Real-Time DSM2 Simulation

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Real-time DSM2 Simulation

What is it?

Real-time DSM2 Simulation

Why is it done ?

Bay-Delta Standards
Contained in D-1641

DRAFT

CRITERIA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
FLOW/OPERATIONAL												
• **Fish and Wildlife**												
SWP/CVP Export Limits					1,500cfs [1]							
Export/Inflow Ratio [2]	65%	35% of Delta Inflow [3]							65% of Delta Inflow			
Minimum Delta Outflow	[4]								3,000 - 8,000 cfs [4]			
Habitat Protection Outflow		7,100 - 29,200 cfs [5]										
Salinity Starting Condition [6]		[6]										
River Flows:												
@ Rio Vista									3,000 - 4,500 cfs [7]			
@ Vernalis - Base		710 - 3,420 cfs [8]				[8]						
- Pulse				[9]						+28TAF		
Delta Cross Channel Gates	[10]	Closed				[11]				Conditional [10]		
WATER QUALITY STANDARDS												
• **Municipal and Industrial**												
All Export Locations		≤ 250 mg/l Cl										
Contra Costa Canal		150 mg/l Cl for the required number of days [12]										
• **Agriculture**												
Western/Interior Delta					Max.14-day average EC mmhos/cm [13]							
Southern Delta [14]		1.0 mS		30 day running avg EC 0.7 mS						1.0 mS		
• **Fish and Wildlife**												
San Joaquin River Salinity [15]				14-day avg; 0.44 EC								
Suisun Marsh Salinity [16]	12.5 EC	8.0 EC		11.0 EC						19.0 EC	[17]	15.5 EC

Bay-Delta Standards Stations

D-1641 BAY-DELTA STANDARDS STATIONS
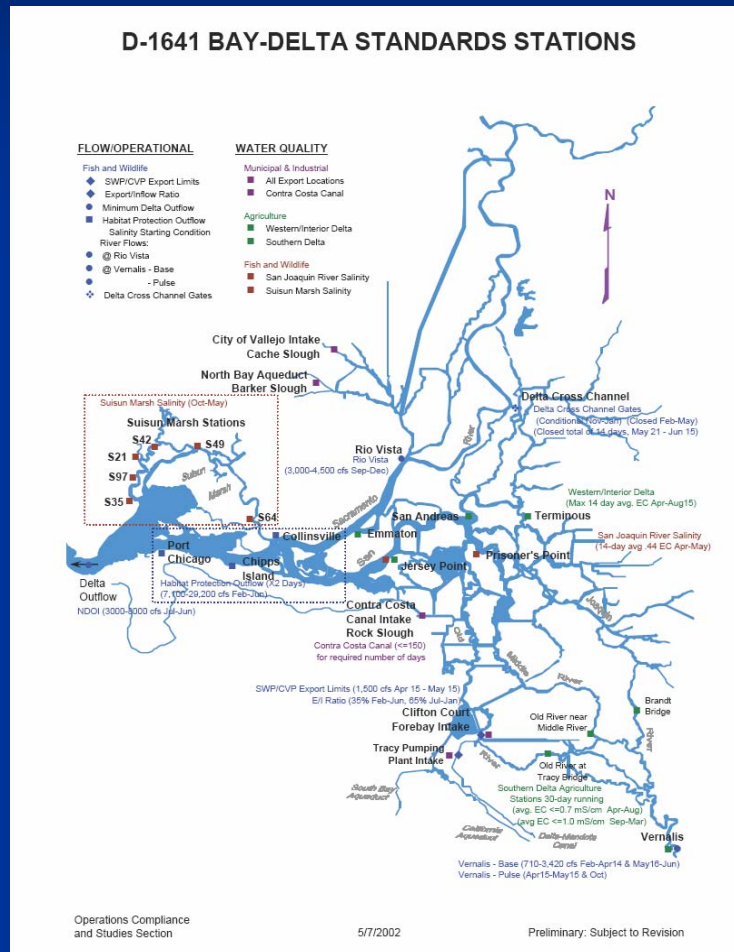
DSM2 Locations for Stage, Flow, and EC
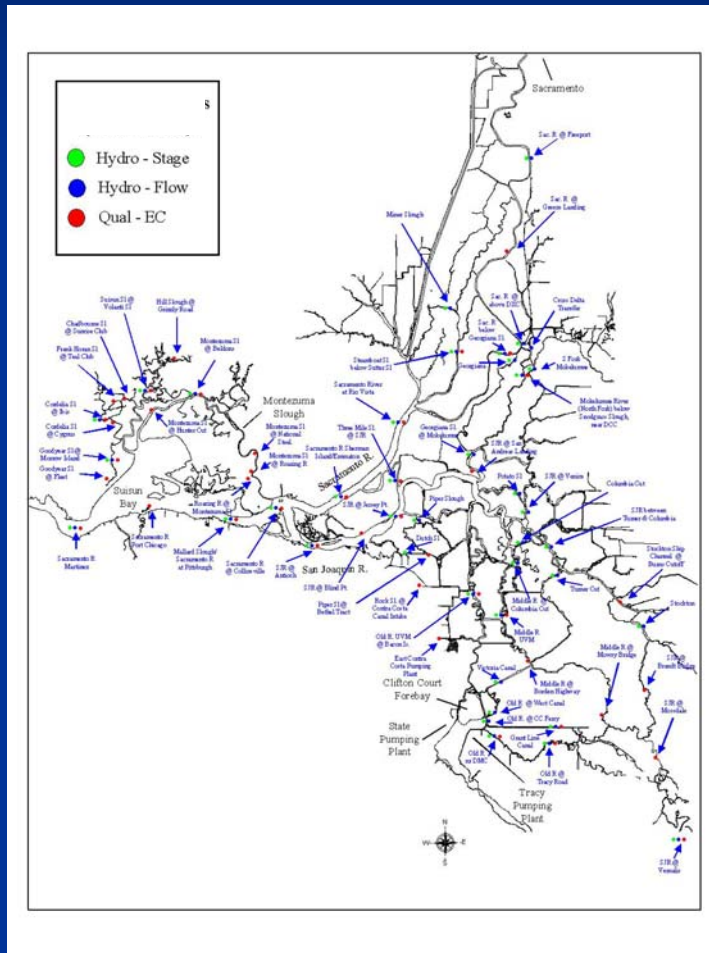
Real-time DSM2 Simulation Components

- HYDRO
- QUAL
- PTM

Real-time DSM2 Simulation Steps (HYDRO)

1. Prepare weekly run data sheet.
2. Prepare gates.dss file.
3. Prepare hydro.dss file.
4. Prepare forecast.dss file.
5. Prepare input data for running HYDRO.
6. Run HYDRO.
7. Process and review water level results.
8. Prepare PDFs for water levels.

Step 1: Prepare Weekly Run Data Sheet

Weekly Run Data Sheet: 02/19/08

Historical Period: **Forecast Period:**

FEB 12 2008 – FEB 18 2008   FEB 19 2008 – MAR 22 2008

Run ID:
20080219-33A

Run Period:
12FEB2008 22MAR2008 A

Water Level Graphs for pdf outputs:
1. Wes of Union Island
2. Middle River @ Howard
3. Old River @ Tracy Blvd.
4. Doughty Cut
5. East end of GLC

Water Quality (EC) Graphs for pdf outputs:
1. Holland
2. Old River East of Union Island
3. San Joaquin River @ Brandt
4. Old River @ Tracy Blvd.
5. Jersey Point
6. Bethel

Assumptions
1.
2.
3.

Baseline

Alternative

Real-time DSM2 Simulation
HYDRO

Step 2: Prepare gates.dss file.

Real-time DSM2 Simulation
HYDRO

Step 3: Prepare hydro.dss file:

- Historical Delta Cross Channel gate and Clifton Court Forebay operations data.
- Historical stage, flow, and export data.

Retrieve Historical Data

Retrieve Historical Stage Data
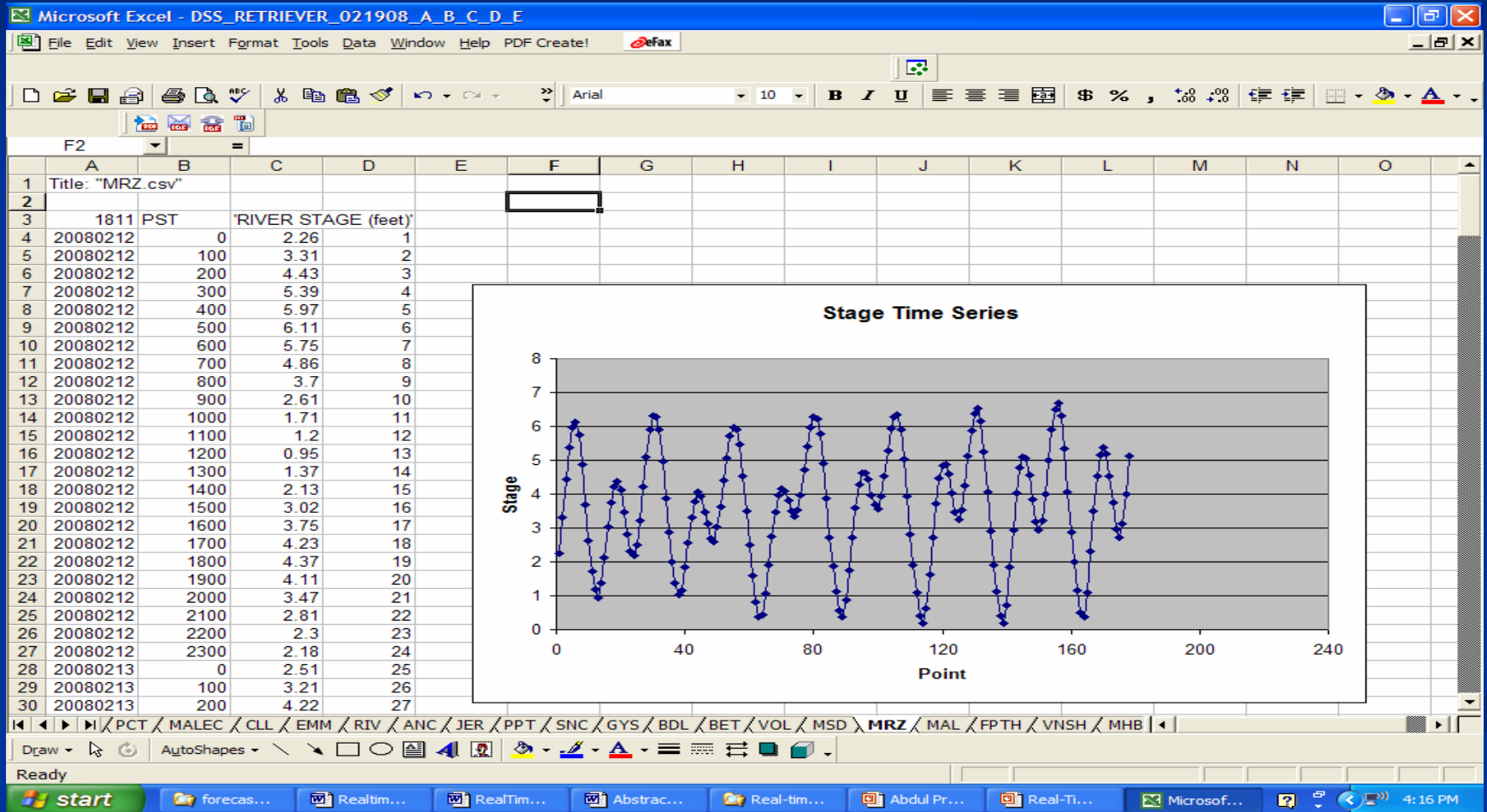
Retrieve Historical Flow Data
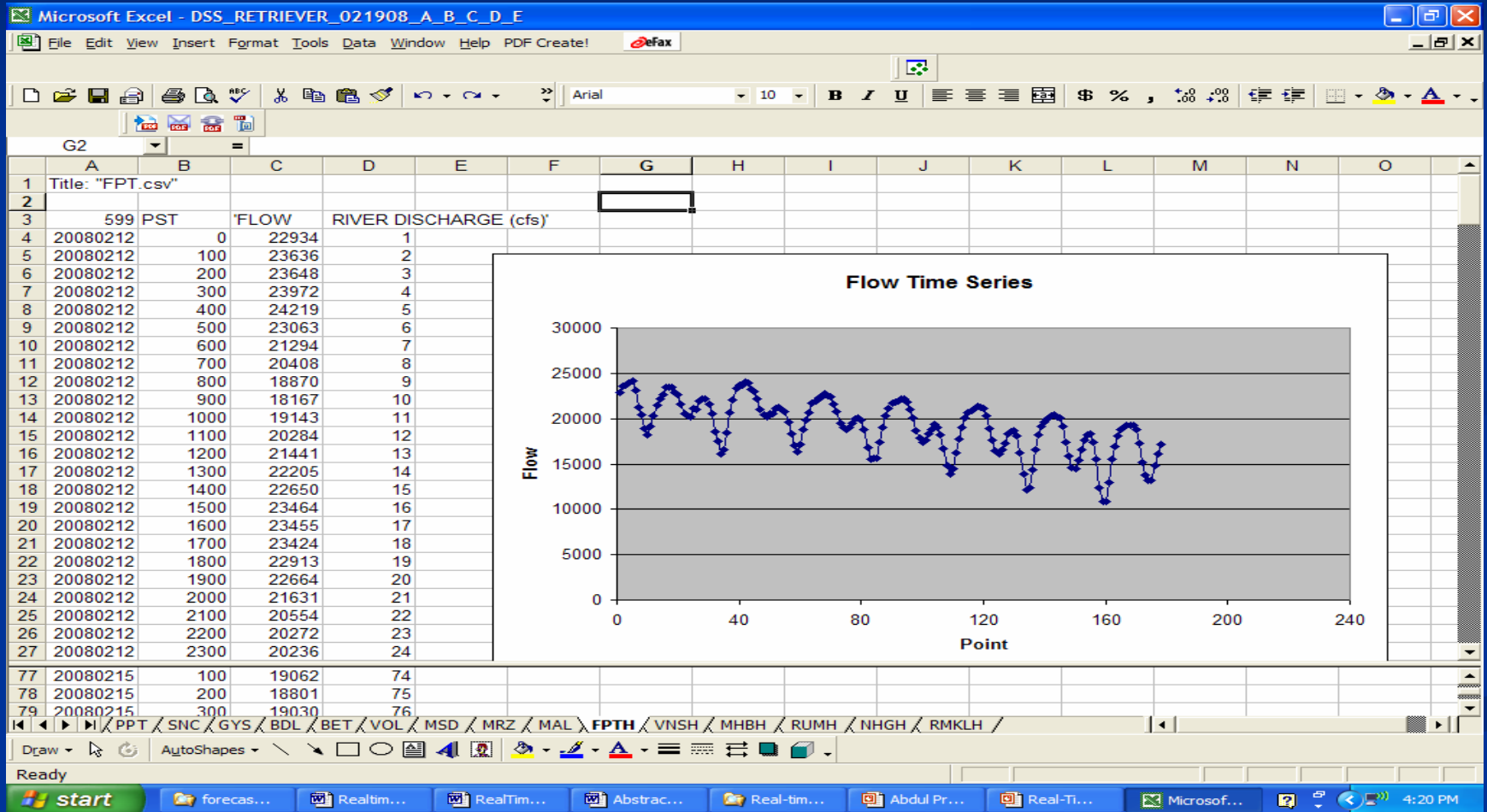
Write Stage Data to hydroraw.dss

Write Flow/Export Data to hydroraw.dss

Fill-in Stage Data and Write Data to hydro.dss
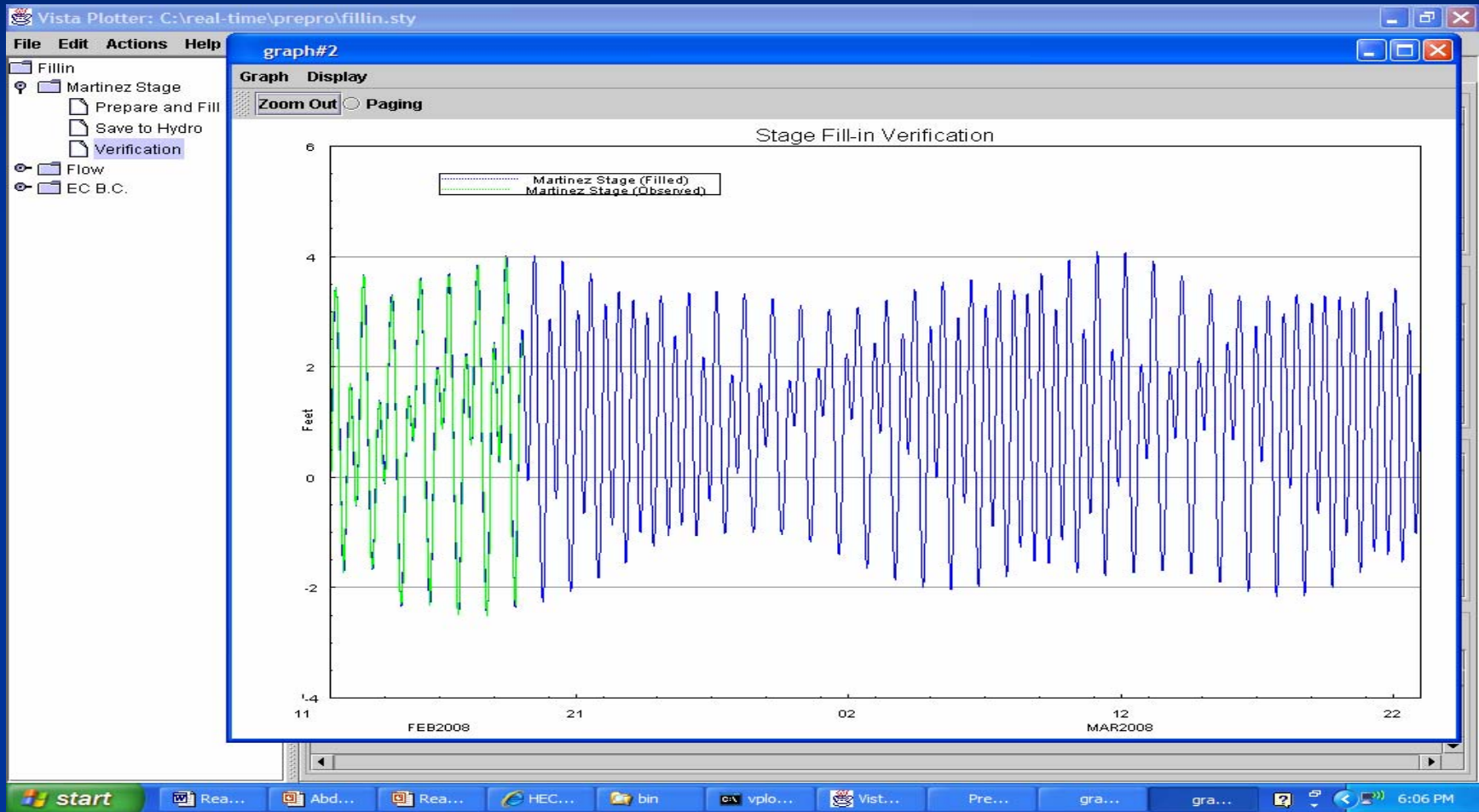
Fill-in Flow/Export Data and Write Data to hydro.dss
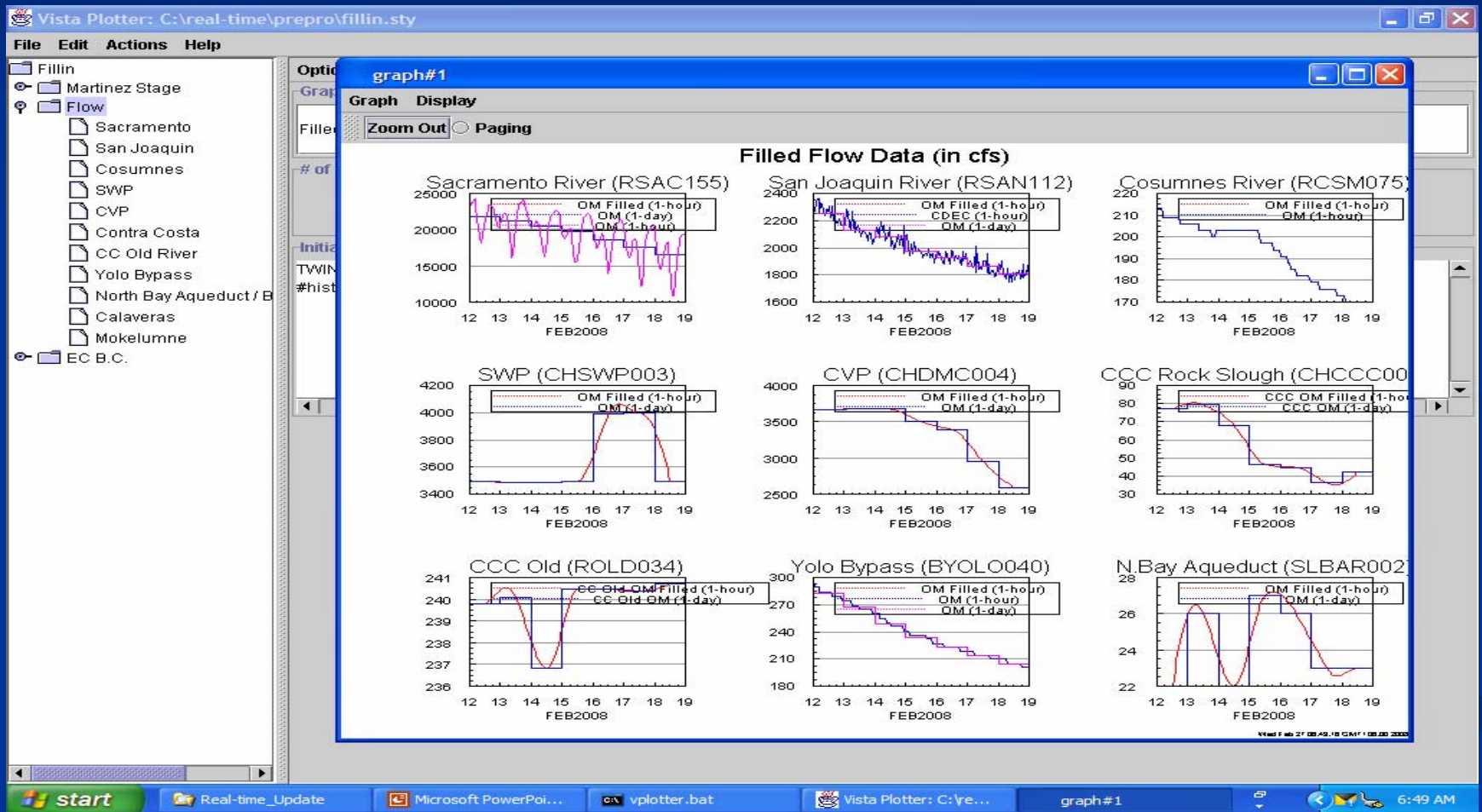
Real-time DSM2 Simulation
HYDRO

Step 4: Prepare forecast.dss file:

- Forecasted Delta Cross Channel gate and Clifton Court Forebay operations data.
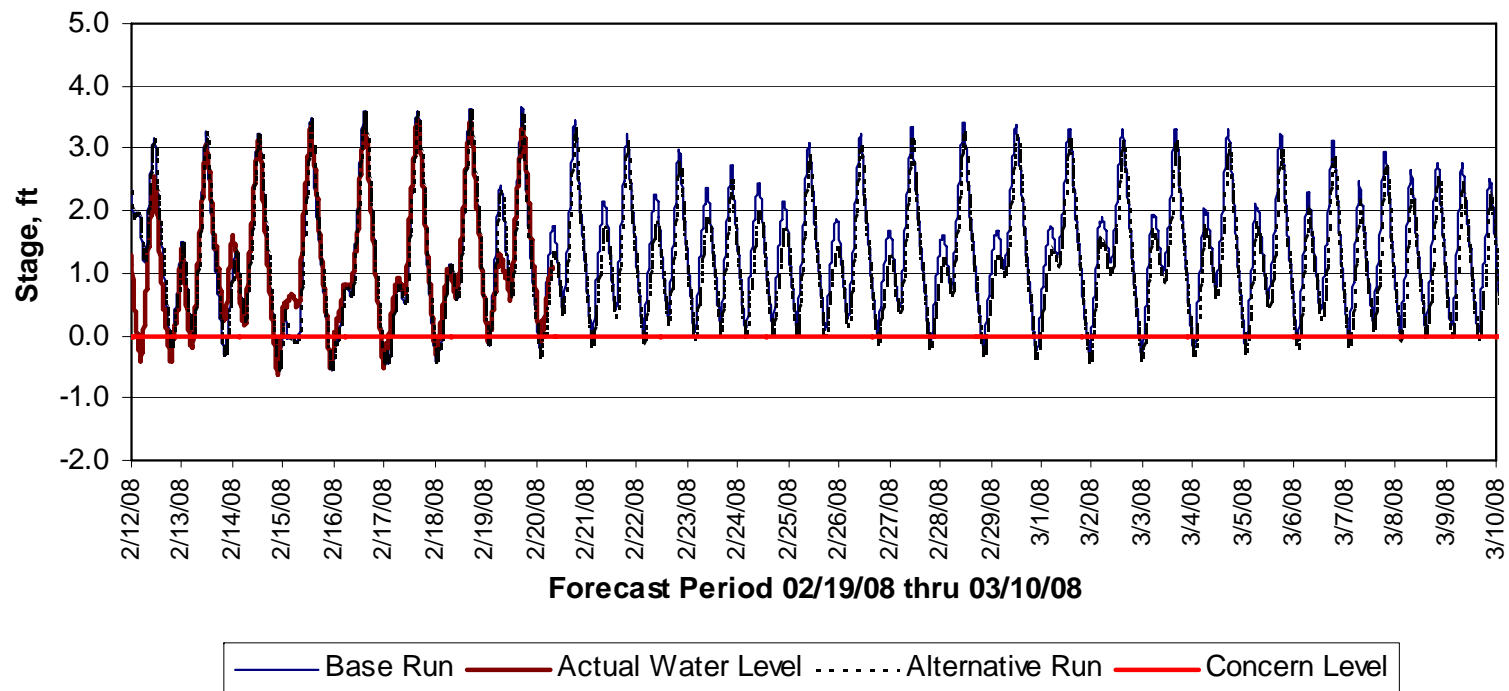- Forecasted flow and export data.

Forecast Data

Write Forecast Data to forecast.dss

Real-time DSM2 Simulation
HYDRO

5. Prepare input data for running HYDRO.
6. Run HYDRO.
7. Process and review water level results.
8. Prepare PDFs for water levels.

Water Level Simulation

Forecasted Stage @ Doughty Ct/Channel 205

Real-time DSM2 Simulation Steps (QUAL)

1. Prepare qualityraw.dss file.
2. Prepare quality.dss file.
3. Update optstart.py and createrestart.py files.
4. Run QUAL warm-start and build initial EC condition.
5. Prepare input data for running QUAL.
6. Run QUAL.
7. Process and review EC results.
8. Prepare PDFs for ECs.

Retrieve Historical Data

Retrieve Historical EC Data
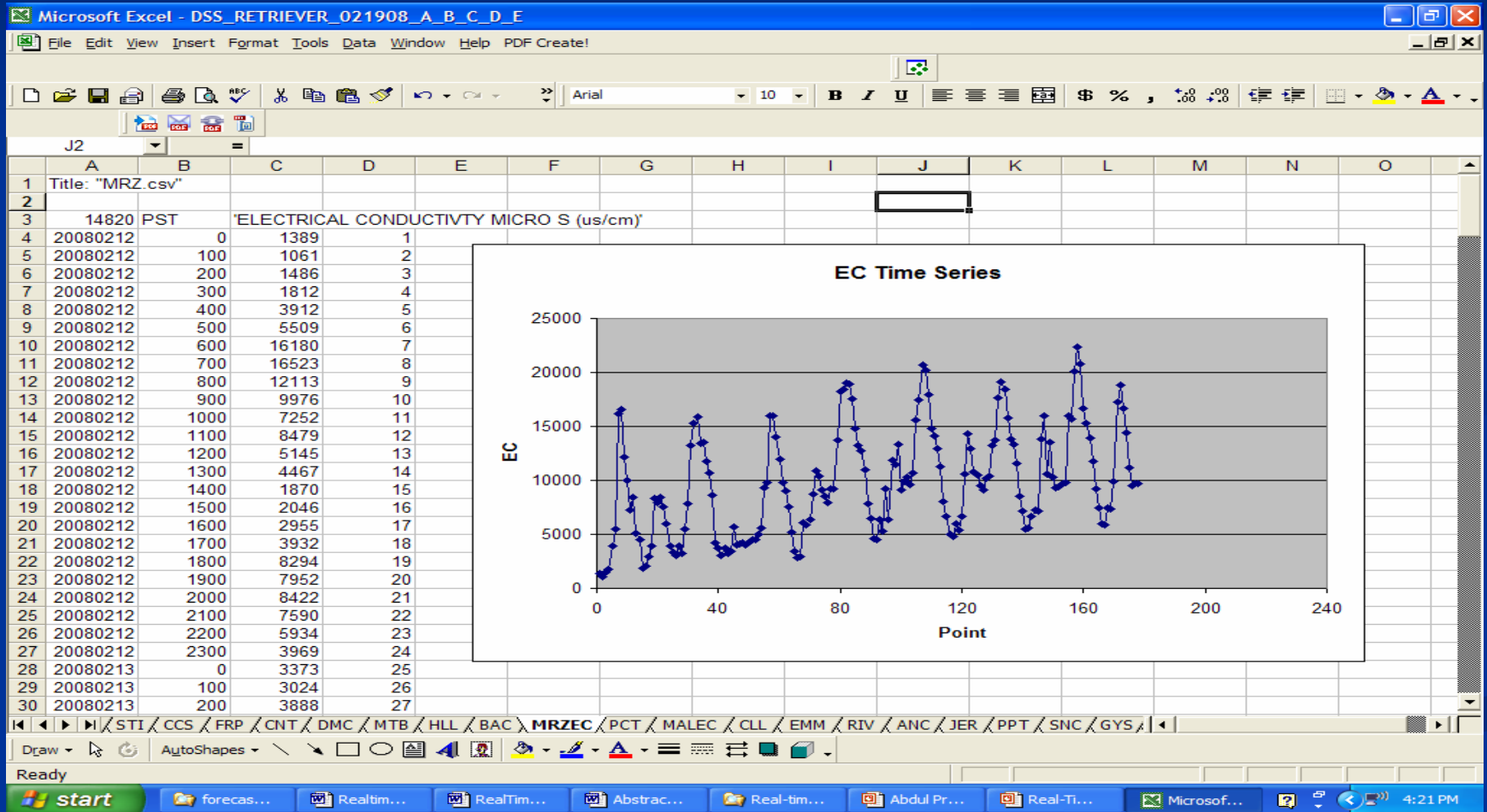
Write EC Data to qualityraw.dss

Fill-in Sac R. and SJR EC Data and Write Data to quality.dss file
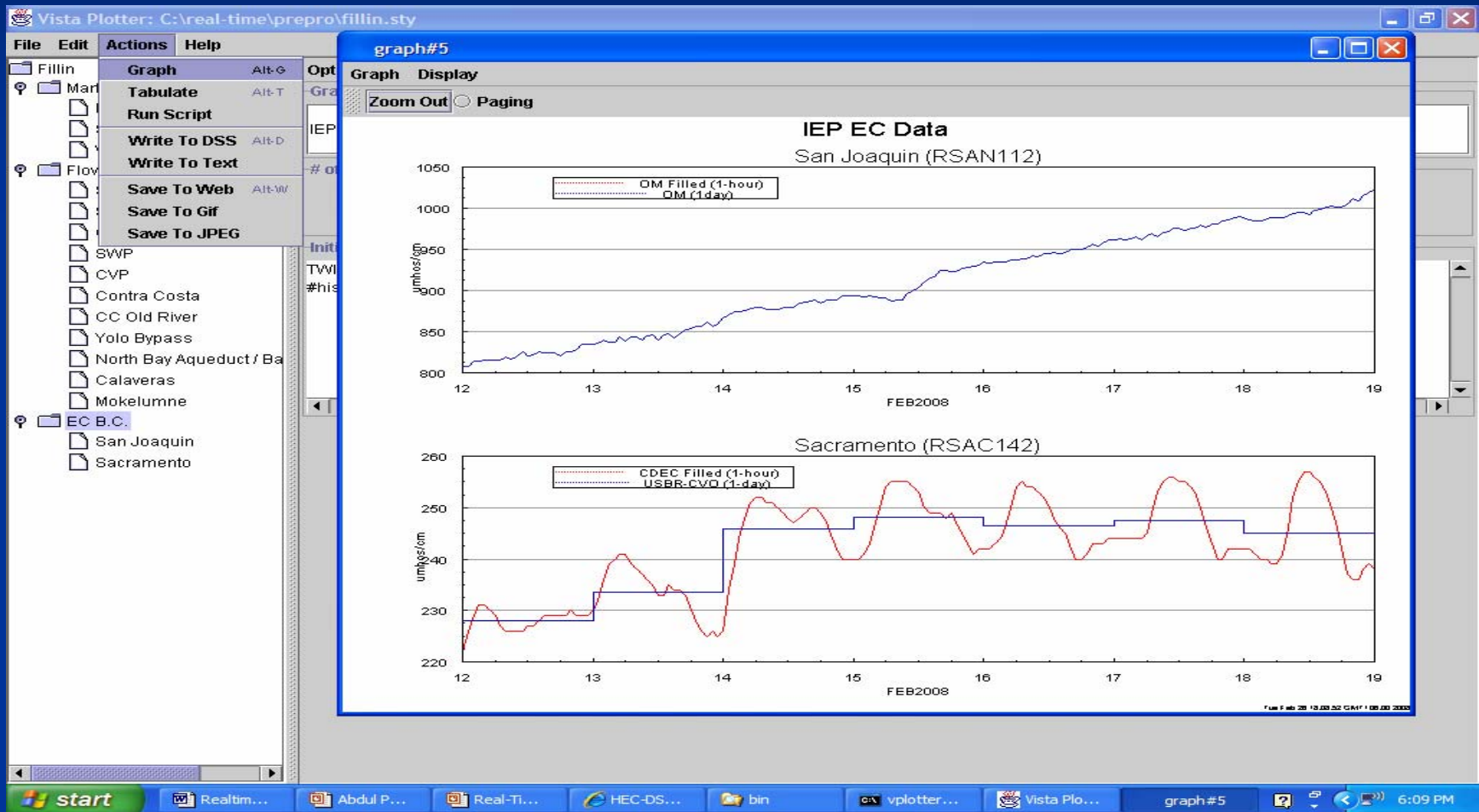
Fill-in Martinez EC Data and Write Data to quality.dss
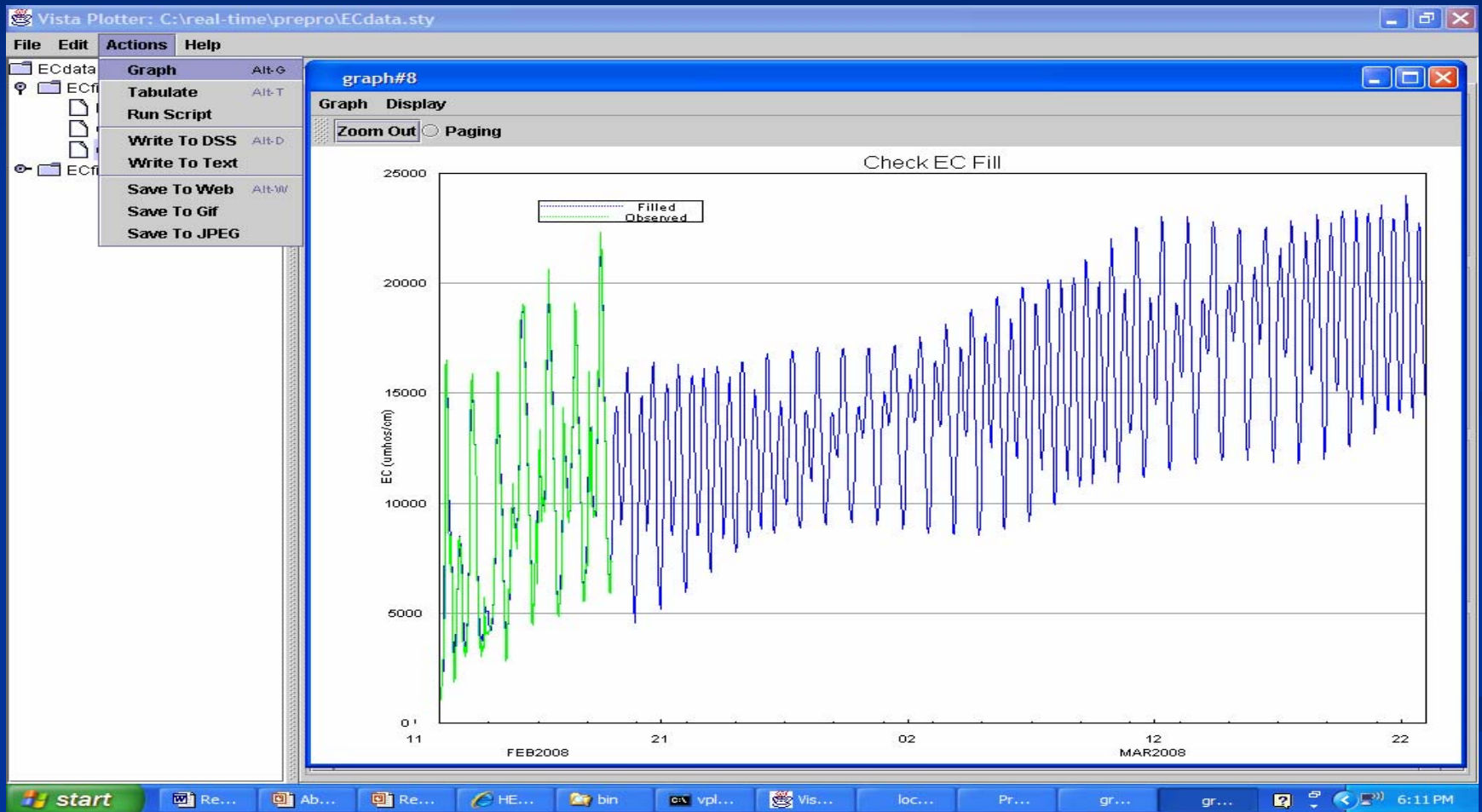
Real-time DSM2 Simulation Steps (QUAL)

3. Update optstart.py and createrestart.py files.

4. Run QUAL warm-start and build initial EC condition.

Real-time DSM2 Simulation Steps (QUAL)

5. Prepare input data for running QUAL.
6. Run QUAL.
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8. Prepare PDFs for ECs.

EC Simulation

Forecasted Daily EC
@ Bethel

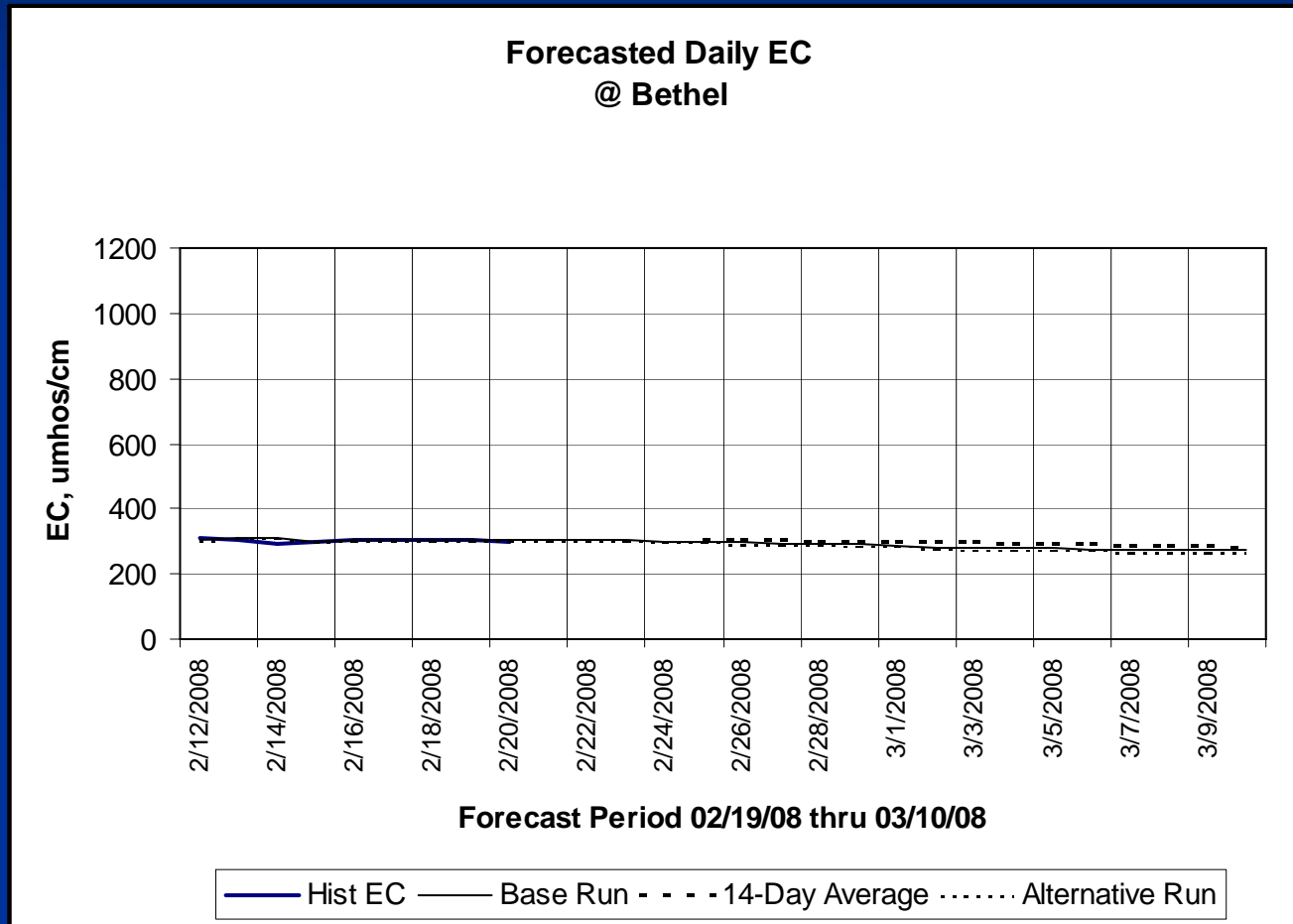Forecast Period 02/19/08 thru 03/10/08

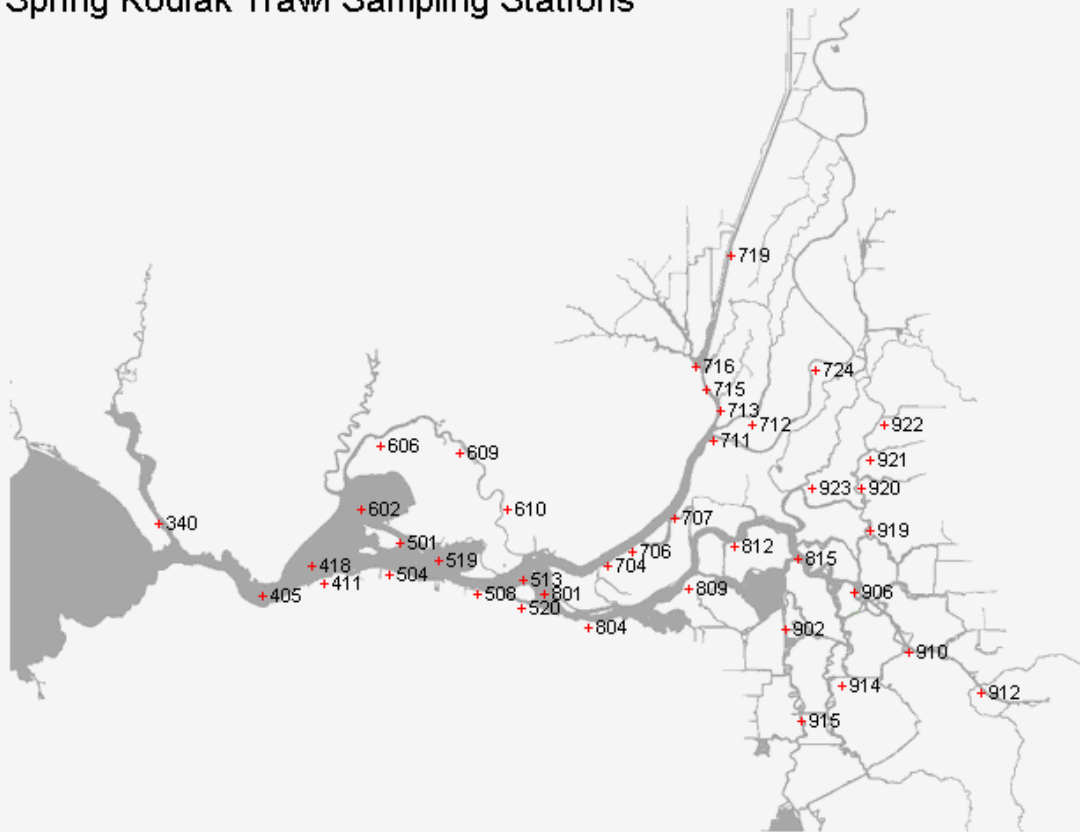Hist EC ——— Base Run - - - - 14-Day Average ······ Alternative Run
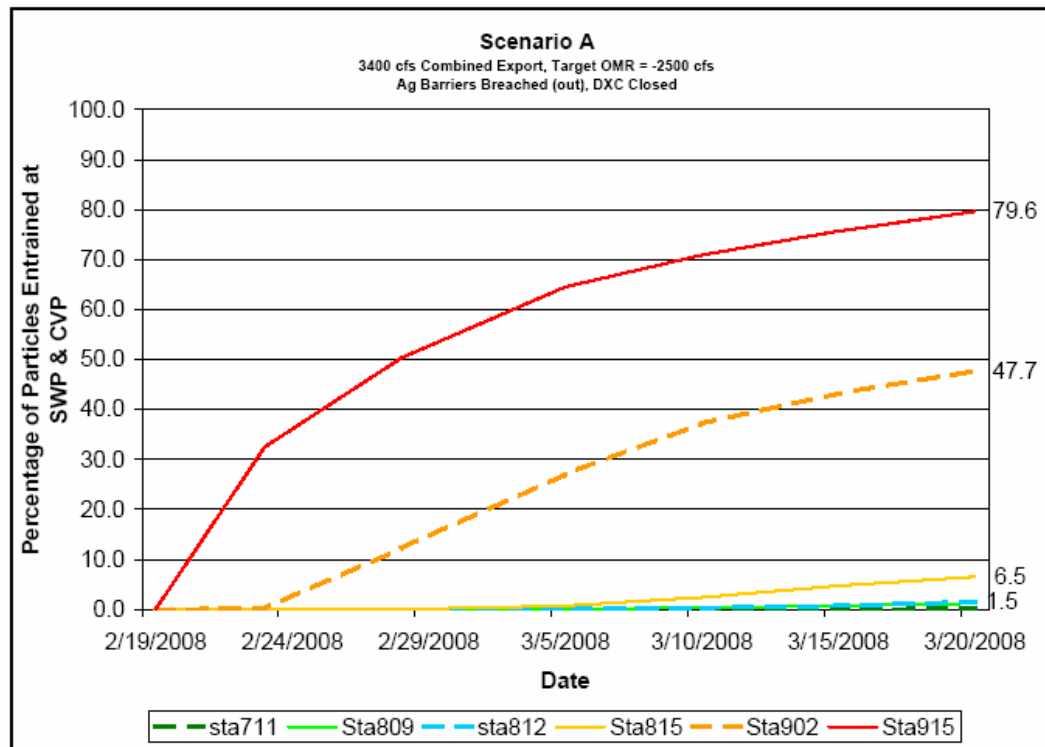
Real-time DSM2 Simulation Steps (PTM)

1. Prepare input data for running PTM.
2. Run PTM.
3. Process and review PTM results.
4. Prepare PDFs for PTM results.

PTM Simulation Locations

Spring Kodiak Trawl Sampling Stations

PTM Simulation

Documentation

- Real-time DSM2 simulation steps.
- Detailed real-time DSM2 guide.

Real-time DSM2 Simulation Steps

Real-time DSM2 Guide

Future Plans

- Migrate fill-in procedure in Excel Retriever.
- Complete detailed real-time DSM2 guide.
- Finish organizing real-time DSM2 steps.
- Improve currently automated steps.
- Automate all remaining steps for pre- and post-processing.

Questions ?