

Appendix B

Additional Data on Alternatives

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This appendix provides the summary of the different amounts of remedial infrastructure estimated for the different alternatives analyzed in this EIR.

As described in Chapter 2, *Project Description*, the PG&E FS evaluations (and Addenda) were based on the contaminated plume as it was defined at the time of the evaluation. The current chromium plume as of Q4 2011 is approximately 2,949 acres, which is larger than the plume that was studied in the FS as described below:

- *Alternative 4B.* FS Addendum 2 used the Q1 2010 plume as its base condition for study for Alternative 4B. The Q1 2010 plume (defined by the 3.1 ppb Cr[VI] contour) was approximately 1,225 acres in size.
- *Alternative 4C-2 to Alternative 4C-5.* As Feasibility Study Addendum 3 studied both the Q1 2010 plume and the Q1 2011 plume. Addendum 3 (and subsequent data provided by PG&E) presented an identification of infrastructure needed to address the Q1 2011 plume. The Q1 2011 plume (defined by the 3.1 ppb Cr[VI] contour) was approximately 1,788 acres in size.

The full extent of the plume area cannot be defined at this time because the plume boundary may be larger than the Q4 2011 delineated boundary as a result of further investigation and/or plume migration. Therefore, for this EIR, it has been assumed that the contaminated plume may be larger by up to 15% from the Q4 2011 plume, which would result in a total plume area of 3,391 acres. This plume area is approximately 190% larger than the Q1 2011 plume and 277% larger than the Q1 2010 plume.

To provide an estimate of the potential expanded amount of remedial activity that may be necessary to address a future plume that is substantially larger than that used as the base condition for identification of remedial activities proposed in the FS (and Addenda), the FS estimates of remedial activity were scaled as follows:

- *No Project Alternative* – The No Project Alternative was not scaled up as it is presumed that remedial activity will be limited to the area of the plume as identified between 2008 and 2010.
- *Agricultural Land Treatment* – Agricultural unit (AU) acreages, piping, wells and extraction flows were scaled up by increasing the FS amounts to include additional AU acreage, infrastructure and flows to treat the revised plume area.
- *In-Situ Remediation* – In-situ remediation is primarily proposed to address the high concentration part of the plume (> 50 ppb) and some of the medium concentration part of the plume (> 10 ppb). The 50 ppb plume boundary has been mostly stable in recent years due to remedial actions. The 10 ppb plume boundary has expanded but not to the same degree as the 3.1 ppb plume boundary. As a result, scaling for in-situ remediation wells, piping, and flows utilized a 25% factor instead of scaling based on plume size.
- *Ex-Situ Remediation* – Ex-situ remediation is proposed in Alternative 4C-3 to maintain year-round pumping rates and winter hydraulic control and treatment and thus ex-situ remediation activity for Alternative 4C-3 was scaled using the same methods as for agricultural land treatment. Ex-situ treatment is proposed in Alternative 4C-5 for treatment of the high

concentration plume (>50 ppb) area. Since the high concentration plume area has been more or less stable due to current remedial actions, no scaling was applied for ex-situ treatment in Alternative 4C-5 but a scaling factor of 25% was included for the purposes of EIR analysis.

- *Freshwater Injection* – To date, freshwater injection on the northwest side of the plume has been effective at controlling further westward migration of the plume and deflecting its movement northward. Thus, it was assumed that a similar amount of freshwater injection would be used in all alternatives in the future. A scaling factor of 15% was used in order to cover potential expansion, should it be needed, to the existing amounts for EIR analysis.
- *Monitoring Wells* – As the plume has expanded, the number of monitoring wells has also expanded. A scaling factor of 25% was added to the existing and projected number of monitoring wells for the EIR analysis.

Tables that summarize the original FS totals for each alternative and show the specific scaling adjustments to account for the expanded plume are presented in this appendix.

Table B-1: PG Hinkley Groundwater Remediation Infrastructure Quantities, Based on PG Feasibility Study/Addenda Data, 2011 - 2012 (08/06/12)

Element	Units	Existing Condition	No Project	Alternative 4B	Alternative 4C-2	Alternative 4C-3	Alternative 4C-4	Alternative 4C-5
AUs (total)	Acres	182	182	222	351	351	895	351
AUs (New over existing)	Acres		0	40	168	168	713	168
AUs (New over No Project)	Acres			40	168	168	713	168
AUs Piping (total)	LF	24,499	24,499	36,719	41,674	41,674	53,974	41,674
AUs Piping (New over existing)	LF		0	12,220	17,175	17,175	29,475	17,175
AUs Piping (New over No Project)	LF			12,220	17,175	17,175	29,475	17,175
AU wells (total)	#	29	29	44	56	56	56	56
AU wells (New over existing)	#		0	15	27	27	27	27
AU wells (New over No Project)	#			15	27	27	27	27
AU pumping (total)	gpm	1,100	1,100	1,270	2,042	2,829	2,829	2,042
AU pumping (New over existing)	gpm		0	170	942	1,729	1,729	942
AU pumping (New over No Project)	gpm			170	942	1,729	1,729	942
IRZ piping (total)	LF	14,985	33,892	33,892	33,892	33,892	33,892	33,892
IRZ piping (New over existing)	LF		18,907	18,907	18,907	18,907	18,907	18,907
IRZ piping (New over No Project)	LF			0	0	0	0	0
IRZ wells (total)	#	70	109	109	109	109	109	91
IRZ wells (New over existing)	#		39	39	39	39	39	21
IRZ wells (New over No Project)	#			0	0	0	0	-18
IRZ injection wells (total)	#	58	89	89	89	89	89	73
IRZ injection wells (New over existing)	#		31	31	31	31	31	15
IRZ injection wells (New over No Project)	#			0	0	0	0	-16
IRZ extraction wells (total)	#	12	20	20	20	20	20	18
IRZ extraction wells (New over existing)	#		8	8	8	8	8	6
IRZ extraction wells (New over No Project)	#			0	0	0	0	-2
IRZ dosed injection flow (total)	gpm	190	190	345	345	345	345	195
IRZ dosed injection flow (New over existing)	gpm		0	155	155	155	155	5
IRZ dosed injection flow (New over No Project)	gpm			155	155	155	155	5
SCRIA dosed-injection flow (total)	gpm	110	110	195	195	195	195	195
SCRIA dosed-injection flow (total) (New over existing)	gpm		0	85	85	85	85	85
SCRIA dosed-injection flow (total) (New over No Project)	gpm			85	85	85	85	85
SAIRZ dosed-injection flow (total)	gpm	80	80	150	150	150	150	0
SAIRZ dosed-injection flow (total) (New over existing)	gpm		0	70	70	70	70	-80
SAIRZ dosed-injection flow (total) (New over No Project)	gpm			70	70	70	70	-80
IRZ recirculation flow (total, CAIRZ/SAIRZ)	gpm	83	83	223	223	223	223	223
IRZ recirculation flow (New over existing)	gpm		0	140	140	140	140	140
IRZ recirculation flow (New over No Project)	gpm			140	140	140	140	140
Ex-situ footprint	acres	0	0	0	0	1.86	0	0.86
Exsitu wells	#					19		19
Exsitu piping	LF					22,050		6,875
Exsitu flow (annual)	gpm					788		200

Table B-1: PG Hinkley Groundwater Remediation Infrastructure Quantities, Based on PG Feasibility Study/Addenda Data, 2011 - 2012 (08/06/12)

Element	Units	Existing Condition	No Project	Alternative 4B	Alternative 4C-2	Alternative 4C-3	Alternative 4C-4	Alternative 4C-5
FW Injection piping	LF	31,886	31,886	31,886	31,886	31,886	31,886	31,886
FW Injection wells	#	8	8	8	8	8	8	8
FW Injection flow	gpm	80	80	80	80	80	80	80
Monitoring wells (total)	#	434	446	446	446	446	446	446
Monitoring wells (New over existing)	#		12	12	12	12	12	12
Monitoring wells (New over No Project)	#			0	0	0	0	0
All wells (total)	#	541	592	607	619	638	619	620
All wells (New Over Existing)	#		51	66	78	97	78	79
All wells (New over No Project)	#			15	27	46	27	28
Well supporting acreage	Acres	36	39	40	41	42	41	41
Well supporting acreage (New over existing)	Acres		3	4	5	6	5	5
Well supporting acreage (New Over No Project)	Acres			1.00	1.80	3.06	1.80	1.86
Road supporting acreage	Acres		1.09	1.79	2.07	2.07	2.78	2.07
Road supporting acreage (New over existing)	Acres		1.09	1.79	2.07	2.07	2.78	2.07
Road supporting acreage (New Over No Project)	Acres			0.70	0.99	0.99	1.69	0.99

Table B-2: PG Hinkley Groundwater Remediation Infrastructure Quantities, Scaled Up from PG Feasibility Study/Addenda Data, 2011 - 2012 (08/06/12)

Element	Units	Existing Condition	No Project	Alternative 4B	Alternative 4C-2	Alternative 4C-3	Alternative 4C-4	Alternative 4C-5	Notes
Plume (3.1 ppb) at time of FS	Acres	1,225	1,788	1,225	1,788	1,788	1,788	1,788	Q1 2010 for Existing, No Project, and 4B, Q1 2011 for all other Alternatives)
Q4 2011 Plume (3.1 ppb)	Acres	2,949	2,949	2,949	2,949	2,949	2,949	2,949	
Q4 2011 Plume (3.1 ppb w/ 15% contingency)	Acres	3,391	3,391	3,391	3,391	3,391	3,391	3,391	
Plume (10 ppb) at time of FS	Acres	552	1,084	552	1,084	1,084	1,084	1,084	Q1 2010 for Existing and 4B, Q1 2011 for all other Alternatives)
Q4 2011 Plume (10 ppb)	Acres	1,105	1,105	1,105	1,105	1,105	1,105	1,105	
Q4 2011 Plume (10 ppb) w/15% contingency	Acres	1,271	1,271	1,271	1,271	1,271	1,271	1,271	
Northern Plan	Acres			124	124	124	249	124	Concept Plan September 2011, 04/11/12 email; For 4C-3 and -4, assume the same 3 AUs are used as Alt 4C-2 (AUs #6, 7, 8); Alt 4C-4 will add 5 more AUs (25 acres/each) because of the lower AU application rate per acre in the winter
Additional AU acreage for Expanded Plume	Acres			100	100	100	250	100	Email 03/27/12, 04/11/12; For 4C-4, assume lower AU application rate (gpm per acre AU), consistent with 4C-4 presented in Addendum #3; additional AUs for all alternatives are 25 acres/each
AU Pumping (gpm) - Northern Plan				575	575	797	797	575	For 4C-3 and 4C-4, an additional 797 gpm is extracted, but a portion (222 gpm) that is treated by AUs in 4C-4 is treated by ex-situ treatment in 4C-3
AU Pumping (gpm) - Expanded Plume				550	550	762	762	550	For 4C-3 and 4C-4, an additional 762 gpm is extracted, but a portion (212 gpm) that is treated by AUs in 4C-4 is treated by ex-situ treatment in 4C-3
Plume increase				277%	190%	190%	190%	190%	
AU Piping - Northern Plan	LF			22,900	22,900	22,900	46,400	22,900	For 4C-3 and -4, assume the same 3 AUs are used as Alt 4C-2 (AUs #6, 7, 8); Alt 4C-4 will add 5 more AUs because of the lower AU application rate per acre in the winter
AU Piping - Expanded Plume	LF			18,800	18,800	18,800	47,000	18,800	Piping assumes: a) 8 extraction wells (EWs) per 25-ac new AU; b) all EWs are located on the perimeter of the circle measuring 25 acres; c) all EWs piped directly and individually to center of pivot/circle.
AU- Wells for Northern Plan				14	14	14	54	14	For 4C-2, -3, and -4, the 3 AUs from the Northern Plan (AUs #6, 7, 8) use 14 extraction wells; For 4C-4, the additional 5 AUs beyond what was proposed in the Northern Plan use 8 extractoin wells/AU
AU- Wells for expanded AU Acreage (8 per 25 acres)				32	32	32	80	32	Assumes: a) 8 extraction wells (EWs) per 25-ac new AU
IRZ Factor (contingency)	Percent			25%	25%	25%	25%	25%	
ES contingency	Percent					25%		25%	
FW injection (contingency)	Percent			15%	15%	15%	15%	15%	
MW factor (contingency)	Percent			25%	25%	25%	25%	25%	
Road factor (% pipeline with new roads)	Percent		25%	25%	25%	25%	25%	25%	
					168				
AUs - Total (FS)	Acres	182	182	222	351	351	895	351	
AUs - Total (Scaled)	Acres	182	182	446	575	575	1,394	575	Scaling Method: AU Acres (FS) + Northern Plan (124 acres) + additional 100 acres, except additional acreage for 4C-4.
AUs - New over Existing	Acres		0	264	392	392	1,212	392	
AUs - New over No Project	Acres			264	392	392	1,212	392	
AUs - Piping (FS)	LF	24,499	24,499	36,719	41,674	41,674	53,974	41,674	
AU Piping - Total	LF	24,499	24,499	78,419	83,374	83,374	147,374	83,374	Added piping for northern basin and expanded area per PG&E email of 04/11/12.
AU Piping - New over Existing	LF		0	53,920	58,875	58,875	122,875	58,875	
AU Piping - New over No Project	LF			53,920	58,875	58,875	122,875	58,875	
AU Wells (FS)	#	29	29	44	56	56	56	56	
AU wells -Total	#	29	29	90	102	102	190	102	Additional extraction wells per PG&E email of 04/11/12
AU wells -New over Existing	#		0	61	73	73	161	73	
AU wells -New over No Project	#			61	73	73	161	73	
AU pumping (FS)	gpm	1,100	1,100	1,270	2,042	2,829	2,829	2,042	
AU pumping -Total	gpm	1,100	1,100	2,395	3,167	4,388	4,388	3,167	Added pumping for northern basin and expanded area per PG&E email of 04/11/12.
AU pumping -New over Existing	gpm		0	1,125	1,125	1,559	1,559	1,125	
AU pumping - New over No project	gpm			1,125	1,125	1,559	1,559	1,125	
AU Pumping - net annual use	Acre-ft	911	911	2,231	2,873	2,873	6,970	2,873	Assuming irrigation demand of 5 AF/Acre/year

Table B-2: PG Hinkley Groundwater Remediation Infrastructure Quantities, Scaled Up from PG Feasibility Study/Addenda Data, 2011 - 2012 (08/06/12)

Element	Units	Existing Condition	No Project	Alternative 4B	Alternative 4C-2	Alternative 4C-3	Alternative 4C-4	Alternative 4C-5	Notes
IRZ Piping(FS)	LF	14,985	33,892	33,892	33,892	33,892	33,892	33,892	
IRZ Piping - Total	LF	14,985	33,892	42,365	42,365	42,365	42,365	36,340	Scaling Method: IRZ Piping(FS) * (1 + contingency)
IRZ piping - New over Existing	LF		18,907	27,380	27,380	27,380	27,380	21,355	
IRZ piping - New over No Project				8,473	8,473	8,473	8,473	2,448	
IRZ wells (FS)		70	109	109	109	109	109	91	
IRZ wells - Total	#	70	109	136	136	136	136	114	Scaling Method: IRZ Wells (FS) * (1 + contingency)
IRZ wells - New over Existing	#		39	66	66	66	66	44	
IRZ wells - New over No Project	#			27	27	27	27	5	
IRZ injection wells (FS)		58	89	89	89	89	89	73	
IRZ injection wells - Total	#	58	89	111	111	111	111	91	Scaling Method: IRZ Wells (FS) * (1 + contingency)
IRZ injection wells - New over Existing	#		31	53	53	53	53	33	
IRZ injection wells - New over No Project	#			22	22	22	22	2	
IRZ extraction wells (FS)		12	20	20	20	20	20	18	
IRZ extraction wells - Total	#	12	20	25	25	25	25	23	Scaling Method: IRZ Wells (FS) * (1 + contingency)
IRZ extraction wells - New over Existing	#		8	13	13	13	13	11	
IRZ extraction wells - New over No Project	#			5	5	5	5	3	
IRZ carbon-amendment flow (FS)		190	190	345	345	345	345	195	
IRZ carbon-amended flow (total)	gpm	190	190	431	431	431	431	244	Scaling Method: IRZ flow(FS) * (1 + contingency)
IRZ carbon-amended flow (New over existing)	gpm		0	241	241	241	241	54	
IRZ carbon-amended flow (New over No Project)	gpm			241	241	241	241	54	
SCRIA dose-injection flow (FS)		110	110	195	195	195	195	195	
SCRIA dosed-injection flow (total)	gpm	110	110	244	244	244	244	244	Scaling Method: IRZ flow(FS) * (1 + contingency)
SCRIA dosed-injection flow (total) (New over existing)	gpm		0	134	134	134	134	134	
SCRIA dosed-injection flow (total) (New over No Project)	gpm			134	134	134	134	134	
SAIRZ dosed-injection flow (FS)		80	80	150	150	150	150	0	
SAIRZ dosed-injection flow (total)	gpm	80	80	188	188	188	188	0	Scaling Method: IRZ flow(FS) * (1 + contingency)
SAIRZ dosed-injection flow (total) (New over existing)	gpm		0	108	108	108	108	-80	
SAIRZ dosed-injection flow (total) (New over No Project)	gpm			108	108	108	108	-80	
IRZ recirculation flow (FS)		83	83	223	223	223	223	223	
IRZ recirculation flow (total)	gpm	83	83	279	279	279	279	279	Scaling Method: IRZ flow(FS) * (1 + contingency)
IRZ recirculation flow (New over existing)	gpm		0	196	196	196	196	196	
IRZ recirculation flow (New over No Project)	gpm			196	196	196	196	196	
Exsitu treatment facility(FS)	acres	0	0	0	0	1.86	0.00	0.86	assumed facility footprint unchanged (no scaling)
Exsitu wells (FS)	#	0	0	0	0	19	0	19	
Exsitu wells - Total (All new/All new over No Project)	#					31		24	4C-3: Scaling Method: 12 wells per PGE email of 04/11/12; 4C-5 - no scaling for acreage as ES used for treatment of 50 ppb which is more or less stable but addition of 25% for contingency.
Exsitu piping (FS)	LF	0	0	0	0	22,050	0	6,875	
Exsitu piping - Total (All new and all new over No Project)	LF					41,816		8,594	4C-3: Scaling Method: ES Piping (FS) * [(AU Acreage (Q4 2011 Plume + contingency))/AU acreage(FS)]; 4C-5 no scaling for area as ES used for treatment of 50 ppb plume which is more or less stable but addition of 25% for contingency.
Exsitu pumping (FS) (annual)	gpm	0	0	0	0	788	0	200	
Exsitu pumping - Total (All new and all new over No Project)	gpm					1,222		200	4C-3: Scaling Method: + 222 gpm for Northern Basin Plan, + 212 gpm for plume expansion per PGE 04/11/12 email; 4C-5 no scaling as ES used for treatment of 50 ppb plume which is more or less stable.
FW Injection piping (FS)	LF	31,886	31,886	31,886	31,886	31,886	31,886	31,886	
FW Injection piping - Total	LF	31,886	31,886	36,669	36,669	36,669	36,669	36,669	Scaling Method: IRZ Pumping(FS) * (1 + contingency)
FW injection wells (FS)	#	8	8	8	8	8	8	8	
FW Injection wells - Total	#	8	8	9	9	9	9	9	Scaling Method: IRZ Pumping(FS) * (1 + contingency)
FW injection flow(FS)	gpm	80	80	80	80	80	80	80	
FW Injection flow - Total	gpm	80	80	92	92	92	92	92	Scaling Method: IRZ Pumping(FS) * (1 + contingency)
Monitoring Wells (FS)	#	434	446	446	446	446	446	446	
Monitoring wells - Total	#	434	446	558	558	558	558	558	Scaling Method: IRZ Pumping(FS) * (1 + contingency)
Monitoring wells - New over Existing	#		12	124	124	124	124	124	
Monitoring wells - New over NP	#			112	112	112	112	112	

Table B-2: PG Hinkley Groundwater Remediation Infrastructure Quantities, Scaled Up from PG Feasibility Study/Addenda Data, 2011 - 2012 (08/06/12)

Element	Units	Existing Condition	No Project	Alternative 4B	Alternative 4C-2	Alternative 4C-3	Alternative 4C-4	Alternative 4C-5	Notes
Total Wells (FS)	#	541	592	607	619	638	619	620	
Total Wells (Total)	#	0	592	793	805	836	893	806	Total of wells above.
Total Wells - New Over Existing	#		51	757	769	800	857	770	
Total Wells - New Over NP	#			754	766	797	854	767	
Well Supporting Acreage - FS)	Acres	36	39	40	41	42	41	41	
Well supporting acreage - Total	Acres	36	39	53	54	56	59	54	Calculated from total wells (2900 SF per well)
Well supporting - New over Existing	Acres		3	17	18	20	23	18	
Well supporting - New over NP	Acres			13	14	16	20	14	
Road Supporting Acreage - FS)	Acres		1	2	2	2	3	2	
Road supporting acreage - Total	Acres		1	3	3	6	7	4	Calculated from scaled piping length (lf) * 0.25 * 10 foot width
Road supporting - New over Existing	Acres		1	3	3	6	7	4	
Road supporting - New over NP	Acres			2	2	5	6	3	
Piping - FS		71,370	90,277	102,497	107,452	129,502	119,752	114,327	
Wells - FS		541	592	607	619	638	619	620	
Piping - FS - new		0	18,907	31,127	36,082	58,132	48,382	42,957	
Wells - FS - new		0	51	66	78	97	78	79	
Ex-situ pumping		0	0	0	0	788	0	200	
Piping - Scaled		71,370	90,277	157,453	162,408	204,224	226,408	164,977	
Wells - Scaled		0	592	793	805	836	893	806	
Piping - Scaled - New		0	18,907	86,083	91,038	132,854	155,038	93,607	
Wells - Scaled - New		0	51	252	264	295	352	265	
Ex-situ pumping - scaled		0	0	0	0	1,222	0	200	
Piping NEW - FS/Scaling %			100.00%	276.55%	252.31%	228.54%	320.45%	217.91%	
Wells NEW - FS/Scaling %			100.00%	381.74%	338.40%	304.07%	451.22%	335.70%	
Ex-situ pumping %						155.08%		100.00%	

Table B-3: PG and E Hinkley Groundwater Remediation, No Project Alternative, Remedial Infrastructure Based on Feasibility Study, Addendum Data, 2011 - 2012 (08/06/12)

Element	Units	Initial	Year 5- 10	Year 10 - 20	20+
AUs (total)	Acres	182	182	182	182
AUs (New in period)	Acres	0	0	0	0
AUs Piping (total)	LF	24,499	24,499	24,499	24,499
AUs Piping (New in period)	LF	0	0	0	0
AU wells (total)	#	29	29	29	29
AU wells (New in period)	#	0	0	0	0
AU pumping (total)	gpm	1,100	1,100	1,100	1,100
AU pumping (change in period)	gpm	0	0	0	0
IRZ piping (total)	LF	31,392	31,992	33,892	33,892
IRZ piping (New in period)	LF	16,407	600	1,900	0
IRZ wells (total)	#	103	103	109	109
IRZ wells (New in period)	#	33	0	6	0
IRZ injection wells (total)	#	86	86	89	89
IRZ injection wells (New in period)	#	28	0	3	0
IRZ extraction wells (total)	#	17	17	20	20
IRZ extraction wells (New in period)	#	5	0	3	0
IRZ dosed injection flow (total)	gpm	190	190	190	190
IRZ dosed injection flow (New in period)	gpm	0	0	0	0
SCRIA dosed-injection flow (total)	gpm				
SCRIA dosed-injection flow (New in period)	gpm				
SAIRZ dosed-injection flow (total)	gpm				
SAIRZ dosed-injection flow (New in period)	gpm				
IRZ CAIRZ recirculation flow (total)	gpm	83	83	83	83
IRZ recirculation flow (New in period)	gpm	0	0	0	0
Exsitu wells	#				
Exsitu piping	LF				
Exsitu flow	gpm				
FW Injection piping	LF	31,886	31,886	31,886	31,886
FW Injection wells	#	8	8	8	8
FW Injection flow	gpm	80	80	80	80
Monitoring wells (total)	#	446	446	446	446
Monitoring wells (New in period)	#	12	0	0	0
All wells (total)	#	586	586	592	592
All wells (New in period)	#	125	80	86	80
Well supporting acreage	Acres	39	39	39	39
Well supporting acreage (New in period)	Acres	8	5	6	5
Road supporting acreage	Acres	0.94	0.98	1.09	1.09
Road supporting acreage (New in period)	Acres	0.94	0.03	0.11	0.00

Table B-4: PG and E Hinkley Groundwater Remediation, Alternative 4B, Remedial Infrastructure Based on Feasibility Study, Addendum Data, 2011 - 2012 (08/06/12)

Element	Units	Existing	Initial	Year 5- 10	Year 10 - 20	20+	Total	Scaler	Initial (S)	Year 5- 10 (S)	Year 10-20 (S)	20+ (S)
AUs (total)	Acres	182	222	222	222	222	222		446	446	446	446
AUs (New in period)	Acres	0	40	0	0	0	40	201%	264	0	0	0
AUs Piping (total)	LF	24,499	27,649	27,649	36,719	36,719	36,719		59,049	59,049	78,419	78,419
AUs Piping (New in period)	LF	0	3,150	0	9,070	0	12,220	214%	34,550	0	19,370	0
AU wells (total)	#	29	32	32	44	44	44		65	65	90	90
AU wells (New in period)	#	0	3	0	12	0	15	205%	36	0	25	0
AU pumping (total)	gpm	1,100	1,270	1,270	1,270	1,270	1,270		2,395	2,395	2,395	2,395
AU pumping (change in period)	gpm	0	170	0	0	0	170	189%	1,295	0	0	0
IRZ piping (total)	LF	14,985	31,392	31,992	33,892	33,892	33,892		39,240	39,990	42,365	42,365
IRZ piping (New in period)	LF	0	16,407	600	1,900	0	18,907	125%	24,255	750	2,375	0
IRZ wells (total)	#	70	103	103	109	109	109		129	129	136	136
IRZ wells (New in period)	#	0	33	0	6	0	39		59	0	8	0
IRZ injection wells (total)	#	58	86	86	89	89	89		108	108	111	111
IRZ injection wells (New in period)	#	0	28	0	3	0	31	125%	50	0	4	0
IRZ extraction wells (total)	#	12	17	17	20	20	20		21	21	25	25
IRZ extraction wells (New in period)	#	0	5	0	3	0	8	125%	9	0	4	0
IRZ dosed injection flow (total)	gpm	190	345	195	255	170			431	244	319	213
IRZ dosed injection flow (New in period)	gpm	0	155	-150	60	-85	-20	125%	241	-188	75	-106
SCRIA dosed-injection flow (total)	gpm		195						244			
SCRIA dosed-injection flow (New in period)	gpm		195				195	125%	244			
SAIRZ dosed-injection flow (total)	gpm		150						188			
SAIRZ dosed-injection flow (New in period)	gpm		150				150	125%	188			
IRZ CAIRZ recirculation flow (total)	gpm	83	223	223	223	223			279	279	279	279
IRZ recirculation flow (New in period)	gpm	0	140	0	0	0	140	125%	196	0	0	0
Exsitu wells	#											
Exsitu piping	LF											
Exsitu flow	gpm											
FW Injection piping	LF	31,886	31,886	31,886	31,886	31,886	31,886	115%	36,669	36,669	36,669	36,669
FW Injection wells	#	8	8	8	8	8	8	115%	9	9	9	9
FW Injection flow	gpm	80	80	80	80	80	80	115%	92	92	92	92
Monitoring wells (total)	#	434	446	446	446	446	446		558	558	558	558
Monitoring wells (New in period)	#	0	12	0	0	0	12	125%	124	0	0	0
All wells (total)	#	541	589	589	607	607	607		761	761	793	793
All wells (New in period)	#	0	48	0	18	0	66		219	0	32	0
Well supporting acreage	Acres	36	39	39	40	40	40		51	51	53	53
Well supporting acreage (New in period)	Acres	0	3	0	1	0	4		15	0	2	0
Road supporting acreage	Acres		1.12	1.16	1.79	1.79	1.79		3.37	3.42	4.67	4.67
Road supporting acreage (New in period)	Acres		1.12	0.03	0.63	0.00	1.79		3.37	0.04	1.25	0.00

Table B-5: PG and E Hinkley Groundwater Remediation, Alternative 4C-2, Remedial Infrastructure Based on Feasibility Study, Addendum Data, 2011 - 2012 (08/06/12)

Element	Units	Existing	Initial	Year 5- 10	Year 10 - 20	20+	Total	Scaler	Initial (\$)	Year 5- 10 (\$)	Year 10-20 (\$)	20+ (\$)
AUs (total)	Acres	182	351	351	351	351	351		575	575	575	575
AUs (New in period)	Acres	0	168	0	0	0	168	164%	392	0	0	0
AUs Piping (total)	LF	24,499	34,234	34,234	41,674	41,674	41,674		68,489	68,489	83,374	83,374
AUs Piping (New in period)	LF	0	9,735	0	7,440	0	17,175	200%	43,990	0	14,885	0
AU wells (total)	#	29	44	44	56	56	56		80	80	102	102
AU wells (New in period)	#	0	15	0	12	0	27	182%	51	0	22	0
AU pumping (total)	gpm	1,100	2,042	2,042	2,042	1,688	2,042		3,167	3,167	3,167	3,167
AU pumping (change in period)	gpm	0	942	0	0	-354	588	155%	2,067	0	0	0
IRZ piping (total)	LF	14,985	31,392	31,992	33,892	33,892	33,892		39,240	39,990	42,365	42,365
IRZ piping (New in period)	LF	0	16,407	600	1,900	0	18,907	125%	24,255	750	2,375	0
IRZ wells (total)	#	70	103	103	109	109	109		129	129	136	136
IRZ wells (New in period)	#	0	33	0	6	0	39		59	0	8	0
IRZ injection wells (total)	#	58	86	86	89	89	89		108	108	111	111
IRZ injection wells (New in period)	#	0	28	0	3	0	31	125%	50	0	4	0
IRZ extraction wells (total)	#	12	17	17	20	20	20		21	21	25	25
IRZ extraction wells (New in period)	#	0	5	0	3	0	8	125%	9	0	4	0
IRZ dosed injection flow (total)	gpm	190	345	195	255	170	345		431	244	319	213
IRZ dosed injection flow (New in period)	gpm	0	155	-150	60	-85	-20	125%	241	-188	75	-106
SCRIA dosed-injection flow (total)	gpm		195						244			
SCRIA dosed-injection flow (New in period)	gpm		195				195	125%	244			
SAIRZ dosed-injection flow (total)	gpm		150						188			
SAIRZ dosed-injection flow (New in period)	gpm		150				150	125%	188			
IRZ CAIRZ recirculation flow (total)	gpm	83	223	223	223	223	223		279	279	279	279
IRZ recirculation flow (New in period)	gpm	0	140	0	0	0	140	125%	196	0	0	0
Exsitu wells	#											
Exsitu piping	LF											
Exsitu flow	gpm											
FW Injection piping	LF	31,886	31,886	31,886	31,886	31,886	31,886	115%	36,669	36,669	36,669	36,669
FW Injection wells	#	8	8	8	8	8	8	115%	9	9	9	9
FW Injection flow	gpm	80	80	80	80	80	80	115%	92	92	92	92
Monitoring wells (total)	#	434	446	446	446	446	446		558	558	558	558
Monitoring wells (New in period)	#	0	12	0	0	0	12	125%	124	0	0	0
All wells (total)	#	541	601	601	619	619	619		776	776	805	805
All wells (New in period)	#	0	60	0	18	0	78		233	0	29	0
Well supporting acreage	Acres	36	40	40	41	41	41		52	52	54	54
Well supporting acreage (New in period)	Acres	0	4	0	1	0	5		16	0	2	0
Road supporting acreage	Acres		1.50	1.53	2.07	2.07	2.07		3.92	3.96	4.95	4.95
Road supporting acreage (New in period)	Acres		1.50	0.03	0.54	0.00	2.07		3.92	0.04	0.99	0.00

Table B-6: PG and E Hinkley Groundwater Remediation, Alternative 4C-4, Remedial Infrastructure Based on Feasibility Study, Addendum Data, 2011 - 2012 (08/06/12)

Element	Units	Existing	Initial	Year 5- 10	Year 10 - 20	20+	Total	Scaler	Initial (\$)	Year 5- 10 (\$)	Year 10-20 (\$)	20+ (\$)
AUs (total)	Acres	182	895	895	895	895	895		1,394	1,394	1,394	1,394
AUs (New in period)	Acres	0	713	0	0	0	713	156%	1,212	0	0	0
AUs Piping (total)	LF	24,499	48,664	48,664	53,974	53,974	53,974		132,875	132,875	147,374	147,374
AUs Piping (New in period)	LF	0	24,165	0	5,310	0	29,475	273%	108,376	0	14,499	0
AU wells (total)	#	29	44	44	56	56	56		149	149	190	190
AU wells (New in period)	#	0	15	0	12	0	27	339%	120	0	41	0
AU pumping (total)	gpm	1,100	2,829	2,829	2,829	2,325	2,829		4,388	4,388	4,388	4,388
AU pumping (change in period)	gpm	0	1,729	0	0	-504	1,225	155%	3,288	0	0	0
IRZ piping (total)	LF	14,985	31,392	31,992	33,892	33,892	33,892		39,240	39,990	42,365	42,365
IRZ piping (New in period)	LF	0	16,407	600	1,900	0	18,907	125%	24,255	750	2,375	0
IRZ wells (total)	#	70	106	106	112	112	112		129	129	136	136
IRZ wells (New in period)	#	0	36	0	6	0	42		59	0	7	0
IRZ injection wells (total)	#	58	86	86	89	89	89		108	108	111	111
IRZ injection wells (New in period)	#	0	28	0	3	0	31	125%	50	0	4	0
IRZ extraction wells (total)	#	12	20	20	23	23	23		22	22	25	25
IRZ extraction wells (New in period)	#	0	8	0	3	0	11	109%	10	0	3	0
IRZ dosed injection flow (total)	gpm	190	345	195	255	170	345		431	244	319	213
IRZ dosed injection flow (New in period)	gpm	0	155	-150	60	-85	-20	125%	241	-188	75	-106
SCRIA dosed-injection flow (total)	gpm		195						244			
SCRIA dosed-injection flow (New in period)	gpm		195				195	125%	244			
SAIRZ dosed-injection flow (total)	gpm		150						188			
SAIRZ dosed-injection flow (New in period)	gpm		150				150	125%	188			
IRZ CAIRZ recirculation flow (total)	gpm	83	223	223	223	223	223		279	279	279	279
IRZ recirculation flow (New in period)	gpm	0	140	0	0	0	140	125%	196	0	0	0
Exsitu wells	#											
Exsitu piping	LF											
Exsitu flow	gpm											
FW Injection piping	LF	31,886	31,886	31,886	31,886	31,886	31,886	115%	36,669	36,669	36,669	36,669
FW Injection wells	#	8	8	8	8	8	8	115%	9	9	9	9
FW Injection flow	gpm	80	80	80	80	80	80	115%	92	92	92	92
Monitoring wells (total)	#	434	446	446	446	446	446		558	558	558	558
Monitoring wells (New in period)	#	0	12	0	0	0	12	125%	124	0	0	0
All wells (total)	#	541	604	604	622	622	622		845	845	893	893
All wells (New in period)	#	0	63	0	18	0	81		303	0	48	0
Well supporting acreage	Acres	36	40	40	41	41	41		56	56	59	59
Well supporting acreage (New in period)	Acres	0	4	0	1	0	5		20	0	3	0
Road supporting acreage	Acres		2.33	2.36	2.78	2.78	2.78		7.61	7.66	8.62	8.62
Road supporting acreage (New in period)	Acres		2.33	0.03	0.41	0.00	2.78		7.61	0.04	0.97	0.00

Table B-7: PG and E Hinkley Groundwater Remediation, Alternative 4C-5, Remedial Infrastructure Based on Feasibility Study, Addendum Data, 2011 - 2012 (08/06/12)

Element	Units	Existing	Initial	Year 5- 10	Year 10 - 20	20+	Total	Scaler	Initial (\$)	Year 5- 10 (\$)	Year 10-20 (\$)	20+ (\$)
AUs (total)	Acres	182	351	351	351	351	351		575	575	575	575
AUs (New in period)	Acres	0	168	0	0	0	168	164%	392	0	0	0
AUs Piping (total)	LF	24,499	34,234	34,234	41,674	41,674	41,674		68,489	68,489	83,374	83,374
AUs Piping (New in period)	LF	0	9,735	0	7,440	0	17,175	200%	43,990	0	14,885	0
AU wells (total)	#	29	44	44	56	56	56		80	80	102	102
AU wells (New in period)	#	0	15	0	12	0	27	182%	51	0	22	0
AU pumping (total)	gpm	1,100	2,042	2,042	2,042	1,688	1,688		3,167	3,167	3,167	2,618
AU pumping (change in period)	gpm	0	942	0	0	-354	588		2,067	0	0	-549
IRZ piping (total)	LF	14,985	31,392	31,992	33,892	33,892	33,892		33,940	34,690	36,340	36,340
IRZ piping (New in period)	LF	0	16,407	600	1,900	0	18,907	107%	18,955	750	1,650	0
IRZ wells (total)	#	70	87	87	91	91	91		109	109	114	114
IRZ wells (New in period)	#	0	17	0	4	0	21		39	0	5	0
IRZ injection wells (total)	#	58	72	72	73	73	73		90	90	91	91
IRZ injection wells (New in period)	#	0	14	0	1	0	15	125%	32	0	1	0
IRZ extraction wells (total)	#	12	15	15	18	18	18		19	19	23	23
IRZ extraction wells (New in period)	#	0	3	0	3	0	6	125%	7	0	4	0
IRZ dosed injection flow (total)	gpm	190	195	195	255	170	195		244	244	319	213
IRZ dosed injection flow (New in period)	gpm	0	5	0	60	-85	-20	125%	54	0	75	-106
SCRIA dosed-injection flow (total)	gpm		195						244			
SCRIA dosed-injection flow (New in period)	gpm		85		60	-85	60	125%	49			
SAIRZ dosed-injection flow (total)	gpm								0			
SAIRZ dosed-injection flow (New in period)	gpm						0	125%	0			
IRZ CAIRZ recirculation flow (total)	gpm	83	223	223	223	223	223		279	279	279	279
IRZ recirculation flow (New in period)	gpm	0	140	0	0	0	140	125%	196	0	0	0
Exsitu wells	#		16	16	19	19	19		20	20	24	24
Exsitu wells (New in period)	gpm		16	0	3	0	19	125%	20	0	4	0
Exsitu piping	LF		6,175	6,175	6,875	6,875	6,875		7,719	7,719	8,594	8,594
Exsitu piping (New in period)	gpm		6,175	0	700	0	6,875	125%	7,719	0	875	0
Exsitu flow	gpm		200	200	200	0	0		250	250	250	0
Exsitu flow (New in Period)	gpm		200	0	0	-200	0	100%	250	0	0	-250
FW Injection piping	LF	31,886	31,886	31,886	31,886	31,886	31,886	115%	36,669	36,669	36,669	36,669
FW Injection wells	#	8	8	8	8	8	8	115%	9	9	9	9
FW Injection flow	gpm	80	80	80	80	80	80	115%	92	92	92	92
Monitoring wells (total)	#	434	446	446	446	446	446		558	558	558	558
Monitoring wells (New in period)	#	0	12	0	0	0	12	125%	124	0	0	0
All wells (total)	#	541	601	601	620	620	620		776	776	806	806
All wells (New in period)	#	0	60	0	19	0	79		233	0	31	0
Well supporting acreage	Acres	36	40	40	41	41	41		52	52	54	54
Well supporting acreage (New in period)	Acres	0	4	0	1	0	5		16	0	2	0
Road supporting acreage	Acres		1.85	1.89	2.47	2.47	2.47		4.06	4.10	5.10	5.10
Road supporting acreage (New in period)	Acres		1.85	0.03	0.58	0.00	2.47		4.06	0.04	1.00	0.00