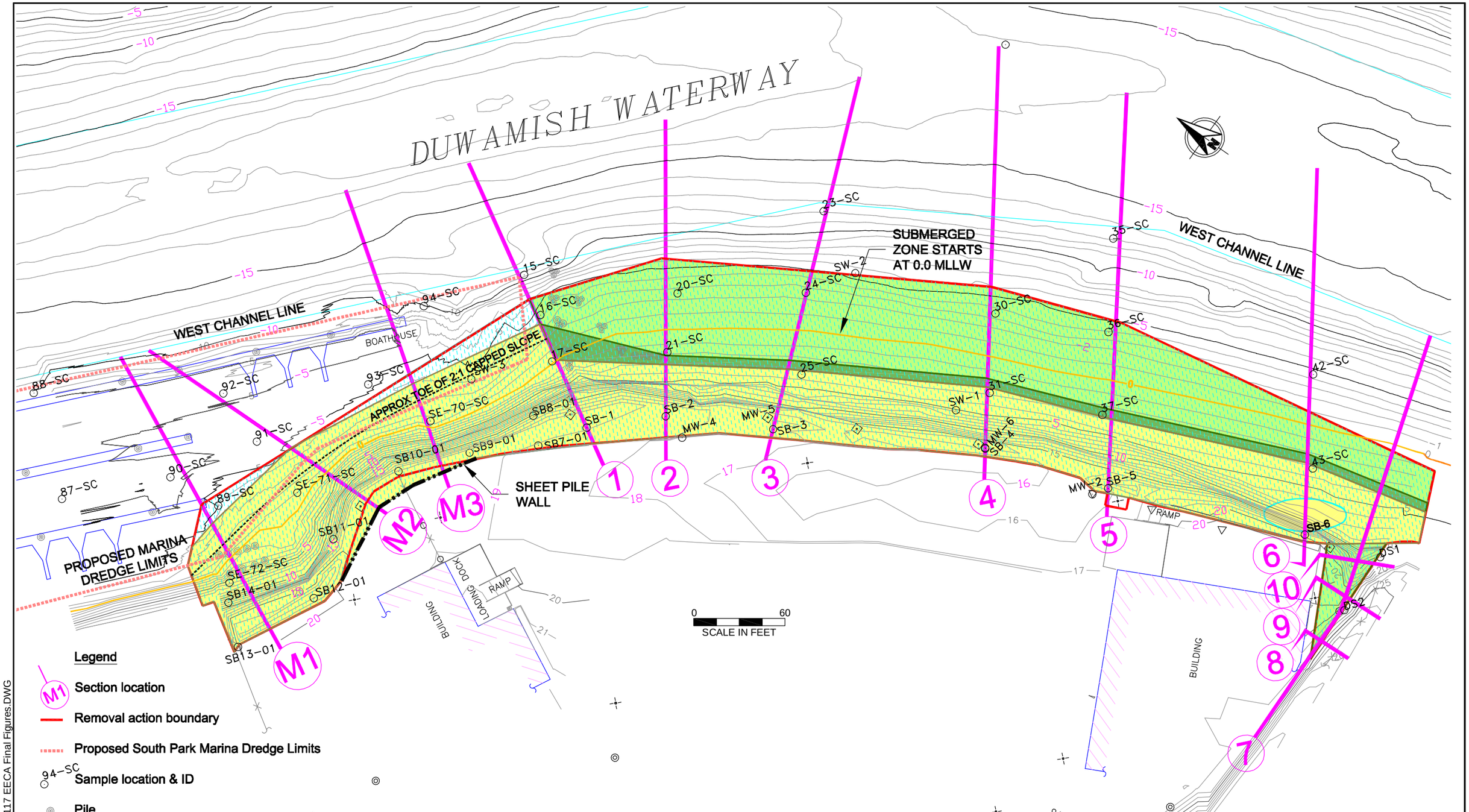


Notes:
1. Topographic Survey and Marina Hydro Survey by INCA Engineers, Inc. of Bellevue, WA November 10, 2004. Vertical Datum is based on MLLW (feet) and Horizontal Datum is based on NAD 83/91(feet). Horizontal coordinate system is WA State Plane North (feet).
2. Multi-beam Channel Hydro Survey is a subset of the David Evans and Associates Aug. 25-29 2003 survey for Lower Duwamish Waterway Group. Vertical Datum is based on MLLW (feet) and Horizontal Datum is based on NAD 93/91(feet).

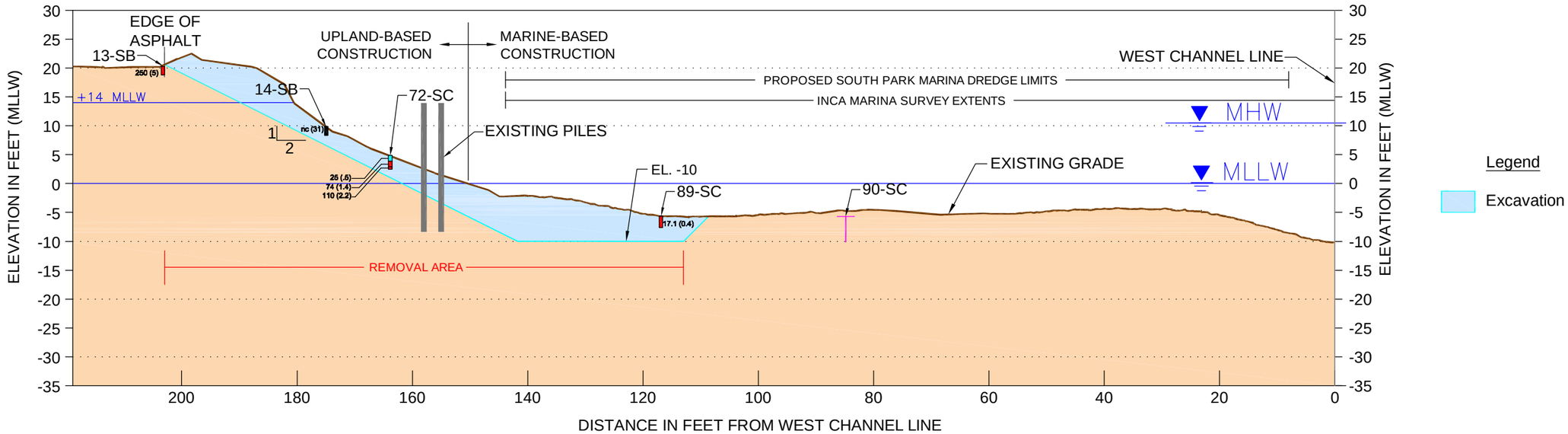
PORT OF SEATTLE T-117

ALTERNATIVE RA1 SITE PLAN

WIN001 **FIGURE 5-1** 7/8/05

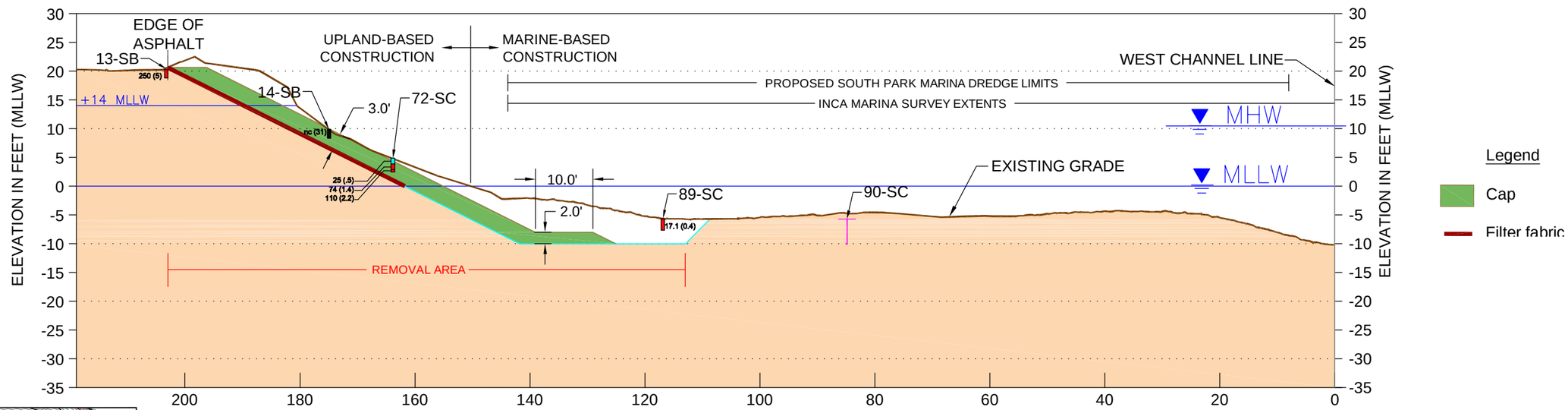
Dalton, Olmsted & Fuglevand, Inc.

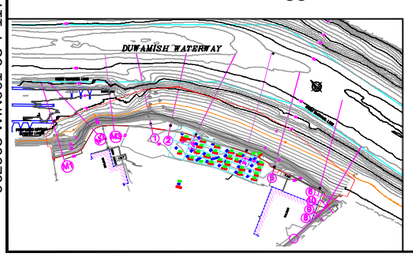
062905 WIN001-03 T-117 EECA Final Figures.DWG



RA1 SECTION M1
EXCAVATION PLAN

0 20
SCALE IN FEET





Sample Legend

SB1: Soil boring location
SE 15: Sediment core location
Soil/sediment sample, detected PCBs <=12mg/kg-OC, or not detected
Soil/sediment sample, detected PCBs >12 and <65 mg/kg-OC
Soil/sediment sample, detected PCBs >65 mg/kg-OC
26 PCB concentration, mg/kg-OC (organic Carbon normalized)
(0.14) PCB concentration, mg/kg dry weight

RA1 SECTION M1
CAPPING PLAN

0 20
SCALE IN FEET

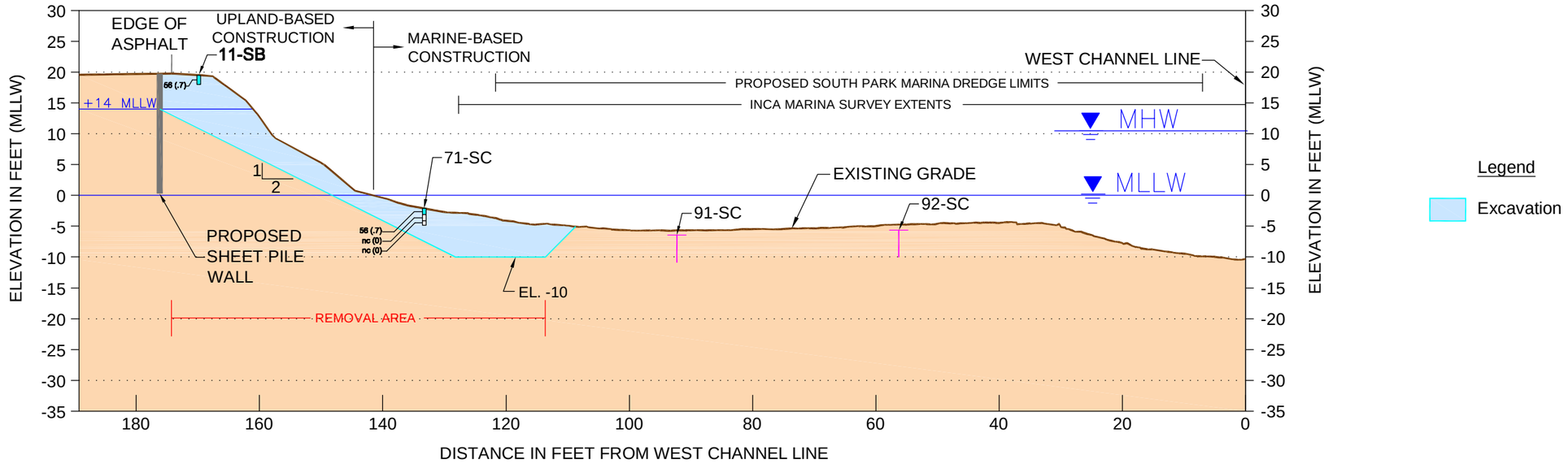
PORT OF SEATTLE T-117

ALTERNATIVE RA1 SECTION M1

WIN001 **FIGURE 5-2** 06/30/05

Dalton, Olmsted & Fuglevand, Inc.

062905 WIN001-03 T-117 EECA Final Figures.DWG

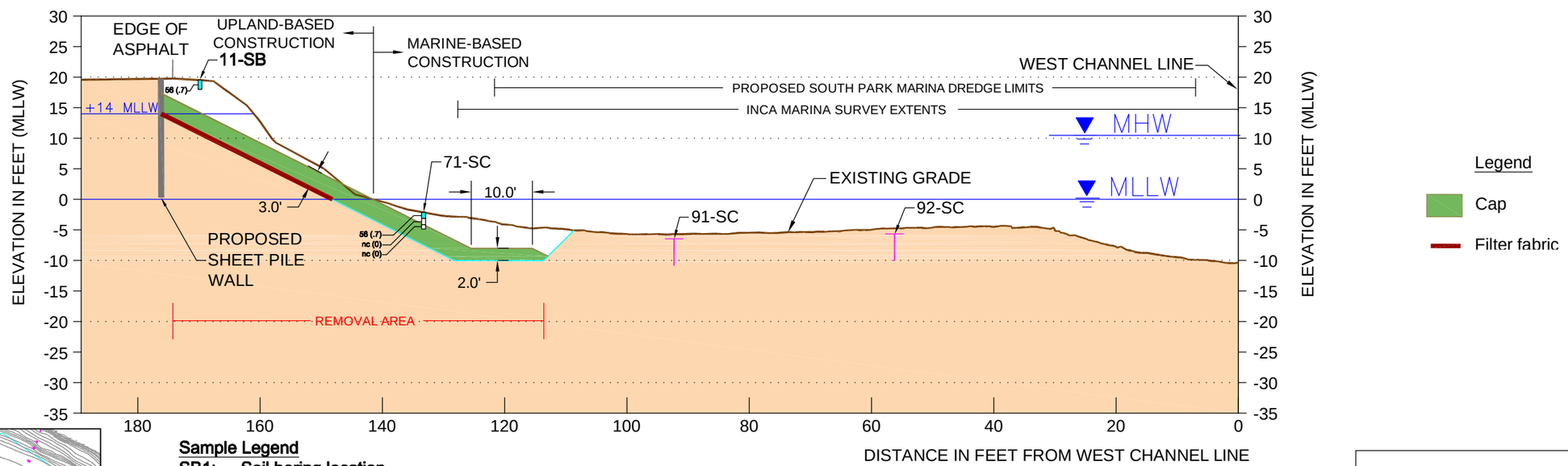


Legend

Excavation

RA1 SECTION M2
EXCAVATION PLAN

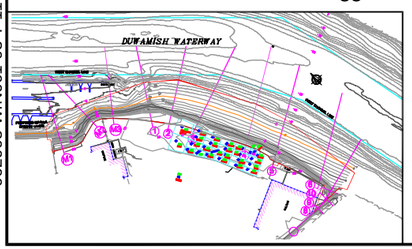
0 20
SCALE IN FEET



Legend

Cap

Filter fabric



Sample Legend

SB1: Soil boring location
SE 15: Sediment core location
Soil/sediment sample, detected PCBs <=12mg/kg-OC, or not detected
Soil/sediment sample, detected PCBs >12 and <65 mg/kg-OC
Soil/sediment sample, detected PCBs >65 mg/kg-OC
26 PCB concentration, mg/kg-OC (organic Carbon normalized)
(0.14) PCB concentration, mg/kg dry weight

RA1 SECTION M2
CAPPING PLAN

0 20
SCALE IN FEET

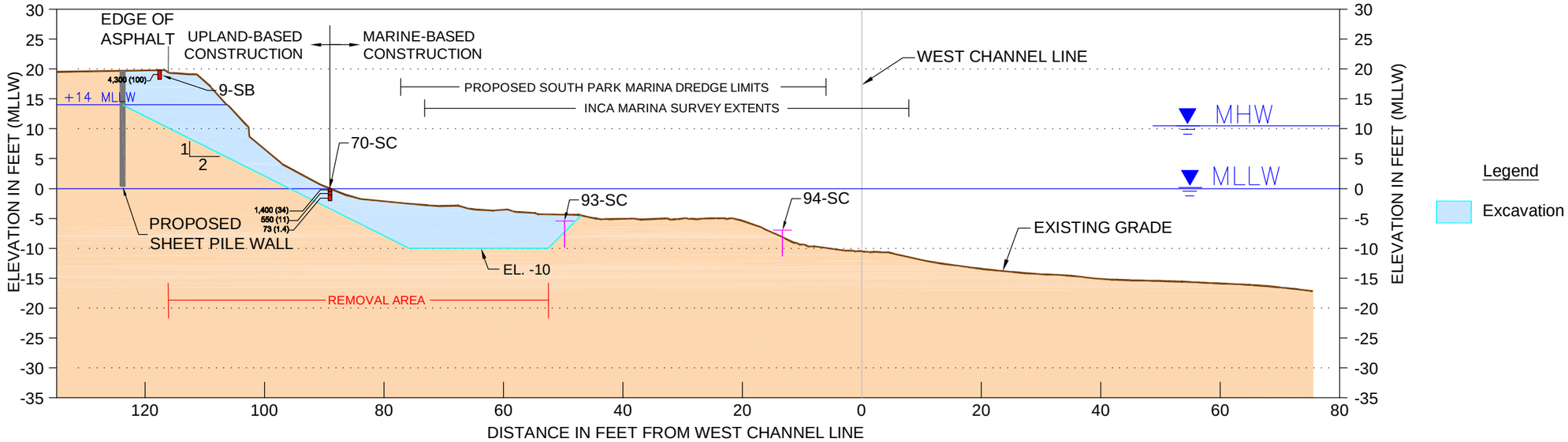
PORT OF SEATTLE T-117

ALTERNATIVE RA1 SECTION M2

WIN001 **FIGURE 5-3** 06/30/05

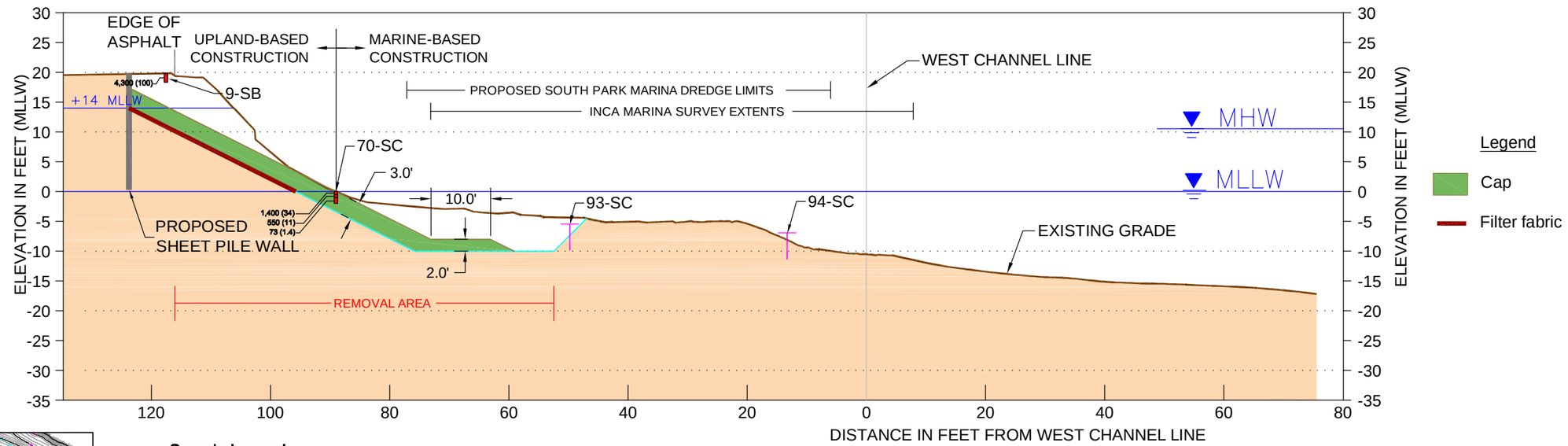
Dalton, Olmsted & Fuglevand, Inc.

062905 WIN001-03 T-117 EECA Final Figures.DWG



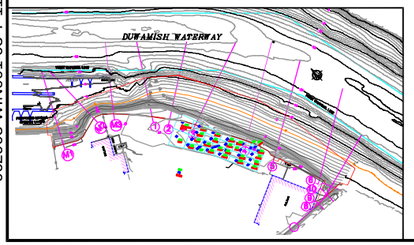
RA1 SECTION M3
EXCAVATION PLAN

0 20
SCALE IN FEET



RA1 SECTION M3
CAPPING PLAN

0 20
SCALE IN FEET



Sample Legend

SB1:	Soil boring location
SE 15:	Sediment core location
	Soil/sediment sample, detected PCBs <=12mg/kg-OC, or not detected
	Soil/sediment sample, detected PCBs >12 and <65 mg/kg-OC
	Soil/sediment sample, detected PCBs >65 mg/kg-OC
26	PCB concentration, mg/kg-OC (organic Carbon normalized)
(0.14)	PCB concentration, mg/kg dry weight

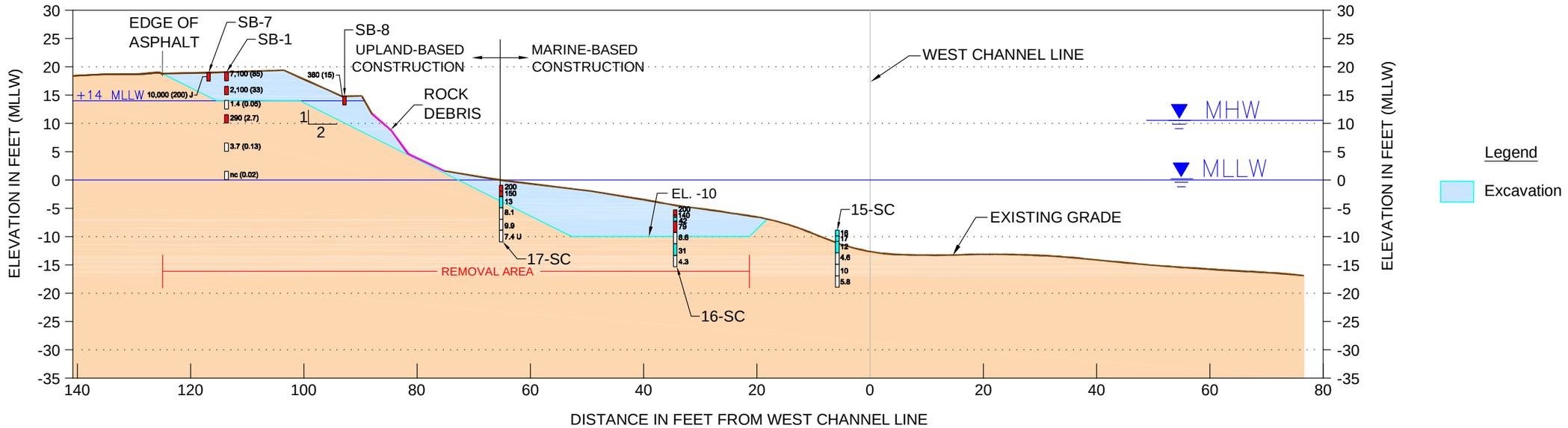
PORT OF SEATTLE T-117

ALTERNATIVE RA1 SECTION M3

WIN001 **FIGURE 5-4** 06/30/05

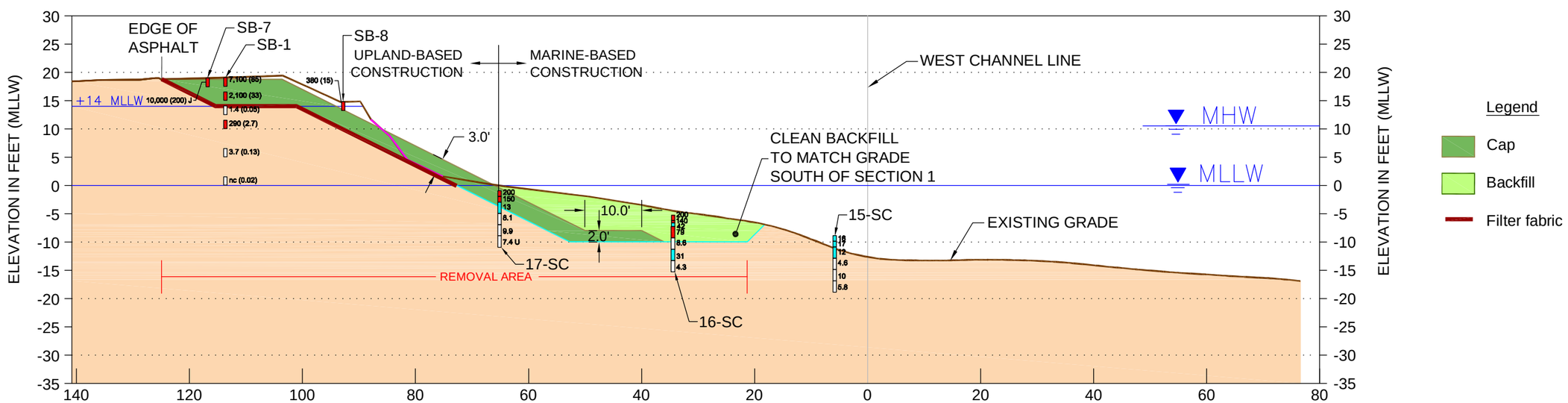
Dalton, Olmsted & Fuglevand, Inc.

062905 WIN001-03 T-117 EECA Final Figures.DWG



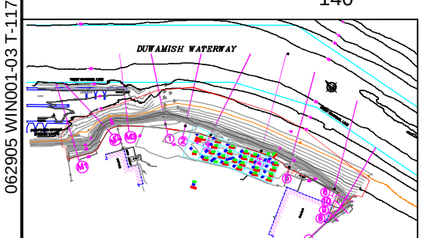
RA1 SECTION 1
EXCAVATION PLAN

0 20
SCALE IN FEET



RA1 SECTION 1
CAPPING PLAN

0 20
SCALE IN FEET



Sample Legend

SB1: Soil boring location
SE 15: Sediment core location
Soil/sediment sample, detected PCBs <=12mg/kg-OC, or not detected
Soil/sediment sample, detected PCBs >12 and <65 mg/kg-OC
Soil/sediment sample, detected PCBs >65 mg/kg-OC
26 PCB concentration, mg/kg-OC (organic Carbon normalized)
(0.14) PCB concentration, mg/kg dry weight

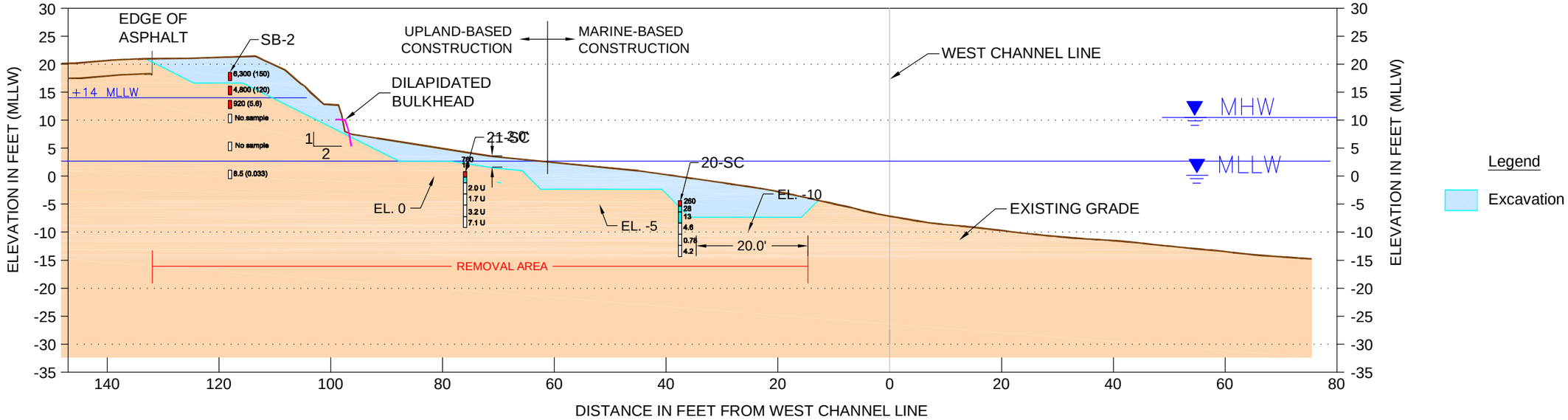
PORT OF SEATTLE T-117

ALTERNATIVE RA1 SECTION 1

WIN001 **FIGURE 5-5** 06/30/05

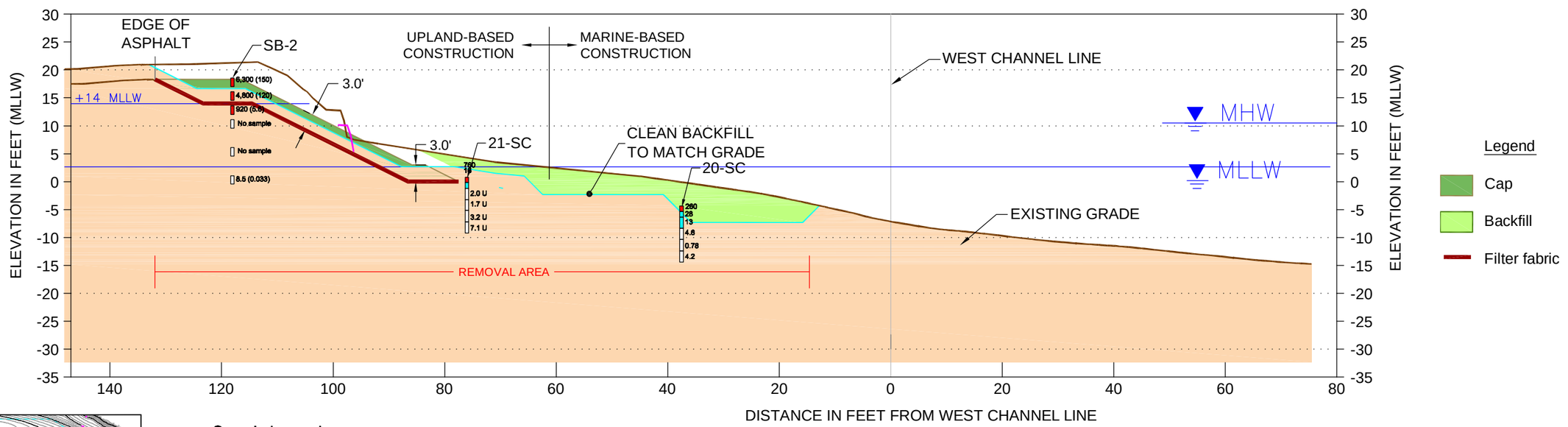
Dalton, Olmsted & Fuglevand, Inc.

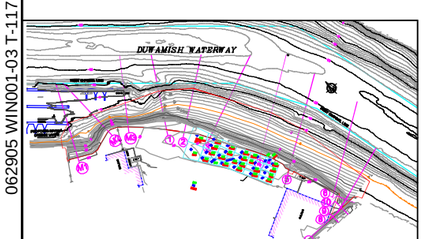
062905 WIN001-03 T-117 EECA Final Figures.DWG



RA1 SECTION 2
EXCAVATION PLAN

0 20
SCALE IN FEET





Sample Legend

SB1: Soil boring location
SE 15: Sediment core location
Soil/sediment sample, detected PCBs <=12mg/kg-OC, or not detected
Soil/sediment sample, detected PCBs >12 and <65 mg/kg-OC
Soil/sediment sample, detected PCBs >65 mg/kg-OC
26 PCB concentration, mg/kg-OC (organic Carbon normalized)
(0.14) PCB concentration, mg/kg dry weight

RA1 SECTION 2
CAPPING PLAN

0 20
SCALE IN FEET

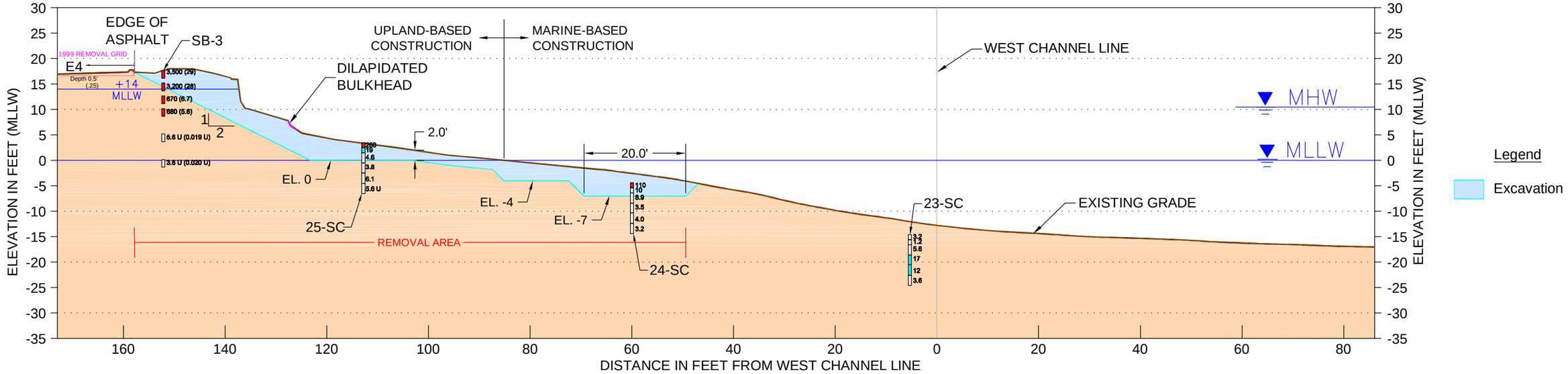
PORT OF SEATTLE T-117

ALTERNATIVE RA1 SECTION 2

WIN001 **FIGURE 5-6** 06/30/05

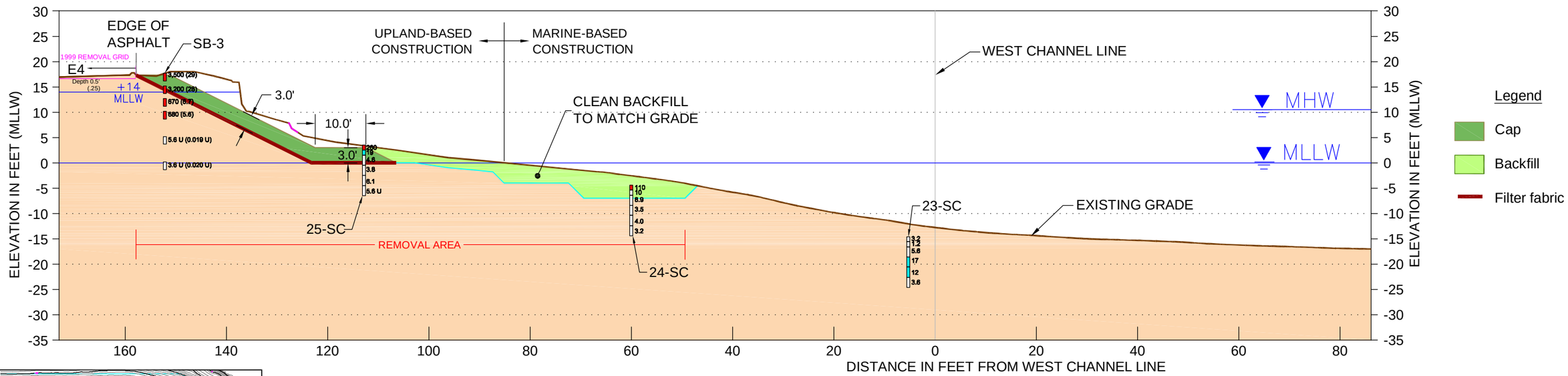
Dalton, Olmsted & Fuglevand, Inc.

062905 WIN001-03 T-117 EECA Final Figures.DWG



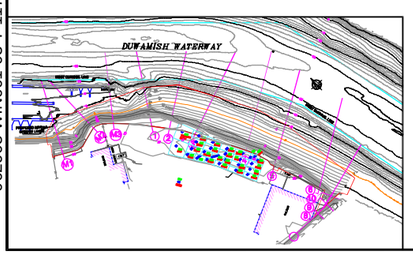
RA1 SECTION 3
EXCAVATION PLAN

0 20
SCALE IN FEET



RA1 SECTION 3
CAPPING PLAN

0 20
SCALE IN FEET



Sample Legend

SB1: Soil boring location
SE 15: Sediment core location
Soil/sediment sample, detected PCBs <=12mg/kg-OC, or not detected
Soil/sediment sample, detected PCBs >12 and <65 mg/kg-OC
Soil/sediment sample, detected PCBs >65 mg/kg-OC
26 PCB concentration, mg/kg-OC (organic Carbon normalized)
(0.14) PCB concentration, mg/kg dry weight

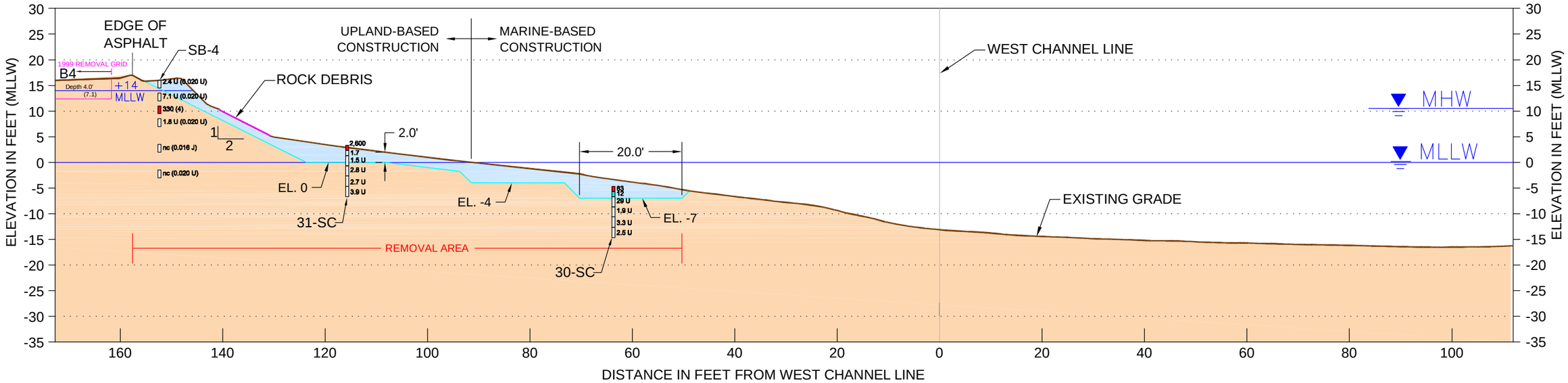
PORT OF SEATTLE T-117

ALTERNATIVE RA1 SECTION 3

WIN001 **FIGURE 5-7** 06/30/05

Dalton, Olmsted & Fuglevand, Inc.

062905 WIN001-03 T-117 EECA Final Figures.DWG

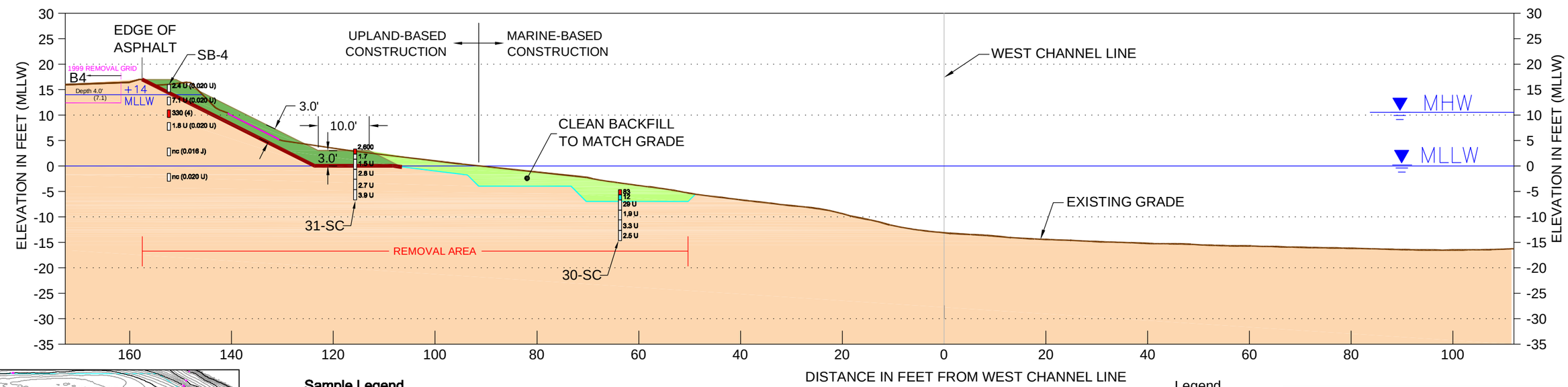


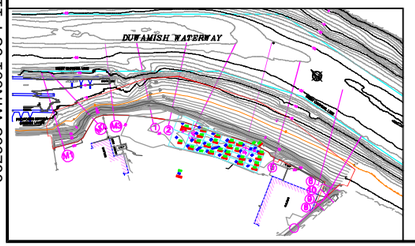
RA1 SECTION 4
EXCAVATION PLAN

0 20
SCALE IN FEET

Legend

Excavation





Sample Legend

SB1: Soil boring location
SE 15: Sediment core location
Soil/sediment sample, detected PCBs <=12mg/kg-OC, or not detected
Soil/sediment sample, detected PCBs >12 and <65 mg/kg-OC
Soil/sediment sample, detected PCBs >65 mg/kg-OC
26 PCB concentration, mg/kg-OC (organic Carbon normalized)
(0.14) PCB concentration, mg/kg dry weight

RA1 SECTION 4
CAPPING PLAN

0 20
SCALE IN FEET

Legend

Cap
Backfill
Filter fabric

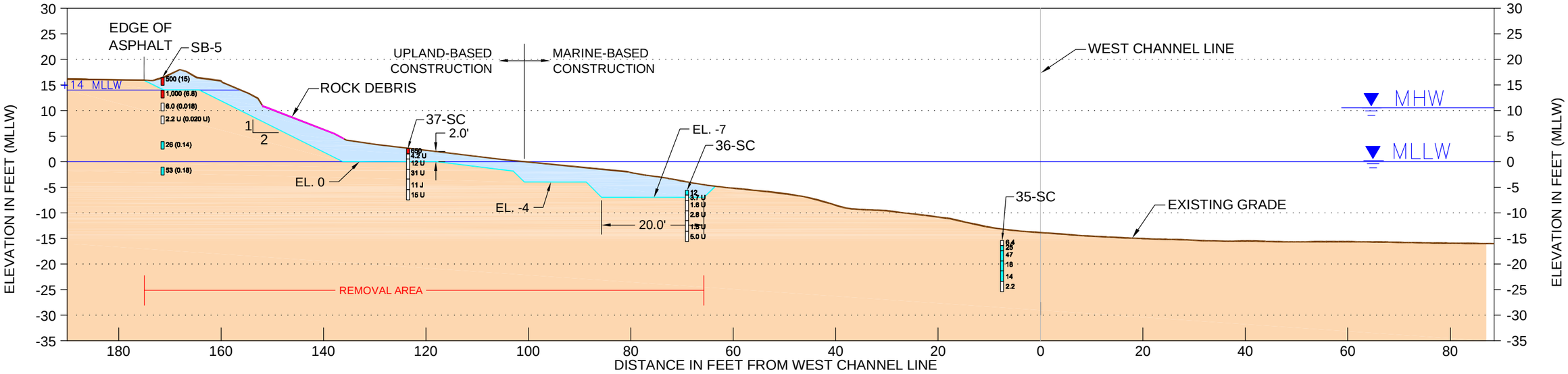
PORT OF SEATTLE T-117

ALTERNATIVE RA1 SECTION 4

WIN001 **FIGURE 5-8** 06/30/05

Dalton, Olmsted & Fuglevand, Inc.

062905 WIN001-03 T-117 EECA Final Figures.DWG

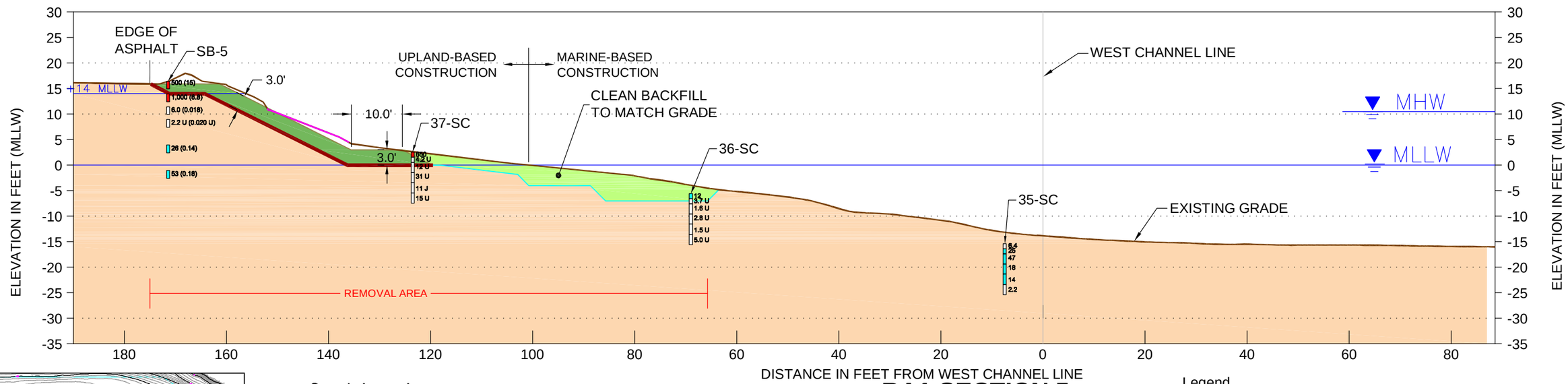


RA1 SECTION 5
EXCAVATION PLAN

0 20
SCALE IN FEET

Legend

Excavation



RA1 SECTION 5
CAPPING PLAN

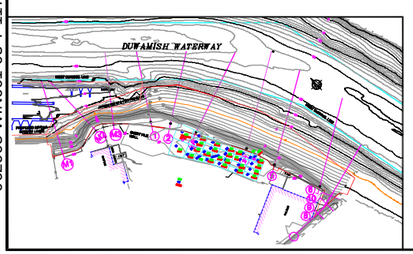
0 20
SCALE IN FEET

Legend

Cap

Backfill

Filter fabric



Sample Legend

SB1: Soil boring location

SE 15: Sediment core location

Soil/sediment sample, detected PCBs <=12mg/kg-OC, or not detected

Soil/sediment sample, detected PCBs >12 and <65 mg/kg-OC

Soil/sediment sample, detected PCBs >65 mg/kg-OC

26 PCB concentration, mg/kg-OC (organic Carbon normalized)

(0.14) PCB concentration, mg/kg dry weight

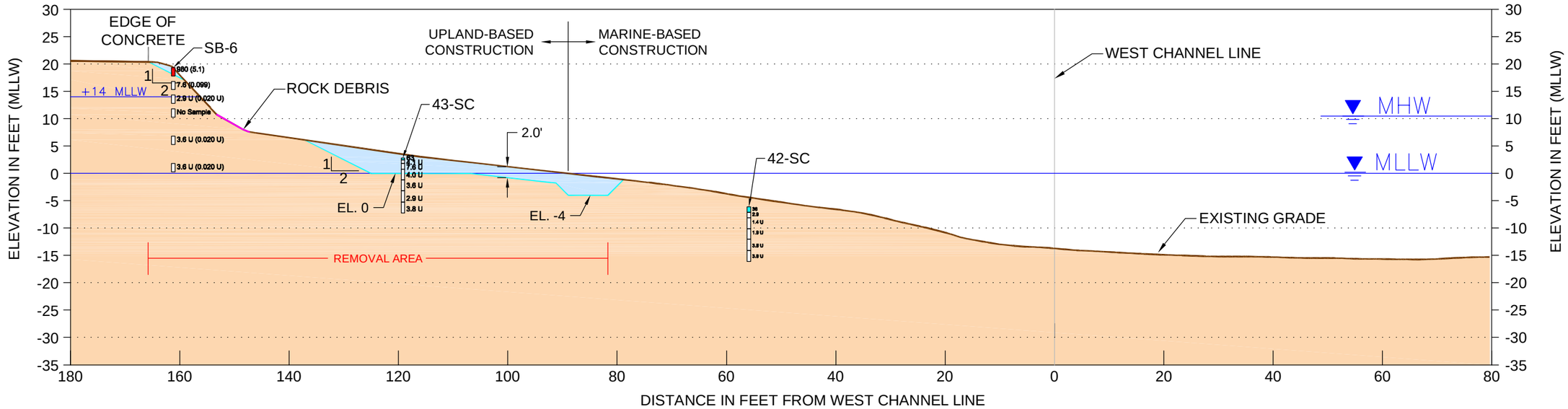
PORT OF SEATTLE T-117

ALTERNATIVE RA1 SECTION 5

WIN001 **FIGURE 5-9** 06/30/05

Dalton, Olmsted & Fuglevand, Inc.

062905 WIN001-03 T-117 EECA Final Figures.DWG

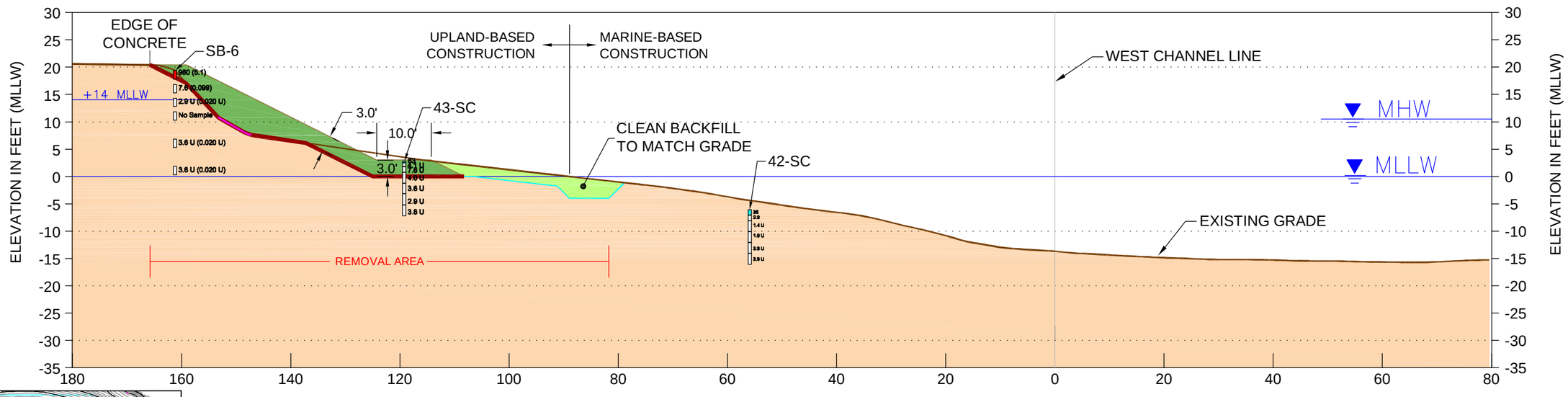


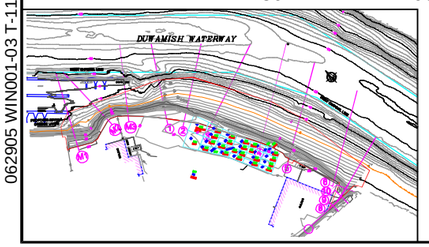
RA1 SECTION 6
EXCAVATION PLAN

Legend

Excavation

0 20
SCALE IN FEET





Sample Legend

SB1: Soil boring location
SE 15: Sediment core location
Soil/sediment sample, detected PCBs <=12mg/kg-OC, or not detected
Soil/sediment sample, detected PCBs >12 and <65 mg/kg-OC
Soil/sediment sample, detected PCBs >65 mg/kg-OC
26 PCB concentration, mg/kg-OC (organic Carbon normalized)
(0.14) PCB concentration, mg/kg dry weight

RA1 SECTION 6
CAPPING PLAN

0 20
SCALE IN FEET

Legend

Cap

Backfill

Filter fabric

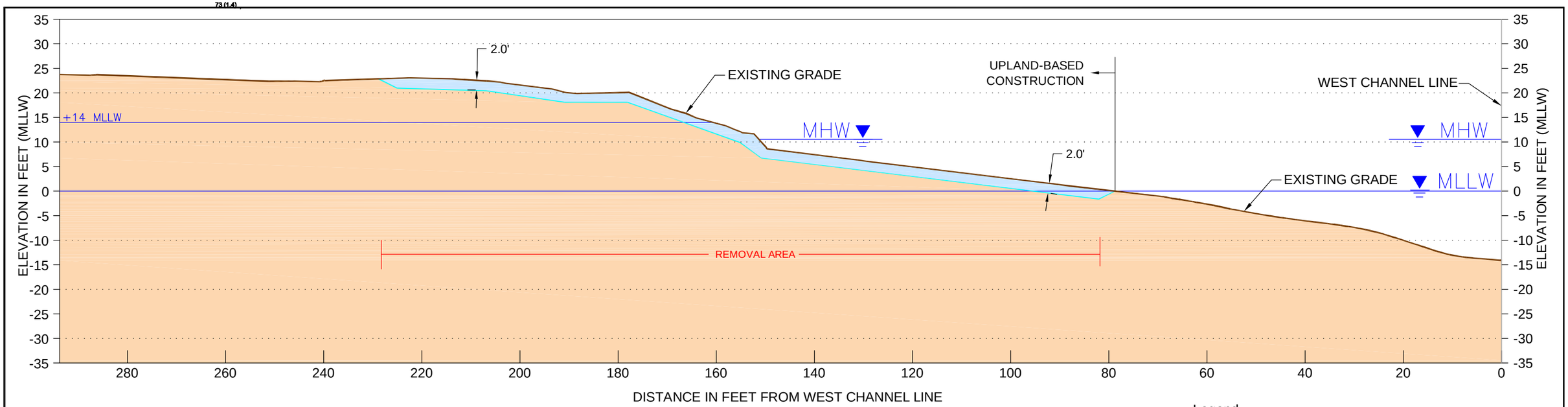
PORT OF SEATTLE T-117

ALTERNATIVE RA1 SECTION 6

WIN001 **FIGURE 5-10** 06/30/05

Dalton, Olmsted & Fuglevand, Inc.

062905 WIN001-03 T-117 EECA Final Figures.DWG

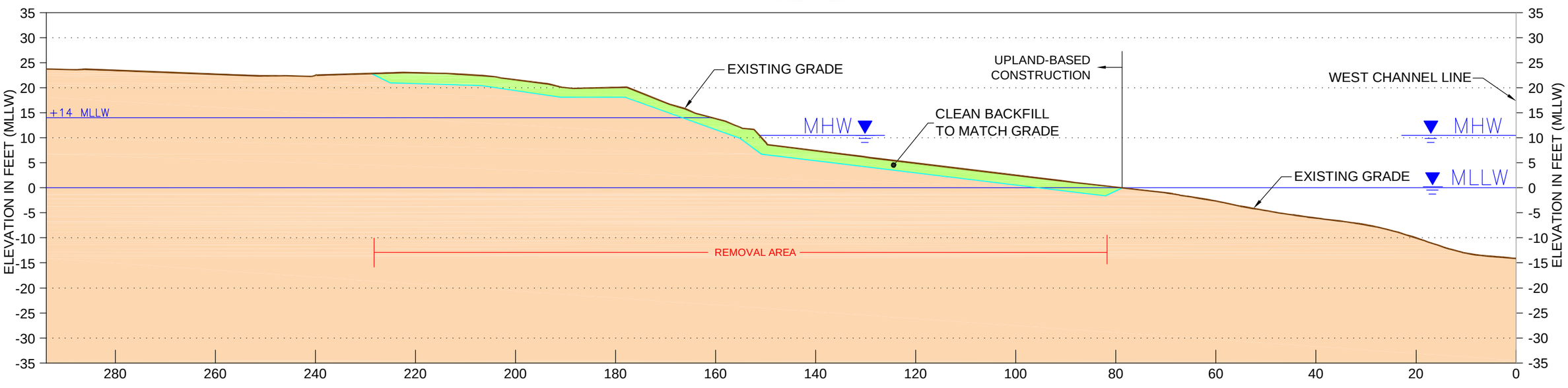


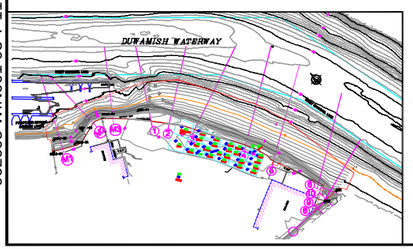
RA1 SECTION 7
EXCAVATION PLAN

0 20
SCALE IN FEET

Legend

Excavation





Sample Legend

SB1:	Soil boring location
SE 15:	Sediment core location
	Soil/sediment sample, detected PCBs <=12mg/kg-OC, or not detected
	Soil/sediment sample, detected PCBs >12 and <65 mg/kg-OC
	Soil/sediment sample, detected PCBs >65 mg/kg-OC
26	PCB concentration, mg/kg-OC (organic Carbon normalized)
(0.14)	PCB concentration, mg/kg dry weight

RA1 SECTION 7
CAPPING PLAN

0 20
SCALE IN FEET

Legend

Backfill

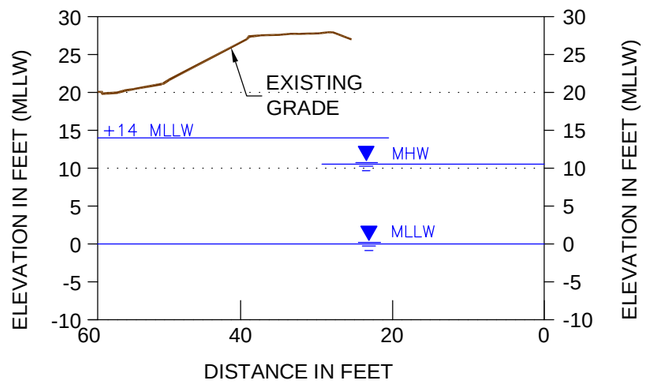
PORT OF SEATTLE T-117

ALTERNATIVE RA1 SECTION 7

WIN001 **FIGURE 5-11** 06/30/05

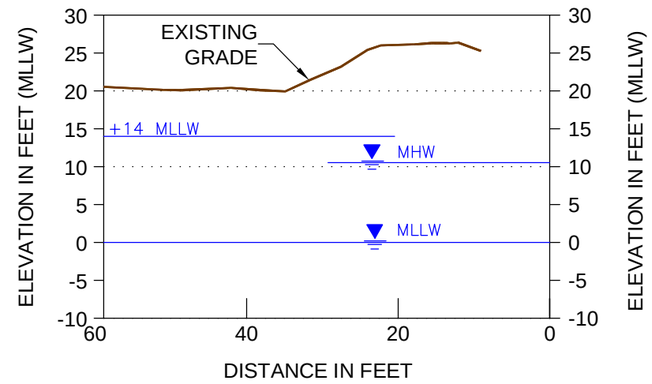
Dalton, Olmsted & Fuglevand, Inc.

062905 WIN001-03 T-117 EECA Final Figures.DWG



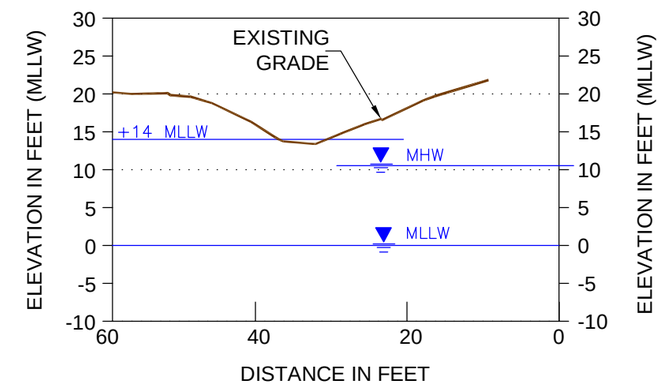
RA1 SECTION 8 EXCAVATION PLAN

0 20
SCALE IN FEET



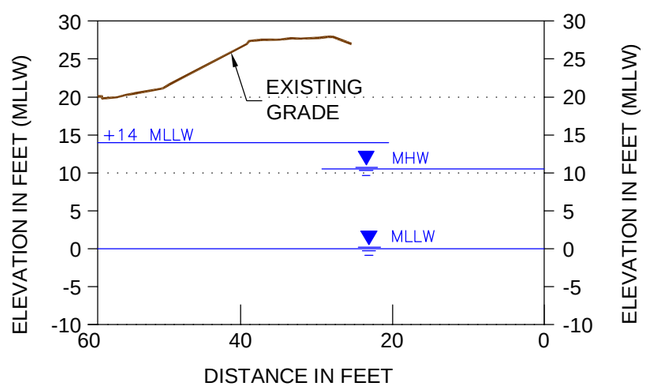
RA1 SECTION 9 EXCAVATION PLAN

0 20
SCALE IN FEET



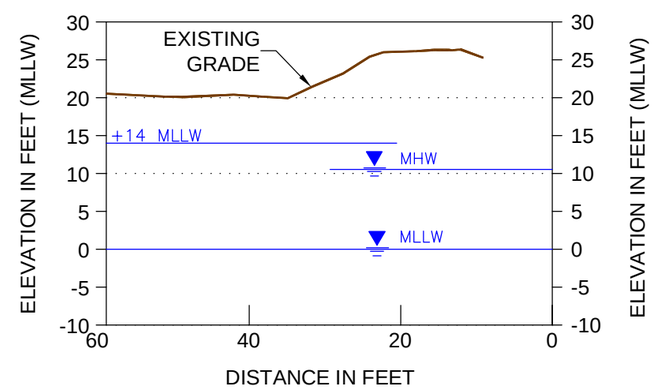
RA1 SECTION 10 EXCAVATION PLAN

0 20
SCALE IN FEET



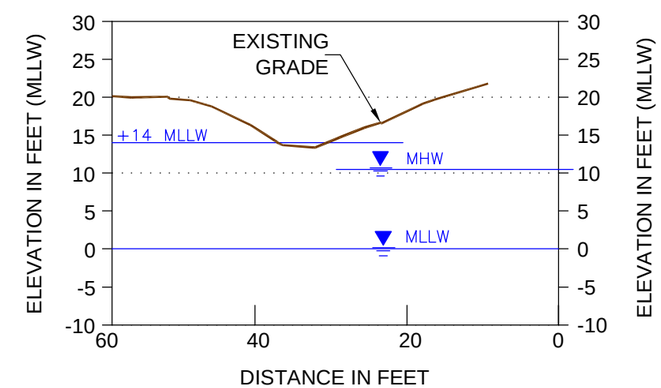
RA1 SECTION 8 CAPPING PLAN

0 20
SCALE IN FEET



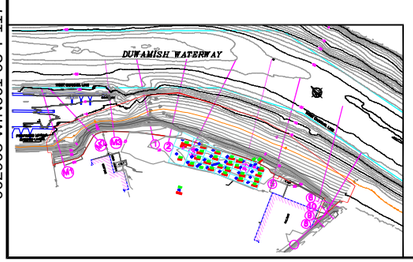
RA1 SECTION 9 CAPPING PLAN

0 20
SCALE IN FEET



RA1 SECTION 10 CAPPING PLAN

0 20
SCALE IN FEET



NOTE: June 2005 sampling event data will be used to complete the above cross sections and will be available in a separate technical memorandum.

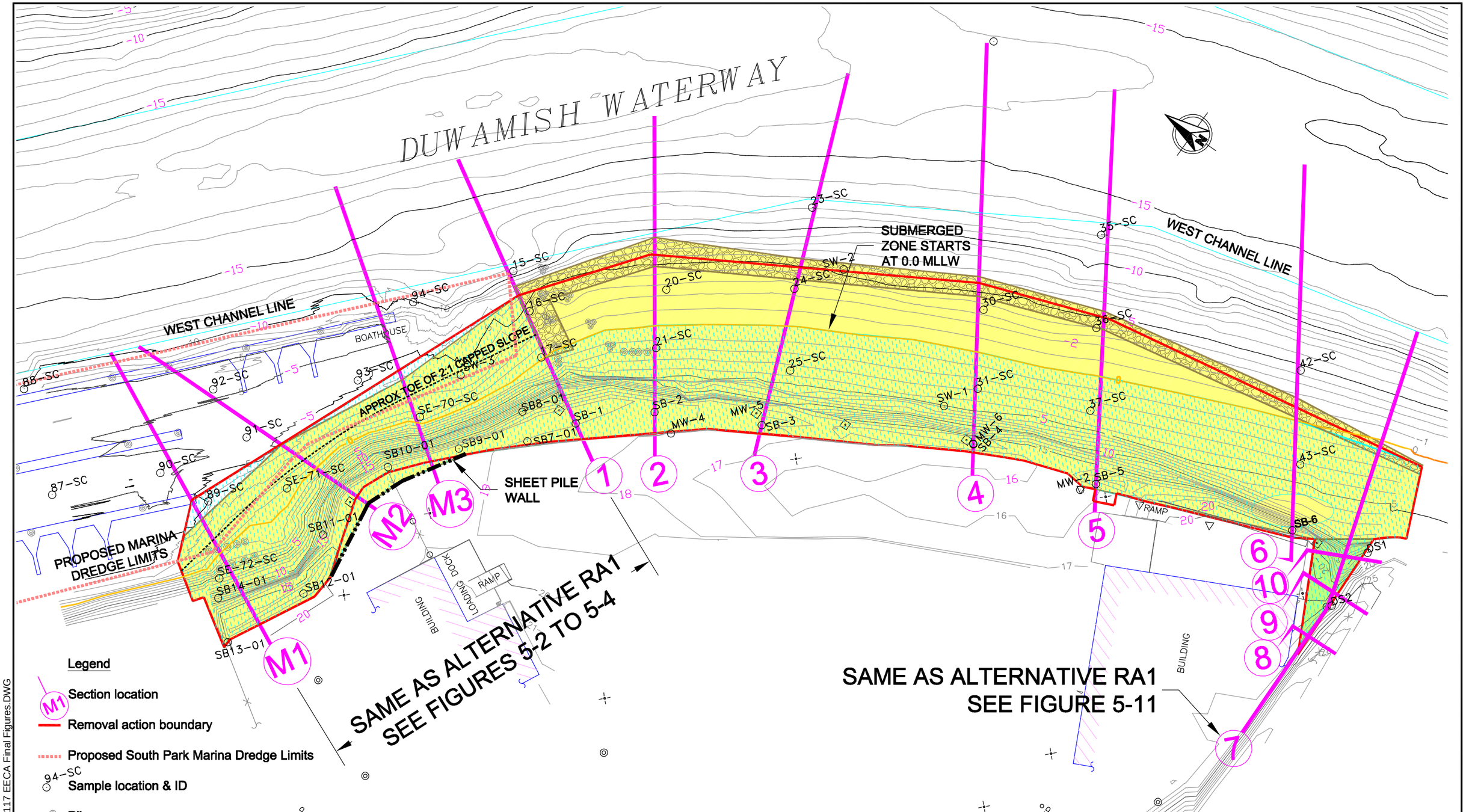
PORT OF SEATTLE T-117

ALTERNATIVE RA1 SECTIONS 8, 9 & 10

WIN001 **FIGURE 5-12** 06/30/05

Dalton, Olmsted & Fuglevand, Inc.

062905 WIN001-03 T-117 EECA Final Figures.DWG



Notes:
1. Topographic Survey and Marina Hydro Survey by INCA Engineers, Inc. of Bellevue, WA November 10, 2004. Vertical Datum is based on MLLW (feet) and Horizontal Datum is based on NAD 83/91(feet). Horizontal coordinate system is WA State Plane North (feet).
2. Multi-beam Channel Hydro Survey is a subset of the David Evans and Associates Aug. 25-29 2003 survey for Lower Duwamish Waterway Group. Vertical Datum is based on MLLW (feet) and Horizontal Datum is based on NAD 93/91(feet).

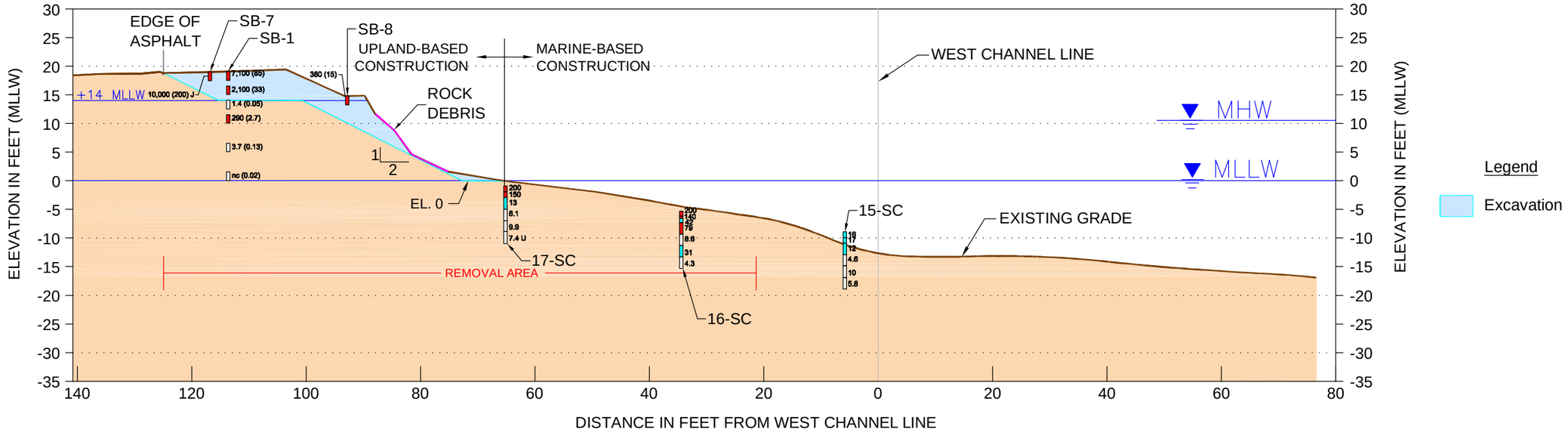
PORT OF SEATTLE T-117

ALTERNATIVE RA2
SITE PLAN

WIN001 **FIGURE 5-13** 06/8/05

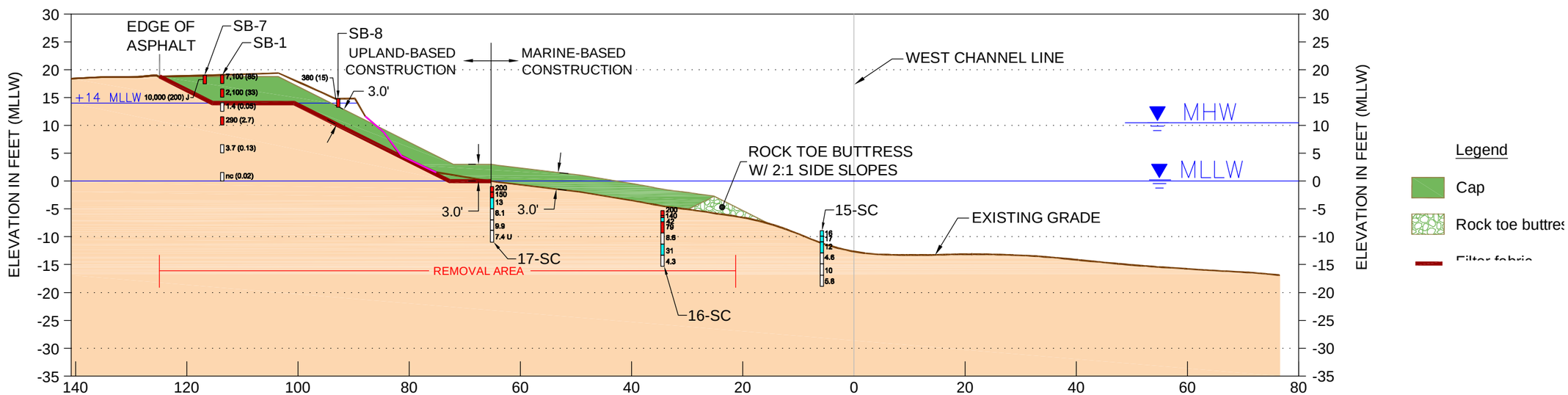
Dalton, Olmsted & Fuglevand, Inc.

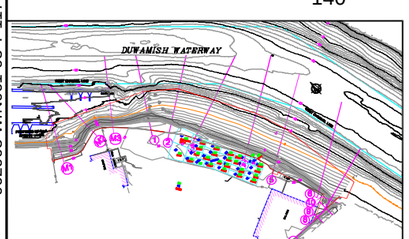
062905 WIN001-03 T-117 EECA Final Figures.DWG



RA2 SECTION 1
EXCAVATION PLAN

0 20
SCALE IN FEET





Sample Legend

SB1: Soil boring location
SE 15: Sediment core location
Soil/sediment sample, detected PCBs <=12mg/kg-OC, or not detected
Soil/sediment sample, detected PCBs >12 and <65 mg/kg-OC
Soil/sediment sample, detected PCBs >65 mg/kg-OC
26 PCB concentration, mg/kg-OC (organic Carbon normalized)
(0.14) PCB concentration, mg/kg dry weight

RA2 SECTION 1
CAPPING PLAN

0 20
SCALE IN FEET

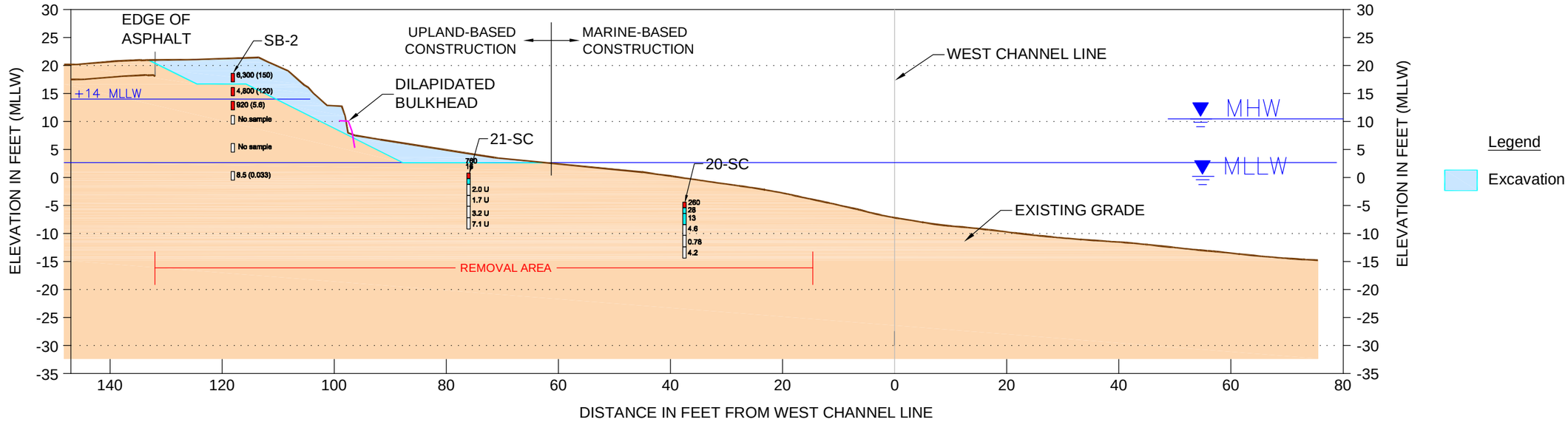
PORT OF SEATTLE T-117

ALTERNATIVE RA2 SECTION 1

WIN001 **FIGURE 5-14** 06/30/05

Dalton, Olmsted & Fuglevand, Inc.

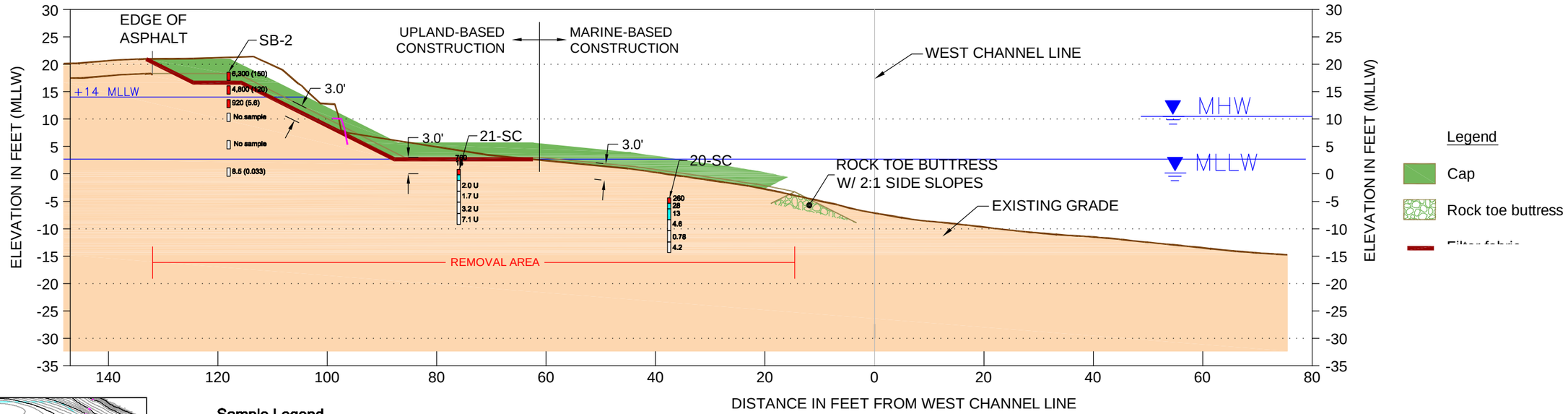
062905 WIN001-03 T-117 EECA Final Figures.DWG



RA2 SECTION **2**

EXCAVATION PLAN

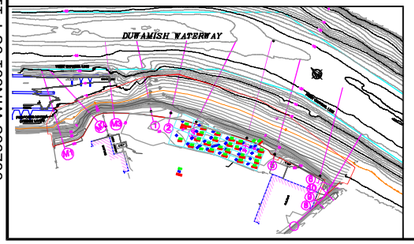
0 20
SCALE IN FEET



RA2 SECTION **2**

CAPPING PLAN

0 20
SCALE IN FEET



Sample Legend

SB1:	Soil boring location
SE 15:	Sediment core location
	Soil/sediment sample, detected PCBs <=12mg/kg-OC, or not detected
	Soil/sediment sample, detected PCBs >12 and <65 mg/kg-OC
	Soil/sediment sample, detected PCBs >65 mg/kg-OC
26	PCB concentration, mg/kg-OC (organic Carbon normalized)
(0.14)	PCB concentration, mg/kg dry weight

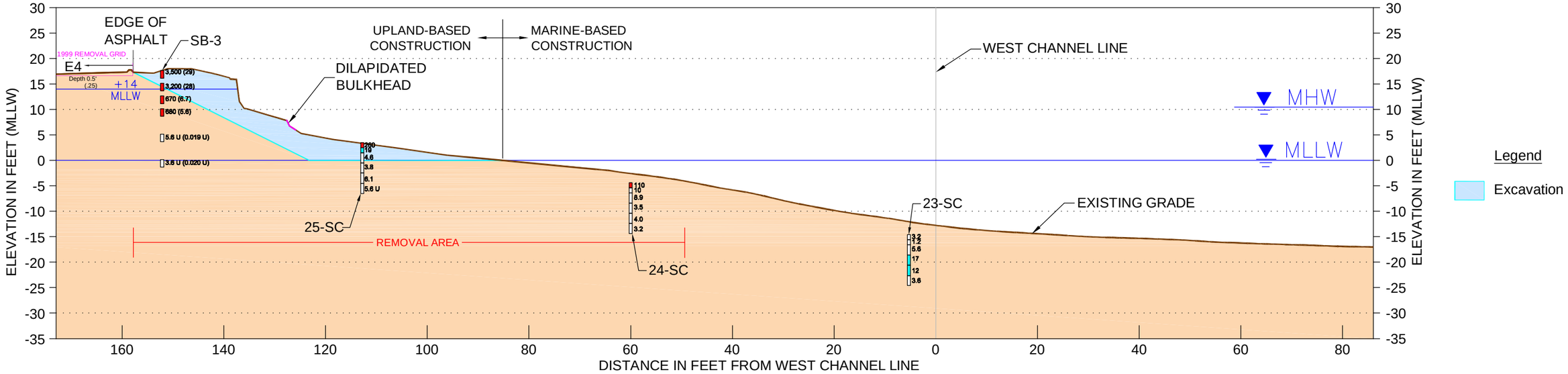
PORT OF SEATTLE T-117

ALTERNATIVE RA2 SECTION 2

WIN001 **FIGURE 5-15** 06/30/05

Dalton, Olmsted & Fuglevand, Inc.

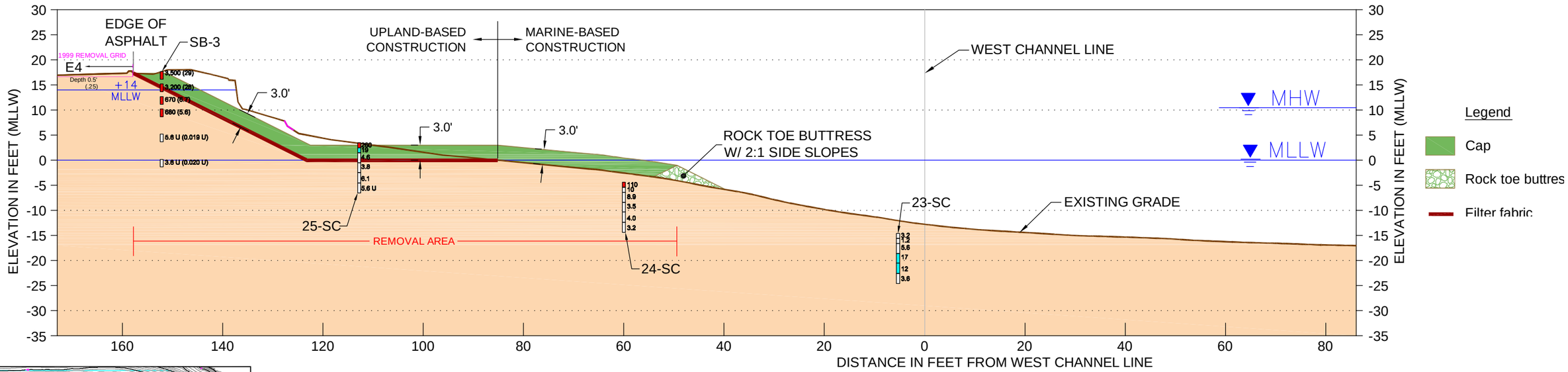
062905 WIN001-03 T-117 EECA Final Figures.DWG



RA2 SECTION **3**

EXCAVATION PLAN

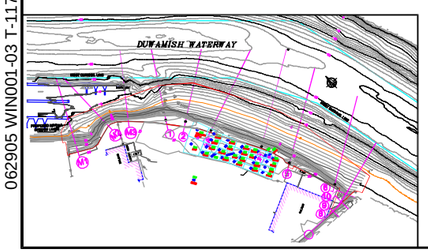
0 20
SCALE IN FEET



RA2 SECTION **3**

CAPPING PLAN

0 20
SCALE IN FEET



Sample Legend

SB1: Soil boring location
SE 15: Sediment core location
Soil/sediment sample, detected PCBs <=12mg/kg-OC, or not detected
Soil/sediment sample, detected PCBs >12 and <65 mg/kg-OC
Soil/sediment sample, detected PCBs >65 mg/kg-OC
26 PCB concentration, mg/kg-OC (organic Carbon normalized)
(0.14) PCB concentration, mg/kg dry weight

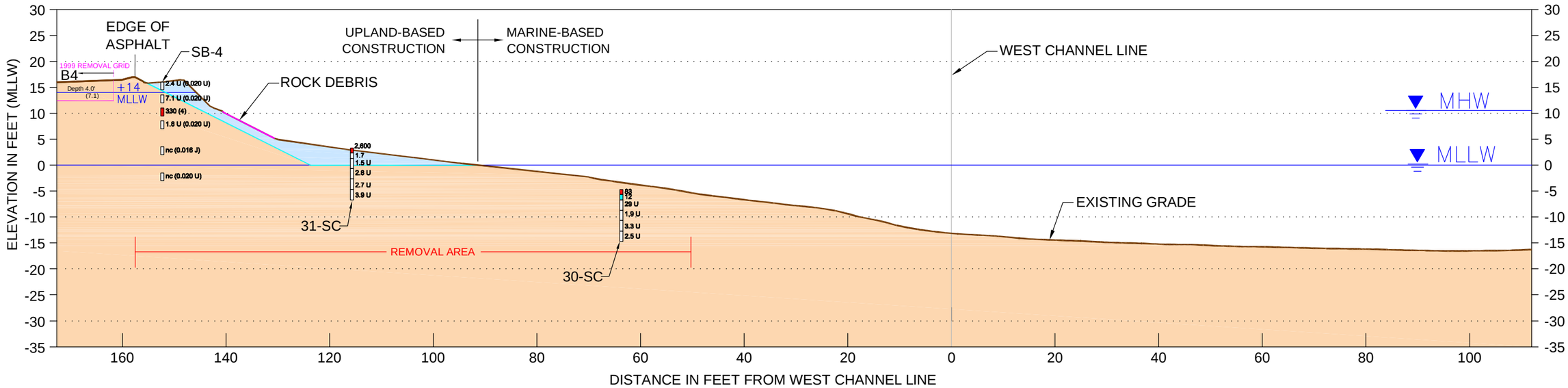
PORT OF SEATTLE T-117

ALTERNATIVE RA2 SECTION 3

WIN001 **FIGURE 5-16** 06/30/05

Dalton, Olmsted & Fuglevand, Inc.

062905 WIN001-03 T-117 EECA Final Figures.DWG

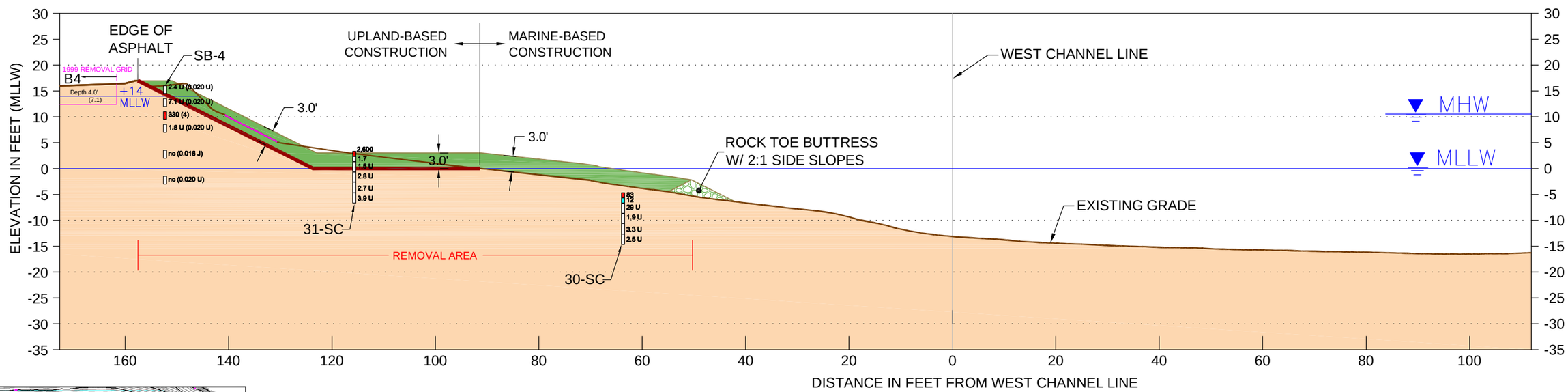


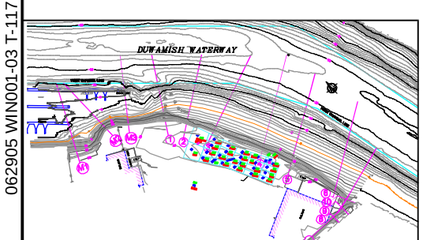
RA2 SECTION 4
EXCAVATION PLAN

0 20
SCALE IN FEET

Legend

Excavation





Sample Legend

SB1: Soil boring location
SE 15: Sediment core location
Soil/sediment sample, detected PCBs <=12mg/kg-OC, or not detected
Soil/sediment sample, detected PCBs >12 and <65 mg/kg-OC
Soil/sediment sample, detected PCBs >65 mg/kg-OC
26 PCB concentration, mg/kg-OC (organic Carbon normalized)
(0.14) PCB concentration, mg/kg dry weight

RA2 SECTION 4
CAPPING PLAN

0 20
SCALE IN FEET

Legend

Cap
Rock toe buttress
Filter fabric

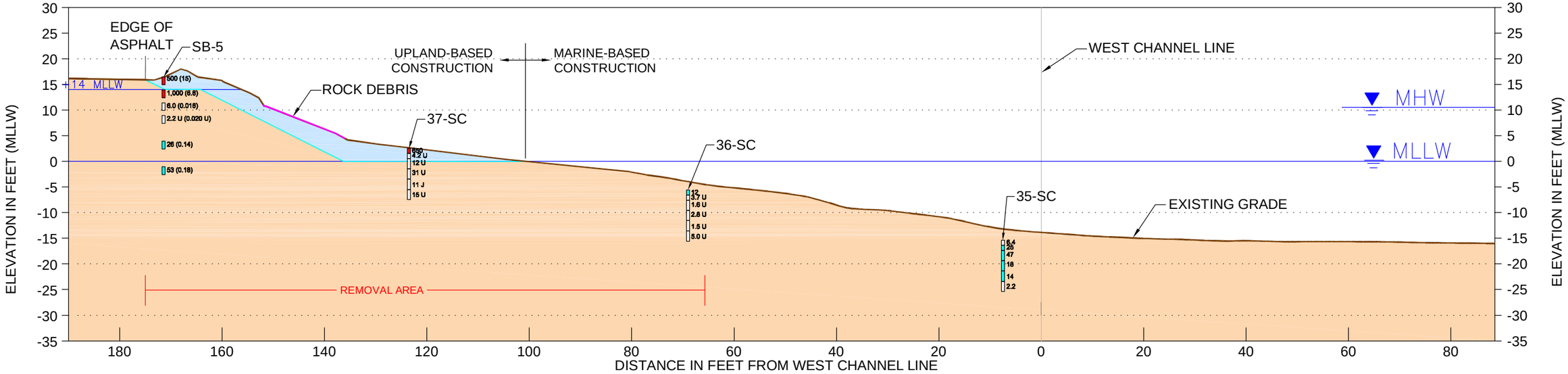
PORT OF SEATTLE T-117

ALTERNATIVE RA2 SECTION 4

WIN001 **FIGURE 5-17** 06/30/05

Dalton, Olmsted & Fuglevand, Inc.

062905 WIN001-03 T-117 EECA Final Figures.DWG

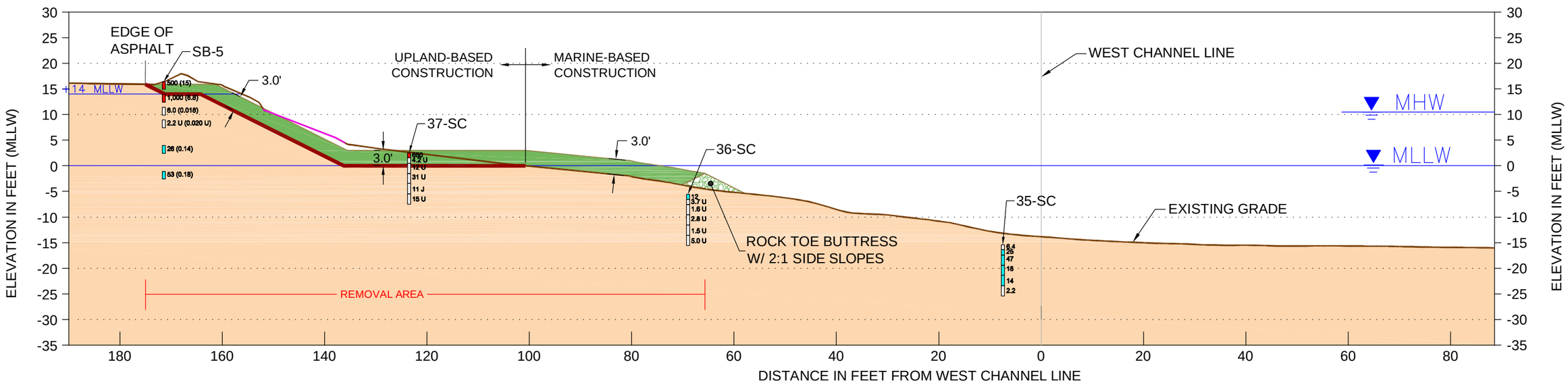


RA2 SECTION **5**
EXCAVATION PLAN

0 20
SCALE IN FEET

Legend

Excavation



RA2 SECTION **5**
CAPPING PLAN

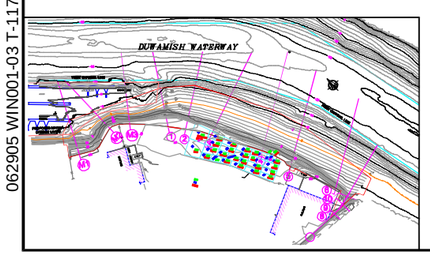
0 20
SCALE IN FEET

Legend

Cap

Rock toe buttress

Filter fabric



Sample Legend

SB1: Soil boring location
SE 15: Sediment core location
Soil/sediment sample, detected PCBs <=12mg/kg-OC, or not detected
Soil/sediment sample, detected PCBs >12 and <65 mg/kg-OC
Soil/sediment sample, detected PCBs >65 mg/kg-OC
26 PCB concentration, mg/kg-OC (organic Carbon normalized)
(0.14) PCB concentration, mg/kg dry weight

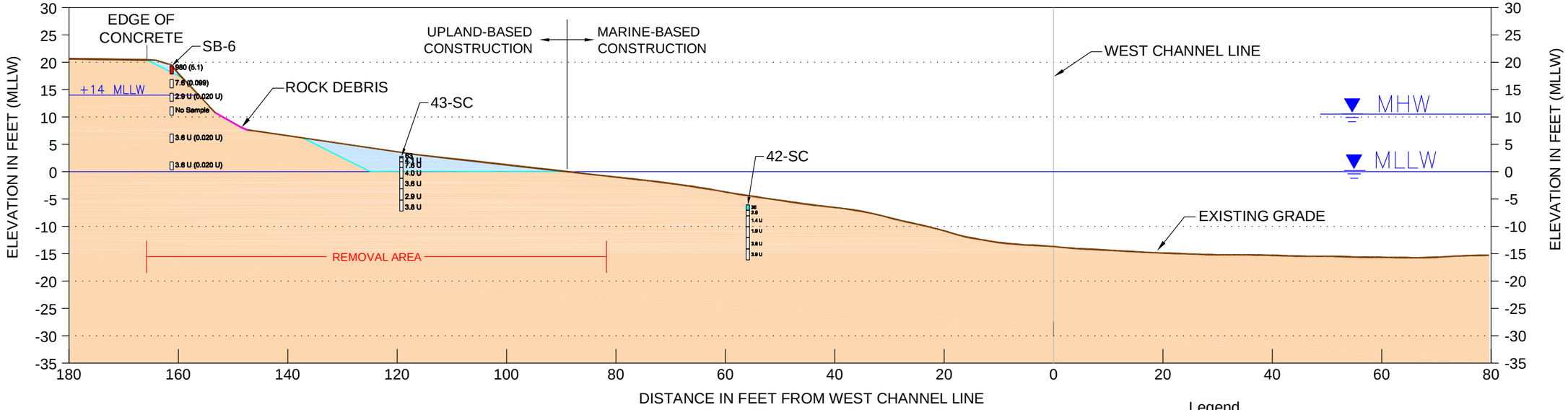
PORT OF SEATTLE T-117

ALTERNATIVE RA2 SECTION 5

WIN001 **FIGURE 5-18** 06/30/05

Dalton, Olmsted & Fuglevand, Inc.

062905 WIN001-03 T-117 EECA Final Figures.DWG

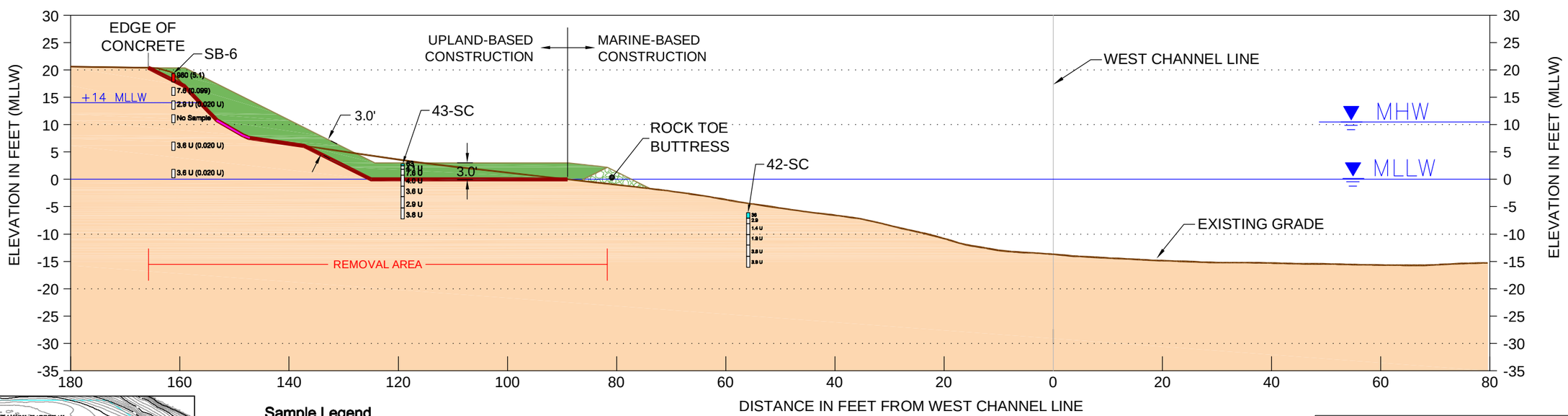


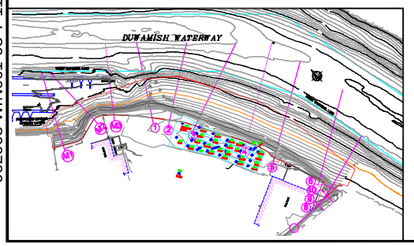
Legend

Excavation

RA2 SECTION 6
EXCAVATION PLAN

0 20
SCALE IN FEET





Sample Legend

SB1: Soil boring location
SE 15: Sediment core location
Soil/sediment sample, detected PCBs <=12mg/kg-OC, or not detected
Soil/sediment sample, detected PCBs >12 and <65 mg/kg-OC
Soil/sediment sample, detected PCBs >65 mg/kg-OC
26 PCB concentration, mg/kg-OC (organic Carbon normalized)
(0.14) PCB concentration, mg/kg dry weight

RA2 SECTION 6
CAPPING PLAN

0 20
SCALE IN FEET

Legend

Cap
Rock toe buttress
Filter fabric

PORT OF SEATTLE T-117

ALTERNATIVE RA2 SECTION 6

WIN001 **FIGURE 5-19** 06/30/05

Dalton, Olmsted & Fuglevand, Inc.

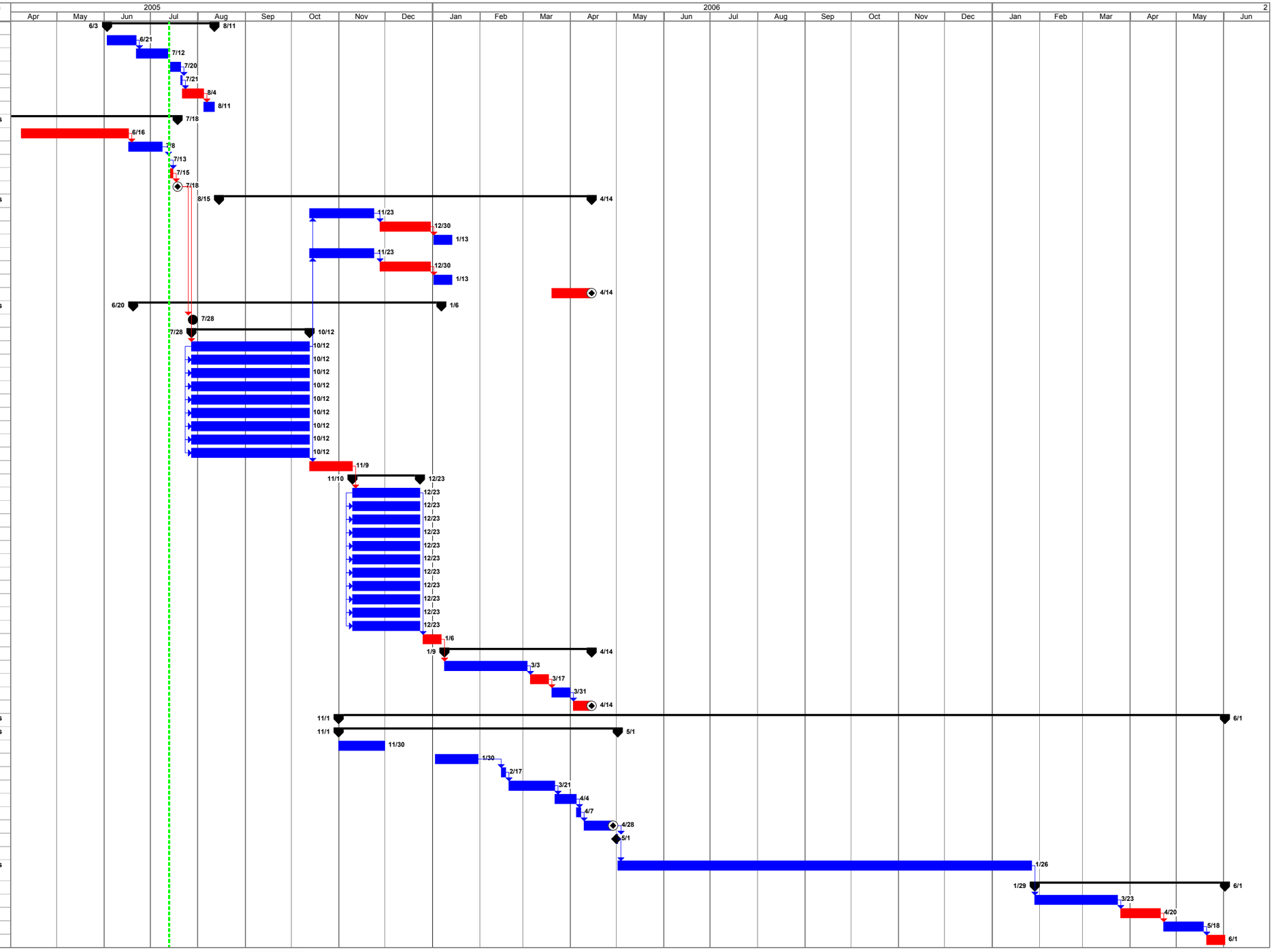
062905 WIN001-03 T-117 EECA Final Figures.DWG

Wind Ward environmental LLC

Figure 8-1. Schedule for T-117 EE/CA and RD/RA

Wed 7/13/05

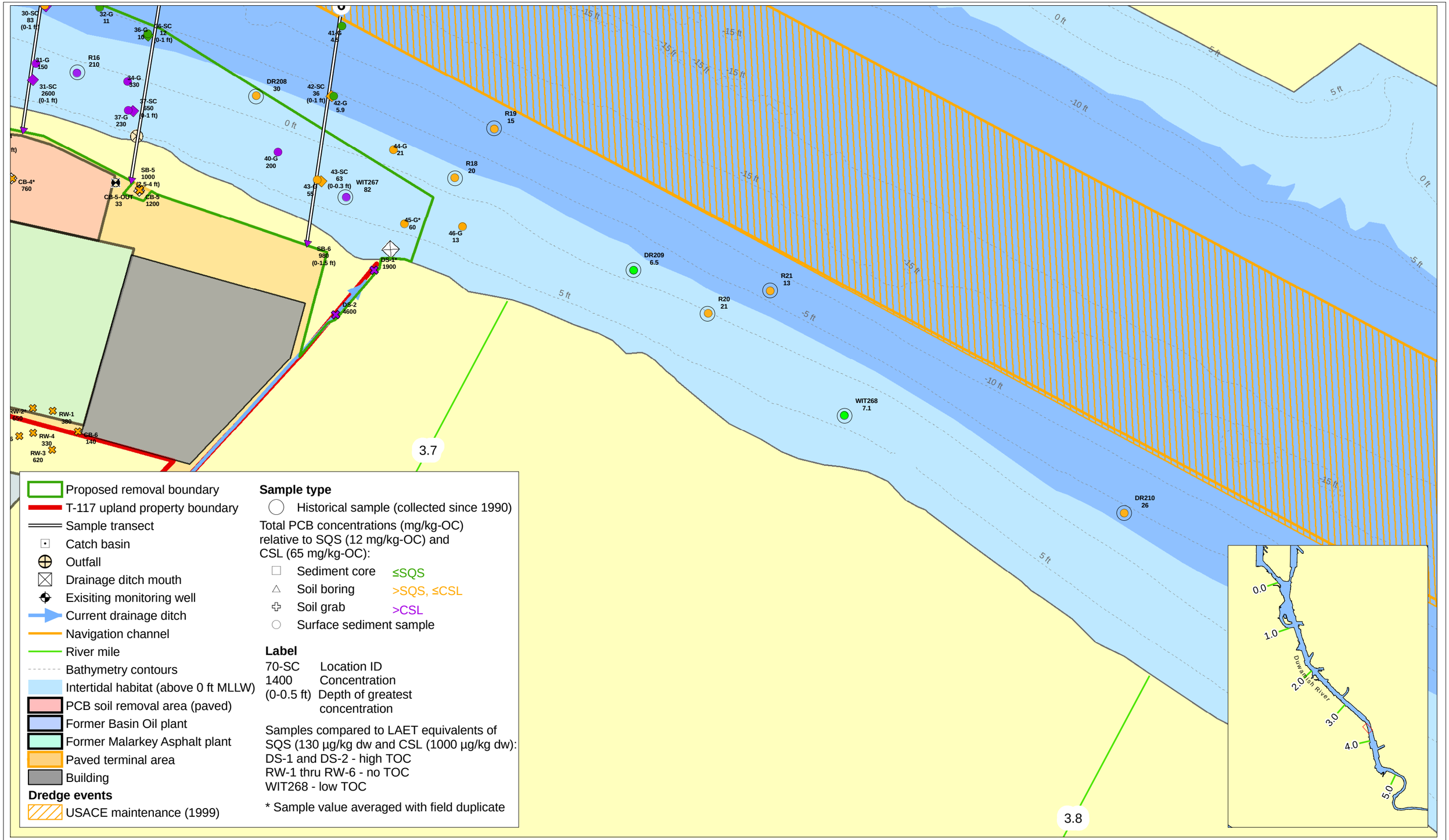
ID	Task Name	Start	Finish	Duration
1	**TASK 3: FIELD SAMPLING AND DATA REPORT**	**Fri 6/3/05**	**Thu 8/11/05**	**50 days**
2	Additional upland sampling	Fri 6/3/05	Tue 6/21/05	13 days
3	Lab analysis and reporting	Wed 6/22/05	Tue 7/12/05	15 days
5	Data validation	Thu 7/14/05	Wed 7/20/05	5 days
6	Draft data memo to EPA/Stakeholders	Thu 7/21/05	Thu 7/21/05	1 day
7	EPA/Stakeholder review	Fri 7/22/05	Thu 8/4/05	10 days
8	Receive comments and prepare final data memo	Fri 8/5/05	Thu 8/11/05	5 days
9	**TASK 4: EE/CA REPORT**	**Wed 11/24/04**	**Mon 7/18/05**	**169 days**
17	EPA responsiveness summary	Fri 4/8/05	Thu 6/16/05	50 days
18	Receive public comments and revise second draft	Fri 6/17/05	Fri 7/8/05	16 days
19	Submit final EE/CA revision	Wed 7/13/05	Wed 7/13/05	1 day
20	EE/CA approval (1)	Thu 7/14/05	Fri 7/15/05	2 days
21	EPA Action Memorandum (1)	Mon 7/18/05	Mon 7/18/05	1 day
22	**TASK 5: ESA AND CWA**	**Mon 8/15/05**	**Fri 4/14/06**	**173 days**
24	Draft CWA 404 Memorandum	Thu 10/13/05	Wed 11/23/05	30 days
25	Agency review of Draft CWA 404 Memorandum (1)	Mon 11/28/05	Fri 12/30/05	25 days
26	Revised CWA 404 Memorandum	Mon 1/2/06	Fri 1/13/06	10 days
27	Draft Biological Assessment	Thu 10/13/05	Wed 11/23/05	30 days
28	Agency review of Draft Biological Assessment (1)	Mon 11/28/05	Fri 12/30/05	25 days
29	Revised Biological Assessment	Mon 1/2/06	Fri 1/13/06	10 days
31	Biological opinion	Mon 3/20/06	Fri 4/14/06	20 days
32	**TASK 6: DESIGN**	**Mon 6/20/05**	**Fri 1/6/06**	**143 days**
37	**Sign AOC for Removal Action**	Tue 7/19/05	Thu 7/28/05	8 days
39	**Prefinal (60%) Design**	**Thu 7/28/05**	**Wed 10/12/05**	**55 days**
40	Draft Design Analysis Report	Thu 7/28/05	Wed 10/12/05	55 days
41	Draft Institutional Control Plan	Thu 7/28/05	Wed 10/12/05	55 days
42	Design drawings	Thu 7/28/05	Wed 10/12/05	55 days
43	Draft construction specifications	Thu 7/28/05	Wed 10/12/05	55 days
44	Draft construction Quality Assurance Plan	Thu 7/28/05	Wed 10/12/05	55 days
45	Draft Removal Action Sampling and Analysis Plan	Thu 7/28/05	Wed 10/12/05	55 days
46	Draft Water Quality Monitoring Plan	Thu 7/28/05	Wed 10/12/05	55 days
47	Draft Quality Assurance Project Plan	Thu 7/28/05	Wed 10/12/05	55 days
48	Draft Health and Safety Plan	Thu 7/28/05	Wed 10/12/05	55 days
52	EPA review of Prefinal Design (1)	Thu 10/13/05	Wed 11/9/05	20 days
54	**Final (100%) Design**	**Thu 11/10/05**	**Fri 12/23/05**	**30 days**
55	Final (100%) Design Analysis Report	Thu 11/10/05	Fri 12/23/05	30 days
56	Final Institutional Control Plan	Thu 11/10/05	Fri 12/23/05	30 days
57	Design drawings	Thu 11/10/05	Fri 12/23/05	30 days
58	Final construction specifications	Thu 11/10/05	Fri 12/23/05	30 days
59	Final Construction Quality Assurance Plan	Thu 11/10/05	Fri 12/23/05	30 days
60	Final Removal Action Sampling and Analysis Plan	Thu 11/10/05	Fri 12/23/05	30 days
61	Final Water Quality Monitoring Plan	Thu 11/10/05	Fri 12/23/05	30 days
62	Final Quality Assurance Project Plan	Thu 11/10/05	Fri 12/23/05	30 days
63	Final Health and Safety Plan	Thu 11/10/05	Fri 12/23/05	30 days
64	Final cost estimate	Thu 11/10/05	Fri 12/23/05	30 days
65	Schedule	Thu 11/10/05	Fri 12/23/05	30 days
66	EPA approval of Final Design (1)	Mon 12/26/05	Fri 1/6/06	10 days
67	**TASK 7: RA WORK PLAN**	**Mon 1/9/06**	**Fri 4/14/06**	**70 days**
68	Draft Removal Action Work Plan	Mon 1/9/06	Fri 3/3/06	40 days
69	EPA comments on Draft RA Work Plan (1)	Mon 3/6/06	Fri 3/17/06	10 days
70	Final RA Work Plan	Mon 3/20/06	Fri 3/31/06	10 days
71	EPA approval of Final RA Work Plan (1)	Mon 4/3/06	Fri 4/14/06	10 days
72	**TASK 8: REMOVAL ACTION**	**Tue 11/1/05**	**Fri 6/1/07**	**412 days**
73	**Contractor Selection**	**Tue 11/1/05**	**Mon 5/1/06**	**128 days**
74	Qualified contractor advertising/pre-qualification	Tue 11/1/05	Wed 11/30/05	20 days
75	Select pre-qualified contractors	Tue 1/3/06	Mon 1/30/06	20 days
76	Issue bid packages	Wed 2/15/06	Fri 2/17/06	3 days
77	Receive bid packages	Mon 2/20/06	Tue 3/21/06	22 days
78	Evaluate bids	Wed 3/22/06	Tue 4/4/06	10 days
79	Select contractor	Wed 4/5/06	Fri 4/7/06	3 days
80	Award contract	Mon 4/10/06	Fri 4/28/06	15 days
81	Notice to Proceed	Mon 5/1/06	Mon 5/1/06	1 day
82	**Notification of removal action start**	**Tue 4/4/06**	**Tue 4/4/06**	**1 day**
83	**Removal Action Activities start/finish (general time period)**	**Tue 5/2/06**	**Fri 1/26/07**	**194 days**
84	**Removal Action Completion Report (estimated)**	**Mon 1/29/07**	**Fri 6/1/07**	**90 days**
85	Draft Removal Action Completion Report	Mon 1/29/07	Fri 3/23/07	40 days
86	EPA review of RA Completion Report (1)	Mon 3/26/07	Fri 4/20/07	20 days
87	Final RA Completion Report	Mon 4/23/07	Fri 5/18/07	20 days
88	EPA approval of Final RA Completion Report (1)	Mon 5/21/07	Fri 6/1/07	10 days



Normal Task | Agency Task | Meeting | Milestone | Summary

(1) Assumed duration of Agency task

⦿ Critical task deadline



Wind Ward environmental LLC

Prepared by STS 01/05/05 Map 1622

W:\Projects\03-08-12 T-117 (Malarkey)\Data\GIS\EECA\Updated

0 25 50 100 Feet

0 12.5 25 50 Meters

N

Figure A-1. T-117 southern vicinity

For sediment core and soil borings where more than one sample was collected (i.e., SB-1 to SB-6), the maximum PCB concentration within the core or boring is shown. PCB concentrations for the other subsurface samples are in the report.

Bathymetry information compiled from the U.S. Army Corps of Engineers March 2003 hydro survey.