

**Part 2**

**BIOSCREEN MODEL OUTPUT  
SWMU 62, Sandy Cove Housing Unit 134 Area**

# BIOSCREEN Natural Attenuation Decision Support System

Air Force Center for Environmental Excellence

Version 1.4

Adak SWMU 62, Area 134

DRO initial/calibrated (12 yrs)

Data Input Instructions:

## 1. HYDROGEOLOGY

Seepage Velocity*	Vs	292.8	(ft/yr)
or		↑ or	
Hydraulic Conductivity	K	2.8E-02	(cm/sec)
Hydraulic Gradient	i	0.003	(ft/ft)
Porosity	n	0.3	(-)

## 2. DISPERSION

Longitudinal Dispersivity	alpha x	13.8	(ft)
Transverse Dispersivity*	alpha y	1.4	(ft)
Vertical Dispersivity*	alpha z	0.0	(ft)
or		↑ or	
Estimated Plume Length	Lp	300	(ft)

## 3. ADSORPTION

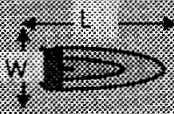
Retardation Factor*	R	16.0	(-)
or		↑ or	
Soil Bulk Density	rho	1.8	(kg/l)
Partition Coefficient	Koc	5010	(L/kg)
Fraction Organic Carbon	foc	5.0E-4	(-)

## 4. BIODEGRADATION

1st Order Decay Coef*	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*	1700	(ft)
Modeled Area Width*	750	(ft)
Simulation Time*	12	(yr)



## 6. SOURCE DATA

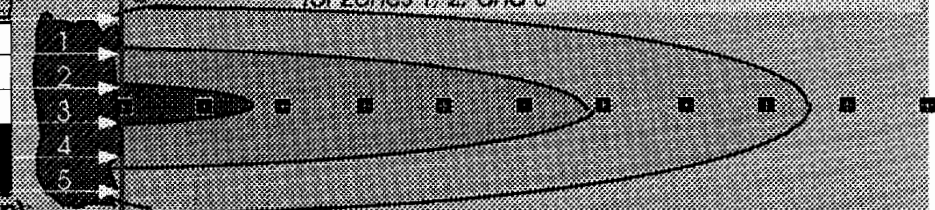
Source Thickness in Sat Zone\* 8 (ft)

Source Zones	
Width* (ft)	Conc. (mg/L)*
156	27
0	0
0	0

Source Half-life (see Help)

700	800	(yr)
Inst. React.	1st Order	
Solute Mass	99174	(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)	5.84	7.45	2.60										
Dist. from Source (ft)	0	170	340	510	680	850	1020	1190	1360	1530	1700		

## 8. CHOOSE TYPE OF OUTPUT TO SEE:

**RUN CENTERLINE**

**RUN ARRAY**

**View Output**

**View Output**

**Help**

Recalculate This Sheet

Paste Example Dataset

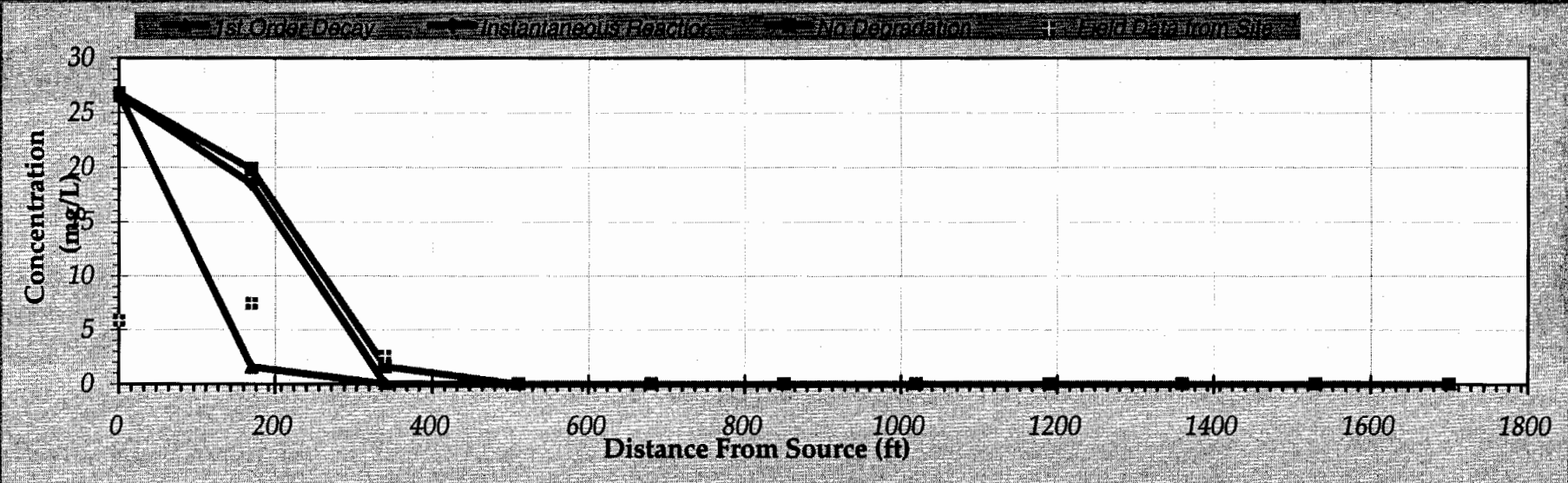
Restore Formulas for Vs, Dispersivities, R, lambda, other

DRO Model Output (Area 134)  
Initial and Calibrated

DISSOLVED HYDROCARBON CONCENTRATION ATIONIC PLUME CENTERLINE (mg/L)

Distance From Source (ft)

TYPE of MODEL	0	170	340	510	680	850	1020	1190	1360	1530	1700
No Degradation	26.728	19.825	1.614	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1st Order Decay	26.728	1.587	0.039	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Inst. Reaction	26.617	18.481	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data from Site	5.840	7.450	2.600								



Calculate Animation

Time: 12 Years

Return to Input

Recalculate This Sheet

DRO Model Output (Area 134)  
Initial and Calibrated

# BIOSCREEN Natural Attenuation Decision Support System

Air Force Center for Environmental Excellence

Adak SWMU 62, Area 134

Version 1.4

DRO final (87 yrs)

## 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	292.8	(ft/yr)
or		↑ or	
Hydraulic Conductivity	K	2.8E-02	(cm/sec)
Hydraulic Gradient	i	0.003	(ft/ft)
Porosity	n	0.3	(-)

### 2. DISPERSION

Longitudinal Dispersivity	alpha x	13.8	(ft)
Transverse Dispersivity*	alpha y	1.4	(ft)
Vertical Dispersivity*	alpha z	0.0	(ft)
or		↑ or	
Estimated Plume Length	Lp	300	(ft)

### 3. ADSORPTION

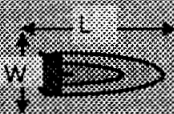
Retardation Factor*	R	16.0	(-)
or		↑ or	
Soil Bulk Density	rho	1.8	(kg/l)
Partition Coefficient	Koc	5010	(L/kg)
Fraction Organic Carbon	foc	5.0E-4	(-)

### 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*	1700	(ft)
Modeled Area Width*	750	(ft)
Simulation Time*	87	(yr)



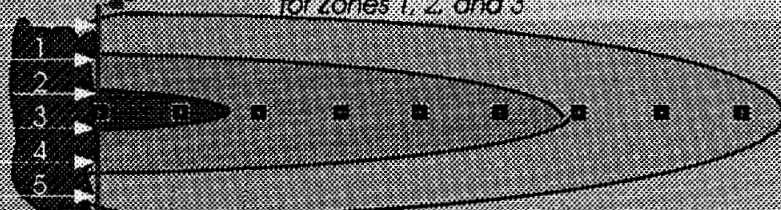
### 6. SOURCE DATA

Source Thickness in Sat Zone\* 8 (ft)

Source Zones	
Width* (ft)	Conc. (mg/L)*
156	27
0	0
0	0

Source Half-life (see Help):	700	800	(yr)
Inst. React. IV	↑	1st Order	
Soluble Mass	99174		(Kg)
In Source NAPL, Soil:			

Vertical Plane Source: Look at Plume Cross-Section and Input Concentrations & Widths for Zones 1, 2, and 5



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)	5.84	7.45	2.60									
Dist. from Source (ft)	0	170	340	510	680	850	1020	1190	1360	1530	1700	

### 8. CHOOSE TYPE OF OUTPUT TO SEE:

**RUN CENTERLINE**

View Output

**RUN ARRAY**

View Output

**Help**

Recalculate This Sheet

Paste Example Dataset

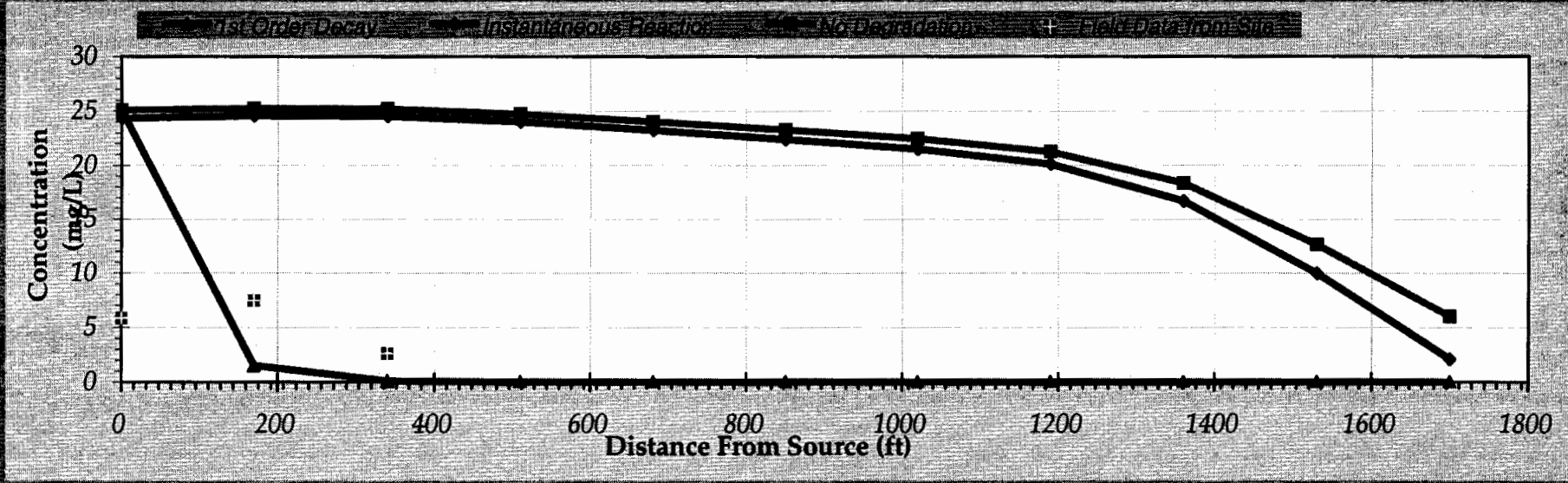
Restore Formulas for Vs, Dispersivities, R, lambda, other

DRO Model Output (Area 134)  
Final

DISSOLVED HYDROCARBON CONCENTRATIONS (mg/L) - PCE (mg/L) (K<sub>1</sub> = 0)

Distance from Source (ft)

TYPE OF MODEL	0	170	340	510	680	850	1020	1190	1360	1530	1700
No Degradation	25.087	25.277	25.204	24.712	24.019	23.275	22.486	21.267	18.355	12.657	6.001
1st Order Decay	25.087	1.532	0.093	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Inst. Reaction	24.328	24.593	24.551	24.017	23.243	22.407	21.517	20.114	16.705	9.983	2.097
Field Data from Site	5.840	7.450	2.600								



Calculate Animation

Time: 87 Years

Return to Input

Recalculate This Sheet

DRO Model Output (Area 134)  
Final

# BIOSCREEN Natural Attenuation Decision Support System

Air Force Center for Environmental Excellence

Version 1.4

Adak SWMU 62, Area 134

GRO Initial (12 yrs)

### Data Input Instructions:

115

0.02

Variable\*

20

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	292.8	(ft/yr)
or		↑ or	
Hydraulic Conductivity	K	2.8E-02	(cm/sec)
Hydraulic Gradient	i	0.003	(ft/ft)
Porosity	n	0.3	(-)

## 2. DISPERSION

Longitudinal Dispersivity	alpha x	13.8	(ft)
Transverse Dispersivity*	alpha y	1.4	(ft)
Vertical Dispersivity*	alpha z	0.0	(ft)
or		↑ or	
Estimated Plume Length	Lp	300	(ft)

## 3. ADSORPTION

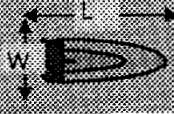
Retardation Factor*	R	4.8	(-)
or		↑ or	
Soil Bulk Density	rho	1.8	(kg/l)
Partition Coefficient	Koc	1260	(L/kg)
Fraction Organic Carbon	foc	5.0E-4	(-)

## 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*	1700	(ft)
Modeled Area Width*	750	(ft)
Simulation Time*	12	(yr)



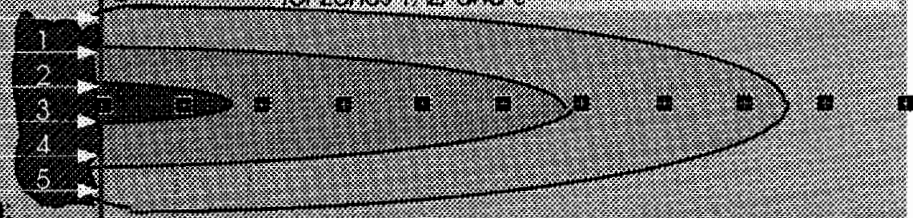
## 6. SOURCE DATA

Source Thickness in Sat Zone\* 8 (ft)

Source Zones	
Width* (ft)	Conc. (mg/L)*
156	4.9
0	0
0	0

Source Half-life (see Help)	
50	100
(yr)	
Inst. React. <input checked="" type="checkbox"/>	1st Order <input type="checkbox"/>
Soluble Mass 2149 (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 "D"

## 7. FIELD DATA FOR COMPARISON

Concentration (mg/L)	0.264	0.689	0.124								
Dist. from Source (ft)	0	170	340	510	680	850	1020	1190	1360	1530	1700

## 8. CHOOSE TYPE OF OUTPUT TO SEE:

**RUN CENTERLINE**

**RUN ARRAY**

**View Output**

**View Output**

**Help**

Recalculate This Sheet

Paste Example Dataset

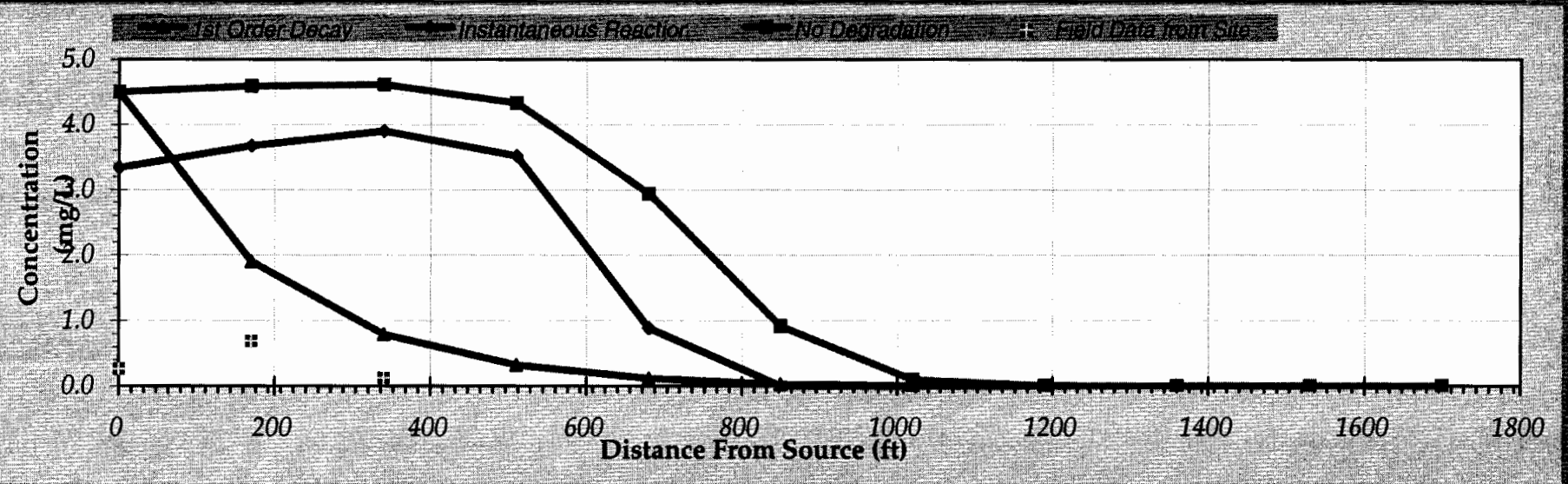
Restore Formulas for Vs, Dispersivities, R, lambda, other

GRO Model Output (Area 134)  
Initial

DISSOLVED HYDROCARBON CONCENTRATION ALONG PLUM CHAPERNE (mg/L @ 12 yrs)

Distance from Source (ft)

TYPE OF MODEL	0	170	340	510	680	850	1020	1190	1360	1530	1700
No Degradation	4.501	4.589	4.617	4.330	2.938	0.919	0.096	0.003	0.000	0.000	0.000
1st Order Decay	4.501	1.903	0.796	0.324	0.116	0.025	0.002	0.000	0.000	0.000	0.000
Inst. Reaction	3.334	3.669	3.900	3.516	0.889	0.000	0.000	0.000	0.000	0.000	0.000
Field Data from Site	0.264	0.689	0.124								



Calculate Animation

Time:  
12 Years

Return to Input

Recalculate This Sheet

GRO Model Output (Area 134)  
Initial

# BIOSCREEN Natural Attenuation Decision Support System

Air Force Center for Environmental Excellence

Version 1.4

Adak SWMU 62, Area 134

GRO calibrated (12 yrs)

Run Name

## Data Input Instructions:

115

↑ or

0.02

Variable\*

20

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	292.8	(ft/yr)
or		↑ or	
Hydraulic Conductivity	K	2.8E-02	(cm/sec)
Hydraulic Gradient	I	0.003	(ft/ft)
Porosity	n	0.3	(-)

### 2. DISPERSION

Longitudinal Dispersivity	alpha x	13.8	(ft)
Transverse Dispersivity*	alpha y	1.4	(ft)
Vertical Dispersivity*	alpha z	0.0	(ft)
or		↑ or	
Estimated Plume Length	Lp	300	(ft)

### 3. ADSORPTION

Retardation Factor*	R	8.6	(-)
or		↑ or	
Soil Bulk Density	rho	1.8	(kg/l)
Partition Coefficient	Koc	1200	(L/kg)
Fraction Organic Carbon	foc	1.0E-3	(-)

### 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*	1700	(ft)
Modeled Area Width*	750	(ft)
Simulation Time*	12	(yr)



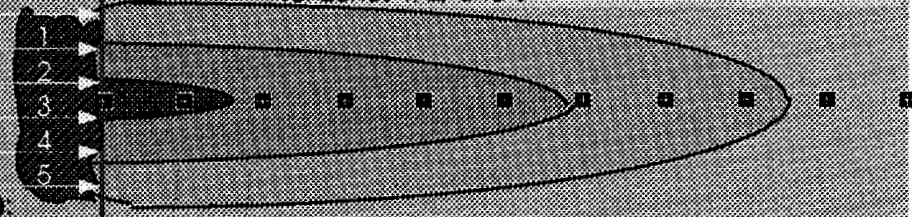
### 6. SOURCE DATA

Source Thickness in Sat Zone\* 8 (ft)

Source Zones:

Width* (ft)	Conc. (mg/L)*
156	4.9
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 Half-life (see Help):

50 100 (yr)

Inst. React. ↑ 1st Order

Soluble Mass 2149 (Kg)

In Source NAPL, Soil

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

### 7. FIELD DATA FOR COMPARISON

Concentration (mg/L)	0.264	0.689	0.124									
Dist. from Source (ft)	0	170	340	510	680	850	1020	1190	1360	1530	1700	

### 8. CHOOSE TYPE OF OUTPUT TO SEE:

**RUN CENTERLINE**

**RUN ARRAY**

**Help**

Recalculate This Sheet

**View Output**

**View Output**

Paste Example Dataset

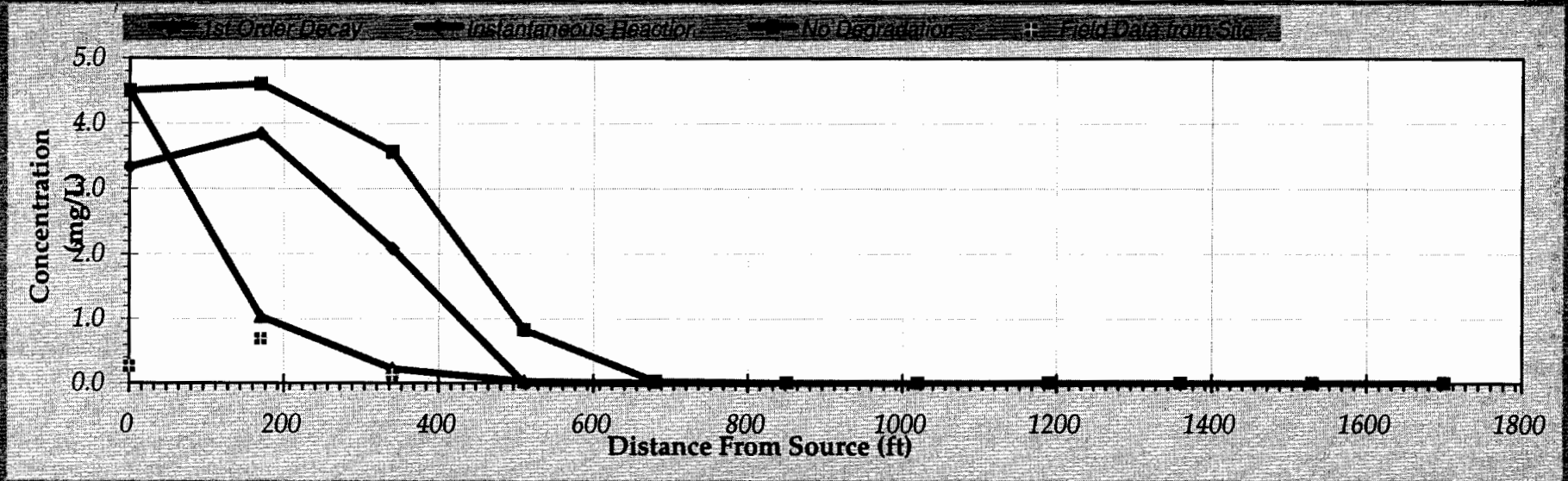
Restore Formulas for Vs, Dispersivities, R, lambda, other

GRO Model Output (Area 134)  
Calibrated

DISSOLVED HYDROCARBON CONCENTRATION AT ONE PDM (CPN) BAKLINE (mg/L) = 0

Distance from Source (ft)

TYPE of MODEL	0	170	340	510	680	850	1020	1190	1360	1530	1700
No Degradation	4.501	4.605	3.562	0.826	0.026	0.000	0.000	0.000	0.000	0.000	0.000
1st Order Decay	4.501	1.034	0.223	0.026	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Inst. Reaction	3.334	3.839	2.084	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data from Site	0.264	0.689	0.124								



Calculate Animation

Time: 12 Years

Return to Input

Recalculate This Sheet

GRO Model Output (Area 134)  
Calibrated

# BIOSCREEN Natural Attenuation Decision Support System

Air Force Center for Environmental Excellence

Version 1.4

Adak SWMU 62, Area 134

GRO final (87 yrs)

## Data Input Instructions:

115  
or  
0.02

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	292.8	(ft/yr)
or		↑ or	
Hydraulic Conductivity	K	2.8E-02	(cm/sec)
Hydraulic Gradient	i	0.003	(ft/ft)
Porosity	n	0.3	(-)

### 2. DISPERSION

Longitudinal Dispersivity	alpha x	13.8	(ft)
Transverse Dispersivity*	alpha y	1.4	(ft)
Vertical Dispersivity*	alpha z	0.0	(ft)
or		↑ or	
Estimated Plume Length	Lp	300	(ft)

### 3. ADSORPTION

Retardation Factor*	R	8.6	(-)
or		↑ or	
Soil Bulk Density	rho	1.8	(kg/l)
Partition Coefficient	Koc	1200	(L/kg)
Fraction Organic Carbon	foc	1.0E-3	(-)

### 4. BIODEGRADATION

1st Order Decay Coef*	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*	1700	(ft)
Modeled Area Width*	750	(ft)
Simulation Time*	87	(yr)

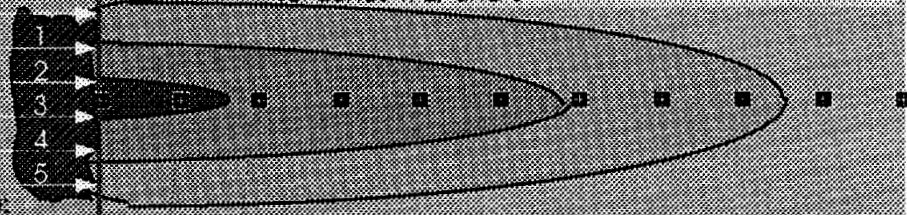


### 6. SOURCE DATA

Source Thickness in Sat Zone\* 8 (ft)

Source Zones	Width* (ft)	Conc. (mg/L)*
1		
2		
3	156	4.9
4	0	0
5	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 Half-life (see Help)

50 100 (yr)

Inst. React. (N) ↑ 1st Order

Soluble Mass 2149 (Kg)

In Source NAPL, Soil

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

### 7. FIELD DATA FOR COMPARISON

Concentration (mg/L)	0.264	0.689	0.124											
Dist. from Source (ft)	0	170	340	510	680	850	1020	1190	1360	1530	1700			

### 8. CHOOSE TYPE OF OUTPUT TO SEE:

**RUN CENTERLINE**

**RUN ARRAY**

**Help**

Recalculate This Sheet

View Output

View Output

Paste Example Dataset

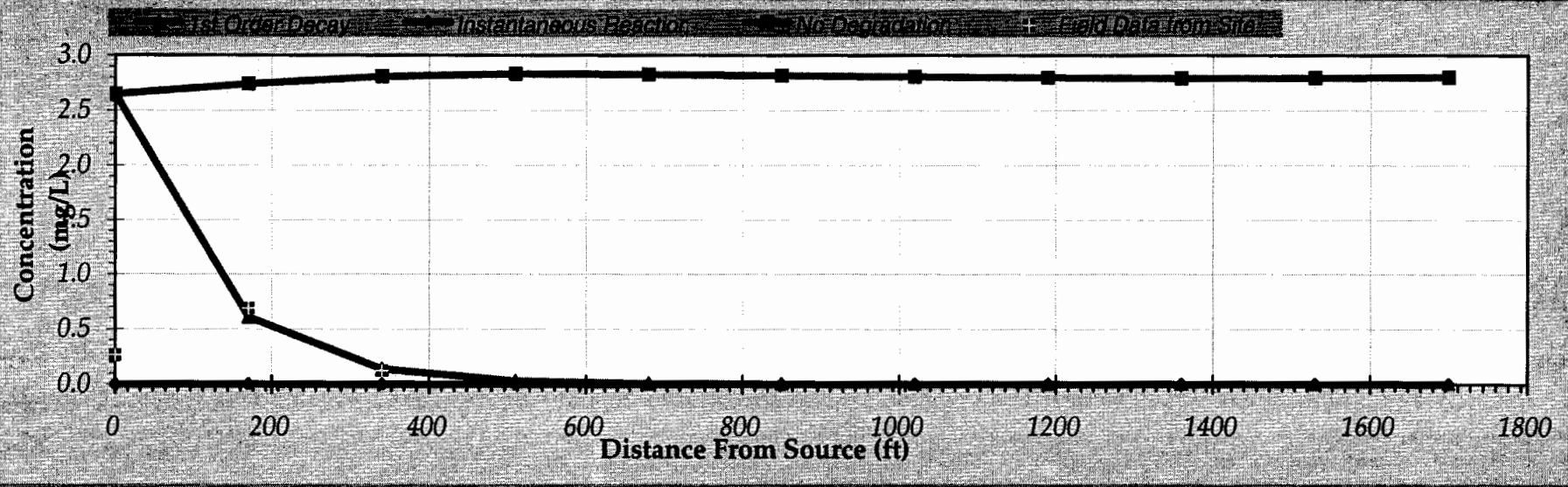
Restore Formulas for Vs, Dispersivities, R, lambda, other

GRO Model Output (Area 134)  
Final

DISSOLVED HYDROCARBON CONCENTRATION ALONG PLUME CENTERLINE (mg/L @ 700)

Distance from Source (ft)

TYPE OF MODEL	0	170	340	510	680	850	1020	1190	1360	1530	1700
No Degradation	2.648	2.742	2.810	2.831	2.828	2.817	2.805	2.797	2.794	2.795	2.802
1st Order Decay	2.648	0.609	0.138	0.031	0.007	0.002	0.000	0.000	0.000	0.000	0.000
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	0.264	0.689	0.124								



Calculate Animation

Time: 87 Years

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 134

Data Input Instructions:

## 1. HYDROGEOLOGY

Seepage Velocity*	Vs	292.8	(ft/yr)
or		↑ or	
Hydraulic Conductivity	K	2.8E-02	(cm/sec)
Hydraulic Gradient	i	0.003	(ft/ft)
Porosity	n	0.3	(-)

## 2. DISPERSION

Longitudinal Dispersivity	alpha x	13.8	(ft)
Transverse Dispersivity*	alpha y	1.4	(ft)
Vertical Dispersivity*	alpha z	0.0	(ft)
or		↑ or	
Estimated Plume Length	Lp	300	(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)
Fraction Organic Carbon	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*	1700	(ft)
Modeled Area Width*	750	(ft)
Simulation Time*	12	(yr)



## 6. SOURCE DATA

Source Thickness in Sat Zone\* 8 (ft)

Source Zones	Width* (ft)	Conc. (mg/L)*
1		
2		
3	156	0.25
4	0	0
5	0	0

Source Half-life (see Help)

< 1 (yr)

Inst. React. 1st Order

Soluble Mass 0.17 (Kg)

In Source NAPL, Soil

## 7. FIELD DATA FOR COMPARISON

Concentration (mg/L)	0.00114	0.0072	0.0013											
Dist. from Source (ft)	0	170	340	510	680	850	1020	1190	1360	1530	1700			

## 8. CHOOSE TYPE OF OUTPUT TO SEE:

**RUN CENTERLINE**

**RUN ARRAY**

View Output

View Output

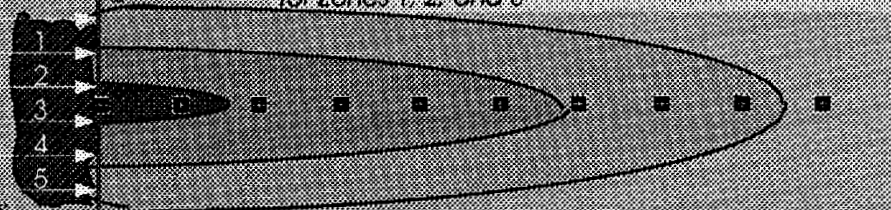
**Help**

Recalculate This Sheet

Paste Example Dataset

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

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



View of Plume Looking Down

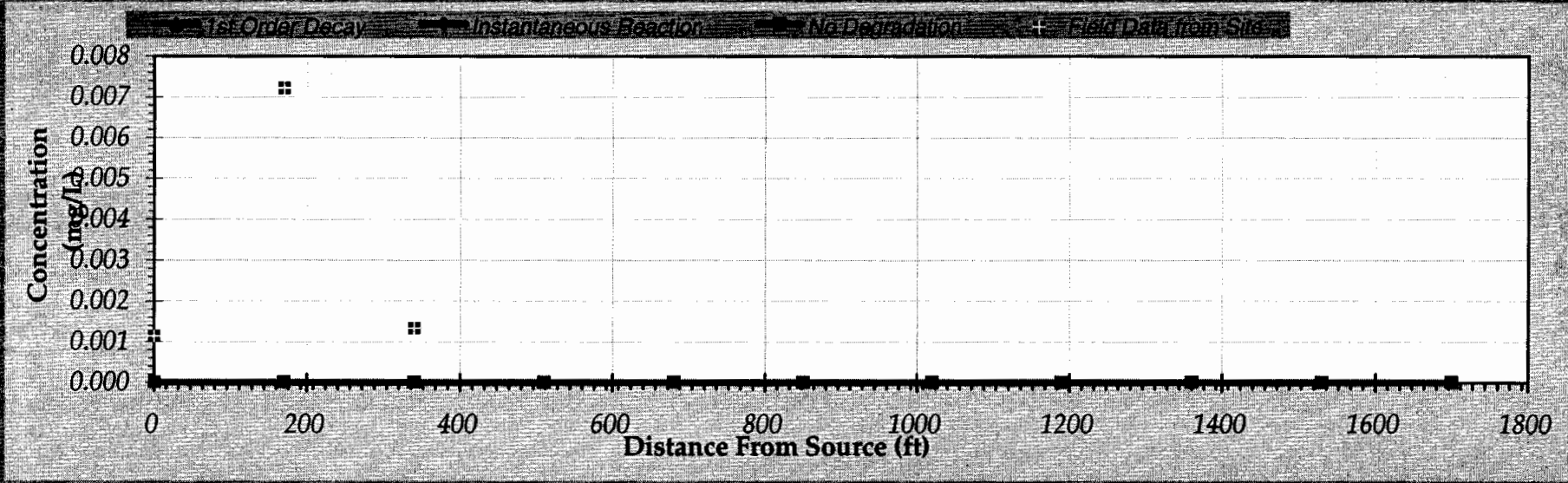
Observed Centerline Concentrations at Monitoring Wells  
If No Data Leave Blank or Enter '0'

Benzene Model Output (Area 134)  
Initial

DISSOLVED HYDROCARBON CONCENTRATION (mg/L) (mg/L) (12 yrs)

Distance From Source (ft)

TYPE OF MODEL	0	170	340	510	680	850	1020	1190	1360	1530	1700
No Degradation	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1st Order Decay	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1st 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	0.001	0.007	0.001								



Calculate Animation

Time: 12 Years

Return to Input

Recalculate This Sheet

Benzene Model Output (Area 134)  
Initial

# BIOSCREEN Natural Attenuation Decision Support System

Air Force Center for Environmental Excellence

Version 1.4

Adak SWMU 62, Area 134

Benzene calibrated (12 yrs)

Run Name

## Data Input Instructions:

115

or

0.02

Variable\*

20

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	292.8	(ft/yr)
or		↑ or	
Hydraulic Conductivity	K	2.8E-02	(cm/sec)
Hydraulic Gradient	i	0.003	(ft/ft)
Porosity	n	0.3	(-)

### 2. DISPERSION

Longitudinal Dispersivity	alpha x	13.8	(ft)
Transverse Dispersivity*	alpha y	1.4	(ft)
Vertical Dispersivity*	alpha z	0.0	(ft)
or		↑ or	
Estimated Plume Length	Lp	300	(ft)

### 3. ADSORPTION

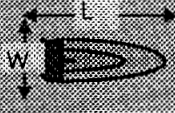
Retardation Factor*	R	1.2	(-)
or		↑ or	
Soil Bulk Density	rho	1.8	(kg/l)
Partition Coefficient	Koc	58.9	(L/kg)
Fraction Organic Carbon	foc	7.0E-4	(-)

### 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*	1700	(ft)
Modeled Area Width*	750	(ft)
Simulation Time*	12	(yr)



### 6. SOURCE DATA

Source Thickness in Sat Zone\* 8 (ft)

Source Zones

Width* (ft)	Conc. (mg/L)*
156	0.25
0	0
0	0

Source Half-life (see Help):

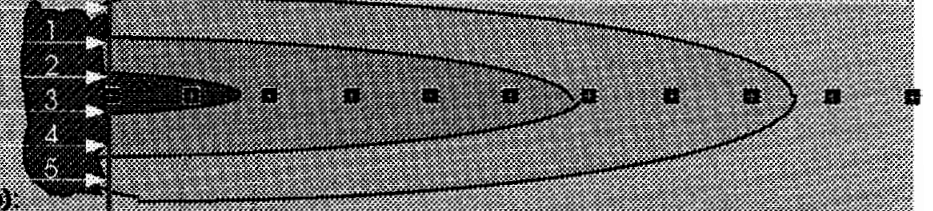
< 3 (yr)

Inst. React. ↑ 1st Order

Soluble Mass 3.0 (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)	0.00114	0.0072	0.0013								
Dist from Source (ft)	0	170	340	510	680	850	1020	1190	1360	1530	1700

### 8. CHOOSE TYPE OF OUTPUT TO SEE:

**RUN CENTERLINE**

**RUN ARRAY**

**Help**

Recalculate This Sheet

View Output

View Output

Paste Example Dataset

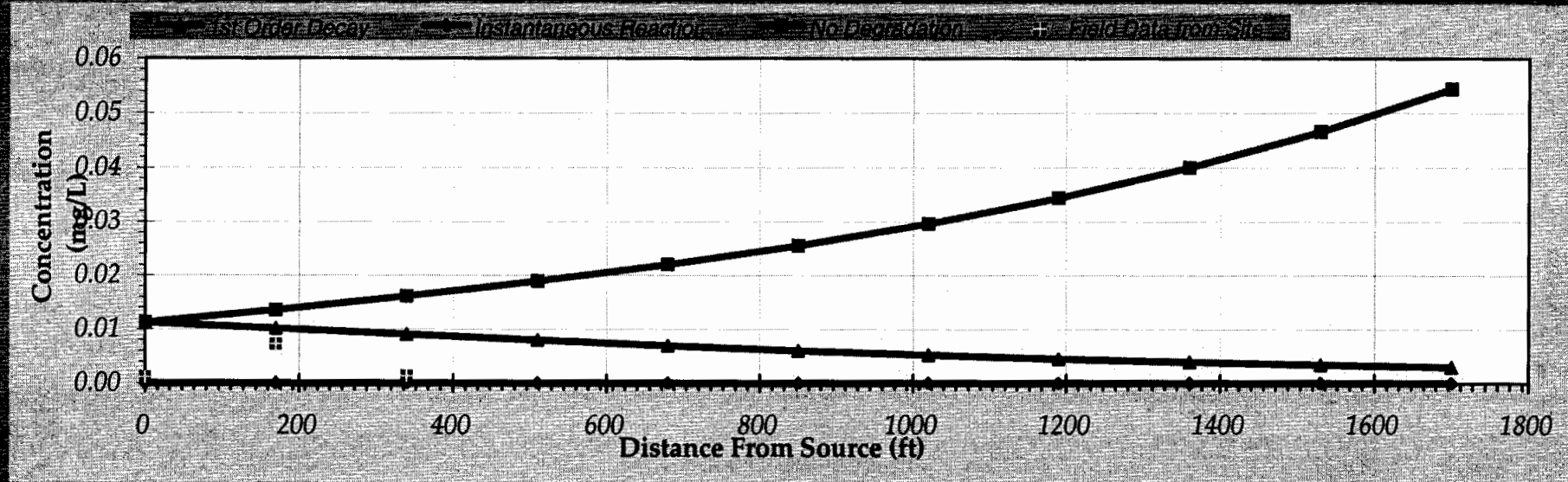
Restore Formulas for Vs, Dispersivities, R, lambda, other

Benzene Model Output (Area 134)  
Calibrated

DISSOLVED HYDROCARBON CONCENTRATION AT TIME  $t$  (mg/L) ( $t=0$ )

Distance from source (ft)

TYPE OF MODEL	0	170	340	510	680	850	1020	1190	1360	1530	1700
No Degradation	0.011	0.014	0.016	0.019	0.022	0.026	0.030	0.034	0.040	0.047	0.054
1st Order Decay	0.011	0.010	0.009	0.008	0.007	0.006	0.005	0.005	0.004	0.003	0.003
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	0.001	0.007	0.001								



Calculate Animation

Time: 12 Years

Return to Input

Recalculate This Sheet

Benzene Model Output (Area 134)  
Calibrated

# BIOSCREEN Natural Attenuation Decision Support System

Air Force Center for Environmental Excellence

Version 1.4

Adak SWMU 62, Area 134

Benzene final (87 yrs)

Data Input Instructions:

115

or

0.02

- Enter value directly... or
  - 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	292.8 (ft/yr)
or		↑ or
Hydraulic Conductivity	K	2.8E-02 (cm/sec)
Hydraulic Gradient	i	0.003 (ft/ft)
Porosity	n	0.3 (-)

## 2. DISPERSION

Longitudinal Dispersivity	alpha x	13.8 (ft)
Transverse Dispersivity*	alpha y	1.4 (ft)
Vertical Dispersivity*	alpha z	0.0 (ft)
or		↑ or
Estimated Plume Length	Lp	300 (ft)

## 3. ADSORPTION

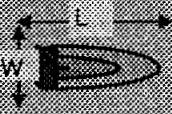
Retardation Factor*	R	1.2 (-)
or		↑ or
Soil Bulk Density	rho	1.8 (kg/l)
Partition Coefficient	Koc	58.9 (L/kg)
Fraction Organic Carbon	foc	7.0E-4 (-)

## 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)
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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*	1700 (ft)
Modeled Area Width*	750 (ft)
Simulation Time*	87 (yr)



## 6. SOURCE DATA

Source Thickness in Sat Zone\* 8 (ft)

Source Zones

Width* (ft)	Conc. (mg/L)*
156	0.25
0	0
0	0

Source Half-life (see Help):

< 3 (yr)

Inst. React. 1st Order

Soluble Mass 3.0 (Kg)

In Source NAPL, Soil

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## 8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE

RUN ARRAY

View Output

View Output

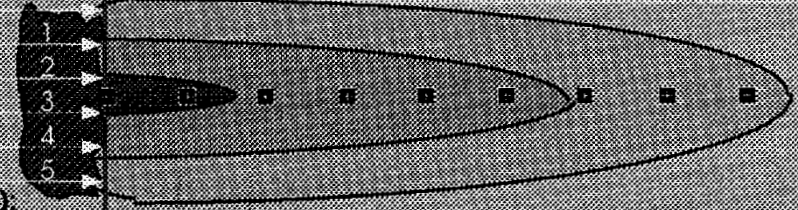
Help

Recalculate This Sheet

Paste Example Dataset

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

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



View of Plume Looking Down

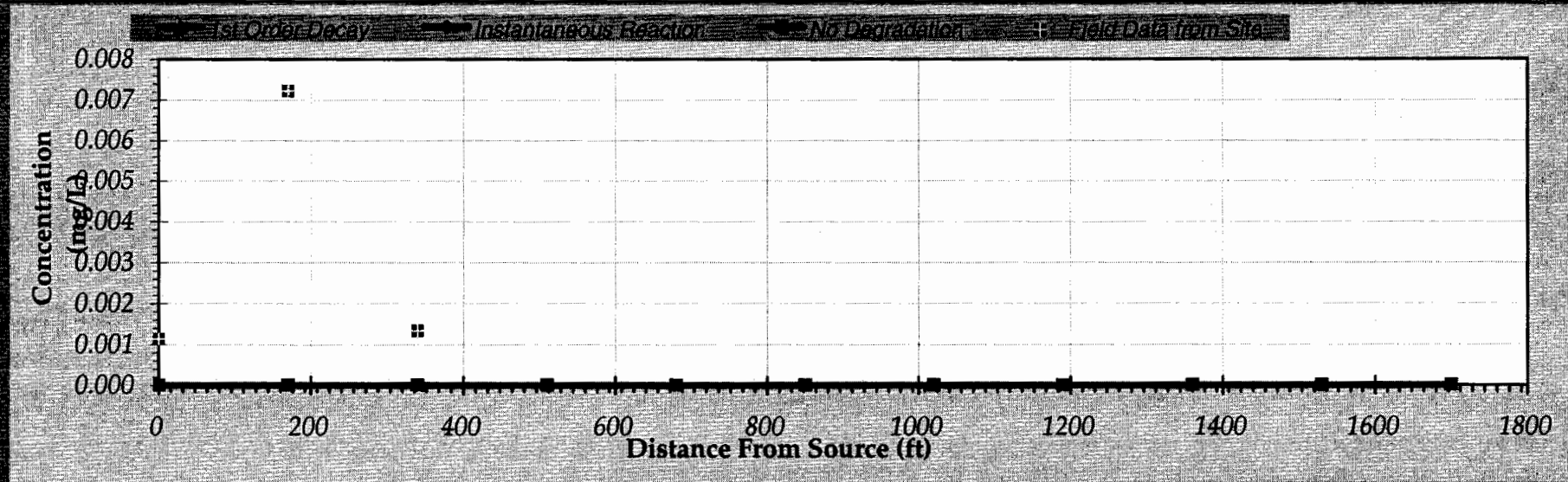
Observed Centerline Concentrations at Monitoring Wells If No Data Leave Blank or Enter "0"

Benzene Model Output (Area 134)  
Final

DISSOLVED HYDROCARBON CONCENTRATION AT ONE-DIMENSIONAL MODEL (174)

Distance From Source (ft)

DEGRADATION	0	170	340	510	680	850	1020	1190	1360	1530	1700
No Degradation	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1st Order Decay	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
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	0.001	0.007	0.001								



Calculate Animation

Time: 87 Years

Return to Input

Recalculate This Sheet

Benzene Model Output (Area 134)  
Final