Estimated Hot Spot Backfill Volumes -- Parcels B, G, and D-1

Parcel	Excavation	Subject Boring(s)	Hot Sample Depth	Excavation Dimensions (ft)	Excv Depth (ft)	Excv Area (ft^2)	Excv Volume (yd^3)	Backfill Volume (bcy)	Backfill Volume (lcy)[a]	Backfill Volume (lcy)[b]
B	B3416	PA24B005	2.75	15 X 15	4	225	34	34	44	57
B	B3426	IR10B008	0.75	15 X 15	3	225	25	25	33	42
B	B4716	IR26B026	1.75	15 X 15	3	225	25	25	33	42
G	AT20	IR09B030	1.25	15 X 15	3	225	25	25	33	42
G	AV20	IR33B091	1.25	15 X 15	3	225	25	25	33	42
D-1	BA22	IR35SS14 IR35SS15	0	16 X 32	2	512	38	38	49	64
D-1	BE26	PA55TA04	1.25	15 X 15	3	225	25	25	33	42
D-1	BD29	PA55TA10	3.5	15 X 15	5	225	42	42	55	71
D-1	BG31	PA53SS03	0	irregular	2	177	14	14	18	24
D-1	BJ30	SPD31	0	15 X 15	2	225	17	17	22	29
D-1	BJ31	SPD23	0	15 X 15	2	225	17	17	22	29
						Total	287	287	373	**485**

Notes:

a. Factor of 1.3 used to convert bank cubic yards to loose cubic yards

b. Factor of 1.3 used to include contingency volume for step-out excavation, sloping, over excavation, etc.

Analysis of Step-Out/Step-Down for Hot Spot

Scenario Number	Initial Width (ft)	Initial Depth (ft)	Initial Sidewall Length (ft)	Initial Bottom Area (ft^2)	Initial Volume (CY)	Number of Initial Sidewall Samples	Number of Initial Bottom Samples
1	15	2	60	225	17	4	1
2	15	2	60	225	17	4	1
3	15	2	60	225	17	4	1
4	15	2	60	225	17	4	1
5	15	2	60	225	17	4	1
6	15	2	60	225	17	4	1
7	15	2	60	225	17	4	1
8	15	2	60	225	17	4	1
9	15	2	60	225	17	4	1
10	15	2	60	225	17	4	1
11	15	2	60	225	17	4	1
12	15	2	60	225	17	4	1
13	15	2	60	225	17	4	1
14	15	2	60	225	17	4	1
15	15	2	60	225	17	4	1
16	15	2	60	225	17	4	1
17	15	2	60	225	17	4	1
18	15	2	60	225	17	4	1
19	15	2	60	225	17	4	1
20	15	2	60	225	17	4	1
21	15	2	60	225	17	4	1
22	15	2	60	225	17	4	1
23	15	2	60	225	17	4	1
24	15	2	60	225	17	4	1
25	15	2	60	225	17	4	1
26	15	2	60	225	17	4	1
27	15	2	60	225	17	4	1
28	15	2	60	225	17	4	1
29	15	2	60	225	17	4	1
30	15	2	60	225	17	4	1
31	15	2	60	225	17	4	1
32	15	2	60	225	17	4	1
33	15	2	60	225	17	4	1
34	15	2	60	225	17	4	1
35	15	2	60	225	17	4	1
36	15	2	60	225	17	4	1
37	15	2	60	225	17	4	1
38	15	2	60	225	17	4	1
39	15	2	60	225	17	4	1
40	15	2	60	225	17	4	1
41	15	2	60	225	17	4	1
42	15	2	60	225	17	4	1
43	15	2	60	225	17	4	1
44	15	2	60	225	17	4	1

45	15	2	60	225	17	4	1
46	15	2	60	225	17	4	1
47	15	2	60	225	17	4	1
48	15	2	60	225	17	4	1
49	15	3	60	225	25	4	1
50	15	3	60	225	25	4	1
51	15	3	60	225	25	4	1
52	15	3	60	225	25	4	1
53	15	3	60	225	25	4	1
54	15	3	60	225	25	4	1
55	15	3	60	225	25	4	1
56	15	3	60	225	25	4	1
57	15	3	60	225	25	4	1
58	15	3	60	225	25	4	1
59	15	3	60	225	25	4	1
60	15	3	60	225	25	4	1
61	15	3	60	225	25	4	1
62	15	3	60	225	25	4	1
63	15	3	60	225	25	4	1
64	15	3	60	225	25	4	1
65	15	3	60	225	25	4	1
66	15	3	60	225	25	4	1
67	15	3	60	225	25	4	1
68	15	3	60	225	25	4	1
69	15	3	60	225	25	4	1
70	15	3	60	225	25	4	1
71	15	3	60	225	25	4	1
72	15	3	60	225	25	4	1
73	15	3	60	225	25	4	1
74	15	3	60	225	25	4	1
75	15	3	60	225	25	4	1
76	15	3	60	225	25	4	1
77	15	3	60	225	25	4	1
78	15	3	60	225	25	4	1
79	15	3	60	225	25	4	1
80	15	3	60	225	25	4	1
81	15	3	60	225	25	4	1
82	15	3	60	225	25	4	1
83	15	3	60	225	25	4	1
84	15	3	60	225	25	4	1
85	15	3	60	225	25	4	1
86	15	3	60	225	25	4	1
87	15	3	60	225	25	4	1
88	15	3	60	225	25	4	1
89	15	3	60	225	25	4	1
90	15	3	60	225	25	4	1
91	15	3	60	225	25	4	1
92	15	3	60	225	25	4	1
93	15	3	60	225	25	4	1
94	15	3	60	225	25	4	1

95	15	3	60	225	25	4	1
96	15	3	60	225	25	4	1
97	15	4	60	225	34	4	1
98	15	4	60	225	34	4	1
99	15	4	60	225	34	4	1
100	15	4	60	225	34	4	1
101	15	4	60	225	34	4	1
102	15	4	60	225	34	4	1
103	15	4	60	225	34	4	1
104	15	4	60	225	34	4	1
105	15	4	60	225	34	4	1
106	15	4	60	225	34	4	1
107	15	4	60	225	34	4	1
108	15	4	60	225	34	4	1
109	15	4	60	225	34	4	1
110	15	4	60	225	34	4	1
111	15	4	60	225	34	4	1
112	15	4	60	225	34	4	1
113	15	4	60	225	34	4	1
114	15	4	60	225	34	4	1
115	15	4	60	225	34	4	1
116	15	4	60	225	34	4	1
117	15	4	60	225	34	4	1
118	15	4	60	225	34	4	1
119	15	4	60	225	34	4	1
120	15	4	60	225	34	4	1
121	15	4	60	225	34	4	1
122	15	4	60	225	34	4	1
123	15	4	60	225	34	4	1
124	15	4	60	225	34	4	1
125	15	4	60	225	34	4	1
126	15	4	60	225	34	4	1
127	15	4	60	225	34	4	1
128	15	4	60	225	34	4	1
129	15	4	60	225	34	4	1
130	15	4	60	225	34	4	1
131	15	4	60	225	34	4	1
132	15	4	60	225	34	4	1
133	15	4	60	225	34	4	1
134	15	4	60	225	34	4	1
135	15	4	60	225	34	4	1
136	15	4	60	225	34	4	1
137	15	4	60	225	34	4	1
138	15	4	60	225	34	4	1
139	15	4	60	225	34	4	1
140	15	4	60	225	34	4	1
141	15	4	60	225	34	4	1
142	15	4	60	225	34	4	1
143	15	4	60	225	34	4	1
144	15	4	60	225	34	4	1

145	15	5	60	225	42	4	1
146	15	5	60	225	42	4	1
147	15	5	60	225	42	4	1
148	15	5	60	225	42	4	1
149	15	5	60	225	42	4	1
150	15	5	60	225	42	4	1
151	15	5	60	225	42	4	1
152	15	5	60	225	42	4	1
153	15	5	60	225	42	4	1
154	15	5	60	225	42	4	1
155	15	5	60	225	42	4	1
156	15	5	60	225	42	4	1
157	15	5	60	225	42	4	1
158	15	5	60	225	42	4	1
159	15	5	60	225	42	4	1
160	15	5	60	225	42	4	1
161	15	5	60	225	42	4	1
162	15	5	60	225	42	4	1
163	15	5	60	225	42	4	1
164	15	5	60	225	42	4	1
165	15	5	60	225	42	4	1
166	15	5	60	225	42	4	1
167	15	5	60	225	42	4	1
168	15	5	60	225	42	4	1
169	15	5	60	225	42	4	1
170	15	5	60	225	42	4	1
171	15	5	60	225	42	4	1
172	15	5	60	225	42	4	1
173	15	5	60	225	42	4	1
174	15	5	60	225	42	4	1
175	15	5	60	225	42	4	1
176	15	5	60	225	42	4	1
177	15	5	60	225	42	4	1
178	15	5	60	225	42	4	1
179	15	5	60	225	42	4	1
180	15	5	60	225	42	4	1

Step-Out Distance (ft)	Step-Down Distance (ft)	Number of Sidewalls w/ Step-Outs	Number of Step-Outs per Sidewall	Number of Bottom Step-Downs	New Depth (ft)	New Sidewall Length (ft)
5	2	1	1	0	2	70
5	2	2	1	0	2	80
5	2	3	1	0	2	90
5	2	4	1	0	2	100
5	2	1	2	0	2	80
5	2	2	2	0	2	100
5	2	3	2	0	2	110
5	2	4	2	0	2	140
5	2	1	3	0	2	90
5	2	2	3	0	2	120
5	2	3	3	0	2	130
5	2	4	3	0	2	180
5	2	1	1	1	4	70
5	2	2	1	1	4	80
5	2	3	1	1	4	90
5	2	4	1	1	4	100
5	2	1	2	1	4	80
5	2	2	2	1	4	100
5	2	3	2	1	4	110
5	2	4	2	1	4	140
5	2	1	3	1	4	90
5	2	2	3	1	4	120
5	2	3	3	1	4	130
5	2	4	3	1	4	180
5	2	1	1	2	6	70
5	2	2	1	2	6	80
5	2	3	1	2	6	90
5	2	4	1	2	6	100
5	2	1	2	2	6	80
5	2	2	2	2	6	100
5	2	3	2	2	6	110
5	2	4	2	2	6	140
5	2	1	3	2	6	90
5	2	2	3	2	6	120
5	2	3	3	2	6	130
5	2	4	3	2	6	180
5	2	1	1	3	8	70
5	2	2	1	3	8	80
5	2	3	1	3	8	90
5	2	4	1	3	8	100
5	2	1	2	3	8	80
5	2	2	2	3	8	100
5	2	3	2	3	8	110
5	2	4	2	3	8	140

5	2	1	3	3	8	90
5	2	2	3	3	8	120
5	2	3	3	3	8	130
5	2	4	3	3	8	180
5	2	1	1	0	3	70
5	2	2	1	0	3	80
5	2	3	1	0	3	90
5	2	4	1	0	3	100
5	2	1	2	0	3	80
5	2	2	2	0	3	100
5	2	3	2	0	3	110
5	2	4	2	0	3	140
5	2	1	3	0	3	90
5	2	2	3	0	3	120
5	2	3	3	0	3	130
5	2	4	3	0	3	180
5	2	1	1	1	5	70
5	2	2	1	1	5	80
5	2	3	1	1	5	90
5	2	4	1	1	5	100
5	2	1	2	1	5	80
5	2	2	2	1	5	100
5	2	3	2	1	5	110
5	2	4	2	1	5	140
5	2	1	3	1	5	90
5	2	2	3	1	5	120
5	2	3	3	1	5	130
5	2	4	3	1	5	180
5	2	1	1	2	7	70
5	2	2	1	2	7	80
5	2	3	1	2	7	90
5	2	4	1	2	7	100
5	2	1	2	2	7	80
5	2	2	2	2	7	100
5	2	3	2	2	7	110
5	2	4	2	2	7	140
5	2	1	3	2	7	90
5	2	2	3	2	7	120
5	2	3	3	2	7	130
5	2	4	3	2	7	180
5	2	1	1	3	9	70
5	2	2	1	3	9	80
5	2	3	1	3	9	90
5	2	4	1	3	9	100
5	2	1	2	3	9	80
5	2	2	2	3	9	100
5	2	3	2	3	9	110
5	2	4	2	3	9	140
5	2	1	3	3	9	90
5	2	2	3	3	9	120

5	2	3	3	3	9	130
5	2	4	3	3	9	180
5	2	1	1	0	4	70
5	2	2	1	0	4	80
5	2	3	1	0	4	90
5	2	4	1	0	4	100
5	2	1	2	0	4	80
5	2	2	2	0	4	100
5	2	3	2	0	4	110
5	2	4	2	0	4	140
5	2	1	3	0	4	90
5	2	2	3	0	4	120
5	2	3	3	0	4	130
5	2	4	3	0	4	180
5	2	1	1	1	6	70
5	2	2	1	1	6	80
5	2	3	1	1	6	90
5	2	4	1	1	6	100
5	2	1	2	1	6	80
5	2	2	2	1	6	100
5	2	3	2	1	6	110
5	2	4	2	1	6	140
5	2	1	3	1	6	90
5	2	2	3	1	6	120
5	2	3	3	1	6	130
5	2	4	3	1	6	180
5	2	1	1	2	8	70
5	2	2	1	2	8	80
5	2	3	1	2	8	90
5	2	4	1	2	8	100
5	2	1	2	2	8	80
5	2	2	2	2	8	100
5	2	3	2	2	8	110
5	2	4	2	2	8	140
5	2	1	3	2	8	90
5	2	2	3	2	8	120
5	2	3	3	2	8	130
5	2	4	3	2	8	180
5	2	1	1	3	10	70
5	2	2	1	3	10	80
5	2	3	1	3	10	90
5	2	4	1	3	10	100
5	2	1	2	3	10	80
5	2	2	2	3	10	100
5	2	3	2	3	10	110
5	2	4	2	3	10	140
5	2	1	3	3	10	90
5	2	2	3	3	10	120
5	2	3	3	3	10	130
5	2	4	3	3	10	180

5	2	1	1	0	5	70
5	2	2	1	0	5	80
5	2	3	1	0	5	90
5	2	4	1	0	5	100
5	2	1	2	0	5	80
5	2	2	2	0	5	100
5	2	3	2	0	5	110
5	2	4	2	0	5	140
5	2	1	3	0	5	90
5	2	2	3	0	5	120
5	2	3	3	0	5	130
5	2	4	3	0	5	180
5	2	1	1	1	7	70
5	2	2	1	1	7	80
5	2	3	1	1	7	90
5	2	4	1	1	7	100
5	2	1	2	1	7	80
5	2	2	2	1	7	100
5	2	3	2	1	7	110
5	2	4	2	1	7	140
5	2	1	3	1	7	90
5	2	2	3	1	7	120
5	2	3	3	1	7	130
5	2	4	3	1	7	180
5	2	1	1	2	9	70
5	2	2	1	2	9	80
5	2	3	1	2	9	90
5	2	4	1	2	9	100
5	2	1	2	2	9	80
5	2	2	2	2	9	100
5	2	3	2	2	9	110
5	2	4	2	2	9	140
5	2	1	3	2	9	90
5	2	2	3	2	9	120
5	2	3	3	2	9	130
5	2	4	3	2	9	180

New Bottom Area (ft^2)	New Volume (CY)	Addt Volume (CY)	Number of Addt Sidewall Samples	Number of Addt Bottom Samples	Ratio of Addt Samples to Addt Volume
307	23	6	1	0	0.16667
400	30	13	1	0	0.07692
507	38	21	2	1	0.14286
625	47	30	2	1	0.1
400	30	13	1	0	0.07692
625	47	30	2	1	0.1
757	57	40	3	1	0.1
1225	91	74	5	2	0.09459
507	38	21	2	1	0.14286
900	67	50	4	1	0.1
1057	79	62	4	2	0.09677
2025	150	133	7	4	0.08271
307	46	29	1	0	0.03448
400	60	43	1	0	0.02326
507	76	59	2	1	0.05085
625	93	76	2	1	0.03947
400	60	43	1	0	0.02326
625	93	76	2	1	0.03947
757	113	96	3	1	0.04167
1225	182	165	5	2	0.04242
507	76	59	2	1	0.05085
900	134	117	4	1	0.04274
1057	157	140	4	2	0.04286
2025	300	283	7	4	0.03887
307	69	52	1	0	0.01923
400	89	72	1	0	0.01389
507	113	96	2	1	0.03125
625	139	122	2	1	0.02459
400	89	72	1	0	0.01389
625	139	122	2	1	0.02459
757	169	152	3	1	0.02632
1225	273	256	5	2	0.02734
507	113	96	2	1	0.03125
900	200	183	4	1	0.02732
1057	235	218	4	2	0.02752
2025	450	433	7	4	0.02540
307	91	74	5	0	0.06757
400	119	102	5	0	0.04902
507	151	134	6	1	0.05224
625	186	169	6	1	0.04142
400	119	102	5	0	0.04902
625	186	169	6	1	0.04142
757	225	208	7	1	0.03846
1225	363	346	9	2	0.03179

507	151	134	6	1	0.05224
900	267	250	8	1	0.036
1057	314	297	8	2	0.03367
2025	600	583	11	4	0.02573
307	35	10	1	0	0.1
400	45	20	1	0	0.05
507	57	32	2	1	0.09375
625	70	45	2	1	0.06667
400	45	20	1	0	0.05
625	70	45	2	1	0.06667
757	85	60	3	1	0.06667
1225	137	112	5	2	0.0625
507	57	32	2	1	0.09375
900	100	75	4	1	0.06667
1057	118	93	4	2	0.06452
2025	225	200	7	4	0.055
307	57	32	1	0	0.03125
400	75	50	1	0	0.02
507	94	69	2	1	0.04348
625	116	91	2	1	0.03297
400	75	50	1	0	0.02
625	116	91	2	1	0.03297
757	141	116	3	1	0.03448
1225	227	202	5	2	0.03465
507	94	69	2	1	0.04348
900	167	142	4	1	0.03521
1057	196	171	4	2	0.03509
2025	375	350	7	4	0.03143
307	80	55	1	0	0.01818
400	104	79	1	0	0.01266
507	132	107	2	1	0.02804
625	163	138	2	1	0.02174
400	104	79	1	0	0.01266
625	163	138	2	1	0.02174
757	197	172	3	1	0.02326
1225	318	293	5	2	0.02389
507	132	107	2	1	0.02804
900	234	209	4	1	0.02392
1057	275	250	4	2	0.024
2025	525	500	7	4	0.022
307	103	78	5	0	0.06410
400	134	109	5	0	0.04587
507	169	144	6	1	0.04861
625	209	184	6	1	0.03804
400	134	109	5	0	0.04587
625	209	184	6	1	0.03804
757	253	228	7	1	0.03509
1225	409	384	9	2	0.02865
507	169	144	6	1	0.04861
900	300	275	8	1	0.03273

1057	353	328	8	2	0.03049
2025	675	650	11	4	0.02308
307	46	12	1	0	0.08333
400	60	26	1	0	0.03846
507	76	42	2	1	0.07143
625	93	59	2	1	0.05085
400	60	26	1	0	0.03846
625	93	59	2	1	0.05085
757	113	79	3	1	0.05063
1225	182	148	5	2	0.04730
507	76	42	2	1	0.07143
900	134	100	4	1	0.05
1057	157	123	4	2	0.04878
2025	300	266	7	4	0.04135
307	69	35	1	0	0.02857
400	89	55	1	0	0.01818
507	113	79	2	1	0.03797
625	139	105	2	1	0.02857
400	89	55	1	0	0.01818
625	139	105	2	1	0.02857
757	169	135	3	1	0.02963
1225	273	239	5	2	0.02929
507	113	79	2	1	0.03797
900	200	166	4	1	0.03012
1057	235	201	4	2	0.02985
2025	450	416	7	4	0.02644
307	91	57	5	0	0.08772
400	119	85	5	0	0.05882
507	151	117	6	1	0.05983
625	186	152	6	1	0.04605
400	119	85	5	0	0.05882
625	186	152	6	1	0.04605
757	225	191	7	1	0.04188
1225	363	329	9	2	0.03343
507	151	117	6	1	0.05983
900	267	233	8	1	0.03863
1057	314	280	8	2	0.03571
2025	600	566	11	4	0.02650
307	114	80	5	0	0.0625
400	149	115	5	0	0.04348
507	188	154	6	1	0.04545
625	232	198	6	1	0.03535
400	149	115	5	0	0.04348
625	232	198	6	1	0.03535
757	281	247	7	1	0.03239
1225	454	420	9	2	0.02619
507	188	154	6	1	0.04545
900	334	300	8	1	0.03
1057	392	358	8	2	0.02793
2025	750	716	11	4	0.02095

307	57	15	1	0	0.06667
400	75	33	1	0	0.03030
507	94	52	2	1	0.05769
625	116	74	2	1	0.04054
400	75	33	1	0	0.03030
625	116	74	2	1	0.04054
757	141	99	3	1	0.04040
1225	227	185	5	2	0.03784
507	94	52	2	1	0.05769
900	167	125	4	1	0.04
1057	196	154	4	2	0.03896
2025	375	333	7	4	0.03303
307	80	38	1	0	0.02632
400	104	62	1	0	0.01613
507	132	90	2	1	0.03333
625	163	121	2	1	0.02479
400	104	62	1	0	0.01613
625	163	121	2	1	0.02479
757	197	155	3	1	0.02581
1225	318	276	5	2	0.02536
507	132	90	2	1	0.03333
900	234	192	4	1	0.02604
1057	275	233	4	2	0.02575
2025	525	483	7	4	0.02277
307	103	61	5	0	0.08197
400	134	92	5	0	0.05435
507	169	127	6	1	0.05512
625	209	167	6	1	0.04192
400	134	92	5	0	0.05435
625	209	167	6	1	0.04192
757	253	211	7	1	0.03791
1225	409	367	9	2	0.02997
507	169	127	6	1	0.05512
900	300	258	8	1	0.03488
1057	353	311	8	2	0.03215
2025	675	633	11	4	0.02370

eep excavation	Average	127.5	3.8	1.2	0.053
cavations, 36%	Standard Dev	114.6	2.5	1.1	0.036
	Prob Min	12.9	1.3	0.1	0.018
	Prob Max	242.2	6.3	2.2	0.089

eep excavation	Average	148.4	3.8	1.2	0.041
cavations, 45%	Standard Dev	128.1	2.5	1.1	0.021
	Prob Min	20.2	1.3	0.1	0.020
	Prob Max	276.5	6.3	2.2	0.062

eep excavation	Average	168.1	4.8	1.2	0.042
xcavations, 9%	Standard Dev	142.4	2.7	1.1	0.016

	Prob Min	25.7	2.1	0.1	0.026
	Prob Max	310.5	7.5	2.2	0.058
eep excavation	Average	160.1	4.2	1.2	0.038
xcavations, 9%	Standard Dev	133.2	2.6	1.1	0.015
	Prob Min	26.9	1.5	0.1	0.023
	Prob Max	293.3	6.8	2.2	0.052