

# RECLAMATION

*Managing Water in the West*

## Fontenelle Working Group Meeting

August 25, 2009



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Upper Colorado Region  
Hydraulic Engineer



U.S. Department of the Interior  
Bureau of Reclamation

# Fontenelle Reservoir Current Status

As of 8/24/09

## Storage

Live Capacity	345,000 AF
Capacity on 8/24/09	<u>319,700 AF</u> (93% full)

## Pool Elevation

Reservoir Elev. (Max)	6506.0 ft
Elevation on 8/24/09	<u>6502.7 ft</u>
Elevation below (Max)	3.3 ft

## Inflow and Release

5 Day Average Inflow	950 cfs
Current Release on 8/24/09	1600 cfs

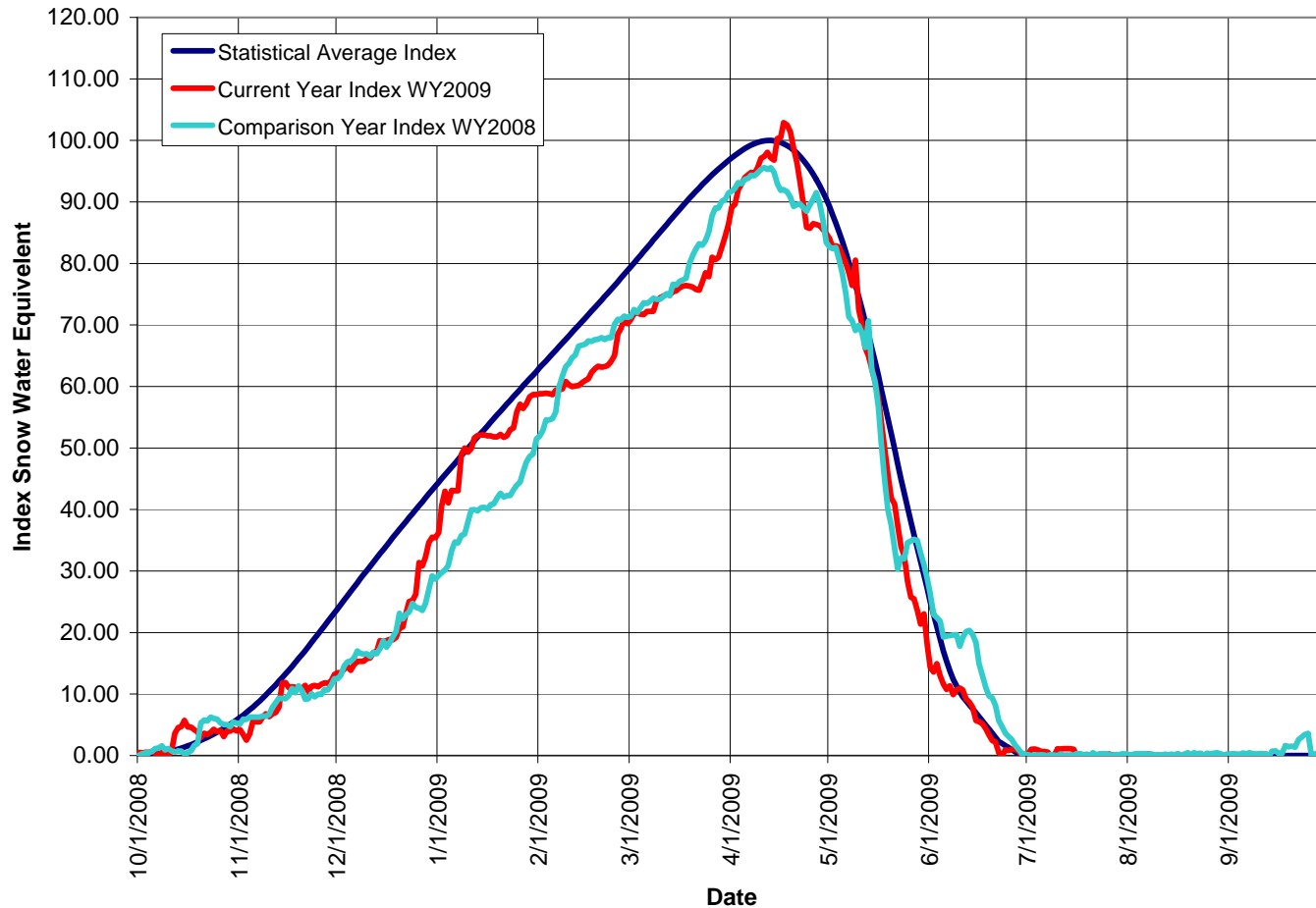
*Expect to begin ramp down later this week to reach 1,150cfs*

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# Observed Snowpack

## Water Year 2009

**Upper Green River Basin Snotel Tracking**  
Aggregate of 13 Snotel Sites above Fontenelle Reservoir



# Observed Snowpack

## Water Year 2009

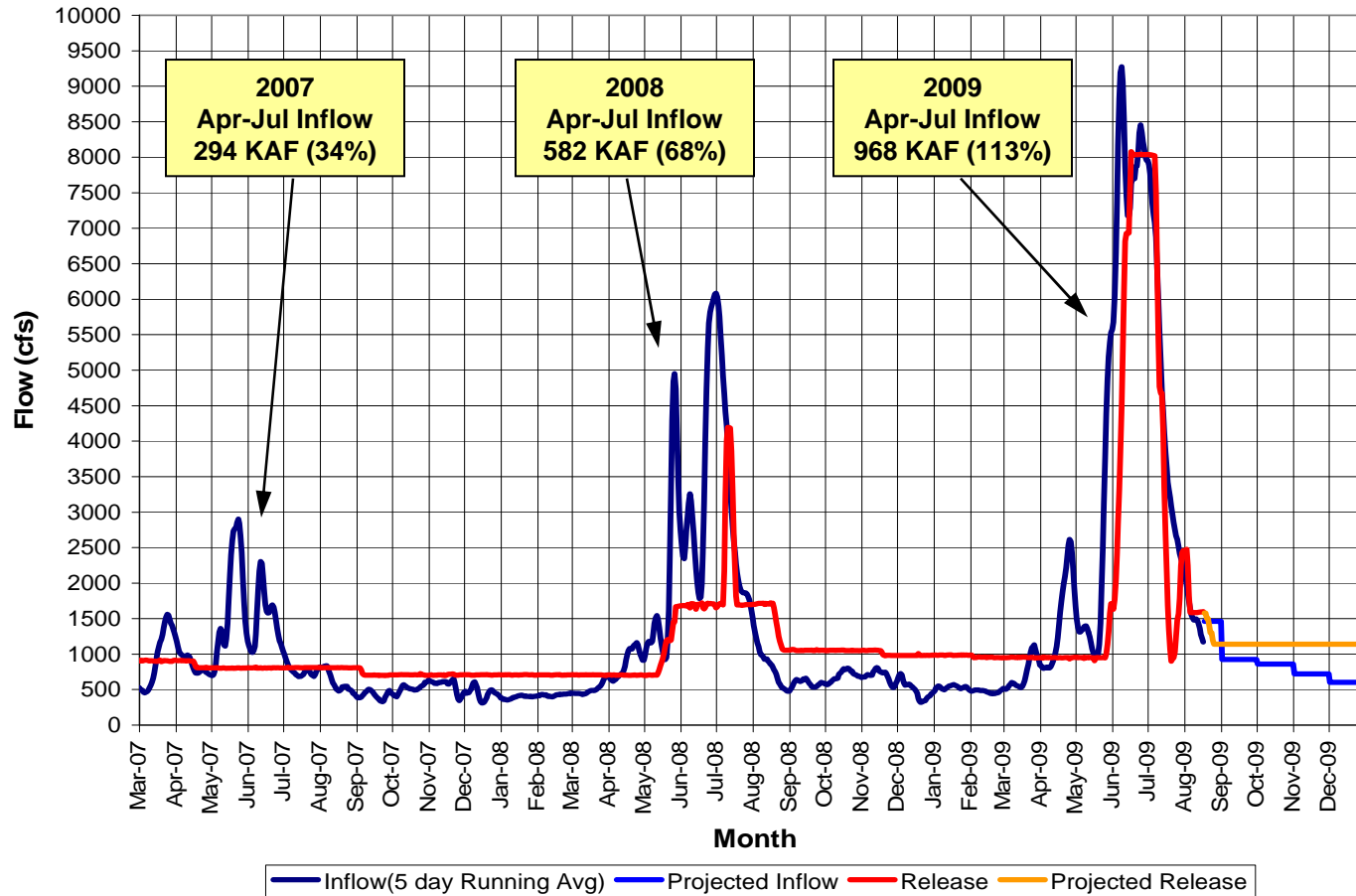


Wind River Mountains near Pinedale, WY 6/20/2009

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# Observed Inflow and Release

Fontenelle Operations  
2007, 2008, 2009



# Observed Inflow and Release Water Year 2009

**Inflow: 8,360 cfs**

Green River at La Barge, WY 6/20/2009



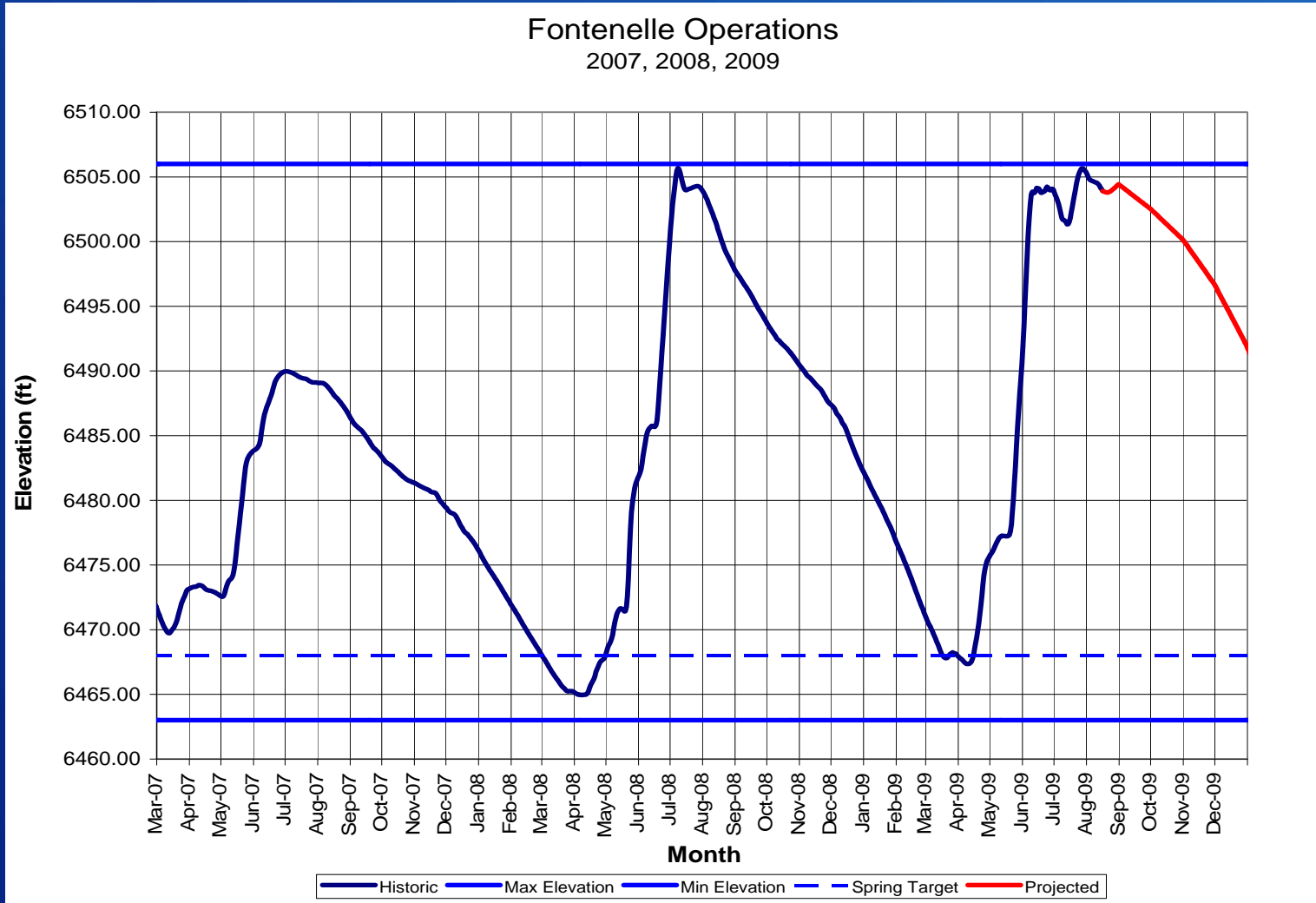
**Release: 8.040 cfs**

Fontenelle Dam 6/21/2009



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# Observed Reservoir Elevation



# Observed Reservoir Elevation

## Water Year 2009

**Elevation 6503.8 ft** above sea level  
2 ft below top of pool  
Fontenelle Dam, WY 6/20/2009

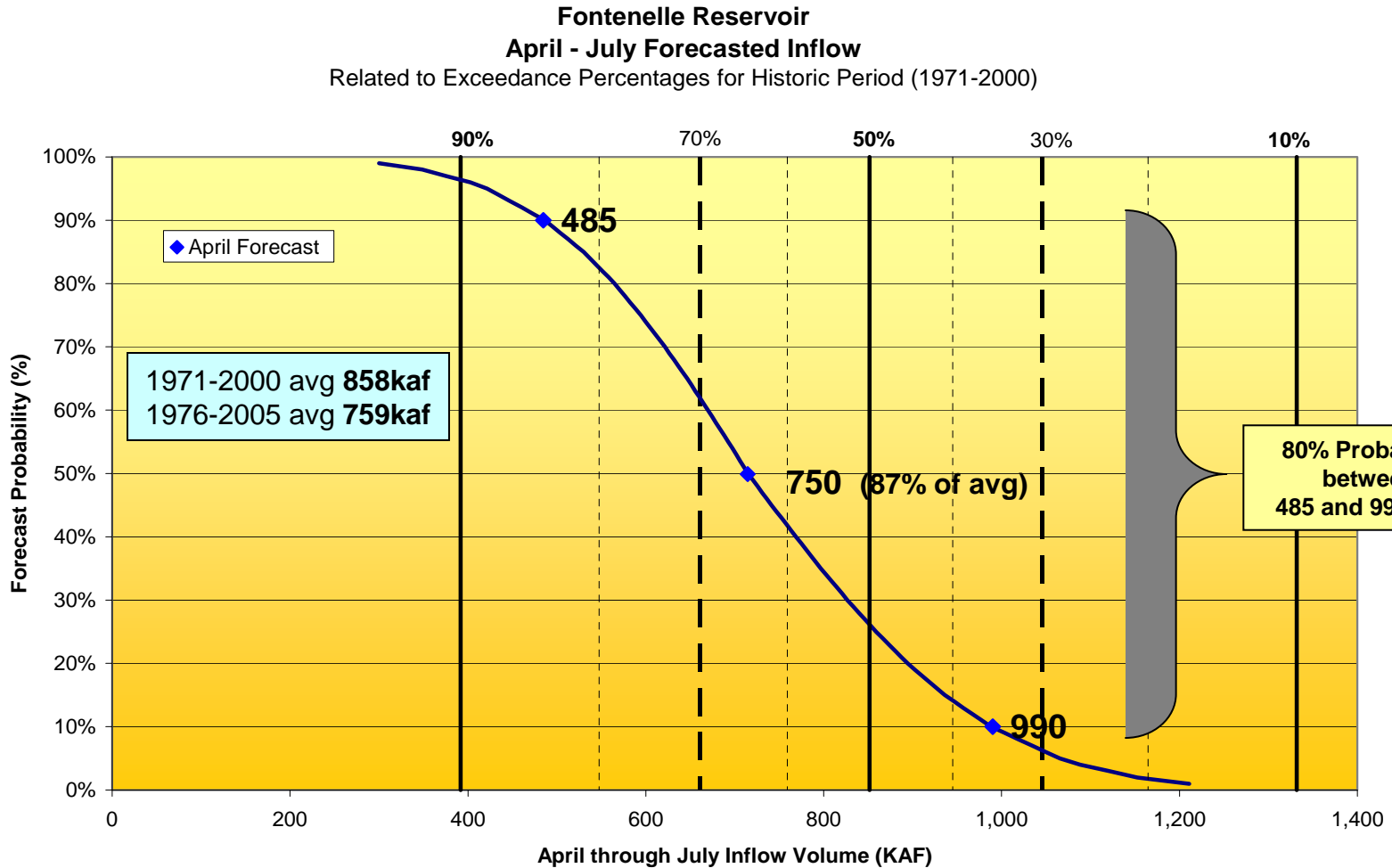


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# April Forecast

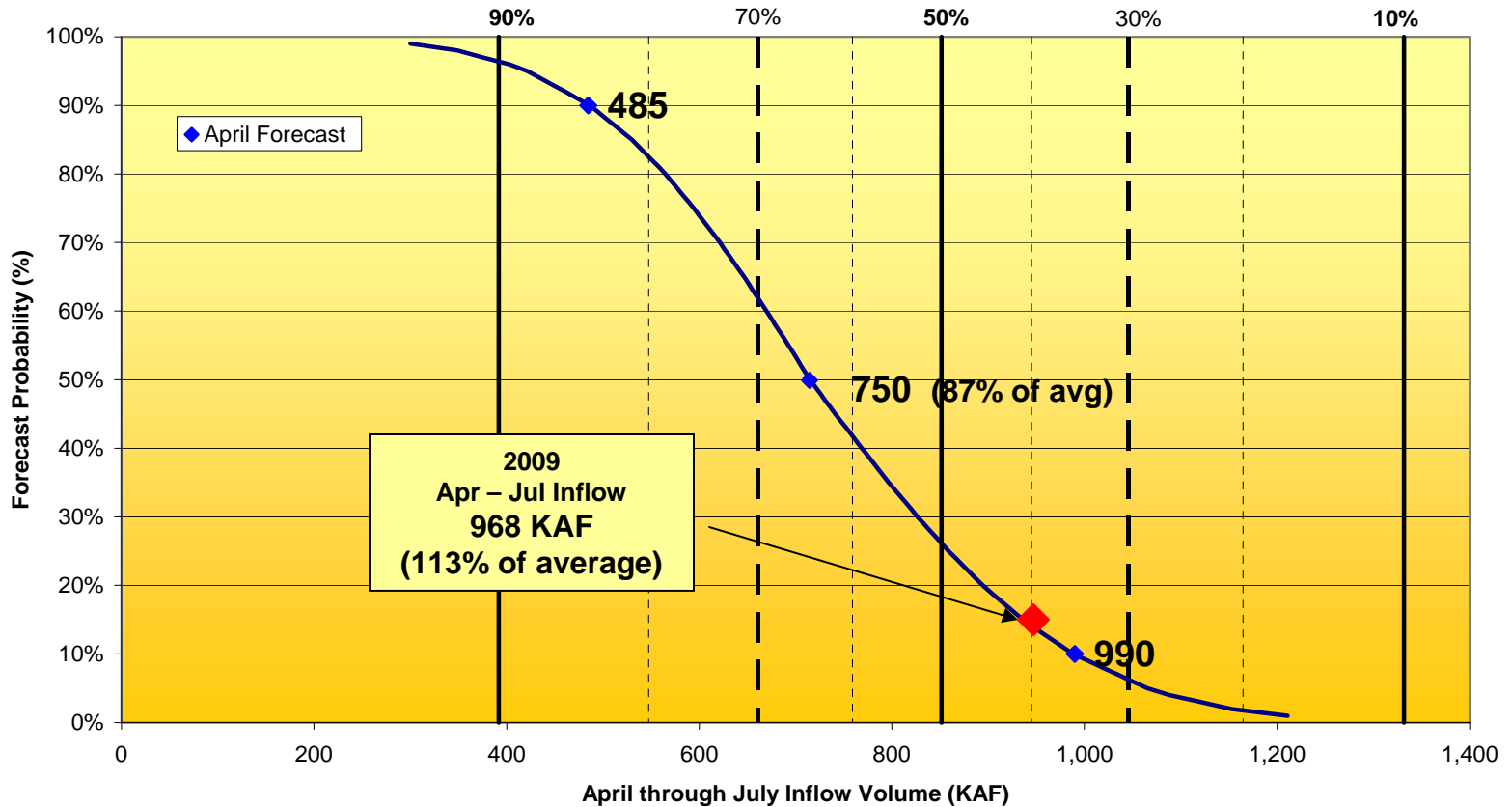
Presented at April Working Group Meeting



# Observed Inflow

## 2009 April – July Runoff Season

Fontenelle Reservoir  
April - July Forecasted Inflow  
Related to Exceedance Percentages for Historic Period (1971-2000)

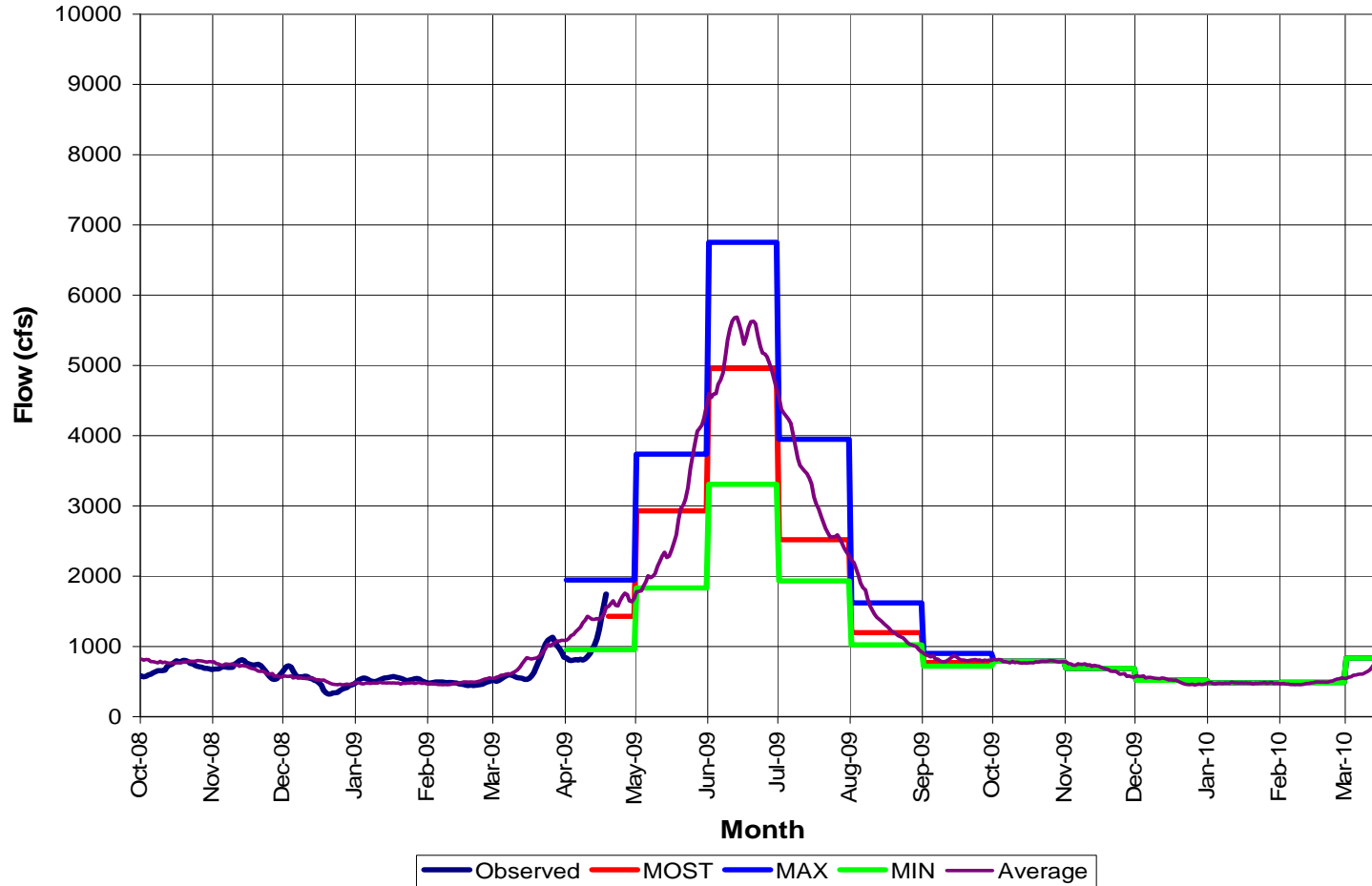


# Projected 2009 Inflow Scenarios

Presented at April Working Group Meeting

## Fontenelle Inflow Scenarios

Based on April Inflow Forecasts

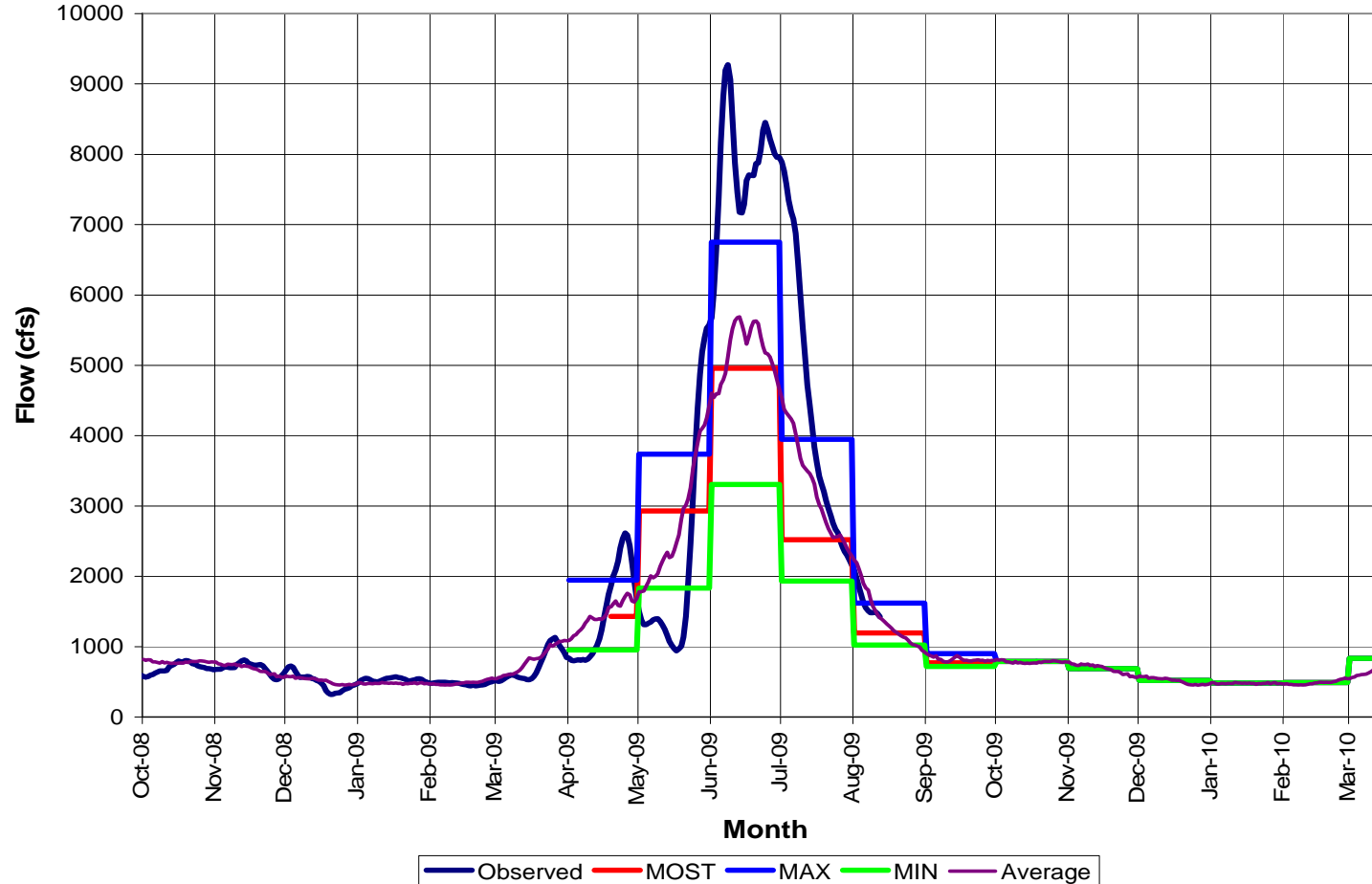


# Observed 2009 Inflow

As of Aug 15, 2009

## Fontenelle Inflow Scenarios

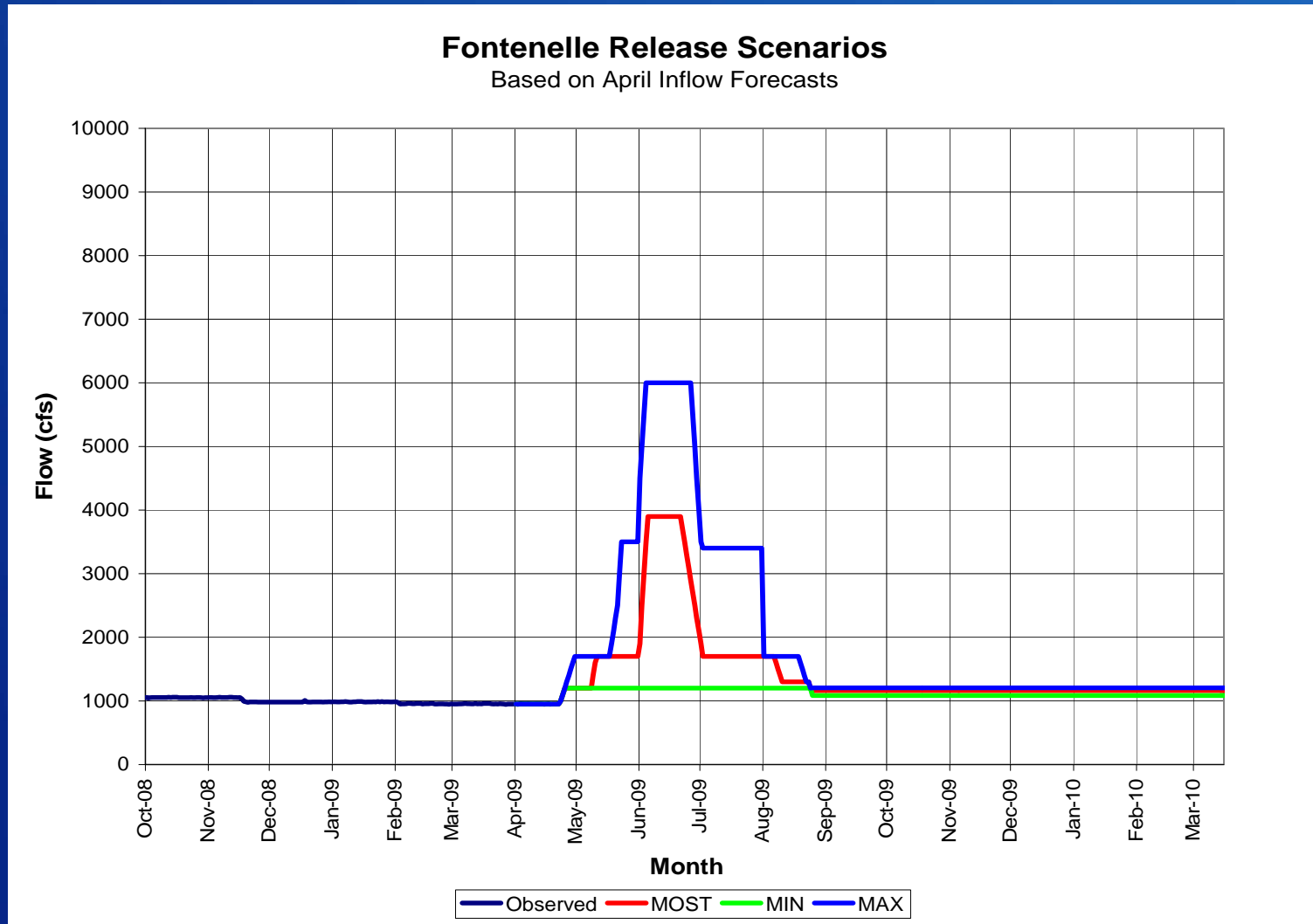
Based on April Inflow Forecasts



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# Projected 2009 Release Scenarios

Presented at April Working Group Meeting

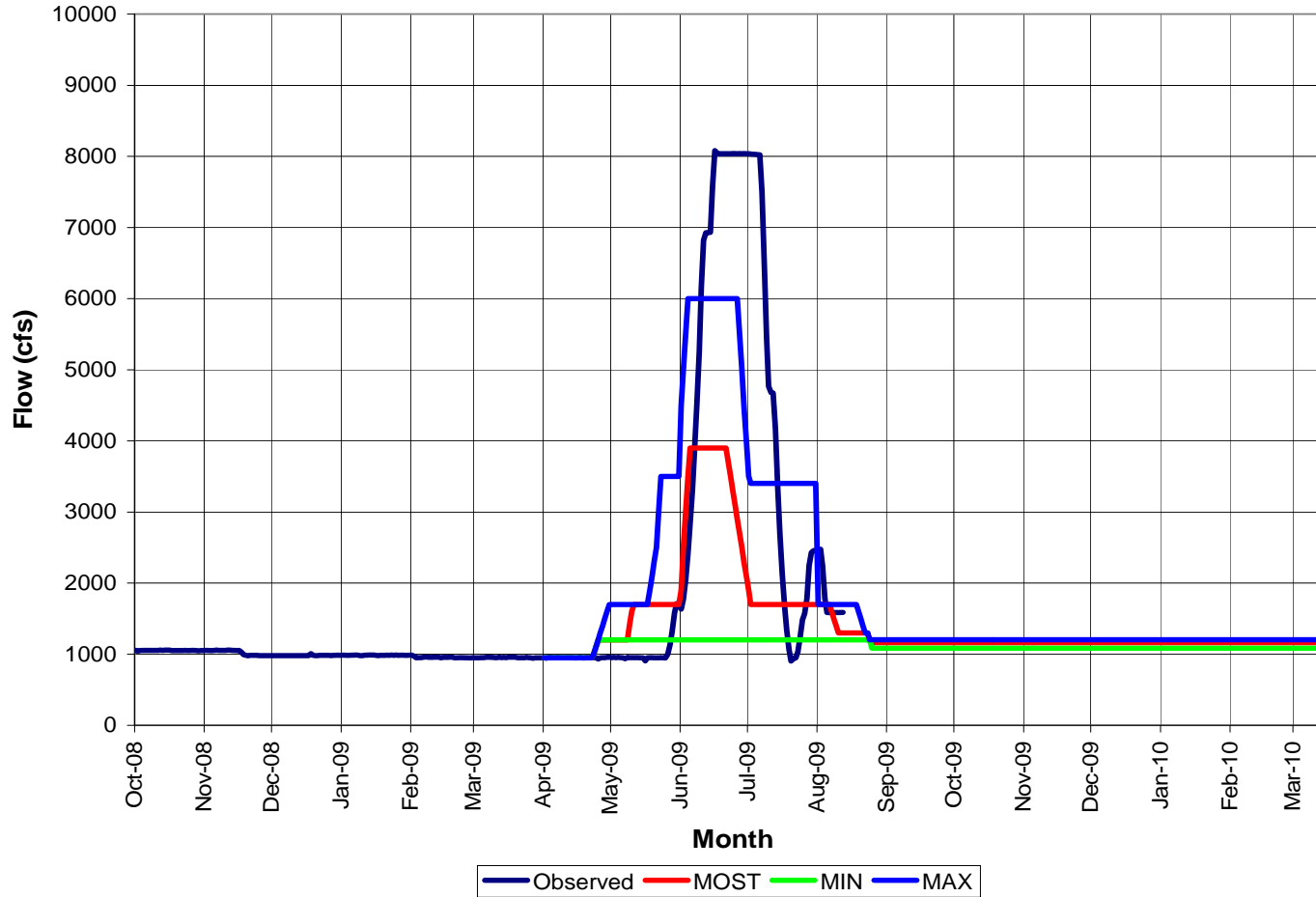


# Observed 2009 Release

As of Aug 15, 2009

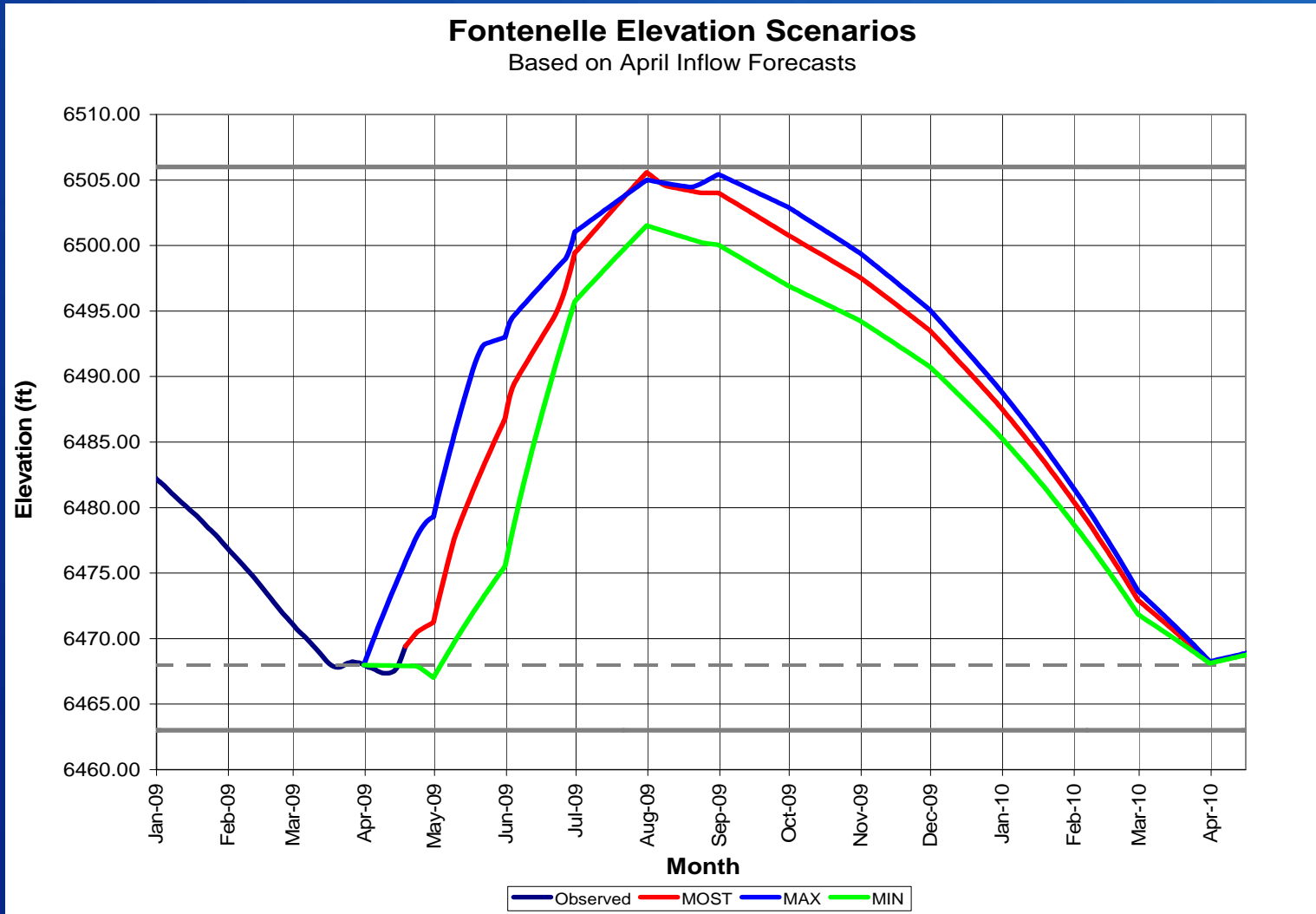
## Fontenelle Release Scenarios

Based on April Inflow Forecasts



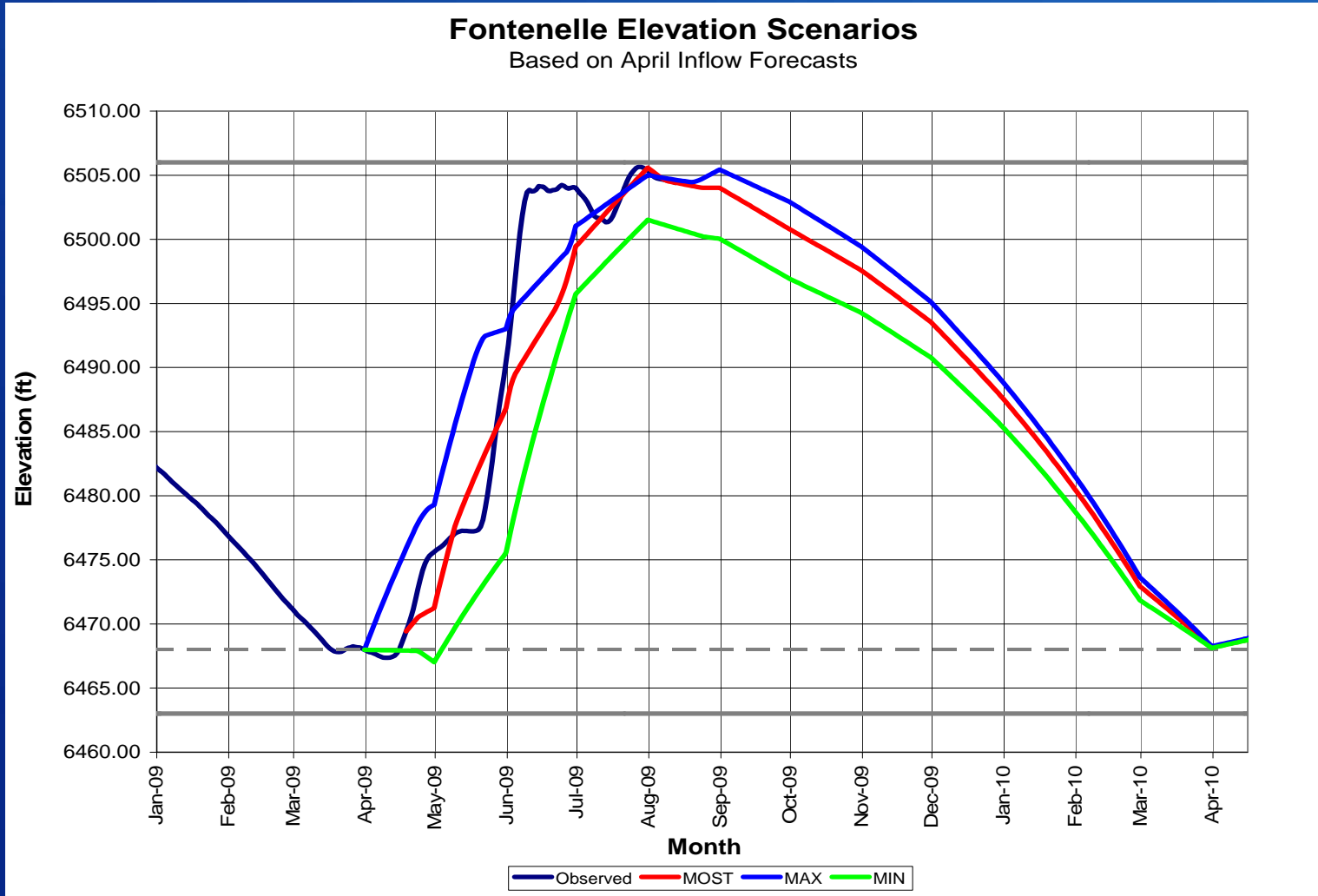
# Projected Elevation Scenarios

Presented at April Working Group Meeting



# Observed Elevation

As of Aug 15, 2009



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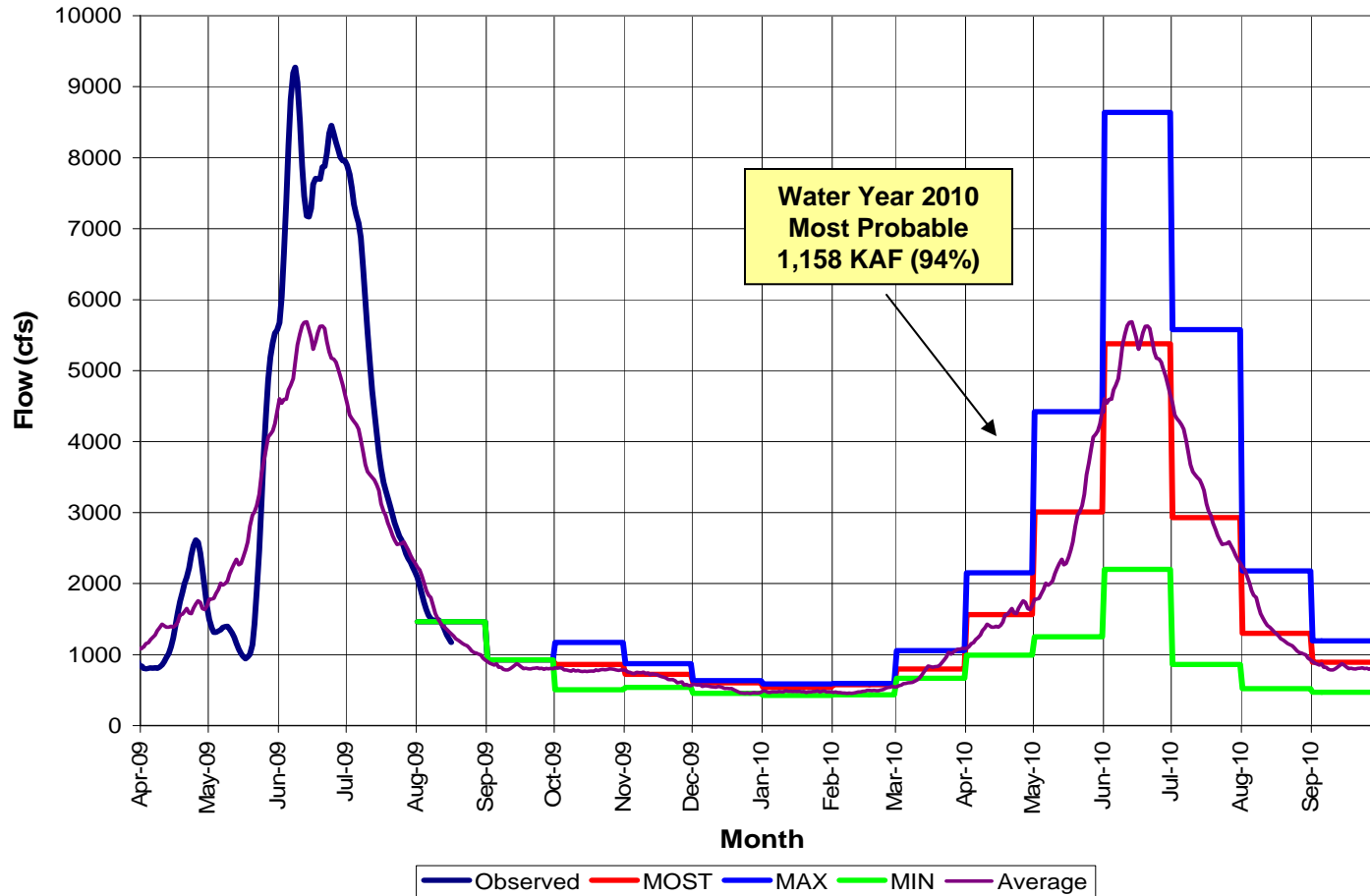
# Water Year 2010 Proposed Operations

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# Inflow Scenarios

## Water Year 2010

**Fontenelle 2010 Inflow Scenarios**  
Based on August Inflow Forecasts

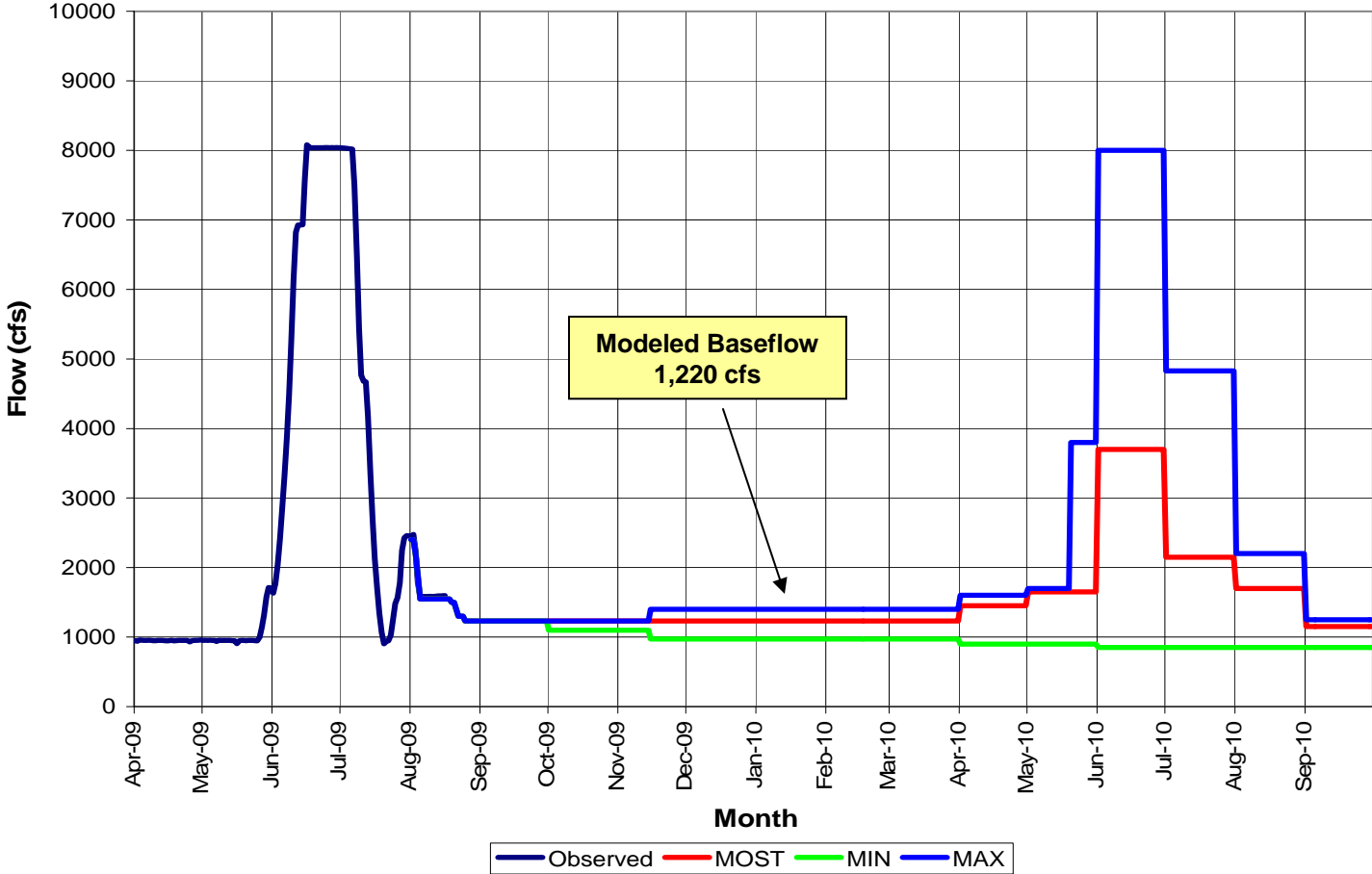


# Release Scenarios

## Water Year 2010

### Fontenelle 2010 Release Scenarios

Based on August Inflow Forecasts

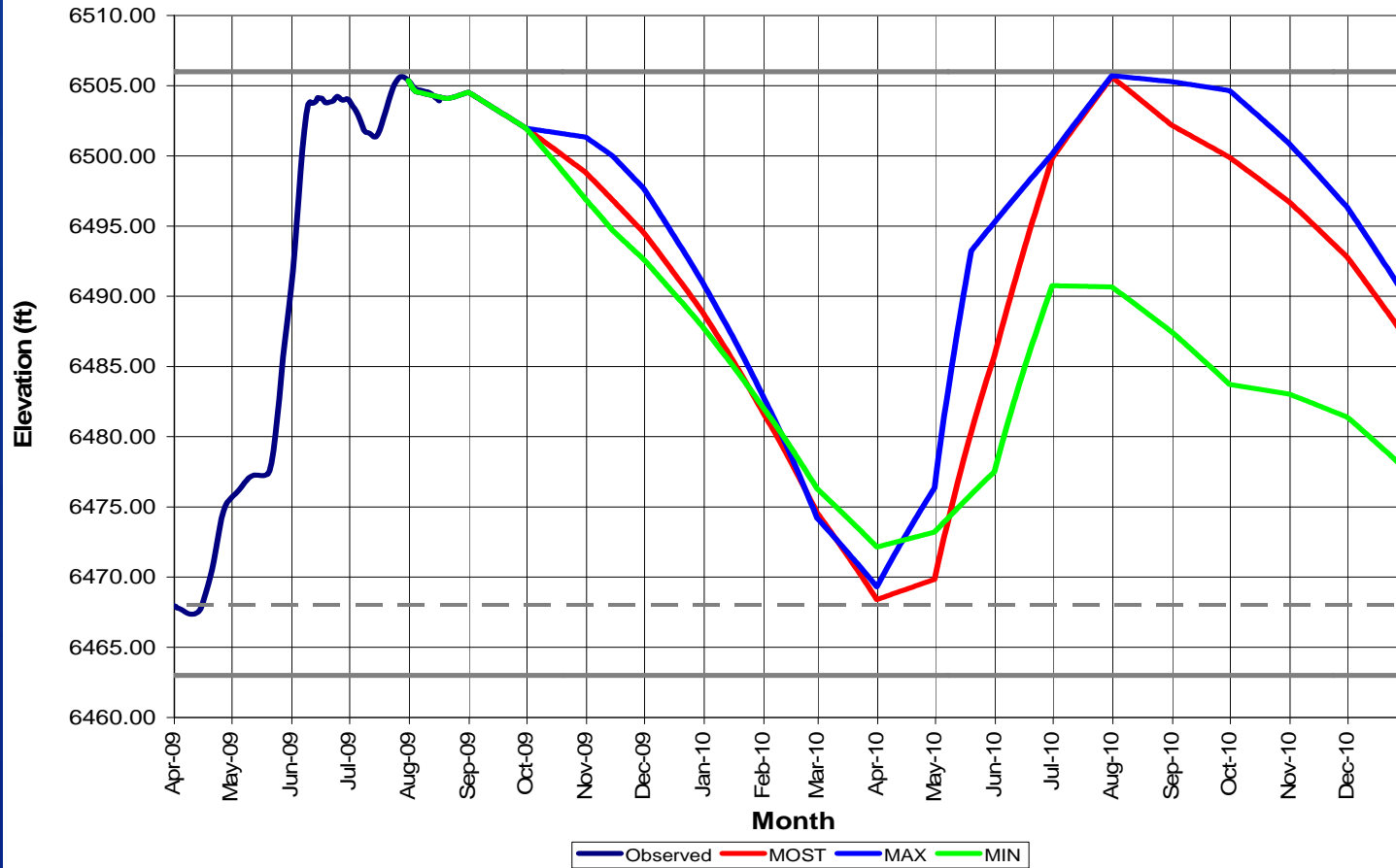


# Elevation Scenarios

## Water Year 2010

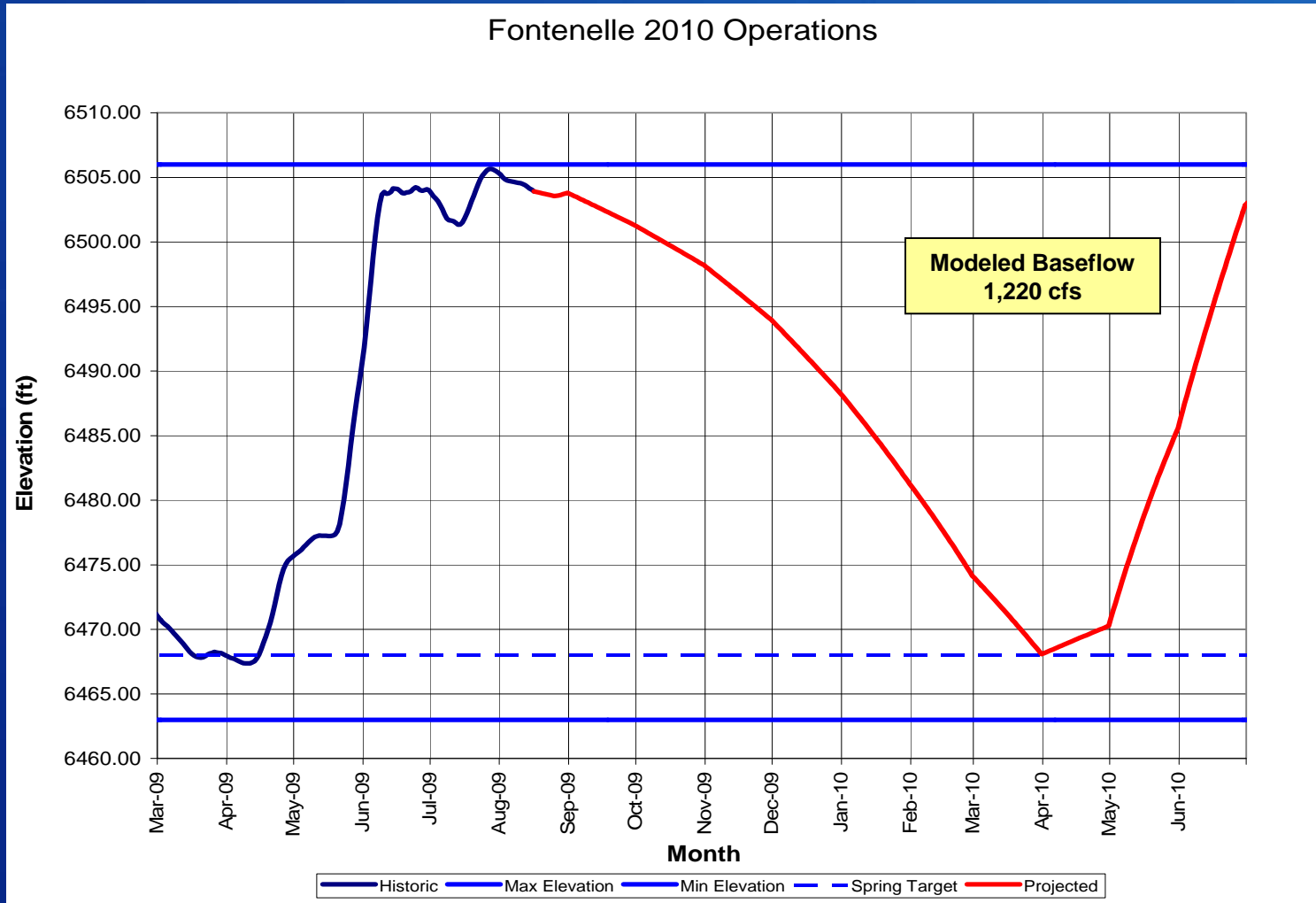
### Fontenelle 2010 Elevation Scenarios

Based on August Inflow Forecasts

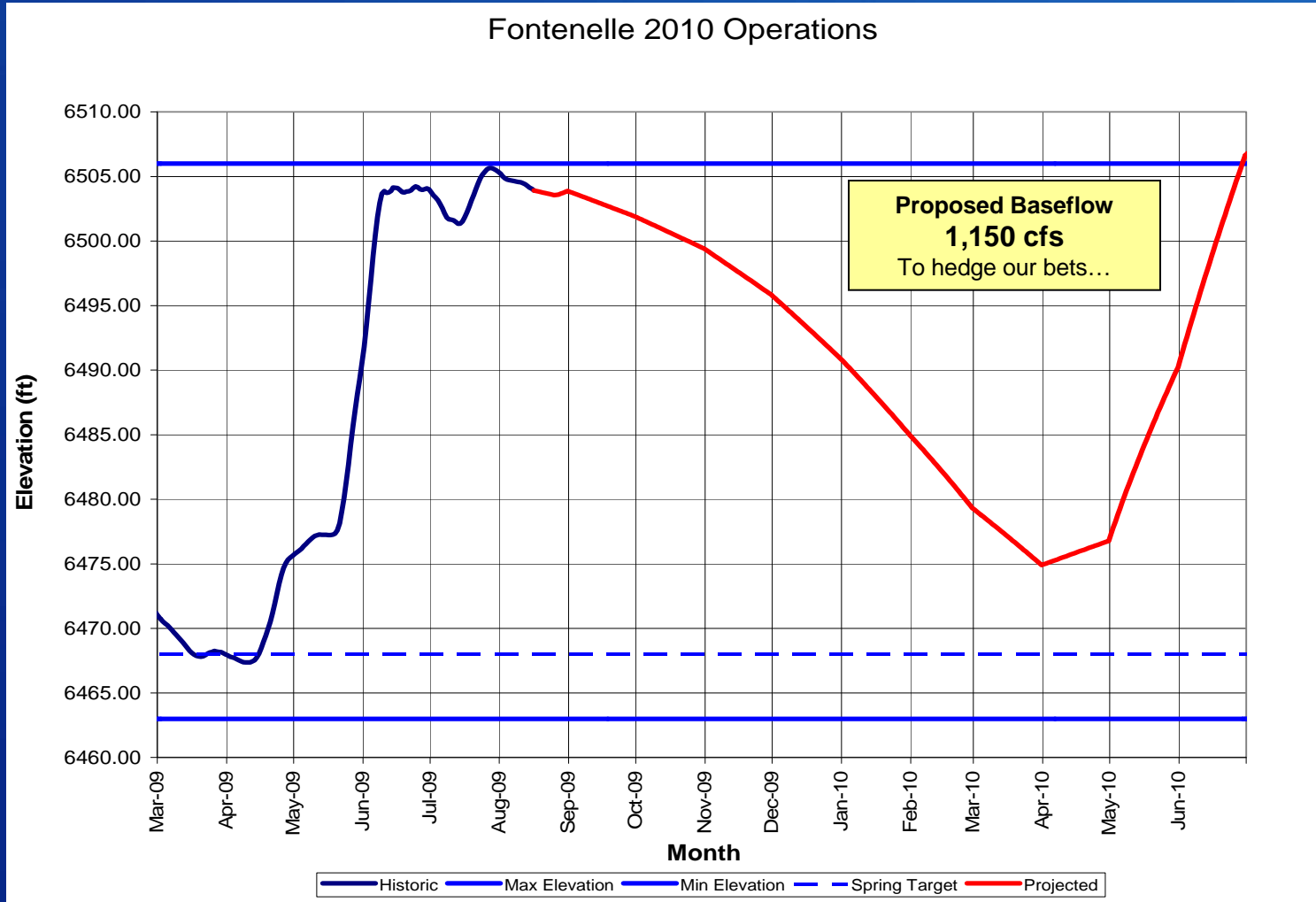


# Projected Elevation

1,220 cfs Baseflow



# Proposed Baseflow Water Year 2010



# Other Topics for Discussion

1. Fontenelle 2009 annual fall maintenance
  - Exciter replacement: Oct 5<sup>th</sup> – Dec 1<sup>st</sup>
  - Bypassing water – possibility to lower flows during this time?
2. Emergency response functional exercise
  - Judy Valentine
3. National Integrated Drought Information Service (NIDIS)
  - Low flow impacts database
4. Other Items?

# Low Flow Impacts Project



1. Green River at Warren Bridge
2. New Fork near Big Piney
3. Green River near La Barge
4. Fontenelle Creek near Herschler
5. **Green River at Fontenelle Reservoir**
6. Big Sandy River near Farson,
7. Big Sandy River at Big Sandy Res
8. Big Sandy at Gasson Bridge near Eden
9. **Green River near Green River**
10. Blacks Fork near Little America

## Info Needed:

Location, flow/stage, impact, timing

e.g., *Green River below Fontenelle, 600 cfs, minimum flow needed for productive Kokonee spawn, generally mid-September to mid-November*

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# Fontenelle Working Group Meeting August 2009



*Other Topics for Discussion?*

*Questions?*

*Comments?*

Green River at La Barge, WY 6/20/2009

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Extra Slides Follow

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# Fall Maintenance

- September 15<sup>th</sup> -Dec 1<sup>st</sup> reduced flows ?
  - Releasing 1,000 cfs instead of 1,220 cfs during this time
  - saves 5ft of water or 34,000 acre-ft
  - Back of the envelope calculation: roughly \$85,000 in power revenues saved over 45 days
    - Assumes 10MW at 1,220 cfs and 7 MW at 1,000cfs @\$26/mwh
- One proposal
  - Aug to Sept 15<sup>th</sup>: 1,200 cfs
  - Sept 15<sup>th</sup> to Dec 1<sup>st</sup> : 1,000 cfs
  - Dec 1<sup>st</sup> to April: 1,325 cfs

# Historic Inflow Statistics

## Period of Record 1976-2005

ANNUALIZED MONTHLY INFLOW VOLUME(THOUSAND-ACRE-FEET)												
Month	95%	90%	80%	70%	60%	50%	40%	30%	20%	10%	5%	Average
OCT	30	<b>31</b>	33	36	39	43	47	53	61	<b>73</b>	86	<b>49</b>
NOV	29	<b>31</b>	34	37	39	41	43	46	49	<b>53</b>	57	<b>41</b>
DEC	28	<b>28</b>	29	30	31	32	33	34	36	<b>38</b>	41	<b>32</b>
JAN	25	<b>26</b>	27	28	29	30	31	32	34	<b>37</b>	39	<b>30</b>
FEB	23	<b>24</b>	25	26	27	28	29	30	31	<b>33</b>	35	<b>28</b>
MAR	39	<b>41</b>	43	45	48	50	53	56	60	<b>66</b>	72	<b>52</b>
APR	49	<b>56</b>	66	73	81	88	95	104	114	<b>129</b>	143	<b>89</b>
MAY	35	<b>71</b>	112	140	162	182	202	222	245	<b>275</b>	299	<b>176</b>
JUN	86	<b>121</b>	170	210	248	286	327	374	432	<b>519</b>	598	<b>307</b>
JUL	18	<b>50</b>	91	122	150	177	205	235	273	<b>327</b>	374	<b>185</b>
AUG	19	<b>31</b>	46	58	68	78	89	100	114	<b>134</b>	152	<b>82</b>
SEP	23	<b>27</b>	33	38	42	46	51	56	62	<b>72</b>	80	<b>48</b>
<b>ANNUAL</b>	403	<b>535</b>	708	842	963	1,081	1,204	1,341	1,510	<b>1,757</b>	1,975	<b>1,121</b>
<b>APR-JUL</b>	188	<b>297</b>	438	545	641	733	829	935	1,063	<b>1,251</b>	1,413	<b>758</b>

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# Historic Inflow Statistics

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NOV	29	<b>33</b>	38	41	43	45	47	49	51	<b>53</b>	55	<b>44</b>
DEC	26	<b>28</b>	30	32	33	34	35	36	38	<b>39</b>	41	<b>33</b>
JAN	24	<b>26</b>	29	30	31	32	33	34	35	<b>37</b>	38	<b>31</b>
FEB	23	<b>25</b>	27	28	29	30	31	32	33	<b>34</b>	35	<b>29</b>
MAR	37	<b>40</b>	43	46	48	51	54	57	61	<b>67</b>	72	<b>52</b>
APR	60	<b>64</b>	73	79	86	92	99	107	116	<b>129</b>	141	<b>93</b>
MAY	69	<b>104</b>	143	169	189	207	223	240	257	<b>280</b>	296	<b>196</b>
JUN	98	<b>148</b>	212	261	304	345	388	434	491	<b>571</b>	640	<b>355</b>
JUL	38	<b>74</b>	119	151	180	207	234	264	300	<b>350</b>	393	<b>212</b>
AUG	30	<b>43</b>	60	72	82	91	100	110	121	<b>135</b>	147	<b>91</b>
SEP	26	<b>32</b>	39	44	49	53	57	62	67	<b>74</b>	79	<b>53</b>
<b>ANNUAL</b>	490	<b>651</b>	849	993	1,118	1,235	1,354	1,482	1,633	<b>1,845</b>	2,022	<b>1,243</b>
<b>APR-JUL</b>	264	<b>391</b>	546	660	758	851	944	1,045	1,164	<b>1,331</b>	1,471	<b>857</b>

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# Stage – Discharge Tables

provided by the USGS

USGS updates these periodically-- every time a new profile of the river is done

– Green River at Green River, WY

[http://waterdata.usgs.gov/nwisweb/data/exsa\\_rat/09217000.rdb](http://waterdata.usgs.gov/nwisweb/data/exsa_rat/09217000.rdb)

– Green River below Fontenelle Reservoir

[http://waterdata.usgs.gov/nwisweb/data/exsa\\_rat/09211200.rdb](http://waterdata.usgs.gov/nwisweb/data/exsa_rat/09211200.rdb)