE CALCULATED, IN DAY

3652.5000

PLOT SCALING FACTOR FOR X (XSCLP) = 1.000000E+03
PLOT SCALING FACTOR FOR Y (YSCLP) = 1.000000E+03
CONTOUR INCREMENT (DELTA) = 1.000000E-01 MG/L

SOLUTE CONCENTRATION AT TIME = 3652.5000 DAY
AND AT Z = 1650.0000 FEET

Table with 10 columns: X-COORDINATE, IN FEET; Y-COORDINATE, IN FEET (0.0000, 100.0000, 200.0000, 300.0000, 400.0000, 500.0000, 600.0000, 700.0000, 800.0000); SOLUTE CONCENTRATION, IN MG/L. Rows range from 0.0000 to 3900.0000 X-coordinate.

SOLUTE CONCENTRATION AT TIME = 3652.5000 DAY (CONTINUED)
AND AT Z = 1650.0000 FEET

Table with 10 columns: X-COORDINATE, IN FEET; Y-COORDINATE, IN FEET (900.0000, 1000.0000, 1100.0000, 1200.0000, 1300.0000, 1400.0000, 1500.0000, 1600.0000, 1700.0000); SOLUTE CONCENTRATION, IN MG/L. Rows range from 0.0000 to 900.0000 X-coordinate.

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1050.0000	!	20.159862	28.301746	34.322327	37.743847	39.324102	39.935596	40.088345	39.935596	39.324102
1200.0000	!	19.359626	26.674483	32.314679	35.756069	37.482379	38.203648	38.393020	38.203648	37.482379
1350.0000	!	18.595877	25.218318	30.490679	33.892916	35.718941	36.532813	36.755751	36.532813	35.718941
1500.0000	!	17.869150	23.903390	28.829742	32.154718	34.041306	34.928938	35.180894	34.928938	34.041306
1650.0000	!	17.175944	22.703736	27.308490	30.532029	32.447102	33.389768	33.665402	33.389768	32.447102
1800.0000	!	16.509854	21.595765	25.902536	29.009422	30.927009	31.907111	32.200829	31.907111	30.927009
1950.0000	!	15.862211	20.557229	24.587133	27.567624	29.466652	30.468151	30.774448	30.468151	29.466652
2100.0000	!	15.222536	19.566588	23.337388	26.184815	28.047900	29.056386	29.370043	29.056386	28.047900
2250.0000	!	14.579000	18.602777	22.128516	24.837628	26.650033	27.652575	27.968732	27.652575	26.650033
2400.0000	!	13.919070	17.645438	20.936368	23.502250	25.251037	26.235967	26.550137	26.235967	25.251037
2550.0000	!	13.230397	16.675607	19.738377	22.155819	23.829249	24.785939	25.093986	24.785939	23.829249
2700.0000	!	12.501986	15.676832	18.514911	20.778168	22.365354	23.284070	23.582194	23.284070	22.365354
2850.0000	!	11.725524	14.636570	17.250917	19.353818	20.844630	21.716492	22.001225	21.716492	20.844630
3000.0000	!	10.896732	13.547641	15.937608	17.873959	19.259174	20.076223	20.344466	20.076223	19.259174
3150.0000	!	10.016490	12.409459	14.573865	16.338094	17.609731	18.365112	18.614189	18.365112	17.609731
3300.0000	!	9.091507	11.228732	13.167039	14.754973	15.906753	16.594961	16.822704	16.594961	15.906753
3450.0000	!	8.134340	10.019398	11.732852	13.142514	14.170358	14.787509	14.992345	14.787509	14.170358
3600.0000	!	7.162648	8.801666	10.294267	11.526575	12.429038	12.973104	13.154126	12.973104	12.429038
3750.0000	!	6.197726	7.600204	8.879388	9.938621	10.717173	11.188123	11.345138	11.188123	10.717173
3900.0000	!	5.262496	6.441686	7.518611	8.412575	9.071664	9.471475	9.605000	9.471475	9.071664

SOLUTE CONCENTRATION AT TIME = 3652.5000 DAY (CONTINUED)
AND AT Z = 1650.0000 FEET

		Y-COORDINATE, IN FEET								
		1800.0000	1900.0000	2000.0000	2100.0000	2200.0000	2300.0000	2400.0000	2500.0000	2600.0000
X-COORDINATE, IN FEET	*	SOLUTE CONCENTRATION, IN MG/L								
0.0000	!	50.000000	50.000000	50.000000	25.000000	0.000000	0.000000	0.000000	0.000000	0.000000
150.0000	!	49.138889	48.668296	45.610289	24.625858	3.641427	0.583416	0.112806	0.024288	0.005599
300.0000	!	47.857044	46.612629	41.077815	24.107242	7.136665	1.601835	0.357355	0.082898	0.019989
450.0000	!	46.151813	44.115290	37.513626	23.440716	9.367797	2.766086	0.729389	0.187307	0.048245
600.0000	!	44.147449	41.488316	34.643147	22.665942	10.688715	3.843439	1.183911	0.339389	0.094480
750.0000	!	42.001178	38.927308	32.226259	21.834798	11.443290	4.742020	1.667355	0.531578	0.160560
900.0000	!	39.839726	36.527225	30.136390	20.990075	11.843671	5.452420	2.138462	0.751070	0.245740
1050.0000	!	37.743847	34.322327	28.301746	20.159862	12.017822	5.996512	2.572522	0.984221	0.347171
1200.0000	!	35.756069	32.314679	26.674483	19.359626	12.044507	6.403117	2.957802	1.219208	0.460749
1350.0000	!	33.892916	30.490679	25.218318	18.595877	11.973021	6.698809	3.290682	1.446942	0.581918
1500.0000	!	32.154718	28.829742	23.903390	17.869150	11.834286	6.905205	3.571819	1.660910	0.706202
1650.0000	!	30.532029	27.308490	22.703736	17.175944	11.647256	7.038657	3.803628	1.856571	0.829462
1800.0000	!	29.009422	25.902536	21.595765	16.509854	11.422707	7.110734	3.988763	2.030676	0.947949
1950.0000	!	27.567624	24.587133	20.557229	15.862211	11.165554	7.128873	4.129276	2.180671	1.058250
2100.0000	!	26.184815	23.337388	19.566588	15.222536	10.876387	7.097059	4.226219	2.304275	1.157187
2250.0000	!	24.837628	22.128516	18.602777	14.579000	10.552630	7.016505	4.279569	2.399226	1.241755
2400.0000	!	23.502250	20.936368	17.645438	13.919070	10.189595	6.886399	4.288390	2.463222	1.309108
2550.0000	!	22.155819	19.738377	16.675607	13.230397	9.781579	6.704745	4.251212	2.494032	1.356633
2700.0000	!	20.778168	18.514911	15.676832	12.501986	9.323071	6.469317	4.166579	2.489754	1.382110
2850.0000	!	19.353818	17.250917	14.636570	11.725524	8.810021	6.178682	4.033694	2.449180	1.383921
3000.0000	!	17.873959	15.937608	13.547641	10.896732	8.241077	5.833186	3.853098	2.372200	1.361306
3150.0000	!	16.338094	14.573865	12.409459	10.016490	7.618606	5.435793	3.627249	2.260167	1.314580
3300.0000	!	14.754973	13.167039	11.228732	9.091507	6.949332	4.992622	3.360909	2.116136	1.245287
3450.0000	!	13.142514	11.732852	10.019398	8.134340	6.244431	4.513063	3.061235	1.944920	1.156223
3600.0000	!	11.526575	10.294267	8.801666	7.162648	5.519003	4.009424	2.737529	1.752905	1.051320
3750.0000	!	9.938621	8.879388	7.600204	6.197726	4.790956	3.496107	2.400654	1.547651	0.935378
3900.0000	!	8.412575	7.518611	6.441686	5.262496	4.079435	2.988442	2.062191	1.337298	0.813673

SOLUTE CONCENTRATION AT TIME = 3652.5000 DAY
AND AT Z = 1700.0000 FEET

Y-COORDINATE, IN FEET

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X-COORDINATE, IN FEET	SOLUTE CONCENTRATION, IN MG/L									
	0.0000	100.0000	200.0000	300.0000	400.0000	500.0000	600.0000	700.0000	800.0000	
0.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
150.0000	0.000020	0.000077	0.000296	0.001161	0.004680	0.019592	0.086366	0.410002	2.146034	
300.0000	0.000079	0.000295	0.001114	0.004280	0.016771	0.067311	0.277151	1.161076	4.671373	
450.0000	0.000215	0.000790	0.002915	0.010850	0.040716	0.153576	0.575721	2.077468	6.631630	
600.0000	0.000493	0.001766	0.006320	0.022586	0.080317	0.281486	0.952499	2.983429	7.999031	
750.0000	0.001003	0.003490	0.012041	0.041078	0.137594	0.446261	1.366635	3.787250	8.921862	
900.0000	0.001862	0.006271	0.020783	0.067450	0.212358	0.638109	1.783083	4.460404	9.528720	
1050.0000	0.003206	0.010427	0.033126	0.102153	0.302500	0.845718	2.178195	5.005318	9.911730	
1200.0000	0.005175	0.016240	0.049431	0.144921	0.404663	1.058657	2.538596	5.436071	10.134777	
1350.0000	0.007901	0.023916	0.069784	0.194850	0.514910	1.268420	2.858079	5.769242	10.241855	
1500.0000	0.011482	0.033548	0.093972	0.250541	0.629215	1.468533	3.134707	6.020038	10.262996	
1650.0000	0.015970	0.045092	0.121496	0.310242	0.743731	1.654191	3.368676	6.200871	10.218232	
1800.0000	0.021349	0.058349	0.151588	0.371965	0.854876	1.821756	3.560903	6.321002	10.120213	
1950.0000	0.027524	0.072963	0.183249	0.433565	0.959317	1.968273	3.712160	6.386622	9.975984	
2100.0000	0.034319	0.088426	0.215290	0.492800	1.053909	2.091100	3.822607	6.401152	9.788257	
2250.0000	0.041475	0.104102	0.246374	0.547377	1.135652	2.187687	3.891635	6.365678	9.556463	
2400.0000	0.048661	0.119252	0.275079	0.595021	1.201696	2.255516	3.917955	6.279524	9.277746	
2550.0000	0.055498	0.133082	0.299971	0.633566	1.249419	2.292197	3.899902	6.140975	8.948036	
2700.0000	0.061582	0.144800	0.319701	0.661076	1.276576	2.295703	3.835912	5.948129	8.563219	
2850.0000	0.066523	0.153681	0.333107	0.675996	1.281513	2.264708	3.725109	5.699840	8.120373	
3000.0000	0.069984	0.159140	0.339329	0.677313	1.263393	2.198964	3.567928	5.396637	7.618974	
3150.0000	0.071716	0.160791	0.337899	0.664696	1.222419	2.099635	3.366651	5.041520	7.061894	
3300.0000	0.071589	0.158498	0.328820	0.638597	1.159966	1.969524	3.125767	4.640461	6.456030	
3450.0000	0.069610	0.152397	0.312587	0.600270	1.078614	1.813123	2.852054	4.202525	5.812422	
3600.0000	0.065922	0.142891	0.290157	0.551712	0.982033	1.636437	2.554342	3.739532	5.145772	
3750.0000	0.060793	0.130610	0.262872	0.495505	0.874728	1.446602	2.242958	3.265291	4.473402	
3900.0000	0.054583	0.116345	0.232327	0.434594	0.761671	1.251324	1.928927	2.794490	3.813786	

SOLUTE CONCENTRATION AT TIME = 3652.5000 DAY (CONTINUED)
AND AT Z = 1700.0000 FEET

X-COORDINATE, IN FEET	SOLUTE CONCENTRATION, IN MG/L									
	900.0000	1000.0000	1100.0000	1200.0000	1300.0000	1400.0000	1500.0000	1600.0000	1700.0000	
0.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
150.0000	9.984679	17.823324	19.559352	19.882973	19.949691	19.964383	19.967038	19.964383	19.949691	
300.0000	14.147548	23.623720	27.134002	28.017869	28.227493	28.277214	28.286540	28.277214	28.227493	
450.0000	15.820151	25.008664	29.562784	31.064375	31.485945	31.596680	31.618612	31.596680	31.485945	
600.0000	16.523838	25.048624	30.064129	32.094704	32.764445	32.961060	33.002523	32.961060	32.764445	
750.0000	16.747277	24.572650	29.707062	32.126960	33.044848	33.344963	33.412442	33.344963	33.044848	
900.0000	16.701137	23.873473	28.941410	31.617417	32.757982	33.169221	33.267462	33.169221	32.757982	
1050.0000	16.495646	23.079418	27.985167	30.810053	32.135311	32.655830	32.787149	32.655830	32.135311	
1200.0000	16.194454	22.253890	26.951506	29.845419	31.314296	31.935100	32.099351	31.935100	31.314296	
1350.0000	15.835728	21.429219	25.900138	28.805941	30.379588	31.087232	31.282226	31.087232	30.379588	
1500.0000	15.442187	20.620804	24.861259	27.738915	29.383029	30.161925	30.384031	30.161925	29.383029	
1650.0000	15.026485	19.833912	23.847738	26.669419	28.354791	29.188851	29.433594	29.188851	28.354791	
1800.0000	14.594294	19.067234	22.861654	25.607912	27.310073	28.183719	28.446253	28.183719	27.310073	
1950.0000	14.146180	18.314861	21.897968	24.554856	26.253325	27.152000	27.427437	27.152000	26.253325	
2100.0000	13.678861	17.567522	20.946741	23.503700	25.181128	26.091463	26.375064	26.091463	25.181128	
2250.0000	13.186219	16.813568	19.994731	22.443063	24.084422	24.994196	25.281470	24.994196	22.443063	
2400.0000	12.660310	16.039988	19.026827	21.358648	22.950546	23.848554	24.135289	23.848554	21.358648	
2550.0000	12.092503	15.233613	18.027602	20.235193	21.765378	22.641285	22.923545	22.641285	20.235193	
2700.0000	11.474783	14.382556	16.983055	19.058584	20.515651	21.359897	21.634027	21.359897	19.058584	
2850.0000	10.801173	13.477816	15.882513	17.818071	19.191402	19.995197	20.257830	19.995197	17.818071	
3000.0000	10.069129	12.514852	14.720463	16.508408	17.788316	18.543727	18.791830	18.543727	17.788316	

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3150.0000	!	9.280696	11.494904	13.498083	15.131597	16.309647	17.009787	17.240719	17.009787	16.309647
3300.0000	!	8.443214	10.425766	12.224127	13.697921	14.767370	15.406639	15.618238	15.406639	14.767370
3450.0000	!	7.569392	9.321820	10.914952	12.225989	13.182250	13.756604	13.947272	13.756604	13.182250
3600.0000	!	6.676649	8.203192	9.593529	10.741664	11.582716	12.089890	12.258663	12.089890	11.582716
3750.0000	!	5.785758	7.094092	8.287520	9.275922	10.002574	10.442220	10.588816	10.442220	10.002574
3900.0000	!	4.918974	6.020530	7.026630	7.861924	8.477870	8.851572	8.976389	8.851572	8.477870

SOLUTE CONCENTRATION AT TIME = 3652.5000 DAY (CONTINUED)
AND AT Z = 1700.0000 FEET

		Y-COORDINATE, IN FEET								
		1800.0000	1900.0000	2000.0000	2100.0000	2200.0000	2300.0000	2400.0000	2500.0000	2600.0000
X-COORDINATE, IN FEET	*	SOLUTE CONCENTRATION, IN MG/L								
0.0000	!	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
150.0000	!	19.882973	19.559352	17.823324	9.984679	2.146034	0.410002	0.086366	0.019592	0.004680
300.0000	!	28.017869	27.134002	23.623720	14.147548	4.671373	1.161076	0.277151	0.067311	0.016771
450.0000	!	31.064375	29.562784	25.008664	15.820151	6.631630	2.077468	0.575721	0.153576	0.040716
600.0000	!	32.094704	30.064129	25.048624	16.523838	7.999031	2.983429	0.952499	0.281486	0.080317
750.0000	!	32.126960	29.707062	24.572650	16.747277	8.921862	3.787250	1.366635	0.446261	0.137594
900.0000	!	31.617417	28.941410	23.873473	16.701137	9.528720	4.460404	1.783083	0.638109	0.212358
1050.0000	!	30.810053	27.985167	23.079418	16.495646	9.911730	5.005318	2.178195	0.845718	0.302500
1200.0000	!	29.845419	26.951506	22.253890	16.194454	10.134777	5.436071	2.538596	1.058657	0.404663
1350.0000	!	28.805941	25.900138	21.429219	15.835728	10.241855	5.769242	2.858079	1.268420	0.514910
1500.0000	!	27.738915	24.861259	20.620804	15.442187	10.262996	6.020038	3.134707	1.468533	0.629215
1650.0000	!	26.669419	23.847738	19.833912	15.026485	10.218232	6.200871	3.368676	1.654191	0.743731
1800.0000	!	25.607912	22.861654	19.067234	14.594294	10.120213	6.321002	3.560903	1.821756	0.854876
1950.0000	!	24.554856	21.897968	18.314861	14.146180	9.975984	6.386622	3.712160	1.968273	0.959317
2100.0000	!	23.503700	20.946741	17.567522	13.678861	9.788257	6.401152	3.822607	2.091100	1.053909
2250.0000	!	22.443063	19.994731	16.813568	13.186219	9.556463	6.365678	3.891635	2.187687	1.135652
2400.0000	!	21.358648	19.026827	16.039988	12.660310	9.277746	6.279524	3.917955	2.255516	1.201696
2550.0000	!	20.235193	18.027602	15.233613	12.092503	8.948036	6.140975	3.899902	2.292197	1.249419
2700.0000	!	19.058584	16.983055	14.382556	11.474783	8.563219	5.948129	3.835912	2.295703	1.276576
2850.0000	!	17.818071	15.882513	13.477816	10.801173	8.120373	5.699840	3.725109	2.264708	1.281513
3000.0000	!	16.508408	14.720463	12.514852	10.069129	7.618974	5.396637	3.567928	2.198964	1.263393
3150.0000	!	15.131597	13.498083	11.494904	9.280696	7.061894	5.041520	3.366651	2.099635	1.222419
3300.0000	!	13.697921	12.224127	10.425766	8.443214	6.456030	4.640461	3.125767	1.969524	1.159966
3450.0000	!	12.225989	10.914952	9.321820	7.569392	5.812422	4.202525	2.852054	1.813123	1.078614
3600.0000	!	10.741664	9.593529	8.203192	6.676649	5.145772	3.739532	2.554342	1.636437	0.982033
3750.0000	!	9.275922	8.287520	7.094092	5.785758	4.473402	3.265291	2.242958	1.446602	0.874728
3900.0000	!	7.861924	7.026630	6.020530	4.918974	3.813786	2.794490	1.928927	1.251324	0.761671

SOLUTE CONCENTRATION AT TIME = 3652.5000 DAY
AND AT Z = 1750.0000 FEET

		Y-COORDINATE, IN FEET								
		0.0000	100.0000	200.0000	300.0000	400.0000	500.0000	600.0000	700.0000	800.0000
X-COORDINATE, IN FEET	*	SOLUTE CONCENTRATION, IN MG/L								
0.0000	!	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
150.0000	!	0.000018	0.000066	0.000250	0.000955	0.003729	0.014934	0.061649	0.262577	1.113243
300.0000	!	0.000069	0.000254	0.000941	0.003532	0.013429	0.051735	0.201078	0.773173	2.736257
450.0000	!	0.000188	0.000681	0.002471	0.008997	0.032840	0.119481	0.427042	1.447072	4.283524
600.0000	!	0.000432	0.001527	0.005378	0.018843	0.065371	0.222159	0.723651	2.166644	5.544902
750.0000	!	0.000881	0.003029	0.010296	0.034506	0.113122	0.357575	1.062746	2.850752	6.514288
900.0000	!	0.001640	0.005463	0.017866	0.057079	0.176419	0.518984	1.416613	3.460005	7.238186
1050.0000	!	0.002832	0.009121	0.028637	0.087104	0.253917	0.697633	1.764017	3.981739	7.766991
1200.0000	!	0.004587	0.014267	0.042975	0.124501	0.343063	0.884783	2.090993	4.416954	8.143314
1350.0000	!	0.007027	0.021101	0.061010	0.168613	0.440628	1.072798	2.389400	4.772430	8.400483

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1500.0000	!	0.010246	0.029726	0.082604	0.218304	0.543131	1.255470	2.655021	5.056527	8.563518
1650.0000	!	0.014297	0.040119	0.107351	0.272072	0.647104	1.427887	2.885931	5.277076	8.650497
1800.0000	!	0.019172	0.052117	0.134591	0.328153	0.749208	1.586120	3.081275	5.440387	8.673778
1950.0000	!	0.024791	0.065409	0.163438	0.384598	0.846253	1.726863	3.240454	5.550848	8.641007
2100.0000	!	0.030997	0.079543	0.192814	0.439325	0.935174	1.847139	3.362630	5.610875	8.555965
2250.0000	!	0.037557	0.093940	0.221491	0.490181	1.013017	1.944119	3.446508	5.621086	8.419368
2400.0000	!	0.044170	0.107921	0.248149	0.535006	1.076955	2.015066	3.490356	5.580698	8.229717
2550.0000	!	0.050487	0.120753	0.271444	0.571726	1.124376	2.057425	3.492242	5.488095	7.984257
2700.0000	!	0.056133	0.131696	0.290102	0.598471	1.153030	2.069034	3.450434	5.341569	7.680056
2850.0000	!	0.060747	0.140072	0.303017	0.613723	1.161225	2.048433	3.363923	5.140155	7.315170
3000.0000	!	0.064011	0.145324	0.309357	0.616467	1.148050	1.995205	3.232975	4.884473	6.889777
3150.0000	!	0.065691	0.147081	0.308656	0.606326	1.113573	1.910285	3.059625	4.577450	6.407123
3300.0000	!	0.065661	0.145203	0.300883	0.583655	1.058973	1.796168	2.847997	4.224793	5.874133
3450.0000	!	0.063921	0.139803	0.286466	0.549566	0.986570	1.656952	2.604384	3.835094	5.301534
3600.0000	!	0.060598	0.131240	0.266269	0.505869	0.899718	1.498174	2.337017	3.419523	4.703428
3750.0000	!	0.055936	0.120088	0.241518	0.454933	0.802567	1.326449	2.055553	2.991118	4.096336
3900.0000	!	0.050264	0.107073	0.213680	0.399472	0.699721	1.148955	1.770323	2.563747	3.497840

SOLUTE CONCENTRATION AT TIME = 3652.5000 DAY (CONTINUED)
AND AT Z = 1750.0000 FEET

X-COORDINATE, IN FEET	Y-COORDINATE, IN FEET									
	900.0000	1000.0000	1100.0000	1200.0000	1300.0000	1400.0000	1500.0000	1600.0000	1700.0000	
0.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
150.0000	3.678788	6.244332	7.094994	7.295909	7.342576	7.353597	7.355665	7.353597	7.342576	7.342576
300.0000	7.254845	11.773431	13.736502	14.308546	14.457705	14.495324	14.502629	14.495324	14.457705	14.457705
450.0000	9.607529	14.931526	17.767941	18.787835	19.094904	19.179754	19.197071	19.179754	19.094904	19.094904
600.0000	11.072971	16.601023	19.979195	21.421878	21.922275	22.075213	22.108276	22.075213	21.922275	21.922275
750.0000	11.974444	17.434564	21.097922	22.885302	23.588326	23.825510	23.879917	23.825510	23.588326	23.588326
900.0000	12.509188	17.780118	21.557963	23.600202	24.494009	24.824170	24.904297	24.824170	24.494009	24.494009
1050.0000	12.797570	17.828021	21.612683	23.828437	24.888533	25.312734	25.421080	25.312734	24.888533	24.888533
1200.0000	12.916209	17.688889	21.414278	23.737093	24.933625	25.446638	25.583674	25.446638	24.933625	24.933625
1350.0000	12.915343	17.429860	21.056402	23.434680	24.737210	25.329473	25.493884	25.329473	24.737210	24.737210
1500.0000	12.828186	17.092337	20.597088	22.991765	24.371843	25.031306	25.220433	25.031306	24.371843	24.371843
1650.0000	12.676301	16.701360	20.071608	22.453367	23.885598	24.599153	24.809464	24.599153	23.885598	23.885598
1800.0000	12.472856	16.270903	19.499982	21.846698	23.308921	24.063363	24.290856	24.063363	23.308921	23.308921
1950.0000	12.224719	15.807059	18.891573	21.186177	22.659170	23.441756	23.682253	23.441756	22.659170	22.659170
2100.0000	11.933925	15.310124	18.248080	20.476871	21.943843	22.742544	22.991885	22.742544	21.943843	21.943843
2250.0000	11.598869	14.776183	17.565740	19.717083	21.163125	21.966686	22.220834	21.966686	21.163125	21.163125
2400.0000	11.215441	14.198537	16.837213	18.900602	20.312187	21.110084	21.365178	21.110084	20.312187	20.312187
2550.0000	10.778251	13.569183	16.053443	18.018889	19.383497	20.165871	20.418243	20.165871	19.383497	19.383497
2700.0000	10.281971	12.880425	15.205604	17.063344	18.369251	19.126869	19.373064	19.126869	18.369251	18.369251
2850.0000	9.722767	12.126562	14.287109	16.027616	17.263861	17.988147	18.224948	17.988147	17.263861	17.263861
3000.0000	9.099677	11.305518	13.295518	14.909773	16.066322	16.749470	16.973949	16.749470	16.066322	16.066322
3150.0000	8.415764	10.420192	12.234111	13.714094	14.782144	15.417310	15.626893	15.417310	14.782144	14.782144
3300.0000	7.678832	9.479279	11.112833	12.452148	13.424540	14.006087	14.198639	14.006087	13.424540	13.424540
3450.0000	6.901542	8.497375	9.948418	11.142944	12.014602	12.538353	12.712265	12.538353	12.014602	12.014602
3600.0000	6.100836	7.494259	8.763543	9.812009	10.580319	11.043777	11.198034	11.043777	10.580319	10.580319
3750.0000	5.296714	6.493389	7.585096	8.489459	9.154515	9.556998	9.691225	9.556998	9.154515	9.154515
3900.0000	4.510500	5.519814	6.441754	7.207319	7.771975	8.114632	8.229094	8.114632	7.771975	7.771975

SOLUTE CONCENTRATION AT TIME = 3652.5000 DAY (CONTINUED)
AND AT Z = 1750.0000 FEET

X-COORDINATE, IN FEET	Y-COORDINATE, IN FEET									
	1800.0000	1900.0000	2000.0000	2100.0000	2200.0000	2300.0000	2400.0000	2500.0000	2600.0000	
3000.0000	9.099677	11.305518	13.295518	14.909773	16.066322	16.749470	16.973949	16.749470	16.066322	16.066322
3150.0000	8.415764	10.420192	12.234111	13.714094	14.782144	15.417310	15.626893	15.417310	14.782144	14.782144
3300.0000	7.678832	9.479279	11.112833	12.452148	13.424540	14.006087	14.198639	14.006087	13.424540	13.424540
3450.0000	6.901542	8.497375	9.948418	11.142944	12.014602	12.538353	12.712265	12.538353	12.014602	12.014602
3600.0000	6.100836	7.494259	8.763543	9.812009	10.580319	11.043777	11.198034	11.043777	10.580319	10.580319
3750.0000	5.296714	6.493389	7.585096	8.489459	9.154515	9.556998	9.691225	9.556998	9.154515	9.154515
3900.0000	4.510500	5.519814	6.441754	7.207319	7.771975	8.114632	8.229094	8.114632	7.771975	7.771975

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0.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
150.0000	7.295909	7.094994	6.244332	3.678788	1.113243	0.262577	0.061649	0.014934	0.003729
300.0000	14.308546	13.736502	11.773431	7.254845	2.736257	0.773173	0.201078	0.051735	0.013429
450.0000	18.787835	17.767941	14.931526	9.607529	4.283524	1.447072	0.427042	0.119481	0.032840
600.0000	21.421878	19.979195	16.601023	11.072971	5.544902	2.166644	0.723651	0.222159	0.065371
750.0000	22.885302	21.097922	17.434564	11.974444	6.514288	2.850752	1.062746	0.357575	0.113122
900.0000	23.600202	21.557963	17.780118	12.509188	7.238186	3.460005	1.416613	0.518984	0.176419
1050.0000	23.828437	21.612683	17.828021	12.797570	7.766991	3.981739	1.764017	0.697633	0.253917
1200.0000	23.737093	21.414278	17.688889	12.916209	8.143314	4.416954	2.090993	0.884783	0.343063
1350.0000	23.434680	21.056402	17.429860	12.915343	8.400483	4.772430	2.389400	1.072798	0.440628
1500.0000	22.991765	20.597088	17.092337	12.828186	8.563518	5.056527	2.655021	1.255470	0.543131
1650.0000	22.453367	20.071608	16.701360	12.676301	8.650497	5.277076	2.885931	1.427887	0.647104
1800.0000	21.846698	19.499982	16.270903	12.472856	8.673778	5.440387	3.081275	1.586120	0.749208
1950.0000	21.186177	18.891573	15.807059	12.224719	8.641007	5.550848	3.240454	1.726863	0.846253
2100.0000	20.476871	18.248080	15.310124	11.933925	8.555965	5.610875	3.362630	1.847139	0.935174
2250.0000	19.717083	17.565740	14.776183	11.598869	8.419368	5.621086	3.446508	1.944119	1.013017
2400.0000	18.900602	16.837213	14.198537	11.215441	8.229717	5.580698	3.490356	2.015066	1.076955
2550.0000	18.018889	16.053443	13.569183	10.778251	7.984257	5.488095	3.492242	2.057425	1.124376
2700.0000	17.063344	15.205604	12.880425	10.281971	7.680056	5.341569	3.450434	2.069034	1.153030
2850.0000	16.027616	14.287109	12.126562	9.722767	7.315170	5.140155	3.363923	2.048433	1.161225
3000.0000	14.909773	13.295518	11.305518	9.099677	6.889777	4.884473	3.232975	1.995205	1.148050
3150.0000	13.714094	12.234111	10.420192	8.415764	6.407123	4.577450	3.059625	1.910285	1.113573
3300.0000	12.452148	11.112833	9.479279	7.678832	5.874133	4.224793	2.847997	1.796168	1.058973
3450.0000	11.142944	9.948418	8.497375	6.901542	5.301534	3.835094	2.604384	1.656952	0.986570
3600.0000	9.812009	8.763543	7.494259	6.100836	4.703428	3.419523	2.337017	1.498174	0.899718
3750.0000	8.489459	7.585096	6.493389	5.296714	4.096336	2.991118	2.055553	1.326449	0.802567
3900.0000	7.207319	6.441754	5.519814	4.510500	3.497840	2.563747	1.770323	1.148955	0.699721

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