SGW-58972 -VA
Revision 0

200 West Pump and Treat 1st Quarter 2015 Briefing

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Contractor for the U.S. Department of Energy
under Contract DE-AC06-08RL14788

P.O. Box 1600
Richland, Washington 99352

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200 West Pump and Treat 1st Quarter 2015 Briefing

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Contents

- 200 West P&T production - liters/gallons treated
- Contaminants of concern - mass removed
- Issues – past and present
- Successes – past and present
- Items on the radar

200 West P&T Production

Date	Million Gallons	Million Liters
2012	**150.26**	**568.79**
2013	**746.55**	**2825.98**
2014	**823.80**	**3118.41**
2015 (Through March 31)	**248.19**	**939.50**
January	86.30	326.68
February	73.40	277.85
March	88.49	334.97
Cumulative to March 31, 2015	**1,968.80**	**7,452.68**

200 West P&T Radiological System Influent and Effluent Concentrations

	Iodine-129 (pCi/L)		Technetium-99 (pCi/L)	
	Cleanup Level is 1 pCi/L		Cleanup Level is 900 pCi/L	
Date	**Influent**	**Effluent**	**Influent**	**Effluent**
2012	0.48	0.33	1560	<17
2013	0.32	<0.23	1584	<17
2014	0.28	0.28	1281	13
		2015		
January	<0.23	<0.48	1,220	15
February	<0.41	<0.34	1,340	17
March	<0.08	<0.27	1,780	20

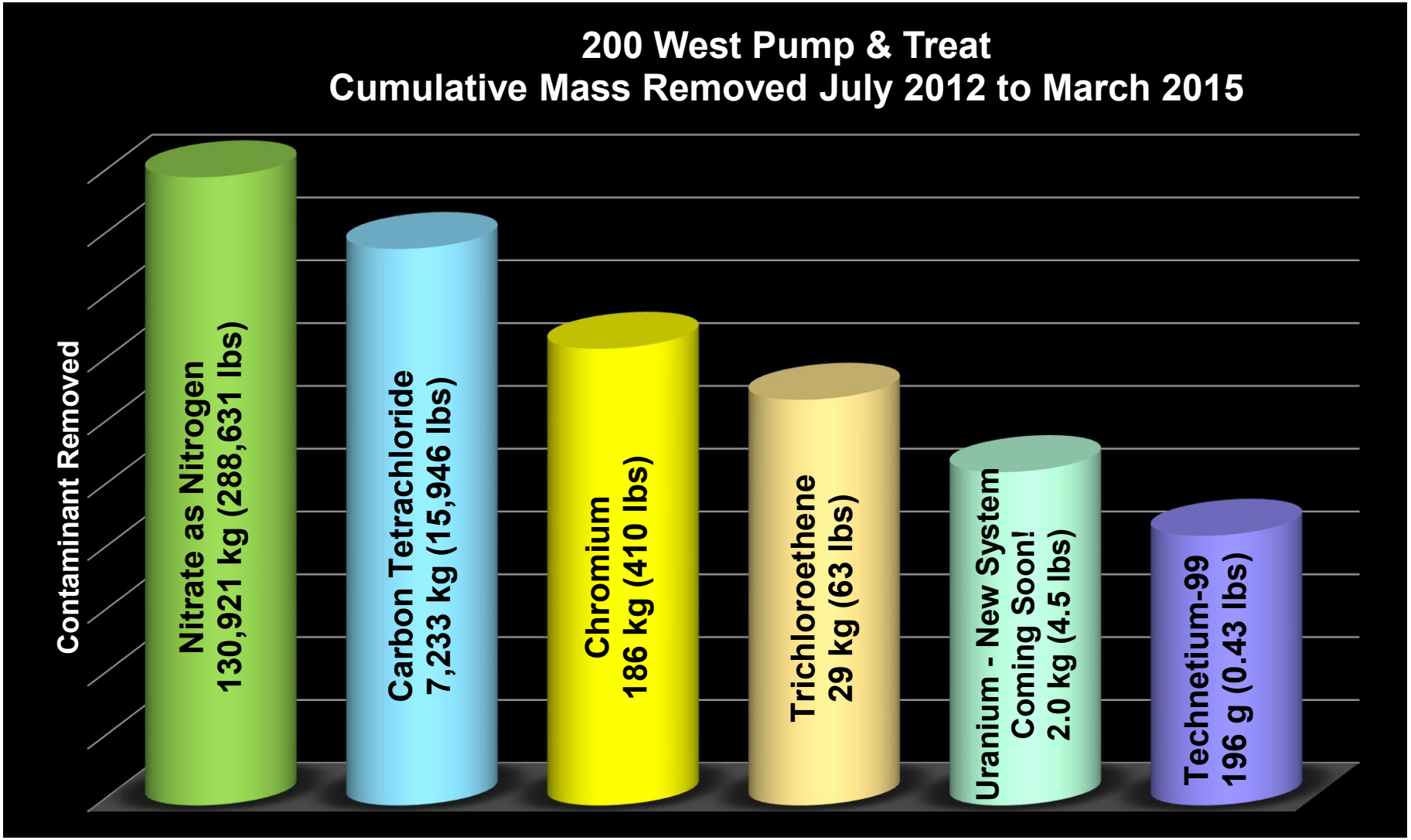
200 West P&T Biological System Influent and Effluent Concentrations

	Carbon Tetrachloride		Hexavalent Chromium		Iodine-129		Nitrate as N		Technetium-99		Trichloroethene	
Cleanup Level	3.4 µg/L		48 µg/L		1 pCi/L		10 mg/L		900 pCi/L		1 µg/L	
	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent
2012	663	2.6	15.5	<2.0	0.25	<0.24	19.0	6.3	62	34	4.9	<1.0
2013	821	<2.0	22.9	5.6	0.23	<0.26	23.6	8.0	73	55	4.5	<1.0
2014	611	<0.7	21.7	6.2	<0.26	<0.24	22.9	5.2	67	54	3.7	<0.4
2015												
January	650	<0.1	23.2	4.5	<0.30	<0.28	23.4	4.1	72	69	3.8	<0.3
February	625	<0.1	24.5	7.9	<0.32	<0.25	23.8	5.2	76	74	3.9	<0.3
March	300	<0.1	21.8	2.7	<0.26	<0.10	24.8	3.7	87	60	1.9	<0.3

Contaminants of Concern – Mass Removed

Date	CCl4 (kg)	NO3-N (kg)	NO3-NO3 (kg)	Cr (kg)	Tc-99 (Ci)	TCE (kg)
2012	**531**	**11,053**	**48,854**	**19.32**	**0.33**	**2.42**
2013	**3,049**	**44,067**	**195,051**	**71.92**	**1.34**	**13.07**
2014	**2,898**	**56,762**	**251,595**	**75.17**	**1.31**	**10.24**
January 2015	266	6,359	28,161	7.10	0.125	1.14
February 2015	217	5,666	25,092	5.66	0.110	1.01
March 2015	272	6,973	30,880	6.97	0.126	0.82
2015	**755**	**18,998**	**84,133**	**19.73**	**0.361**	**2.98**
Cumulative	**7,233**	**130,921**	**579,815**	**186.14**	**3.343 (196g)**	**28.71**

Contaminants of Concern – Mass Removed, continued



Air Monitoring Activities

Air Stack Sampling Summary:

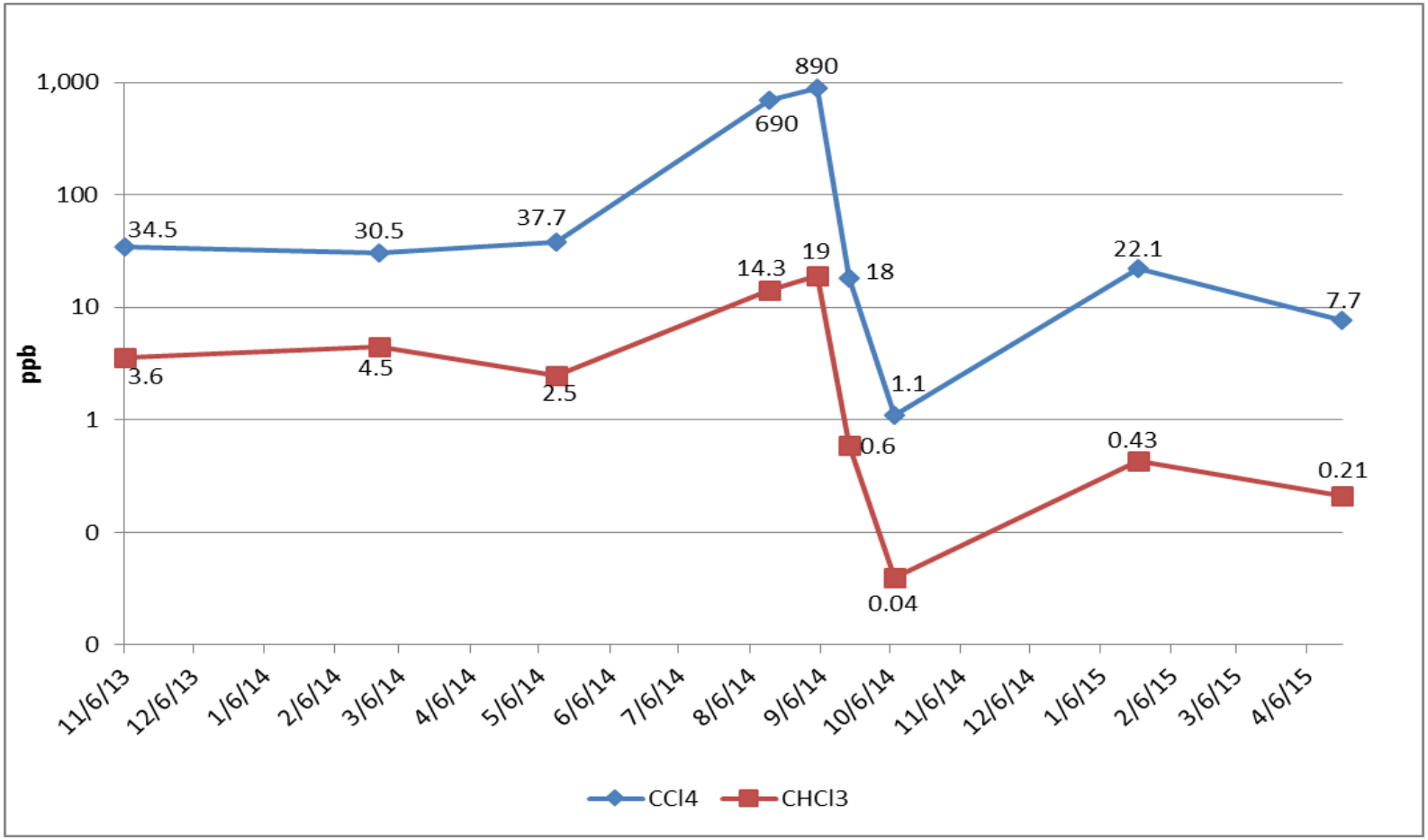
- Treated Off-gas stack was sampled for volatile organic compounds on 01/22/15 and 04/21/15
- Results confirm that TOG stack emissions have remained low
- Carbon tetrachloride reported at 22.1 ppbv and 7.7 ppbv, respectively
- Chloroform reported at 0.43 ppbv and 0.21 ppbv, respectively
- Trichloroethene and vinyl chloride were non-detectable.

Air Monitoring Activities

Actions completed to reduce emissions:

- Monthly performance monitoring of individual GAC treatment vessels continued. This consists of sampling influent and effluent streams for each GAC vessel.
- Monthly sampling revealed build up and saturation of the lead GAC vessels for the VOG system.
- Saturated lead GAC treatment vessels for the VOG system were changed out in April with fresh regenerated GAC vessels.
- Air stripper and VOG system off gas is temperature controlled.

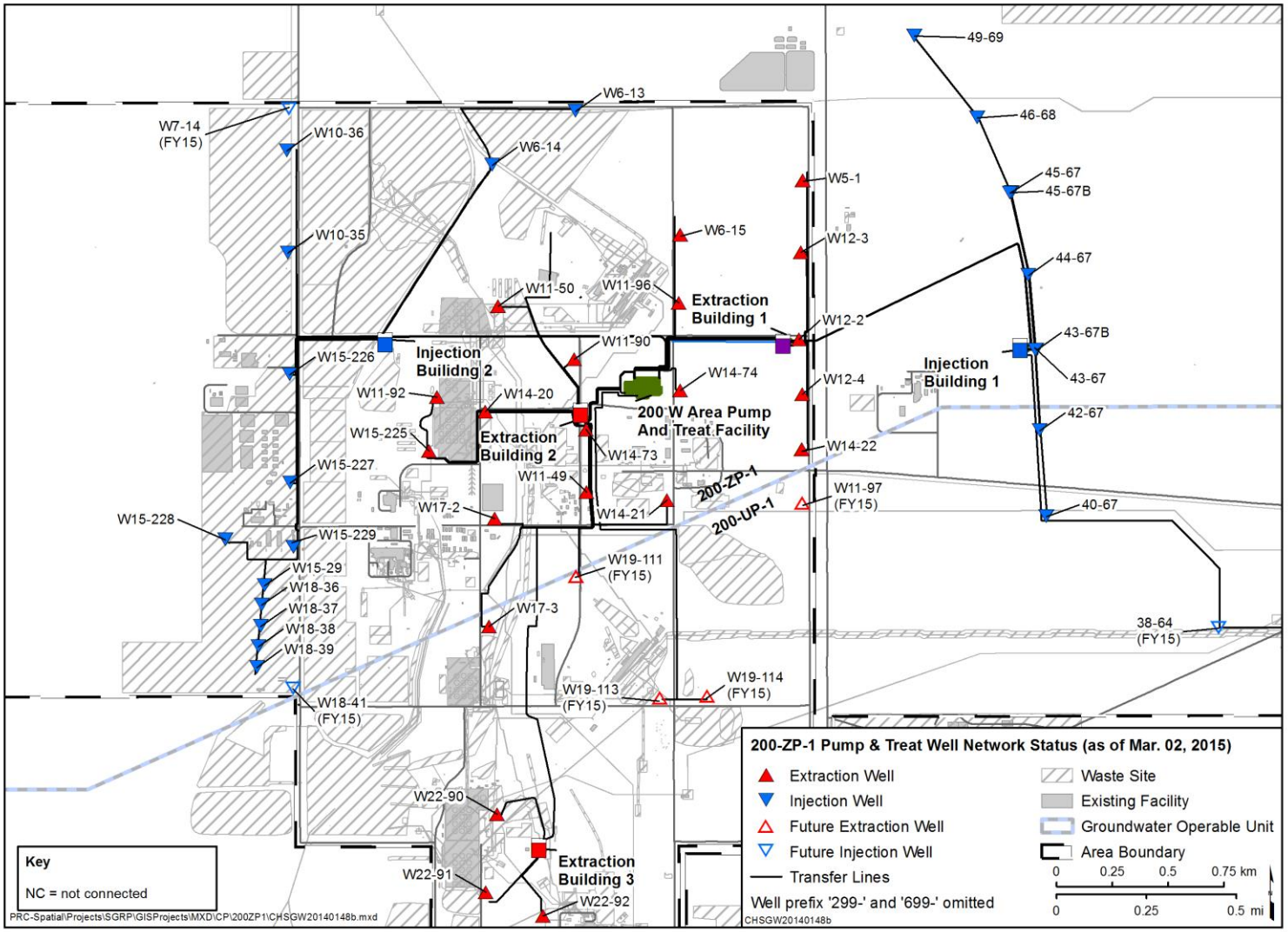
Air Monitoring Activities – Emissions Summary



Waste Management Activities

- Biosolids Summary:
  - FY 2012 through March 2015
  - Shipped to Environmental Restoration Disposal Facility
  - 192 Roll-on/roll-off containers (~3 per week in CY 15)
- Granular Activated Carbon (GAC) Summary:
  - FY 2012 through March 2015
  - Changed out 13 GAC containers
  - Shipped 13 GAC containers to Siemens/Evoqua for regeneration

200 West P&T Well Network



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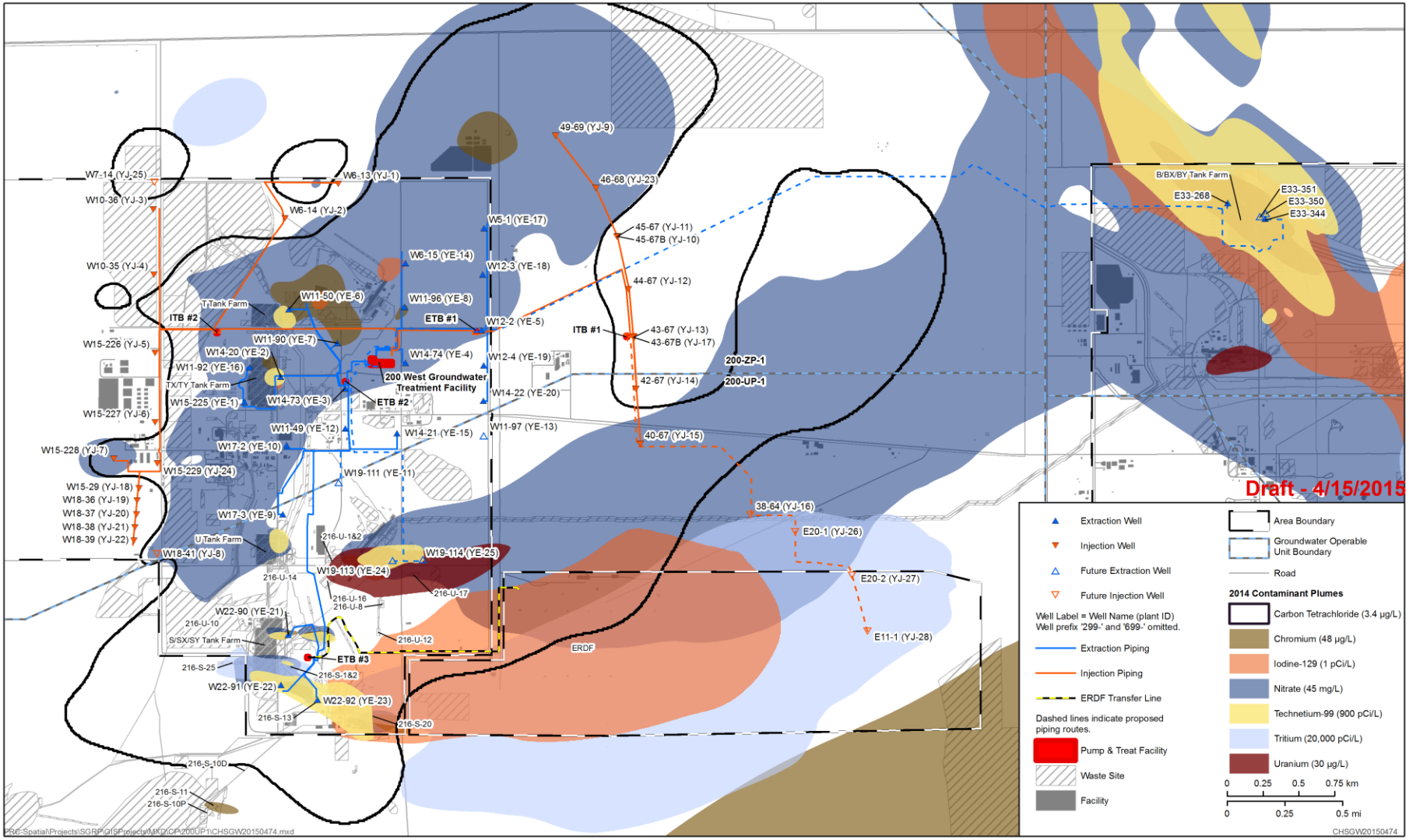
200 West P&T Well Network, continued

- 18 extraction wells in 200-ZP-1 operational
- 3 extraction wells at S-SX operational
- 22 injection wells in 200-ZP-1 operational
- 10 wells in FY 2015:
  - YJ-25 (re-drilling)
  - YJ-8 (constructed/connected/operating)
  - YJ-16 (under construction)
  - YE-25 and YE-26 (200-UP-1 uranium wells; drilled and constructed)
  - YE-11, YE-13 (drilling to start June 1, 2015)
  - three UP-1 I-129 containment injection wells (drilling started on May 18, 2015)

200 West P&T Well Network Status

21 Operating in 2015	Well Name	Extraction Well	Well No.	State No.	Northing	Easting	Ground Elev. (m)	Total Depth (ft)	TD (m)	DTW (ft)	Screen Length	Installation Date
X	299-W15-225	YE-1	C7017	ALC-018	136108.93	566657.35	204.846	415	126	233	150	Jun-10
X	299-W14-20	YE-2	C7018	ALC-019	136284.47	566909.22	204.399	410	125	231	140	Aug-11
X	299-W14-73	YE-3	C7021	ALC-020	136204.58	567358.99	216.725	501	153	272	180	Aug-11
X	299-W14-74	YE-4	C7024	ALC-028	136381.29	567781.48	221.443	505	154	291	165	Aug-11
X	299-W12-2	YE-5	C7027	ALC-029	136610.25	568312.67	223.478	492	150	297	105	Jan-11
X	299-W11-50	YE-6	C7020	ALF-663	136756.64	566966.27	211.282	430	131	257	130	Aug-11
X	299-W11-90	YE-7	C7022	ALF-658	136519.66	567306.79	218.146	520	158	276	205	Aug-11
X	299-W11-96	YE-8	C7754	ALC-024	136772.24	567774.83	220.744	475	145	290	156	Feb-11
X	299-W17-3	YE-9	C7577	ALF-657	135325.02	566925.89	206.137	440	134	234	170	Aug-11
X	299-W17-2	YE-10	C7576	ALF-659	135806.21	566951.64	204.515	405	123	231	135	Aug-11
	299-W19-111	YE-11	C8718		135549.16	567315.20	214.2					FY 15
X	299-W11-49	YE-12	C7019	ALF-655	135924.72	567361.5	216.009	430	131	267	130	Aug-11
	299-W11-97	YE-13	C8719		135876.03	568327.08	223.2					FY 15
X	299-W6-15	YE-14	C8720	BCF 571	137076.33	567781.56	220.8	482	147	296	140	Sep-14
X	299-W14-21	YE-15	C7494	ALC-025	135890.01	567721.52	219.32	520	158	278	190	Aug-11
X	299-W11-92	YE-16	C7025	ALF-660	136351.78	566692.86	204.58	405	123	230	125	Sep-11
X	299-W5-1	YE-17	C8721	BCF 570	137321.53	568329.58	221.5	465	142	299	130	Sep-14
X	299-W12-3	YE-18	C7028	ALC-026	136998.09	568321.53	224.167	495	151	301	160	Feb-11
X	299-W12-4	YE-19	C7029	ALC-027	136363.65	568327.41	223.485	509	155	297	125	Feb-11
X	299-W14-22	YE-20	C7030	BCF 564	136116.49	568324.89	223.5	519	158	305	170	Sep-14
X	299-W22-90	YE-21	C8095	ALC-045	134483.24	566961.39	207.07	293	89	242	40	Dec-11
X	299-W22-91	YE-22	C8096	ALC-044	134134.53	566911.76	204.4	297	91	229	50	Dec-11
X	299-W22-92	YE-23	C8097	APS-589	134029.77	567167.84	205.558	325	99	235	45	Dec-11
	299-W19-113	YE-25	C8927	BIN 149	135005.33	567690.14	214.4	370	113	275	70	May-15
	299-W19-114	YE-26	C8928	BIF 372	135013.28	567901.87	213.2	361	110	270	70	Jan-15
22 Operating in 2015	**Well Name**	**Injection Well**	**Well No.**	**State No.**	**Northing**	**Easting**	**Ground Elev. (m)**	**Total Depth (ft)**	**TD (m)**	**DTW (ft)**	**Screen Length**	**Installation Date**
X	299-W6-13	YJ-1	C8064	BCF 592	137630.55	567313.33	216.804	451	137	274	100	Nov-11
X	299-W6-14	YJ-2	C8065	ALC-043	137388.93	566939.64	211.54	476	145	257	145	Nov-11
X	299-W10-36	YJ-3	C8066	ALC-047	137451.97	566019.19	210.457	457	139	247	110	Nov-11
X	299-W10-35	YJ-4	C7573	ALF-662	136995.48	566024.73	212.032	460	140	252	130	Sep-11
X	299-W15-226	YJ-5	C7574	ALF-665	136450.23	566033.3	212.373	449	137	251	110	Sep-11
X	299-W15-227	YJ-6	C7575	ALF-664	135966.56	566034.04	213.752	456	139	263	110	Sep-11
X	299-W15-228	YJ-7	C8716	BIF-393	135711.51	565745.49	207.5	410	125	238	135	Jan-15
X	299-W18-41	YJ-8	C8920	BIF-396	135046.10	566047.99	204.5	487	148	244	180	Mar-15
X	699-49-69	YJ-9	C8786	BIF-373	137966.53	568829.64	210.80	415	126	265	120	Sep-14
X	699-45-67B	YJ-10	C8717	BCF 563	137265.00	569264.31	219.60	450	137	301	60	Dec-13
X	699-45-67	YJ-11	C7578	ALF-661	137262.97	569257.03	219.771	325	99	290	45	Dec-13
X	699-44-67	YJ-12	C8068	BCF 584	136894.30	569338.04	224.165	482	147	311	100	Feb-12
X	699-43-67	YJ-13	C7579	ALF-666	136560.41	569369.88	227.302	365	111	320	60	Jan-15
X	699-42-67	YJ-14	C8069	BCF 591	136199.83	569390.25	228.265	524	160	326	100	Feb-12
X	699-40-67	YJ-15	C8070	BIF-371	135816.00	569420.00	228.55	535	163	325	120	Sep-14
	699-38-64	YJ-16	C8921		135316.86	570190.00	230.5	549	167	337	80	FY 15
X	699-43-67B	YJ-17	C8386	BCF 585	136560.20	569374.78	227.358	503	153	325	90	Feb-12
X	299-W15-29	YJ-18	B2409		135506.00	565921.17	213.15	292	89	231	80	Aug-12
X	299-W18-36	YJ-19	B2747		135419.40	565908.61	208.01	269	82	217	50	Aug-12
OFFLINE	299-W18-37	YJ-20	B2756		135323.43	565904.37	208.77	272	83	219	60	Aug-12
X	299-W18-38	YJ-21	B2757		135232.92	565892.13	207.75	277	84	218	65	Aug-12
X	299-W18-39	YJ-22	B2758		135141.11	565885.56	204.38	272	83	219	60	Aug-12
X	699-46-68	YJ-23	C8067	BIF-374	137599.95	569110.03	216.9	315	96	286	100	Sep-14
X	299-W15-229	YJ-24	C8944	BIF-392	135678.91	566049.45	213.70	465	142	253	160	Sep-14
	299-W7-14	YJ-25	C9521		137637.74	566028.06	210.00	438	134	243	180	FY 15

200 West P&T Well Network and 200 West Area



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“Challenges” or “Headwinds”

- Maintenance/recovery cleans of Membrane Bioreactors limits flow through the entire system.
- Injection well rehabilitation efforts restricting flow through the entire system.
- New injection wells are taking some stress off the well field during cleanings, but flow limitations may be encountered as the plant is now operating at 2,000 gpm and higher.

Operations' Successes

- Continuous operations with greater than 98% uptime
- Throughput averaged 1,907 gpm for 1st quarter of 2015
- Throughput ranged between 1,368 gpm to 2,087 gpm
- 200 West P&T effluent consistently at or below cleanup levels since startup July 2012
- Groundwater contaminant concentrations declining
- Decreased potential for well fouling by decreasing Chemical Oxygen Demand by over 70 percent, decreasing mineral scaling, and decreasing manganese in effluent

Well Maintenance Successes

- Scrub and surge well first
- Combination of chemicals and methods successfully dissolving metal oxides and killing bacteria that are clogging wells
- Intense surging performed to move chemicals into filter pack and nearby formation
- Intense development to pull dissolved metal oxides out of nearby formation
- Recent well rehabilitations encountered less metal oxides (less of the black viscous material)

Items on the Radar

- CHPRC, DOE, and EPA quarterly briefings
  - Provide RAD and BIO system influent and effluent numbers
  - Prepare summary slide with well installation information-operating and future wells
  - Send quarterly briefings electronically
  - Publically release quarterly briefings
- Integration of new flow streams – UP-1, DV-1, BP-5, and ERDF*; all new systems under construction

* Under regulatory review