

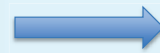
WATER SUPPLY AND DEMAND OPTIMIZATION MODEL UPGRADES

January 24, 2024



Introduction

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1														
2	W	A	T	E	R	0	0	0	0	0	0	0	0	0
3	S	U	P	P	L	Y	and	0	0	0	0	0	0	0
4	D	E	M	A	N	D	0	0	0	0	0	0	0	0
5	O	P	T	I	M	I	Z	A	T	I	O	N		
6	M	O	D	E	L	0	0	0	0	0	0	0	0	0



BLUE PLAN-IT
DECISION SUPPORT SYSTEM

Purpose: to prioritize water supplies while targeting reservoir levels

Existing WSDOM Model

WSDOM Operations Interface

Input Details
 Use Today:
 Start Date: 17-May, Previous Week: 5/8, End Date: 5/14
 Current Week: 5/15, Next Week: 5/22, End Date: 5/28

Fiscal Year 2022 Operations
 CPTP Balance: 2000 AF
 Imported Water Use This Year: 0 AF
 Groundwater Pumped This Year: 0 AF
 MWRP Used This Year: 0 AF
 DCWD Target BPP: 77%
 Actual BPP: 0%

Reservoir Level and Storage Forecaster
 Target Reservoir Levels: 18, 12, 12, 12, 15, 15, 25, 15
 Actual Levels (ft): 12

Block Hours
 Enable Blocked Hour Restrictions
 Start Time PM: 6:00 PM, End Time AM: 7:00 AM
 Weekday: 6:00 PM, 7:00 AM
 Weekend: 6:00 PM, 7:00 AM

Optimization Parameters
 Electricity:
 Gas:
 Labor:
 Chemicals:
 Reservoir Operation Parameters: Percent above ADD to be met: 100% hourly by reservoirs, Lead fill and empty proportion: 100%, Lag fill and empty proportion: 0%

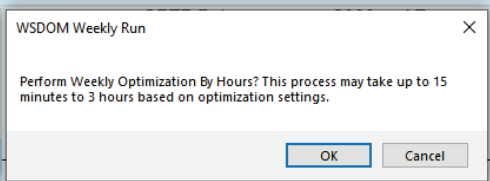
Hourly Optimized Schedule of Operations For the Week of Monday, May 15, 2023 to Sunday, May 21, 2023

Day	Monday, May 15, 2023	Tuesday, May 16, 2023	Wednesday, May 17, 2023
Well 1	OFF	ON	ON
Well 3	ON	ON	ON
Well 5	ON	ON	ON
Well 7	ON	ON	ON
Well 9	OFF	ON	ON
MWRP	0.36	0.36	0.36
Reservoir 1	D	D	D
Reservoir 2	F	F	F
Imported Water (MG)	0.00	0.00	0.00
Imported Water (cfs)	0.00	0.00	0.00

What are the Drivers for Updating WSDOM?

Major Driver:

- New wells
 - Windows / Office upgrades
- ### Requested Enhancements:
- Faster run times
 - Variable start times



Supplies Interface

Assumptions: Day: 7/9/2018, Pumping Supply Cost: 276.00, Price (\$/ft): 946.99, Imported Water Cost: 847.00, Price (\$/ft): 324.80, Price (\$/MG): 2559.27, MWDCC & MWD Misc. (Eqv): 105.84, Typical Imported Water Rate: 952.84, Price (\$/MG): 2924.08

Input Details
 Allocated CPTP: 2,000 af

Facility Information

Well	Status	Well Name	Discharge Pressure (psi)	Ground Surface Elevation (ft)	Current Pumping GW Level (ft)	Capacity (gpm)	Capacity (mgh)	Capacity (mgd)	Capacity (cfs)
Well 1	<input checked="" type="checkbox"/>	97	97	0	-115.00	2,330	0.14	3.355	5.1904944
Well 3	<input checked="" type="checkbox"/>	93.98	34	-48.00	1,160	0.07	1.670	2.5841088	
Well 5	<input checked="" type="checkbox"/>	97.62	32.71	-39.50	2,300	0.14	3.312	5.123694	
Well 7	<input checked="" type="checkbox"/>	96.17	29.4	-60.30	1,300	0.08	1.872	2.85694	
Well 9	<input type="checkbox"/>	94.11	32	-32.00	1,430	0.09	2.059	3.1855824	
MWRP	<input checked="" type="checkbox"/>				6,000	0.36	8.640	13.36608	
						0.87	20.91	32.35	

Reservoirs

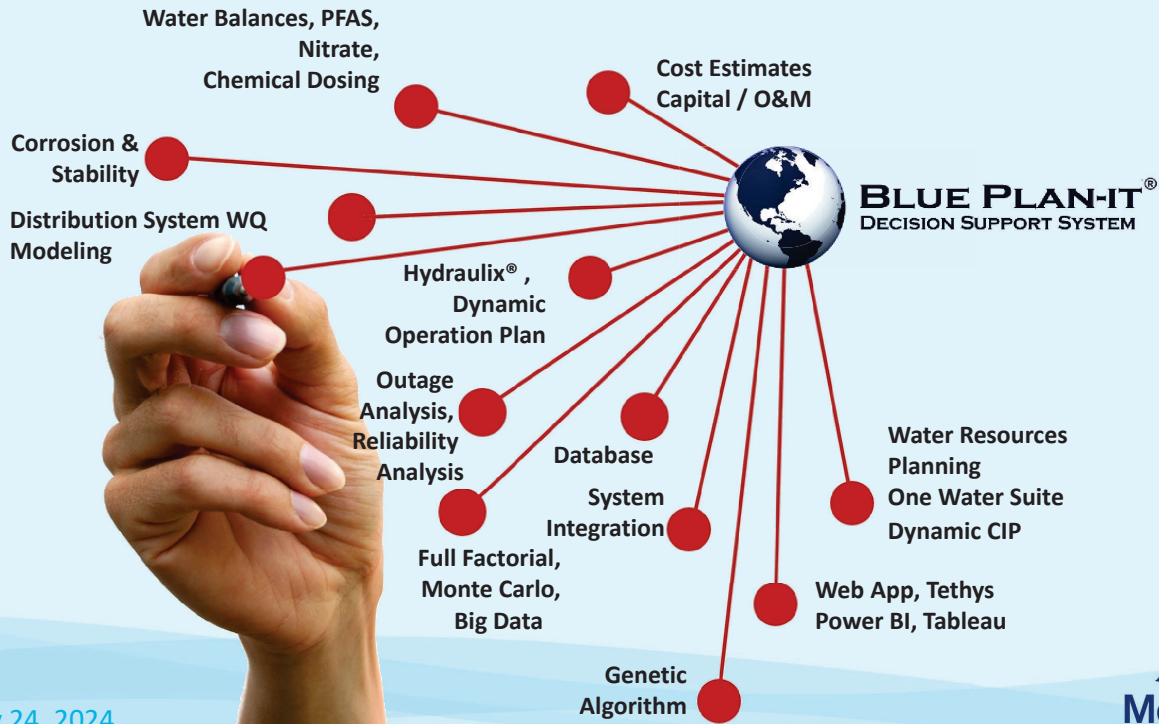
Status	Reservoirs	Minimum Level (ft)	Maximum Level (ft)	Maximum Capacity (gpm)
<input checked="" type="checkbox"/>	Reservoir 1	7.5	38.0	8,000
<input checked="" type="checkbox"/>	Reservoir 2	5.0	33.0	14,000

Booster Pumps

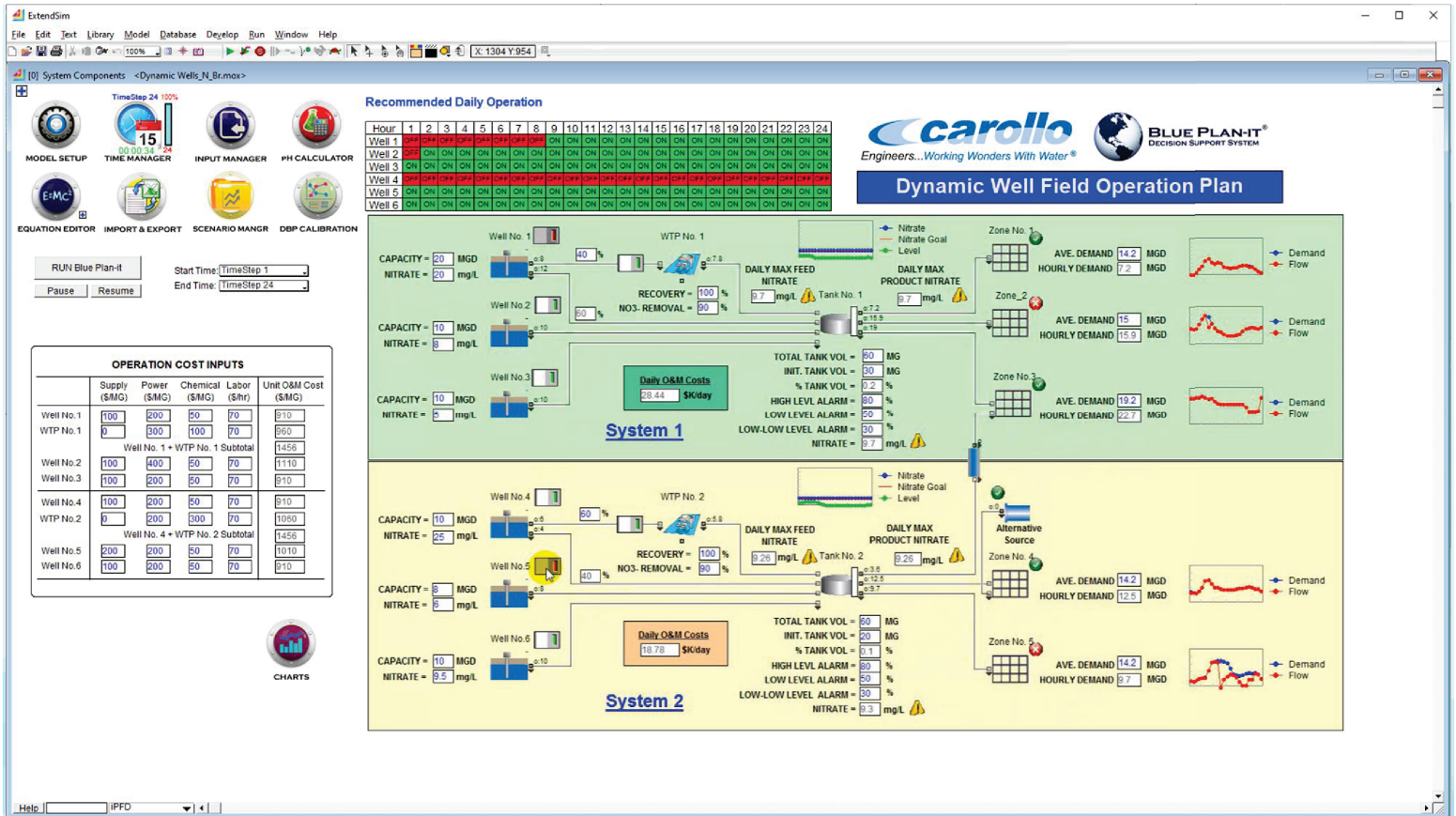
Status	Pump Name	Capacity (gpm)
<input checked="" type="checkbox"/>	Reservoir 1 E1	1,000
<input checked="" type="checkbox"/>	Reservoir 1 E2	1,000
<input checked="" type="checkbox"/>	Reservoir 1 G1	2,500
<input checked="" type="checkbox"/>	Reservoir 1 G2	2,500
<input checked="" type="checkbox"/>	Reservoir 1 G3	2,500
<input checked="" type="checkbox"/>	Reservoir 2 G1	4,200
<input checked="" type="checkbox"/>	Reservoir 2 G2	4,200
<input checked="" type="checkbox"/>	Reservoir 2 G3	4,200
<input checked="" type="checkbox"/>	Reservoir 2 G4	4,200

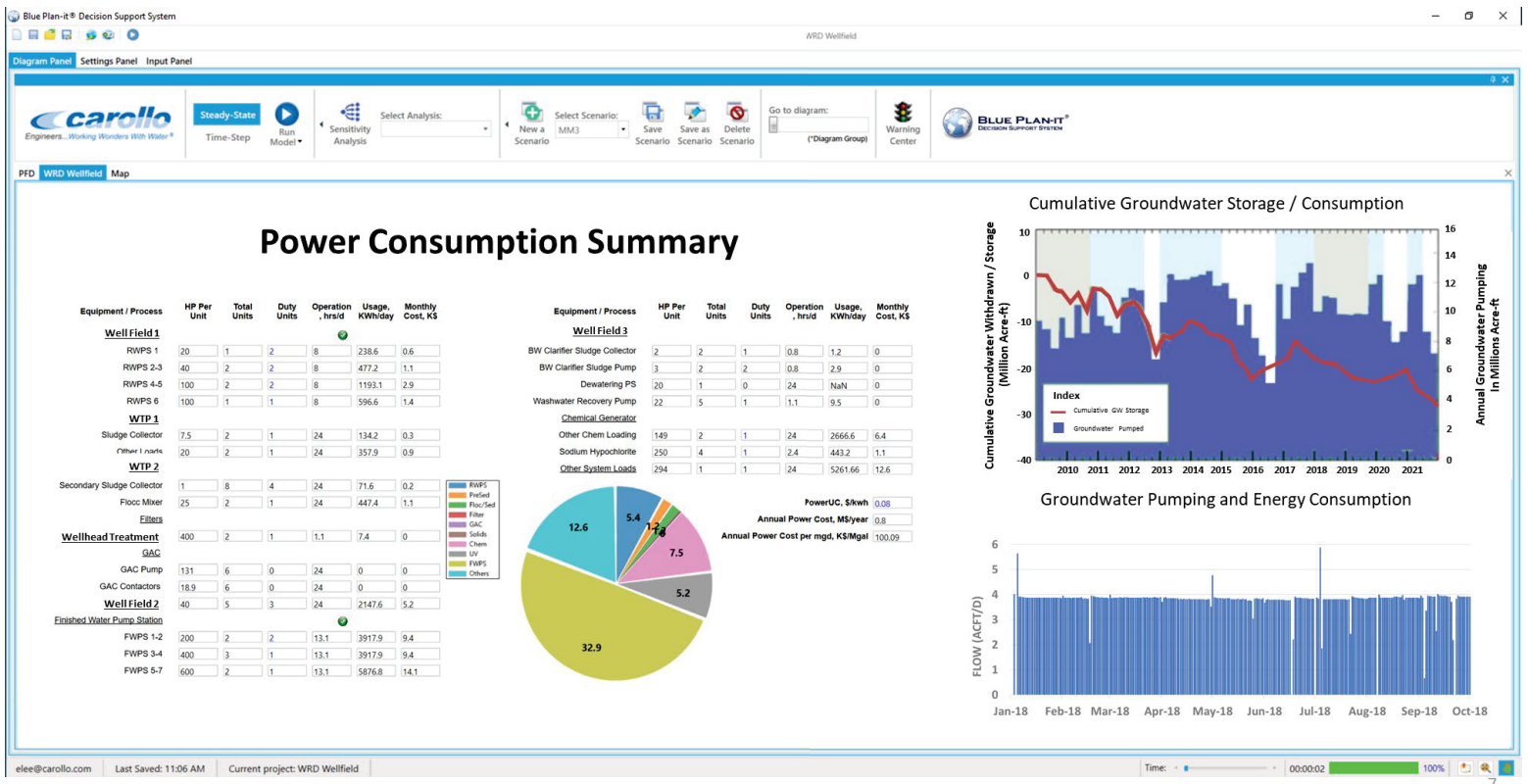
Imported

Status	Connection Name	Capacity (cfs)
<input checked="" type="checkbox"/>	CM 2	15.0
<input type="checkbox"/>	CM 6	4.0
<input type="checkbox"/>	OC 14	10.0



5 | January 24, 2024





Recommendations

Blue Plan-it® Benefits:

- Can track and prioritize water supplies
- Improved interface
- Shorter run times
- Easy to modify
- Simple to upgrade to include water quality calculations (PFAS)
- Flexibility for future operational modifications

Recommendation: Rebuild WSDOM with required upgrades in Blue Plan-it®

Questions?

9 | January 24, 2024

