National Park Service

EXPERIENCE
YOUR
AMERICA

CAPITAL ASSET PLANS

Part 3: Earned Value Calculations and Variances

AGENDA—PART 3
The Capital Asset Plan and Business Case

- The Big Picture
- Definition & impetus
- Schedule
- Scoring
- How to write a good one
  - Types of input required
- ***Variances***
  - Consequences
  - ***Earned value and other calculations***
- ***Questions***

VARIANCES FROM THE PROJECT BASELINE

- Three possible levels used in calculations
  - Specific project milestones
  - Divided phases
  - Cookbook
- All methods require 4 values
  - OMB approved baseline budget [BAC]
  - Budgeted cost of work scheduled [BCWS]
  - Budgeted cost of work performed BCWP]
  - Actual cost of work performed [ACWP]

BEST: Develop the Project Budget and Schedule

Use Milestone Activities

Budget covers all phases, pre-design through construction

HINT:
Check Q-Track milestones so you only have to do this once

PROJECT DEVELOPMENT BUDGET

FY O3

Supp. Services 13K

Pre-design 48K

Activity	Completion Date	Cost	Cumulative Total
Scoping	1/30/2003	3,000	3,000
Proj. Agree	2/28/2003	2,000	5,000
Cap Asset P	3/15/2003	2,000	7,000
Alt Dev & VA	4/30/2003	33,000	40,000
Pref Alt Dev	6/15/2003	16,000	56,000
DAB	8/10/2003	3,000	59,000
Complete Concept Design	9/15/2003	2,000	61,000

FY O4

Supp. Services 7K

Design 90K

Activity	Completion Date	Cost	Cumulative Total
Complete PD on Concept	12/30/2003	25,000	86,000
25% CD dev	2/15/2004	18,000	104,000
50% CD dev	4/1/2004	13,000	117,000
75% CD dev	6/15/2004	15,000	132,000
100% CD dev	8/30/2004	26,000	158,000

Continue through the Construction phase, also

NOTE:
BAC includes construction contingency

HINT:
Does your BAC match the spending schedule on your CAP—They should match!

PROJECT DEVELOPMENT BUDGET

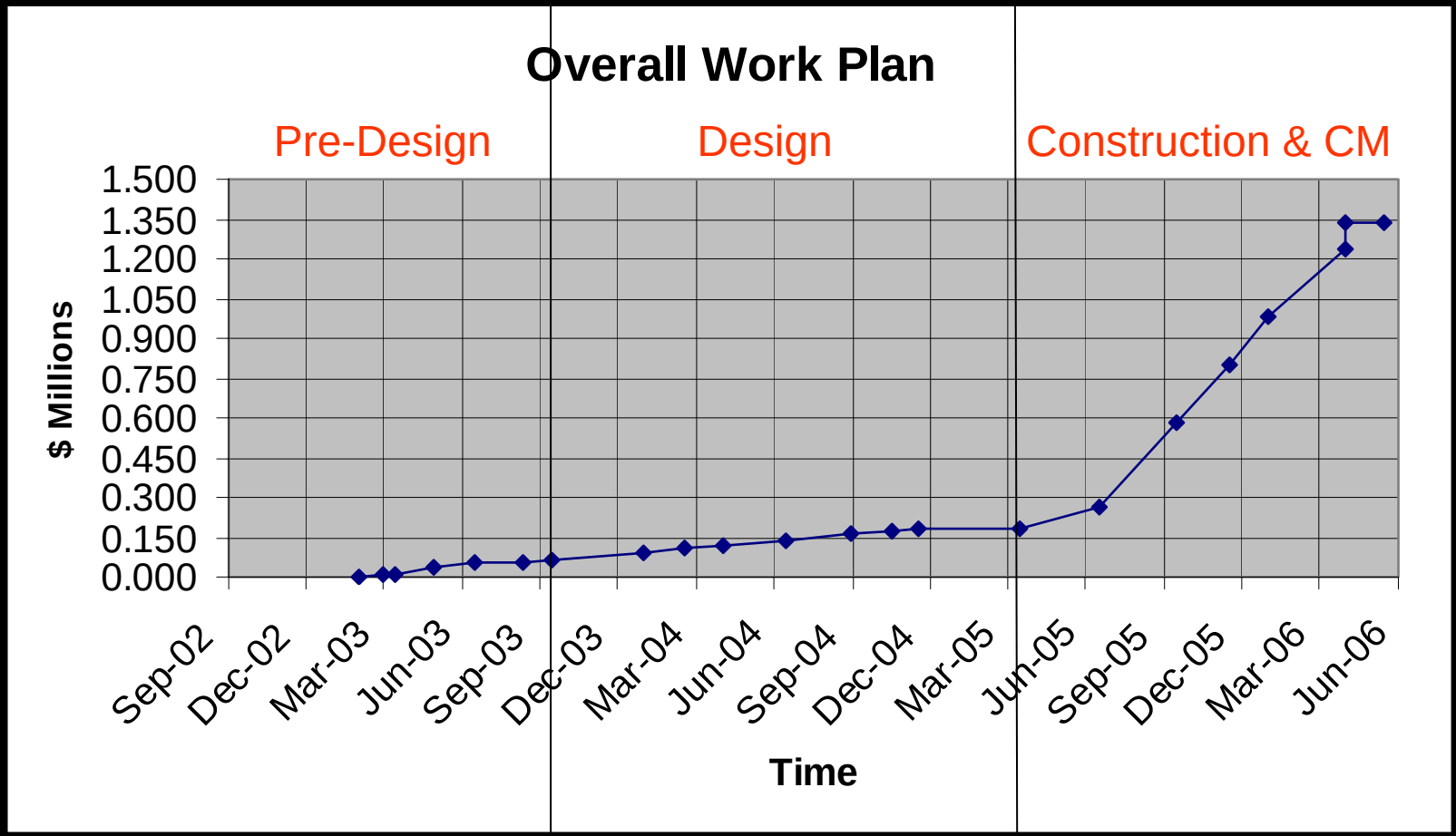
FY O5
Design $10K
CM $80k
Net. Cons't $1 Million
Contingency $90K

Activity	Completion Date	Design Cost	CM Cost	Construct Cost	Contingency Cost	Cumulative Total
Constructability Review	10/15/2004	7,000	0	0	0	165,000
Advertise Contr	11/15/2004	3,000	0	0	0	168,000
Award Contract	3/15/2005	0	0	0	0	168,000
Mobil & Demo	6/15/2005	0	15,000	70,000	0	253,000
Rough Carp, Elect & Mech	9/15/2005	0	10,000	275,000	30,000	568,000
Int Fin Rough	10/15/2005	0	15,000	150,000	10,000	743,000
Final Elect, Mech & Plumb	11/15/2005	0	10,000	150,000	25,000	928,000
Final Interior	1/1/2006	0	15,000	215,000	25,000	1,183,000
Ext Sitework & Cleanup	4/1/2006	0	5,000	90,000	0	1,278,000
Final Inspection	5/15/2006	0	5,000	0	0	1,283,000
Punchlist	8/15/2006	0	5,000	50,000	0	1,338,000
Budget at Completion	**BAC**					**1,338,000**

Project graph

NOTE: The project graph reflects the project development budget @ $1.338 million.

Each dot below corresponds to an activity milestone on the project development schedule.



Now develop:

- Cost and schedule variances,
- Cost and schedule performance indices,
- Estimate at Completion . . .for the **June 3, 2003**, quarterly update.
- Formulas at right

Are BAC and EAC different? Maybe.
BAC is the original budget and schedule, the Budget At Completion
From this point on, we develop the EAC, the Estimate at Completion

CAPITAL ASSET PLAN AND BUSINESS CASE Date: Sept 3, 2003 EXHIBIT 300

A Provide the following project summary information from your EVMS software: As of: JUNE 3, 2003

B Show the budgeted (planned) cost of work scheduled (BCWS): $_____

C Show budgeted (planned) cost of work performed (BCWP): $_____

D Show the actual cost of work performed (ACWP): $_____

	Value
OMB-approved baseline (BAC) =	
Budgeted (planned) cost of work scheduled (BCWS)=	
Budgeted (planned) cost of work performed (BCWP) =	
Actual cost of work performed (ACWP) =	
Cost Variance = (BCWP-ACWP) =	
Cost Variance % = (CV/BCWP) x 100% =	
Cost Performance Index (CPI) = (BCWP/ACWP) =	
Schedule Variance = (BCWP-BCWS) =	
Schedule Variance % = (SV/BCWS) x 100% =	
Schedule Performance Index (SPI) = (BCWP/BCWS) =	
First independent Estimate at Completion (EAC) = ACWPcum + (Performance Factor (PF) X (BAC minus BCWPcum)), where PF_1 = 1/CPI,	
Second independent Estimate at Completion, where PF_2 = 1/CPI*SPI	
Variance at Completion (VAC) = (BAC - EAC) for both EACs above =	
Variance at Completion % = (VAC/BAC) x 100% for both EACs above =	
Expected Cost to Complete (ETC) = EAC – ACWP =	
Expected Completion Date =	

Definitions for Earned Value Management System:

ACWP – Actual Cost for Work Performed – What you paid.
BAC – Budget At Completion – The baseline (planned) budget for the project.
BCWP – Budgeted Cost for Work Performed – The earned value.
BCWS – Budgeted Cost for Work Scheduled – The planned costs.
CPI – Cost Performance Index – The ratio of the budgeted to actual cost of work performed.
CV – Cost Variance – The difference between planned and actual cost of work performed.
EAC – Estimate At Completion – The latest estimated cost at completion.
ETC – Estimate to Completion – Funds needed to complete the project.
PF – Performance Factor – The cost to earn a dollar of value, or ACWP/BCWP, or 1/CPI.
SPI – Schedule Performance Index – The percent of the project that has been completed.
SV – Schedule Variance – The variance between the actual and planned schedules.
VAC – Variance at Completion – The variance between the baseline and actual budget at completion.65

Example Project: Learning to Write a CAP

How much was budgeted for the work scheduled?

(BCWS)

Take this from your milestone chart.

How much was budgeted for the work that was *performed*? (BCWP)

For Quarterly Report Due June 3, 2003

Budgeted Cost of Work Scheduled (BCWS)

Activity	*% scheduled*	*Budgeted Cost*	*Cum. Total*
Scoping	100	3,000	3,000
Proj Agreement	100	2,000	5,000
Cap Asset Plan	100	2,000	7,000
Alt. Devel. & VA	100	33,000	40,000
Pref. Alternative	63	10,080	50,080
		BCWS	$50,080

Budgeted Cost of Work Performed (BCWP)

Scoping	100	3,000	3,000
Proj Agreement	100	2,000	5,000
Cap Asset Plan	100	2,000	7,000
Alt. Devel. & VA	100	33,000	40,000
Pref. Alternative	0	0	0
		BCWP	$40,000

Schedule Variance = BCWP - BCWS = 40,000 - 50,080 = ($10,080)

% Sched Variance = SV/BCWS x 100% = -10,080/50,080 x 100% = (20%)

Can you figure % cost variance?

We just figured out the *budgeted* cost of the work performed.
Now, what is the *actual* cost of the work performed?

For Quarterly Report Due June 3, 2003

Cost Variance		% Scheduled	BCWP	ACWP
	Scoping	100	3,000	5,000
	Proj Agreement	100	2,000	3,000
	Cap Asset Plan	100	2,000	4,000
	Alt. Devel. & VA	100	33,000	30,000
	Pref. Alternative	63	0	0
	Total		40,000	42,000

Cost Variance = BCWP - ACWP = $40,000 - $42,000 = ($2,000)

% Cost Variance = CV/BCWP x 100% = - $2,000/ $40,000 = (5%)

What are EAC and CPI?

We need the Budget at Completion—the total cost of the project.

Is that what it will really cost at the end? What is the EAC—estimate at completion?

Use the CPI as a judge of how well you are following your plan.

For Quarterly Report Due June 3, 2003

BCWP is Budgeted Cost for Work Performed (What had you planned to pay for the work that was done so far?)

ACWP is the Actual Cost of Work Performed (What *did* you pay for work done?)

EAC is the Estimate at Completion (What do you estimate the final cost to be?)

BAC is the Budget at Completion (The baseline planned cost of the project)

CPI is the Cost Performance Index (Ration of Budgeted to Actual Cost of Work Performed)

Activity	*% Scheduled*	*BCWP*	*ACWP*
Scoping	100	3,000	5,000
Proj Agreement	100	2,000	3,000
Cap Asset Plan	100	2,000	4,000
Alt. Devel. & VA	100	33,000	30,000
Pref. Alternative	63	0	0
Total		40,000	42,000

Cost Performance Index = BCWP/ACWP = $40,000/$42,000 = .952

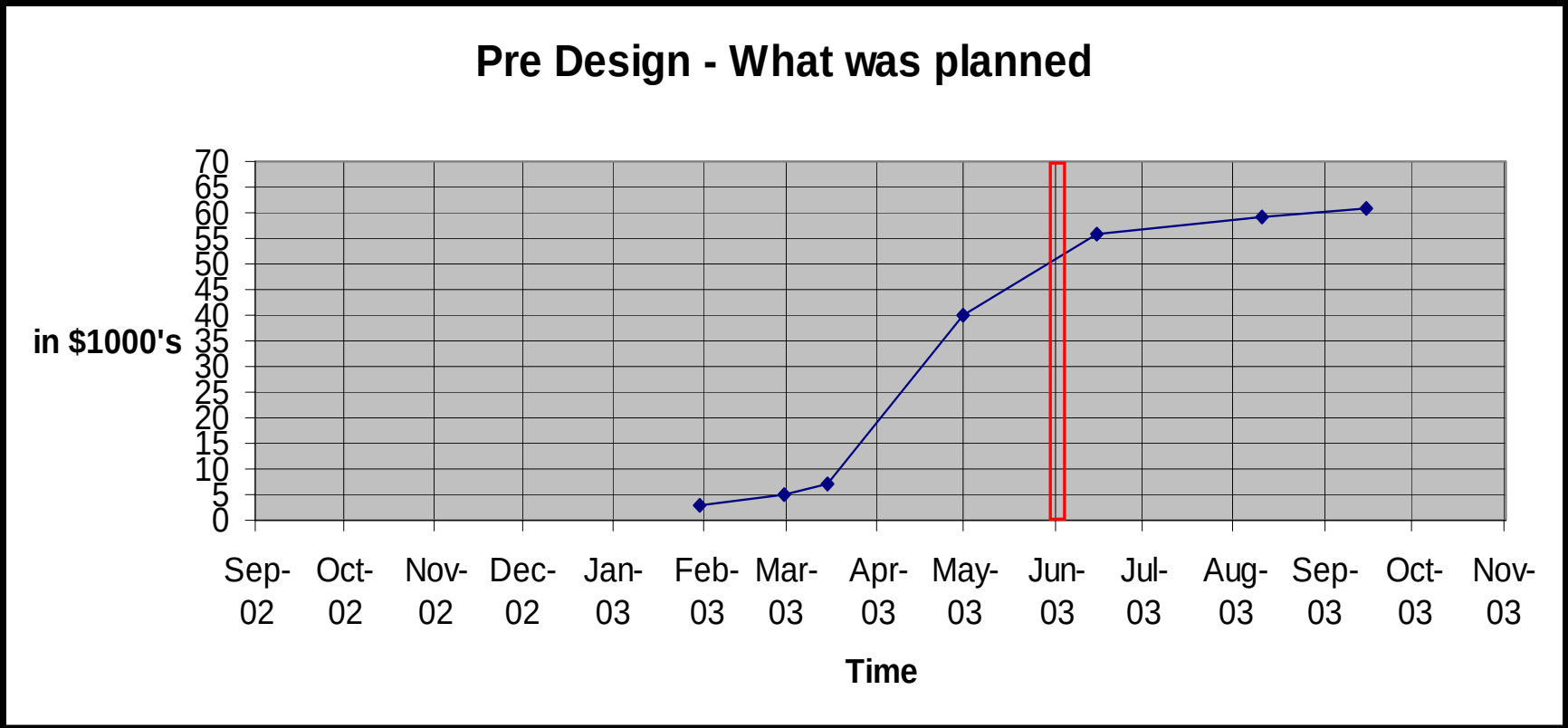
Estimate at Completion = (BAC - BCWP)/CPI + ACWP =

= (1,338,000 - 40,000)/.952 + 42,000 = $1,405,445

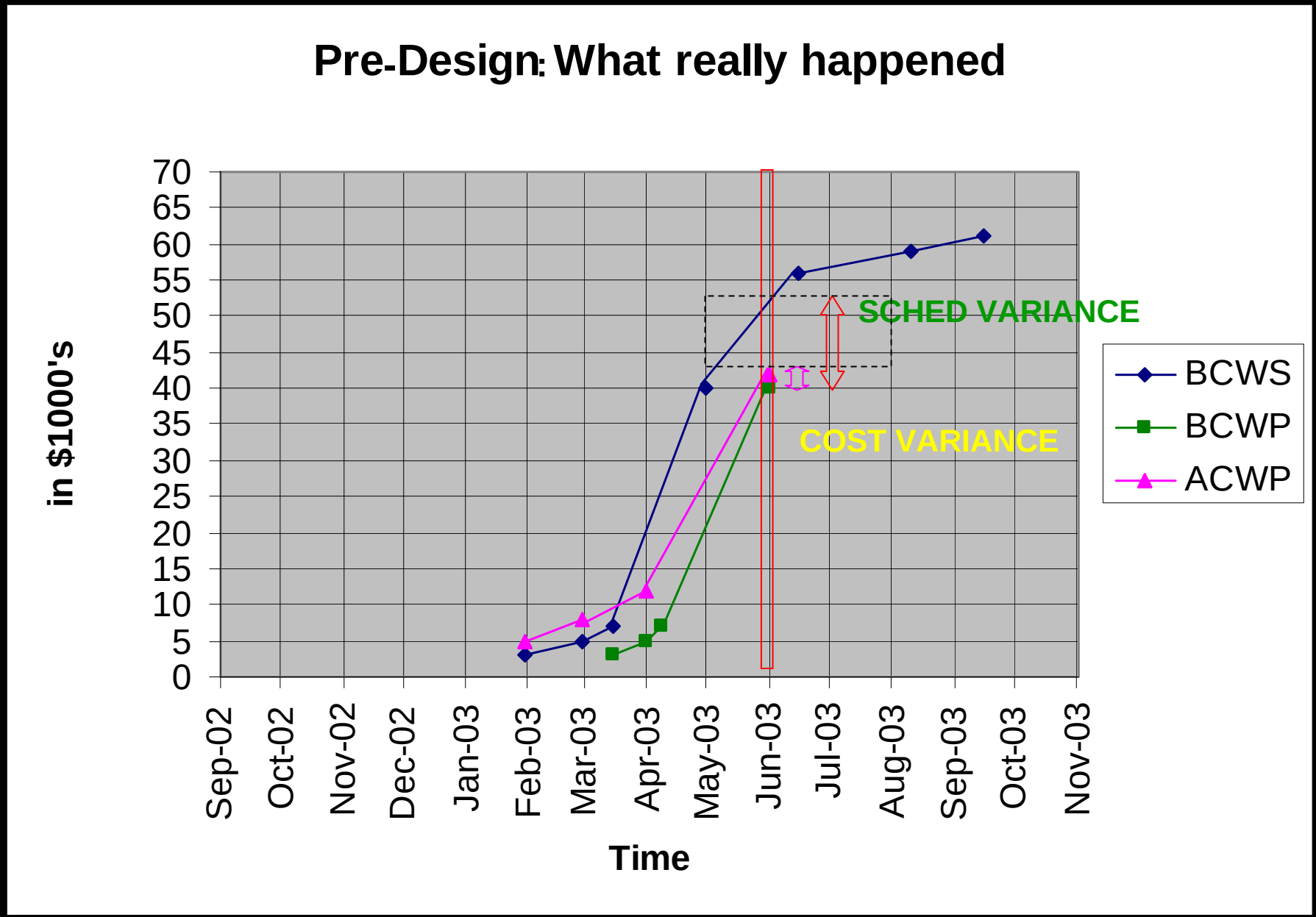
Pre-design intentions as a Graph

What would the planning for our project look like on a graph for pre-design only?

By June 3, the chart would show $50,080 BCWS



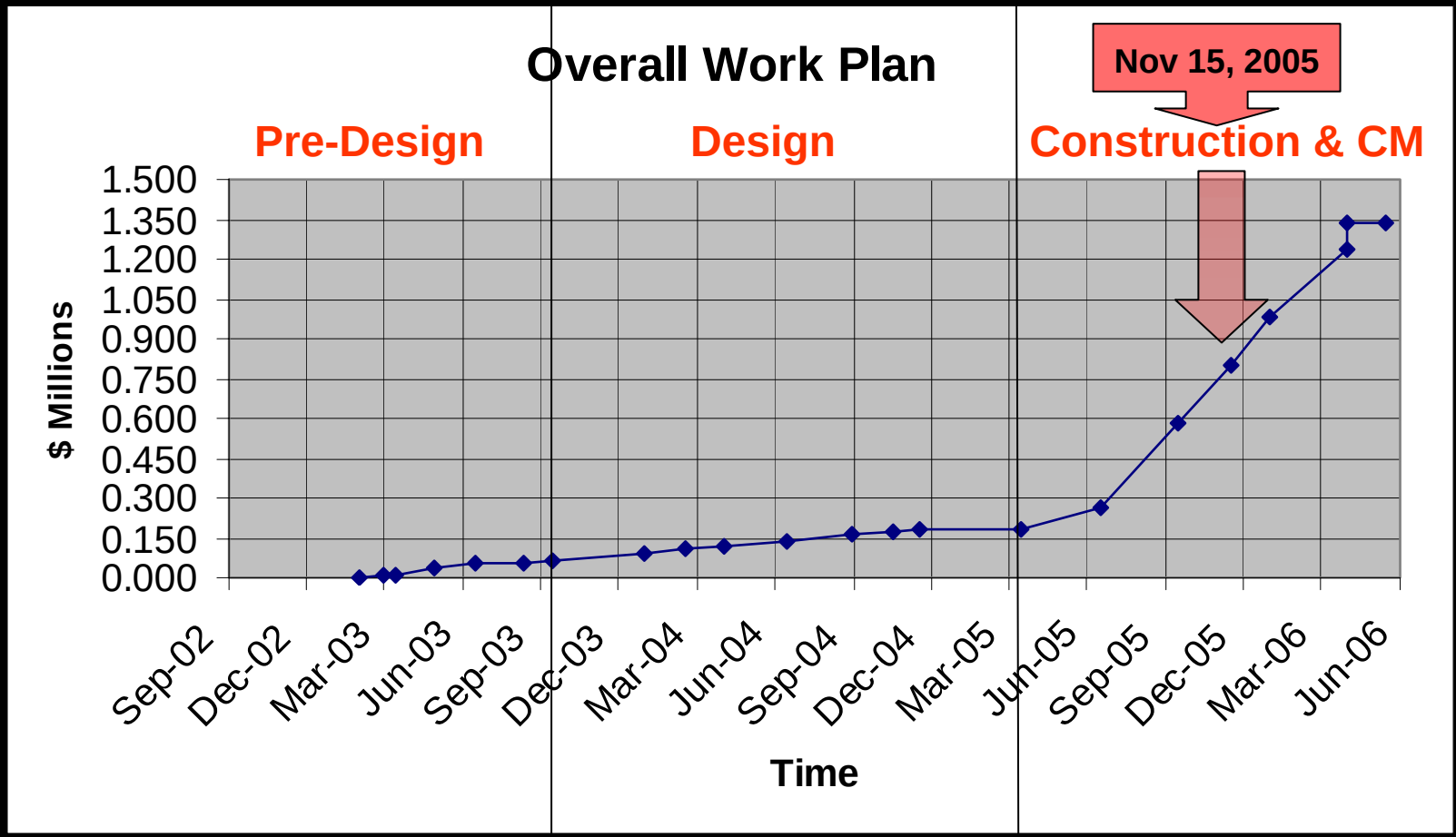
Pre-design—what really happened?



The next update will be a calculation exercise. This will be for November 15, 2005—during the construction phase.

What is the project status on November 15, 2005?

1. **Determine whether project is on schedule and within budget.**
2. **Calculate variances and other values as shown on chart from Capital Asset Plan and Business Case form.**
3. **Will the Expected Completion Date change?**



First, Update Milestones for Nov. 15, 2005

Pre-Design

Design

Construct & CM

For Quarterly Report As of November 15, 2005					
Activity	**BCWP**	**ACWP**	**BCWS**	**Scheduled Compl. Date**	**Actual Compl. Date**
Scoping		5,000			3/15/2003
Project Agreement		3,000			4/1/2003
Cap Asset Plan		4,000			4/10/2003
Alt. Development & VA		30,000			6/1/2003
Pref. Alt.		21,000			7/10/2003
DAB		3,000			8/10/2003
Compl. Concept. Design		6,000			10/21/2003
Compl PD on Concept		31,000			1/15/2004
25% CD Development		18,000			3/15/2004
50% CD Development		15,000			5/3/2004
75% CD Development		17,000			7/20/2004
100% CD Development		30,000			10/2/2004
Constructability Review		5,000			12/1/2004
Advertise Contr		4,000			12/28/2004
Award Contract		0			4/18/2005
Mobil & Demo		93,000			7/10/2005
Mobil & Demo--*CM*		18,000			7/10/2005
Rough Carp, Elect & Mech		320,000			10/21/2005
R Carp, Elect & Mech--*CM*		10,000			10/21/2005
Int Fin Rough		175,000			11/3/2004
Int Fin Rough--*CM*		21,000			11/3/2004
Final Elect, Mech & Plumb		31,000			15% complete
Final E, M & P--*CM*		2,000			20% complete
TOTALS		862,000			

First, Update Milestones for Nov. 15, 2005

- Variances are all expressed in dollar ratios.

  One of the biggest difficulties seems to be in distinguishing among the 4 critical values.

- BAC Your total project budget, the bottom line.
- BCWS Amount of money that you were planning, or budgeting, for the work tasks that you planned, or scheduled, to have done by a certain date.
- BCWP Amount of money you were planning to spend on the work that you actually got done by that date.
- ACWP Amount of money you *actually* spent for the work that you *actually* got done.

A way to look at developing Values

- Variances are all expressed in dollar ratios.
- Schedule Variance **BCWP – BCWS**
  - Look at the work that you were scheduled to do against the work that you actually got done. Remember, it's all in $$.
  - Subtract the $ of what you had scheduled from the $ of what you actually got done, or performed.
  - Schedule variance holds constant the budgeted $ and measures differences in what got done vs what you planned to get done
- Cost Variance **BCWP – ACWP**
  - Look at the work that you actually got done (Work Performed).
  - Subtract what you actually paid for this from what you were planning to pay for it.
  - Cost variance holds constant the work performed, and measures differences in $ planned vs $ paid

Now update the values for Nov. 15, 2003

	Value
OMB-approved baseline (BAC) =	
Budgeted (planned) cost of work scheduled (BCWS)=	
Budgeted (planned) cost of work performed (BCWP) =	
Actual cost of work performed (ACWP) =	
Cost Variance = (BCWP-ACWP) =	
Cost Variance %= (CV/BCWP) x 100%=	
Cost Performance Index (CPI) = (BCWP/ACWP) =	
Schedule Variance = (BCWP-BCWS) =	
Schedule Variance %= (SV/BCWS) x 100%=	
SchedulePerformance Index (SPI) = (BCWP/BCWS) =	
First independent Estimate at Completion (EAC) = ACWPcum = (Performance Factor (PF) X (BAC minus BCWPcum)), where PF_1 = 1/CPI,	
Second independent Estimate at Completion, where PF_2 = 1/CPI*SPI	
Variance at Completion (VAC) = (BAC - EAC) for both EACs above =	
Variance at Completion %= (VAC/BAC) x 100% for both EACs above =	
Expected Cost to Complete (ETC) = EAC – ACWP =	
Expected Completion Date =	

Updated Milestones for Nov. 15, 2005

Pre-Design

Design

Construct & CM

For Quarterly Report As of November 15, 2005

Activity	BCWP	ACWP	BCWS	Scheduled Compl. Date	Actual Compl. Date
Scoping	3,000	5,000	3,000	1/30/2003	3/15/2003
Project Agreement	2,000	3,000	2,000	2/28/2003	4/1/2003
Cap Asset Plan	2,000	4,000	2,000	3/15/2003	4/10/2003
Alt. Development & VA	33,000	30,000	33,000	4/30/2003	6/1/2003
Pref. Alt.	16,000	21,000	16,000	6/15/2003	7/10/2003
DAB	3,000	3,000	3,000	8/10/2003	8/10/2003
Compl. Concept. Design	2,000	6,000	2,000	9/15/2003	10/21/2003
Compl PD on Concept	25,000	31,000	25,000	12/30/2003	1/15/2004
25% CD Development	18,000	18,000	18,000	2/15/2004	3/15/2004
50% CD Development	13,000	15,000	13,000	4/1/2004	5/3/2004
75% CD Development	15,000	17,000	15,000	6/15/2004	7/20/2004
100% CD Development	26,000	30,000	26,000	8/30/2004	10/2/2004
Constructability Review	7,000	5,000	7,000	10/15/2004	12/1/2004
Advertise Contr	3,000	4,000	3,000	11/15/2004	12/28/2004
Award Contract	0	0	0	3/15/2005	4/18/2005
Mobil & Demo	85,000	93,000	85,000	6/15/2005	7/10/2005
Mobil & Demo--*CM*	15,000	18,000	15,000	6/15/2005	7/10/2005
Rough Carp, Elect & Mech	305,000	320,000	305,000	9/15/2005	10/21/2005
R Carp, Elect & Mech--*CM*	10,000	10,000	10,000	9/15/2005	10/21/2005
Int Fin Rough	160,000	175,000	160,000	10/15/2005	11/3/2004
Int Fin Rough--*CM*	15,000	21,000	15,000	10/15/2005	11/3/2004
Final Elect, Mech & Plumb	36,000	31,000	175,000	11/15/2005	15% complete
Final E, M & P--*CM*	1,500	2,000	10,000	11/15/2005	20% complete
TOTALS	795,500	862,000	943,000		

Completed calculations for Nov. 15, 2005, update:

	Value
OMB-approved baseline (BAC) =	1.338
Budgeted (planned) cost of work scheduled (BCWS)=	.943
Budgeted (planned) cost of work performed (BCWP) =	.7955
Actual cost of work performed (ACWP) =	.862
Cost Variance = (BCWP-ACWP) =	-0.0665
Cost Variance % = (CV/BCWP) x 100% =	-8.4%
Cost Performance Index (CPI) = (BCWP/ACWP) =	0.92
Schedule Variance = (BCWP-BCWS) =	-0.1475
Schedule Variance % = (SV/BCWS) x 100% =	-15.6%
Schedule Performance Index (SPI) = (BCWP/BCWS) =	0.84
First independent Estimate at Completion (EAC) = ACWPcum = (Performance Factor (PF) X (BAC minus BCWPcum)), where PF_1 = 1/CPI,	1.45
Second independent Estimate at Completion, where PF_2 = 1/CPI*SPI	1.56
Variance at Completion (VAC) = (BAC - EAC) for both EACs above =	-0.112
Variance at Completion % = (VAC/BAC) x 100% for both EACs above =	116.59
Expected Cost to Complete (ETC) = EAC – ACWP =	0.588
Expected Completion Date =	10/15/2006

You haven't developed a list of milestones??

A familiar—although less precise —way to do the calculations:

- Measure the project as 4 phased milestones
  - Pre-Design
  - Design
  - Construction + Contingency
  - Construction Management
- Develop the 4 critical values
  - BAC
  - BCWS
  - BCWP
  - ACWP

Key to every method is developing the 4 values

- Use 4 phases as milestones
- Put into an active worksheet
- Keep results for project tracking

CAPITAL ASSET PLAN - BUDGET WORKSHEET

PARK	INFO						
PKG/PMIS	123/012345						
DATE	November 15, 2005						
Billing Through	November 10, 2005						
			BCWS		ACWP		BCWP
	Budget ($)	Budget (%)	Budget to date	Actual (%)	Actual spent to date	Planned%	Actual Budget
Predesign	$61,000	100	$61,000	100	$72,000	$100	$61,000
Design	$117,000	100	$117,000	100	$120,000	$100	$117,000
Construction + contin	$1,080,000	69.9074	$755,000	57.3	$619,000	$15	$162,000
Construction Mgmt	$80,000	68.748	$54,998	63.75	$52,000	$20	$16,000
BAC =	$1,338,000		$987,998		$863,000		$356,000
BCWS =	$987,998						
ACWP =	$863,000						
BCWP =	$356,000						
Cost Variance (CV) =	BCWP - ACWP =	-$507,000					
Cost Variance (%) =	(CV/BCWP) * 100%	-142.42					
CPI =	BCWP/ACWP =	0.413					
Schedule Variance (SV) =	BCWP - BCWS =	-$631,998					
Schedule Variance (%) =	(SV/BCWS) * 100%	-63.97					
SPI =	BCWP/BCWS =	0.36					
Critical Ratio =	CPI * SPI =	0.15		Note: If CR is between 0.9 & 1.2, it's OK; if below 0.8 or above 1.3, then there is a problem; if btwn 0.8-0.9 & 1.2-1.3, then check			
EAC	(BAC - BCWP) / CPI + A	$3,243,522					
Est. to Complete (ETC)	EAC - ACWP =	$2,380,522					
Variance @ Compl. (VAC	BAC - EAC =	-$1,905,522					
VAC %	VAC/BAC * 100%	-142.42					
Est. to Complete (ETC) =	EAC - ACWP =	$2,380,522					

- Info must still be entered into the official CAP format

Worksheet filled in for Nov 15, 2005

CAPITAL ASSET PLAN - BUDGET WORKSHEET

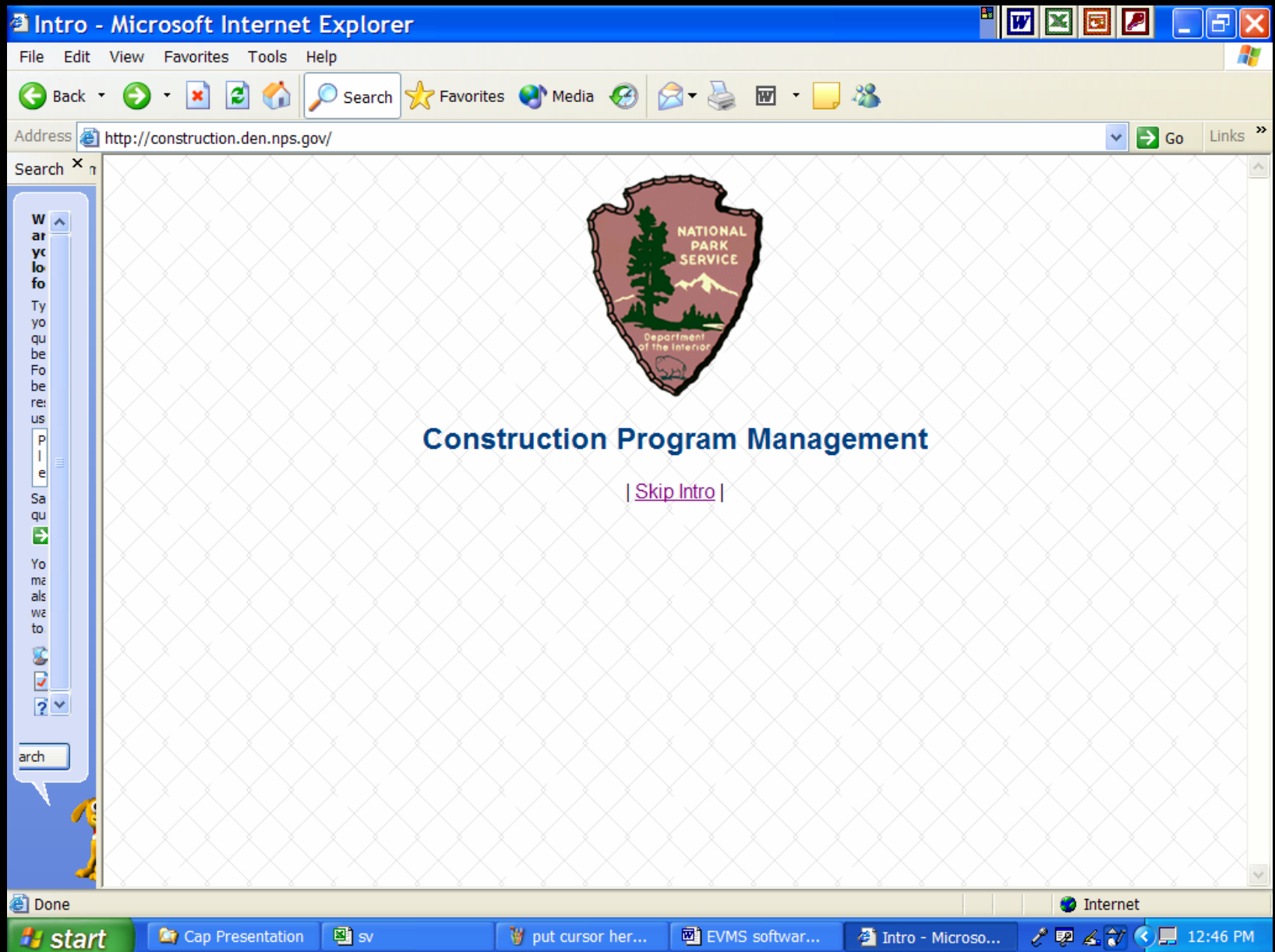
			BCWS		ACWP		BCWP
	Budget ($)	Budget (%)	Budget to date	Actual (%)	Actual spent to date	Planned%	Actual Budget
PARK	INFO						
PKG/PMIS	123/012345						
DATE	November 15, 2005						
Billing Through	November 10, 2005						
Predesign	$61,000	100	$61,000	100	$72,000	$100	$61,000
Design	$107,000	100	$107,000	100	$120,000	$100	$107,000
Construction + contin	$1,090,000	66.514	$725,003	56.8	$619,000	$54	$585,984
Construction Mgmt	$80,000	62.5	$50,000	63.75	$51,000	$52	$41,500
BAC =	$1,338,000		$943,003		$862,000		$795,484
BCWS =	$943,003						
ACWP =	$862,000						
BCWP =	$795,484						
Cost Variance (CV) =	BCWP - ACWP =	-$66,516					
Cost Variance (%) =	(CV/BCWP) * 100%	-8.36					
CPI =	BCWP/ACWP =	0.923					
Schedule Variance (SV) =	BCWP - BCWS =	-$147,519					
Schedule Variance (%) =	(SV/BCWS) * 100%	-15.64					
SPI =	BCWP/BCWS =	0.84					
Critical Ratio =	CPI * SPI =	0.78		Note: If CR is between 0.9 & 1.2, it's OK; if below 0.8 or above 1.3, then there is a problem; if btwn 0.8-0.9 & 1.2-1.3, then check			
EAC	(BAC - BCWP) / CPI + A	$1,449,880					
Est. to Complete (ETC)	EAC - ACWP =	$587,880					
Variance @ Compl. (VAC	BAC - EAC =	-$111,880					
VAC %	VAC/BAC * 100%	-8.36					
Est. to Complete (ETC) =	EAC - ACWP =	$587,880					

A third way to do the calculations

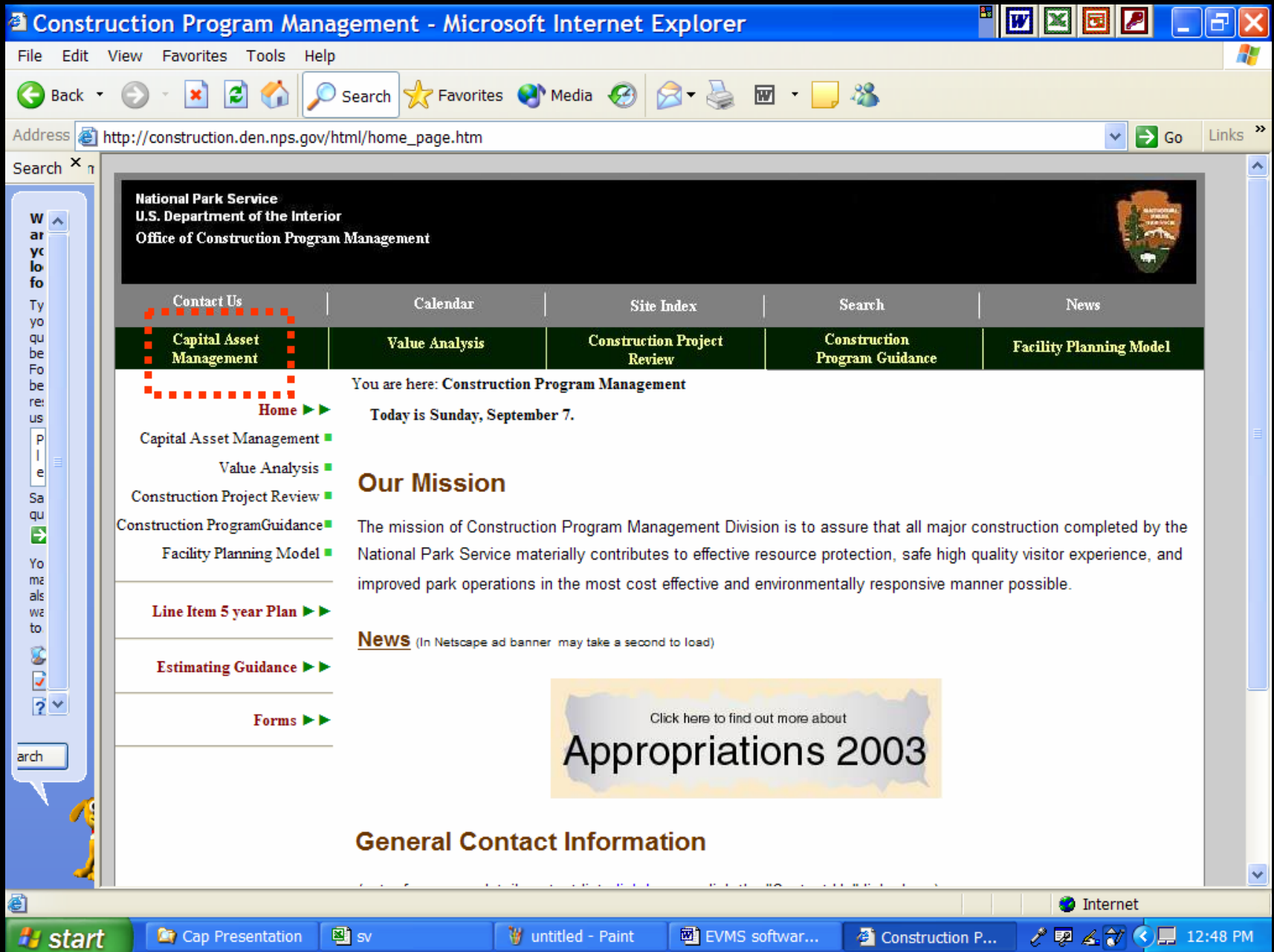
The COOKBOOK METHOD

- Ingredients:
  - BAC
  - BCWS
  - BCWP
  - ACWP
  - Project Summary sheet with active macros

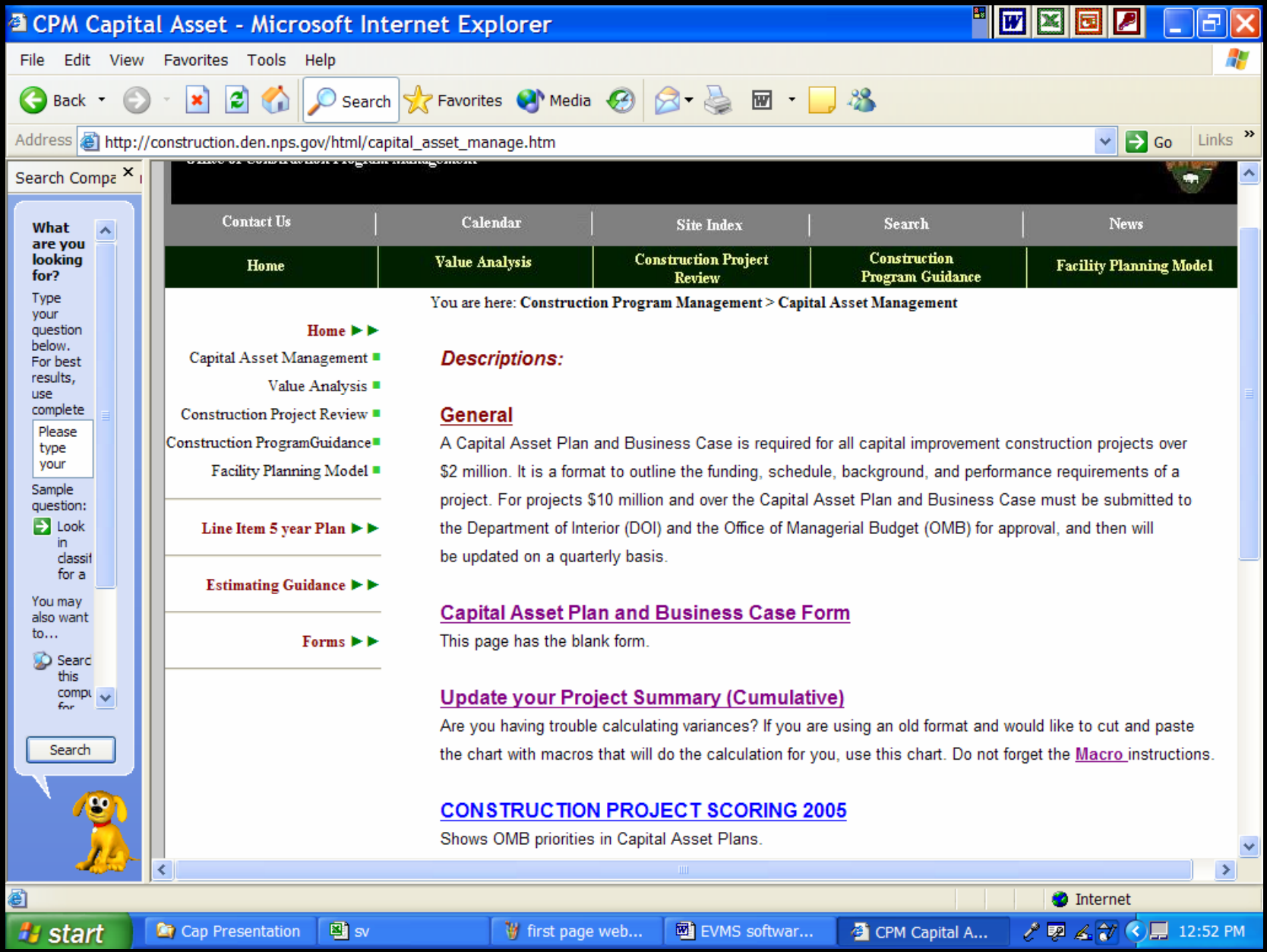
Find the website for Construction Program Management at construction.den.nps.gov



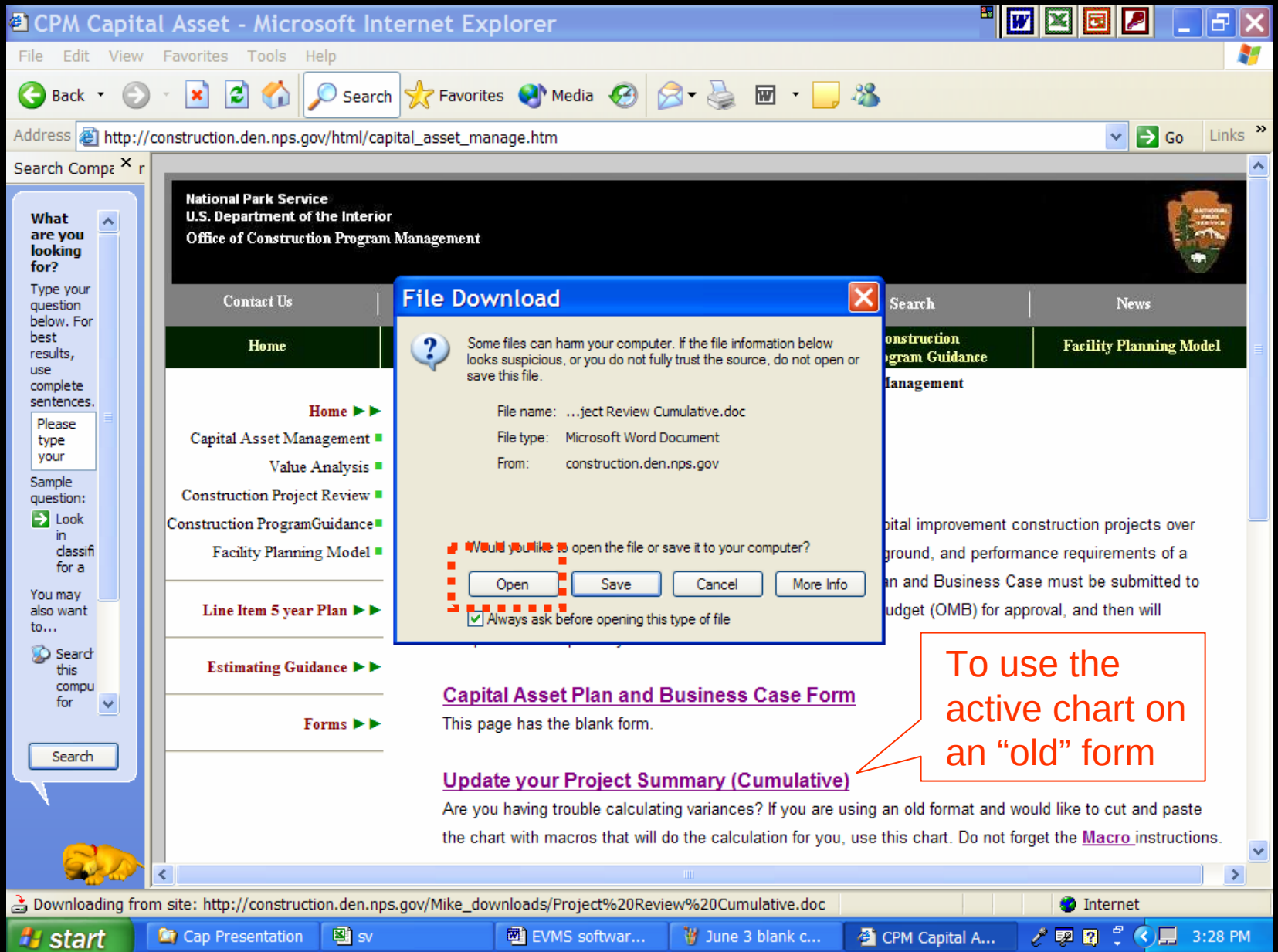
Go into the website



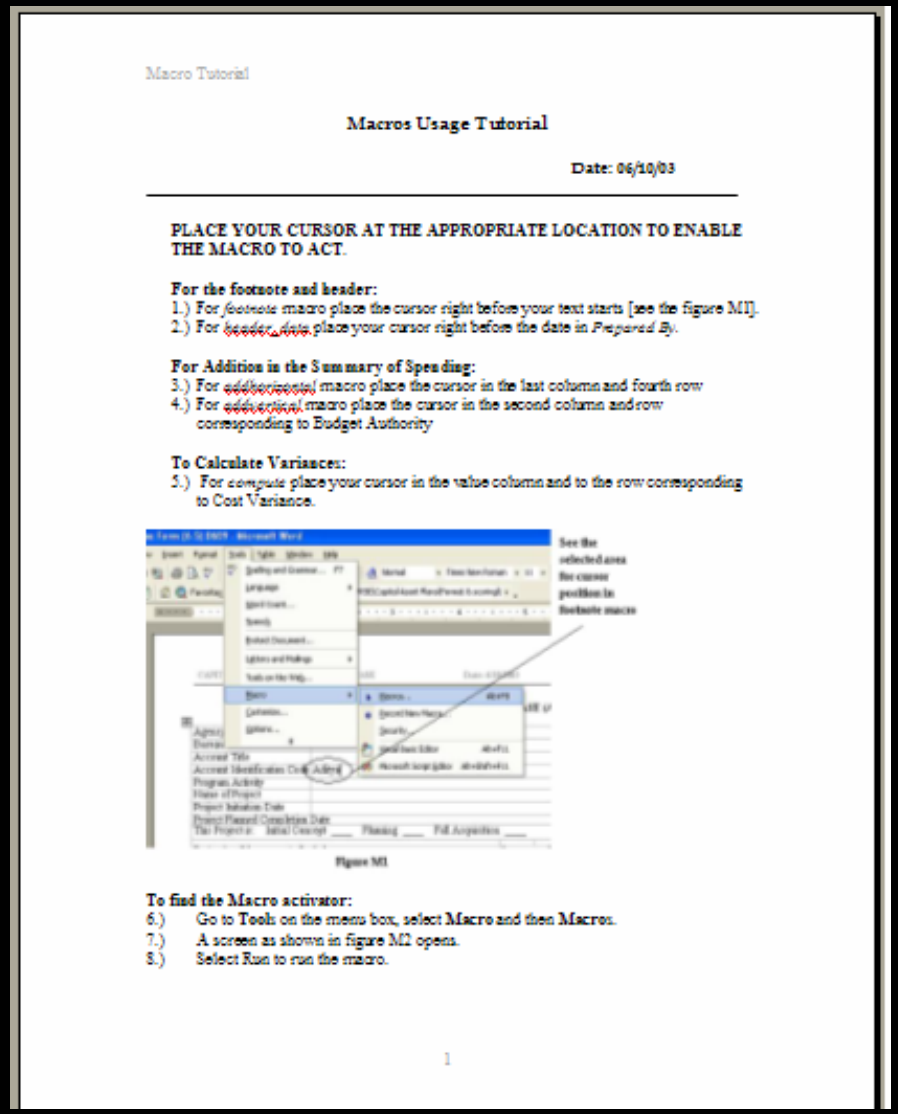
Go to the Capital Asset Section



Open there on the web



What are macros?



Macro Tutorial

Macros Usage Tutorial

Date: 06/10/03

PLACE YOUR CURSOR AT THE APPROPRIATE LOCATION TO ENABLE THE MACRO TO ACT.

For the footnote and header:

1.) For *footnote* macro place the cursor right before your text starts [see the figure M1].
2.) For *header_date* place your cursor right before the date in *Prepared By*.

For Addition in the Summary of Spending:

3.) For *addhorizontal* macro place the cursor in the last column and fourth row
4.) For *addvertical* macro place the cursor in the second column and row corresponding to Budget Authority

To Calculate Variances:

5.) For *compute* place your cursor in the value column and to the row corresponding to Cost Variance.

Figure M1

To find the Macro activator:

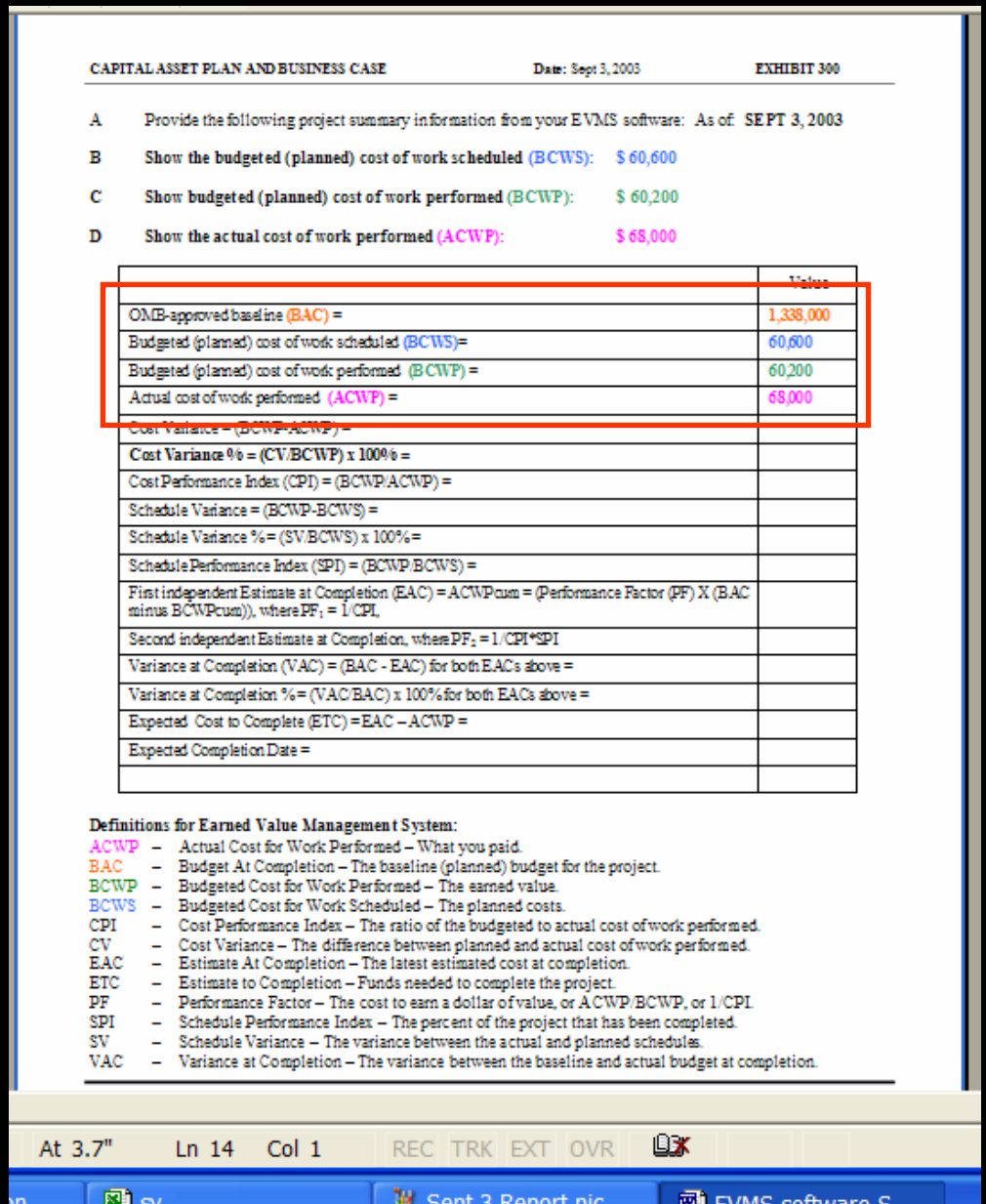
6.) Go to **Tools** on the menu box, select **Macro** and then **Macros**.
7.) A screen as shown in figure M2 opens.
8.) Select Run to run the macro.

1

The CPM website has instruction for using macros

Enter the first 4 values

- For the latest CAP format, macros should work right there in the form.
- To cut the chart into your old, existing format, work it on the website, then later cut and paste into your existing file.



CAPITAL ASSET PLAN AND BUSINESS CASE Date: Sept 3, 2003 EXHIBIT 300

A Provide the following project summary information from your EVMS software: As of: SEPT 3, 2003

B Show the budgeted (planned) cost of work scheduled (BCWS): $ 60,600

C Show budgeted (planned) cost of work performed (BCWP): $ 60,200

D Show the actual cost of work performed (ACWP): $ 68,000

	Value
OMB-approved baseline (BAC) =	1,338,000
Budgeted (planned) cost of work scheduled (BCWS)=	60,600
Budgeted (planned) cost of work performed (BCWP) =	60,200
Actual cost of work performed (ACWP) =	68,000
Cost Variance = (BCWP-ACWP) =	
Cost Variance % = (CV/BCWP) x 100% =	
Cost Performance Index (CPI) = (BCWP/ACWP) =	
Schedule Variance = (BCWP-BCWS) =	
Schedule Variance %= (SV/BCWS) x 100%=	
Schedule Performance Index (SPI) = (BCWP/BCWS) =	
First independent Estimate at Completion (EAC) = ACWPcum = (Performance Factor (PF) X (BAC minus BCWPcum)), where PF_1 = 1/CPI,	
Second independent Estimate at Completion, where PF_2 = 1/CPI*SPI	
Variance at Completion (VAC) = (BAC - EAC) for both EACs above =	
Variance at Completion %= (VAC/BAC) x 100% for both EACs above =	
Expected Cost to Complete (ETC) = EAC – ACWP =	
Expected Completion Date =	

Definitions for Earned Value Management System:

ACWP – Actual Cost for Work Performed – What you paid.
BAC – Budget At Completion – The baseline (planned) budget for the project.
BCWP – Budgeted Cost for Work Performed – The earned value.
BCWS – Budgeted Cost for Work Scheduled – The planned costs.
CPI – Cost Performance Index – The ratio of the budgeted to actual cost of work performed.
CV – Cost Variance – The difference between planned and actual cost of work performed.
EAC – Estimate At Completion – The latest estimated cost at completion.
ETC – Estimate to Completion – Funds needed to complete the project.
PF – Performance Factor – The cost to earn a dollar of value, or ACWP/BCWP, or 1/CPI.
SPI – Schedule Performance Index – The percent of the project that has been completed.
SV – Schedule Variance – The variance between the actual and planned schedules.
VAC – Variance at Completion – The variance between the baseline and actual budget at completion.

At 3.7" Ln 14 Col 1 REC TRK EXT OVR

Start the action . . . Put cursor here.

CAPITAL ASSET PLAN AND BUSINESS CASE Date: Sept 3, 2003 EXHIBIT 300

A Provide the following project summary information from your EVMS software: As of: **SEPT 3, 2003**

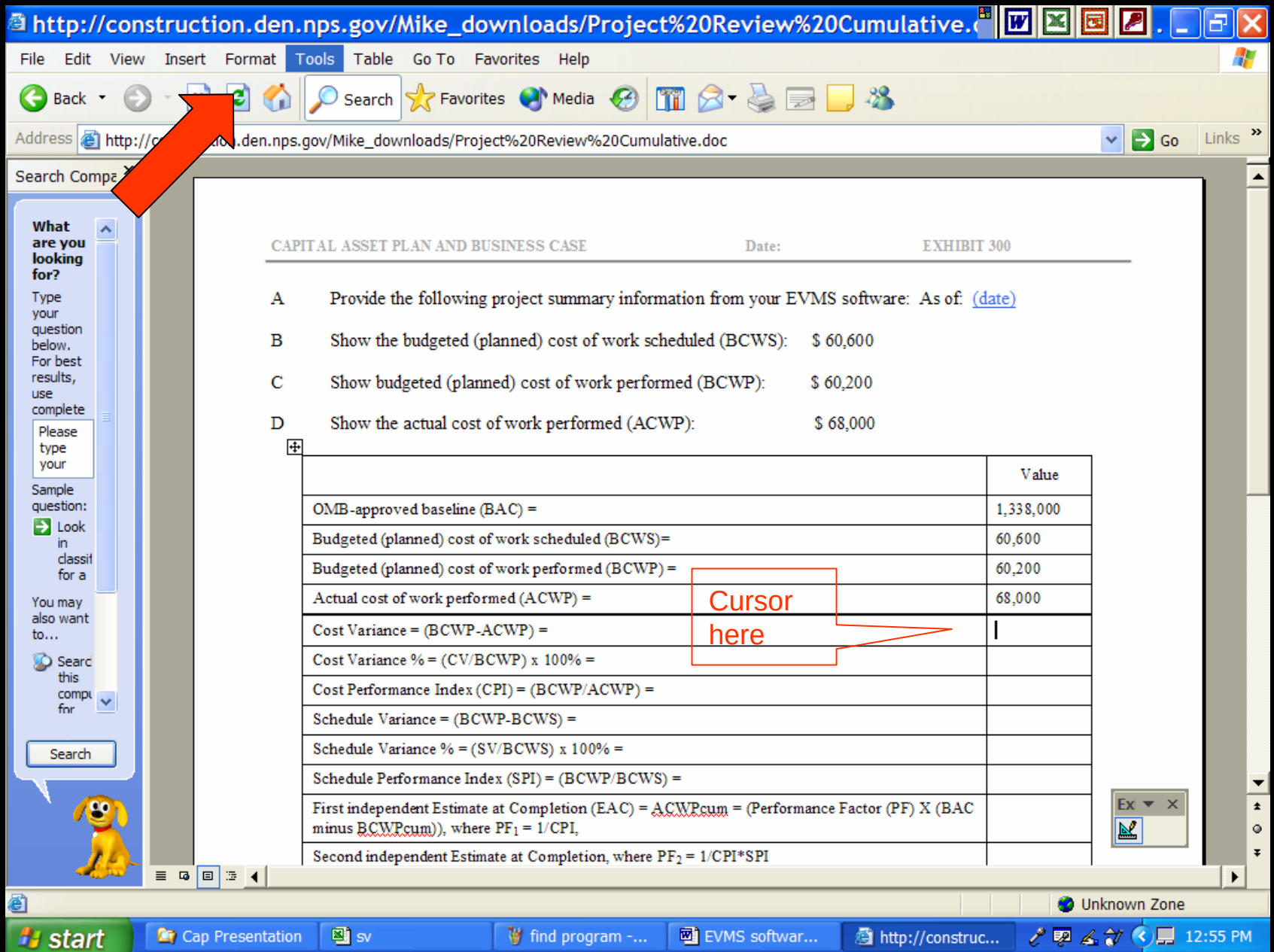
B Show the budgeted (planned) cost of work scheduled (BCWS): $ 60,600

C Show budgeted (planned) cost of work performed (BCWP): $ 60,200

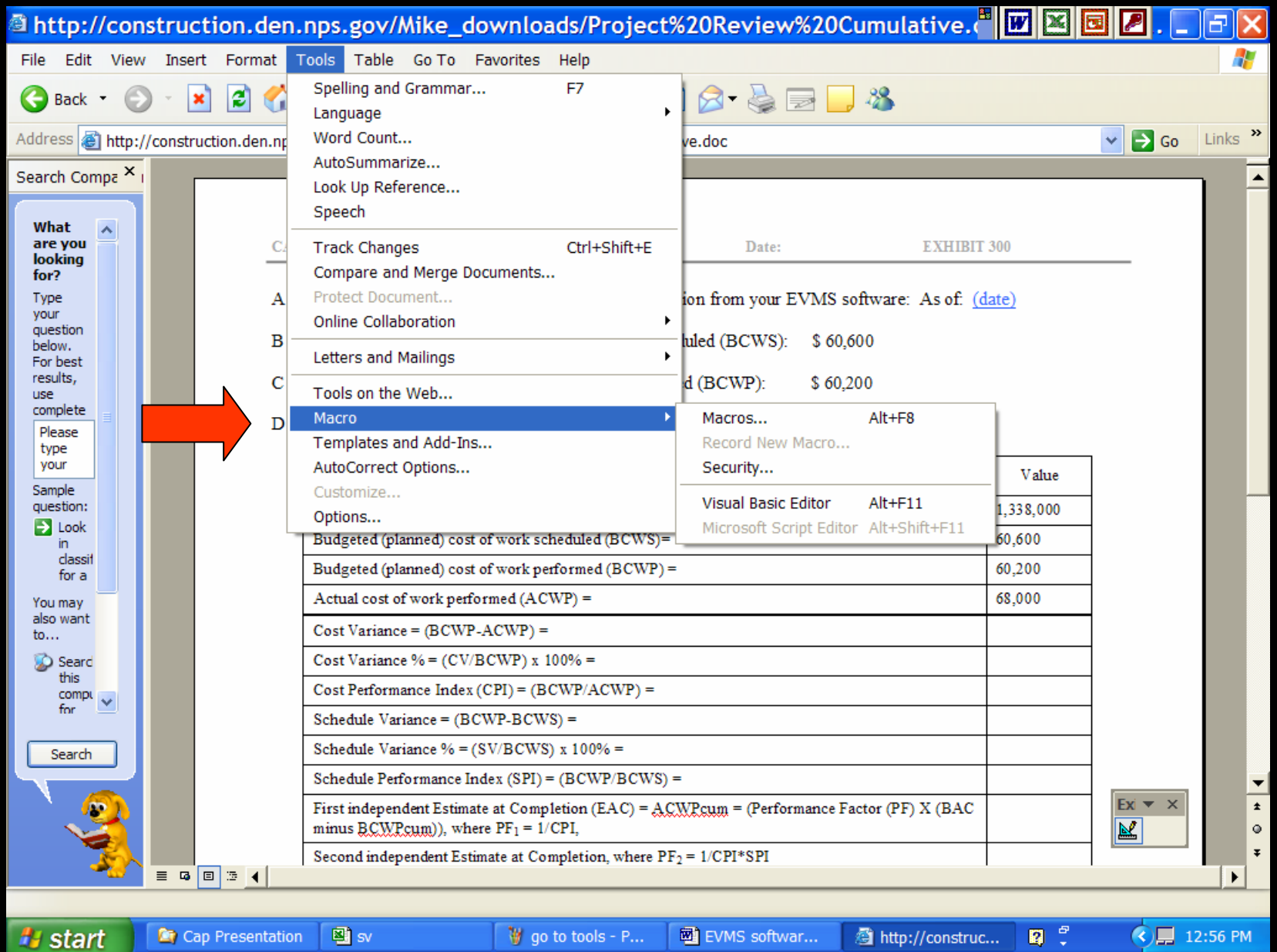
D Show the actual cost of work performed (ACWP): $ 68,000

	Value
OMB-approved baseline (BAC) =	1,338,000
Budgeted (planned) cost of work scheduled (BCWS)=	60,600
Budgeted (planned) cost of work performed (BCWP) =	60,200
Actual cost of work performed (ACWP) =	68,000
Cost Variance = (BCWP-ACWP) =	
Cost Variance % = (CV/BCWP) x 100% =	
Cost Performance Index (CPI) = (BCWP/ACWP) =	
Schedule Variance = (BCWP-BCWS) =	
Schedule Variance % = (SV/BCWS) x 100% =	
Schedule Performance Index (SPI) = (BCWP/BCWS) =	
First independent Estimate at Completion (EAC) = ACWPcum = (Performance Factor (PF) X (BAC minus BCWPcum)), where $PF_1 = 1/CPI$,	
Second independent Estimate at Completion, where $PF_2 = 1/CPI*SPI$	
Variance at Completion (VAC) = (BAC - EAC) for both EACs above =	
Variance at Completion % = (VAC/BAC) x 100% for both EACs above =	

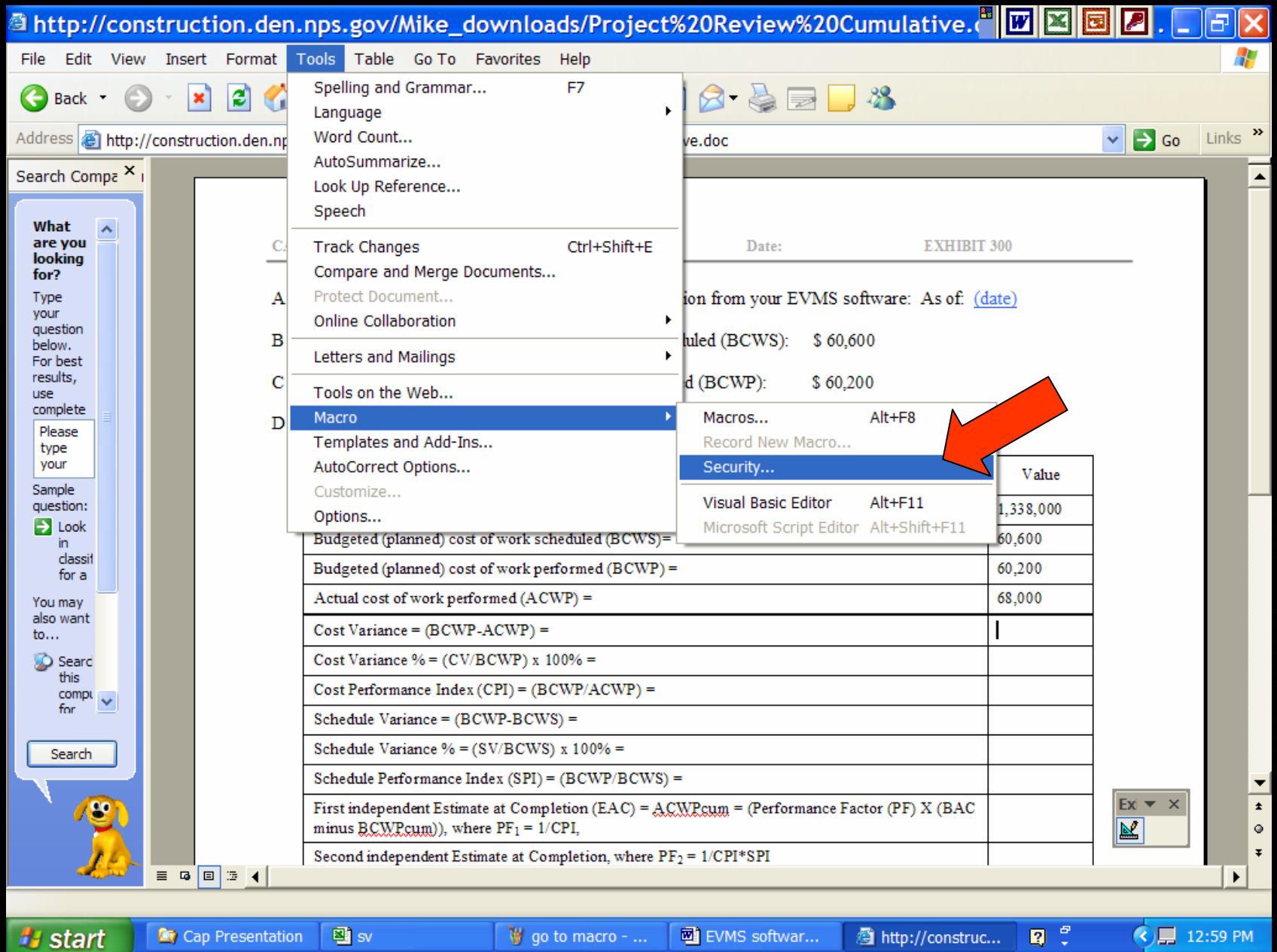
Go to “Tools”


http://construction.den.nps.gov/Mike_downloads/Project%20Review%20Cumulative.doc
File Edit View Insert Format Tools Table Go To Favorites Help
Back Search Favorites Media
Address http://construction.den.nps.gov/Mike_downloads/Project%20Review%20Cumulative.doc
Go Links
What are you looking for?
Type your question below. For best results, use complete
Please type your
Sample question:
Look in classif for a
You may also want to...
Search
CAPITAL ASSET PLAN AND BUSINESS CASE Date: EXHIBIT 300
A Provide the following project summary information from your EVMS software: As of: (date)
B Show the budgeted (planned) cost of work scheduled (BCWS): $ 60,600
C Show budgeted (planned) cost of work performed (BCWP): $ 60,200
D Show the actual cost of work performed (ACWP): $ 68,000
Value
OMB-approved baseline (BAC) = 1,338,000
Budgeted (planned) cost of work scheduled (BCWS)= 60,600
Budgeted (planned) cost of work performed (BCWP) = 60,200
Actual cost of work performed (ACWP) = 68,000
Cursor here
Cost Variance = (BCWP-ACWP) =
Cost Variance % = (CV/BCWP) x 100% =
Cost Performance Index (CPI) = (BCWP/ACWP) =
Schedule Variance = (BCWP-BCWS) =
Schedule Variance % = (SV/BCWS) x 100% =
Schedule Performance Index (SPI) = (BCWP/BCWS) =
First independent Estimate at Completion (EAC) = ACWPcum = (Performance Factor (PF) X (BAC minus BCWPcum)), where PF1 = 1/CPI,
Second independent Estimate at Completion, where PF2 = 1/CPI*SPI
Unknown Zone
start
Cap Presentation
sv
find program -...
EVMS softwar...
http://construc...
12:55 PM

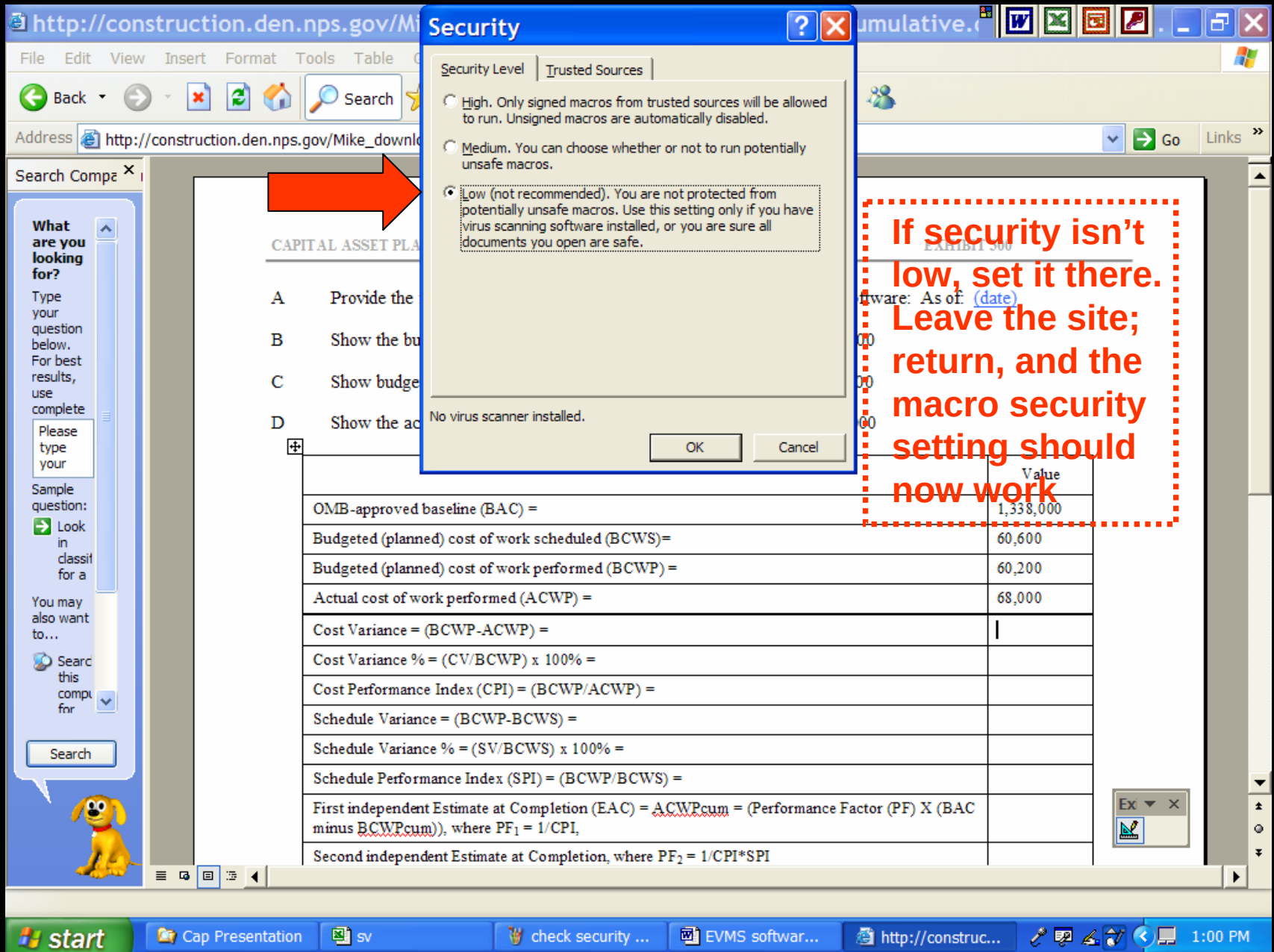
Go to ‘macro’


http://construction.den.nps.gov/Mike_downloads/Project%20Review%20Cumulative.
File Edit View Insert Format Tools Table Go To Favorites Help
Back
Address http://construction.den.np
ve.doc
Go
Links
Search Compa
What are you looking for?
Type your question below. For best results, use complete
Please type your
Sample question:
Look in classif for a
You may also want to...
Searc this compu for
Search
Spelling and Grammar... F7
Language
Word Count...
AutoSummarize...
Look Up Reference...
Speech
Track Changes Ctrl+Shift+E
Compare and Merge Documents...
Protect Document...
Online Collaboration
Letters and Mailings
Tools on the Web...
Macro
Templates and Add-Ins...
AutoCorrect Options...
Customize...
Options...
Macros... Alt+F8
Record New Macro...
Security...
Visual Basic Editor Alt+F11
Microsoft Script Editor Alt+Shift+F11
Date: EXHIBIT 300
ion from your EVMS software: As of: (date)
uled (BCWS): $ 60,600
d (BCWP): $ 60,200
Value
Budgeted (planned) cost of work scheduled (BCWS)= 60,600
Budgeted (planned) cost of work performed (BCWP) = 60,200
Actual cost of work performed (ACWP) = 68,000
Cost Variance = (BCWP-ACWP) =
Cost Variance % = (CV/BCWP) x 100% =
Cost Performance Index (CPI) = (BCWP/ACWP) =
Schedule Variance = (BCWP-BCWS) =
Schedule Variance % = (SV/BCWS) x 100% =
Schedule Performance Index (SPI) = (BCWP/BCWS) =
First independent Estimate at Completion (EAC) = ACWPcum = (Performance Factor (PF) X (BAC minus BCWPcum)), where PF1 = 1/CPI,
Second independent Estimate at Completion, where PF2 = 1/CPI*SPI
start
Cap Presentation
sv
go to tools - P...
EVMS softwar...
http://construc...
12:56 PM

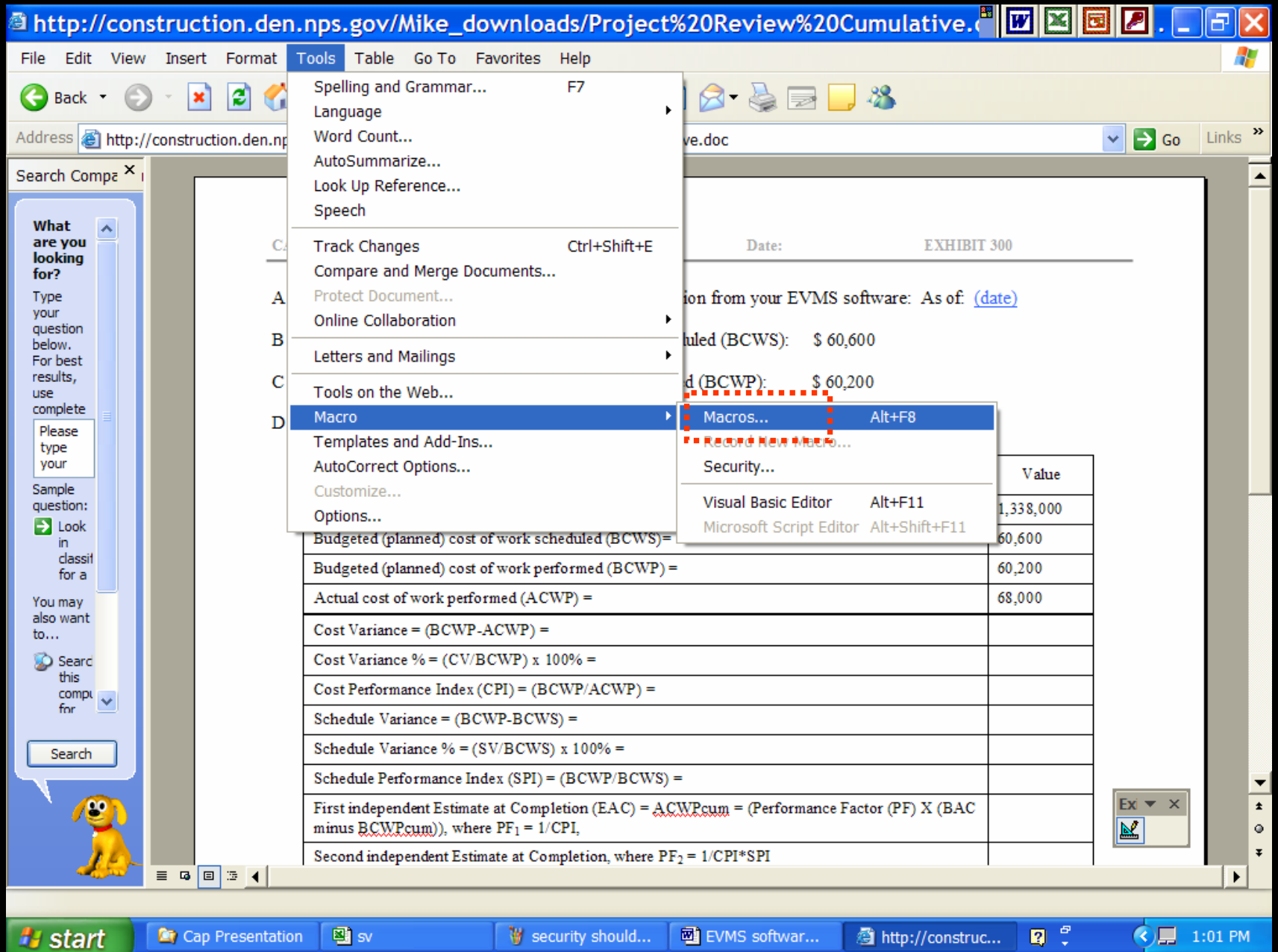
Check ‘security’



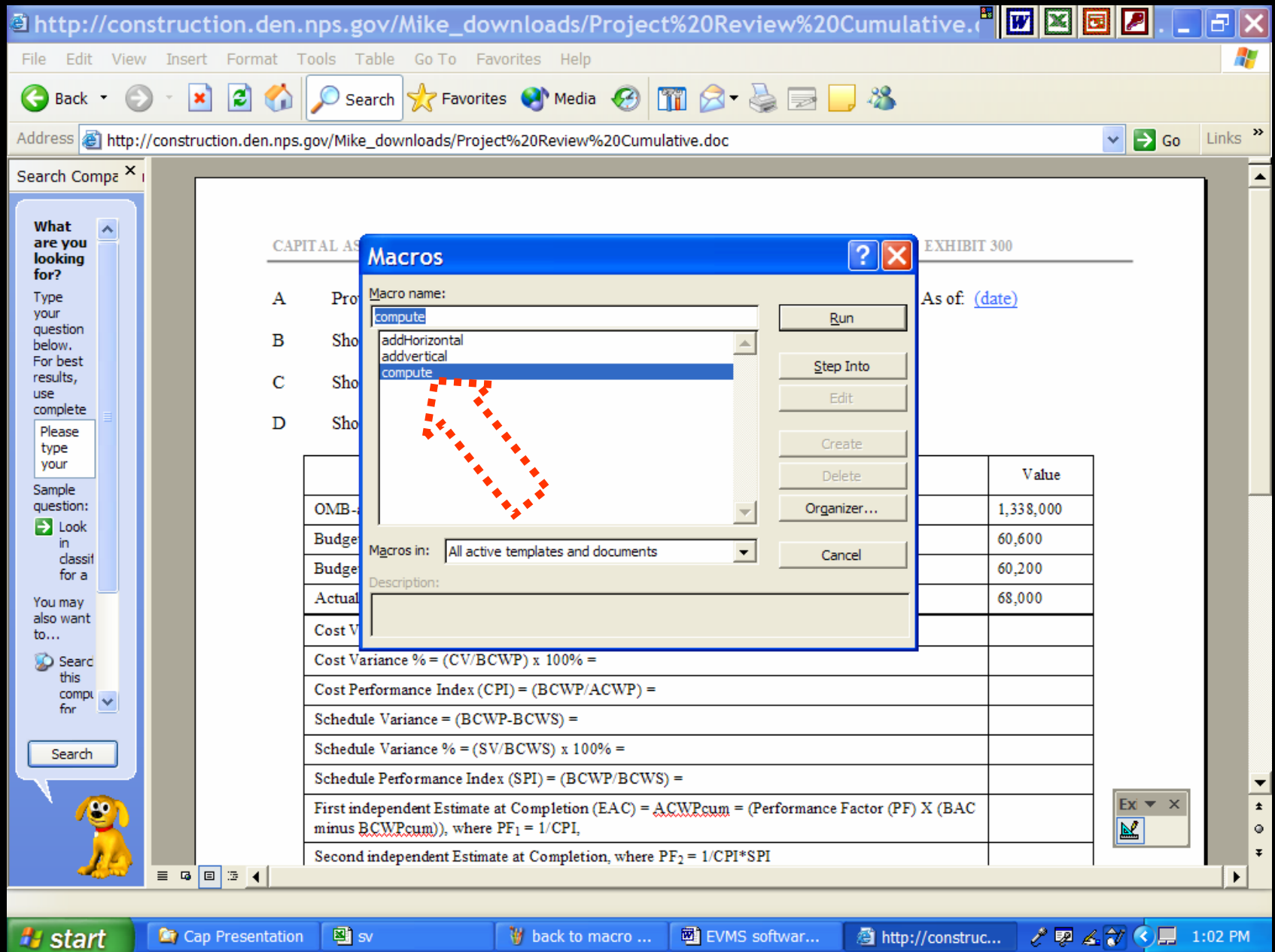
‘Security’ has to be ‘low’



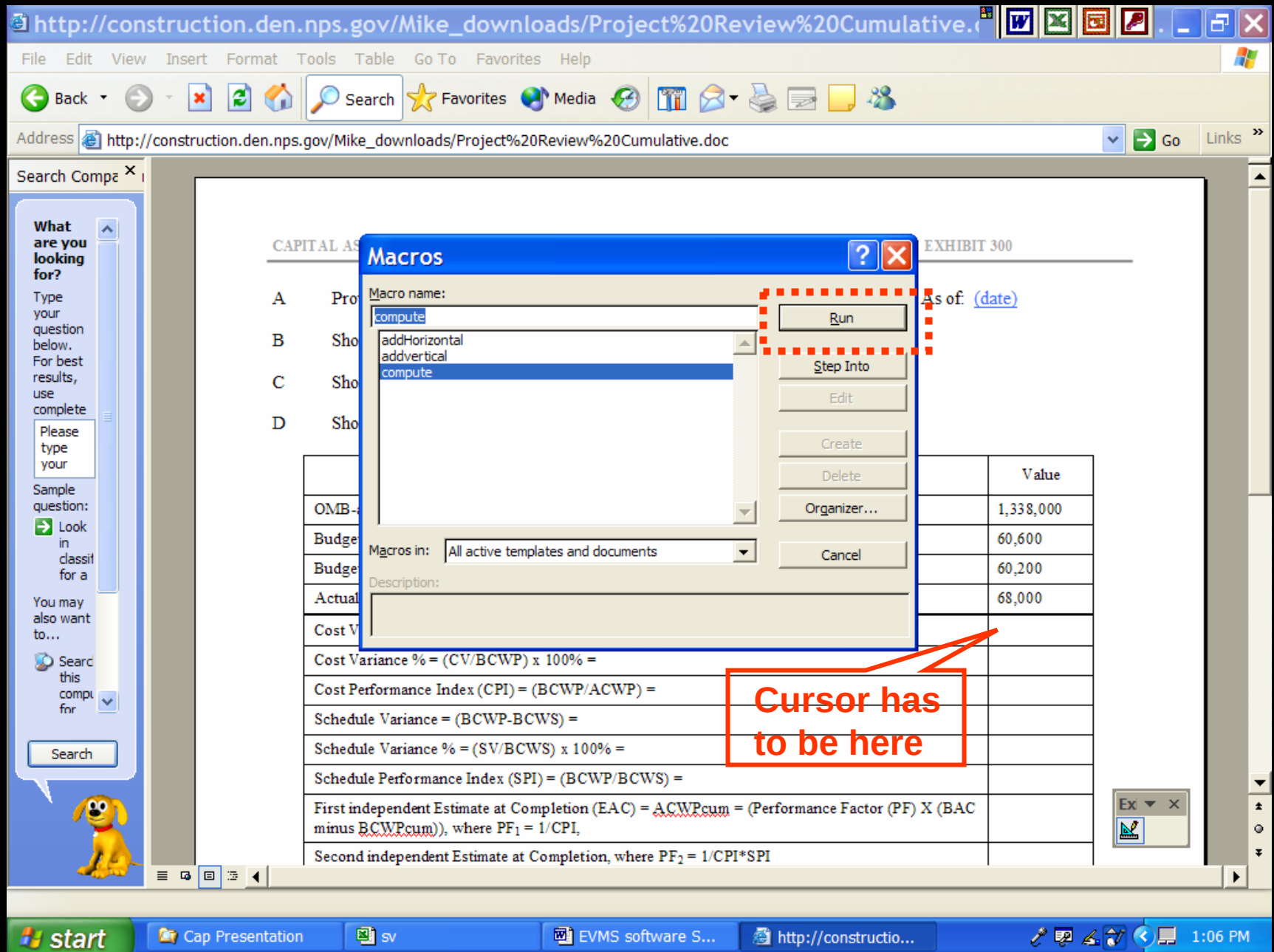
Now back to the macro



Choose the right macro



Now run the macro



All your values will be filled in

CAPITAL ASSET PLAN AND BUSINESS CASE **Date:** **EXHIBIT 300**

A Provide the following project summary information from your EVMS software. As of: Sept 3, 2008

B Show the budgeted (planned) cost of work scheduled (BCWS): $ 61,600

C Show budgeted (planned) cost of work performed (BCWP): $ 60,600

D Show the actual cost of work performed (ACWP): $ 68,000

	Value
OMB-approved baseline (BAC) –	1,338,000
Budgeted (planned) cost of work scheduled (BCWS)–	61,600
Budgeted (planned) cost of work performed (BCWP)–	60,600
Actual cost of work performed (ACWP) –	68,000
Cost Variance – (BCWP-ACWP)–	-7,400
Cost Variance % – (CV/BCWP) x 100% –	-12.20%
Cost Performance Index (CPI) – (BCWP/ACWP) –	0.89
Schedule Variance – (BCWP-BCWS) –	-1,000
Schedule Variance % – (SV/BCWS) x 100% –	-1.62%
Schedule Performance Index (SPI) – (BCWP/BCWS)–	0.98
First independent Estimate at Completion (EAC) – ACWPcum – (Performance Factor (PF) X (BAC minus BCWPcum)), where PF_3 = 1/CPI,	1,503,280.9
Second independent Estimate at Completion, where PF_2 = 1/CPI x SPI	1,532,572.35
Variance at Completion (VAC) – (BAC - EAC) for both EACs above –	-165,280.9
Variance at Completion % – (VAC/BAC) x 100% for both EACs above –	114.54%
Expected Cost to Complete (ETC) – EAC – ACWP –	1,435,280.9
Expected Completion Date –	8/15/06

Definitions for Earned Value Management System:

ACWP – Actual Cost for Work Performed – What you paid.
BAC – Budget At Completion – The baseline (planned) budget for the project.
BCWP – Budgeted Cost for Work Performed – The earned value.
BCWS – Budgeted Cost for Work Scheduled – The planned costs.
CPI – Cost Performance Index – The ratio of the budgeted to actual cost of work performed.
CV – Cost Variance – The difference between planned and actual cost of work performed.
EAC – Estimate At Completion – The latest estimated cost at completion.
ETC – Estimate to Completion – Funds needed to complete the project.
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SPI – Schedule Performance Index – The percent of the project that has been completed.
SV – Schedule Variance – The variance between the actual and planned schedules.
VAC – Variance at Completion – The variance between the baseline and actual budget at completion.

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