Part 1

BIOSCREEN MODEL OUTPUT
SWMU 62, Sandy Cove Housing Unit 102 Area

BIOSCREEN Natural Attenuation Decision Support System

Air Force Center for Environmental Excellence — *Version 1.4*

Adak SWMU 62, Area 102

DRO initial (max) (12 yrs)

Run Name

Data Input Instructions:

1. Enter value directly...or
2. Calculate by filling in grey cells below. (To restore formulas, hit button below)

Variable* — Data used directly in model.
Value calculated by model. (Don't enter any data)

1. HYDROGEOLOGY

Seepage Velocity*	Vs	195.2	(ft/yr)
or		↑ or	
Hydraulic Conductivity	K	2.8E-02	(cm/sec)
Hydraulic Gradient	I	0.002	(ft/ft)
Porosity	n	0.3	(-)

2. DISPERSION

Longitudinal Dispersivity	alpha x	20.8	(ft)
Transverse Dispersivity*	alpha y	2.1	(ft)
Vertical Dispersivity*	alpha z	0.0	(ft)
or		↑ or	
Estimated Plume Length	Lp	686	(ft)

3. ADSORPTION

Retardation Factor*	R	16.0	(-)
or		↑ or	
Soil Bulk Density	rho	1.8	(kg/l)
Partition Coefficient	Koc	5010	(L/kg)
FractionOrganicCarbon	foc	5.0E-4	(-)

4. BIODEGRADATION

1st Order Decay Coeff*	lambda	3.7E-1	(per yr)
or		↑ or	
Solute Half-Life	t-half		(year)

or Instantaneous Reaction Model

Delta Oxygen*	DO	7.35	(mg/L)
Delta Nitrate*	NO3	0.007	(mg/L)
Observed Ferrous Iron*	Fe2+	3.87	(mg/L)
Delta Sulfate*	SO4	0	(mg/L)
Observed Methane*	CH4	1.95	(mg/L)

5. GENERAL

Modeled Area Length*	1900	(ft)
Modeled Area Width*	500	(ft)
Simulation Time*	12	(yr)

L, W

115 (↑ or 0.02)

Variable* 20

6. SOURCE DATA

Source Thickness in Sot Zone* 5 (ft)

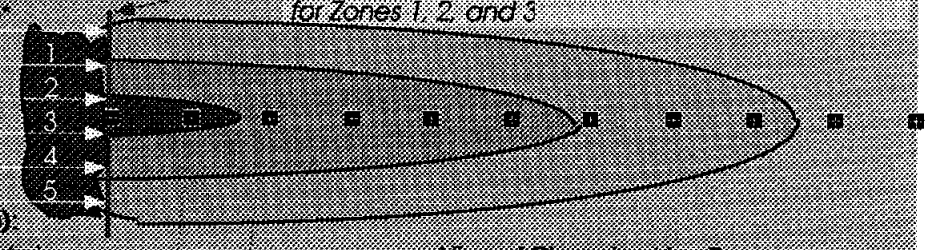
Source Zones	Width* (ft)	Conc. (mg/L)*
1		
2		
3	221	43
4	0	0
5	0	0

Source Halflife (see Help):

>1000	>1000 (yr)
Inst. React.	1st Order

Soluble Mass in Source NAPL, Soil: 644900 (Kg)

Vertical Plane Source: Look at Plume Cross-Section and Input Concentrations & Widths for Zones 1, 2, and 3



View of Plume Looking Down

Observed Centerline Concentrations at Monitoring Wells If No Data Leave Blank or Enter '0'

7. FIELD DATA FOR COMPARISON

Dist. from Source (ft)	Concentration (mg/L)
0	18.7
190	9.79
380	11.5
570	2.59
760	
950	
1140	
1330	
1520	
1710	
1900	

8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE — **View Output**

RUN ARRAY — **View Output**

Help

Recalculate This Sheet

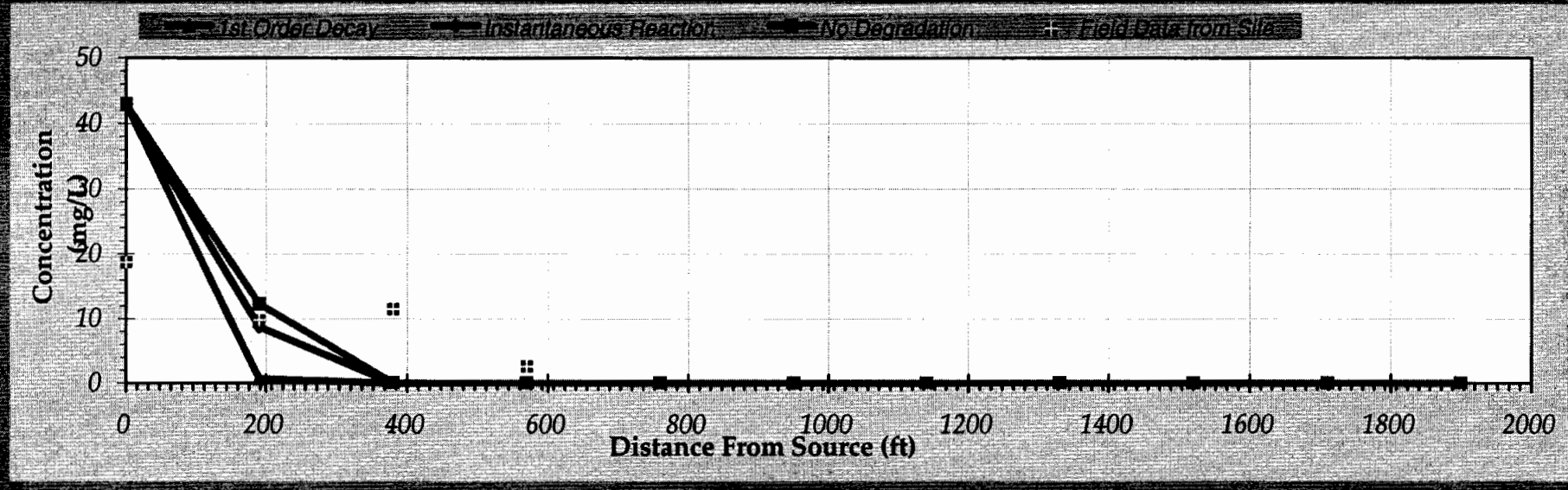
Paste Example Dataset

Restore Formulas for Vs, Dispersivities, R, lambda, other

DRO Model Output (Area 102)
Initial (Maximum Soluble Mass)

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE (mg/L) AT t = 0

TYPE OF MODEL	0	190	380	570	760	950	1140	1330	1520	1710	1900
No Degradation	42.937	12.326	0.057	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1st Order Decay	42.937	0.669	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Inst. Reaction	42.921	8.746	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data from Site	18.700	9.790	11.500	2.590							



Calculate Animation

Time:
12 Years

Return to Input

Recalculate This Sheet

DRO Model Output (Area 102)
Initial (Maximum Soluble Mass)

BIOSCREEN Natural Attenuation Decision Support System

Air Force Center for Environmental Excellence

Version 1.4

Adak SWMU 62, Area 102

DRO calibrated (12 yrs)

Run Name

Data Input Instructions:

1. Enter value directly...or
2. Calculate by filling in grey cells below. (To restore formulas, hit button below)

Variable* = Data used directly in model

Value calculated by model (Don't enter any data)

1. HYDROGEOLOGY

Seepage Velocity*	Vs	195.2	(ft/yr)
or		*or*	
Hydraulic Conductivity	K	2.8E-02	(cm/sec)
Hydraulic Gradient	i	0.002	(ft/ft)
Porosity	n	0.3	(-)

2. DISPERSION

Longitudinal Dispersivity	alpha x	20.8	(ft)
Transverse Dispersivity*	alpha y	2.1	(ft)
Vertical Dispersivity*	alpha z	0.0	(ft)
or		*or*	
Estimated Plume Length	Lp	686	(ft)

3. ADSORPTION

Retardation Factor*	R	7.0	(-)
or		*or*	
Soil Bulk Density	rho	1.8	(kg/l)
Partition Coefficient	Koc	5010	(L/kg)
FractionOrganicCarbon	foc	2.0E-4	(-)

4. BIODEGRADATION

1st Order Decay Coeff*	lambda	3.7E-1	(per yr)
or		*or*	
Solute Half-Life	t-half		(year)
or Instantaneous Reaction Model			
Delta Oxygen*	DO	7.35	(mg/L)
Delta Nitrate*	NO3	0.007	(mg/L)
Observed Ferrous Iron*	Fe2+	3.87	(mg/L)
Delta Sulfate*	SO4	0	(mg/L)
Observed Methane*	CH4	1.95	(mg/L)

5. GENERAL

Modeled Area Length*	1900	(ft)
Modeled Area Width*	500	(ft)
Simulation Time*	12	(yr)

L, W

115	
or	
0.02	
20	

6. SOURCE DATA

Source Thickness in Sat Zone* 5 (ft)

Source Zones

	Width* (ft)	Conc. (mg/L)*
1		
2		
3	221	43
4	0	0
5	0	0

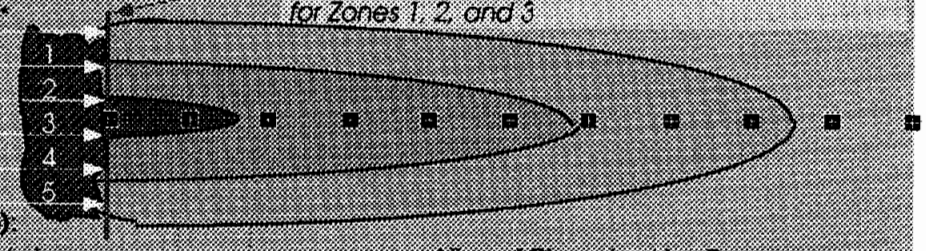
Source Halflife (see Help):

>1000	>1000	(yr)
Inst. React.	1st Order	

Soluble Mass 644900 (Kg)

In Source NAPL, Soil

Vertical Plane Source: Look at Plume Cross-Section and Input Concentrations & Widths for Zones 1, 2, and 3



View of Plume Looking Down

Observed Centerline Concentrations at Monitoring Wells

If No Data Leave Blank or Enter "0"

7. FIELD DATA FOR COMPARISON

Concentration (mg/L)	18.7	9.79	11.5	2.59							
Dist. from Source (ft)	0	190	380	570	760	950	1140	1330	1520	1710	1900

8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE — **View Output**

RUN ARRAY — **View Output**

Help

Recalculate This Sheet

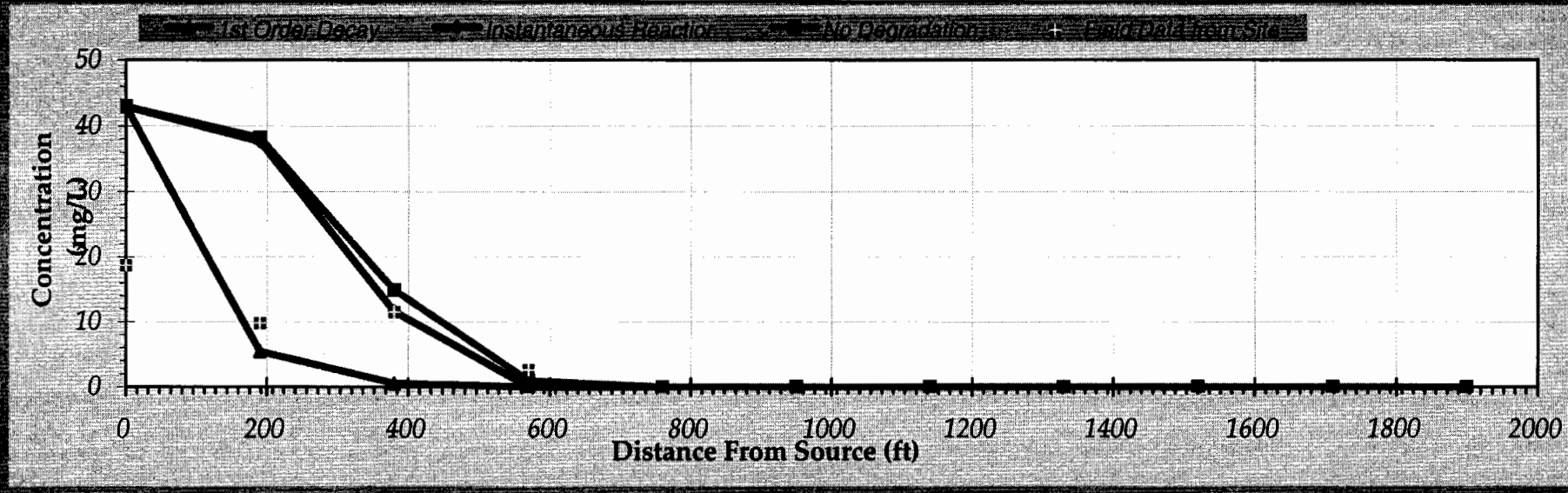
Paste Example Dataset

Restore Formulas for Vs, Dispersivities, R, lambda, other

DRO Model Output (Area 102)
Calibrated

DISSOLVED HYDROCARBON CONCENTRATION ALONG PLUME CENTERLINE (mg/L at t = 0)

TYPE OF MODEL	Distance from Source (ft)										
	0	190	380	570	760	950	1140	1330	1520	1710	1900
No Degradation	42.937	38.213	14.895	0.949	0.006	0.000	0.000	0.000	0.000	0.000	0.000
1st Order Decay	42.937	5.437	0.564	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Inst. Reaction	42.921	37.651	11.614	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data from Site	18.700	9.790	11.500	2.590							



Time:

12 Years

Calculate Animation

Return to Input

Recalculate This Sheet

DRO Model Output (Area 102)
Calibrated

BIOSCREEN Natural Attenuation Decision Support System

Air Force Center for Environmental Excellence

Version 1.4

Adak SWMU 62, Area 102

DRO final (87 yrs)

Run Name

Data Input Instructions:

1. *Enter value directly...or*
2. *Calculate by filling in grey cells below. (To restore formulas, hit button below)*

Variable — *Data used directly in model*

Value calculated by model (Don't enter any data)

1. HYDROGEOLOGY

Seepage Velocity*	Vs	195.2	(ft/yr)
or		or	
Hydraulic Conductivity	K	2.8E-02	(cm/sec)
Hydraulic Gradient	i	0.002	(ft/ft)
Porosity	n	0.3	(-)

2. DISPERSION

Longitudinal Dispersivity	alpha x	20.8	(ft)
Transverse Dispersivity*	alpha y	2.1	(ft)
Vertical Dispersivity*	alpha z	0.0	(ft)
or		or	
Estimated Plume Length	Lp	686	(ft)

3. ADSORPTION

Retardation Factor*	R	7.0	(-)
or		or	
Soil Bulk Density	rho	1.8	(kg/l)
Partition Coefficient	Koc	5010	(L/kg)
FractionOrganicCarbon	foc	2.0E-4	(-)

4. BIODEGRADATION

1st Order Decay Coeff*	lambda	3.7E-1	(per yr)
or		or	
Solute Half-Life	t-half		(year)

or Instantaneous Reaction Model

Delta Oxygen*	DO	7.35	(mg/L)
Delta Nitrate*	NO3	0.007	(mg/L)
Observed Ferrous Iron*	Fe2+	3.87	(mg/L)
Delta Sulfate*	SO4	0	(mg/L)
Observed Methane*	CH4	1.95	(mg/L)

5. GENERAL

Modeled Area Length*	1900	(ft)
Modeled Area Width*	500	(ft)
Simulation Time*	87	(yr)

L, W

115 or 0.02

6. SOURCE DATA

Source Thickness in Sat.Zone* 5 (ft)

Source Zones

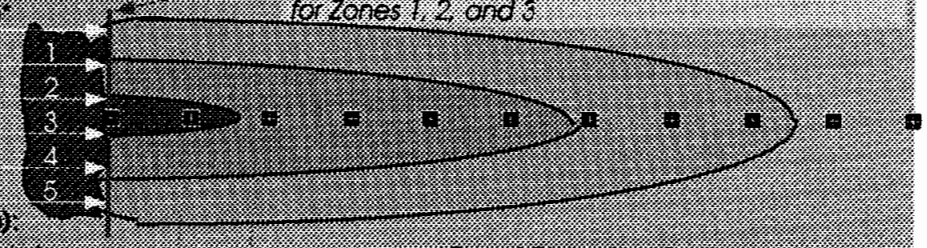
	Width* (ft)	Conc. (mg/L)*
1		
2		
3	221	43
4	0	0
5	0	0

Source Halflife (see Help):

>1000	>1000	(yr)
Inst. React.	1st Order	
Soluble Mass	644900	(Kg)

In Source NAPL, Soil

Vertical Plane Source: Look at Plume Cross-Section and Input Concentrations & Widths for Zones 1, 2, and 3



View of Plume Looking Down

Observed Centerline Concentrations at Monitoring Wells
If No Data Leave Blank or Enter "0"

7. FIELD DATA FOR COMPARISON

Dist. from Source (ft)	Concentration (mg/L)
0	18.7
190	9.79
380	11.5
570	2.59
760	
950	
1140	
1330	
1520	
1710	
1900	

8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE — **View Output**

RUN ARRAY — **View Output**

Help

Recalculate This Sheet

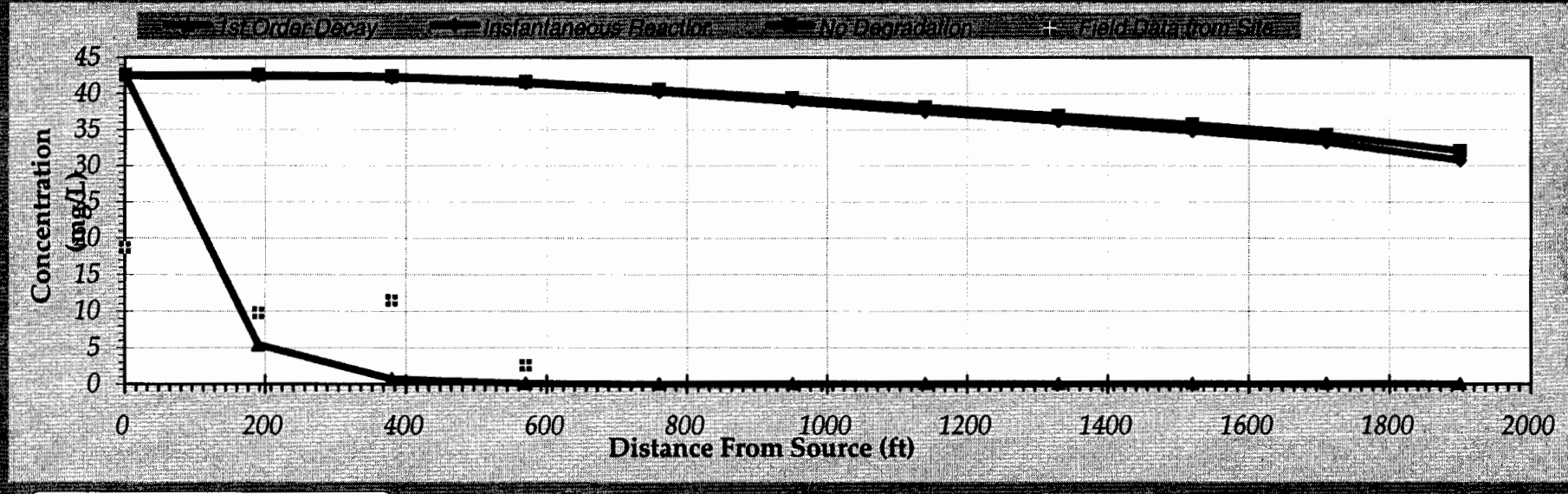
Paste Example Dataset

Restore Formulas for Vs, Dispersivities, R, lambda, other

DISSOLVED HYDROCARBON CONCENTRATION ALONG PLUME CENTERLINE (mg/L) at T = 87

Distance Downgradient (ft)

TYPE OF MODEL	0	190	380	570	760	950	1140	1330	1520	1710	1900
No Degradation	42.546	42.578	42.386	41.664	40.586	39.366	38.126	36.916	35.711	34.298	32.054
1st Order Decay	42.546	5.421	0.687	0.086	0.011	0.001	0.000	0.000	0.000	0.000	0.000
Inst. Reaction	42.434	42.474	42.265	41.464	40.266	38.909	37.529	36.183	34.842	33.268	30.767
Field Data from Site	18.700	9.790	11.500	2.590							



Time

87 Years

Calculate Animation

Return to Input

Recalculate This Sheet

BIOSCREEN Natural Attenuation Decision Support System

Air Force Center for Environmental Excellence

Version 1.4

Adak SWMU 62, Area 102

GRO initial (max. conc.) / cal. (12 yrs)

Run Name

Data Input Instructions:

1. Enter value directly, ..or
2. Calculate by filling in grey cells below. (To restore formulas, hit button below)

* Data used directly in model.

* Value calculated by model. (Don't enter any data)

1. HYDROGEOLOGY

Seepage Velocity*	*Vs*	195.2	*(ft/yr)*
or		*or*	
Hydraulic Conductivity	*K*	2.8E-02	*(cm/sec)*
Hydraulic Gradient	*i*	0.002	*(ft/ft)*
Porosity	*n*	0.3	*(-)*

2. DISPERSION

Longitudinal Dispersivity	*alpha x*	16.9	*(ft)*
Transverse Dispersivity*	*alpha y*	1.7	*(ft)*
Vertical Dispersivity*	*alpha z*	0.0	*(ft)*
or		*or*	
Estimated Plume Length	*Lp*	441	*(ft)*

3. ADSORPTION

Retardation Factor*	*R*	4.8	*(-)*
or		*or*	
Soil Bulk Density	*rho*	1.8	*(kg/l)*
Partition Coefficient	*Koc*	1260	*(L/kg)*
FractionOrganicCarbon	*foc*	5.0E-4	*(-)*

4. BIODEGRADATION

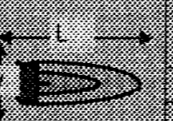
1st Order Decay Coeff*	*lambda*	3.4E-1	*(per yr)*
or		*or*	
Solute Half-Life	*t-half*		*(year)*

or Instantaneous Reaction Model

Delta Oxygen*	*DO*	7.35	*(mg/L)*
Delta Nitrate*	*NO3*	0.007	*(mg/L)*
Observed Ferrous Iron*	*Fe2+*	3.87	*(mg/L)*
Delta Sulfate*	*SO4*	0	*(mg/L)*
Observed Methane*	*CH4*	1.95	*(mg/L)*

5. GENERAL

Modeled Area Length*	1600	*(ft)*
Modeled Area Width*	500	*(ft)*
Simulation Time*	12	*(yr)*



	115
	or
	0.02

Variable*

20

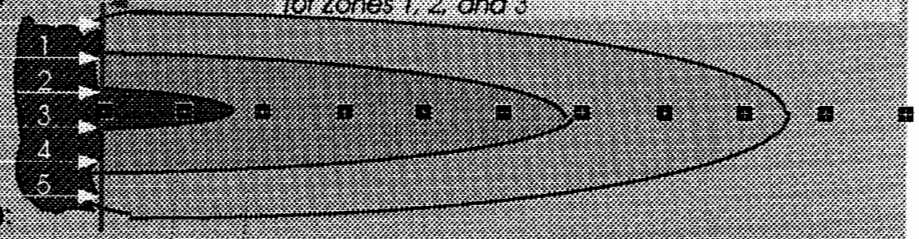
6. SOURCE DATA

Source Thickness in Sat Zone* 5 *(ft)*

Source Zones

Width* (ft)	Conc. (mg/L)*
104	18.2
0	0
0	0

Vertical Plane Source: Look at Plume Cross-Section and Input Concentrations & Widths for Zones 1, 2, and 3



View of Plume Looking Down

Source Halflife (see Help):

Inst. React.	1st Order
40	50

(yr)

Soluble Mass in Source NAPL, Soil: 1130 *(Kg)*

Observed Centerline Concentrations at Monitoring Wells
If No Data Leave Blank or Enter '0'

7. FIELD DATA FOR COMPARISON

Dist. from Source (ft)	Concentration (mg/L)
0	18.2
160	
320	
480	2.50
640	
800	
960	
1120	
1280	
1440	
1600	

8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE — **View Output**

RUN ARRAY — **View Output**

Help

Recalculate This Sheet

Paste Example Dataset

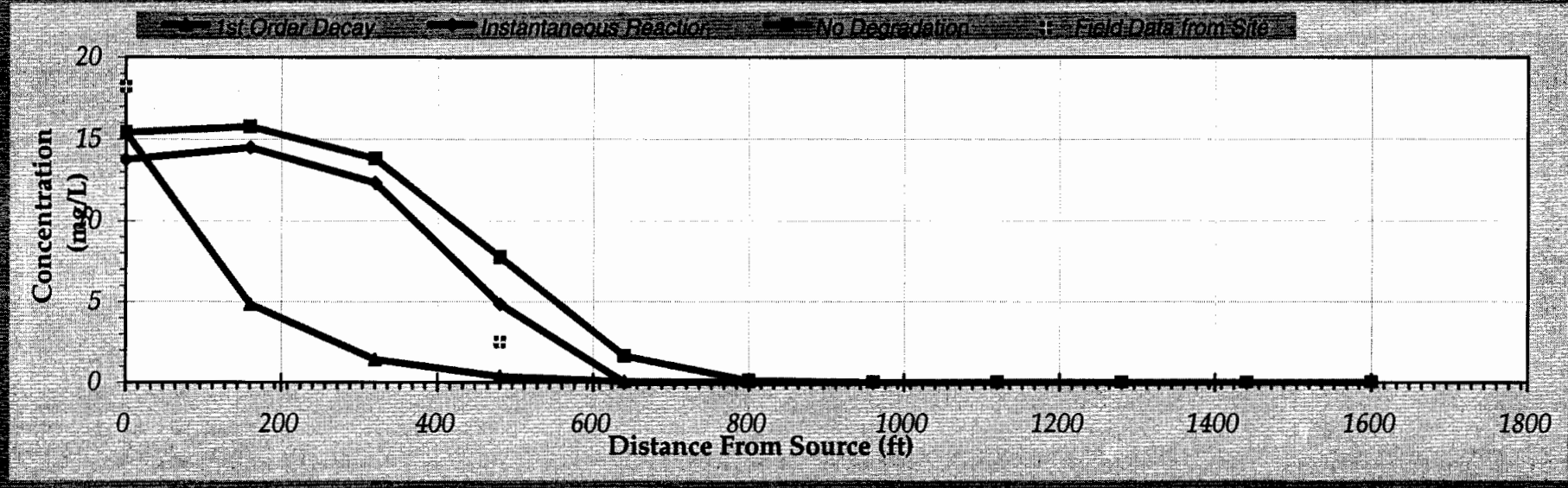
Restore Formulas for Vs, Dispersivities, R, lambda, other

GRO Model Output (Area 102)
Initial (Maximum Soluble Mass)
and Calibrated

DISSOLVED HYDROCARBON CONCENTRATION ALONG PLUME CENTERLINE (mg/L, Y = 0)

Distance from Source (ft)

TYPE OF MODEL	0	160	320	480	640	800	960	1120	1280	1440	1600
No Degradation	15.408	15.778	13.813	7.744	1.633	0.099	0.001	0.000	0.000	0.000	0.000
1st Order Decay	15.408	4.851	1.409	0.354	0.049	0.002	0.000	0.000	0.000	0.000	0.000
Inst. Reaction	13.755	14.496	12.325	4.850	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data from Site	18.200			2.500							



Calculate Animation

Time

12 Years

Return to Input

Recalculate This Sheet

GRO Model Output (Area 102)
Initial (Maximum Soluble Mass)
and Calibrated

BIOSCREEN Natural Attenuation Decision Support System

Air Force Center for Environmental Excellence — *Version 1.4*

Adak SWMU 62, Area 102

GRO final (87 yrs) — Run Name

Data Input Instructions:

1. Enter value directly...or
2. Calculate by filling in grey cells below. (To restore formulas, hit button below)

Variable* = Data used directly in model.

Value calculated by model. (Don't enter any data)

1. HYDROGEOLOGY

Seepage Velocity*	Vs	195.2	(ft/yr)
or		or	
Hydraulic Conductivity	K	2.8E-02	(cm/sec)
Hydraulic Gradient	I	0.002	(ft/ft)
Porosity	n	0.3	(-)

2. DISPERSION

Longitudinal Dispersivity	alpha x	16.9	(ft)
Transverse Dispersivity*	alpha y	1.7	(ft)
Vertical Dispersivity*	alpha z	0.0	(ft)
or		or	
Estimated Plume Length	Lp	441	(ft)

3. ADSORPTION

Retardation Factor*	R	4.8	(-)
or		or	
Soil Bulk Density	rho	1.8	(kg/l)
Partition Coefficient	Koc	1260	(L/kg)
FractionOrganicCarbon	foc	5.0E-4	(-)

4. BIODEGRADATION

1st Order Decay Coeff*	lambda	3.4E-1	(per yr)
or		or	
Solute Half-Life	t-half		(year)

or Instantaneous Reaction Model

Delta Oxygen*	DO	7.35	(mg/L)
Delta Nitrate*	NO3	0.007	(mg/L)
Observed Ferrous Iron*	Fe2+	3.87	(mg/L)
Delta Sulfate*	SO4	0	(mg/L)
Observed Methane*	CH4	1.95	(mg/L)

5. GENERAL

Modeled Area Length*	1600	(ft)
Modeled Area Width*	500	(ft)
Simulation Time*	87	(yr)

L / W

115 or 0.02

20

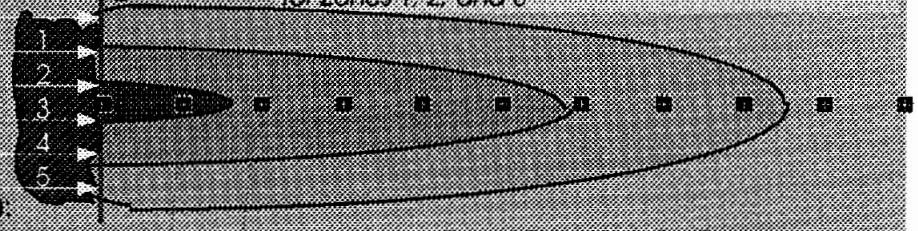
6. SOURCE DATA

Source Thickness in Sat Zone* 5 (ft)

Vertical Plane Source: Look at Plume Cross-Section and Input Concentrations & Widths for Zones 1, 2, and 3

Source Zones:

	Width* (ft)	Conc. (mg/L)*
1		
2		
3	104	18.2
4	0	0
5	0	0



View of Plume Looking Down

Source Halflife (see Help):

40 (Inst. React.) | 50 (1st Order) (yr)

Soluble Mass In Source NAPL, Soil: 1130 (Kg)

Observed Centerline Concentrations at Monitoring Wells
If No Data Leave Blank or Enter "0"

7. FIELD DATA FOR COMPARISON

Dist. from Source (ft)	Concentration (mg/L)
0	18.2
160	
320	
480	2.50
640	
800	
960	
1120	
1280	
1440	
1600	

8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE — **View Output**

RUN ARRAY — **View Output**

Help

Recalculate This Sheet

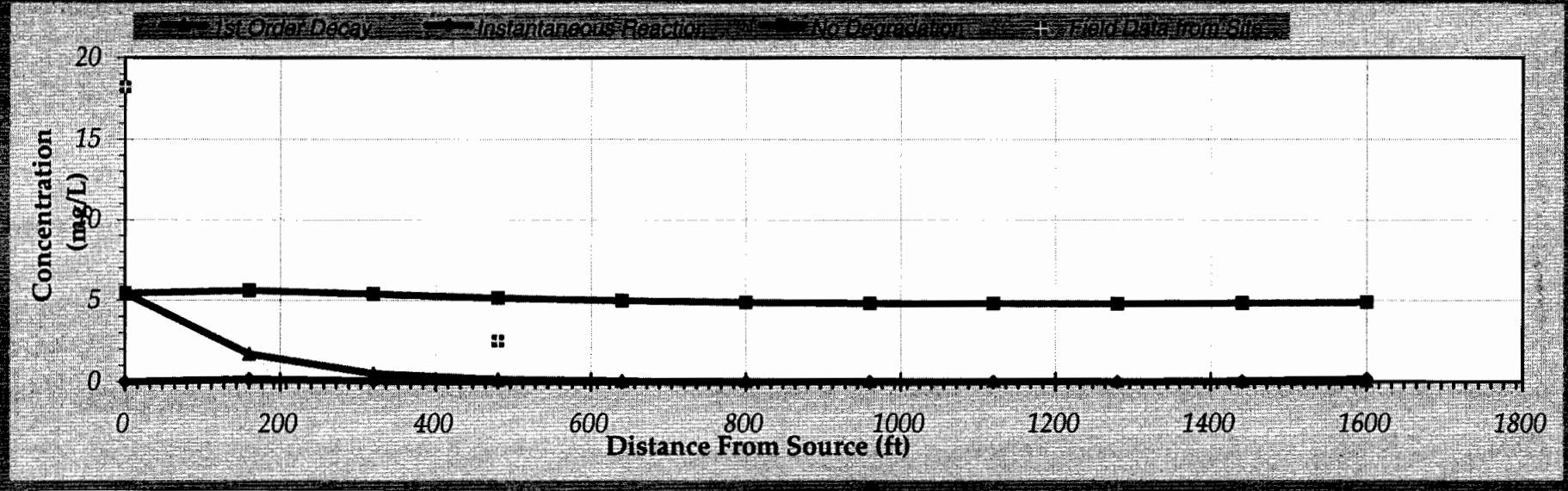
Paste Example Dataset

Restore Formulas for Vs, Dispersivities, R, lambda, other

DISSOLVED HYDROCARBON CONCENTRATION ALONG PLUME CENTERLINE (ft) (SC102)

Distance from Source (ft)

TYPE OF MODEL	0	160	320	480	640	800	960	1120	1280	1440	1600
No Degradation	5.440	5.600	5.377	5.148	4.984	4.878	4.819	4.796	4.802	4.832	4.882
1st Order Decay	5.440	1.713	0.503	0.147	0.044	0.013	0.004	0.001	0.000	0.000	0.000
Inst. Reaction	0.000	0.178	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.037	0.167
Field Data from Site	18.200			2.500							



Time:

87 Years

Calculate Animation

Return to Input

Recalculate This Sheet

BIOSCREEN Natural Attenuation Decision Support System

Air Force Center for Environmental Excellence

Version 1.4

Adak SWMU 62, Area 102

Benzene initial (12 yrs)

Run Name

Data Input Instructions:

1. Enter value directly....or
2. Calculate by filling in grey cells below. (To restore formulas, hit button below)

115 or 0.02

Variable* = Data used directly in model.

20 = Value calculated by model. (Don't enter any data)

1. HYDROGEOLOGY

Seepage Velocity*	Vs	195.2	(ft/yr)
or		or	
Hydraulic Conductivity	K	2.8E-02	(cm/sec)
Hydraulic Gradient	i	0.002	(ft/ft)
Porosity	n	0.3	(-)

2. DISPERSION

Longitudinal Dispersivity	alpha x	16.9	(ft)
Transverse Dispersivity*	alpha y	1.7	(ft)
Vertical Dispersivity*	alpha z	0.0	(ft)
or		or	
Estimated Plume Length	Lp	441	(ft)

3. ADSORPTION

Retardation Factor*	R	1.2	(-)
or		or	
Soil Bulk Density	rho	1.8	(kg/l)
Partition Coefficient	Koc	58.9	(L/kg)
FractionOrganicCarbon	foc	5.0E-4	(-)

4. BIODEGRADATION

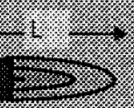
1st Order Decay Coeff*	lambda	4.1E-1	(per yr)
or		or	
Solute Half-Life	t-half		(year)

or Instantaneous Reaction Model

Delta Oxygen*	DO	7.35	(mg/L)
Delta Nitrate*	NO3	0.007	(mg/L)
Observed Ferrous Iron*	Fe2+	3.87	(mg/L)
Delta Sulfate*	SO4	0	(mg/L)
Observed Methane*	CH4	1.95	(mg/L)

5. GENERAL

Modeled Area Length*	1600	(ft)
Modeled Area Width*	500	(ft)
Simulation Time*	12	(yr)

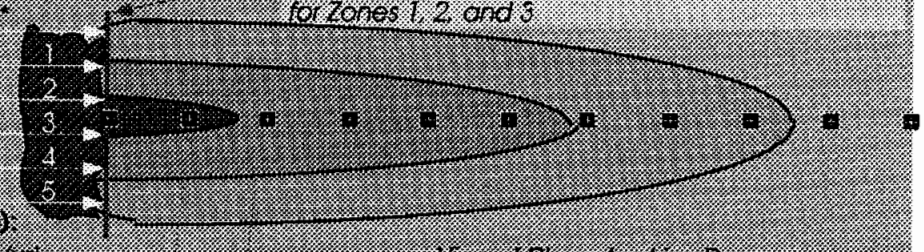


6. SOURCE DATA

Source Thickness in Sat Zone* 5 (ft)

Vertical Plane Source: Look at Plume Cross-Section and Input Concentrations & Widths for Zones 1, 2, and 3

Source Zones	Width* (ft)	Conc. (mg/L)*
1		
2		
3	104	0.22
4	0	0
5	0	0



View of Plume Looking Down

Source Halflife (see Help):

<1	4	(yr)
Inst. React.	1st Order	

Soluble Mass in Source NAPL, Soil: 1 (Kg)

Observed Centerline Concentrations at Monitoring Wells
If No Data Leave Blank or Enter '0'

7. FIELD DATA FOR COMPARISON

Dist. from Source (ft)	Concentration (mg/L)
0	0.22
160	
320	
480	0.0069
640	
800	
960	
1120	
1280	
1440	
1600	

8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE — **View Output**

RUN ARRAY — **View Output**

Help

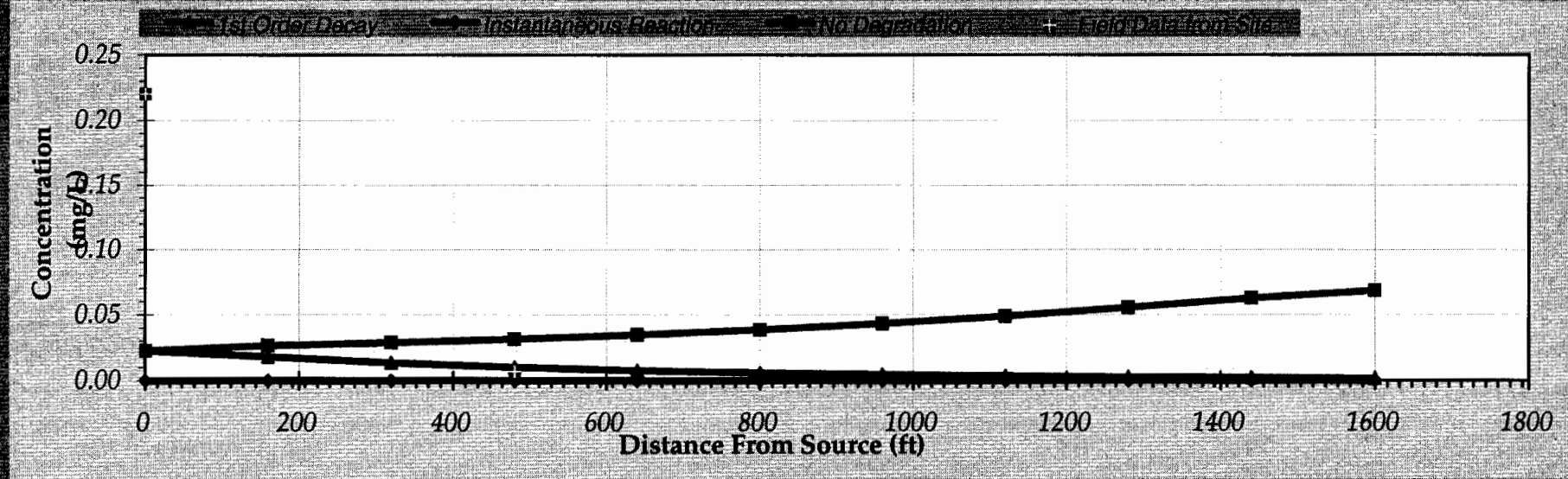
Recalculate This Sheet

Paste Example Dataset

Restore Formulas for Vs, Dispersivities, R, lambda, other

DISSOLVED HYDROCARBON CONCENTRATION ALONG PLUME CENTERLINE (mg/L) (Y = 0)

TYPE OF MODEL	Distance from Source (ft)										
	0	160	320	480	640	800	960	1120	1280	1440	1600
No Degradation	0.023	0.026	0.029	0.031	0.035	0.039	0.043	0.049	0.056	0.063	0.069
1st Order Decay	0.023	0.018	0.014	0.010	0.008	0.006	0.004	0.003	0.003	0.002	0.002
Inst. Reaction	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data from Site	0.220			0.007							



Calculate Animation

Time: 12 Years

Return to Input

Recalculate This Sheet

Benzene Model Output (Area 102)
Initial

BIOSCREEN Natural Attenuation Decision Support System

Air Force Center for Environmental Excellence

Version 1.4

Adak SWMU 62, Area 102

Benzene calibrated (12 yrs)

Run Name

Data Input Instructions:

1. Enter value directly...or
2. Calculate by filling in grey cells below. (To restore formulas, hit button below)

Variable* — Data used directly in model.
Value calculated by model. (Don't enter any data)

1. HYDROGEOLOGY

Seepage Velocity*	Vs	195.2	(ft/yr)
or		or	
Hydraulic Conductivity	K	2.8E-02	(cm/sec)
Hydraulic Gradient	i	0.002	(ft/ft)
Porosity	n	0.3	(-)

2. DISPERSION

Longitudinal Dispersivity	alpha x	16.9	(ft)
Transverse Dispersivity*	alpha y	1.7	(ft)
Vertical Dispersivity*	alpha z	0.0	(ft)
or		or	
Estimated Plume Length	Lp	441	(ft)

3. ADSORPTION

Retardation Factor*	R	1.2	(-)
or		or	
Soil Bulk Density	rho	1.8	(kg/l)
Partition Coefficient	Koc	58.9	(L/kg)
FractionOrganicCarbon	foc	5.0E-4	(-)

4. BIODEGRADATION

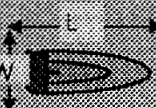
1st Order Decay Coeff*	lambda	4.1E-1	(per yr)
or		or	
Solute Half-Life	t-half		(year)

or Instantaneous Reaction Model

Delta Oxygen*	DO	7.35	(mg/L)
Delta Nitrate*	NO3	0.007	(mg/L)
Observed Ferrous Iron*	Fe2+	3.87	(mg/L)
Delta Sulfate*	SO4	0	(mg/L)
Observed Methane*	CH4	1.95	(mg/L)

5. GENERAL

Modeled Area Length*	1600	(ft)
Modeled Area Width*	500	(ft)
Simulation Time*	12	(yr)



115 or 0.02

6. SOURCE DATA

Source Thickness in Sat Zone* 5 (ft)

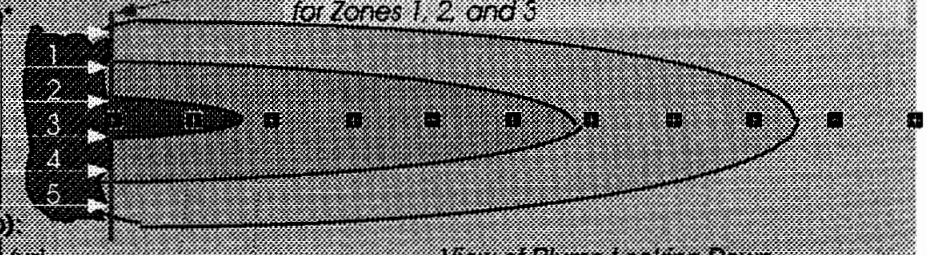
Source Zones	Width* (ft)	Conc. (mg/L)*
1		
2		
3	104	0.22
4	0	0
5	0	0

Source Halflife (see Help):

Inst. Reract.	1st Order
8	200 (yr)

Soluble Mass in Source NAPL, Soil: 50 (Kg)

Vertical Plane Source: Look at Plume Cross-Section and Input Concentrations & Widths for Zones 1, 2, and 3



View of Plume Looking Down

Observed Centerline Concentrations at Monitoring Wells
If No Data Leave Blank or Enter "0"

7. FIELD DATA FOR COMPARISON

Dist. from Source (ft)	Concentration (mg/L)
0	0.22
160	
320	
480	0.0069
640	
800	
960	
1120	
1280	
1440	
1600	

8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE — **View Output**

RUN ARRAY — **View Output**

Help

Recalculate This Sheet

Paste Example Dataset

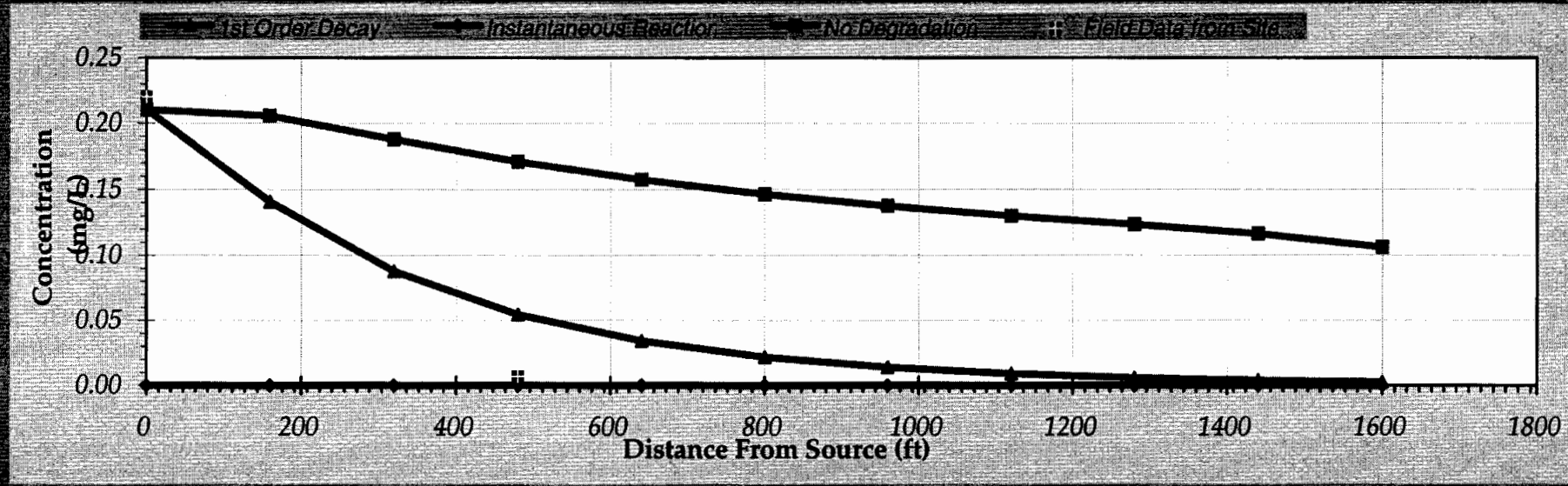
Restore Formulas for Vs, Dispersivities, R, lambda, other

Benzene Model Output (Area 102)
Calibrated

DISSOLVED HYDROCARBON CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Y = 0)

Distance from Source (ft)

TYPE OF MODEL	0	160	320	480	640	800	960	1120	1280	1440	1600
No Degradation	0.210	0.206	0.188	0.171	0.157	0.146	0.137	0.130	0.123	0.116	0.106
1st Order Decay	0.210	0.141	0.088	0.055	0.034	0.022	0.014	0.009	0.006	0.004	0.002
Inst. Reaction	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data from Site	0.220			0.007							



Time

12 Years

Calculate Animation

Return to Input

Recalculate This Sheet

Benzene Model Output (Area 102)
Calibrated

BIOSCREEN Natural Attenuation Decision Support System

Air Force Center for Environmental Excellence

Version 1.4

Adak SWMU 62, Area 102

Benzene final (87 years)

Run Name

Data Input Instructions:

1. Enter value directly...or

2. Calculate by filling in grey cells below. (To restore formulas, hit button below)

** Data used directly in model.*

** Value calculated by model. (Don't enter any data)*

1. HYDROGEOLOGY

Seepage Velocity*	*Vs*	195.2	*(ft/yr)*
or		*or*	
Hydraulic Conductivity	*K*	2.9E-02	*(cm/sec)*
Hydraulic Gradient	*i*	0.002	*(ft/ft)*
Porosity	*n*	0.3	*(-)*

2. DISPERSION

Longitudinal Dispersivity	*alpha x*	16.9	*(ft)*
Transverse Dispersivity*	*alpha y*	1.7	*(ft)*
Vertical Dispersivity*	*alpha z*	0.0	*(ft)*
or		*or*	
Estimated Plume Length	*Lp*	441	*(ft)*

3. ADSORPTION

Retardation Factor*	*R*	1.2	*(-)*
or		*or*	
Soil Bulk Density	*rho*	1.8	*(kg/l)*
Partition Coefficient	*Koc*	58.9	*(L/kg)*
FractionOrganicCarbon	*foc*	5.0E-4	*(-)*

4. BIODEGRADATION

1st Order Decay Coeff*	*lambda*	4.1E-1	*(per yr)*
or		*or*	
Solute Half-Life	*t-half*		*(year)*

or Instantaneous Reaction Model

Delta Oxygen*	*DO*	7.35	*(mg/L)*
Delta Nitrate*	*NO3*	0.007	*(mg/L)*
Observed Ferrous Iron*	*Fe2+*	3.87	*(mg/L)*
Delta Sulfate*	*SO4*	0	*(mg/L)*
Observed Methane*	*CH4*	1.95	*(mg/L)*

5. GENERAL

Modeled Area Length*	1600	*(ft)*
Modeled Area Width*	500	*(ft)*
Simulation Time*	87	*(yr)*

115 or 0.02

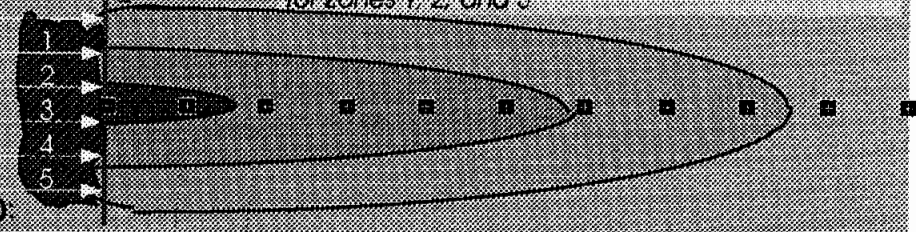
Variable*: 20

6. SOURCE DATA

Source Thickness in Sat.Zone* 5 *(ft)*

Vertical Plane Source: Look at Plume Cross-Section and Input Concentrations & Widths for Zones 1, 2, and 3

Source Zones	Width* (ft)	Conc. (mg/L)*
1		
2		
3	104	0.22
4	0	0
5	0	0



View of Plume Looking Down

Source Halflife (see Help):

Inst. Reactn.*	1st Order
8	200 *(yr)*

Soluble Mass in Source NAPL Soil: 50 *(Kg)*

Observed Centerline Concentrations at Monitoring Wells

If No Data Leave Blank or Enter "0"

7. FIELD DATA FOR COMPARISON

Dist. from Source (ft)	Concentration (mg/L)
0	0.22
160	
320	
480	0.0069
640	
800	
960	
1120	
1280	
1440	
1600	

8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE — **View Output**

RUN ARRAY — **View Output**

Help

Recalculate This Sheet

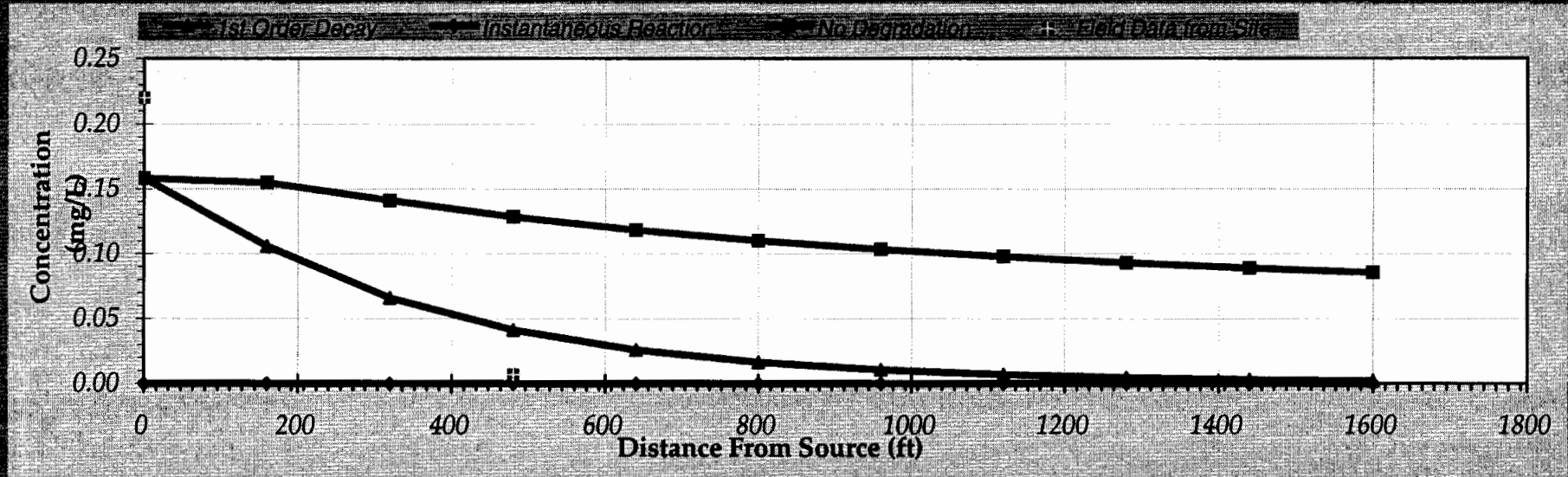
Paste Example Dataset

Restore Formulas for Vs, Dispersivities, R, lambda, other

DISSOLVED HYDROCARBON CONCENTRATION ALONG PLUME CENTERLINE (mg/L, Y=0)

Distance from source (ft)

TYPE OF MODEL	0	160	320	480	640	800	960	1120	1280	1440	1600
No Degradation	0.158	0.155	0.141	0.129	0.118	0.110	0.103	0.098	0.093	0.089	0.085
1st Order Decay	0.158	0.106	0.066	0.041	0.026	0.016	0.011	0.007	0.004	0.003	0.002
Inst. Reaction	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data from Site	0.220			0.007							



Calculate Animation

Time

87 Years

Return to Input

Recalculate This Sheet