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APPENDIX A
HISTORICAL DATA TABLES FOR INSTALLATION RESTORATION SITES 4 AND 5
(22 Pages)

TABLE A-1

INSTALLATION RESTORATION SITE 4 CHEMICALS OF CONCERN
ALAMEDA POINT, ALAMEDA, CALIFORNIA
(Page 1 of 3)

Point Name	Point Type	Date	Depth (feet bgs)	1,1-DCE (µg/L)	TCE (µg/L)	Vinyl Chloride (µg/L)
03GB039	GP	09/09/94	7 to 9	<1	<1	<0.5
D04-02	MW	02/04/98	86.5 to 96.5	<1	<1	<0.5
D04-02	MW	03/09/95	86.5 to 96.5	<2	<2	<0.5
D04-02	MW	03/09/95	86.5 to 96.5	<2	<2	<0.5
D04-02	MW	05/03/95	86.5 to 96.5	<2	<2	<0.5
D04-02	MW	05/08/98	86.5 to 96.5	<1	<1	<0.5
D04-02	MW	08/05/98	86.5 to 96.5	<1	<1	<0.5
D04-02	MW	11/14/97	86.5 to 96.5	<1J	<1	<0.5
D04-03	MW	02/04/98	84 to 94	<1	<1	<0.5
D04-03	MW	03/09/95	84 to 94	<2	<2	<0.5J
D04-03	MW	03/09/95	84 to 94	<2	<2	<0.5
D04-03	MW	05/06/98	84 to 94	<1	<1	<0.5
D04-03	MW	05/10/95	84 to 94	<2	<2	<0.5
D04-03	MW	08/05/98	84 to 94	<1	<1	<0.5
D04-03	MW	11/14/97	84 to 94	<1J	<1	<0.5
DHP-S04-07	HP	01/18/95	50	<2	<2	<0.5
DHP-S04-08	HP	01/23/95	43.5	<2	<2	<0.5
DHP-S04-09	HP	01/25/95	50	<2	<2	<0.5
DHP-S07B-01	HP	08/04/94	28.5	<1	<1	<0.5
HP-S04-01	HP	02/14/94	20	3J	1,300	<20
HP-S04-02	HP	02/14/94	20	2J	230	34
HP-S04-07	HP	01/18/95	30	<2	0.8J	<0.5
HP-S04-08	HP	01/20/95	30	<2	<2	<0.5
HP-S04-09	HP	01/25/95	32	<2	<2	<0.5
M04-06	MW	01/23/95	3.5 to 13.5	<2	<2	<0.5
M04-06	MW	02/09/98	3.5 to 13.5	<1	<1	<0.5
M04-06	MW	04/26/95	3.5 to 13.5	<2	0.3J	<0.5
M04-06	MW	05/06/98	3.5 to 13.5	<1	<1	<0.5
M04-06	MW	06/30/94	3.5 to 13.5	0.1J	<2	<0.5
M04-06	MW	08/04/98	3.5 to 13.5	<1	<1	<0.5
M04-06	MW	09/23/94	3.5 to 13.5	<2	<2	<0.5
M04-06	MW	11/03/97	3.5 to 13.5	<1	<1	<0.5
M04-07	MW	01/25/95	3.5 to 13.5	1J	13	<0.8
M04-07	MW	02/09/98	3.5 to 13.5	<1	<1	<0.5
M04-07	MW	04/24/95	3.5 to 13.5	<2	2J	<0.5
M04-07	MW	05/05/98	3.5 to 13.5	<1	<1	<0.5
M04-07	MW	07/06/94	3.5 to 13.5	<2	<10J	<0.5
M04-07	MW	08/04/98	3.5 to 13.5	<1	<1	<0.5
M04-07	MW	09/27/94	3.5 to 13.5	<2	1J	<0.5

TABLE A-1

INSTALLATION RESTORATION SITE 4 CHEMICALS OF CONCERN
ALAMEDA POINT, ALAMEDA, CALIFORNIA
(Page 2 of 3)

Point Name	Point Type	Date	Depth (feet bgs)	1,1-DCE (µg/L)	TCE (µg/L)	Vinyl Chloride (µg/L)
M04-07	MW	11/03/97	3.5 to 13.5	<1	<1	<0.5
M07B-01	MW	02/13/98	3.5 to 13.5	<1J	<1J	<0.5J
MW360-1	MW	01/24/95	5 to 15	6J	4,300	<12
MW360-1	MW	02/09/98	5 to 15	<25	4,100	<12
MW360-1	MW	04/24/95	5 to 15	10J	4,400	<83
MW360-1	MW	05/06/98	5 to 15	<250	2,700	<120
MW360-1	MW	07/06/94	5 to 15	4J	3,400	<6
MW360-1	MW	07/11/90	5 to 15	<250	4,900	<500
MW360-1	MW	08/04/98	5 to 15	5J	2,900	1J
MW360-1	MW	09/22/94	5 to 15	<250	3,700	<62
MW360-1	MW	11/07/97	5 to 15	7	4,600J	0.9
MW360-4	MW	01/23/95	5 to 15	15J	4,200	200
MW360-4	MW	02/09/98	5 to 15	3	1,200	54
MW360-4	MW	04/25/95	5 to 15	16J	4,100	130
MW360-4	MW	05/06/98	5 to 15	2	410	21
MW360-4	MW	07/01/94	5 to 15	<330	5,200	310
MW360-4	MW	08/03/90	5 to 15	<50	2,100	140
MW360-4	MW	08/05/98	5 to 15	2	580	26
MW360-4	MW	09/23/94	5 to 15	<500	6,900	310
MW360-4	MW	11/06/97	5 to 15	4	520J	64J
S04-1-2	HP	01/28/98	5.5 to 7.5	<0.5	<0.5	<0.5
S04-1-4	HP	01/21/98	7.5 to 9.5	33	<0.5	<0.5
S04-1-4	HP	01/21/98	9.5 to 11.5	2,200	8	<0.5
S04-1-4	HP	01/21/98	11.5 to 13.5	16,000	<0.5	7
S04-1-4	HP	01/21/98	20 to 25	29,000	<0.5	4
S04-1-4	HP	01/21/98	25 to 30	84,000	62	7
S04-1-4	HP	01/21/98	30 to 35	2,500	2	<0.5
S04-1-4	HP	01/21/98	30 to 35	3,800	<0.5	<0.5
S04-1-4	HP	01/22/98	40 to 45	1,900	<0.5	<0.5
S04-1-4	HP	01/22/98	40 to 45	7	<0.5	<0.5
S04-1-4	HP	01/22/98	40 to 45	2	<0.5	<0.5
S04-2D-B	HP	01/22/98	3	<0.5	<0.5	<0.5
S04-2D-C	HP	04/08/97	15	57	24,000	2,200
S04-2D-C	HP	04/08/97	7.5	<0.5	0.52	1
S04-2D-C	HP	04/08/97	9.5	1.2	<0.5	62
S04-3-2	HP	01/21/98	7.5 to 9.5	<0.5	200	<0.5
S04-3-2	HP	01/21/98	9.5 to 11.5	<0.5	<0.5	<0.5
S04-3-2	HP	01/21/98	11.5 to 13.5	1	0.9	<0.5
S04-3-2	HP	01/21/98	20 to 25	0.6	1J	<0.5

TABLE A-1

INSTALLATION RESTORATION SITE 4 CHEMICALS OF CONCERN
ALAMEDA POINT, ALAMEDA, CALIFORNIA
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Point Name	Point Type	Date	Depth (feet bgs)	1,1-DCE (µg/L)	TCE (µg/L)	Vinyl Chloride (µg/L)
S04-3-2	HP	01/21/98	25 to 30	<0.5	<0.5	<0.5
S04-3-2	HP	01/21/98	30 to 35	<0.5	81	<0.5
S04-3-2	HP	01/21/98	30 to 35	<2	14	<0.5
S04-3-3	HP	01/22/98	5.5 to 7.5	<0.5	760	<2.9
S04-3-3	HP	01/22/98	7.5 to 9.5	<0.5	2,800	<0.5
S04-3-3	HP	01/22/98	11.5 to 13.5	3.2	2.4	0.5
S04-3-3	HP	01/22/98	20 to 25	<0.5	120	<0.5
S04-3-3	HP	01/22/98	25 to 30	<0.5	790	<0.5
S04-3-3	HP	01/22/98	30 to 35	<0.5	1,500	<0.5
S04-3-3	HP	01/29/98	40 to 45	<2	1J	<0.5
S04-3-3	HP	01/30/98	40 to 45	15	<0.5	<0.5
S04-3D-B	HP	04/09/97	10	3.5	160	150
S04-3D-B	HP	04/09/97	23	5.3	220	1.5
S04-4-3	HP	01/30/98	20 to 25	<0.5	<0.5	<0.5
S04-4-3	HP	01/30/98	25 to 30	4	20,000	17
S04-4-3	HP	02/04/98	30 to 35	5	11,000	26
S04-4-3	HP	02/04/98	40 to 45	4	2,600	140
S04-4-3	HP	02/04/98	40 to 45	<0.5	103	<0.5
S04-4-4	HP	01/30/98	20 to 25	3.2	2,600	<0.5
S04-4-4	HP	01/30/98	30 to 35	<0.5	560	<0.5
S04-4-4	HP	02/04/98	40 to 45	<0.5	8.5	<0.5
S04-5-9	HP	03/23/98	15.5 to 20	<0.5	<0.5	<0.5
S04-5C-A	HP	04/07/97	11	0.8	<0.5	<0.5
S04-5C-A	HP	04/08/97	15	9.4	1,800	1.8
SHP-S04-07	HP	01/18/95	10	<2	<2	<0.5
SHP-S04-08	HP	01/20/95	17	<2	<2	<0.5
SHP-S04-09	HP	01/25/95	16	<2	<2	<0.5

Notes:

<	Concentration was not detected at or above the method detection limit
µg/L	Microgram per liter
1,1-DCE	1,1-Dichloroethene
1,2-DCE	1,2-Dichloroethene (includes cis and trans 1,2-DCE)
bgs	Below ground surface
GP	Geoprobe®
HP	Hydropunch®
J	Estimated concentration
MW	Monitoring well
NA	Not analyzed
TCE	Trichloroethene

TABLE A-2

INSTALLATION SITE 4 BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES
ALAMEDA POINT,
ALAMEDA, CALIFORNIA
(Page 1 of 3)

Point Name	Point Type	Date	Depth (feet bgs)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylene[a] (µg/L)
03GB039	GP	09/09/94	7 to 9	<1	<1	<1	<1
D04-02	MW	11/14/97	86.5 to 96.5	<0.5	<1	<1	<1
D04-02	MW	02/04/98	86.5 to 96.5	<0.5	<1	<1	<1
D04-02	MW	05/08/98	86.5 to 96.5	<0.5	3	<1	<1
D04-02	MW	08/05/98	86.5 to 96.5	<0.5	<1	<1	<1
D04-02	MW	03/09/95	86.5 to 96.5	<0.5	<2	<0.5	<0.5
D04-02	MW	03/09/95	86.5 to 96.5	<0.5	<0.5	<2	<2
D04-02	MW	03/09/95	86.5 to 96.5	<0.5	<2	<2	<2
D04-02	MW	05/03/95	86.5 to 96.5	<0.5	<2J	<0.5	<0.5
D04-02	MW	05/03/95	86.5 to 96.5	0.5J	0.6	<2	<2J
D04-03	MW	11/14/97	84 to 94	<0.5	<1	<1	<1
D04-03	MW	02/04/98	84 to 94	<0.5	<1	<1	<1
D04-03	MW	05/06/98	84 to 94	<0.5	<1	<1	<1
D04-03	MW	08/05/98	84 to 94	<0.5	<1	<1	<1
D04-03	MW	03/09/95	84 to 94	<0.5	<2	<0.5	<0.5
D04-03	MW	03/09/95	84 to 94	<0.5	<0.5	<2	<2
D04-03	MW	03/09/95	84 to 94	<0.5	<2	<2	<2
D04-03	MW	05/10/95	84 to 94	<0.5	<0.5	<0.5	<0.5
D04-03	MW	05/10/95	84 to 94	<0.5	<2	<2	<2
DHP-S04-07	HP	01/18/95	50	<0.5J	<2J	<2	0.8J
DHP-S04-08	HP	01/23/95	43.5	<0.5J	<2J	<2	<2J
DHP-S04-09	HP	01/25/95	50	<0.5	<2	<2	<2
DHP-S07B-01	HP	08/04/94	28.5	<1	<1	<1	<1
HP-S04-01	HP	02/14/94	20	<20	<0.5	20	20
HP-S04-01	HP	02/14/94	20	<0.5	<20	<0.5	<0.5
HP-S04-02	HP	02/14/94	20	<17	<17	<17	<0.5
HP-S04-02	HP	02/14/94	20	<0.5	<0.5	<0.5	<17
HP-S04-07	HP	01/18/95	30	<0.5J	<2J	<2	<2J
HP-S04-08	HP	01/20/95	30	<0.5	<2	<2	<2J
HP-S04-09	HP	01/25/95	32	<0.5	<2	<2	<2
M04-06	MW	11/03/97	3.5 to 13.5	<0.5	<1	<1	<1
M04-06	MW	02/09/98	3.5 to 13.5	<0.5	<1	<1	<1
M04-06	MW	05/06/98	3.5 to 13.5	<0.5	<1	<1	<1
M04-06	MW	08/04/98	3.5 to 13.5	<0.5	<1	<1	<1
M04-06	MW	06/30/94	3.5 to 13.5	<0.5	<2	<2	2J
M04-06	MW	06/30/94	3.5 to 13.5	<0.5	<0.5	<0.5	2
M04-06	MW	09/23/94	3.5 to 13.5	<0.5	<2	<2	<2
M04-06	MW	09/23/94	3.5 to 13.5	<0.5	<0.5	<0.5	<0.5
M04-06	MW	01/23/95	3.5 to 13.5	<0.5	<2	<2	<2
M04-06	MW	01/23/95	3.5 to 13.5	<0.5	<0.5	<0.5	<0.5

TABLE A-2

INSTALLATION SITE 4 BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES
ALAMEDA POINT,
ALAMEDA, CALIFORNIA
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Point Name	Point Type	Date	Depth (feet bgs)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylene[a] (µg/L)
M04-06	MW	04/26/95	3.5 to 13.5	<0.5	<2	<2	<2
M04-06	MW	04/26/95	3.5 to 13.5	<0.5	<0.5	<0.5	<0.5
M04-07	MW	11/03/97	3.5 to 13.5	<0.5	<1	<1	<1
M04-07	MW	02/09/98	3.5 to 13.5	<0.5	<1	<1	<1
M04-07	MW	05/05/98	3.5 to 13.5	<0.5	<1	<1	<1
M04-07	MW	08/04/98	3.5 to 13.5	<0.5	<1	<1	<1
M04-07	MW	07/06/94	3.5 to 13.5	<0.5	<2	<0.5	<0.5
M04-07	MW	07/06/94	3.5 to 13.5	<0.5	<0.5	<2	<2
M04-07	MW	09/27/94	3.5 to 13.5	<0.5	<0.5	<0.5	<0.5
M04-07	MW	09/27/94	3.5 to 13.5	<0.5	<2	<2	<2
M04-07	MW	01/25/95	3.5 to 13.5	<0.5	<3	<3	<3
M04-07	MW	04/24/95	3.5 to 13.5	<0.5	<0.5	<0.5	<0.5
M04-07	MW	04/24/95	3.5 to 13.5	<0.5	<2	<2	<2
MW360-1	MW	11/07/97	5 to 15	<0.5	<1	<1	<1
MW360-1	MW	02/09/98	5 to 15	<12	<25	<25	<25
MW360-1	MW	05/06/98	5 to 15	<120	<250	<250	<250
MW360-1	MW	08/04/98	5 to 15	<0.5	<1	<1	<1
MW360-1	MW	07/06/94	5 to 15	<6	<25	<25	<0.5
MW360-1	MW	07/06/94	5 to 15	<0.5	<0.5	<0.5	<25
MW360-1	MW	09/22/94	5 to 15	<62	<0.5	<0.5	<0.5
MW360-1	MW	09/22/94	5 to 15	<0.5	<250	<250	<250
MW360-1	MW	01/24/95	5 to 15	<12	<50	<50	<50
MW360-1	MW	04/24/95	5 to 15	22J	39J	<330	<330
MW360-1	MW	07/11/90	5 to 15	<250	<250	<250	<250
MW360-4	MW	11/06/97	5 to 15	<0.5	<1	<1	<1
MW360-4	MW	02/09/98	5 to 15	<0.5	<1	<1	<1
MW360-4	MW	05/06/98	5 to 15	<0.5	<1	<1	<1
MW360-4	MW	08/05/98	5 to 15	<0.5	<1	<1	<1
MW360-4	MW	07/01/94	5 to 15	<0.5	<0.5	<330	<330
MW360-4	MW	07/01/94	5 to 15	<83	330	<0.5	2
MW360-4	MW	09/23/94	5 to 15	<120	1	<0.5	0.7
MW360-4	MW	09/23/94	5 to 15	<0.5	500	<500	<500
MW360-4	MW	01/23/95	5 to 15	<0.5	50	<0.5	<0.5
MW360-4	MW	01/23/95	5 to 15	<12	<0.5	<50	<50
MW360-4	MW	04/25/95	5 to 15	<0.5	250	<0.5	<0.5
MW360-4	MW	04/25/95	5 to 15	<62	<0.5	<250	<250
MW360-4	MW	08/03/90	5 to 15	<50	50	<50	<50
S04-1-2	HP	01/28/98	5.5 to 7.5	<0.5	<0.5	<0.5	<0.5
S04-2D-B	HP	04/07/97	3	<0.5	9.3	1.7	0.6
S04-2D-C	HP	04/08/97	15	1.7	6.1	1.1	1.3

TABLE A-2

INSTALLATION SITE 4 BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES
ALAMEDA POINT,
ALAMEDA, CALIFORNIA
(Page 3 of 3)

Point Name	Point Type	Date	Depth (feet bgs)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylene[a] (µg/L)
S04-2D-C	HP	04/08/97	7.5	0.93	0.76	<0.5	<0.5
S04-2D-C	HP	04/08/97	9.5	0.57	2.4	<0.64	0.9
S04-3-2	HP	01/21/98	7.5 to 9.5	<0.5	1.1	<0.5	2.4
S04-3-2	HP	01/21/98	9.5 to 11.5	<0.5	1.9	<0.5	2.4
S04-3-2	HP	01/21/98	11.5 to 13.5	<0.5	<0.5	<0.5	0.8J
S04-3-2	HP	01/21/98	20 to 25	<0.5	1.3	<0.5	<0.5
S04-3-2	HP	01/21/98	25 to 30	<0.5	2.3	<0.5	<0.5
S04-3-2	HP	01/21/98	30 to 35	<0.5	2J	<0.5	<0.5
S04-3-2	HP	01/21/98	30 to 35	<0.5	3.2	<2	3.9
S04-3-3	HP	01/22/98	5.5 to 7.5	<0.5	2.5	<0.5	<0.5
S04-3-3	HP	01/22/98	7.5	<0.5	0.7	<0.5	<0.5
S04-3-3	HP	01/22/98	11.5	<0.5	<0.5	<0.5	<2
S04-3-3	HP	01/22/98	20	<0.5	5.3	<0.5	<0.5
S04-3-3	HP	01/22/98	25 to 30	<0.5	<0.5	<0.5	<0.5
S04-3-3	HP	01/22/98	30 to 35	<0.5	<0.5	<0.5	<0.5
S04-3-3	HP	01/29/98	40 to 45	<0.5	0.9J	<2	<0.5
S04-3-3	HP	01/30/98	40 to 45	<0.5	0.8	<0.5	<0.5
S04-3D-B	HP	04/09/97	10	<0.5	0.9	<0.5	<0.5
S04-3D-B	HP	04/09/97	23	<0.5	<0.5	<0.5	<0.5
S04-4-4	HP	01/30/98	20 to 25	<0.5	0.6	<0.5	<0.5
S04-4-4	HP	01/30/98	30 to 35	<0.5	<0.5	<0.5	<0.5
S04-4-4	HP	02/04/98	40 to 45	<0.5	<0.5	<0.5	2.3
S04-5-9	HP	03/23/98	15.5 to 20	<0.5	0.7B	<0.5	<0.5
S04-5C-A	HP	04/07/97	11	<0.5	8.7	2.1	<0.5
S04-5C-A	HP	04/08/97	15	1.6	21	3.7	<10
SHP-S04-07	HP	01/18/95	10	<0.5J	<2J	0.2J	NA
SHP-S04-08	HP	01/20/95	17	<2J	<2J	<2J	NA
SHP-S04-09	HP	01/25/95	16	<0.5J	<2J	<2J	NA

Notes:

[a] Total Xylenes

<	Concentration not detected at or above method detection limit
µg/L	Microgram per liter
bgs	Below ground surface
GP	Geoprobe®
HP	Hydropunch®
J	Estimated concentration
MW	Monitoring well

TABLE A-3

INSTALLATION SITE 4 TOTAL PETROLEUM HYDROCARBONS
ALAMEDA POINT, ALAMEDA, CALIFORNIA
(Page 1 of 1)

Point Name	Point Type	Date	Depth (feet bgs)	TPH-d (µg/L)	TPH-g (µg/L)	TPH-mo (µg/L)	JP5 (µg/L)	Kerosene (µg/L)
03GB039	GP	09/09/94	7 to 9	<100	<50	390J	<100	<52
D04-02	MW	03/09/95	86.5 to 96.5	<52	<50	<520	<52	<50
D04-02	MW	05/03/95	86.5 to 96.5	<50	<50	600J	<50	<52
D04-03	MW	03/09/95	84 to 94	<52	<50	<520	<52	<50
D04-03	MW	05/10/95	84 to 94	<50	<50	<500	<50	<50
DHP-S07B-01	HP	08/04/94	28.5	<100	<50	520J	<100	<50
HP-S04-01	HP	02/14/94	20	<50	<50	<500	<50	<50
HP-S04-02	HP	02/14/94	20	<50	<50	<500	<50	<52J
M04-06	MW	01/23/95	3.5 to 13.5	<50	<50J	<500	<50	<50
M04-06	MW	04/26/95	3.5 to 13.5	<52J	<50	<520	<52J	<52
M04-06	MW	06/30/94	3.5 to 13.5	<50	<50	<500	<50	<50
M04-06	MW	09/23/94	3.5 to 13.5	<52J	<50	<520	<52	<50J
M04-07	MW	01/25/95	3.5 to 13.5	<50	<50	<500	<50	<50
M04-07	MW	04/24/95	3.5 to 13.5	<50J	<50	<500	<50J	<50
M04-07	MW	07/06/94	3.5 to 13.5	<50	<50	<500	<50	<54
M04-07	MW	09/27/94	3.5 to 13.5	<50J	<50	<500	<50	<50J
MW360-1	MW	01/23/95	5 to 15	<54	<50	<540	<54	NA
MW360-1	MW	04/24/95	5 to 15	<50J	670J	<500	<50J	NA
MW360-1	MW	07/06/94	5 to 15	<50	<50	<500	<50	NA
MW360-1	MW	09/22/94	5 to 15	<53J	<50	<530	<53	NA
MW360-4	MW	01/23/95	5 to 15	<50	<50J	<500	<50	NA
MW360-4	MW	04/25/95	5 to 15	<52J	970J	<520	<52J	NA
MW360-4	MW	07/01/94	5 to 15	<50	<50	<500	<50	NA
MW360-4	MW	09/23/94	5 to 15	<50J	<50	<500	<50	NA

Notes:

<	Concentration not detected at or above method detection limit
µg/L	Microgram per liter
bgs	Below ground surface
GP	Geoprobe®
HP	Hydropunch®
J	Estimated concentration
JP 5	Jet Fuel No. 5
MW	Monitoring well
TPH-d	Total petroleum hydrocarbon - diesel range
TpH-g	Total petroleum hydrocarbon - gasoline range
TPH-mo	Total petroleum hydrocarbon - motor oil range

TABLE A-4

INSTALLATION RESTORATION SITE 4 OTHER PARAMETERS
ALAMEDA POINT, ALAMEDA, CALIFORNIA
(Page 1 of 3)

Point Name	Point Type	Date	Depth (feet bgs)	Concentration (µg/L)
CHROMIUM				
D04-02	MW	02/04/98	86.5 to 96.5	<0.4
D04-02	MW	03/09/95	86.5 to 96.5	<2.3
D04-02	MW	05/03/95	86.5 to 96.5	<14.3J
D04-02	MW	05/08/98	86.5 to 96.5	<0.35
D04-02	MW	08/05/98	86.5 to 96.5	<0.8
D04-02	MW	11/14/97	86.5 to 96.5	<0.6
D04-03	MW	02/04/98	84 to 94	<0.2
D04-03	MW	03/09/95	84 to 94	<2.3
D04-03	MW	05/06/98	84 to 94	<0.35
D04-03	MW	05/10/95	84 to 94	<8.6J
D04-03	MW	08/05/98	84 to 94	<0.8
D04-03	MW	11/14/97	84 to 94	<0.3
DHP-S07B-01	HP	08/04/94	28.5	<2J
HP-S04-01	HP	02/14/94	20	<3
HP-S04-02	HP	02/14/94	20	<3
M04-06	MW	01/23/95	3.5 to 13.5	<2.3
M04-06	MW	02/09/98	3.5 to 13.5	3J
M04-06	MW	04/26/95	3.5 to 13.5	<2.3
M04-06	MW	05/06/98	3.5 to 13.5	6.4
M04-06	MW	06/30/94	3.5 to 13.5	<2.3
M04-06	MW	08/04/98	3.5 to 13.5	1.4J
M04-06	MW	09/23/94	3.5 to 13.5	3.5J
M04-06	MW	11/03/97	3.5 to 13.5	1.3J
M04-07	MW	01/25/95	3.5 to 13.5	<2.3
M04-07	MW	02/09/98	3.5 to 13.5	<1.6J
M04-07	MW	04/24/95	3.5 to 13.5	<2.3
M04-07	MW	05/05/98	3.5 to 13.5	6
M04-07	MW	07/06/94	3.5 to 13.5	<2.3
M04-07	MW	08/04/98	3.5 to 13.5	<0.8
M04-07	MW	09/27/94	3.5 to 13.5	<2.3
M04-07	MW	11/03/97	3.5 to 13.5	<0.3
MW360-1	MW	01/24/95	5 to 15	<2.3
MW360-1	MW	02/09/98	5 to 15	<0.62J
MW360-1	MW	04/24/95	5 to 15	<2.3
MW360-1	MW	05/06/98	5 to 15	11.1
MW360-1	MW	07/06/94	5 to 15	<2.3
MW360-1	MW	07/11/90	5 to 15	440

TABLE A-4

INSTALLATION RESTORATION SITE 4 OTHER PARAMETERS
ALAMEDA POINT, ALAMEDA, CALIFORNIA
(Page 2 of 3)

Point Name	Point Type	Date	Depth (feet bgs)	Concentration (µg/L)
CHROMIUM (Continued)				
MW360-1	MW	08/04/98	5 to 15	<0.8
MW360-1	MW	09/22/94	5 to 15	50.4
MW360-1	MW	11/07/97	5 to 15	<0.4J
MW360-4	MW	01/23/95	5 to 15	<2.3
MW360-4	MW	02/09/98	5 to 15	<0.3J
MW360-4	MW	04/25/95	5 to 15	<2.3
MW360-4	MW	05/06/98	5 to 15	8.9
MW360-4	MW	07/01/94	5 to 15	<2.3
MW360-4	MW	08/03/90	5 to 15	1,100
MW360-4	MW	08/05/98	5 to 15	<0.8
MW360-4	MW	09/23/94	5 to 15	2.9J
MW360-4	MW	11/06/97	5 to 15	<0.88J
DISSOLVED OXYGEN				
MW360-1	MW	07/11/90	5 to 15	2,100
MW360-4	MW	08/03/90	5 to 15	4,000
TOTAL ORGANIC CARBON				
D04-02	MW	03/09/95	86.5 to 96.5	21,000
D04-02	MW	05/03/95	86.5 to 96.5	1,800J
D04-02	MW	11/14/97	86.5 to 96.5	1,000
D04-03	MW	03/09/95	84 to 94	1,500
D04-03	MW	05/10/95	84 to 94	21,000J
D04-03	MW	11/14/97	84 to 94	1,000
DHP-S07B-01	HP	08/04/94	28.5	2,300J
HP-S04-01	HP	02/14/94	20	12,000
HP-S04-02	HP	02/14/94	20	19,000
M04-06	MW	01/23/95	3.5 to 13.5	5,000
M04-06	MW	04/26/95	3.5 to 13.5	6,900
M04-06	MW	06/30/94	3.5 to 13.5	7,500
M04-06	MW	09/23/94	3.5 to 13.5	11,000
M04-06	MW	11/03/97	3.5 to 13.5	12,000
M04-07	MW	01/25/95	3.5 to 13.5	6,600
M04-07	MW	04/24/95	3.5 to 13.5	4,800
M04-07	MW	07/06/94	3.5 to 13.5	7,700
M04-07	MW	09/27/94	3.5 to 13.5	2,100
M04-07	MW	11/03/97	3.5 to 13.5	9,000
MW360-1	MW	01/24/95	5 to 15	14,000
MW360-1	MW	04/24/95	5 to 15	23,000J

TABLE A-4

INSTALLATION RESTORATION SITE 4 OTHER PARAMETERS
ALAMEDA POINT, ALAMEDA, CALIFORNIA
(Page 3 of 3)

Point Name	Point Type	Date	Depth (feet bgs)	Concentration (µg/L)
TOTAL ORGANIC CARBON (Continued)				
MW360-1	MW	07/06/94	5 to 15	13,000
MW360-1	MW	07/11/90	5 to 15	27,300
MW360-1	MW	09/22/94	5 to 15	12,000
MW360-1	MW	11/07/97	5 to 15	14,000J
MW360-4	MW	01/23/95	5 to 15	4,200
MW360-4	MW	04/25/95	5 to 15	1,900
MW360-4	MW	07/01/94	5 to 15	5,100
MW360-4	MW	08/03/90	5 to 15	14,100
MW360-4	MW	09/23/94	5 to 15	2,200
MW360-4	MW	11/06/97	5 to 15	7,000J

Notes:

<	Concentration was not detected at or above the method detection limit
µg/L	Microgram per liter
bgs	Below ground surface
HP	Hydropunch®
J	Estimated concentration
MW	Monitoring well

TABLE A-5

INSTALLATION RESTORATION SITE 5 CHEMICALS OF CONCERN
ALAMEDA POINT, ALAMEDA, CALIFORNIA
(Page 1 of 4)

Point Name	Point Type	Sample Date	Depth (feet bgs)	1,1,1-TCA (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	PCE (µg/L)	TCE (µg/L)	Vinyl Chloride (µg/L)
030-S05-011	EXCV	09/12/98	7.5	52J	27J	<50	85J	<50	40J	30J
05GB001	GP	08/10/94	6	0.8J	<1	<1	<1	<1	0.7J	<0.5
05GB002	GP	08/10/94	6	<1	3	<1	<1	<1	<1	<0.5
05GB003	GP	08/11/94	6	<1	12	<1	<1	<1	<1	<0.5
B05-11	SB	01/12/95	5.5	<5	53J	<5	5J	<5	2J	<1
B05PS-01	SB	06/04/92	5.5	430	400	<50	<50	<50	<50	<50
B05PS-01	SB	06/04/92	5.5	720	480	<50	<50	<50	<50	<50
B05PS-02	SB	06/03/92	5.5	3,900	170	91	<100	<100	<100	<100
B05PS-03	SB	06/03/92	5.5	5,200	140	110	<250	<250	<250	<250
B05PS-04	SB	06/03/92	5.5	790,000	13,000	9,200	<25,000	<25,000	<25,000	<25,000
B05PS-05	SB	06/03/92	5.5	59	56	6.6	<5	<5	<5	5.9
B05PS-06	SB	09/21/93	5.5	z	<100	<2	<2	<2	NA	<0.5
B05PS-07	SB	09/22/93	5.5	990	<50	<1	<2	<1	NA	0.5
B05PS-08	SB	09/22/93	5.5	1,300	35J	<2	<2	<2	NA	<0.5
B05PS-08	SB	09/22/93	5.5	8,800	<1,000	<1	11J	<1	NA	<0.5
B05PS-09	SB	09/22/93	5.5	48	<4	<2	<1	<2	NA	<0.5
B05PS-10	SB	09/22/93	5.5	750	<100	<1	<1	<1	NA	<0.5
D05-02	MW	11/13/97	67	<2	<2	<1	4	<1	<2	<0.5
D05-02	MW	02/04/98	67	<1	<1	<2J	<2	<2J	<1	1J
D05-02	MW	05/08/98	67	<2	<2	<1J	430	<1	<2	<0.5
D05-02	MW	08/05/98	67	<1	<1	<1	440	<1	<1	<0.5
D05-02	MW	08/05/98	67	<2	<2	<1	580	<1	<2	<0.5
D05-02	MW	06/29/94	67	<1	<1	0.3J	210	<2	<1	1J
D05-02	MW	09/23/94	67	<1	<1	<2	620	<2	<1	<2
D05-02	MW	01/12/95	67	<2J	<2J	6	430J	<1	42J	2
D05-02	MW	04/28/95	67	<1	<1	120	1,300J	7J	<1	30
DHP-S05-08	HP	08/10/94	47	<1	<1	5	<3,300J	<1	<1	2
DHP-S05-09	HP	08/11/94	44	<1	<1	120	1J	11	<1	140
HP-S05-03	HP	02/21/94	58	<2	3	2	1J	<1	2	4
HP-S05-04	HP	02/17/94	46	<2	<2	350	1J	<25	<2	190
M05-04	MW	11/04/97	15	11	22	110	<25J	7J	50J	51
M05-04	MW	02/05/98	15	34	230	2	5	<1	360	2
M05-04	MW	05/08/98	15	6	16	930	46	40	38	140
M05-04	MW	08/05/98	15	34	370	<1	<2	<1	480	2
M05-04	MW	06/29/94	15	4	14	140J	<2	<250	24	110
M05-04	MW	10/05/94	15	36	760	<1	<2,000	<1	590	2
M05-04	MW	04/26/95	15	13J	230	3,800	NA	<2,500	280	<620
M05-04	MW	08/29/91	15	1	5	<1	NA	<1	8	4
M05-07	MW	11/03/97	17	2,600	14,000	12,000	NA	<3,300	1,100	<830J
M05-07	MW	02/05/98	17	5	15	2	NA	<1	10	4

TABLE A-5

INSTALLATION RESTORATION SITE 5 CHEMICALS OF CONCERN
ALAMEDA POINT, ALAMEDA, CALIFORNIA
(Page 2 of 4)

Point Name	Point Type	Sample Date	Depth (feet bgs)	1,1,1-TCA (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	PCE (µg/L)	TCE (µg/L)	Vinyl Chloride (µg/L)
M05-07	MW	05/08/98	17	770	5,000	0.6J	NA	<2	290	<0.5
M05-07	MW	08/05/98	17	3	9	100	NA	<1	8	8
M05-07	MW	06/29/94	17	9,000	41,000	0.4J	NA	<2	2,400J	<0.5
M05-07	MW	09/30/94	17	5	32	24	NA	<1	9	5J
M05-07	MW	01/12/95	17	56,000	60,000	5J	NA	<12	5,400	<3
M05-07	MW	04/13/95	17	8	78	14J	NA	<1J	18	4J
M05-10	MW	11/03/97	15	5	7	39	NA	<25	2	<6
M05-10	MW	02/06/98	15	5	230	140J	NA	<1	3	9
M05-10	MW	05/13/98	15	4J	2J	14,000	NA	<0.5	2J	<0.5
M05-10	MW	08/06/98	15	8	120J	11	NA	0.64	2	6.4
M05-10	MW	06/28/94	15	150	19	<0.5	NA	40	<12	2,600
M05-10	MW	10/04/94	15	24J	160J	34	NA	4	2J	4.2
M05-10	MW	01/12/95	15	440	64	<0.5	NA	<0.5	6J	<0.5
M05-10	MW	04/17/95	15	12	330J	<0.5	NA	<0.5	5	<0.5
S05-2A-A	HP	04/02/97	13.5	1.1	6.2	42	NA	0.64	56	6.4
S05-2A-A	HP	04/02/97	7.5	2100	29,000J	19	NA	40	1,700	2,600
S05-2A-A	HP	04/02/97	10	0.93	2.7	<0.5	NA	<0.5	95	4.2
S05-2A-C	HP	04/11/97	10	<0.5	330	34	NA	4	16	4.2
S05-2B-B	HP	04/10/97	20	<0.5	2.1	<0.5	NA	<0.5	14	<0.5
S05-2B-B	HP	04/10/97	14	<0.5	130	<0.5	NA	<0.5	<0.5	<0.5
S05-2B-B	HP	04/10/97	10	<0.5	1.1	<0.5	NA	<0.5	<0.5	<0.5
S05-3-1	HP	02/09/98	15.5	<0.5	<0.5	96	NA	6.5	<0.5	0.66
S05-3-1	HP	02/09/98	13.5	<0.5	<0.5	28	NA	<0.5	<0.5	8.9
S05-3-1	HP	02/09/98	7.5	<0.5	1.5	4.2	NA	0.76	<0.5	2,000
S05-3A-A	HP	04/02/97	13.5	8.4	42	<0.5	NA	4.6	79	91
S05-3A-A	HP	04/02/97	10	3.8	19	2.5	NA	2.9	41	14
S05-3A-A	HP	04/02/97	8	<0.5	<0.5	160	NA	<0.5	2.7	6
S05-3A-B	HP	04/03/97	14	<0.5	28	2.5	NA	0.76	20	8.9
S05-3A-B	HP	04/03/97	8	23	96	1.7	NA	6.5	53	2,000
S05-3A-B	HP	04/03/97	12	<0.5	4.2	<0.5	NA	<0.5	2.2	0.66
S05-3A-D	HP	04/11/97	20	<0.5	2.5	2.7	NA	<0.5	1.6	0.63
S05-3A-D	HP	04/11/97	12.5	<0.5	<0.5	3.2	NA	<0.5	<0.5	<0.5
S05-3A-D	HP	04/11/97	9	8.5	160	21.9	NA	<0.5	2.6	3.8
S05-3A-E	HP	04/11/97	13	<0.5	1.7	34	NA	<0.5	1	0.85
S05-3A-E	HP	04/11/97	10	<0.5	2.5	<0.5	NA	<0.5	6.9	3
S05-3B-B	HP	04/02/97	14	<0.5	<0.5	113	NA	<0.5	<0.5	0.71
S05-3B-B	HP	04/02/97	8	<0.5	3.2	1.7	NA	<0.5	2.3	46
S05-3B-B	HP	04/02/97	9.5	<0.5	2.7	1.4	NA	<0.5	1.6	<0.5
S05-3B-C	HP	04/10/97	10	150	34	<0.5	NA	23	320	0.85
S05-3B-C	HP	04/10/97	12	77	21.9	<0.5	NA	1.5	50	12

TABLE A-5

INSTALLATION RESTORATION SITE 5 CHEMICALS OF CONCERN
ALAMEDA POINT, ALAMEDA, CALIFORNIA
(Page 3 of 4)

Point Name	Point Type	Sample Date	Depth (feet bgs)	1,1,1-TCA (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	PCE (µg/L)	TCE (µg/L)	Vinyl Chloride (µg/L)
S05-3B-D	HP	04/10/97	20	28	113	0.6	NA	3.8	130	46
S05-3B-D	HP	04/10/97	13	0.59	1.7	<0.5	NA	<0.5	2.5	0.6
S05-3B-D	HP	04/10/97	10	<0.5	0.5	0.6J	NA	<0.5	<0.5	46
S05-4-1	HP	02/10/98	9.5	1.2	<0.5	<0.5	NA	2.1	10	<0.5
S05-4-1	HP	02/10/98	20	<0.5	6.6	<0.5	NA	<0.5	<0.5	<0.5
S05-4-1	HP	03/09/98	11.5	1.2	13	<0.5	NA	<0.5	7.4	<0.5
S05-4-1	HP	03/09/98	7.5	0.8	11	<0.5	NA	<0.5	4.5	<0.5
S05-4-2	HP	03/09/98	11.5	<0.5	<0.5	<0.5	NA	<0.5	<0.5	<0.5
S05-4-2	HP	02/06/98	11.5	<2	3	1.4	NA	<0.5	10	<0.5
S05-4-2	HP	02/06/98	15.5	<0.5	3	2.3	NA	<0.5	9.5	<0.5
S05-4-2	HP	02/06/98	20	<0.5	<0.5	<0.5	NA	<0.5	<0.5	3.1
S05-4-2	HP	03/09/98	13.5	<0.5	1.2	0.6	NA	<2	<0.5	<0.5
S05-4-2	HP	03/09/98	9.5	<0.5	1.8	1J	NA	<0.5	1	<0.5
S05-4-3	HP	02/06/98	20	0.5	<0.5	<0.5	NA	<2	<0.5	<0.5
S05-4-3	HP	03/13/98	9.5	1.3	6.2	<0.5	NA	<0.5	3.9	<0.5
S05-4-3	HP	03/13/98	7.5	66	3.7	<0.5	NA	<0.5	5	1.5
S05-4-3	HP	03/05/98	11.5	<0.5	5.2	<2	NA	<0.5	7.3	<0.5
S05-4-3	HP	03/05/98	11.5	<2	6	5.8	NA	0.7	8	1
S05-4-3	HP	03/06/98	13.5	<0.5	2.8	0.5	NA	<0.5	<0.5	<0.5
S05-4-3	HP	03/06/98	35	<0.5	<0.5	<0.5	NA	<0.5	<0.5	<0.5
S05-4-3	HP	03/06/98	30	<0.5	<2	10	NA	<0.5	<0.5	4.4
S05-4-3	HP	03/13/98	30	<2	<0.5	8.5	NA	<0.5	<2	<0.5
S05-4-3	HP	03/13/98	15.5	<0.5	1.7	<0.5	NA	<0.5	<0.5	<0.5
S05-4-4	HP	02/06/98	9.5	3.3	51	<2	NA	<0.5	<0.5	<0.5
S05-4-4	HP	03/09/98	11.5	<0.5	180	<0.5	NA	<2	<0.5	<0.5
S05-4-4	HP	03/09/98	7.5	35	6.7	11	NA	<0.5	1.7	7.3
S05-4-4	HP	03/09/98	15.5	<0.5	210E	1,400	NA	1.5	8.4	230
S05-4-4	HP	03/09/98	20	2.2	4.1	2,000	NA	<2,000	<0.5	<500
S05-4-4	HP	03/13/98	30	<0.5	<0.5	<0.5	NA	<0.5	<0.5	200
S05-4-4	HP	03/16/98	35	<0.5	<0.5	370	NA	<0.5	<0.5	<0.5
S05-4-4	HP	03/16/98	35	<2	<2	22	NA	2.9	<2	2.4
S05-4-4	HP	03/24/98	13.5	<0.5	240	25	NA	1	11	<0.5
S05-4-5	HP	04/03/98	13.5	130E	40,000	12	NA	<0.5	42	<0.5
S05-4-5	HP	04/03/98	13.5	<2,000	34,000E	22,000	NA	8.6	<2,000	270
S05-4-5	HP	04/06/98	20	<0.5	<0.5	170	NA	2	<0.5	1.3
S05-4-5	HP	04/06/98	9.5	<0.5	4,400	65,000	NA	<25	<0.5	2,900
S05-4B-A	HP	04/01/97	12	4.3	11	12	NA	2.9	12	<0.5
S05-4B-A	HP	04/01/97	10	<0.5	29	22	NA	<0.5	2.2	2.4
S05-4B-A	HP	04/01/97	7	260	27	25	NA	1	13	<0.5
S05-4B-C	HP	04/04/97	12	100,000	8,200	65,000	NA	8.6	160	270

TABLE A-5

INSTALLATION RESTORATION SITE 5 CHEMICALS OF CONCERN
ALAMEDA POINT, ALAMEDA, CALIFORNIA
(Page 4 of 4)

Point Name	Point Type	Sample Date	Depth (feet bgs)	1,1,1-TCA (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	PCE (µg/L)	TCE (µg/L)	Vinyl Chloride (µg/L)
S05-4B-C	HP	04/04/97	10	20,000	24,000	22,000	NA	<25	68	2,900
S05-4B-C	HP	04/04/97	7	370	200	170	NA	2	120	1.3
S05-4B-D	HP	04/11/97	12	<0.5	16	27	NA	4.5	13	14
S05-4B-D	HP	04/11/97	10	<0.5	37	30	NA	<0.5	37	47
S05-5B-A	HP	03/31/97	15	35	22	97	NA	1.2	70	<0.5
S05-5B-A	HP	03/31/97	12	620	510	1,500	NA	5.1	7.9	150
S05-5B-B	HP	04/01/97	13.5	<0.5	1.9	3.7	NA	1.1	<0.5	<0.5
S05-5B-B	HP	04/01/97	10	<0.5	4.2	<0.5	NA	<0.5	4.1	1.2
S05-5B-B	HP	04/01/97	7	3.3	3.2	12	NA	0.7	2.5	0.56
S05-6-2	HP	02/05/98	7.5	<0.5	2.2	<0.5	NA	<0.5	4.3	<0.5
S05-6-2	HP	02/05/98	20	<0.5	170	<0.5	NA	<0.5	<0.5	<0.5
S05-6-2	HP	02/05/98	13.5	0.7	820E	NA	NA	NA	7	NA
S05-6-2	HP	03/05/98	25	<0.5	0.7	NA	NA	NA	<0.5	NA
S05-6-3	HP	02/05/98	7.5	<0.5	1.3	NA	NA	NA	<0.5	NA
S05-6-3	HP	02/05/98	13.5	<0.5	<0.5	NA	NA	NA	<0.5	NA
S05-6-3	HP	03/05/98	15.5	<0.5	0.8	NA	NA	NA	<0.5	NA
S05-6-3	HP	03/17/98	20	<0.5	<0.5	NA	NA	NA	<0.5	NA

Notes:

<	Concentration was not detected at or above the method detection limit
µg/L	Microgram per liter
1,1,1-TCA	1,1,1-Trichloroethane
1,1-DCA	1,1-Dichloroethane
1,1-DCE	1,1-Dichloroethene
1,2-DCE	includes cis and trans 1,2-Dichloroethene
bgs	Below ground surface
EXCV	Excavation
GP	Geoprobe®
HP	Hydropunch®
J	Estimated concentration
NA	Not analyzed
MW	Monitoring well
PCE	Tetrachloroethene
SB	
TCE	Trichloroethene

TABLE A-6

INSTALLATION SITE 5 BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES
ALAMEDA POINT, ALAMEDA, CALIFORNIA
(Page 1 of 4)

Point Name	Point Type	Sample Date	Depth (feet bgs)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylene[a] (µg/L)
030-S05-011	EXCV	09/12/98	7 to 7.5	<13	<50	<50	<50
05GB001	GP	08/10/94	5 to 6	<1	<1	<1	<1
05GB002	GP	08/10/94	5 to 6	<1	<1	<1	<1
05GB003	GP	08/11/94	5 to 6	<1	<1	<1	<1
B05-11	SB	01/12/95	0	<0.8J	16J	<15	150J
B05PS-01	SB	06/04/92	18	<50	<50	NA	<50
B05PS-01	SB	06/04/92	0	<50	<50	<50	<50
B05PS-02	SB	06/03/92	6	<100J	<100	<50	<100
B05PS-03	SB	06/03/92	6.5	<250	<250	<100	<250
B05PS-04	SB	06/03/92	5 to 5.5	<25,000	<25,000	<250	<25,000
B05PS-05	SB	06/03/92	6.5	<5	<5	<25,000	<5
D05-02	MW	01/12/95	67	<0.5	<2	<5	<2
D05-02	MW	02/04/98	67	<0.5	<1	<2	<1
D05-02	MW	04/28/95	67	<0.5	<2	<1	<2
D05-02	MW	05/08/98	67	<0.5	1	<2	<1
D05-02	MW	06/29/94	67	<0.5	<2	<1	<2
D05-02	MW	08/05/98	67	<0.5	<1	<1	<1
D05-02	MW	08/05/98	67	<0.5	<1	<2	<1
D05-02	MW	09/23/94	67	<0.5	<2J	<1	<0.5
D05-02	MW	09/23/94	67	>0.5J	<0.5	<0.5	<2J
D05-02	MW	11/13/97	67	0.6	2	<2J	<1
DHP-S05-08	HP	08/10/94	43 to 47	<1	<1	<1	<1
DHP-S05-09	HP	08/11/94	44	<1	<1	<1	<1
HP-S05-03	HP	02/21/94	58	0.3J	<2	<1	<2
HP-S05-04	HP	02/17/94	46	<2	<2	<2	<2
M05-04	MW	02/05/98	15	<0.5	<1	<2	<1
M05-04	MW	04/26/95	15	4J	7J	<1	<25J
M05-04	MW	05/08/98	15	<0.5	<1	<25	<1
M05-04	MW	06/29/94	15	1	<2	<1	<2
M05-04	MW	08/05/98	15	<0.5	<1	<2	<1
M05-04	MW	08/29/91	15	<25	<25	<1	<25
M05-04	MW	10/05/94	15	1J	<17	<25	<17
M05-04	MW	11/04/97	15	<0.5	<1	<17	<1
M05-07	MW	01/12/95	17	<6	28	<1	<25J
M05-07	MW	02/05/98	17	<0.5	<1	3J	<1
M05-07	MW	04/13/95	17	<62	<250	<1	<250
M05-07	MW	05/08/98	17	<0.5	<1	<250	<1
M05-07	MW	06/29/94	17	<620	<2,500	<1	<2,500

TABLE A-6

INSTALLATION SITE 5 BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES
ALAMEDA POINT, ALAMEDA, CALIFORNIA
(Page 2 of 4)

Point Name	Point Type	Sample Date	Depth (feet bgs)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylene[a] (µg/L)
M05-07	MW	08/05/98	17	0.6	<1	<2,500	<1
M05-07	MW	09/30/94	17	<830	<3,300	<1	<3,300
M05-07	MW	11/03/97	17	<0.5	<1	<3,300	<1
M05-10	MW	01/12/95	15	<0.5J	<2	<1	<2
M05-10	MW	02/06/98	15	<0.5	<1	<2	<1
M05-10	MW	04/17/95	15	<0.5	<2	<1	<2
M05-10	MW	05/13/98	15	<0.5	<1	<2	<1
M05-10	MW	06/28/94	15	<3	12	<1	<12
M05-10	MW	08/06/98	15	>0.5J	<1J	<12	<1J
M05-10	MW	10/04/94	15	<6	<25	<1J	<25
M05-10	MW	11/03/97	15	<0.5	<1	<25	<1
S05-2A-A	HP	04/02/97	13.5	6.4	85	<1	<0.5
S05-2A-A	HP	04/02/97	7.5	<0.5	<0.5	3.6	<0.5
S05-2A-A	HP	04/02/97	10	<0.5	<0.5	<0.5	<0.5
S05-2A-C	HP	04/11/97	10	<0.5	<0.5	<0.5	<0.5
S05-2B-B	HP	04/10/97	20	<0.5	<0.5	<0.5	<0.5
S05-2B-B	HP	04/10/97	14	22	89	<0.5	<0.5
S05-2B-B	HP	04/10/97	10	<0.5	<0.5	2.5	<0.5
S05-3-1	HP	02/09/98	13.5 to 15.5	<0.5	<0.5	<0.5	<0.5
S05-3-1	HP	02/09/98	5.5 to 7.5	<0.5	<0.5	<0.5	<2
S05-3-1	HP	02/09/98	11.5 to 13.5	<0.5	<0.5	<0.5	<0.5
S05-3A-A	HP	04/02/97	13.5	1.5	<0.5	<0.5	<0.5
S05-3A-A	HP	04/02/97	10	<0.5	<0.5	<0.5	<0.5
S05-3A-A	HP	04/02/97	8	<0.5	<0.5	<0.5	<0.5
S05-3A-B	HP	04/03/97	14	14	16	<0.5	<0.5
S05-3A-B	HP	04/03/97	8	<0.5	<0.5	3	<0.5
S05-3A-B	HP	04/03/97	12	<0.5	<0.5	<0.5	<0.5
S05-3A-D	HP	04/11/97	20	6.3	1.9	<0.5	<0.5
S05-3A-D	HP	04/11/97	12.5	<0.5	<0.5	<0.5	<0.5
S05-3A-D	HP	04/11/97	9	<0.5	<0.5	<0.5	<2
S05-3A-E	HP	04/11/97	13	<0.5	<0.5	<0.5	<0.5
S05-3A-E	HP	04/11/97	10	<0.5	<0.5	<0.5	<0.5
S05-3B-B	HP	04/02/97	14	2.4	<0.5	<0.5	<2
S05-3B-B	HP	04/02/97	8	<0.5	<0.5	<0.5	<0.5
S05-3B-B	HP	04/02/97	9.5	<0.5	<0.5	<0.5	<0.5
S05-3B-C	HP	04/10/97	10	<0.5	<0.5	<0.5	<0.5
S05-3B-C	HP	04/10/97	12	0.5	<0.5	<0.5	<0.5
S05-3B-D	HP	04/10/97	20	<0.5	<0.5	<0.5	<0.5

TABLE A-6

INSTALLATION SITE 5 BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES
ALAMEDA POINT, ALAMEDA, CALIFORNIA
(Page 3 of 4)

Point Name	Point Type	Sample Date	Depth (feet bgs)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylene[a] (µg/L)
S05-3B-D	HP	04/10/97	13	0.93	0.83	<0.5	<0.5
S05-3B-D	HP	04/10/97	10	0.93	<0.5	<0.5	<0.5
S05-4-1	HP	02/10/98	7.5 to 9.5	<0.5	<0.5	<0.5	<0.5
S05-4-1	HP	02/10/98	15.5 to 20	<0.5	0.7	<0.5	<2
S05-4-1	HP	03/09/98	9.5 to 11.5	<0.5	<0.5	<0.5	<0.5
S05-4-1	HP	03/09/98	5.5 to 7.5	<0.5	<0.5	<0.5	<2,000
S05-4-2	HP	02/06/98	13.5 to 15.5	<0.5	<0.5	<0.5	<0.5
S05-4-2	HP	02/06/98	9.5 to 11.5	<0.5	<2	<0.5	<0.5
S05-4-2	HP	02/06/98	9.5 to 11.5	<0.5	<0.5	<2	<0.5
S05-4-2	HP	03/09/98	15.5 to 20	<0.5	<0.5	<0.5	<0.5
S05-4-2	HP	03/09/98	11.5 to 13.5	1.3	<0.5	<0.5	1
S05-4-2	HP	03/09/98	7.5 to 9.5	0.6	1	<0.5	<0.5
S05-4-3	HP	02/06/98	15.5 to 20	<0.5	<0.5	<0.5	<0.5
S05-4-3	HP	03/05/98	5.5 to 7.5	<0.5	<0.5	<0.5	<0.5
S05-4-3	HP	03/05/98	7.5 to 9.5	<0.5	<0.5	<0.5	<0.5
S05-4-3	HP	03/06/98	9.5 to 11.5	<0.5	0.8	<0.5	<0.5
S05-4-3	HP	03/06/98	9.5 to 11.5	0.4J	1	<0.5	<0.5
S05-4-3	HP	03/06/98	11.5 to 13.5	2.4	2J	<0.5	NA
S05-4-3	HP	03/13/98	30 to 35	<0.5	<0.5	<2	NA
S05-4-3	HP	03/13/98	25 to 30	<0.5	<0.5	<0.5	NA
S05-4-3	HP	03/13/98	25 to 30	<0.5	<2	<0.5	NA
S05-4-3	HP	03/13/98	13.5 to 15.5	3	<0.5	<2	NA
S05-4-4	HP	02/06/98	7.5 to 9.5	<0.5	<0.5	<0.5	NA
S05-4-4	HP	03/09/98	13.5 to 15.5	3.4	<0.5	<0.5	NA
S05-4-4	HP	03/09/98	15.5 to 20	<0.5	<0.5	<0.5	NA
S05-4-4	HP	03/09/98	5.5 to 7.5	<0.5	<0.5	<0.5	NA
S05-4-4	HP	03/09/98	9.5 to 11.5	0.5	<0.5	<0.5	NA
S05-4-4	HP	03/13/98	25 to 30	<0.5	<0.5	<0.5	NA
S05-4-4	HP	03/16/98	30 to 35	<0.5	<2	<0.5	NA
S05-4-4	HP	03/16/98	30 to 35	<0.5	<0.5	<2	NA
S05-4-4	HP	03/24/98	11.5 to 13.5	0.9	<0.5	<0.5	NA
S05-4-5	HP	04/03/98	11.5 to 13.5	<500	0.7	<2,000	NA
S05-4-5	HP	04/03/98	11.5 to 13.5	1.1	<2,000	<0.5	NA
S05-4-5	HP	04/06/98	15.5 to 20	<0.5	<0.5	<0.5	NA
S05-4-5	HP	04/06/98	7.5 to 9.5	<0.5	<0.5	<0.5	NA
S05-4B-A	HP	04/01/97	12	0.84	<0.5	<0.5	NA
S05-4B-A	HP	04/01/97	10	<0.5	<0.5	<0.5	NA
S05-4B-A	HP	04/01/97	7	<0.5	<0.5	<0.5	NA

TABLE A-6

INSTALLATION SITE 5 BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES
ALAMEDA POINT, ALAMEDA, CALIFORNIA
(Page 4 of 4)

Point Name	Point Type	Sample Date	Depth (feet bgs)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylene[a] (µg/L)
S05-4B-C	HP	04/04/97	12	<25	370	<25	NA
S05-4B-C	HP	04/04/97	10	<0.5	140	<0.5	NA
S05-4B-C	HP	04/04/97	7	<0.5	<0.5	<0.5	NA
S05-4B-D	HP	04/11/97	12	2.9	0.94	<0.5	NA
S05-4B-D	HP	04/11/97	10	0.57	0.81	<0.5	NA
S05-5B-A	HP	03/31/97	15	0.55	<0.5	<0.5	NA
S05-5B-A	HP	03/31/97	12	<0.5	0.57	<0.5	NA
S05-5B-B	HP	04/01/97	13.5	1	<0.5	<0.5	NA
S05-5B-B	HP	04/01/97	10	<0.5	<0.5	<0.5	NA
S05-5B-B	HP	04/01/97	7	<0.5	<0.5	<0.5	NA
S05-6-2	HP	02/05/98	15.5 to 20	30	1.6	<0.5	NA
S05-6-2	HP	02/05/98	11.5 to 13.5	<0.5	<0.5	<0.5	NA
S05-6-2	HP	02/05/98	5.5 to 7.5	<0.5	<0.5	<0.5	NA
S05-6-2	HP	03/05/98	20 to 25	<0.5	1	<0.5	NA
S05-6-3	HP	02/05/98	11.5 to 13.5	1.4	<0.5	<0.5	NA
S05-6-3	HP	02/05/98	5.5 to 7.5	<0.5	<0.5	<0.5	NA
S05-6-3	HP	03/05/98	13.5 to 15.5	1.9	1.2	NA	NA
S05-6-3	HP	03/17/98	15.5 to 20	<0.5	<0.5	NA	NA

Notes:

[a] Total Xylenes

<	Concentration not detected at or above method detection limit
µg/L	Microgram per liter
bgs	Below ground surface
EXCV	Excavation
GP	Geoprobe®
HP	Hydropunch®
J	Estimated concentration
MW	Monitoring well
SB	

TABLE A-7

INSTALLATION SITE 5 TOTAL PETROLEUM HYDROCARBONS
ALAMEDA POINT, ALAMEDA, CALIFORNIA
(Page 1 of 1)

Point Name	Point Type	Sample Date	Depth (feet bgs)	TPH-d (µg/L)	TPH-g (µg/L)	TPH-mo (µg/L)	JP5 (µg/L)
030-S05-011	EXCV	09/12/98	7 to 7.5	<5,000	2,330J	12,000J	78,000J
05GB001	GP	08/10/94	5 to 6	<100J	110J	<500J	230J
05GB002	GP	08/10/94	5 to 6	<100J	<50	<500J	<100
05GB003	GP	08/11/94	5 to 6	<100J	70J	<500J	<100
DHP-S05-08	HP	08/10/94	43 to 47	260J	<50	<500	<100
DHP-S05-09	HP	08/11/94	44	<100	<50	<500	<100
D05-02	MW	09/23/94	44	NA	<50	NA	NA

Notes:

<	Concentration not detected at or above method detection limit
µg/L	Microgram per liter
bgs	Below ground surface
EXCV	Excavation
GP	Geoprobe®
HP	Hydropunch®
J	Estimated concentration
JP 5	Jet Fuel No. 5
MW	Monitoring well
TPH-d	Total petroleum hydrocarbon - diesel range
TpH-g	Total petroleum hydrocarbon - gasoline range
TPH-mo	Total petroleum hydrocarbon - motor oil range

TABLE A-8

INSTALLATION RESTORATION SITE 5
ALAMEDA POINT, ALAMEDA, CALIFORNIA
(Page 1 of 3)

Point Name	Point Type	Sample Date	Depth (feet bgs)	Concentration (µg/L)
CHROMIUM				
030-S05-011	EXCV	09/12/98	7 to 7.5	1,020
05GB001	GP	08/10/94	5 to 6	<0.4
05GB002	GP	08/10/94	5 to 6	<0.4
05GB003	GP	08/11/94	5 to 6	<11.2J
B05-11	SB	01/12/95	0	<2.3
B05PS-01	SB	06/04/92	0	18.6
B05PS-01	SB	06/04/92	18	23
B05PS-02	SB	06/03/92	6	2,470
B05PS-03	SB	06/03/92	6.5	111
B05PS-04	SB	06/03/92	5 to 5.5	227
B05PS-05	SB	06/03/92	6.5	10,700
D05-02	MW	01/12/95	67	<2.3
D05-02	MW	02/04/98	67	<0.2
D05-02	MW	04/28/95	67	<6.2J
D05-02	MW	05/08/98	67	<0.35
D05-02	MW	06/29/94	67	<2.3
D05-02	MW	08/05/98	67	<0.8
D05-02	MW	08/05/98	67	<0.8
D05-02	MW	09/23/94	67	4.9J
D05-02	MW	11/13/97	67	<0.3
DHP-S05-08	HP	08/10/94	43 to 47	<0.88J
DHP-S05-09	HP	08/11/94	44	<0.8
HP-S05-03	HP	02/21/94	58	<3
HP-S05-04	HP	02/17/94	46	11.3
M05-04	MW	02/05/98	15	<0.2
M05-04	MW	04/26/95	15	<2.3
M05-04	MW	04/26/95	15	<2.3
M05-04	MW	05/08/98	15	<0.35
M05-04	MW	06/29/94	15	<2.3
M05-04	MW	08/05/98	15	<0.8
M05-04	MW	10/05/94	15	<2.3
M05-04	MW	11/04/97	15	<0.38J
M05-07	MW	01/12/95	17	<2.3
M05-07	MW	02/05/98	17	<0.2
M05-07	MW	04/13/95	17	<2.3
M05-07	MW	05/08/98	17	0.49J
M05-07	MW	06/29/94	17	<2.3

TABLE A-8

INSTALLATION RESTORATION SITE 5
ALAMEDA POINT, ALAMEDA, CALIFORNIA
(Page 2 of 3)

Point Name	Point Type	Sample Date	Depth (feet bgs)	Concentration (µg/L)
CHROMIUM (Continued)				
M05-07	MW	08/05/98	17	<0.8
M05-07	MW	09/30/94	17	<2.3
M05-07	MW	11/03/97	17	0.4J
M05-10	MW	01/12/95	15	7.4
M05-10	MW	02/06/98	15	8.4
M05-10	MW	04/17/95	15	53.3
M05-10	MW	05/13/98	15	6.5
M05-10	MW	06/28/94	15	15.1
M05-10	MW	08/06/98	15	18.8
M05-10	MW	10/04/94	15	38.1
M05-10	MW	11/03/97	15	3J
HEXAVALENT CHROMIUM				
B05PS-01	SB	06/04/92	0	<1,000
B05PS-01	SB	06/04/92	18	1,020
B05PS-02	SB	06/03/92	6	6,470
B05PS-03	SB	06/03/92	6.5	7,010
B05PS-04	SB	06/03/92	5 to 5.5	13,100
B05PS-05	SB	06/03/92	6.5	<5,000
TOTAL ORGANIC CARBON				
05GB003	GP	08/11/94	5 to 6	2,800
B05-11	SB	01/12/95	0	11,000
D05-02	MW	01/12/95	67	<1,000
D05-02	MW	04/28/95	67	11,000
D05-02	MW	06/29/94	67	2,300
D05-02	MW	09/23/94	67	<1000
D05-02	MW	11/13/97	67	<1,000
HP-S05-03	HP	02/21/94	58	6,800
HP-S05-04	HP	02/17/94	46	<5,000
M05-04	MW	04/26/95	15	3,500
M05-04	MW	06/29/94	15	4,700
M05-04	MW	08/29/91	15	20,500
M05-04	MW	10/05/94	15	6,100
M05-04	MW	11/04/97	15	10,000
M05-07	MW	01/12/95	17	6,500
M05-07	MW	04/13/95	17	8,100
M05-07	MW	06/29/94	17	7,900
M05-07	MW	09/30/94	17	10,000

TABLE A-8

INSTALLATION RESTORATION SITE 5
ALAMEDA POINT, ALAMEDA, CALIFORNIA
(Page 3 of 3)

Point Name	Point Type	Sample Date	Depth (feet bgs)	Concentration (µg/L)
TOTAL ORGANIC CARBON (Continued)				
M05-07	MW	11/03/97	17	<1,000
M05-10	MW	01/12/95	15	1,400
M05-10	MW	04/17/95	15	4,500
M05-10	MW	06/28/94	15	1,300
M05-10	MW	10/04/94	15	3,100
M05-10	MW	11/03/97	15	1,000

Notes:

<	Concentration was not detected at or above the method detection limit
bgs	Below ground surface
GP	Geoprobe®
HP	Hydropunch®
J	Estimated concentration
MW	Monitoring well
SB	

APPENDIX B

DOCUMENTS
FROM THE ADMINISTRATIVE RECORD
LEADING UP TO THE REMOVAL ACTION

DRAFT ADMINISTRATIVE RECORD FILE INDEX - UPDATE (SORTED BY RECORD DATE / RECORD NUMBER)

SITE 4 and 5, DNAPL

UIC No. / Rec. No. Doc. Control No. Record Type Contr./Guid. No. Approx. # Pages	Prc. Date Record Date CTO No. EPA Cat. #	Author Affil. Author Recipient Affil. Recipient	Subject	Classification	Keywords	Sites	Location Box No.
N00236 / 000535 LTR NONE 0000	11-24-1999 **11-01-1990** NONE 00.0	DHS	REQUEST FOR SOIL SAMPLING OUTSIDE BLDG 5	ADMIN RECORD		005	IRON MOUNTAIN 45359718
N00236 / 000821 REPO NONE 0000	11-24-1999 **02-01-1992** NONE 00.0	PRC	DRAFT DATA SUMMARY REPORT RI/FS PHASES 2B AND 3 VOLUME 1	REMOVED	FS RI		SOUTHWEST DIVISION
N00236 / 000603 LTR NONE 0000	11-24-1999 **03-13-1992** NONE 00.0	NAVY	PROPOSED ADDITIONAL FIELD WORK AT SITES 4 (BLDG 360) AND 5 (BLDG 5) FOR THE RI/FS	ADMIN RECORD	FS RI	004 005	IRON MOUNTAIN 45359719
N00236 / 001095 CMNT NONE 0000	11-24-1999 **04-14-1992** NONE 00.0	DTSC	COMMENTS ON THE PROPOSED ADDITIONAL RI/FS FIELD WORK AT SITES 4 AND 5	ADMIN RECORD	FS RI	004 005	IRON MOUNTAIN 45359734
N00236 / 000615 RESP NONE 0000	11-24-1999 **05-05-1992** NONE 00.0	NAVY	RESPONSE TO DTSC COMMENTS PROPOSED ADDITIONAL FIELD WORK AT SITES 4 AND 5 FOR RI/FS	ADMIN RECORD	FS RI	004 005	IRON MOUNTAIN 45359719
N00236 / 001098	11-24-1999	DTSC	APPROVAL OF REQUESTED CHANGES FOR	ADMIN RECORD		004	IRON MOUNTAIN

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UIC No. / Rec. No. Doc. Control No. Record Type Contr./Guid. No. Approx. # Pages	Prc. Date Record Date CTO No. EPA Cat. #	Author Affil. Author Recipient Affil. Recipient	Subject	Classification	Keywords	Sites	Location Box No.
	05-07-1992		ADDITIONAL FIELD WORK AT SITES 4 AND 5			005	45359734
LTR NONE 0000	NONE 00.0						
N00236 / 000710	11-24-1999 **08-06-1992**	NAVY	SUBMISSION OF DRAFT FINAL DATA SUMMARY REPORT FOR BACKGROUND AND TIDAL INFLUENCE STUDIES AND ADDITIONAL WORK AT SITES 4 AND 5	INFO REPOSITORY	BACKGROUND TIDAL	004 005	IRON MOUNTAIN 45359720
LTR NONE 0000	NONE 00.0						
N00236 / 000907	11-24-1999 **08-27-1992**	CAC	COMMENTS ON THE DRAFT FINAL DATA SUMMARY REPORT FOR BACKGROUND AND TIDAL INFLUENCE STUDIES AND ADDITIONAL WORK AT SITES 4 AND 5	ADMIN RECORD	BACKGROUND TIDAL	004 005	IRON MOUNTAIN 45359731
CMNT NONE 0000	NONE 00.0						
N00236 / 000749	11-24-1999 **09-16-1992**	NAVY	CLARIFICATION ON SITE 5 (BLDG 5) ADDITIONAL SAMPLING FOR THE RI/FS	ADMIN RECORD	FS RI	005	IRON MOUNTAIN 45359720
LTR NONE 0000	NONE 00.0						
N00236 / 000909	11-24-1999 **09-16-1992**	DTSC	COMMENTS ON THE DRAFT FINAL DATA SUMMARY REPORT FOR BACKGROUND AND TIDAL INFLUENCE STUDIES AND ADDITIONAL WORK AT SITES 4 AND 5	ADMIN RECORD	BACKGROUND TIDAL	004 005	IRON MOUNTAIN 45359731
CMNT NONE 0000	NONE 00.0						
N00236 / 000917	11-24-1999 **11-05-1992**	NAVY	SUBMISSION OF DRAFT FINAL ADDENDUM SECOND ROUND BACKGROUND GROUNDWATER SAMPLE RESULTS AND RESAMPLE RESULTS FOR SITES 4 AND 5	INFO REPOSITORY	BACKGROUND GW	004 005	IRON MOUNTAIN 45359731
LTR NONE	NONE 00.0						

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0000							
N00236 / 000919 RESP NONE 0000	11-24-1999 **11-18-1992** NONE 00.0	NAVY	RESPONSE TO COMMENTS ON THE DRAFT FINAL DATA SUMMARY REPORT BACKGROUND AND TIDAL INFLUENCE STUDIES AND ADDITIONAL WORK AT SITES 4 AND 5	ADMIN RECORD	BACKGROUND TIDAL	004 005	IRON MOUNTAIN 45359731
N00236 / 000921 RESP NONE 0000	11-24-1999 **11-20-1992** NONE 00.0	NAVY	RESPONSE TO COMMENTS ON THE DRAFT FINAL DATA SUMMARY REPORT: BACKGROUND AND TIDAL INFLUENCE STUDIES AND ADDITIONAL WORK AT SITES 4 AND 5	ADMIN RECORD	BACKGROUND TIDAL	004 005	IRON MOUNTAIN 45359731
N00236 / 000932 LTR NONE 0000	11-24-1999 **01-22-1993** NONE 00.0	DTSC	APPROVAL OF DRAFT FINAL DATA SUMMARY REPORT: BACKGROUND AND TIDAL INFLUENCE STUDIES AND ADDITIONAL WORK AT SITES 4 AND 5	ADMIN RECORD	BACKGROUND TIDAL	004 005	IRON MOUNTAIN 45359731
N00236 / 000939 LTR NONE 0000	11-24-1999 **02-16-1993** NONE 00.0	DTSC	APPROVAL OF ADDENDUM, SECOND ROUND BACKGROUND GROUNDWATER SAMPLE RESULTS AND RESAMPLE RESULTS FOR SITES 4 AND 5	ADMIN RECORD	BACKGROUND GW	004 005	IRON MOUNTAIN 45359731
N00236 / 001005 LTR	11-24-1999 **03-02-1993** NONE	NAVY	SUBMISSION OF RESPONSES TO NAVY COMMENTS ON SAMPLING RESULTS, SITES 4 AND 5	INFO REPOSITORY		004 005	IRON MOUNTAIN 45359732

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NONE 0000	00.0						
N00236 / 000965 RESP NONE 0000	11-24-1999 **07-19-1993** NONE 00.0	NAVY	RESPONSE TO COMMENTS ON THE DRAFT FIELD SAMPLING PLANS (SP) FOR FOLLOW ON FIELD WORK FOR PHASES 2B/3 AND 5/6 SITES	ADMIN RECORD	SP	005	IRON MOUNTAIN 45359732
N00236 / 000987 LTR NONE 0001 00	11-24-1999 **10-25-1993** NONE 00.0	DTSC LANPHAR, THOMAS NAVY MUNEKAWA,	APPROVAL OF FIELD SAMPLING PLAN (SP), PHASE 5 AND 6	ADMIN RECORD	SP	005	IRON MOUNTAIN 45359732
N00236 / 001080 REPO NONE 0000	11-24-1999 **08-10-1994** NONE 00.0	PRC	DRAFT FINAL FOLLOW-ON RI/FS FIELD SAMPLING PLAN (SP) - PHASES 2B AND 3	ADMIN RECORD	FS RI SP	00018	SOUTHWEST DIVISION
N00236 / 001182 LTR NONE 0000	11-24-1999 **05-01-1995** NONE 00.0	NAVY	DOCUMENT SUMMARY FOR DRAFT DATA TRANSMITTAL MEMORANDUM FOR SITES 4, 5, 8, 10A, 12, AND 14	INFO REPOSITORY		004 005 008 010 012 014	IRON MOUNTAIN 45359736
N00236 / 001188 LTR	11-24-1999 **05-18-1995** NONE	NAVY	SUBMISSION OF RI/FS DRAFT DATA TRANSMITTAL MEMORANDUM SITES 4, 5, 8, 10A, 12, AND 14	ADMIN RECORD	FS RI	004 005 008	IRON MOUNTAIN 45359736

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NONE 0000	00.0					010 012 014 018	
N00236 / 001190 RPT NONE 0000	11-24-1999 **05-18-1995** NONE 00.0	PRC	RI/FS DRAFT DATA TRANSMITTAL MEMORANDUM SITES 4, 5, 8, 10A, 12, AND 14, VOLUME II OF II	ADMIN RECORD	FS RI	004 005 008 010 012 014 018	IRON MOUNTAIN 45359736
N00236 / 001218 CMNT NONE 0006 0006	11-24-1999 **07-26-1995** NONE 00.0	DTSC LANPHAR, THOMAS THOMAS NAVY GARIBALDI, CAMIL	COMMENTS ON THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS) DATA TRANSMITTAL MEMORANDUM SITES 4, 5, 8, 9, 10A, 12 AND 14	ADMIN RECORD	FS RI	004 005 008 009 010 012 014	IRON MOUNTAIN 45359737
N00236 / 001296 RPT N62474-88-D-5086 0125	11-24-1999 **10-06-1995** 00121 00.0	PRC BALCH, DUANE C. NAVY KIKUGAWA, GEORGE	FINAL DATA SUMMARY REPORT BACKGROUND AND TIDAL INFLUENCE STUDIES AND ADDITIONAL WORK AT SITES 4 AND 5, VOLUME 1 OF 2	ADMIN RECORD	BACKGROUND TIDAL	004 005	IRON MOUNTAIN 45359739
N00236 / 001297 RPT N62474-88-D-5086	11-24-1999 **10-06-1995** 00121 00.0	PRC BALCH, DUANE C. NAVY KIKUGAWA, GEORGE	FINAL DATA SUMMARY REPORT BACKGROUND AND TIDAL INFLUENCE STUDIES AND ADDITIONAL WORK AT SITES 4 AND 5, VOLUME 2 OF 2	ADMIN RECORD	BACKGROUND TIDAL	004 005	IRON MOUNTAIN 45359739

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0553 0001							
N00236 / 001279 RESP NONE 0009 0009	11-24-1999 **04-01-1996** NONE 00.0	NAVY KIKUGAWA, GEORGE GEORGE DTSC LANPHAR, THOMAS	RESPONSE TO COMMENTS ON THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS), DRAFT DATA TRANSMITTAL MEMORANDUM FOR SITES 4, 5, 8, 10A, 12 AND 14	ADMIN RECORD	FS RI	004 005 008 010 012 014	IRON MOUNTAIN 45359738
N00236 / 001280 LTR NONE 0005 0005	11-24-1999 **04-01-1996** NONE 00.0	NAVY KIKUGAWA, GEORGE GEORGE DTSC LANPHAR, THOMAS	REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS), FINAL DATA TRANSMITTAL MEMORANDUM, SITES 4, 5, 8, 10A, 12 AND 14; COVER SHEET AND ERRATA SHEET	ADMIN RECORD	FS RI	004 005 008 010 012 014	IRON MOUNTAIN 45359738
N00236 / 001328 REPO N62474-88-D-5086 0200	11-24-1999 **08-06-1996** 00316 00.0	PRC WILLOUGHBY, SUSA NAVY BERNHARD,	DRAFT TECHNICAL MEMORANDUM (TM), AQUIFER TEST DATA ANALYSIS	ADMIN RECORD	AQUIFER TM		SOUTHWEST DIVISION
N00236 / 001436 RPT N62474-94-D-7609 0250	11-24-1999 **09-16-1997** 00122 00.0	TETRA TECH HUTCHISON, NEAL NEAL NAVY MCFADDEN, PATRIC	DRAFT FIELD SAMPLING PLAN (SP) FOR SITE 4 AND 5, CHLORINATED SOLVENT PLUME DEFINITION, AND SITE 14 SUMP INVESTIGATION	REMOVED	CHLORINATED PLUME PSP SOLVENT	004 005 014	SOUTHWEST DIVISION
N00236 / 001458	11-24-1999	NAVY	REQUEST FOR IDENTIFICATION OF STATE	ADMIN RECORD	ARAR	001	IRON MOUNTAIN

DRAFT ADMINISTRATIVE RECORD FILE INDEX - UPDATE (SORTED BY RECORD DATE / RECORD NUMBER)

SITE 4 and 5, DNAPL

UIC No. / Rec. No. Doc. Control No. Record Type Contr./Guid. No. Approx. # Pages	Prc. Date Record Date CTO No. EPA Cat. #	Author Affil. Author Recipient Affil. Recipient	Subject	Classification	Keywords	Sites	Location Box No.
LTR NONE 0005	**10-02-1997** NONE 00.0	GARIBALDI, CAMIL DTSC LANPHAR, THOMAS	APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) FOR REMOVAL ACTIONS (RM) AT SITES 1, 2, 5, AND 10		RM	002 005 010	45359743
N00236 / 001454 RPT N62474-94-D-7609 0011	11-24-1999 **11-01-1997** 00147 00.0	TETRA TECH HUTCHISON, NEAL NEAL NAVY KIKUGAWA, GEORGE	DRAFT REMOVAL SITE EVALUATION FOR REMOVAL ACTION (RM) AT INSTALLATION RESTORATION (IR) SITES 1, 2, 5, AND 10	REMOVED	RM	001 002 005 010	SOUTHWEST DIVISION
N00236 / 001459 RPT N62474-94-D-7609 0040	11-24-1999 **11-01-1997** 00057 00.0	TETRA TECH WETTERS, MARK NAVY KIKUGAWA, GEORGE	DRAFT TREATABILITY STUDY (TS) PROPOSAL	REMOVED	TS	004 005 013	SOUTHWEST DIVISION
N00236 / 001489 RPT N62474-94-D-7609 0151	11-24-1999 **12-12-1997** 00122 00.0	TETRA TECH HUTCHISON, NEAL NEAL NAVY MCFADDEN, PATRIC	FINAL FIELD SAMPLING PLAN (SP) FOR SITE 4 AND 5, CHLORINATED SOLVENT PLUME DEFINITION AND SITE 14 SUMP INVESTIGATION	ADMIN RECORD	CHLORINATED SOLVENT SP	004 005 014	IRON MOUNTAIN 45359743
N00236 / 001483 RPT N62474-94-D-7609	11-24-1999 **02-01-1998** 00057 00.0	TETRA TECH WETTERS, MARK NAVY KIKUGAWA, GEORGE	FINAL TREATABILITY STUDY (TS) PROPOSAL	ADMIN RECORD	TS	004 005 013	SOUTHWEST DIVISION

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0040							
N00236 / 001479 LTR N62474-94-D-7430 0001	11-24-1999 **02-13-1998** 00007 00.0	NAVY YEE, RONALD USEPA COOK, ANNA-MARIE	SUBMISSION OF THE DRAFT WORK PLAN (WP), TREATABILITY STUDY (TS) FOR NATURAL ATTENUATION OF CHLORINATED ALIPHATIC HYDROCARBONS, SITE 5 - FEBRUARY 1998	ADMIN RECORD	ALIPHATIC CHLORINATED HYDROCARBONS TS WP	005	IRON MOUNTAIN 45359743
N00236 / 001482 LTR N62474-94-D-7609 0001	11-24-1999 **03-02-1998** 00057 00.0	NAVY KIKUGAWA, GEORGE DTSC CASSA, MARY ROSE	SUBMISSION OF THE FINAL TREATABILITY STUDY (TS) PROPOSAL - FEBRUARY 1998	ADMIN RECORD	TS	004 005 013	IRON MOUNTAIN 45359743
N00236 / 001500 RESP NONE 0007	11-24-1999 **04-07-1998** NONE 00.0	NAVY KIKUGAWA, GEORGE GEORGE DTSC CASSA, MARY ROSE	RESPONSE TO COMMENTS ON THE WORK PLANS (WP) FOR LANDFILL SITES 1 AND 2 AND BUILDINGS 5 AND 400	ADMIN RECORD	LANDFILL WP	001 002 005 010	IRON MOUNTAIN 45359744
N00236 / 001531 RPT N62474-94-D-7609 0010	11-24-1999 **05-01-1998** 00147 00.0	TETRA TECH HO, EDWARD NAVY KIKUGAWA, GEORGE	FINAL REMOVAL SITE EVALUATION FOR REMOVAL ACTIONS (RM) AT INSTALLATION RESTORATION (IR) SITES 1, 2, 5, AND 10	ADMIN RECORD	RM	001 002 005 010	IRON MOUNTAIN 45359744
N00236 / 001510 LTR NONE	11-24-1999 **05-12-1998** NONE 00.0	DTSC MURPHY, DANIEL E NAVY	REQUIREMENTS FOR DISCHARGE OF GROUNDWATER TO SAN FRANCISCO BAY	ADMIN RECORD	GW	001 002 005 010	IRON MOUNTAIN 45359744

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0002		KIKUGAWA, GEORGE					
N00236 / 001525 LTR NONE 0005	11-24-1999 **05-15-1998** NONE 00.0	NAVY GEE, HENRY C. DTSC MURPHY, DANIEL E	APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) FOR DISCHARGE OF GROUNDWATER TO SAN FRANCISCO BAY FOR REMOVAL ACTIONS (RM) AT SITE 1, 2, 5, AND 10	ADMIN RECORD	ARAR GW RM	001 002 005 010	IRON MOUNTAIN 45359744
N00236 / 001534 RPT N62474-94-D-7609 0250	11-24-1999 **06-26-1998** 00122 00.0	TETRA TECH NAVY MCFADDEN, PATRIC	DATA TRANSMITTAL MEMORANDUM FOR SITES 4 AND 5 CHLORINATED SOLVENT PLUME DEFINITION AND SITE 14 SUMP INVESTIGATION	ADMIN RECORD	CHLORINATED SOLVENT	004 005 014	IRON MOUNTAIN 45359744
N00236 / 001535 RPT N62474-94-D-7609 0200	11-24-1999 **06-26-1998** 00122 00.0	TETRA TECH NAVY MCFADDEN, PATRIC	DATA TRANSMITTAL MEMORANDUM FOR SITES 4 AND 5 CHLORINATED SOLVENT PLUME DEFINITION AND SITE 14 SUMP INVESTIGATION, APPENDICES	ADMIN RECORD	CHLORINATED SOLVENT	004 005 014	IRON MOUNTAIN 45359745
N00236 / 001542 LTR NONE 0002	11-24-1999 **08-25-1998** NONE 00.0	NAVY KIKUGAWA, GEORGE GEORGE DTSC CASSA, MARY ROSE	SUBMISSION OF THE PHASE III AND IV SITE WORK PLAN, SITE HEALTH AND SAFETY PLAN (HASP), SITE QUALITY ASSURANCE PLAN (QAP), FOR THE STORM WATER DRAIN EXCAVATION, CL	ADMIN RECORD	HASP QAP	005 010	IRON MOUNTAIN 45359745
N00236 / 001583	11-24-1999 **01-26-1999**	NAVY WONG, DENNIS	SUBMISSION OF THE DRAFT WORK IMPLEMENTATION PLAN FOR SURFACTANT ENHANCED DNAPL REMOVAL	ADMIN RECORD	DNAPL SURFACTANT	005	IRON MOUNTAIN 45359747

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LTR NONE 0002	NONE 00.0	DTSC CASSA, MARY ROSE	TREATABILITY STUDY (TS) AT SITE 5 - 01 JANAURY 1999		TS		
N00236 / 001584 RPT NONE 0300	11-24-1999 **01-26-1999** NONE 00.0	SURBEC NAVY WONG, DENNIS	DRAFT WORK IMPLEMENTATION PLAN FOR SURFACTANT ENHANCED DNAPL REMOVAL TREATABILITY STUDY (TS) AT SITE 5	ADMIN RECORD	DNAPL SURFACTANT TS	005	IRON MOUNTAIN 45359747
N00236 / 001614 RESP N62474-94-D-7609 0041	11-24-1999 **04-16-1999** 00147 00.0	TETRA TECH HO, EDWARD NAVY KIKUGAWA, GEORGE	RESPONSE TO COMMENTS ON THE SURVEY AND SAMPLING APPROACH PROPOSED BY DTSC INSTALLATION RESTORATION SITES 5 AND 10 (IR05 AND IR10)	ADMIN RECORD		005 010	IRON MOUNTAIN 45359748
N00236 / 001616 RPT NONE 0500	11-24-1999 **05-18-1999** NONE 00.0	SURBEC NAVY	FINAL WORK PLAN (WP) FOR SURFACTANT ENHANCED DNAPL REMOVAL TREATABILITY STUDY (TS) AT SITE 5	ADMIN RECORD	DNAPL SURFACTANT TS WP	005	IRON MOUNTAIN 45359748
N00236 / 001643 RPT NONE	11-24-1999 **06-23-1999** NONE 00.0	SURBEC NAVY WONG, DENNIS	TECHNICAL MEMORANDUM (TM) FOR SURFACTANT ENHANCED DNAPL REMOVAL TREATABILITY STUDY AT SITE	ADMIN RECORD		005	IRON MOUNTAIN 45359750

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0300							
N00236 / 001642 LTR NONE 0002	11-24-1999 **06-28-1999** NONE 00.0	NAVY WONG, DENNIS DTSC CASSA, MARY ROSE	SUBMISSION OF THE TECHNICAL MEMORANDUM (TM) FOR SURFACTANT ENHANCED DNAPL REMOVAL TREATABILITY STUDY AT SITE 5 - 23 JUNE 1999	ADMIN RECORD		005	IRON MOUNTAIN 45359750
N00236 / 001679 NONE MM NONE 0015	01-21-2000 **08-03-1999** NONE 10.4	NAVFAC - WESTERN DIVISION NAVFAC - WESTERN DIVISION	RESTORATION ADVISORY BOARD (RAB) MEETING SUMMARY FOR 3 AUGUST 1999 (INCLUDES AGENDA, HANDOUTS AND SIGN-IN SHEETS)	ADMIN RECORD	FS PCB RAB RI UXO	001 002 003 004 005 009 010 013 014 017 019 020 021 022 023 024 025 1112 360 400 410 BLDG. 14 BLDG. 162 BLDG. 5	IRON MOUNTAIN 45359751

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						OU 1 OU 2 OU 3 OU 4	
N00236 / 001660 RPT N62474-94-D-7609 0250	11-24-1999 **09-01-1999** 00057 00.0	TETRA TECH HUTCHISON, NEAL NEAL NAVY WONG, DENNIS	DRAFT SITE 5 ELECTROKINETIC PILOT-SCALE TREATABILITY STUDY OVERSIGHT REPORT	ADMIN RECORD		005	SOUTHWEST DIVISION
N00236 / 001678 NONE MM NONE 0050	01-21-2000 **09-07-1999** NONE 10.4	NAVFAC - WESTERN DIVISION NAVFAC - WESTERN DIVISION	DRAFT RESTORATION ADVISORY BOARD MEETING SUMMARY FOR 7 SEPTEMBER 1999 (INCLUDES AGENDA, HANDOUTS AND SIGN-IN SHEETS)	ADMIN RECORD	BTEX EBS RAB TPH	003 004 005 009 010 011 012 013 014 015 019 021 022 023 025 BLDG. 14 BLDG. 400 BLDG. 410 BLDG. 5 BLDG. 530 OU 2	IRON MOUNTAIN 45359751
N00236 / 001659	11-24-1999	NAVY	SUBMISSION OF THE DRAFT SITE 5	ADMIN RECORD		005	IRON MOUNTAIN

UIC No. / Rec. No. Doc. Control No. Record Type Contr./Guid. No. Approx. # Pages	Prc. Date Record Date CTO No. EPA Cat. #	Author Affil. Author Recipient Affil. Recipient	Subject	Classification	Keywords	Sites	Location Box No.
LTR N62474-94-D-7609 0002	**09-21-1999** 00057 00.0	WONG, DENNIS DTSC CASSA, MARY ROSE	ELECTROKINETIC PILOT-SCALE TREATABILITY STUDY OVERSIGHT REPORT - SEPTEMBER 1999				45359751
N00236 / 001677 NONE MM NONE 0020	01-21-2000 **10-05-1999** NONE 10.4	NAVFAC - WESTERN DIVISION NAVFAC - WESTERN DIVISION	DRAFT RESTORATION ADVISORY BOARD (RAB) MEETING SUMMARY FOR 5 OCTOBER 1999 (INCLUDES AGENDA, HANDOUTS AND SIGN-IN SHEETS)	ADMIN RECORD	BTEX FFA RAB TDS UST	001 002 005 010 014 025 BLDG. 400 BLDG. 5 OU 1 OU 2 OU 3	IRON MOUNTAIN 45359751
N00236 / 001673 NONE LTR LTR NONE 0000	01-21-2000 **10-26-1999** NONE 00.0	DTSC, BERKELEY, CA M. CASSA M. CASSA NAVFAC - WESTERN DIVISION D. WONG	LETTER STATING DRAFT ELECTROKINETIC PILOT-SCALE TREATABILITY STUDY OVERSIGHT REPORT TEST DATA ARE VERY LIMITED - CANNOT RECOMMEND FULL SCALE	ADMIN RECORD	TREATABIL.	005	IRON MOUNTAIN 45359751
N00236 / 001681 NONE MM MM	02-15-2000 **01-04-2000** NONE NONE	NAVFAC - WESTERN DIVISION DIVISION	RESOTRATION ADVISORY BOARD (RAB) MEETING MINUTES FROM JANUARY 4, 2000. (WITH ENCLOSURES)	ADMIN RECORD INFO REPOSITORY REPOSITORY	CAP CEQA FS	001 002 005 005	IRON MOUNTAIN 45359751

UIC No. / Rec. No. Doc. Control No. Record Type Contr./Guid. No. Approx. # Pages	Prc. Date Record Date CTO No. EPA Cat. #	Author Affil. Author Recipient Affil. Recipient	Subject	Classification	Keywords	Sites	Location Box No.
NONE 0026		NAVFAC - SOUTHWEST DIVISION			MTG MINS OU RAB UST	010 025 BLDG. 400 BLDG. 5 OU 1 OU 2 OU 3 OU 4	
N00236 / 000058 SWDIV SER 06CA.GC/1044 06CA.GC/1044 LTR LTR NONE 0003	02-01-2001 **12-27-2000** NONE NONE	NAVFAC - SOUTHWEST DIVISION G. CLARK DTSC, BERKELEY, CA M. CASSA	IDENTIFICATION OF STATE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) FOR REMOVAL ACTIONS	ADMIN RECORD INFO REPOSITORY	ARAR	003 004 005 005 009 011 016 019 021	IRON MOUNTAIN 80462382
N00236 / 000054 DS.0386.15537-01 & SWDIV SER & SWDIV SER 06CA.GC/0005 RPT N62474-94-D-7609 0150	01-05-2001 **01-05-2001** 00386 00386	TETRA TECH EM INC. C. FENNESSEY C. FENNESSEY NAVFAC - SOUTHWEST DIVISION G. CLARK	DRAFT DENSE NONAQUENOUS PHASE LIQUID AND DISSOLVED SOURCE REMOVAL ACTION, ENGINEERING EVALUATION AND COST ANALYSIS (EE/CA) - INCLUDES TRANSMITTAL LETTER BY GLENNA CLARK [REVISION PAGES SUBMITTED 02/23/01, HAVE BEEN INSERTED INTO THE DOCUMENT]	ADMIN RECORD INFO REPOSITORY REPOSITORY	BTEX DCA DCE EE/CA MTBE PCB PCE REMOVAL SVE SVOC TCA TCE TPH VOC	004 005	IRON MOUNTAIN 80462382

UIC No. / Rec. No. Doc. Control No. Record Type Contr./Guid. No. Approx. # Pages	Prc. Date Record Date CTO No. EPA Cat. #	Author Affil. Author Recipient Affil. Recipient	Subject	Classification	Keywords	Sites	Location Box No.
N00236 / 000094 NONE LTR LTR NONE 0005	06-25-2001 **03-12-2001** NONE NONE	U.S. EPA, SAN FRANCISCO, CA A. COOK A. COOK NAVFAC - SOUTHWEST DIVISION G. CLARK	REVIEW AND COMMENTS ON THE DRAFT DENSE NONAQUENOUS PHASE LIQUID & DISSOLVED SOURCE REMOVAL ACTION, ENGINEERING EVALUATION/COST ANALYSIS (EE/CA) {SEE AR #54 - DRAFT DENSE NONAQUENOUS EE/CA, #95 - COMMENTS BY CRWQCB, #96 - COMMENTS BY DTSC}	ADMIN RECORD INFO REPOSITORY REPOSITORY	COMMENTS EE/CA REMOVAL SVE	004 005	SOUTHWEST DIVISION
N00236 / 000095 NONE LTR LTR NONE 0003	06-25-2001 **03-15-2001** NONE	CRWQCB, OAKLAND, CA B. JOB B. JOB NAVFAC - SOUTHWEST DIVISION M. MCCLELLAND	REVIEW AND COMMENTS ON THE DRAFT DENSE NONAQUENOUS PHASE LIQUID & DISSOLVED SOURCE REMOVAL ACTION, ENGINEERING EVALUATION/COST ANALYSIS (EE/CA) [PORTIONS OF THE MAILING LIST IS CONFIDENTIAL]	ADMIN RECORD CONFIDENTIAL INFO REPOSITORY	COMMENTS EE/CA REMOVAL SVE	004 005	SOUTHWEST DIVISION
N00236 / 000096 NONE LTR LTR NONE 0003	06-25-2001 **03-16-2001** NONE NONE	DTSC, BERKELEY, CA M. CASSA M. CASSA NAVFAC - SOUTHWEST DIVISION G. CLARK	REVIEW AND COMMENTS ON THE DRAFT DENSE NONAQUENOUS PHASE LIQUID & DISSOLVED SOURCE REMOVAL ACTION, ENGINEERING EVALUATION/COST ANALYSIS (EE/CA) {SEE AR #54 - DRAFT DENSE NONAQUENOUS EE/CA, #94 - COMMENTS BY EPA & #95 - COMMENTS BY CRWQCB}	ADMIN RECORD INFO REPOSITORY REPOSITORY	COMMENTS EE/CA REMOVAL SVE	004 005	SOUTHWEST DIVISION
N00236 / 000097 TC.0386.10977 & SWDIV SER SWDIV SER 06CA.GC/0484 MISC N62474-94-D-7609 0013	06-25-2001 **05-04-2001** 00386	TETRA TECH EM INC. U.S. EPA, SAN FRANCISCO, CA A. COOK	NAVY'S RESPONSE TO EPA & CRWQCB COMMENTS ON THE DRAFT DENSE NONAQUENOUS PHASE LIQUID & DISSOLVED SOURCE REMOVAL ACTION, ENGINEERING EVALUATION/COST ANALYSIS (EE/CA) - INCLUDES SWDIV TRANSMITTAL LETTER BY G. CLARK	ADMIN RECORD CONFIDENTIAL INFO REPOSITORY	COMMENTS EE/CA REMOVAL SVE	004 005	SOUTHWEST DIVISION

DRAFT ADMINISTRATIVE RECORD FILE INDEX - UPDATE (SORTED BY RECORD DATE / RECORD NUMBER)

SITE 4 and 5, DNAPL

UIC No. / Rec. No. Doc. Control No. Record Type Contr./Guid. No. Approx. # Pages	Prc. Date Record Date CTO No. EPA Cat. #	Author Affil. Author Recipient Affil. Recipient	Subject	Classification	Keywords	Sites	Location Box No.
N00236 / 000206 TC.0386.11119 & SWDIV SER SWDIV SER 06CA.GC/0701 MISC N62474-94-D-7609 0016	07-25-2001 **07-19-2001** 00386	TETRA TECH EM INC. NAVFAC - SOUTHWEST DIVISION	REVISED NAVY'S RESPONSE TO EPA & CRWQCB COMMENTS ON THE DRAFT DENSE NONAQUEOUS PHASE LIQUID & DISSOLVED SOURCE REMOVAL ACTION ENGINEERING EVALUATION/COST ANALYSIS - INCLUDES SWDIV TRANSMITTAL LETTER BY G. CLARK	ADMIN RECORD CONFIDENTIAL INFO REPOSITORY	COMMENTS EE/CA REMOVAL	004 005	SOUTHWEST DIVISION

UIC=N00236
No Keywords
Sites=005

This Administrative Record (AR) Index includes references to documents which cite bibliography sources.
These bibliographic citations are considered to be part of this AR but may not be cited separately in the index.

APPENDIX C

EXPOSURE TO VOLATILIZED CHEMICALS IN GROUNDWATER - IR SITE 5 RISK CALCULATIONS

Risks and hazard indices were calculated for exposure to volatilized chemicals from groundwater. The California-modified Johnson and Ettinger model was use for this purpose. In the absence of site-specific information, default physical constants from DTSC and EPA were used to assess exposures hypothetical residential receptors. The following constants were used:

Parameter	Value Used	Source
Depth below grade to bottom of enclosed space floor	15 centimeters	DTSC and EPA default value
Depth below grade to water table	213.4 centimeters (7 feet)	Site-specific value
Soil type directly above water table	Silty Loam	Site-specific
Soil Temperature	15 degrees Celsius	DTSC and EPA default value
Vadose zone soil type	Silty Loam	Site-specific
Soil dry bulk density	1.5 g/cm3	DTSC and EPA default value
Soil total porosity	0.43	DTSC and EPA default value
Soil Water-filled porosity	0.3	EPA default value

Although default values were used in this assessment, future assessments will use site-specific data that is currently being collected. Soil was assumed to be homogeneous from the surface to the groundwater; no attempt was made to evaluate soil layers, as this information is not currently available. The maximum groundwater concentrations of each chemical of concern were used in the model. Only hypothetical residential exposures were assessed, to provide the most conservative risk and hazard index measurements.

The results of the Johnson and Ettinger model are shown below for each chemical, then summed. Model output is included as an attachment to this technical memorandum.

Chemical	Incremental Cancer Risk	Hazard Index
1,1-Dichloroethane	2.8E-5	NA
1,1-Dichloroethene	4.1E-3	NA
1,2-Dichloroethane	1.4E-4	NA
1,1,1-Trichloroethane	NA	1.3
Trichloroethene	6.7E-5	0.13
TOTAL	**4.3E-3**	**1.4**

NA = Not Applicable

Total risks and hazard indices exceed target levels using the maximum detected concentrations. Remediation of the DNAPL plume is justified based on potential risks.

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
107062	73000	1,2-Dichloroethane

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	213.4	SIL	15

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	30	350

Used to calculate risk-based groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	adose zon effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
198.4	0.130	0.642	1.68E-09	0.519	8.73E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	8,468	5.96E-04	2.52E-02	1.77E-04	6.69E-04	1.11E-04	2.45E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
198.4	15	1.84E+06	0.10	8.35E-01	6.69E-04	3.84E+02	1.51E+21	8.56E-06	1.57E+01	2.2E-05	NA

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	NA	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.4E-04	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
75354	65000	1,1-Dichloroethylene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)
15	213.4	SIL	15

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)	ENTER Vadose zone soil dry bulk density, ρ_b^v (g/cm^3)	ENTER Vadose zone soil total porosity, n^v (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^v (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	30	350

Used to calculate risk-based groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	adose zon effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
198.4	0.130	0.642	1.68E-09	0.519	8.73E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	6,359	1.80E-02	7.61E-01	1.77E-04	5.47E-04	2.55E-05	6.82E-05

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
198.4	15	4.94E+07	0.10	8.35E-01	5.47E-04	3.84E+02	8.10E+25	4.08E-06	2.02E+02	5.0E-05	NA

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	NA	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
4.1E-03	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
75343	57000	1,1-Dichloroethane

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	213.4	SIL	15

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^v (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^v (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^v (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	30	350

Used to calculate risk-based groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	adose zon effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
198.4	0.130	0.642	1.68E-09	0.519	8.73E-10	68.18	0.43	0.050	0.380	3.844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	7,395	3.64E-03	1.54E-01	1.77E-04	4.56E-04	3.33E-05	8.51E-05

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
198.4	15	8.77E+06	0.10	8.35E-01	4.56E-04	3.84E+02	1.10E+31	4.77E-06	4.18E+01	1.6E-06	NA

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	NA	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.8E-05	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
79016	72500	Trichloroethylene

ENTER Depth below grade to bottom of enclosed *space floor*, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	213.4	SIL	15

ENTER *Vadose zone* SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	30	350

Used to calculate risk-based groundwater concentration.

INTERMEDIATE CA[illegible]TIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	adose zon effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
198.4	0.130	0.642	1.68E-09	0.519	8.73E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	8,495	6.26E-03	2.65E-01	1.77E-04	4.82E-04	2.72E-05	7.15E-05

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
198.4	15	1.92E+07	0.10	8.35E-01	4.82E-04	3.84E+02	2.41E+29	4.23E-06	8.11E+01	2.0E-06	6.0E-01

RESULT[illegible]EET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	NA	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
6.7E-05	1.3E-01

DATA EN[illegible]EET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
71556	790000	1,1,1-Trichloroethane

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	213.4	SIL	15

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	30	350
Used to calculate risk-based groundwater concentration.					

INTERMEDIATE CA[illegible]ATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	adose zon effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
198.4	0.130	0.642	1.68E-09	0.519	8.73E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	7,831	1.09E-02	4.60E-01	1.77E-04	4.75E-04	2.37E-05	6.30E-05

Diffusion path length, L_d (cm)	*Convection* path length, L_p (cm)	*Source* vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
198.4	15	3.63E+08	0.10	8.35E-01	4.75E-04	3.84E+02	7.07E+29	3.85E-06	1.40E+03	NA	1.0E+00

RESULT[illegible]EET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	NA	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.3E+00

APPENDIX D
ARAR CORRESPONDENCE

DEPARTMENT OF THE NAVY
SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132-5190

5090
Ser 06CA.GC/1044
December 27, 2000

Ms. Mary Rose Cassa
Project Manager
State of California Environmental Protection Agency
Department of Toxic Substances Control
700 Heinz Avenue, Suite 200
Berkeley, CA 94710

Subj: IDENTIFICATION OF STATE "APPLICABLE" OR "RELEVANT AND APPROPRIATE" REQUIREMENTS (ARARS) FOR REMOVAL ACTIONS AT ALAMEDA POINT, ALAMEDA, CALIFORNIA

Dear Ms. Cassa:

Pursuant to previous discussions and to accomplish the goals of Alameda Point, Installation Restoration (IR) program, we are hereby requesting that the Department of Toxic Substances Control (DTSC) identify potential State chemical-specific, action specific, and location specific ARARs for the cleanup of IR Sites 3, 4, 5, 9, 11, 16, 19 and 21.

In addition, the Department of the Navy (DON) is requesting that the State of California identify any other criteria, advisories, guidance, and proposed standards that the State requests be considered (TBCs) for the above identified sites. Please coordinate responses from all California state agencies.

Timely identification of potential State ARARs is required under Section 121(d)(2)(A) of CERCLA and under the National Contingency Plan (NCP), 40 CFR 300.400(g) and 300.515(d) & (h). Experience to date around the country has shown that a failure to identify ARARs with sufficient precision, early in the process, can cause severe disruptions in timely implementation of remedial action. To ensure timely and complete ARARs identification, please include the following information:

1. A specific citation to the statutory or regulatory provision(s) for the potential State ARAR and the date of enactment or promulgation.

2. A brief description of why the potential STATE ARAR is applicable or relevant and appropriate to the particular IR Site.

3. A description of how the potential State ARAR would apply to potential remedial action, including: specific numeric discharge, effluent, or emission limitations; hazardous

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Ser 06CA.GC/1044
December 27, 2000

substance/constituent action or cleanup levels; etc., if the State intends to take the position that the potential State ARAR includes such limitations, levels, etc.

4. If the State believes its proposed ARAR is more stringent than the corresponding Federal ARAR, please provide the rationale and technical justification for this position.

5. If the State determines that there is not enough information to fully respond to our request, please identify any additional information that would be required to support identification of State ARARs and their application.

Consistent with 40 CFR 300.515(h)(2), we are requesting that you send a response via first class mail addressed to me and postmarked within 30 calendar days of receipt of this request. If you have any technical questions concerning this request, please call me at (619) 532-0951. For any legal questions, please call Mr. Armando Alvarez, Environmental Counsel at (619) 532-0992.

Sincerely,

Glenna Clark

GLENNA CLARK
Base Realignment and Closure
Remedial Project Manager

Department of Toxic Substances Control

Edwin F. Lowry, Director
700 Heinz Avenue, Suite 200
Berkeley, California 94710-2721

Winston H. Hickox
Agency Secretary
California Environmental
Protection Agency

Gray Davis
Governor

February 8, 2001

Southwest Division
Naval Facilities Engineering Command
BRAC Office
Attn: Ms. Glenna M. Clark
1230 Columbia Street, Suite 1100
San Diego, CA 92101-8517

IDENTIFICATION OF STATE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) FOR REMOVAL ACTIONS AT ALAMEDA POINT, ALAMEDA, CALIFORNIA

Dear Ms. Clark:

This letter is in response to your letter of December 27, 2000 requesting the Department of Toxic Substances Control (DTSC) to identify potential State chemical-specific, action specific, and location specific ARARs for planned removal actions at Installation Restoration Sites 3, 4, 5, 9, 11, 16, 19, and 21 at Alameda Point.

DTSC provided ARARs in a letter dated November 13, 1996 and proposed that a workshop be scheduled with all responsible State and Federal agencies to establish the ARARs for the remediation activities at Alameda Point. We proposed that the Restoration Advisory Board be encouraged to participate in the workshop and that the invitation to participate in the workshop include a new solicitation for ARARs from the invited agencies. DTSC also provided ARARs for discharge of groundwater to San Francisco Bay for removal actions at Sites 1, 2, 5, and 10 at Alameda Point in a letter dated May 21, 1998.

To our knowledge, no significant changes have taken place that would alter the basic ARARs that have already been compiled. We continue to urge the Navy to initiate a participatory and consensual process to identify ARARs that is based on our mutual goals and our mutual responsibility for protection of human health and the environment at Alameda Point.

Our legal staff will review the existing ARARs and recommend changes which we will submit to the Navy by March 15, 2001. Further, I will also continue to review potential

ARARs for the proposed removal actions. If I identify an ARAR that appears to have been revised or is new, I will inform the Navy as soon as it comes to my attention.

Please contact me at (510) 540-3767 if you have any questions regarding this letter.

Sincerely,

Mary Rose Cassa

Mary Rose Cassa, R.G.
Engineering Geologist
Office of Military Facilities

cc: Mr. Phillip Ramsey (SFD-8-2)
U. S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, CA 94105

Mr. Brad Job
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

Southwest Division
Naval Facilities Engineering Command
BRAC Office
Attn: Mr. Michael McClelland (Code 06CA.MM)
1230 Columbia Street, Suite 1100
San Diego, CA 92101-8517

Ms. Dina Tasini
Alameda Reuse and Redevelopment Authority
950 West Mall Square
Alameda, CA 94501

Mr. Michael John Torrey
RAB Community Co-Chair
174 Maple Way
Alameda, CA 94501

APPENDIX E

RESPONSE TO COMMENTS

RESPONSE TO COMMENTS
INSTALLATION RESTORATION SITES 4 & 5 DNAPL REMOVAL ACTION
ACTION MEMORANDUM
ALAMEDA POINT, ALAMEDA, CALIFORNIA

REF	COMMENT	RESPONSE
Anna Marie Cook, Remedial Project Manager, United States Environmental Protection Agency (EPA) Region IX, September 28, 2001		**Tetra Tech EM, Inc.**
GENERAL COMMENTS		
1	Response to comments ref. 3, 8, 10, 11 indicate that disposal of contaminated groundwater would be "off site." The Action Memorandum states that it is expected that any contaminated groundwater would be treated and discharged to a POTW (page 28, 31). EPA recommends that the response to comments be clarified to indicate that "off-site" means discharge to a POTW, not to a landfill.	Comment noted. The Navy acknowledges that groundwater generated during the removal action will be disposed of off site through a publicly owned treatment system (POTW).
2	Response to comments ref. 14. EPA understands that in removals ARARs must be complied with "to the extent practicable considering the exigencies of the situation." However, if ARARs will not be complied with, the Navy should explain how the exigencies of the situation make compliance not practicable.	The Navy intends to comply with all an applicable or relevant and appropriate requirements (ARARs) for the selected removal action.

REF	COMMENT	RESPONSE
3	Response to comments ref. 18b. EPA agrees that Regional Board Resolution 88-160 is not an ARAR, but not for the reasons given by the Navy. EPA does not consider this resolution to be an ARAR because it appears to be advisory rather than enforceable. However, EPA has no objection to considering this resolution to be a TBC, and strongly urges the Navy to comply with it. EPA also notes that despite the Navy's comments in response to ref. 18, the Navy states on page 30 of the Action Memorandum that this resolution is an ARAR, and it includes this resolution in the ARARs table.	In the response to comments letter, the California Regional Water Quality Control Board (RWQCB) identified Regional Board Resolution 88-160 as an action specific ARAR. The Navy responded by stating it would include the resolution in the Action Memo as an ARAR.
4	Page 25. The first bullet indicates that to be a state ARAR, a state requirement must be a state law. This is not correct. A state regulation or other requirement can also be ARAR if it is a "promulgated standard, requirement, criteria, or limitation <u>under</u> a state environmental or facility siting law."	The Navy agrees with the comment that a state regulation or other requirement can be an ARAR if it is a promulgated standard, requirement, criterion, or limitation under a state environmental or facility siting law.
5	p. 28, 31: The Action Memorandum indicates that contaminated water will be disposed of at a POTW. Because EPA considers this to be off-site disposal, requirements for discharge to a POTW are not considered to be ARARs. However, federal and state pretreatment requirements -- both substantive and procedural -- need to be complied with. The Action Memorandum should discuss what pretreatment requirements apply and how they will be complied with.	Pre-treatment requirements are based upon negotiations with the East Bay Municipal Utility District (EBMUD), and the results of pilot testing. The navy intends to comply with EBMUD requirements.

REF	COMMENT	RESPONSE
6	Page 28. EPA agrees that generally MCLs and MCLGs are generally considered to be relevant and appropriate, rather than applicable. However, the statement that MCLs and MCLGs are not applicable ARARs at Navy sites is an overstatement. EPA recommends the sentence in par. 3 be amended to state that MCLs and MCLGs are "generally" not applicable ARARs.	Comment noted: The Navy acknowledges that maximum contaminant levels (MCLs) and maximum contaminant level goals (MCLGs) are generally not applicable ARARs at Removal Action sites where the final remedial alternatives are being evaluated.
7	Page 29, Action-Specific ARARs. The document states that because action-specific ARARs depend on the action selected, they are identified after an alternative has been selected. This language is confusing, as the Navy has acknowledged in responding to comments on other removal documents. As written, it sounds as if action-specific ARARs are only analyzed after the preferred alternative has been decided. If that is the intended meaning, it is a procedure EPA does not agree with. Rather, action-specific ARARs should be identified for all alternatives, because one of the factors in weighing the alternatives is analyzing whether ARARs can be met. If, on the other hand, "selected" means that ARARs are identified after an alternative has been put forward as an alternative (as opposed to chosen as the selected remedy), then that needs to be clarified.	Comment noted: Comment noted. The Navy did examined action specific ARARs during in its analysis of the different removal actions considered in the EE/CA. The action specific ARARs for each removal action alternative identified for evaluation were evaluated, but only the selected alternative for the removal action was discussed for brevity's sake

REF	COMMENT	RESPONSE
8	p. 29 discussion of action-specific ARARs. The Navy should also consider whether the following requirements are ARARs concerning the SVE system and treatment of extracted vapors: 22 CFR 66264.1032 and following regarding air emission standards for process vents, 22 CCR 66264.1054 and following regarding pressure relief devices for gas/vapor systems, and 22 CCR 66264.341 and following regarding incinerators.	The Navy considered these regulations and has determined that Bay Area Air Quality Management District (BAAQMD) Rules 8-47-301 and 8-47-302 are more specific and pertinent to the SVE system and the related action specific ARARs. The action specific ARARs section of the Action Memo discusses these rules.
9	Table 5-1. EPA disagrees with practice of giving scores for the criterion of protectiveness; this is a threshold criterion that must be complied with. In remedial action RODs, EPA also disagrees with giving scores for the criterion of compliance with ARARs, for the same reason. EPA recognizes that this is a removal and not considered a final action. However, the Navy should still make clear whether ARARs will be complied with, and if not, the Navy should present adequate justification why compliance with particular ARARs is not practicable due to the exigencies of the situation. It is not clear from this chart whether ARARs will be complied with. This is especially important with regard to Alternative 4, the selected alternative. By giving the ARARs criterion for Alternative 4 a score of 6, the Navy implies that some ARARs will not be complied with. This should be explained.	Navy acknowledges that assigning scores for compliance with ARARs and protectiveness is not appropriate. The scores shown for "compliance with ARARs" reflected the relative difficulty of complying with action specific ARARs, and not whether the ARARs would be complied with. The Navy intends to comply with all identified ARARs for the selected removal action. Removing the scores for "compliance with ARARs" should reduce possible confusion over this issue.
10	Table 5-4 action-specific ARARs. See comment above regarding possible ARARs for the SVE system.	Comment noted. See response to comment 8.

EPA Program Comments on Draft Action Memorandum for Site 4 & 5 DNAPL Removal		
11	Page 9, second paragraph: Possibly this paragraph was mistakenly copied from the Action Memo prepared for Site 14. Schematics of the storm sewer system from the "Storm Sewer Study Technical Memorandum Addendum" of August 30, 2001 do not support the description of the location of storm drains given in the paragraph for Site 5.	A review of Figures 1 and 3 of the storm sewer system from the "Storm Sewer Study Technical Memorandum Addendum" of August 30, 2001, shows that the two storm sewer lines (F and G) transverse Building 5 from east to west. These sewer lines may influence local groundwater elevations and flow. The Action Memo will be edited to reflect the accurate location of storm sewers.
	In addition, previously distributed documents such as the first draft RI for Site 5 contradict the information on hydraulic gradient and describe the groundwater flow as "radial" with not much movement either toward or away from the harbor. Please verify and, where necessary, correct the information in this paragraph.	Comment noted. Variable groundwater flow paths have been observed in the area. Groundwater flow direction has historically been influenced by a significant water line leak beneath Building 5. Recent groundwater flow data suggest that flow is away from the harbor. Groundwater is expected to flow toward the north during the rainy season.

12	Table 4-1: Is this table necessary to include in the Action Memo, or could a text description of the concentrations in groundwater versus the PRG suffice. The table is labeled "risks associated with ingestion of groundwater", but actually shows the <u>difference</u> between the concentrations found in the groundwater and those concentrations that would equate to a 10^{-4} risk. We agreed during review of the EE/CA that presenting future risk from ingestion of untreated groundwater at Site 4 was not necessary because the risk was so high, and that a simple comparison of concentration versus PRGs would satisfactorily support the obvious need for mitigation. In addition, the table showing risks associated with inhalation of indoor air at Site 5 is somewhat misleading in that each COC is broken out and the cumulative risk is not given. Also, the chemicals listed are only those that showed up with concentrations in excess of 10,000 ppb, and the inhalation risks associated with lesser concentrations of chemicals such as vinyl chloride have not been included. While is it important to support showing that a removal action is necessary, this table appears to underplay the risk from inhalation by not summing the risk and not acknowledging that other chemicals not covered in this removal action will also factor into the inhalation risk.	Comment noted. The Navy acknowledges that Table 4-1 is not necessary. The risks associated with groundwater ingestion of untreated groundwater at IR Site 4 are four to six orders of magnitude greater than the EPA's preliminary remediation goals (PRGs) for tap water. Concentration of 1,1-dichloroethene (1,1-DCE) and trichloroethene (TCE) in groundwater are 84,000 micrograms per liter (µg/l) and 11,000 µg/l respectively. The PRGs for 1,1-DCE and TCE at Site are 0.046 µg/l and 1.6 µg/l respectively. The Navy acknowledges that information regarding the risks of associated with inhalation of indoor air at Site 5 is incomplete. The sum of the calculated risk based upon the maximum concentrations detected is 4.3^{-3} with a hazard index of 1.4. The Navy risks present are sufficient to support a removal action. The final risks at the site will be discussed in the draft revised RI.