# Everglades Phosphorus Gradient Model (EPGM)

## Excel version

## Operating Instructions DRAFT



Prepared for

South Florida Water Management District



Radiant Systems, Inc. 1500 W. Cypress Creek Road, Suite 415 Fort Lauderdale, FL 33309 Tel: (954) 938-2800 Fax: (954) 938 2004 www.radiants.com

## Table of Contents

Step 2: Using the Phosphorus Gradient	Model Worksheets
	3
Menu	
Parameters needed as input to run the model calculations:	4
Toolbar and button descriptions:	4
Using the EGPM model to add a new case	
Inputs Worksheet	6
Results worksheet	9
Graphs Profile worksheet	
Graphs_Correl worksheet	
Graphs Site worksheet	
Graphs_Any worksheet	
Slices worksheet	
Areas worksheet	
Distances worksheet	
TimeDist worksheet	

## Introduction

The purpose of this document is to illustrate the use of the Everglades Phosphorus Gradient Model (EPGM) developed by Mr. William W. Walker Jr.and Robert H. Kadlec in 1996. The original application was developed in Lotus 123 and converted into an Excel version in 2004.

### Step 1: Launching the EPGM Model

To start the EPGM model open the Excel file "EPGM\_09\_01\_2004\_comments.xls" located on \\halfs2\ka\_db\dcvp\devel\apps\epgm and click on the "Enable Macro" button. The file can be moved.

## Step 2: Using the Phosphorus Gradient Model Worksheets

The EPGM Excel model contains the following worksheets that are used to select a case, run the model and navigate between the worksheets.

#### Menu

From the menu different excel worksheets can be accessed that allows for input, output, and documentation about model contents. Below is the navigation through the top menu and their description:

- a. "Read Me First" button Activates "Notes" worksheet.
- b. "Documentation on EPGM web site" Opens a web browser with the documentation for EPGM model.
- c. "Select Case" list This list contains all input cases. There are 12 cases already defined in the model. The model provides the ability to add a new case.
- d. "Load Case" button Re-runs the model for the case selected in the "Select Case" list and makes the selected case current case.
- e. "Select Output Sheet" list This list contains all the worksheets in the workbook.
- f. "View Sheet" button Activates the worksheet selected in the "Select Output Sheet" list.
- g. "Run" button re-runs the model.

# Parameters needed as input to run the model calculations:

- 1. Distance Displayed Enter the distance in kilometers for which the output will display results.
- 2. Year displayed -Enter the number of years for which the output will display results.
- 3. Maximum Years Enter the maximum number of simulated years. It should be equal to or less than 200.
- 4. Maximum Distance Enter the maximum distance (in km) to be plotted. It should be equal to or less than 15 km.

#### Toolbar and button descriptions:

with 1.

"Update" button Re-runs the model;
 "Select variable" button - Shows a list with all variables.
 "Next case" button - Makes the next case current;
 "Previous case" button - Makes the previous case current.
 "Next Year" button - Moves the output time forward by 1 year.
 "Last Year" button - Moves the output time backward by 1 year.
 "Upstream" button- decreases the output distance by 0.1 km.
 "Downstream" button - Increases the output distance by 0.1 km.
 "Faster" button - Increases the "Time Increment" for animation with 1.
 "Slower" button decreases the "Time Increment" for animation

Figure 1.1 Illustrates cases associated to a particular STA and output criteria can be select from the initial screen:

Microsoft Excel - epgm_0	9_01_2004_comments
Eile Edit View Insert	Format Tools Data Window Help _ & X
🛛 🥳 Update 📑 Select Variable 📼	🕨 Next Case 🛭 💠 Previous Case 🐇 Downstream Faster Slower 🌺
DBBBBBB	
Arial MT - 12 -	₿௶≣≣፼,;ஃ;;◎☆- <u>A</u> - *
(in the the later in the later	🔁 😥 🔄 🐨 Redy was Stangestin End Review 🖕
A3 🕶 🎜	prepared for
A	
2 Everglade	s Phosphorus Gradient Model
3	prepared for
4	.S. Department of Interior
5 Read Me First	by Documentation at
6	W. Walker & R. Kadlec
7	October 1997
8 Excel	Version - September 1, 2004
9 10 Select Case:	Select Output Sheet:
12 2 - STA-34 _ NE 3A _ Z=10 CM	Notes - Read These Before Using Model
13 4 - STA-6_NW 3A_Z=10 CM	Water Col & Soil P vs. Distance at Specified Time Areas Exceeding WC & Soil P Criteria vs. Time
15 7- STA-34_ NE 3A_ Z=20 CM	Soil P vs. Time & Depth Interval at Specific Location
16 8 - STA-6_ NW 3A_ Z=20 CM	Selected Variable vs. Time & Distance Table - Output Summary for Specified Case & Time
17 10 - STA-2GDR_ NW 2A_ 2=10 CM	Table - Areas Exceeding WC & Soil P Criteria vs. Time Table - Distances Exceeding WC & Soil P Criteria vs. Time
18 11-S102_NE 2A_Z=10 CM	Table - Soil P vs. Time & Depth Interval Table - Selected Variable vs. Time & Distance
20	
22	Way Choot
25	
26 Run	Case: 11 S10s NE 2A Z=10 CM
28	
29 Marameters:	
31 Year Displayed 29	output displays results for this distance output displays results for this time (years)
32 Maximum Years 200	maximum number of years simulated <= 200 years
33 Maximum Distance 15	maximum distance plotted <= 15 km
Menu / Notes / In	puts / Results / Graphs Profile / Graphs Areas / CI
Draw - 🔓 AutoShapes - 🔪	
Ready	

## Using the EGPM model to add a new case

- 1. From the menu select "Input" worksheet;
- 2. Go to the first empty column to the right of the table. Fill out all the column cells with the information specified above.
- 3. Go to "Menu" worksheet;
- 4. Select the case in the "Select case" list;
- 5. Change the following parameters if desired:
  - a. Distance displayed;
  - b. Year displayed;
  - c. Maximum years;
  - d. Maximum distance.
- 6. Click on "Run" button.

#### Inputs Worksheet

The Inputs worksheet contains the input information for each case that is set up of the STA to obtain results for various studies.

Microsoft Excel - epgm_09_01_200	4_comments		eren der S	Contrast Calify	Qual to a set		
🗿 Eile Edit View Insert Format To	ols <u>D</u> ata <u>W</u> ini	dow <u>H</u> elp		1 2008) 1	- 2. 85° 57° 5	· · · · -	8 >
🖏 Update 🔠 Select Variable 🔶 Next Case	🖛 Previous Case	+ Next Year	Last Year	🕆 Upstream	Downstrea	am Faster Slo	wer 2
nallan an Att	തം ം		- 41 21	(n . 10	0% - 2		
			- 27 AT			•	
Arial + 10	• в / ц		B \$ %	• • • • • • • • • • • • • • • • • • •	1 <b>F</b> 1 <b>F</b>	_ • Ø • /	7 -
白皙白云飞白 可取命 >>	Prazis un Comp	$\lim_{n \to \infty} \left\  \frac{1}{n} \sum_{i=1}^{n} \frac{1}{n} \left[ \frac{1}{n} \sum_{i=1}^{n} \frac{1}{n} \left[ \frac{1}{n} \sum_{i=1}^{n} \frac{1}{n} \sum$	•				
D4 <del>▼</del> f≩ 1							
A	В	C	D	E	F	G	
1 EPGM Input Values Menu	Run		Append r	new cases to	o right edge	of table>	-
2			Click Ru	n' button afte	er modifying	input values	3
3 Fixed Inputs	Units	Current					
4 Case Number		11	1	2	3	4	
5_STA Name	-	S10s	STA-2	STA-34	STA-5	STA-6	Ś
6 Receiving Area	-	NE 2A	NW 2A	NE 3A	Rotenb.	NW 3A	A
7 Case Description	-	Z=10 CM	Z=10 CM	Z=10 CM	Z=10 CM	Z=10 CM	2=
8 Start of STA Discharge	-	1962	1999	2003	1999	1999	
9 STA Outflow Conc	ppb	122	50 0	50.0	100 0	50.0	
0 STA Outflow Volume	kac-ft/yr	281.2634999	205 8	422 0	60 0	64 4	ź
1 Width of Flow Path	km	10.5	12 1	14.2	3.0	60	
2 Average Hydroperiod	%	0.914	92.0%	88.0%	69.0%	61.0%	ç
3 Soil Depth	cm	10	10	10	10	1Ŭ	
4 Initial Soil Bulk Density	g/cm3	0.102	0 080	0.179	0.197	0.222	(
5 Initial Soil P Content	mg/kg	198	500	463	508	467	
6 Initial Vertical Soil P Gradient	mg/cm3/cm	0	-0.0018	-0 0039	-0.0052	-0.0054	-0
7 Final Soil Bulk Density	g/cm3	0.08	0 080	0.080	0.080	0 080	C
8 P Settling Rate	m/yr	10.2	10.2	10.2	10 2	10.2	
9 Atmos P Depos	mg/m2-yr	42.9	45.6	45 6	45.6	45.6	
0 Rainfall	m/yr	1.16	1.23	1.23	1 23	1 23	
ET	m/yr	1.38	1.38	1.36	1 38	1.39	
2 Soil P vs. Accretion - Slope		1.467	1.467	1 467	1 467	1 467	
3 Soil P vs. Accretion - Intercept	mg/kg	462.9	462.9	462 9	462 9	462.9	2
4 Low WC Threshold	ppb	10	10	10	10	10	
5 Medium WC Threshold	ppb	15	15	15	15	15	
6 High WC Threshold	ppb	20	20	20	20	20	
Z Low Soil P Threshold ↓ ▶ ► \ Menu / Notes \ Inputs / Res	mn/kn ults / Graphs_P	610 Profile 🖌 Graphs	610 _Areas 🖌 G	610 raphs_Correl	610 Coraphs_s	610 Site / Graph	is
Draw - 🔓 AutoShapes - 🔪		4 3 2 2	1 3 . 1	• A • =		<u>í</u>	
		•••••••••••••••••••••••••••••••••••••					

Figure 1.2 EPGM Input Values

- 1. The "Menu" button activates "Menu" worksheet that displays all values needed for input.
- 2. "Run" button Re-runs the model.
- 3. "Case Number" contains the number of the case. The "EPGM" already has 12 pre-defined cases.
- 4. "STA Name" contains the name of the STA (or basin) for which is the case.
- 5. "Receiving Area"- contains the name of the receiving area.
- 6. "Case Description".
- 7. "Start of STA Discharge"- contains the start year of STA discharge.
- 8. "STA Outflow Conc"- annual flow weighted mean total phosphorus concentration in ppb.
- 9. "Width of Flow Path" contains the width of flow path in km.
- 10. "Average Hydroperiod" contains the fraction of time the system is wet in percent. This coefficient accounts for drought conditions when no net phosphorus accretion is suppose to occur.
- 11. "Soil Depth" contains the soil column depth in cm.
- 12. "Initial Soil Bulk Density" contains the initial soil bulk density in g/cm<sup>3</sup>. This is derived from soil measurements in relevant portions of WCA 2A, WCA 3A and Rotenberger. Properties are estimated for 0-10 and 0-20 depth intervals.
- 13. "Initial Soil P Content" contains the initial soil phosphorus content in mg/kg. This is derived from soil measurements in relevant portions of WCA 2A, WCA 3A and Rotenberger. Properties are estimated for 0-10 and 0-20 depth intervals.
- 14. "Initial Vertical Soil P Gradient" contains the vertical P gradient in initial soil in mg/cm<sup>3</sup>/cm. This is derived from soil measurements in relevant portions of WCA 2A, WCA 3A and Rotenberger. Properties are estimated for 0-10 and 0-20 depth intervals.
- 15. "Final Soil Bulk Density" contains the bulk density of new soil in g/cm<sup>3</sup>. It is set to 0.08 g/cm<sup>3</sup>, based upon measured densities in the NW region of WCA 2A (discharge zone of STA 2) It is assumed that this reflects typical marsh soils generated under hydrologic conditions similar to those expected in the ST A discharge zones. Soils at other STA discharge sites (northern WCA 3A and Rotenberger) have higher initial bulk densities (0.18 to .22 g/cm<sup>3</sup>). Higher densities probably reflect frequent dryout and mineralization at these locations under historical conditions. It is assumed that new soils formed in these areas under future conditions (-continuously wet) will have bulk densities similar to those currently found in WCA-2A. If new soils formed in these areas actually have higher bulk densities, soil response times would be longer than those predicted.
- 16. "P Settling Rate" contains long-term-average setting rate in m/yr. It is set to 10.2 m/yr.
- 17. "Atmos P Depos." contains the atmospheric phosphorus deposition in  $mg/m^2-yr$  .
- 18. "Rainfall" contains the annual rainfall (m/yr).
- 19. "ET" contains the annual evapotranspiration (m/yr).

- 20. "Soil P vs. Accretion Slope" Contains Soil phosphorus vs accretion - slope. It is set to 1.467.
- 21. "Soil P vs. Accretion Intercept" Contains Soil phosphorus vs. accretion - slope. It is set to 462.9 mg/kg.
- 22. "Low WC Threshold" Contains the low water column threshold. It is set to 10 ppb.
- 23. "Medium WC Threshold" Contains the medium water column threshold. It is set to 15 ppb.
- 24. "High WC Threshold" Contains the high water column threshold. It is set to 20 ppb.
- 25. "Low Soil P Threshold" Contains the low soil phosphorus threshold. It is set to 610 mg/kg. Soil P thresholds for cattail expansion estimated from WCA-2A and WCA-1 data range from 610 to 990 mg/kg for a 10 cm soil depth and from 540 to 720 mg/kg for a 20 cm soil depth. Errors in predicting vegetation types based upon observed soil P levels range from 1 % to 19%. Site classification errors are higher when soil P criteria are expressed on a volumetric basis.
- 26. "Medium Soil P Threshold" Contains the medium soil phosphorus threshold. It is set to 870 mg/kg.
- 27. "High Soil P Threshold" Contains the high soil phosphorus threshold. It is set to 990 mg/kg.
- 28. "FDEP Soil P Threshold (Z = 10 cm)'' It is set to 500 mg/kg.
- 29. "Volumetric Soil P Threshold" It is set to 0.062 mg/cm<sup>3</sup>. Observed soil phosphorus and vegetation patterns in WCA-2A suggest a volumetric threshold criterion of -0.062 mg/cm<sup>3</sup> for a 10-cm soil depth and 0.053 mg/m<sup>3</sup> for a 20-cm depth. Because of high bulk densities (0.18 to 0.23 g/cm<sup>3</sup>), soils in the discharge zones of STA's- 34,5, & 6 have initial volumetric P concentrations (.08 - .10 mg/cm 3) that exceed both criteria. Simulations indicate that significant changes in volumetric P content in these areas are not expected to result from discharge of 50 ppb water.
- 30. "Logistic Spread Cattail vs. Soil P" For 10 cm soil depth it is set to 144.1 mg/kg.
- 31. "Logistic Midpoint Cattail vs. Soil P" For 10 cm soil depth it is set to 1034.4 mg/kg.
- 32. "Total Distance Modeled" Contains the total distance showed in the output. It is set to 15 km.

## Results worksheet

This worksheet contains the results from the model. The values that the user can modify in this worksheet are colored in red. Those values are:

a. Distance b. Year.

Figure 1.3 Results worksheet

Kicrosoft Excel - epgm_0	9_01_2004_	commen	ts.XLS		(Alexander)		n yasya	11111	
📓 Eile Edit View Insert	Format Tools	Data	<u>W</u> indow	Heip					in ten bester tit teb 🛛 🚽 🗗 🗙
Inputs 🖏 Update 📑 Selec	t Variable 🏓 Ne	xt Case	Previous (	Case 😳 Rest	art 🏓 Ne	xt Year 🔶 L	ast Year	Upstream	Downstream Faster Slower
nanoalan	ABC V D- 12	sn 🦯		- a 6	A ZI	(u'm	w _ [7]	i i	
	v ,5 49 0	••	N : 2 1.4	5 5 Z	Z+ A+	1 49 13	/* <b>*</b> (_;	•	
			A	rial	•	12 <b>- B</b>	1 U	日童 温 [	፼\$%,%;??;?;?;
LANG DRAN	©		585 J.C. W						
							10050.4		
U12 • 1×	=INDEX(Calcs	_Profile!S	AS10.5BC	5510.DS11/0	alcsisus	33+1.Calcs	(SUSD+1)		
A B		<b>P</b>	E (	SING NE 2A		Bar	i.		Lodify Dietances or Veare to List Output, as Desired
2 Summary of Results in Sn	ecified Year		Time = 29.	avrs Endio	Year = 1	990			racony ensembles of instance use exqueries existings
	comed rour		THIC LON						
4 Simulated Zone	kine	15		LI dronariad		82	0.164		
5 Distance	KITI KITI	10.6		Soil Dooth		70 CM	9175		
7 3(69	ha	15750		Ko Ko		m/ar	10.0		
	hm36r	347.2		STA Outflow (	2000	nnh	122.0		
9 STA Outflow	kac-ft/r	281.3		STA Outflow I	_oad	mtivr	42.4		
10									
11 Distance *	km	0.0	0.5	1.0	1.5	4.0	8.0	10.0	
12 Water Col P Conc	ppb	122	107	94	82	43	17	12	
13 Steady-State WC Conc	ppb	122	107	94	82	43	17	12	
14 Soil P	mg/kg	2131	1925	1744	1587	1053	604	462	
15 Steady-State Soil P	mg/kg	2131	1925	1744	1587	1053	694	620	
16 Time to Steady State	years	15.0	15.5	16.0	16.6	20.9	35.2	46.3	
17 Depth of New Soil	cm	10.0	10.0	10.0	10.0	10.0	8.2	6.3	
18 Bulk Density	g/cm3	0.080	0.080	0.080	0.080	0.080	0.084	0.088	
19 Volumetric Soli P	mg/cm3	0.1/1	0.104	0.140	0.127	0.084	0.051	0.041	
20 Sull Accretion Rate	kaim?r	0.57	0.50	0.03	0.00	0.48	0.20	0.22	
22 Sail P Accretion Rate	maim2-in	1137	0.02	873	766	402	158	107	
23 Cattail Density	c <sub>/a</sub>	100%	100%	99%	98%	53%	5%	2%	
24 Steady State Cattail Dens.	4	100%	100%	99%	98%	53%	9%	5%	
25									
26 Water-Column Threshold		Low	Medium	<u>High</u>					
27 Threshold Value	ppb	10	15	20					
28 Distance Exceeded	km	10.85	8.55	7.25					
29 Current Area Exceeded	ha	11393	8978	7613					
30 Pct of Total Area	c.6	72%	57%	48%					
31 Sail B Threehold		Law	Hadium	Llinh	EDED	Valumatria			
32 SUILP THIESHOLD	maika	<u>L0₩</u> ≳10	MEDIUM	HIQD	FUEP -	volumetric n.o.s.o	na/cm2		
34 Steady-State WC Conc	ngky	10.8	29.8	38.5	27	0.0021	ng/GIIS		
25 Dictança Evraedad	km	7 05	5.55	1.15	0.35				<b>.</b>
H I I Menu / Notes / I	nputs \ Result	s/ Grap	hs_Profile	Graphs_Ar	eas 🖌 Gr	aphs_Correl	/ Graphs_	Ste / Gra	phs_Any / Areas / Distances / TimeDist / Slices
Draw - 🔓 Autos	ihapes • 🔪 🔌		A .		ð - 1	- <u>A</u> -≡	≡ ≓ ∎	6.	
Ready									NUM

9

### Graphs Profile worksheet

This worksheet contains three graphics: Water Column & Soil Phosphorus vs. Distance at Specified Time. These graphs are the profile against which the model results are lined up. a. Water Column Phosphorus profile Low Threshold; iv. Steady state; i . Medium Threshold; ii. v. Time = N of years; ii. High Threshold; vi. Initial. b. Cattail Density; 1. Steady State 2. Time = N years 3. Initial c. Soil Phosphorus profile. Low Threshold; v. Steady state; i. ij. Medium Threshold; vi. Time = N of years; High Threshold ίi. vii. Initial. FDEP Criterion; iv. Figure 1.4 Graph Profile worksheet Kicrosoft Excel - epgm\_09\_01\_2004\_comments.XLS - 02 🗐 File Edit View Insert Format Tools Data Window Help - - - × 🗌 Inputs 🖏 Update 🖼 Select Variable 🔿 Next Case 🔶 Previous Case (③ Restart 🔸 Next Year 🛧 Last Year 🛧 Upstream 🐳 Downstream Faster Slower 🔒 □ 🖻 🖬 🚽 🗿 🗟 🆤 🐰 🖻 電・グ い・・・ 🍓 Σ・斜 斜 🛍 🥵 55% ・ ②。 •12 • B / U 新言書图 \$ % , 協恐 律律 \_ • 》 • A • Arial 记 🏭 🖄 🖂 🔁 🌆 🔄 🧏 😭 👘 🖓 👘 A1 \* f =Results!E1 A B O D E F G H I J K L H H O P Q A S Case: 31 S10s NE 2A Z=10 CM Time = 29.0 grs End of Year = 1990 Vater Col & Soil P vs. Distance at Specified Time 1 U 120% 140 Cattail Density Water Column Phosphorus Profile 120 100% 
 8
 9

 10
 11

 12
 13

 14
 15

 17
 14

 18
 15

 21
 22

 22
 23

 24
 25

 25
 24

 26
 27

 28
 27

 29
 30

 31
 32

 32
 33

 34
 35

 35
 34

 37
 34

 36
 37

 37
 34

 35
 34

 36
 37

 37
 34

 36
 37

 37
 34

 36
 37

 37
 34

 36
 37

 37
 34

 38
 35

 39
 34

 39
 34

 39
 35

 39
 36

 39
 <td 1-Column P (ppb) 09 00 Leu Thresheld Z 80% Plot Area ----- Medium Throrhold ------ High Throrhold - Steady State Catt ail Densit - Time = 29.0 yrs 60% .... Standy State Initial - Time - 29.0 yrs - Initial 40% -iater A 20% 20 0% 0 0.0 5.0 15.0 0.0 10.0 50 10.0 15.0 Distance (km) Distance (km) 2500 Soil Phosphorus Profile 2000 --- Lau Threshold Modium Throshold High Throshold FDEP Critorian Stoedy State (mg / kg) 1500 Soil P 1000 - Time - 29.0 yes - Initial \_\_\_\_\_ 500 0.0 5.0 10.0 15.0 Distance (km) A > N Menu / Notes / Inputs / Results ) Graphs\_Profile / Graphs\_Areas / Graphs\_Correl / Graphs\_Site / Graphs\_Any / Areas / Distar 14  $D_{Taw} \bullet [k] A \underline{u} to Shapes \bullet \setminus [\lambda] \to \Box \bigcirc [a] A \underline{l} \oplus [b] \square \square @ \bullet \bullet \underline{\mathscr{A}} \bullet \underline{\mathscr{A}} \bullet \Xi = \Xi \blacksquare [a] \_[a] .$ Ready NUM

#### Graphs Area worksheet

The graph areas worksheet contains four graphs. The graphs illustrate each Areas Exceeding Water Column & Soil Phosphorus Thresholds vs. Year Areas exceeding water column phosphorus thresholds. These graphs represent the results for the model.

1. Areas Exceeding Water Column thresholds:

- a. 10 ppb;
- b. 15 ppb;
- c. 20 ppb.

2. Areas exceeding soil phosphorus thresholds:

- a. 990 mg/kg;
- b. 870 mg/kg;
- c. 610 mg/kg;
- d. 500 mg/kg.
- 3. Total cattail areas
- 4. Areas exceeding various cattail densities.

Figure 1.5 Graph Results for Areas Exceeding Water Column & Soil P. Thresholds vs. Year.



#### Graphs Correl worksheet

This worksheet contains three graphs to display measurements for Cattail Density vs. Soil Phosphorus & Water Column Phosphorus. The measurements are proportioned as followed:

1. Cattail Density (%) vs. Water-Column phosphorus concentration (ppb).

- a. Steady state
- b. Current
- Soil Total Phosphorus (mg/kg) vs. Water-Column phosphorus concentration (ppb).
  - a. Steady state
  - b. Current
- 3. Cattail Density (%) vs. Soil phosphorus (mg/kg)
  - a. Steady state
  - b. Current

Figure 1.6 Graphs correl worksheet



#### Graphs Site worksheet

The Graph Site worksheet contains three graphs. The graphs are used to measure Soil phosphorus Levels vs. Time & Depth Interval at a Specified Location. The user has the option to change the location or the year using the toolbars.

The following are the conducted measurement results that are illustrated on the graphs:

"Next Year" button moves the output time forward by 1 year.
 "Last Year" button moves the output time backward by 1 year.
 "Upstream" button decreases the output distance by 0.1 km.
 "Downstream" button increases the output distance by 0.1 km.
 Soil phosphorus (mg/kg) by time (years) vs. Cattail Density (%).
 Soil phosphorus (mg/kg) vs. Time (years).

7. Depth (cm).





#### Graphs Any worksheet

The Graph Any worksheet contains two graphs that display the results for Profiles & Time Series for User-Selected Variable. The user can change the plotted variable by selected a different variable from the list. The user can also modify the distance and the years to be plotted. The graph results are displayed as followed:

1. Graph 1 = Variable vs. Time (years);

2. Graph 2 = Variable vs. Distance (km).

Figure 1.8. Graphs Any worksheet results



## Slices worksheet

The slices worksheet contains Vertical Slices - Soil Phosphorus vs. Time & Depth Interval at Fixed Location. The user can change the values in red:

Figure 1.9 Slice worksheet results with fields with allows updates in red

- 0 🛛 Microsoft Excel - epgm\_09\_01\_2004\_comments.XLS File Edit View Insert Format Tools Data Window Help × 🖏 Update 🔚 Select Variable 🏓 Next Case 🔶 Previous Case 🔶 Next Year 🗲 Last Year 👚 Upstream 🐇 Downstream Faster Slower >> •10 • B / U 声言言图 \$ %, ‰ ☆ 谭谭 \_ • ③ • ▲ • . Arial 🖆 🏥 🔄 🖻 🙆 🗍 🧐 😥 🔭 Karalah (Serger, Syrkawa, 🎍 fx =+Calcs\_Table!AE61 C D E F G **•** B B10 GHIJ L M N D Vertical Slices - Soil P vs. Time & Depth Interval at Fized Location Case: 11 S10s NE 2A Z=10 CM Run Distance Soil P Concentration in marka Soil Depth = 10 cm 12 km New Soil Set Lower Bound of Each Depth Interval, Click "Update": New Soil-----> Old Soil----> Whole Depth Zmax--> 10-15 15-20 Ava Bottom 0-2 cm 2.5 5-10 20-30 Ava Bottom Тор Тор Soil (cm) Time Yrs 153 #N/A #N/A #N/A 0.00 153 #N/A 156 #N/A 159 #N/A 162 #N/A 165 #N/A \* #N/A \* #N/A 0.17 #N/A #N/A 0.34 #N/A #N/A 0.51 # #N/A #NVA 0.68 168 #N/A #N/A #NI/A 0.85 171 #N/A , #N/A 1.02 #N/A 174 #N/A 178 #N/A \* #N/A #N/A 1.19 \* #N/A #N/A 1.36 178 #N/A 181 #N/A 184 #N/A #N/A #N/A 1.53 # #N/A 1.70 20 #N/A 184 #N/A 187 #N/A 190 #N/A 193 #N/A #N/A #N/A 1.88 \* #N/A #N/A 2.05 #N/A 23 #N/A 14.8 2.22 \* #N/A 196 #N/A 15 #N/A 2.39 199 #N/A 202 #N/A \* #NIA 25 #N/A 2.56 # #N/A 17 18 #N/A 2.73 202 #N/A 205 #N/A 208 #N/A #N/A 27 #NI/A 2.90 #N/A #N/A #N/A 3.07 211 #N/A 214 #N/A 217 #N/A #N/A 3.24 #N/A 21 22 23 24 25 26 #N/A 3.41 #N/A 31 #N/A 3.58 221" #N/A 224" #N/A 227" #N/A \* #N/A #N/A 3.75 # #NIA 33 34 35 #N/A 3.92 #N/A #N/A 4.09 227 #N/A #N/A 230 #N/A #N/A 233 #N/A #N/A 236 #N/A #N/A 239 #N/A #N/A #NVA 4 26 #N/A 4.43 37 #N/A 4.60 #N/A 4.77 242 #N/A \* #N/A #N/A 4 94 249 #N/A #N/A #N/A 5.11 Image: A start and a start Ready NUM

## Areas worksheet

This worksheet contains table with the Areas Exceedence of Water Column and Soil Phosphorus Criteria in tabular format.

	Nicros	soft Ex	kcel -	epgm_	09_0	1_200	04_co	mmer	ts.XL	S		9970	第六字			are tory	LOTE MARLY			
B)	File	<u>E</u> dit	⊻iew	Insert	Form	nat ]	ools	Data	Wind	ow H	elp					in State	n quadiópr	ion heb	• -	8×
÷3	Updati	e 📑	Select \	/ariable	Arr Ne:	xt Case	e 🔶 P	revious	Case	+ Nex	ct Year	🗲 Las	t Year	🕆 Up	stream	Do	ownstream	Faster	Slower	» •
D	B I		1 <b>B</b>	<b>s</b> D	HBC-	¥ 🛛	a ria	• 🕈	s.)	e Caro		Σ •			<b>A</b> 6	5%	• 2).			
			<b>k</b>	Arial			<b>-</b> 10	- 1	3 I	Ū			9	%	<b>,</b>	00. 0 0.+ 0	ŧ₽ ŧ₽	<u>140</u> •	ð - A	<u> </u>
a	83 1	3	G	5a - 5	B (	2	ŵ Earge	- im a	j~arspe	s., <u>E.</u>	i Re He	Rea 🗸								
	E11		•	fx	=Cal	cs_Ta	ble!N6	13												
1	A	B dence	C of Vate	D er Colun	E in and \$	F Soil P (	G Criteria	H	<b>.</b>	J	K Case:	L 11 S10s	M	N A Z=1	0 0 CM	P	Q F	3   S	T	
2	Areas	in Hec	tares		Total Ar	ea =	157.5													
4 5 6	Time	Endo	WC F	P Criteria Med	(ppb) Hiah	Soil P (	Criteria   Mod	mg/kg) Hiab	ENER	Soil P	Total Cattail	Å	with Cat	tail Dep	ritu Evca	edina				
7	Years	Year 1961	10	15	20	<u>610</u>	870	990	500	0.062	Area 47	5%	10%	20%	<u>50%</u>	90%				
9	1	1962	11393	8978	7613	Ő	Ő	Ő	Ő	Ő	58	Ö	Ö	Ő	Ő	Ő				
11	3	1964	11393	8978	7613	0	Ő	Ő	368	Ő	102	Ő	Ő	0	0	0				
12 13	4 5	1965	11393	8978	7613	1208	0	0	2363	788	227	1208	368	0	0	0				
14 15	6 7	1967 1968	11393 11393	8978 8978	7613 7613	1943 2468	53 683	0 53	3098 3623	1523 2048	362 577	1943 2468	998 1628	263 893	0	0				
16 17	8	1969 1970	11393 11393	8978 8978	7613	2993 3518	1208	578 1103	4253 4673	2468	876 1232	2993 3518	2153 2678	1418 1943	473 893	0				
18	10	1971	11393	8978	7613	3938	2153	1523	5093	3308	1605	3938	3098	2363	1313	158				
19 20	12	1972	11393	8978	7613	4253 4673	2888	2258	5828	3623	2311	4253	3413	2993	2048	893				
21 22	13 14	1974 1975	11393 11393	8978 8978	7613 7613	4988 5303	3203 3413	2573 2888	6143 6458	4253 4463	2629 2926	4988 5303	4043 4358	3308 3623	2363 2678	1208 1523				
23	15	1976	11393	8978	7613	5513	3728	3098	6773	4673	3202	5513	4673	3938	2993	1838				
24	17	1978	11393	8978	7613	6038	4253	3623	7298	5093	3699	6038	5198	4463	3413	2363				
26	18 19	1979 1980	11393 11393	8978 8978	7613 7613	6248 6458	4463 4673	3833 4043	7508 7823	5303 5513	3912 4092	6248 6458	5408 5618	4673 4883	3623 3938	2573 2573				
28	20	1981	11393	8978	7613	6668	4883	4253	8033	5723	4239	6668	5828	5093 5202	4043	2573				
30	22	1983	11393	8978	7613	7088	5303	4673	8453	6038	4443	7088	6248	5408	4358	2573				
31	23 24	1984 1985	11393 11393	8978 8978	7613 7613	7298 7508	5408 5618	4673 4673	8663 8873	6143 6353	4514 4569	7298 7508	6353 6563	5618 5828	4358 4358	2573 2573				
33	25	1986	11393	8978	7613	7718	5723	4673	9083	6458	4615	7718	6773	5933	4358	2573				
35	27	1988	11393	8978	7613	8033	5828	4673	9398	6668	4684	8033	7088	6143	4358	2573				
36	28 29	1989 1990	11393 11393	8978 8978	7613 7613	8138 8348	5828 5828	4673 4673	9608 9818	6878 6983	4711 4734	8138 8348	7193 7403	6143 6143	4358 4358	2573 2573				
38	30	1991	11393	8978	7613	8453	5828	4673	9923	6983	4755	8453	7508	6143	4358	2573				
40	32	1993	11393	8978	7613	8768	5828	4673	10343	6983	4789	8768	7823	6143	4358	2573				
41 42	33 34	1994 1995	11393 11393	8978 8978	7613 7613	8978 9083	5828 5828	4673 4673	10448 10658	6983 6983	4804 4817	8978 9083	7928 7928	6143 6143	4358 4358	2573 2573				
43	35	1996	11393	8978	7613	9188	5828	4673	10763	6983	4830	9188	7928	6143	4358	2573				
45	37	1998	11393	8978	7613	9503	5828	4673	11183	6983	4852	9503	7928	6143	4358	2573				
45	38	1999	11393	89/8	7613	9608	5828 F020	46/3	11288	6983	4861	9608	7928	6143	4358	2573	make Cr	1.		
	P PI	V Mel	N X Un	oces (	Inputs	К Ке	suits ,		ins_Pr \ 조리		Grapt	15_Area	<u>15 / (</u>	srapns V _ A	_corre	i <u>(</u> Gi	raphs_Site ≓ m ∠	Gra	ipns_An	)]]]
Darc	v	<u>ي</u> من الم	37V • L	√ AŪD	uanape	5.	•			ત્યા 🤃		aal 0		• •		• ****				
reau	7																1.4			

## Distances worksheet

This worksheet contains the table with Distances Exceedence of Water Column & Soil Phosphorus Criteria in tabular format.

	Micros	soft Ex	ccel -	epgm_	09_0	1_20	04_c	ommer	nts.XL	S			N						- 0 ×
B)	Eile	<u>E</u> dit	View	<u>I</u> nsert	Form	nat 🗍	Tools	Data	<u>W</u> indo	ow <u>H</u> e	elp					7,28	4-01-46%	on žannes	• _ & ×
-	Updat	e 🗐	Select \	/ariable	→ Ne	xt Case	e 🔶 I	Previous	Case	→ Nex	t Year	🕂 Las	t Year	🕆 Up	stream	🔶 D	ownstre	am Faster	Slower *
	B I	8	<b>B</b>	<b>s</b> D.	ABC.	XI	d Ca	• 🛷	- CA	. (`¥ +		Σ - 3			<b>B</b> 6	5%	• 2	•	
			4	Arial			<del>•</del> 10	- 1	8 <i>I</i>	U	E		9 9	%	• •	00.00	€≣£		ð • A • _
	Por 1	ta Ua	G.	6 J	10.	2	10,25	s . Med	**.anvaa		i Astek	in the second							
	B8	aadaa maanaa	•	f <sub>x</sub>	=Are	as!B8						•							
	A	в	С	D	E.	F	G	H	· 1	J	κ	L	м	N	0	Ρ	Q	RS	T 🔺
1	Excee	dence a	of Vate	er Colum	n & So	il P Cr	iteria				Case: 1	1 S10s	NE 2	A Z=1	0 CM				
3	Distar	ce fror	n Inflo	w in Kilo	meters														
5			yci	P Criteria (	ppb)	Soil P	Criteria	(mg/kg)		Soil P					r				
6 7	<u>Years</u>	End of Year	Low 10	Med 15	High 20	610	Mec 870	High 990	FUEP 500	ng/cm3 0.062	Areas 5%	with Cat 10%	taii Den: 20%	sity Exce	eaing <u>90%</u>				
8	0	1961	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0'n	÷	
10	2	1963	10.85	8.55	7.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
11 12	3	1964 1965	10.85 10.85	8.55 8.55	7.25 7.25	0.00 0.35	0.00 0.00	0.00 0.00	0.35 1.45	0.00 0.05	0.00 0.25	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00				
13	5	1966	10.85	8.55	7.25	1.15	0.00	0.00	2.25	0.75	1.15	0.35	0.00	0.00	0.00				
15	7	1968	10.85	8.55	7.25	2.35	0.65	0.00	3.45	1.95	2.35	1.55	0.85	0.00	0.00				
16 17	8	1969 1970	10.85 10.85	8.55 8.55	7.25 7.25	2.85 3.35	1.15 1.65	0.55 1.05	4.05 4.45	2.35 2.75	2.85 3.35	2.05 2.55	1.35 1.85	0.45 0.85	0.00 0.00				
18	10	1971	10.85	8.55	7.25	3.75	2.05	1.45	4.85	3.15	3.75	2.95	2.25	1.25	0.15				
20	12	1973	10.85	8.55	7.25	4.45	2.35	2.15	5.55	3.75	4.45	3.55	2.85	1.95	0.85				
21 22	13	1974 1975	10.85 10.85	8.55 8.55	7.25 7.25	4.75 5.05	3.05 3.25	2.45 2.75	5.85 6.15	4.05 4.25	4.75 5.05	3.85 4.15	3.15 3.45	2.25	1.15 1.45				
23	15	1976	10.85 10.85	8.55	7.25	5.25	3.55	2.95	6.45 6.75	4.45	5.25 5.55	4.45	3.75	2.85	1.75				
25	17	1978	10.85	8.55	7.25	5.75	4.05	3.45	6.95	4.85	5.75	4.95	4.25	3.25	2.25				
26 27	18 19	1979 1980	10.85 10.85	8.55 8.55	7.25 7.25	5.95 6.15	4.25 4.45	3.65 3.85	7.15 7.45	5.05 5.25	5.95 6.15	5.15 5.35	4.45 4.65	3.45 3.75	2.45 2.45				
28	20	1981	10.85	8.55	7.25	6.35	4.65	4.05	7.65	5.45	6.35	5.55 5.75	4.85	3.85	2.45				
30	22	1983	10.85	8.55	7.25	6.75	5.05	4.45	8.05	5.75	6.75	5.95	5.15	4.05	2.45				
31	23 24	1984 1985	10.85 10.85	8.55 8.55	7.25 7.25	6.95 7.15	5.15 5.35	4.45 4.45	8.25 8.45	5.85 6.05	6.95 7.15	6.05 6.25	5.35 5.55	4.15 4.15	2.45 2.45				
33	25	1986	10.85	8.55 9.55	7.25	7.35	5.45	4.45	8.65	6.15	7.35	6.45 6.55	5.65	4.15	2.45				
34	27	1988	10.85	8.55	7.25	7.65	5.55	4.45	8.95	6.35	7.65	6.75	5.85	4.15	2.45				
36	28 29	1989 1990	10.85 10.85	8.55 8.55	7.25	7.75	5.55 5.55	4.45 4.45	9.15 9.35	6.55 6.65	7.75 7.95	6.85 7.05	5.85 5.85	4.15 4.15	2.45 2.45				
38	30	1991	10.85	8.55 8.55	7.25	8.05	5.55	4.45	9.45	6.65 6.65	8.05	7.15	5.85 5.85	4.15	2.45				
40	32	1993	10.85	8.55	7.25	8.35	5.55	4.45	9.85	6.65	8.35	7.45	5.85	4.15	2.45				
41 42	33 34	1994	10.85 10.85	8.55 8.55	7.25 7.25	8.55 8.65	5.55 5.55	4.45 4.45	9.95 10.15	6.65 6.65	8.55 8.65	7.55	5.85 5.85	4.15 4.15	2.45 2.45				
43	35 36	1996 1997	10.85	8.55 8.55	7.25	8.75 8.85	5.55 5.55	4.45	10.25	6.65 6.65	8.75 8.85	7.55 7.55	5.85 5.85	4.15	2.45				
45	37	1998	10.85	8.55	7.25	9.05	5.55	4.45	10.65	6.65	9.05	7.55	5.85	4.15	2.45				
40	38	/ Gra		a.55	ranhs	Anv	/ Ara	*.+0 as \ Di	stance	0.00	neDict	/ Sline	0.80	9.10 alcs /	Calce	Profile	101	rs Table	7
	- F F	Dra	- <u></u>	Auto	Shape	s • ∖						<u>र</u> अत्य	) + <u>-</u> 4	<u>z - A</u>					(ii, v
Read	ly								••••••		1947-194 S							NUM	

## **TimeDist worksheet**

This worksheet contains data which Set Distances Displayed on 'Graphs\_Any' Sheet in tabular format. The user can change the variable by choosing it from the list.

Microsoft Excel - epgm_09_01_2004_comments.XLS       Image: Comments.XLS       Image: Comments.XLS         Image: Comments.XLS       Image: Comments.XLS       Image: Comments.XLS       Image: Comments.XLS       Image: Comments.XLS         Image: Comments.XLS       Image: Comments.XLS       Image: Comments.XLS       Image: Comments.XLS       Image: Comments.XLS       Image: Comments.XLS         Image: Comments.XLS       Image: Comments.XLS       Image: Comments.XLS       Image: Comments.XLS       Image: Comments.XLS		With the		2000000			Caller of Date	101120-24		suger dentitier r				
	Micro	soft Exc	el - el	pgm_	09_0	1_200	)4_col	mment	ts.XLS					
Sig Update IIII Select Variable → Next Case ← Previous Case → Next Year ← Last Year ← Upstream ↓ Downstream Faster Slower       ?         I IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	🗳 🗄 Ele	Edit	liew	Insert	Form	nat <u>T</u>	ools	<u>D</u> ata	Window	w <u>H</u> eip	Tipe sinceston finnispi 👻 🗕 🗗 🗙			
Arial       -12 - B Z U E E E E E C H I J J K L M N O P Q         Arial       - 6 = + TITLE         A B C D E E E G H I J J K L M N O P Q         Casel II S10s NE2A Z-10 CM         Variable:       1 Water Col P Conc (ppb)         State II S10s NE2A Z-10 CM         Variable:       1 Water Col P Conc (ppb)         State II S10s NE2A Z-10 CM         Variable:       1 Water Col P Conc (ppb)         State II S10s NE2A Z-10 CM         Variable:       1 Water Col P Conc (ppb)         State II S10 NE3A Z-10 CM         Variable:       1 Water Col P Conc (ppb)         State II S10 NE3A Z-10 CM         State II S10 NE3 NE3A Z-10 M 3442 U108 S228955         State II S10 NE3 S354 72.04 33442 U108 S228955         State II S10 NE3 S354 72.04 33442 U108 S228955         State II S10 NE3 S354 72.04 33442 U108 S228955         State II S10 NE3 S354 72.04 33442 U108 S228955         State II S10 NE3 S354 72.04 33442 U108 S228955         State II S10 NE3 S354 72.04 33442 U108 S228955         State II S10 NE3 S354 72.04 33442 U108 S228955         State II S10 NE3 S354 72.04 33442 U108 S228955         State II S10 NE3 S354 72.04 33442 U108 S228955         State II S10 NE3 S354 72.04 33442 U108 S228955         State II S10 NE3 S354 72.04 33442 U108 S228955         State II S10 NE3	Jupdat	te 📑 Se	elect Var	riable	+ Nex	ct Case	🖛 Pr	evious (	Case =	Next Yea	+ Last Year 🗇 Upstream 🕹 Downstream Faster Slower			
Arial       +12 + B       I <t< td=""><td>n a</td><td></td><td>nes 4</td><td>5 DA</td><td>ABÇ-</td><td>Y B</td><td></td><td>- 19</td><td></td><td></td><td>5 - A 2 40 a 3 75% - 12</td></t<>	n a		nes 4	5 DA	ABÇ-	Y B		- 19			5 - A 2 40 a 3 75% - 12			
Arial       - 12       B       I			- <u>u</u> =		Y	ф щ		• 🗸	1997 B. 19					
A $\mathcal{K}$			Aria	al			• 12	• <b>B</b>	I	Ū ≣ ∃	『葦圉\$%,‰☆谭谭⊇・◇・▲・、			
A1	ंब 🖏	д 懿 🖄 🔀 🖬 🗿 📲 😥 Yel Rach vills Granges Epó Rimies 🖕												
A       B       C       D       E       F       G       H       I       J       K       L       M       N       D       P       Q         3       Variable:       1       Water Col P Conc (ppb)       Select Variable:	A1	A1 ▼ f≈ =+TITLE												
1       Case 11       Stos NE 2A       Z=10 CM         3       Variable:       1       Water Col P Conc (ppb)       Select Variable:         5       TIME       Endor Distance (tm)>       Select Variable:       Select Variable:         6       0       1951       4.75       4.75       4.75       4.75       4.76         8       1       1952       122       15.7       106.89       33.64       1208       6.22855       These Stack plant       Select Variable:         0       1951       4.75       4.75       4.75       4.75       4.755	A	A B C D E F G H I J K L M N O P Q												
Select Variable:       1 Water Col P Conc (ppb)       Select Variable:         TMME       End of       Distance (km)>       ***         *       Year 0.0       0.2       0.5       1.0       2.0       5.0       10.0       15.0         *       1       1952       122       115.7       106.89       33.64       72.04       33.64       1506       62.29555       Bit App - App	1 Case 11 S10s NE 2A Z=10 CM													
Image       End of       Distance (km)>         Year       0.0       0.2       0.5       10       20       5.0       10.0       15.0         I       1956       12       15.7       10.68       35.84       7.204       33.642       11.50       2.25       15.7       10.68       35.84       7.204       33.642       11.50       6.228555       Time to	3 Varia	ble:		1 \	Nater	Col P	Conc (	(dqq			Select Variable:			
5       TME       End of       Distance (km) → → →       Vert Col P Conc         7       0       1561       4.715	4													
0       1981       4.715       4.716       4.	5 TIME	End of D	)istance ( 0.0	(km) 0 2	° 05	10'	20	50	10.0	15.0	View Call Course			
8       1       1962       122       105.71       106.88       93.684       72.094       33.642       11508       62.28555         0       3       1964       122       115.71       106.88       93.684       72.094       33.642       11508       62.28555         11       4       1965       122       115.71       106.88       93.684       72.094       33.642       11508       62.28555         13       6       1967       122       115.71       106.88       93.684       72.094       33.642       11508       62.28555         15       8       1966       122       115.71       106.88       93.684       72.094       33.642       11508       62.28555         16       9       1970       122       115.71       106.88       93.684       72.094       33.642       11508       62.28555         17       10       1971       122       15.71       106.88       93.684       72.094       33.642       11508       62.28555         20       13       137.4       122       15.71       106.88       93.684       72.094       33.642       1508       62.28555         21       14	7 (	0 1961	4.715	4.715	4.715	4.715	4.715	4.715	4.715	4.715033	Steady-State WC Conc			
9       2       963       122       115,71       106.89       93.844       11508       6.228555       Time to Steady State       Dept of New Soil         11       4       1965       122       115,71       106.83       93.844       11508       6.228555       Build Deskity         12       5       1966       122       115,71       106.83       93.844       7.094       33.442       11508       6.228555       Build Deskity       Volumetric Soil P       Soil Mass Accretions Rate       Soil Rate       Soil Rate       Soil Rate <t< td=""><td>8</td><td>1 1962</td><td>122</td><td>115.71</td><td>106.89</td><td>93.694</td><td>72.094</td><td>33.642</td><td>11.508</td><td>6.228555</td><td>Soil P Steady-State Soil P</td></t<>	8	1 1962	122	115.71	106.89	93.694	72.094	33.642	11.508	6.228555	Soil P Steady-State Soil P			
0       3       3964       122       16,17       10,639       33,642       110,08       5,228555       15,17       10,683       33,642       115,08       6,228555       15,17       10,683       33,642       115,08       6,228555       15,17       10,683       33,642       115,08       6,228555       15,17       10,683       33,642       115,08       6,228555       15,17       10,683       33,642       115,08       6,228555       15,17       10,683       33,642       115,08       6,228555       15,17       10,683       33,642       115,08       6,228555       15,17       10,683       33,647       12,044       33,642       115,08       6,228555       15,17       10,683       33,647       12,044       33,642       115,08       6,228555       15,17       10,683       33,647       12,044       33,642       115,08       6,228555       Set Distances Displayed on 'Graphs_Any' Sheet         11       1977       122       115,71       10,683       33,647       12,044       33,642       115,08       6,228555       Set Distances Displayed on 'Graphs_Any' Sheet         12       1977       122       115,71       10,683       33,647       12,044       33,642       115,08       6,228555       Se	9	2 1963	122	115.71	106.89	93.694	72.094	33.642	11.508	6.228555	Time to Steady State			
1       1       1000 122       1001 10000 3000 3000 12000 100000 100000 1000000	10	3 1964 1965	122	115.71	106.89	93.694	72.094	33.642	11.508	6.228555	Bulk Density			
a       b<       b       b<       b<       b< </td <td>12</td> <td>+ 1360 5 1966</td> <td>122</td> <td>115.71</td> <td>106.89</td> <td>93 694</td> <td>72 094</td> <td>33.642</td> <td>11508</td> <td>6 228555</td> <td>Volumetric Soil P</td>	12	+ 1360 5 1966	122	115.71	106.89	93 694	72 094	33.642	11508	6 228555	Volumetric Soil P			
H       7       1988       122       115.71       106.89       93.634       72.094       33.642       115.08       6.228555         15       9       1970       122       115.71       106.89       93.684       72.094       33.642       115.08       6.228555         17       10       1971       122       115.71       106.89       93.684       72.094       33.642       115.08       6.228555         18       11       1972       122       115.71       106.89       93.684       72.094       33.642       115.08       6.228555         20       13       1974       122       115.71       106.89       93.684       72.094       33.642       115.08       6.228555         21       15       106.89       93.684       72.094       33.642       115.08       6.228555       Set Distances Displayed on 'Graphs_Any' Sheet         22       15       1975       12       157.1       106.89       93.684       72.094       33.642       115.08       6.228555         23       16       1977       122       115.71       106.89       93.684       72.094       33.642       115.08       6.228555         24       1	13 1	6 1967	122	115.71	106.89	93.694	72.094	33.642	11.508	6.228555	Soil Mass Accretion			
15       8       1963       122       115,71       106,89       33,684       72,094       33,642       11508       6,228555       Steady Start Cuttail Date.       Image: Steady Start Cuttail Date.       Image: Steady Start Cuttail Date.         16       3       1970       122       115,71       106,89       33,684       72,094       33,642       11508       6,228555       Steady Start Cuttail Date.       Image: Steady Start Cuttail Steady Start Cuttail Date.       Image: Stea	14	7 1968	122	115.71	106.89	93.694	72.094	33.642	11.508	6.228555	Soil P Accretion Bate			
16       9       1970       122       115.71       106.89       33.684       72.094       33.642       11508       6.228655         17       10       1971       122       115.71       106.89       33.684       72.094       33.642       11508       6.228655         18       11       1972       122       115.71       106.89       33.684       72.094       33.642       11508       6.228655         20       13       1974       122       115.71       106.89       33.684       72.094       33.642       11508       6.228655         22       15       1976       122       115.71       106.89       33.684       72.094       33.642       11508       6.228655         23       16       1977       122       115.71       106.89       33.684       72.094       33.642       11508       6.228655         24       17       1978       122       115.71       106.89       33.684       72.094       33.642       11508       6.228655         26       19       1980       122       115.71       106.89       33.684       11508       6.228655         27       20       1981       122	15	8 1969	122	115.71	106.89	93.694	72.094	33.642	11.508	6.228555	Steady State Cattail Dens.			
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	16	9 1970	122	115.71	106.89	93.694	72.094	33.642	11.508	6.228555				
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	17 1	0 1971	122	115.71	106.89	93.694	72.094	33.642	11.508	6.228555	Con Distances Displayed on 'Graphy, Apu' Sheet			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	18	11 1972	122	115.71	106.89	93.694	72.094	33.642	11.508	6.228000	Set Distances Displayed on Graphs_hig oneet			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	19 1	2 1973	122	115.71	106.89	93 694	72.034	33.642	11.508	6.228555				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	21 1	4 1975	122	115.71	106.89	93.694	72.094	33.642	11.508	6.228555				
23       16       1977       122       115.71       106.89       93.694       72.094       33.642       115.08       6.228555         24       17       1978       122       115.71       106.89       93.694       72.094       33.642       115.08       6.228555         25       19       1980       122       115.71       106.89       93.694       72.094       33.642       115.08       6.228555         26       19       1980       122       115.71       106.89       93.694       72.094       33.642       115.08       6.228555         27       20       1981       122       115.71       106.89       93.694       72.094       33.642       115.08       6.228555         28       21       1982       122       115.71       106.89       93.694       72.094       33.642       115.08       6.228555         30       23       1984       122       115.71       106.89       93.694       72.094       33.642       115.08       6.228555         31       24       1985       122       115.71       106.89       93.694       72.094       33.642       11508       6.228555         32	22 1	15 1976	122	115.71	106.89	93.694	72.094	33.642	11.508	6.228555				
24       17       1978       122       115.71       106.89       93.694       72.094       33.642       11508       6.228555         25       19       1980       122       115.71       106.89       93.694       72.094       33.642       11508       6.228555         26       19       1980       122       115.71       106.89       93.694       72.094       33.642       11508       6.228555         28       21       1982       122       115.71       106.89       93.694       72.094       33.642       11508       6.228555         28       21       1982       122       115.71       106.89       93.694       72.094       33.642       11508       6.228555         30       23       1984       122       115.71       106.89       93.694       72.094       33.642       11508       6.228555         31       24       1985       122       115.71       106.89       93.694       72.094       33.642       11508       6.228555         32       26       1987       122       115.71       106.89       93.694       72.094       33.642       11508       6.228555         33       26 </td <td>23 1</td> <td>16 1977</td> <td>122</td> <td>115.71</td> <td>106.89</td> <td>93.694</td> <td>72.094</td> <td>33.642</td> <td>11.508</td> <td>6.228555</td> <td></td>	23 1	16 1977	122	115.71	106.89	93.694	72.094	33.642	11.508	6.228555				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	24	17 1978	122	115.71	106.89	93.694	72.094	33.642	11.508	6.228555				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	25	18 1979	122	115.71	106.89	93.694	72.094	33.642	11.508	6.228555 c 228555				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	26	19 1980	122	115.71	106.89	93.694	72.094	33.642	11.508	6.228555				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	27 2	20 1981	122	115.71	106.03	93 694	72.034	33.642	11.508	6.228555				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	28	21 1362	122	115.71	106.89	93.694	72.094	33.642	11.508	6.228555				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	30	23 1984	122	115.71	106.89	93.694	72.094	33.642	11.508	6.228555				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	31	24 1985	122	115.71	106.89	93.694	72.094	33.642	11.508	6.228555				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	32	25 1986	122	115.71	106.89	93.694	72.094	33.642	11.508	6.228555				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	33	26 1987	122	115.71	106.89	93.694	72.094	33.642	11508	6.228555				
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	34	27 1988	122	115.71	106.89	93 694	72.094	33.642	11.508	6.228555				
37       30       1991       122       115.71       106.89       93.694       72.094       33.642       11.508       6.228555         38       31       1992       122       115.71       106.89       93.694       72.094       33.642       11.508       6.228555         39       32       1993       122       115.71       106.89       93.694       72.094       33.642       11.508       6.228555         39       32       1993       122       115.71       106.89       93.694       72.094       33.642       11.508       6.228555         39       32       1993       122       115.71       106.89       93.694       72.094       33.642       11.508       6.228555         39       32       1993       122       115.71       106.89       93.694       72.094       33.642       11.508       6.228555         39       32       1993       122       115.71       106.89       Alreas       Distances       TimeDist / Slices / Calcs / Calcs / Calcs _ Table / II       II         0       Draw ~ b       AutoShapes ~ ```````````````````````````````````	35	28 1989	122	115.71	106.89	93.694	72.094	33.642	11.508	6.228555				
38       31       1992       122       115.71       106.89       93.694       72.094       33.642       11508       6.228555         39       32       1993       122       115.71       106.89       93.694       72.094       33.642       11.508       6.228555         14 <ul> <li> <li> <li></li></li></li></ul>	37	30 1991	122	115.71	106.89	93.694	72.094	33.642	11.508	6.228555				
39       32       1993       122       115.71       106.89       93.654       72.054       33.642       11.006       6.220000         IN	38	31 1992	122	115.71	106.89	93.694	72.094	33.642	11.508	6.228555				
$ A + A   (Graphs_Site (Graphs_Any (Areas (Distances (Mince Sec) Site (Condition (Mince Sec) Site (Mince Se$	39	32 1993	122	115.71	106.89	93.694	/ 12.094	33.642	icton/		Dist / Slices / Calcs / Calcs_Profile / Calcs_Table /			
	H 4 F	M / Gra	aphs_S	re (	Graph	s_Any	X Are							
Ready		Dr	aw • 🕻	AL AL	toShap	es 🕶	1 4		ン貿	ના રુટ હ				
	Ready										ITUIT			

## EPGM Website

