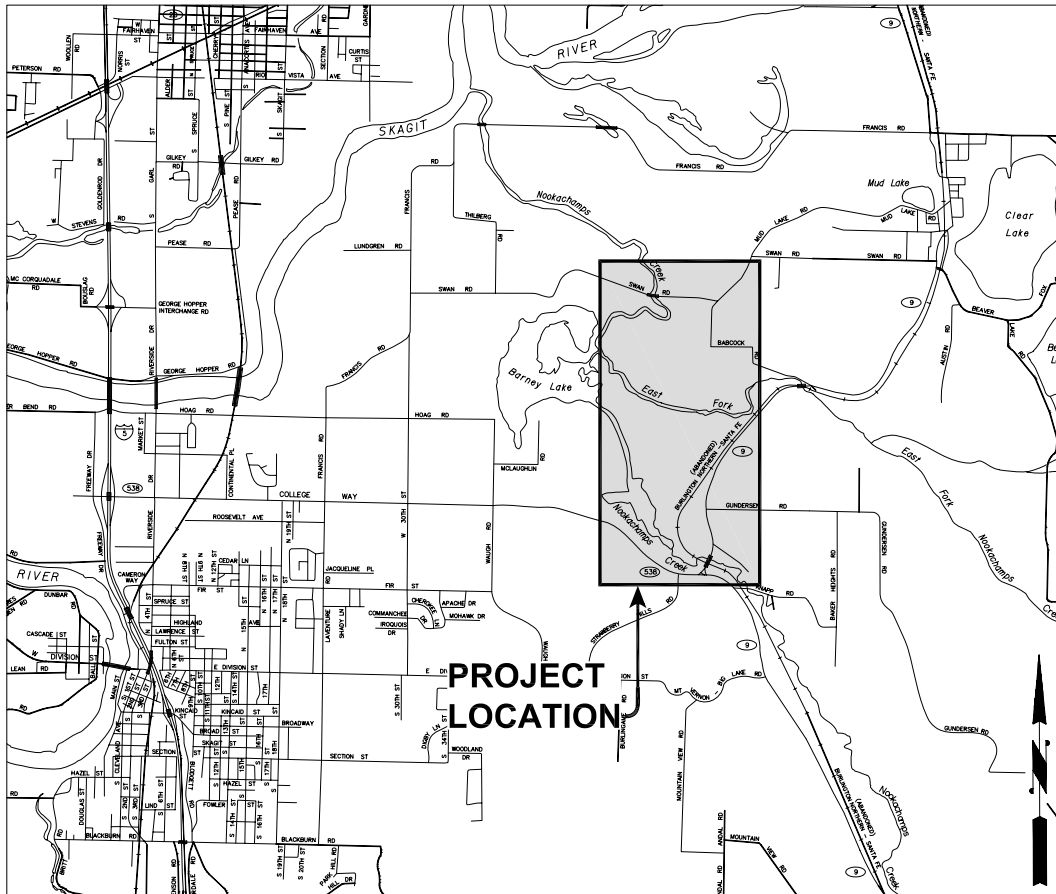


SKAGIT ENVIRONMENTAL BANK HYDROLOGIC CONDITIONS RESTORATION SUSTAINABLE ENVIRONMENTS, LLC PHASE I, II, & III

MOUNT VERNON, WASHINGTON



LOCATION MAP
SCALE: N.T.S.



VICINITY MAP
SCALE: N.T.S.

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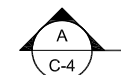
(A) 1 ← LOG IDENTIFICATION / KEY NOTE NUMBER

1 ← DETAIL REFERENCE NUMBER
C-3 ← DRAWING ON WHICH DETAIL IS SHOWN

DETAIL

SCALE: NTS

1 ← DETAIL REFERENCE NUMBER
C-1 ← DRAWING FROM WHICH DETAIL WAS TAKEN



▲ ← SECTION REFERENCE LETTER
← DRAWING ON WHICH SECTION IS SHOWN

SECTION

SCALE: NTS

A ← SECTION REFERENCE LETTER
C-2 ← DRAWING FROM WHICH SECTION WAS TAKEN

"-" INDICATES THAT THE DETAIL/SECTION IS SHOWN ON THE SAME SHEET

"TYP" INDICATES THAT THE DETAIL/SECTION IS UNIFORMLY TYPICAL THROUGHOUT PROJECT EXCEPT WHERE OTHERWISE NOTED

"VAR" SPECIFIES THAT DETAIL/SECTION WAS TAKEN FROM SEVERAL DRAWINGS

NOTE AND DETAIL/SECTION REFERENCING

DRAFT DESIGN

No.	REVISION	BY	APP'D	DATE
3	REVISION NO. 3	MS		7/07
2	REVISION NO. 2	MS		6/06
1	REVISION NO. 1	MS		5/06



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SKAGIT ENVIRONMENTAL BANK PHASE I, II, & III

TITLE SHEET, INDEX AND VICINITY MAP

DATE: JULY 2007
PROJECT NO: 04-02822-003
DRAWING NO: G-1
SHEET NO: 1 OF 35

1. THE BANKING PROJECT IS PLANNED TO BE CONSTRUCTED IN THREE PHASES TO EFFECT HYDROLOGIC AND HYDRAULIC MODIFICATIONS AND REFINE DESIGN TO ACTUAL SITE RESPONSE CONDITIONS.

PHASE I – ELJ CONSTRUCTION, DITCH FILL, AND COVER CROP PLANTING
PHASE II – INITIAL SITE GRADING, CHANNEL CONSTRUCTION, PLANTING
PHASE III – FINAL GRADING AND PLANTING
2. THE WORK IN EACH PHASE WILL BE THE INTRODUCTION OF CHANGES, PERFORMED IN A LOGICAL SEQUENCE TO MODIFY SPECIFIC FUNCTIONS OF THE ENTIRE SITE. – FUNCTIONAL PHASING.
3. PHASE I IS PLANNED TO BE CONSTRUCTED DURING THE IDENTIFIED FISH WINDOW IN 2008.
4. PHASE II AND III WILL FOLLOW PHASE I AS HYDROLOGIC AND HYDRAULIC DATA IS REVIEWED AND THE GRADING PLAN REFINED TO ENSURE PERFORMANCE STANDARDS ARE ACHIEVED.

1. IMPROVE FLOODPLAIN HYDROLOGIC AND HYDRAULIC CONDITIONS BY RESTORING IN-CHANNEL STREAM MORPHOLOGY AND ALTER THE GROUND WATER HYDROLOGY ON 70+% OF THE SITE BY ADDING THREE ENGINEERED LOG JAMS (ELJ'S) IN THE NOOKACHAMPS AND EAST FORK NOOKACHAMPS AT INTERVALS TO AFFECT CHANGE IN GEOMORPHIC PROCESS AND BY FILLING IN EXISTING DRAINAGE DITCHES.
2. PLANT A COVER CROP OF HERBACEOUS PLANTS TO STABILIZE THE HYDRIC SOIL AND NON-HYDRIC SOILS.
3. COVER CROP PLANTING WILL BE A MIXTURE OF FIVE NATIVE GRASSES:
 - TUFTED HAIRGRASS (DESCHAMPSIA CESPITOSA; FAC)
 - MEADOWBARLEY (HORDEUM BRACHYANTHERUM; FACW)
 - TALL MANNAGRASS (GLYCERIA ELATA; FACW)
 - CALIFORNIA BROME (BROMUS CARINATUS; UPLAND SPECIES)
 - BLUE WILD RYE (ELYMUS GLAUCUS; UPLAND SPECIES)
4. SEEDING RATES WILL BE 10 TO 12 POUNDS PER ACRE FOR TWO PLANT SPECIES AND 1 POUND PER ACRES FOR THE OTHER SPECIES IN THE MIX.
5. PLANTING WILL BE PERFORMED IMMEDIATELY FOLLOWING HYDRAULIC AND HYDROLOGIC MODIFICATIONS (INSTALLATION OF ELJ'S AND DITCH FILLING)

1. THE PROJECT SITE IS 397 ACRES INCLUDING THE BANK BUFFER AREA. TOTAL DOES NOT INCLUDE WATERLINE AND POWERLINE EASEMENTS WHICH ARE 9.3 ACRES TOTAL.
2. THE BUFFER BOUNDARY IS SHOWN AS 150 FEET ALONG THE ENTIRE PROJECT SITE..
3. THE SITE IS ACCESSED FROM THE EAST BY STATE ROUTE 9.
4. THE SITE IS ACCESSED FROM THE WEST BY MCLAUGHLIN EXTENSION ROAD.
5. TWO STEAMS PASS THROUGH THE SITE – THE NOOKACHAMPS AND THE EAST FORK OF THE NOOKACHAMPS.

1. GROUND WATER WELLS HAVE BEEN INSTALLED THROUGHOUT THE BANK SITE. SEE DRAWING R-1 FOR WELL LOCATIONS.
2. THIRTY-EIGHT (38) WELLS HAVE BEEN INSTALLED AND MONITORED MONTHLY BEGINNING 2005. FIVE ADDITIONAL WELLS WERE INSTALLED IN THE SUMMER 2006 AND ARE BEING MONITORED MONTHLY.
3. AVERAGED 2ND QUARTER (APRIL/MAY/JUNE) AND 3RD QUARTER (JULY/AUGUST/SEPTEMBER) DEPTH TO GROUNDWATER FROM EXISTING GRADE ELEVATION DATA FROM 2005, 2006, AND 2007 ARE SHOWN ON DRAWINGS R-2A, R-2B, AND R-2C.
4. DRAWING R-3 IS A 2ND QUARTER GROUND WATER ELEVATION CONTOUR MAP BASED ON AVERAGED 2005/2006/2007 2ND QUARTER DATA.
5. DRAWING R-4 IS A CONTOUR MAP SHOWING THE DIFFERENCE BETWEEN GROUND SURFACE AND GROUND WATER ELEVATIONS (AVERAGED 2005/2006/2007 2ND QUARTER).

1. WELLS HAVE BEEN INSTALLED IN REPRESENTATIVE VEGETATION COMMUNITIES (I.E. EMERGENT, SCRUB/SHRUB, AND FORESTED WETLAND) ONSITE.
2. WATER LEVEL DATA COLLECTED DURING THE SECOND QUARTER OF 2005/2006/2007 (APRIL/MAY/JUNE) FROM THE FOLLOWING WELLS WAS USED TO DELINEATE PROPOSED WETLAND COMMUNITIES:

EMERGENT	- 18 TO -5 CM (MW-2)
SCRUB/SHRUB	- 2 TO 20 CM TO GROUND WATER (MW-2, 3 AND 27)
FORESTED	- 23 TO 38 CM TO GROUND WATER (MW-3,5 AND 26)

NOTE: A NEGATIVE NUMBER INDICATES STANDING WATER
3. PROPOSED WETLAND COMMUNITIES ARE BASED ON AVERAGE DEPTH TO GROUND WATER FROM EXISTING GROUND ELEVATION, VEGETATION HYDROLOGIC PREFERENCES, EXISTING TOPOGRAPHY, AND SUBSTRATE.

1. SEE DRAWING C-18. THE PROPOSED WETLAND CLASSIFICATIONS THAT WILL RESULT FROM COMPLETION OF ALL PHASES ARE:

	<u>ACRES</u>	<u>PERCENTAGE</u>
SYSTEM: PALUSTRINE, CLASS: EMERGENT	(49)	(12%)
SYSTEM: PALUSTRINE, CLASS: SCRUB-SHRUB	(85)	(22%)
SYSTEM: PALUSTRINE, CLASS: FORESTED	(97)	(24%)
UPLAND: FORESTED ISLANDS	(61)	(15%)
UPLAND: MOSAIC	(10)	(3%)
BUFFER	(83)	(21%)
RIVERINE	(12)	(3%)
	TOTAL= 397	TOTAL= 100%

NOTE: EMERGENT INCLUDES RIVERINE.

2. IN DESIGNING THE LOCATIONS OF THE PROPOSED WETLAND AREA POLYGONS, ON-SITE PLANT REFERENCE SITE DATA WILL BE USED TO DETERMINE HYDROLOGY REQUIRED TO ACHIEVE THE BANK PERFORMANCE STANDARDS.

3. SEE DRAWING R-1 FOR EXISTING WETLAND AREAS.

4. SITE GRADING WILL BE BASED ON EFFECTED GROUND WATER ELEVATIONS THAT WILL SUPPORT THE PLANTING DISTRIBUTION. SEE SHEET R-4 FOR SOIL EXCAVATION TO GROUND WATER FROM EXITING SURFACE. THIS DATA IS BASED ON 2ND QUARTER GROUND 2005/2006/2007 WATER ELEVATIONS.

5. SEE DRAWING C-11 FOR PHASE II CONCEPTUAL VEGETATION COMMUNITIES.

6. SEE DRAWING C-18 FOR PHASE III CONCEPTUAL VEGETATION COMMUNITIES.

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PROJECT NOTES

DATE:	
JULY 2007	
PROJECT NO:	
04-02822-003	
DRAWING NO:	
G-2	
SHEET NO:	OF
2	35

WORK SEQUENCE NOTES:

1. THIS WORK SEQUENCE PLAN IS SHOWN FOR GENERAL UNDERSTANDING OF THE PROJECT CONSTRAINTS IN RELATION TO CONSTRUCTION OF ENGINEERED LOG JAMS AND RELATED SITE ACTIVITY. CONTRACTOR IS RESPONSIBLE FOR INCORPORATING ALL EXISTING AND NEW MATERIALS INTO STRUCTURES AS NECESSARY.
2. A DETAILED ELJ WORK SEQUENCE AND PHASING PLAN SHALL BE DEVELOPED BY THE CONTRACTOR AND SUBMITTED FOR APPROVAL BY THE ENGINEER. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PLANS AND THE CONTRACTOR'S APPROVED ELJ WORK SEQUENCE AND PHASING PLAN.
3. IN GENERAL, THE WORK SHALL BE SEQUENCED AND PERFORMED IN A MANNER THAT MINIMIZES IMPACTS TO THE CREEK AND AREA SURROUNDING THE WORK SITE.
4. INSTALL TESC MEASURES AS SHOWN ON ESC-1 AND ESC-2.
5. CONSTRUCT TEMPORARY ACCESS ROAD TO ACCESS WORK AREA.
6. CLEAR AND PREPARE STAGING AND STORAGE AREAS AS NECESSARY (DRAWING G-3).
7. INSTALL FISH BLOCKNETS. CONTRACTOR SHALL INFORM THE PROJECT BIOLOGIST THAT THE NETS HAVE BEEN INSTALLED.
8. ALLOW THE PROJECT BIOLOGIST SUFFICIENT TIME TO CLEAR REACH OF FISH. ALL FISH HANDLING ACTIVITIES TO BE DONE BY THE PROJECT BIOLOGIST.
9. BEGIN DEWATERING ACTIVITIES AS NEEDED.

SHORING AND DEWATERING NOTES:

1. GROUND WATER WILL BE ENCOUNTERED IN EXCAVATIONS. CONTRACTOR SHALL DEWATER AS NECESSARY FOR CONSTRUCTION AND INSPECTION.
2. CONTRACTOR SHALL DEWATER EXCAVATIONS AS NEEDED TO PROVIDE ADEQUATE EXCAVATION DEPTH TO ALLOW WOOD PLACEMENT. VERTICAL PILES MAY BE DRIVEN USING VIBRATORY TECHNIQUES.
3. CONTRACTOR SHALL DESIGN ALL REQUIRED SHORING AND WATER EXCLUSION STRUCTURES. HYDROSTATIC PRESSURES SHALL BE ADDED TO LATERAL PRESSURES DUE TO EARTH, SURCHARGES AND SPECIAL PRESSURES. SPECIAL PRESSURES MAY INCLUDE BUT ARE NOT LIMITED TO HYDROSTATIC PRESSURES RESULTING FROM BACKWATER CONDITIONS, TEMPORARY SHORING SEEPAGE, MACHINERY SURCHARGE AND FLUCTUATING GROUND WATER.
4. OTHER SURCHARGES SHALL BE DETERMINED BY THE CONTRACTOR ON THE BASIS OF CONSTRUCTION TRAFFIC, EQUIPMENT STORAGE, SPOILS HANDLING, WORK SEQUENCE AND OTHER FACTORS.
5. ALL TEMPORARY SHORING SYSTEMS SHALL BE DESIGNED WITH A MINIMUM FACTOR OF SAFETY OF 1.4 (FS=1.4)

DITCH FILLING NOTES:

1. DITCHES WILL BE FILLED WITH MATERIAL FROM ADJACENT BERMS.
2. WHERE ADJACENT BERM VOLUMES ARE NOT SUFFICIENT TO FILL DITCHES, ANTICIPATED LOCATIONS OF PHASE 2 HIGH FLOW BACK CHANNELS WILL BE GENTLY GRADED FOR MATERIAL.
3. ALL BERMS AND AREAS GRADED FOR MATERIAL TO FILL DITCHES WILL BE STRIPPED OF VEGETATION PRIOR TO GRADING.
4. VEGETATIVE MATERIAL REMOVED DURING STRIPPING WILL BE COMPOSTED IN UPLAND AREAS.
5. ALL DISTURBED AREAS ASSOCIATED WITH DITCH FILLING WILL BE REPLANTED WITH TEMPORARY EROSION CONTROL VEGETATION AND LATER WITH WETLAND PLANTS. SEE VEGETATION NOTES ON G-4.
6. WHERE DITCHES TERMINATE AT STREAM BANKS, BANK STABILIZATION WILL BE INSTALLED TO PREVENT HEAD CUTS.

WATER MANAGEMENT NOTES:

1. EXCAVATIONS THAT HAVE THE POTENTIAL TO IMPACT THE WETTED CHANNEL SHALL BE ISOLATED FROM THE ACTIVE CHANNEL. ISOLATION MEANS SHALL CONSIST OF SILT BOOMS, SHEET PILE, BULK BAGS, BLADDER DAMS OR OTHERS AS NECESSARY TO PREVENT IMPACTS TO WATER QUALITY.
2. SEE SHEETS ESC-1 AND ESC-2 FOR ADDITIONAL NOTES AND TYPICAL DRAWINGS FOR EROSION AND SEDIMENTATION CONTROL. WATER PUMPED FROM EXCAVATED AREA SHALL BE RELEASED TO THE EXISTING STORMWATER PONDS. THE WATER SHALL NOT BE DIRECTLY DISCHARGED.
3. ANY DEWATERING ACTIVITIES SHALL NOT IMPACT WATER QUALITY.
4. CONSTRUCTION DEWATERING SHALL BE MAINTAINED 24 HOURS PER DAY DURING CONSTRUCTION. PUMPS SHALL BE MAINTAINED BY THE CONTRACTOR DURING WORKING AND NON-WORKING HOURS.
5. DIVERSION CHANNELS SHALL BE LINED WITH 15 MIL PE LINER OR APPROVED EQUAL, TO PREVENT EROSION.

GENERAL CONSTRUCTION NOTES:

1. WORK INCLUDES RECONSTRUCTION OF THREE ENGINEERED LOG JAM (ELJ) STRUCTURES AS SHOWN ON THE PLANS. STRUCTURES ARE TO BE CONSTRUCTED INSTREAM.
2. SLASH SHALL BE COMPRISED OF TREES, LIMBS, ROOTS ROOTWADS, STUMPS, BRUSH AND OTHER MATERIAL GENERATED DURING LAND CLEARING. SLASH MATERIAL MAY BE OF VARIOUS SIZES < 12" DIAMETER. SLASH MATERIALS SHALL NOT CONTAIN COBBLES. AGGREGATE MATERIAL PASSING A TWO INCH SIEVE (SANDS AND GRAVELS) SHALL NOT EXCEED 5% OF THE TOTAL SLASH MATERIAL BY VOLUME AND SHALL NOT CONTAIN SILTY OR CLAYEY MATERIAL THAT WILL IN THE OPINION OF THE ENGINEER, CAUSE EXCESSIVE TURBIDITY WHEN THE WATERS OF CREEK CONTACT THE MATERIAL.
3. CONSTRUCTION MATERIAL STAGING AREAS TO BE LOCATED AS SHOWN ON THE PLANS. MATERIAL SHALL NOT BE STORED OUTSIDE OF IDENTIFIED STAGING AREAS. THE CONTRACTOR SHALL PROTECT MATERIALS FROM DAMAGE AT ALL TIMES.
4. THE CONTRACTOR SHALL LIMIT MACHINERY MOVEMENT TO CONSTRUCTION AREAS DEFINED ON PLANS OR IDENTIFIED AS ACCEPTABLE BY ENGINEER.
5. CLEARING LIMITS SHALL NOT BE EXPANDED UNLESS APPROVED BY ENGINEER.
6. CONTRACTOR SHALL DEWATER EXCAVATIONS AS NEEDED TO ENABLE PLACEMENT OF KEY LOGS AND PILES.
7. WATER PUMPED FROM EXCAVATED AREAS SHALL BE RELEASED TO UPGRADIENT AREAS (SEE SHEETS ESC-1 AND ESC-2). TURBID WATER FROM THE EXCAVATION SHALL NOT BE DIRECTLY DISCHARGED TO CREEK AT ANY TIME.
8. WATER PUMPED FROM CREEK UPSTREAM OF THE CONSTRUCTION AREA SHALL BE PUMPED TO AN ENERGY DISSIPATION STRUCTURE DOWNSTREAM OF THE CONSTRUCTION AREA (SEE SHEETS ESC-1 AND ESC-2). THE UPSTREAM INTAKE FOR THE WATER PUMPS SHALL BE ISOLATED FROM THE STREAM BY A FISH BLOCK NET. ADDITIONALLY THE PUMP INTAKE HOSE SHALL HAVE A SCREEN CONFORMING TO WDFW GUIDELINES.
9. EXCAVATIONS SHALL BE INSPECTED BY ENGINEER PRIOR TO PLACING ANY ELJ MATERIALS.
10. CONTRACTOR SHALL REMOVE ANY AND ALL EQUIPMENT, UNUSED MATERIALS AND TEMPORARY FACILITIES FROM SITE UPON COMPLETION OF WORK.
11. ALL EXISTING FENCES ALONG STREAMS SHALL BE REMOVED.
12. STAGING AREA 1 WILL REMAIN UPLAND. STAGING AREA 2 WILL HAVE TO BE RE-GRADED AND SOILS RESTORED TO SUPPORT WETLAND CONDITIONS.
13. EXISTING BRIDGES OVER THE NOOKACHAMPS AND EAST FORK NOOKACHAMPS WILL REMAIN IN PLACE TO SUPPORT LONGTERM MONITORING AND MAINTENANCE.

DRAFT DESIGN

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PHASE I VEGETATION NOTES:

1. DISTURBED AND UNPLANTED AREAS WILL BE SEEDED WITH A COVER CROP CONSISTENCY OF THE FOLLOWING:

Species (common name)	Scientific Name	Wetland Indicator Status	Total application amount (pounds)	Application rate (pounds per acre)
TUFTED HAIRGRASS	DESCHAMPSIA CESPITOSA	FAC	1,000	2.840
MEADOW BARLEY	HORDEUM BRACHYANTHERUM	FACW	300	0.850
WESTERN MANNAGRASS	GLYCERIA OCCIDENTALIS	FACW	3,000	8.520
CALIFORNIA BROME	BROMUS CARINATUS	UPL	2,000	5.680
BLUE WILDRYE	ELYMUS GLAUCUS	UPL	1,800	5.110
WATER FOXTAIL	ALOPECURUS GENICULATUS	OBL	200	0.570
AMERICAN SLOUGHGRASS	BECKMANNIA SYZIGACHNE	OBL	500	1.420
TOTAL			8,800	25.000

VEGETATION NOTE:

1. PROPORTION OF TOTAL APPLICATION AMOUNTS BASED ON RELATIVE AVAILABILITY OF SPECIES AS OF 2ND QUARTER 2008.

VEGETATION ABBREVIATIONS:

FAC - FACULTATIVE

FACW - FACULTATIVE WETLAND

UPL - UPLAND

OBL - OBLIGATE WETLAND

PHASE II PROJECT WORK ELEMENTS:

1. REGRADE ENTIRE SITE BASED ON THE WATER TABLE RESPONSE FROM PHASE I ACTIVITIES.
2. EXCAVATE FOUR HIGH-FLOW BANK CHANNELS OFF NOOKACHAMPS CREEK AND THE EAST FORK NOOKACHAMPS CREEK TO PROVIDE EMERGENT WETLANDS SHRUB HUMMOCKS AND WINTER JUVENILE SALMONOID REARING.
3. REGRADE MUD CREEK TO CREATE POSITIVE FLOW TO NOOKACHAMPS CREEK TO ALLEVIATE UPSTREAM FLOODING.
4. EXCAVATED SOILS WILL BE PERMANENTLY STOCKPILED WITHIN THE BOUNDARIES OF CLEAR VALLEY FARM PROPERTY. A MAJORITY OF SOIL WILL STOCKPILED OUTSIDE OF THE 100-YEAR FLOODPLAIN. THE REMAINDER WILL BE LOCATED WITHIN THE MITIGATION BANK TO CREATE FLOOD REFUGE HABITAT.
5. THE ENTIRE SITE WILL BE PLANTED WITH NATIVE VEGETATION TO CREATE A DIVERSE MOSAIC OF EMERGENT, SHRUBS, AND FOREST WETLANDS SURROUNDED BY A FOREST WETLAND UPLAND BUFFER.

PHASE II WATER AND ELECTRIC EASEMENT NOTES:

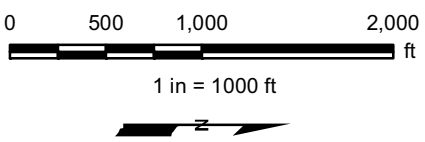
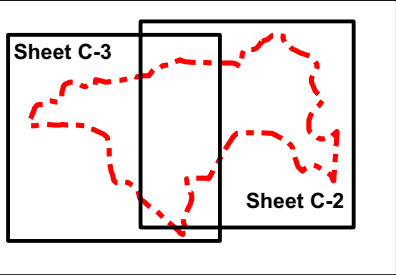
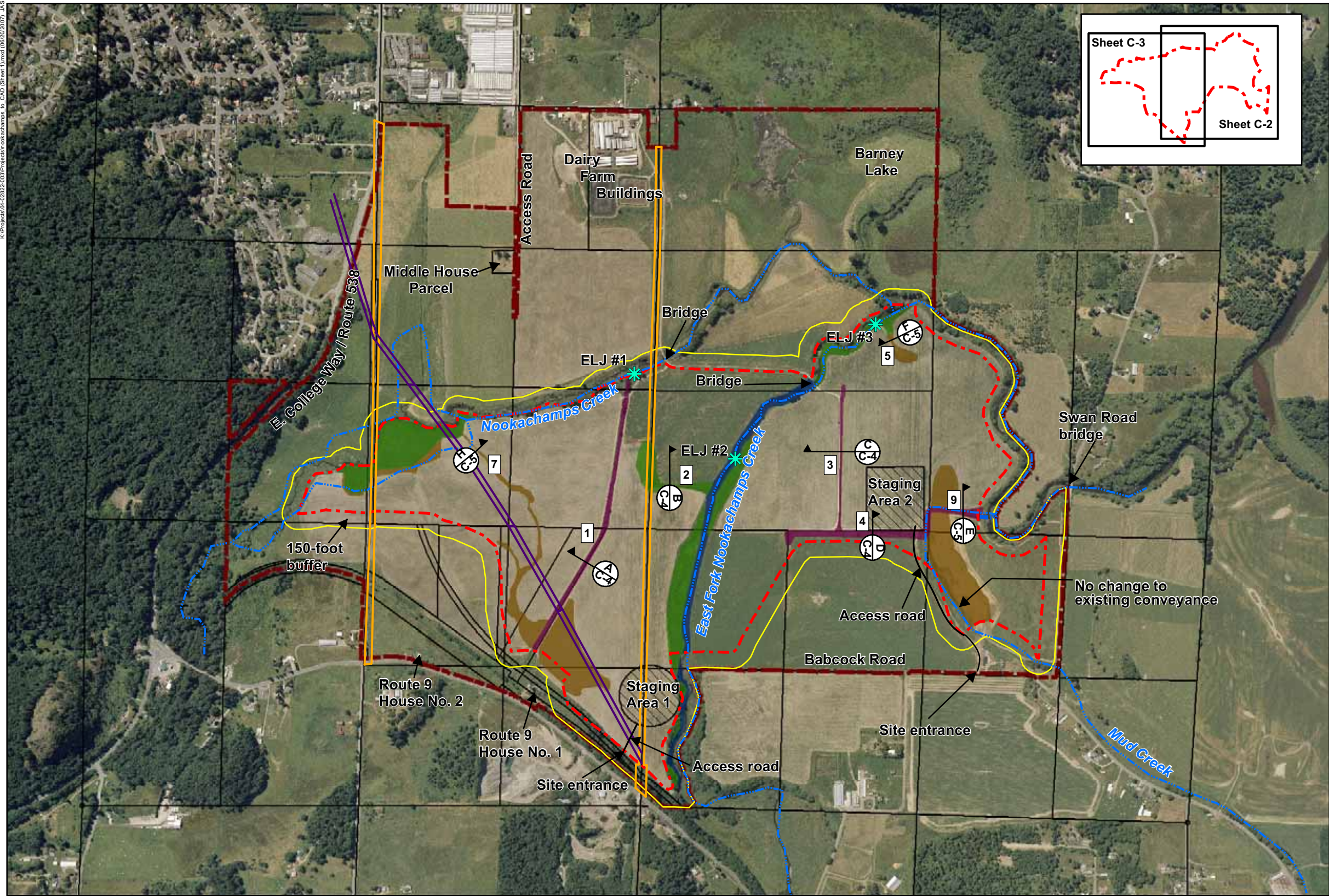
1. PRIOR TO PHASE II ACTIVITIES, A RIGHT-OF-WAY/UTILITY PERMIT APPLICATION IS REQUIRED BY SKAGIT COUNTY PUBLIC WORKS (360-336-9400). THE PERMIT WILL EXPIRE 90 DAYS FROM THE DATE OF ISSUANCE.
2. SKAGIT COUNTY PUBLIC WORKS ALLOWS THE PLANTING OF NATIVE TREE AND SHRUB SPECIES WITHIN THE WATER LINE EASEMENT.
3. PUGET SOUND ENERGY REQUIRES THE SUBMISSION OF A "CONSENT TO USE PUGET SOUND ENERGY RIGHT-OF-WAY". THE FOLLOWING ACTIONS WILL BE TAKEN BASED ON PSE GUIDANCE:
- AREAS WITHIN THE PSE ROW WILL BE VEGETATED WITH SPECIES THAT GROW TO A MAXIMUM HEIGHT OF 15 FEET.
 - NO WATER SHALL COLLECT AT THE BASE OF STRUCTURES.
 - THE EXTENT OF EXCAVATION WITHIN 20 FEET OF PSE STRUCTURE WILL BE NO GREATER THAN 2 FEET.

PHASE III PROJECT WORK ELEMENTS:

1. FINAL SITE GRADING OF AREAS PROPOSED AS WETLAND WHICH HAVE NOT DEVELOPED HYDRIC CONDITIONS.
2. TRANSFORM PORTIONS OF THE TEMPORARY ACCESS ROAD INTO AN UPLAND MOSAIC PATTERN THROUGH GRADING ACTIVITIES. SEE DRAWING C-18.
3. SITE FINAL PLANTING: VEGETATE ALL REGRADED AREAS.

DRAFT DESIGN

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- Legend :**
- 1 Ditch number
 - ELJ - Grade control structure
 - Cross-section location
 - Staging area
 - Stream
 - Waterline easement
 - Powerline easement
 - Mitigation bank boundary
 - Clear Valley Farm property boundary
 - Project site
 - Parcel boundary
- Existing wetlands**
- Palustrine: persistent
 - Palustrine: non-persistent and plowed
 - Palustrine: ditch
 - Riverine

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4	REVISION NO. 4	MM	MS	09/07
3	REVISION NO. 3	MM	MS	07/07
No.	REVISION	BY	APPD	DATE

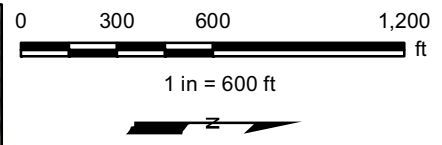
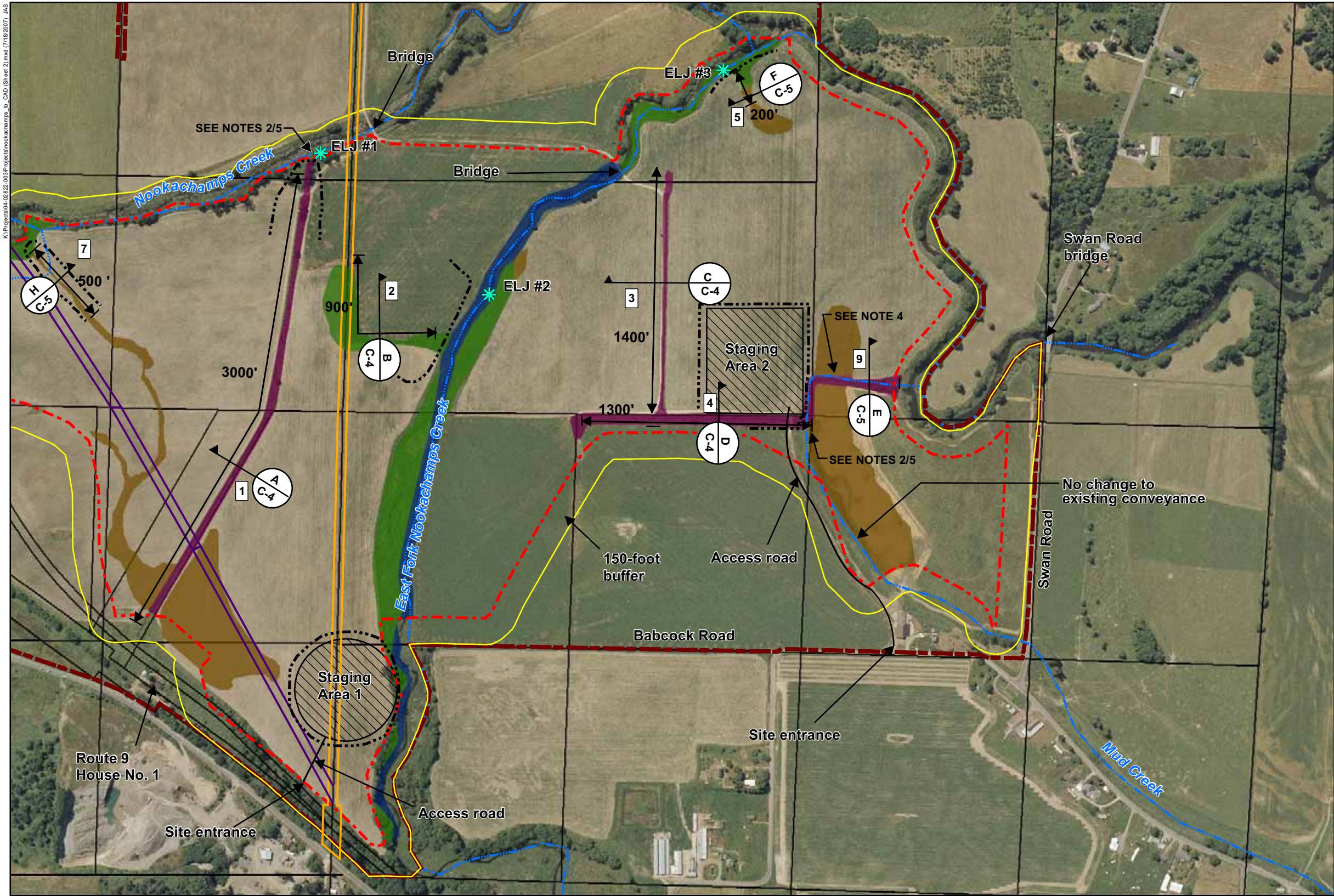


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SKAGIT ENVIRONMENTAL
BANK
PHASE I
EXISTING CONDITIONS
AND PROPOSED STRUCTURES

DATE:	SEPTEMBER 2007
PROJECT NO:	04-02822-003
DRAWING NO:	C-1
SHEET NO:	5 of 43



- Legend :**
- ELJ - Grade control structure
 - Cross-section location and reference sheet
 - Existing ditch length to be filled (ft)
 - Ditch number
 - Staging area
 - Stream
 - Waterline easement
 - Powerline easement
 - Mitigation bank boundary
 - Clear Valley Farm property boundary
 - Project site
 - Parcel boundary
 - Silt fence
 - Existing wetlands**
 - Palustrine: persistent
 - Palustrine: non-persistent and plowed
 - Palustrine: ditch
 - Riverine

- Notes:**
- Construct head cut protection at the end of all ditches when filled.
 - Install temporary silt fence at ends of each ditch.
 - No fill in Ditch 9.
 - See R-6/R-7 for details photos of ditches.

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4	REVISION NO. 4	MM	MS	09/07
3	REVISION NO. 3	MM	MS	07/07
No.	REVISION	BY	APPD	DATE



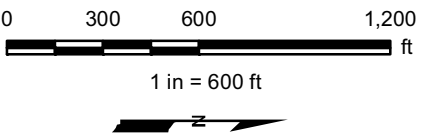
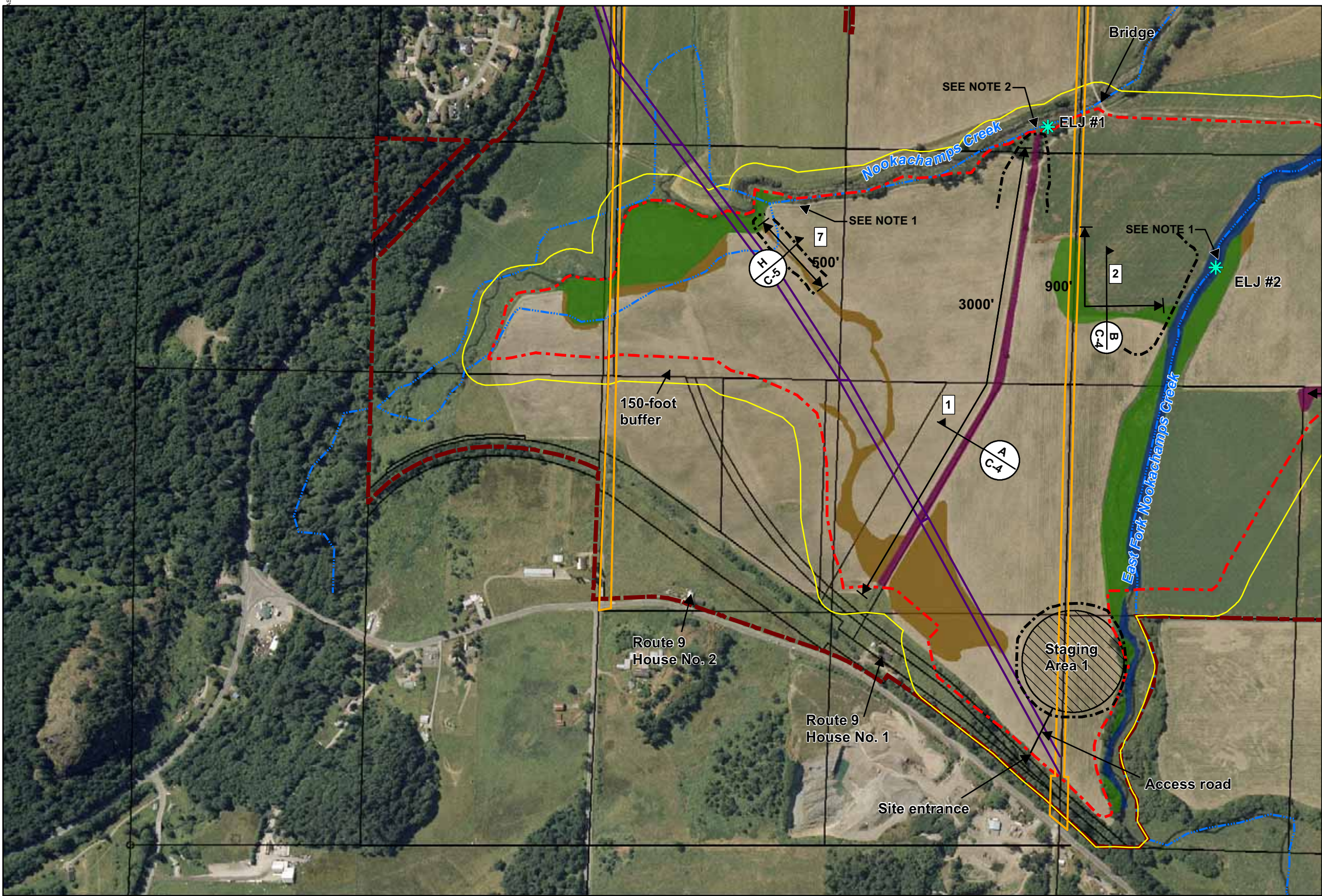
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SKAGIT ENVIRONMENTAL
BANK

PHASE I
SITE PLAN AND PROPOSED WORK

DATE:	SEPTEMBER 2007
PROJECT NO:	04-02822-003
DRAWING NO:	C-2
SHEET NO:	6 of 43



Legend :

- ELJ - Grade control structure
- Cross-section location and reference sheet
- Existing ditch length to be filled (ft)
- Ditch number
- Staging area
- Stream
- Waterline easement
- Powerline easement
- Mitigation bank boundary
- Clear Valley Farm property boundary
- Project site
- Parcel boundary
- Silt fence

Existing wetlands

- Palustrine: persistent
- Palustrine: non-persistent and plowed
- Palustrine: ditch
- Riverine

- Notes:**
1. Construct head cut protection at the end of all ditches when filled.
 2. Install temporary silt fence at ends of each ditch.

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4	REVISION NO.4	MM	MS	09/07
3	REVISION NO.3	MM	MS	07/07
No.	REVISION	BY	APPD	DATE



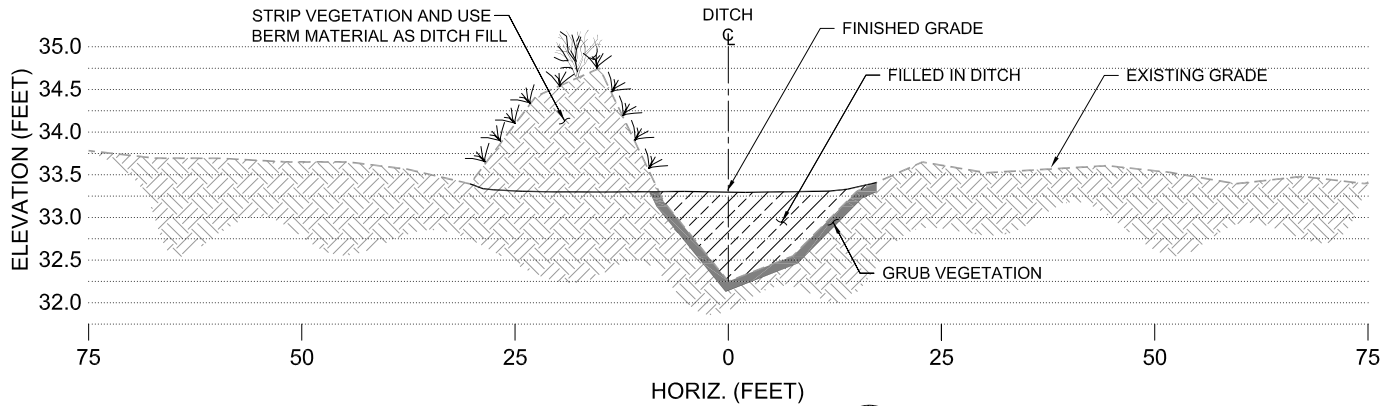
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206-441-9080
206-441-9108 FAX

DESIGNED:	DRAWN:
M. MERKELBACH	J. SCHMIDT
DESIGNED:	DRAWN:
DESIGNED:	CHECKED:
	M. MERKELBACH
DESIGNED:	APPROVED:
	M. SPILLANE

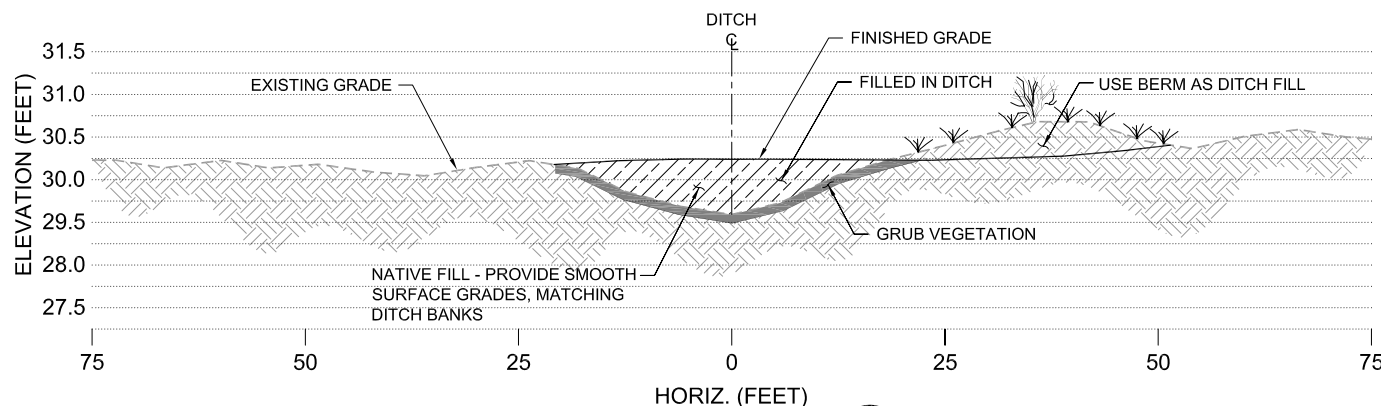
SKAGIT ENVIRONMENTAL
BANK
PHASE I
SITE PLAN AND PROPOSED WORK

DATE:	SEPTEMBER 2007
PROJECT NO:	04-02822-003
DRAWING NO:	C-3
SHEET NO:	7 of 43

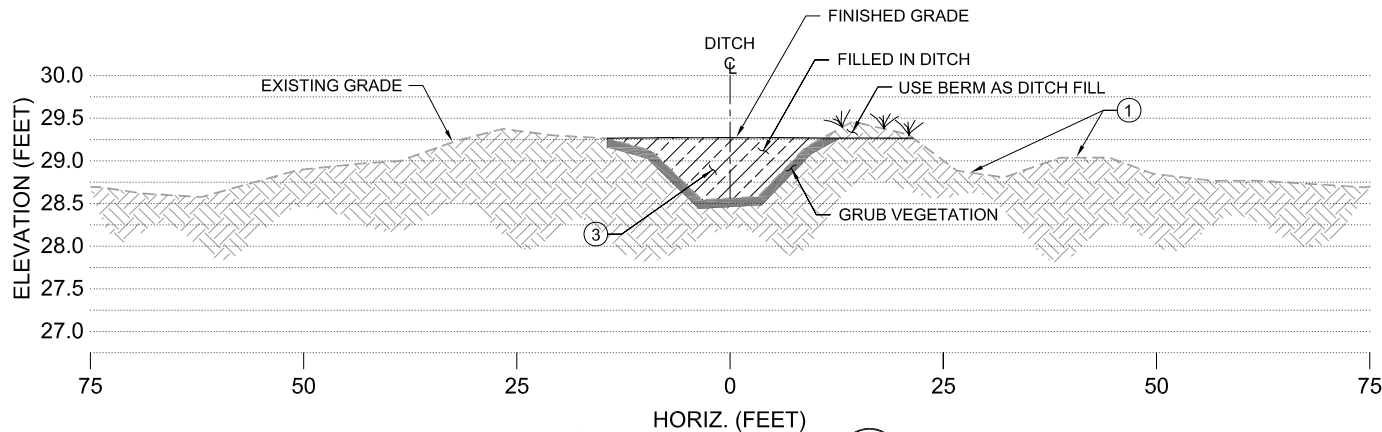
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Plotter: Adobe PDF



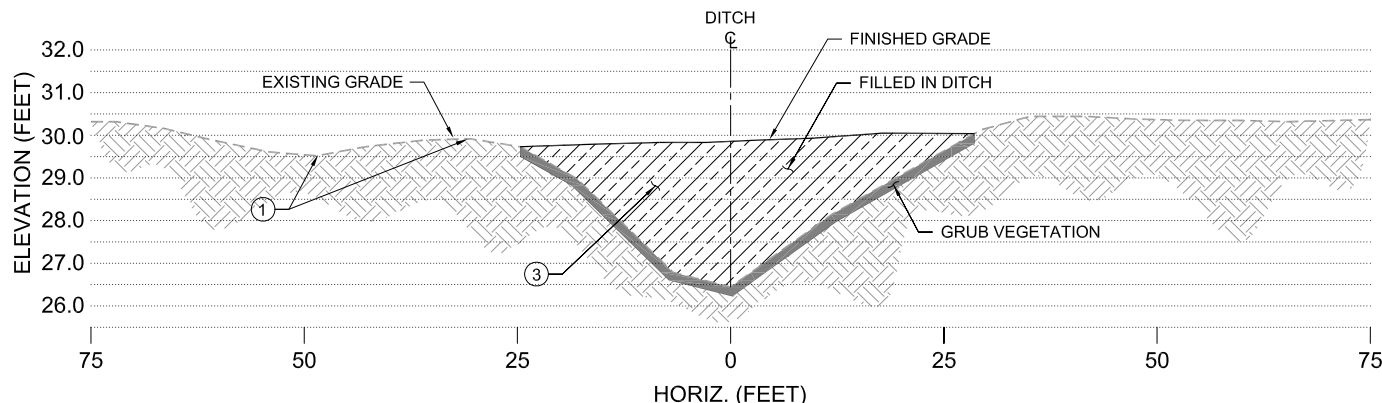
DITCH 1
SCALE: N.T.S.



DITCH 2
SCALE: N.T.S.



DITCH 3
SCALE: N.T.S.



DITCH 4
SCALE: N.T.S.

CROSS SECTION NOTES:

- ① FINISHED GRADE SHALL BE FREE OF DIPS, DEPRESSIONS, OR MOUNDS.
- ② CUT AND FILL LINES ARE SHOWN GRAPHICALLY ONLY AND DO NOT REFLECT GRADING LIMITS REQUIRED TO MEET VOLUMES INDICATED IN DITCH TABLE.
- ③ SEE DITCH FILLING NOTES ON DRAWING G-3.
- ④ ELEVATIONS REFERENCE DISTANCE IN FEET ABOVE MEAN SEA LEVEL, VERTICAL DATUM NAVD 88.

DITCH TABLE						
DITCH ID #	DITCH LENGTH (FT)	DITCH WIDTH (FT)	DITCH DEPTH (FT)	DITCH VOLUME (CY)	BERM VOLUME (CY)	EXCESS FILL NEEDED (CY)
1	3000	30	1	1967	1858	109
2	900	36	0.6	351	246	105
3	1400	18	0.6	272	252	20
4	1300	66	5	7262	0	7262
5	200	31.0	2	259	51	208
7	500	97.3	1.4	1261	0	1261
9	800	54.2	7.1	0	0	0
TOTALS	8100	332.5	17.7	11372	2407	8965

* DITCHES 6 AND 8 HAVE BEEN OMITTED SINCE THEY ARE MINOR LANDSCAPE FEATURES AND WILL BE REGRADED IN PHASE II.

DRAFT DESIGN

No.	REVISION	BY	APP'D	DATE
3	REVISION NO. 3	MS		7/07
2	REVISION NO. 2	MS		6/06
1	REVISION NO. 1	MS		5/06



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DESIGNED: M. MERKELBACH	DRAWN: T. GRIGA
DESIGNED: C. BARTON	CHECKED: M. MERKELBACH
SCALE: AS NOTED	APPROVED: M. SPILLANE

**SKAGIT ENVIRONMENTAL BANK
PHASE I**

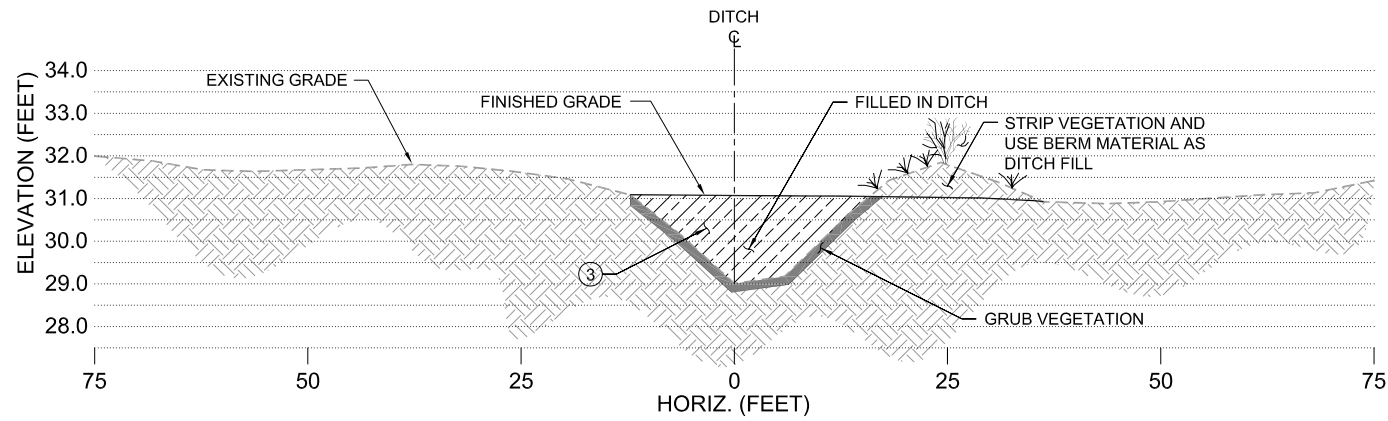
GRADING CROSS-SECTIONS

DATE:	JULY 2007	
PROJECT NO:	04-02822-003	
DRAWING NO:	C-4	
SHEET NO:	8	OF 35

ONE INCH
AT FULL SIZE, IF NOT ONE
INCH SCALE ACCORDINGLY

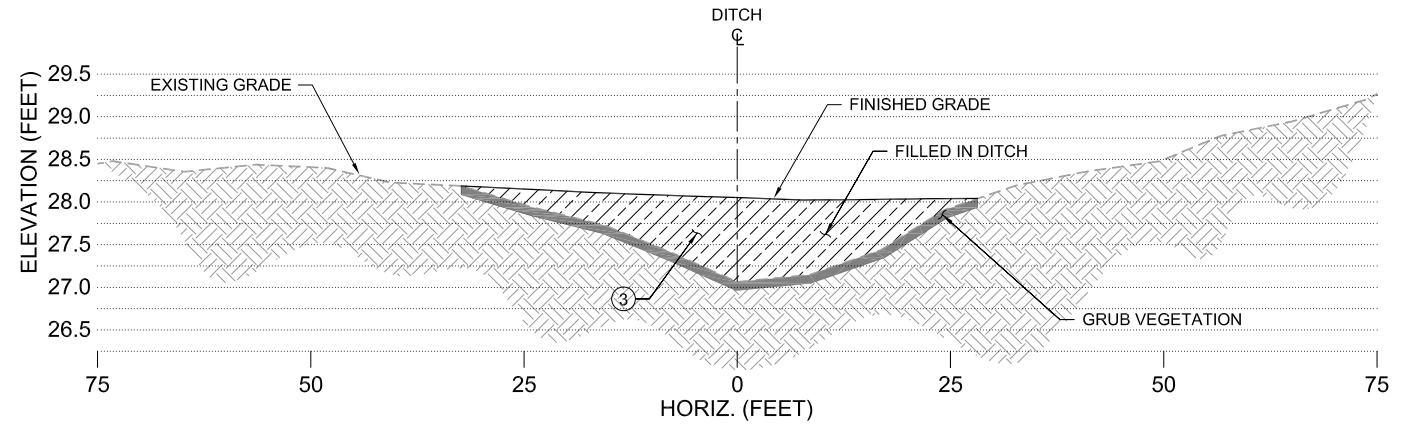
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Plot Style Table: Herrera.ctb
Plotter: Adobe PDF



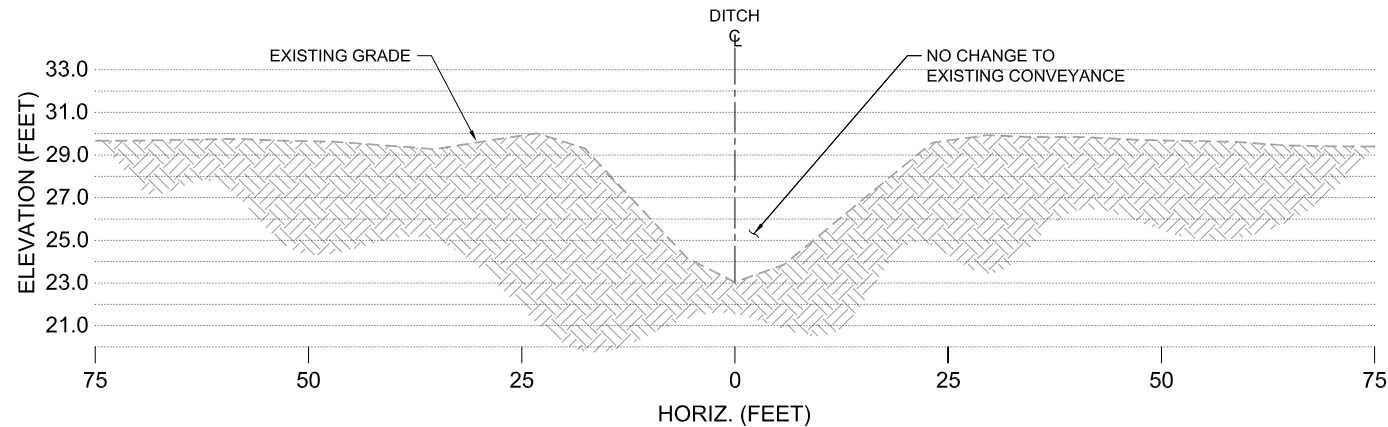
DITCH 5
SCALE: N.T.S.

F



DITCH 7
SCALE: N.T.S.

H



DITCH 9
SCALE: N.T.S.

E

CROSS SECTION NOTES:

- ① FINISHED GRADE SHALL BE FREE OF DIPS, DEPRESSIONS, OR MOUNDS.
- ② CUT AND FILL LINES ARE SHOWN GRAPHICALLY ONLY AND DO NOT REFLECT GRADING LIMITS REQUIRED TO MEET VOLUMES INDICATED IN DITCH TABLE.
- ③ SEE DITCH FILLING NOTES ON DRAWING G-3.
- ④ ELEVATIONS REFERENCE DISTANCE IN FEET ABOVE MEAN SEA LEVEL, VERTICAL DATUM NAVD 88.

DITCH TABLE						
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5	200	31.0	2	259	51	208
7	500	97.3	1.4	1261	0	1261
9	800	54.2	7.1	0	0	0
TOTALS	8100	332.5	17.7	11372	2407	8965

* DITCHES 6 AND 8 HAVE BEEN OMITTED SINCE THEY ARE MINOR LANDSCAPE FEATURES AND WILL BE REGRADED IN PHASE II.

DRAFT DESIGN

3	REVISION NO. 3	MS		7/07
2	REVISION NO. 2	MS		6/06
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No.	REVISION	BY	APP'D	DATE



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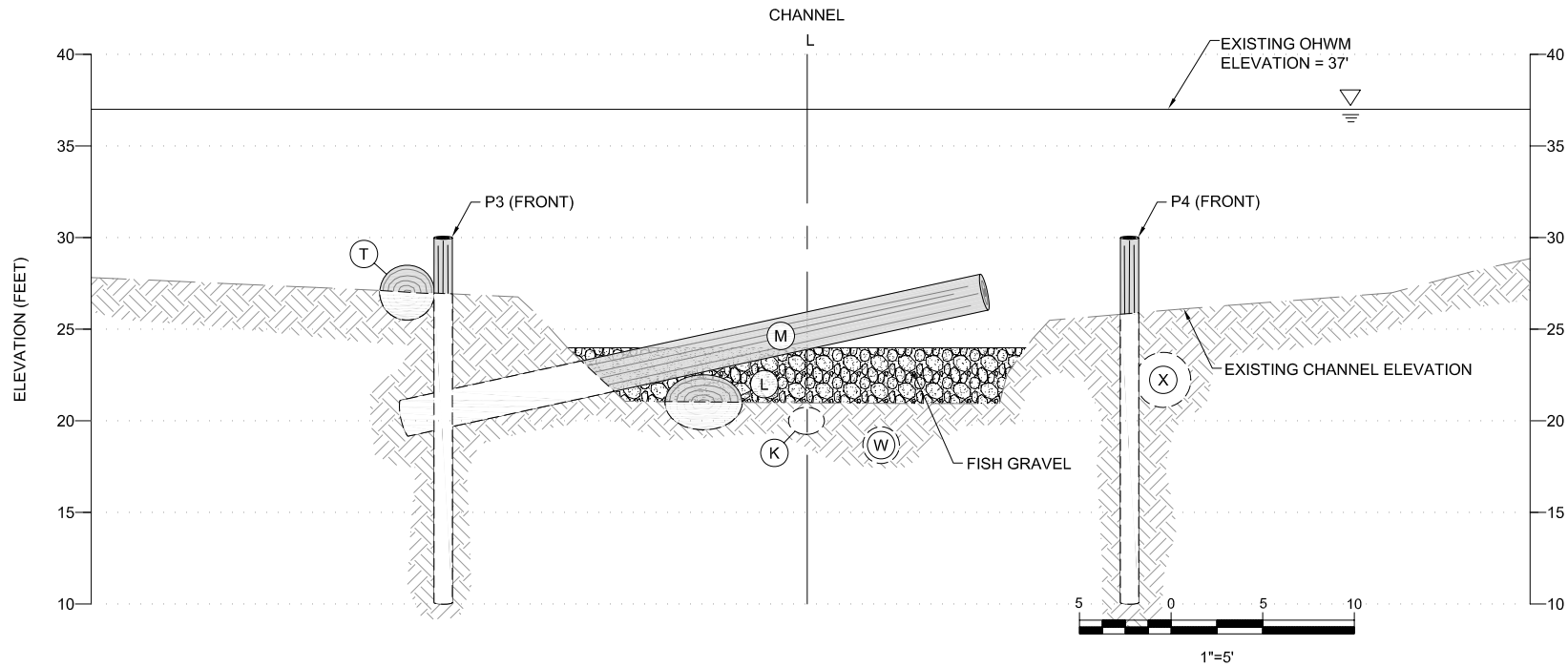
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DESIGNED: M. MERKELBACH	DRAWN: T. GRIGA
DESIGNED: C. BARTON	CHECKED: M. MERKELBACH
SCALE: AS NOTED	APPROVED: M. SPILLANE

**SKAGIT ENVIRONMENTAL BANK
PHASE I**

GRADING CROSS-SECTIONS

DATE: JULY 2007
PROJECT NO: 04-02822-003
DRAWING NO: C-5
SHEET NO: 9 OF 35

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Plot Date: 8/2/2007 11:21 AM Cad User: Tom Griga
Plot Style Table: Herrera.ctb Plotter: Adobe PDF



SECTION
SCALE: 1" = 5'

A
C-6

FISH GRAVEL GRAIN SIZE DISTRIBUTION	
U.S. STANDARD SIEVE SIZE	PERCENT PASSING BY WEIGHT
6 TO 9 INCH	100
3 TO 6 INCH	85
1-1/2 TO 3 INCH	70
3/4 TO 1-1/2 INCH	55
3/8 TO 3/4 INCH	40
0.1 TO 3/8 INCH	25
0.01 TO 0.1 INCH	10

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3	REVISION NO. 3	MS		7/07
2	REVISION NO. 2	MS		6/06
1	REVISION NO. 1	MS		5/06
No.	REVISION	BY	APP'D	DATE



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DESIGNED: C. BARTON	CHECKED: M. MERKELBACH
SCALE: AS NOTED	APPROVED: M. SPILLANE

SKAGIT ENVIRONMENTAL BANK
PHASE I

ELJ - GRADE CONTROL STRUCTURE DETAILS

DATE: JULY 2007
PROJECT NO: 04-02822-003
DRAWING NO: C-7
SHEET NO: 11 OF 35

ONE INCH
↑
AT FULL SIZE, IF NOT ONE
↑
INCH SCALE ACCORDINGLY

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Plot Style Table: Herrera.ctb Plotter: Adobe PDF

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2	REVISION NO. 2	MS		6/06
1	REVISION NO. 1	MS		5/06
No.	REVISION	BY	APP'D	DATE



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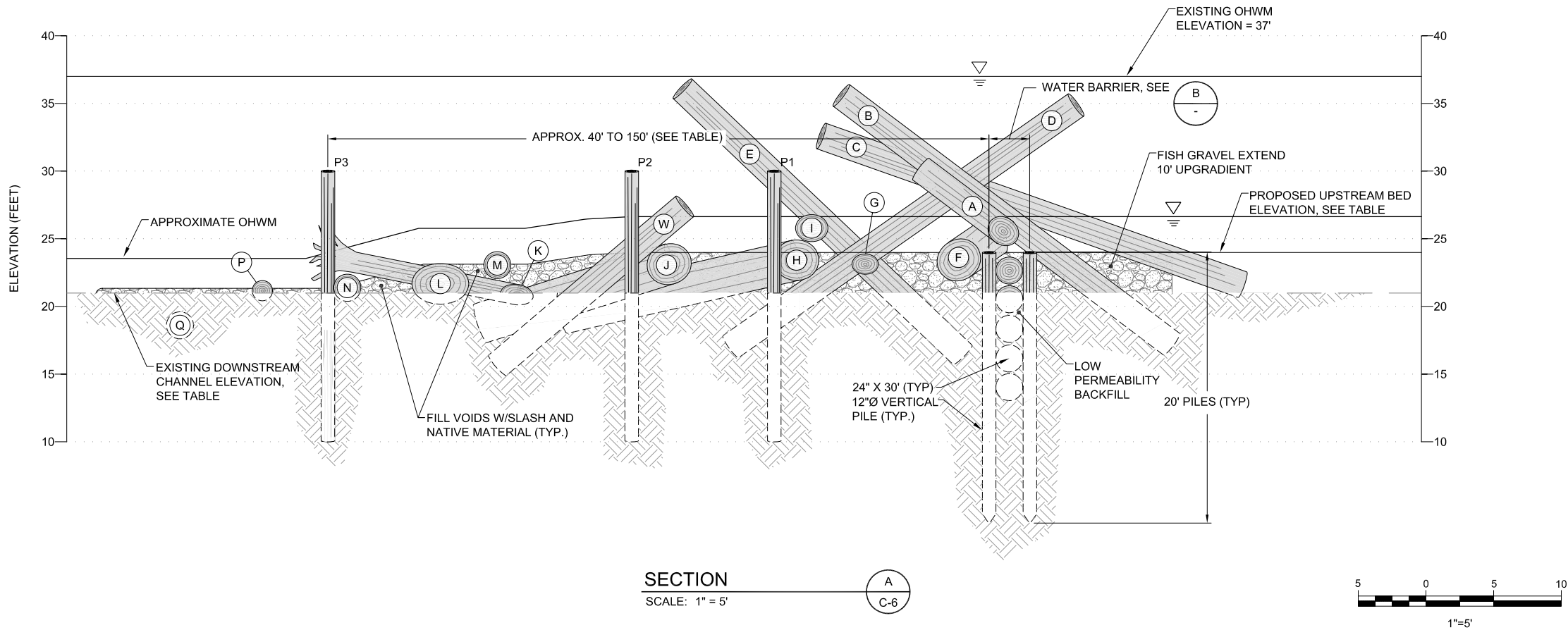
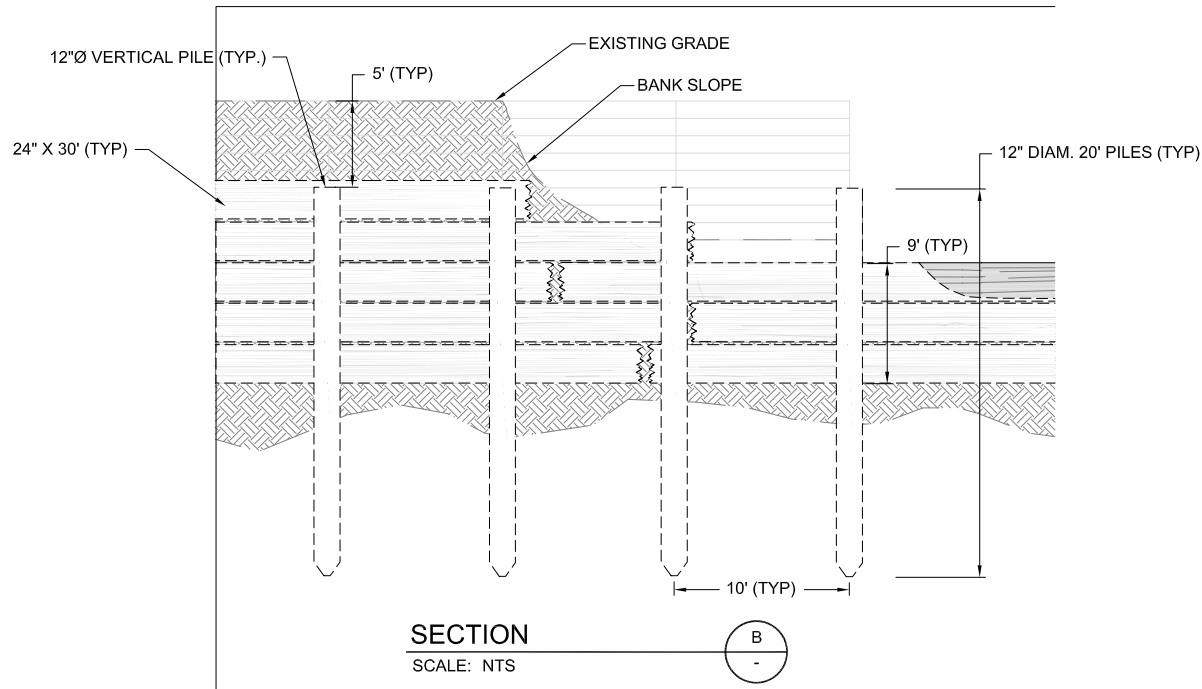
DRAFT DESIGN

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DESIGNED:	DRAWN:
M. MERKELBACH	T. GRIGA
DESIGNED:	CHECKED:
C. BARTON	M. MERKELBACH
SCALE:	APPROVED:
AS NOTED	M. SPILLANE

SKAGIT ENVIRONMENTAL BANK PHASE I

ELJ - GRADE CONTROL STRUCTURE LONGITUDINAL CROSS-SECTION

DATE:	JULY 2007
PROJECT NO:	04-02822-003
DRAWING NO:	C-8
SHEET NO:	12 OF 35



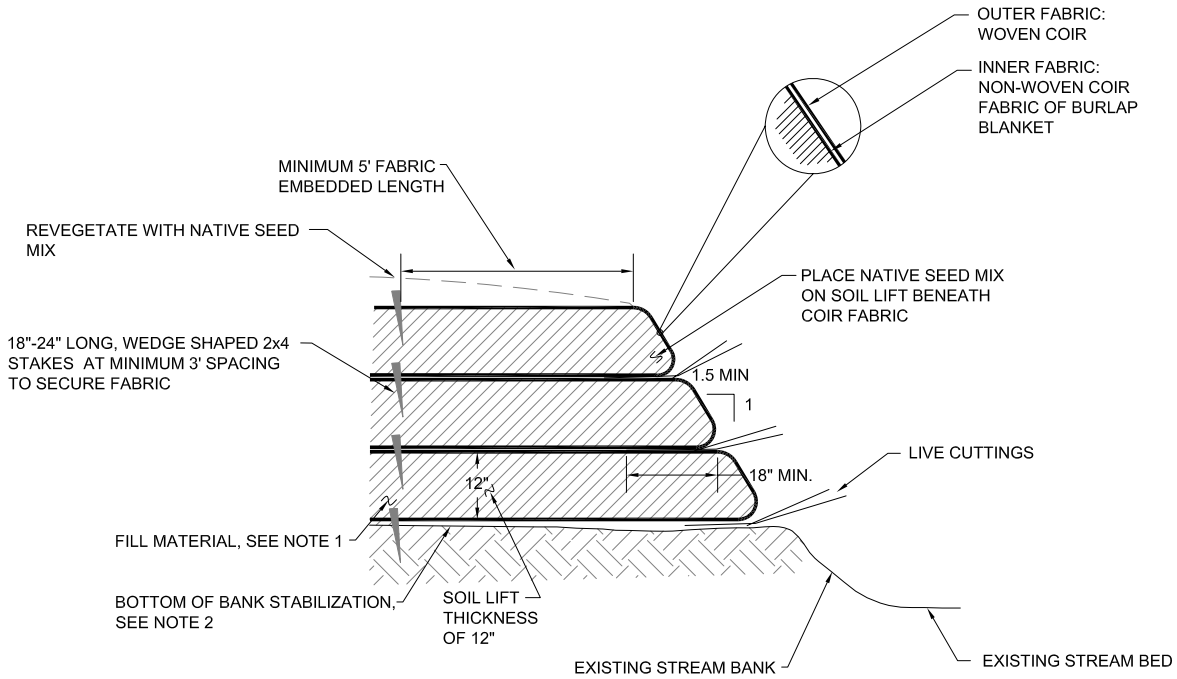
ELJ DIMENSIONS AND ELEVATIONS			
ELJ	LENGTH (FEET)	UPSTREAM ELEVATION (FEET)	DOWNSTREAM ELEVATION (FEET)
ELJ #1	150	27	20.5
ELJ #2	40	25.15	23.5
ELJ #3	50	24	22

NOTE: ELEVATIONS IN NAVD 88

ONE INCH
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INCH SCALE ACCORDINGLY

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Path: O:\proj\04-02822-003\Cad\Drawings\Phase 1-2-3 - Rev 3\13 C-9.dwg
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Plot Style Table: Herrera.ctb Plotter: Adobe PDF



BANK STABILIZATION STRUCTURE


SCALE: N.T.S.



NOTES:

1. FILL MATERIAL AT ELJ CONSTRUCTION SITES TO CONSIST OF LOCAL BANK SEDIMENT. FILL MATERIAL AT END OF FILLED DITCHES TO CONSIST OF DITCH FILL MATERIAL.
2. WHERE BANK STABILIZATION IS INSTALLED TO PREVENT HEAD CUTS WHEN FILLED DITCHES TERMINATE AT STREAM BANKS, BOTTOM OF STABILIZATION SHALL BE THE EXISTING DITCH BOTTOM. WHERE BANK STABILIZATION IS INSTALLED AT ELJ CONSTRUCTION SITES, BOTTOM OF BANK STABILIZATION SHALL BE THE BANK TOE AT BASE OF FISH GRAVEL.

DRAFT DESIGN

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						DESIGNED: M. MERKELBACH	DRAWN: T. GRIGA					PROJECT NO: 04-02822-003				
3	REVISION NO. 3	MS		7/07		DESIGNED: C. BARTON	CHECKED: M. MERKELBACH					DRAWING NO: C-9				
2	REVISION NO. 2	MS		6/06		SCALE: AS NOTED	APPROVED: M. SPILLANE					SHEET NO: 13	OF 35			
1	REVISION NO. 1	MS		5/06												
No.	REVISION	BY	APP'D	DATE												

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INCH SCALE ACCORDINGLY

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Path: O:\proj\04-02822-003\Card\dwgs\Phase 1-2-3 - Rev 3\14 C-10A.dwg
Plot Date: 8/2/2007 11:21 AM Cad User: Tom Griga
Plot Style Table: Herrera.ctb Plotter: Adobe PDF



NOTE:

1. THE AREA BETWEEN THE PROJECT SITE AND MITIGATION BANK BOUNDARY CONSISTS OF A 150 FOOT BUFFER ALONG THE ENTIRE SITE.

LEGEND

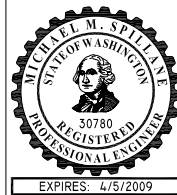
	STREAM
	CLEAR VALLEY FARM PROPERTY BOUNDARY
	PROJECT SITE
	WETLAND LIMITS
	MITIGATION BANK BOUNDARY
	EXISTING UTILITY EASEMENT
	TEMPORARY ACCESS ROAD
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	PROPOSED MAJOR CONTOUR
	PROPOSED MINOR CONTOUR
	PROPOSED SPOT ELEVATION
	PROPOSED ELJ

DRAFT DESIGN

No.	REVISION	BY	APP'D	DATE
3	REVISION NO. 3	MS		7/07
2	REVISION NO. 2	MS		6/06
1	REVISION NO. 1	MS		5/06



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DESIGNED: M. MERKELBACH	DRAWN: T. GRIGA
DESIGNED: C. BARTON	CHECKED: M. MERKELBACH
SCALE: AS NOTED	APPROVED: M. SPILLANE

**SKAGIT ENVIRONMENTAL BANK
PHASE II**

PROPOSED GRADING PLAN

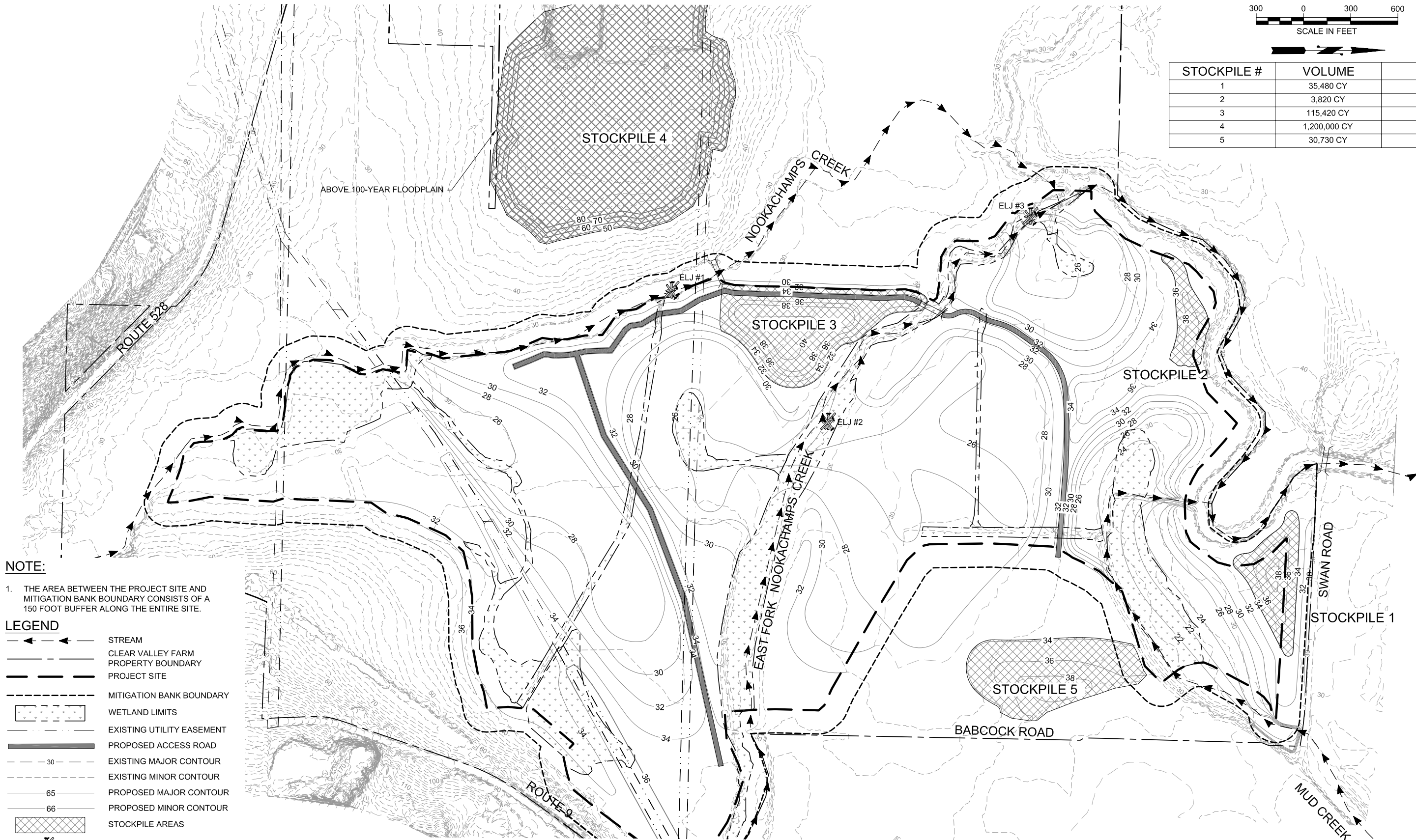
DATE: JULY 2007
PROJECT NO: 04-02822-003
DRAWING NO: C-10A
SHEET NO: 14 OF 35

300 0 300 600

SCALE IN FEET



STOCKPILE #	VOLUME	AREA
1	35,480 CY	4.6 AC
2	3,820 CY	2.5 AC
3	115,420 CY	11.7 AC
4	1,200,000 CY	46 AC
5	30,730 CY	9.9 AC



NOTE:

1. THE AREA BETWEEN THE PROJECT SITE AND MITIGATION BANK BOUNDARY CONSISTS OF A 150 FOOT BUFFER ALONG THE ENTIRE SITE.

LEGEND

	STREAM
	CLEAR VALLEY FARM PROPERTY BOUNDARY
	PROJECT SITE
	MITIGATION BANK BOUNDARY
	WETLAND LIMITS
	EXISTING UTILITY EASEMENT
	PROPOSED ACCESS ROAD
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	PROPOSED MAJOR CONTOUR
	PROPOSED MINOR CONTOUR
	STOCKPILE AREAS
	PROPOSED ELJ

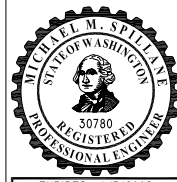
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2	REVISION NO. 2	MS		6/06
1	REVISION NO. 1	MS		5/06



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DESIGNED: M. MERKELBACH	DRAWN: T. GRIGA
DESIGNED: C. BARTON	CHECKED: M. MERKELBACH
SCALE: AS NOTED	APPROVED: M. SPILLANE

SKAGIT ENVIRONMENTAL BANK
PHASE II

STOCKPILE AREA

DATE: JULY 2007
PROJECT NO: 04-02822-003
DRAWING NO: C-10B
SHEET NO: 15 OF 35

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INCH SCALE ACCORDINGLY



NOTE:

1. THE AREA BETWEEN THE PROJECT SITE AND MITIGATION BANK BOUNDARY CONSISTS OF A 150 FOOT BUFFER ALONG THE ENTIRE SITE.
2. HIGH FLOW SIDE CHANNEL WILL BE REACTIVATED RESULTING FROM INSTALLATION OF ELJ #2.

LEGEND

- STREAM
- HIGH FLOW BACK CHANNEL CENTERLINE
- CLEAR VALLEY FARM PROPERTY BOUNDARY
- PROJECT SITE
- MITIGATION BANK BOUNDARY
- EXISTING UTILITY EASEMENT
- PROPOSED SHRUB WETLAND MOSAIC
- PROPOSED EMERGENT WETLANDS
- PROPOSED SHRUB WETLANDS
- PROPOSED FOREST WETLANDS
- PROPOSED UPLAND
- PROPOSED ELJ

DRAFT DESIGN

COMMUNITY TYPE	AREA (AC)	PERCENT OF BANK
EMERGENT WETLAND	49	16%
SHRUB WETLAND	85	27%
FOREST WETLAND	95	30%
UPLAND	73	23%



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DESIGNED: M. MERKELBACH	DRAWN: T. GRIGA
DESIGNED: -	CHECKED: M. MERKELBACH
SCALE: AS NOTED	APPROVED: M. SPILLANE

SKAGIT ENVIRONMENTAL BANK
PHASE II

PROPOSED VEGETATION PLAN

DATE: JULY 2007
PROJECT NO: 04-02822-003
DRAWING NO: C-11
SHEET NO: 16
OF 35


Path: O:\proj\04-02822-003\Cad\Drawings\Phase 1-2-3 - Rev 3\17 C-12.dwg
Plot Date: 8/2/2007 11:23 AM Cad User: Tom Griga
Plot Style Table: Herrera.ctb Plotter: Adobe PDF

PROPOSED PHASE II PLANTING LIST		
FORESTED WETLANDS		
SPECIES COMMON NAME	SCIENTIFIC NAME	WETLAND INDICATOR STATUS
BLACK COTTONWOOD	POPULUS BALSAMIFERA SSP. TRICHOCARPA	FAC
CASCARA	RHAMNUS PURSHIANA	FAC-
PACIFIC WILLOW	SALIX LUCIDA	NI
RED ALDER	ALNUS RUBRA	FAC
SITKA SPRUCE	PICEA SITCHENSIS	FAC
SHORE PINE	PINUS CONTORTA	FAC
WESTERN RED CEDAR	THUJA PLICATA	FAC
SHRUB WETLAND		
BLACK TWINBERRY	LONICERA INVOLUCRATA	FAC+*
NOOTKA ROSE	ROSA NUTKANA	FAC
PACIFIC CRABAPPLE	MALUS FUSCA	FACW
PACIFIC NINEBARK	PHYSOCARPUS CAPITATUS	FACW-
PACIFIC WILLOW	SALIX LUCIDA	NI
RED-OSIER DOGWOOD	CORNUS SERICEA	FACW
SALMONBERRY	RUBUS SPECTABILIS	FAC+
SITKA WILLOW	SALIX SITCHENSIS	FACW
SWAMP ROSE	ROSA PISOCARPA	FAC
EMERGENT WETLAND		
BALTIC RUSH	JUNCUS BALTICUS	FACW+
COMMON SPIKERUSH	ELEOCHARIS PALUSTRIS	OBL
DAGGERLEAF RUSH	JUNCUS ENSIFOLIUS	FACW
DOUGLAS ASTER	ASTER SUBSPICATUS	FACW
SHORT-AWN FOXTAIL	ALOPECURUS AEQUALIS	OBL
SLOUGH SEDGE	CAREX OBNUPTA	OBL
SMALL-FRUITED BULRUSH	SCIRPUS MICROCARPUS	OBL
THREE-SQUARE BULRUSH	SCIRPUS AMERICANUS	OBL
TUFTED HAIRGRASS	DESCHAMPSIA CESPITOSA	FACW
UPLAND		
BEAKED HAZELNUT	CORYLUS CORNUTU	FACU
BIG LEAF MAPLE	ACER MACROPHYLLUM	FACU+ [FAC]
BITTER CHERRY	PRUNUS EMARGINATA	FACU
BLACK COTTONWOOD	POPULUS TRICHOCARPA	FAC
BLACK HAWTHORN	CRATAEGUS DOUGLASII	FAC
DOUGLAS FIR	PSEUDOTSUGA MENZIESII	FACU
RED ELDERBERRY	SAMBUCUS RACEMOSA	FACU
RED HUCKLEBERRY	VACCINIUM PARVIFOLIUM	NI [FACU]
SNOWBERRY	SYMPHORICARPOS ALBUS	FACU
WESTERN HEMLOCK	TSUGA HETEROPHYLLA	FACU-

GENERAL NOTES:

1. THE PLANT LIST IS SUGGESTED AND MAY BE CHANGED BASED ON LOCAL AVAILABILITY.
2. ALL PLANTS, EXCEPT AS NOTED, SHALL BE NURSERY CONTAINER GROWN A MINIMUM OF ONE YEAR AND CONTAINERIZED PER ANSI STANDARDS. PLANT MATERIAL IS TO BE SUPPLIED BY COMMERCIAL NURSERIES THAT SPECIALIZE IN NATIVE PLANTS. PLANT SUBSTITUTIONS ARE SUBJECT TO APPROVAL BY THE ENGINEER.
3. PLANTS SHALL BE RANDOMLY MIXED THROUGHOUT EACH PLANTING ZONE. LAYOUT OF ALL PLANT MATERIAL AND SEEDING TO BE APPROVED BY THE ENGINEER AND PRIOR TO INSTALLATION. USE PLAN FOR QUANTITIES -- FINAL LOCATIONS OF PLANTS SUBJECT TO CHANGE.
4. ALL SHRUB AND TREE PLANTING SHALL OCCUR DURING THE DORMANT SEASON (NOVEMBER THROUGH FEBRUARY).

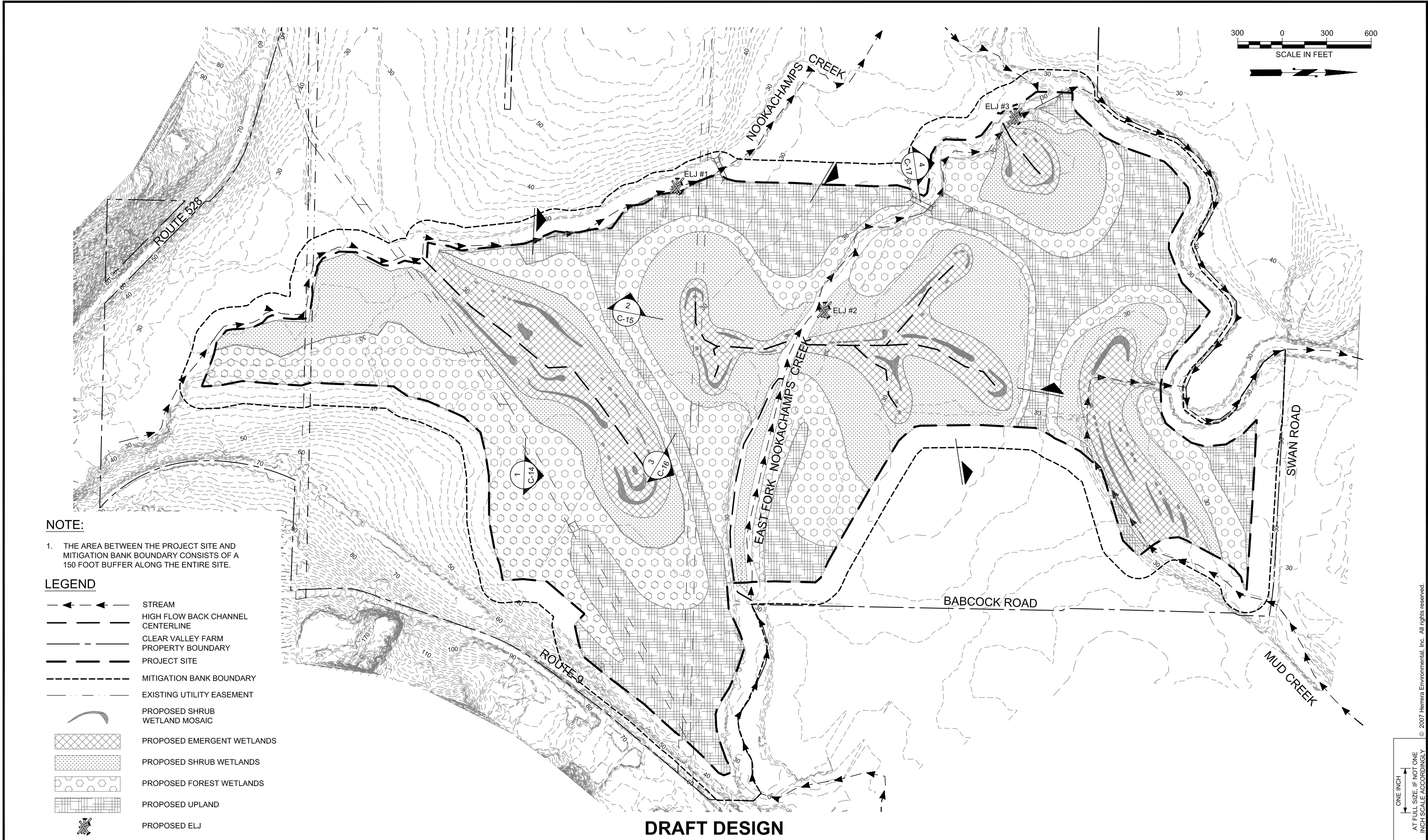
DRAFT DESIGN

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													DESIGNED: M. MERKELBACH	DRAWN: T. GRIGA		PROJECT NO: 04-02822-003	
3	REVISION NO. 3	MS		7/07									DESIGNED: C. BARTON	CHECKED: M. MERKELBACH		DRAWING NO: C-12	
2	REVISION NO. 2	MS		6/06									SCALE: AS NOTED	APPROVED: M. SPILLANE		SHEET NO: 17	OF 35
1	REVISION NO. 1	MS		5/06													
No.	REVISION	BY	APP'D	DATE													

ONE INCH
↑
↓
AT FULL SIZE, IF NOT ONE
INCH SCALE ACCORDINGLY

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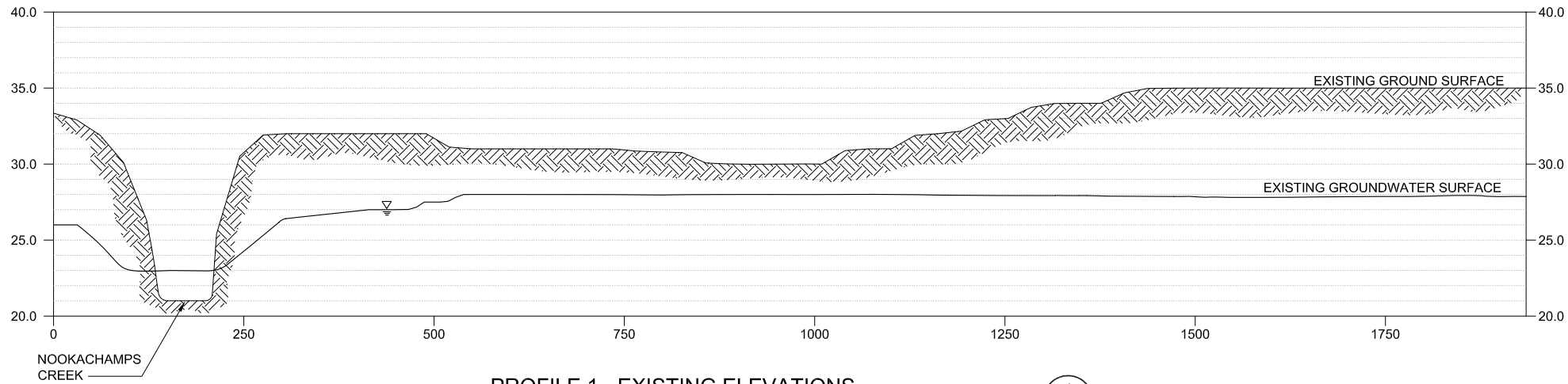
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DESIGNED: M. MERKELBACH	DRAWN: T. GRIGA
DESIGNED: C. BARTON	CHECKED: M. MERKELBACH
SCALE: AS NOTED	APPROVED: M. SPILLANE

SKAGIT ENVIRONMENTAL BANK PHASE II

PROFILE LAYOUT

DATE: JULY 2007
PROJECT NO: 04-02822-003
DRAWING NO: C-13
SHEET NO: 18
OF 35

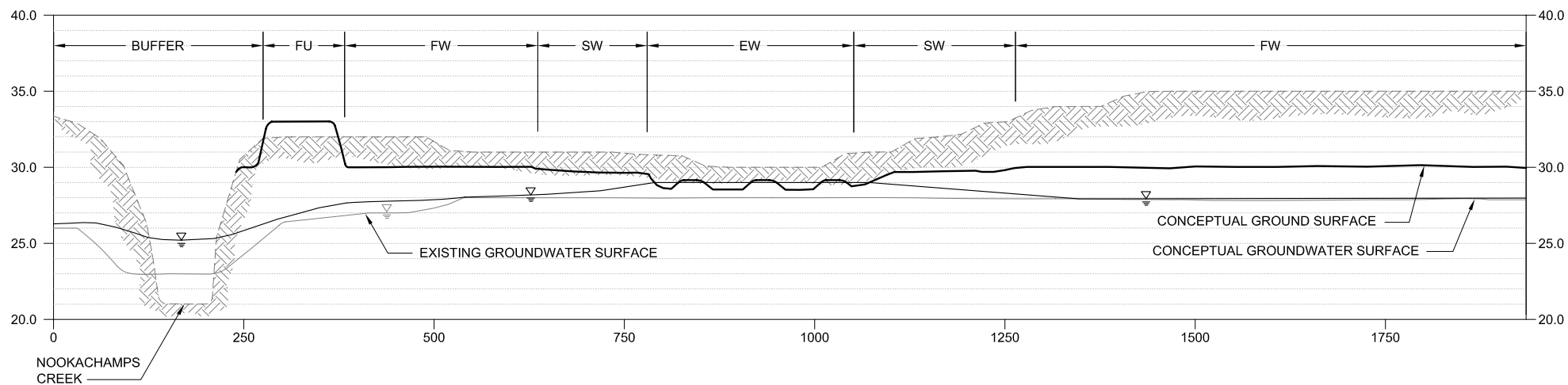
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Plot Date: 8/2/2007 11:24 AM Cad User: Tom Griga
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PROFILE 1 - EXISTING ELEVATIONS

HORIZ. SCALE: 1"=100'
VERT. SCALE: 1"=5'

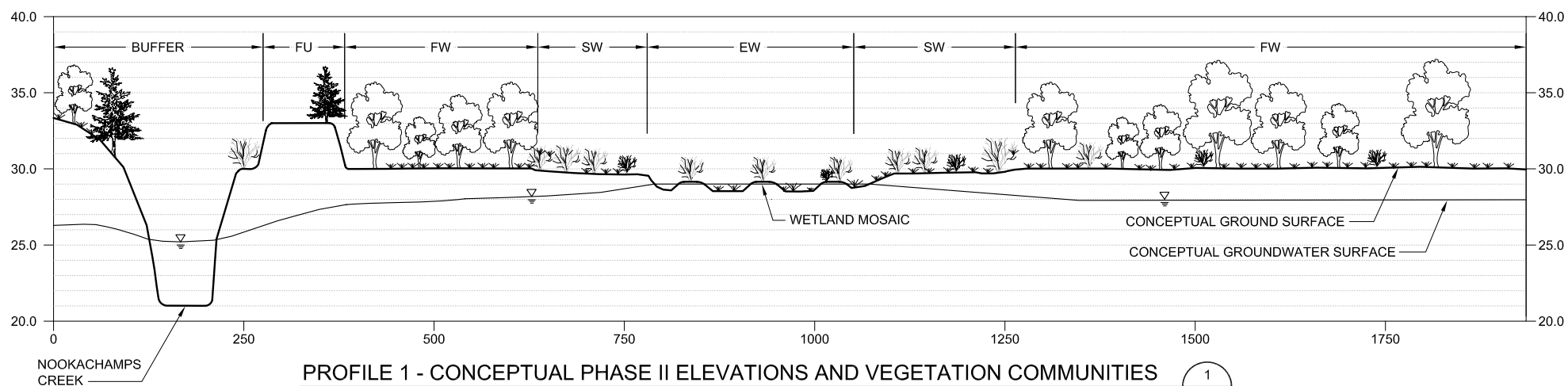
1
C-13



PROFILE 1 - CONCEPTUAL PHASE II ELEVATIONS

HORIZ. SCALE: 1"=100'
VERT. SCALE: 1"=5'

1
C-13



PROFILE 1 - CONCEPTUAL PHASE II ELEVATIONS AND VEGETATION COMMUNITIES

HORIZ. SCALE: 1"=100'
VERT. SCALE: 1"=5'
VEGETATION: = N.T.S.

1
C-13

DRAFT DESIGN

CONCEPTUAL VEGETATION LEGEND:

EW = EMERGENT WETLAND
SW = SCRUB/SHRUB WETLAND
FW = FORESTED WETLAND
FU = FORESTED UPLAND

NOTE:

- GROUNDWATER SURFACE ELEVATIONS ARE BASED ON 2005/2006/2007 SECOND QUARTER GROUNDWATER ELEVATIONS (APRIL, MAY, AND JUNE).
- ELEVATIONS REFERENCE DISTANCE IN FEET ABOVE MEAN SEA LEVEL, VERTICAL DATUM NAVD 88.
- THE CONCEPTUAL WATER LEVELS ARE AN ESTIMATION BASED UPON HYDRAULIC AND HYDROLOGIC MODELING; THE REVISED GRADING PLAN AFTER PHASE I WILL ENSURE THAT THE PROPER WETLAND HYDROLOGY IS MET PER PROPOSED VEGETATION COMMUNITIES.

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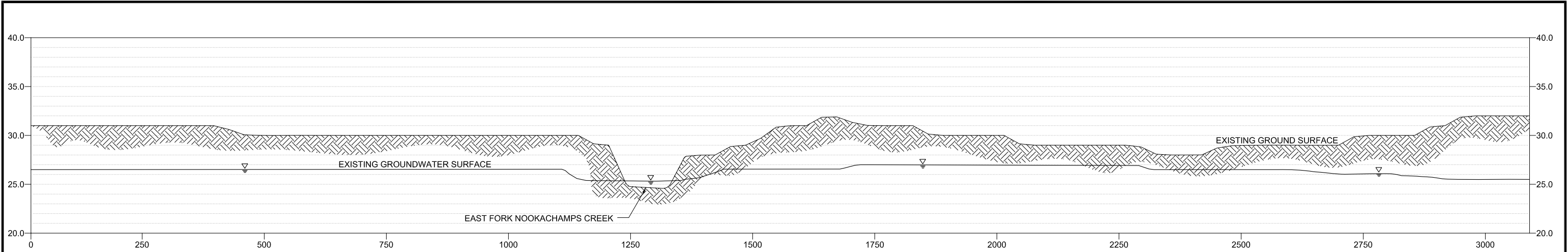
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SCALE: AS NOTED	APPROVED: M. SPILLANE

SKAGIT ENVIRONMENTAL BANK PHASE II

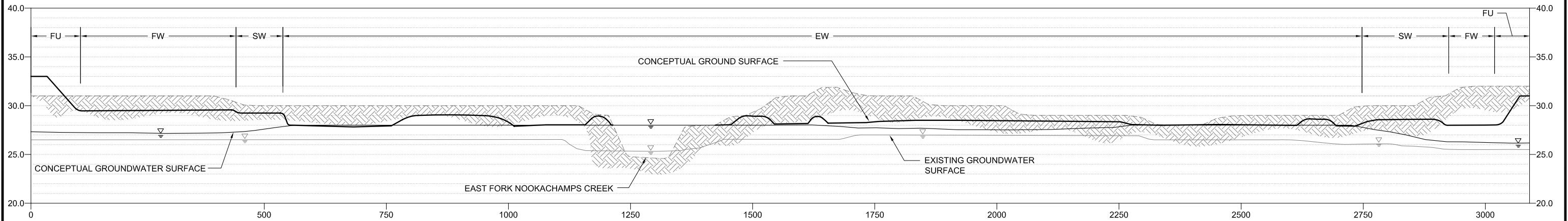
GRADING PROFILES

DATE: JULY 2007
PROJECT NO: 04-02822-003
DRAWING NO: C-14
SHEET NO: 19 OF 35



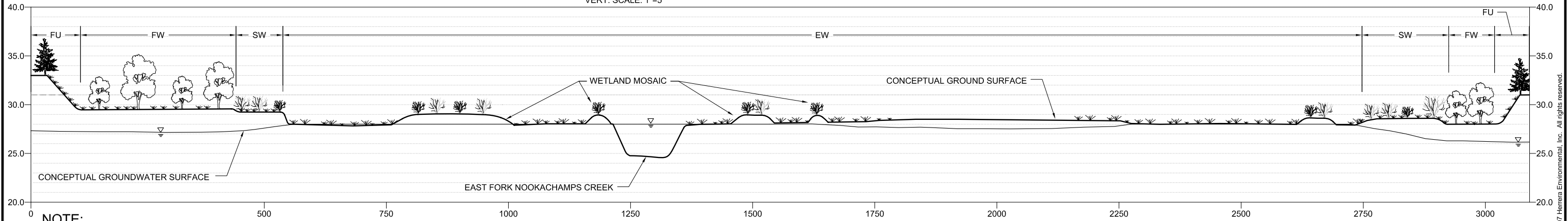
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HORIZ. SCALE: 1"=100'
VERT. SCALE: 1"=5'



PROFILE 2 - CONCEPTUAL PHASE II ELEVATIONS

HORIZ. SCALE: 1"=100'
VERT. SCALE: 1"=5'



PROFILE 2 - CONCEPTUAL PHASE II ELEVATIONS AND VEGETATION COMMUNITIES

HORIZ. SCALE: 1"=100'
VERT. SCALE: 1"=5'
VEGETATION: = N.T.S.

NOTE:

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SKAGIT ENVIRONMENTAL BANK
PHASE II

GRADING PROFILES

DATE:	
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C-15	
SHEET NO:	OF
20	35

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NOTE:

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PROFILE 3 - CONCEPTUAL PHASE II ELEVATIONS AND VEGETAION COMMUNITIES

HORIZ. SCALE: 1"=100'
VERT. SCALE: 1"=5'
VEGETATION: = N.T.S.

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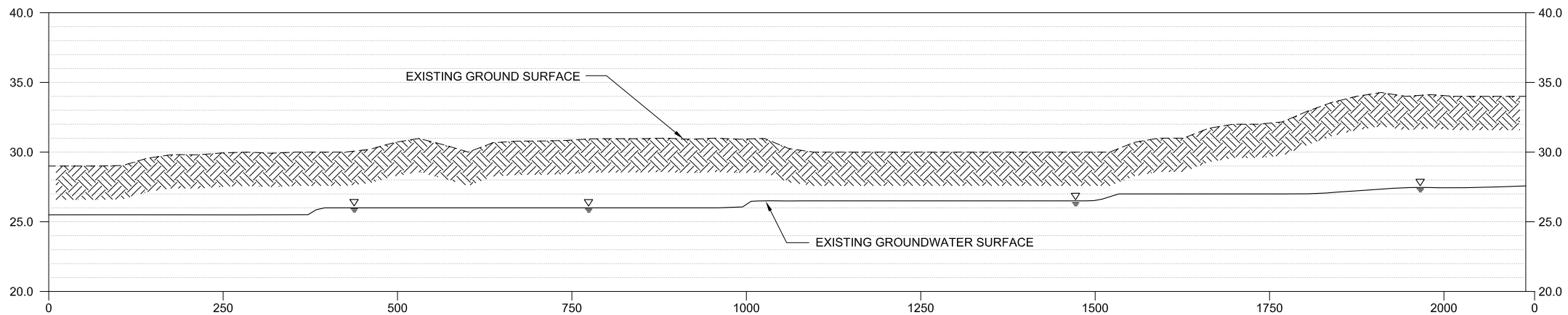
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SCALE: AS NOTED	APPROVED: M. SPILLANE

**SKAGIT ENVIRONMENTAL BANK
PHASE II**

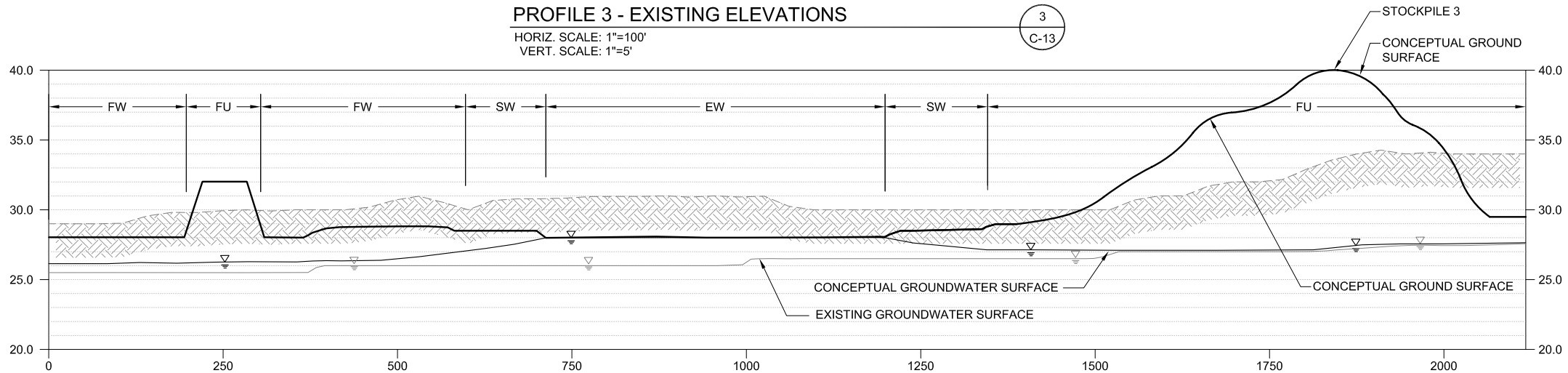
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PROJECT NO: 04-02822-003
DRAWING NO: C-16
SHEET NO: 21 OF 35



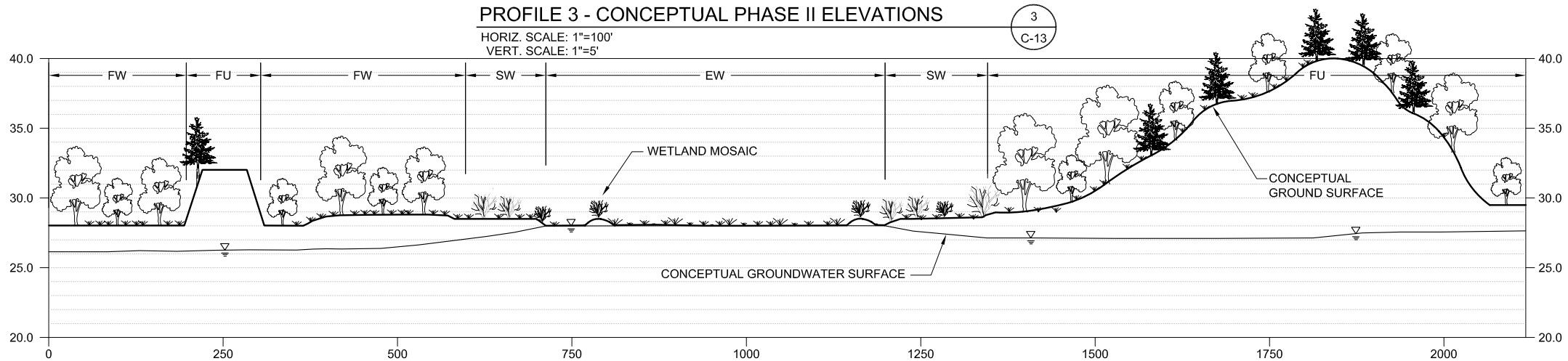
PROFILE 3 - EXISTING ELEVATIONS

HORIZ. SCALE: 1"=100'
VERT. SCALE: 1"=5'



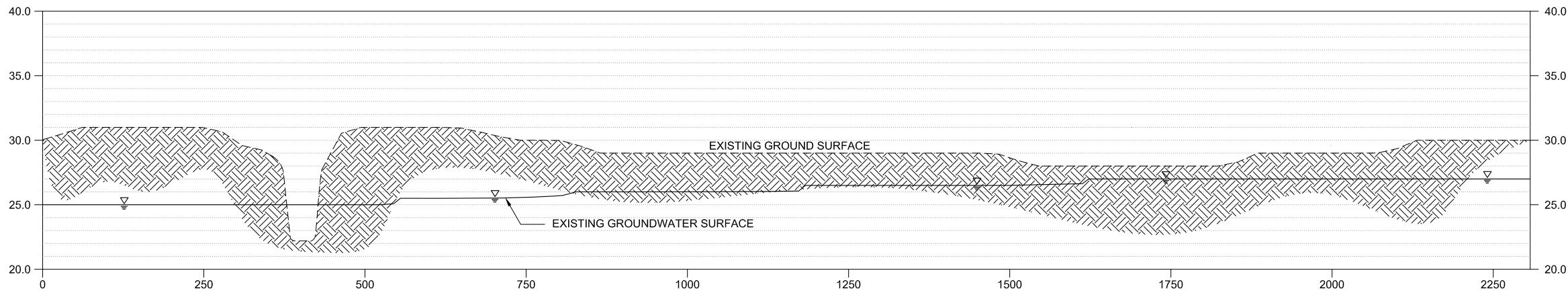
PROFILE 3 - CONCEPTUAL PHASE II ELEVATIONS

HORIZ. SCALE: 1"=100'
VERT. SCALE: 1"=5'

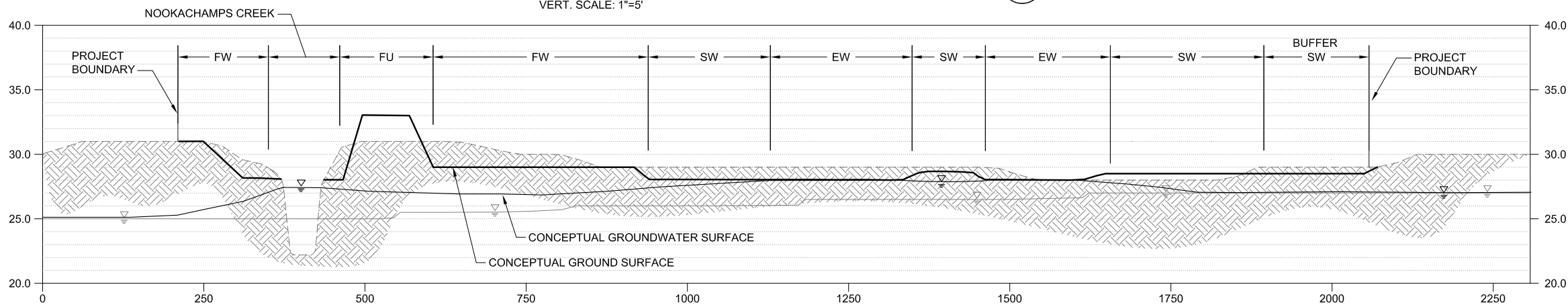


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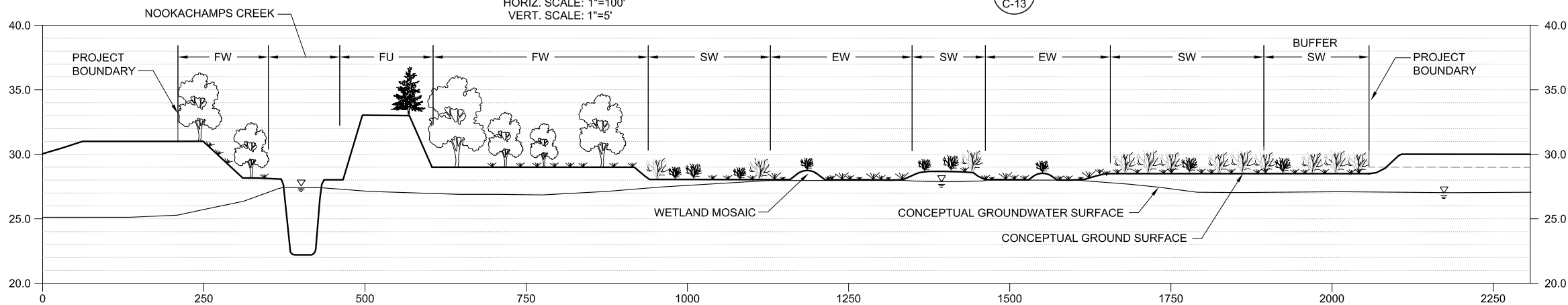
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PROFILE 4 - EXISTING ELEVATIONS
HORIZ. SCALE: 1"=100'
VERT. SCALE: 1"=5'



PROFILE 4 - CONCEPTUAL PHASE II ELEVATIONS
HORIZ. SCALE: 1"=100'
VERT. SCALE: 1"=5'



PROFILE 4 - CONCEPTUAL PHASE II ELEVATIONS AND VEGETAION COMMUNITIES
HORIZ. SCALE: 1"=100'
VERT. SCALE: 1"=5'
VEGETATION: = N.T.S.

- NOTE:**
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SKAGIT ENVIRONMENTAL BANK
PHASE II

GRADING CROSS-SECTIONS

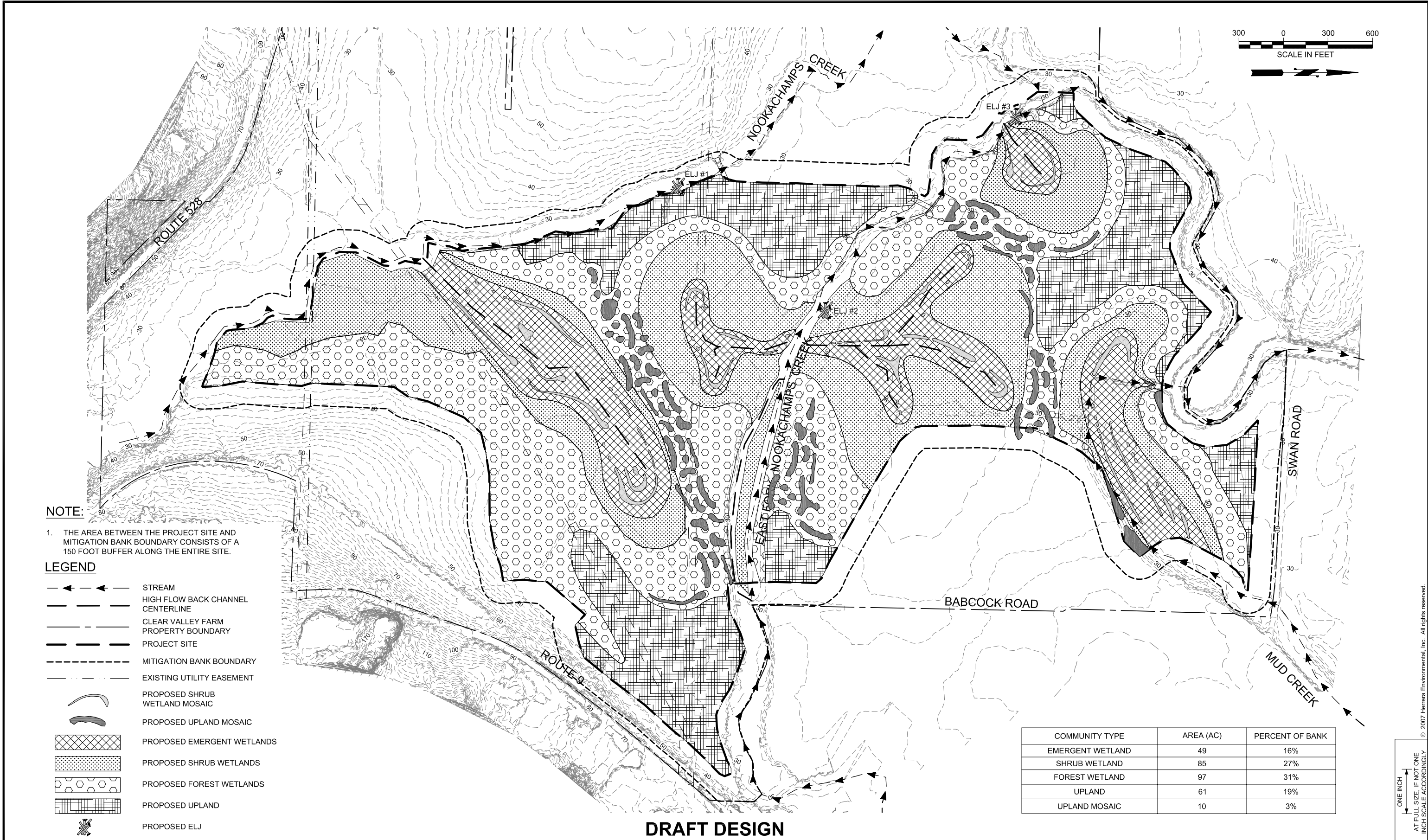
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PROJECT NO: 04-02822-003
DRAWING NO: C-17
SHEET NO: 22
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DESIGNED: C. BARTON	CHECKED: M. MERKELBACH
SCALE: AS NOTED	APPROVED: M. SPILLANE

**SKAGIT ENVIRONMENTAL BANK
PHASE III**

PHASE III VEGETATION PLAN

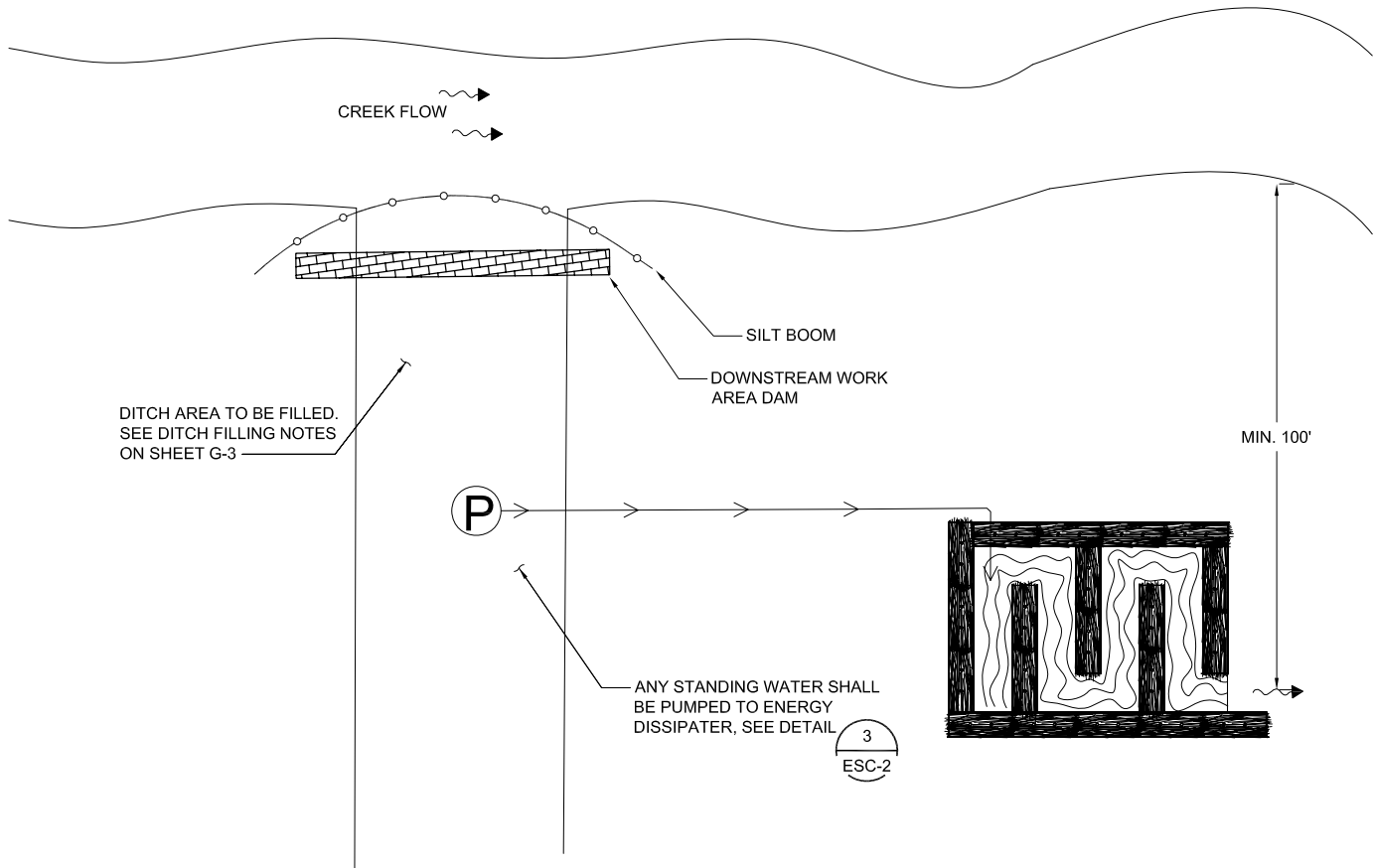
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04-02822-003

DRAWING NO:
C-18

SHEET NO: 23 OF 35

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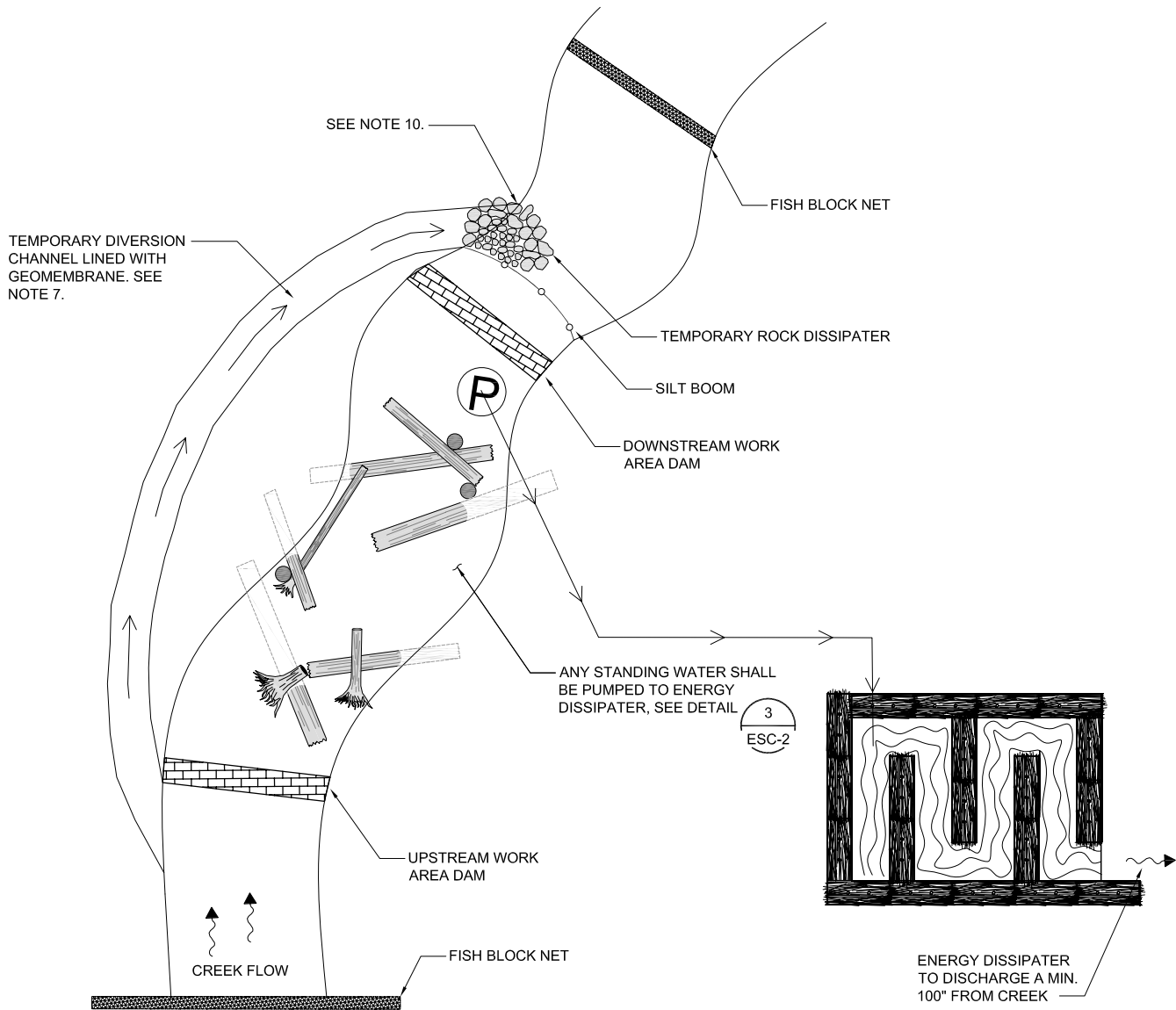
TYPICAL DITCH FILLING WATER MANAGEMENT DETAIL

SCALE: NTS

1
ESC-1

DITCH DETAIL NOTES:

- EXCAVATIONS THAT HAVE POTENTIAL TO IMPACT THE WETTED CHANNEL SHALL BE ISOLATED FROM THE ACTIVE CHANNEL BY THE CONTRACTOR. ISOLATION MEANS SHALL CONSIST OF SILT BOOMS, SHEET PILE, BULK BAGS, BLADDER DAMS OR OTHERS AS NECESSARY TO PREVENT IMPACTS TO WATER QUALITY.
- DEWATERING ACTIVITIES SHALL NOT IMPACT WATER QUALITY.
- INSTALL TEMPORARY SILT BOOM TO ISOLATE DITCH OR WORK AREA AS SHOWN ON THE PLAN.
- CONDUCT FISH REMOVAL (SEINING) IN PROPOSED WORK AREA PRIOR TO ANY EXCAVATION, GRADING OR CONSTRUCTION OF INSTREAM STRUCTURES.
- PUMP SURFACE WATER FROM DITCHES TO UPLAND AREAS FOR INFILTRATION PRIOR TO STRIPPING AND FILLING.
- CONTRACTOR SHALL DEWATER EXCAVATIONS AS NECESSARY FOR CONSTRUCTION AND INSPECTION.



TYPICAL ELJ CONSTRUCTION WATER MANAGEMENT DETAIL

SCALE: NTS

2
ESC-1

STREAM DETAIL NOTES:

- EXCAVATIONS THAT HAVE POTENTIAL TO IMPACT THE WETTED CHANNEL SHALL BE ISOLATED FROM THE ACTIVE CHANNEL BY THE CONTRACTOR. ISOLATION MEANS SHALL CONSIST OF SILT BOOMS, SHEET PILE, BULK BAGS, BLADDER DAMS OR OTHERS AS NECESSARY TO PREVENT IMPACTS TO WATER QUALITY.
- DEWATERING ACTIVITIES SHALL NOT IMPACT WATER QUALITY.
- INSTALL TEMPORARY SILT BOOMS TO ISOLATE WORK AREA AS SHOWN ON THE PLAN.
- CONDUCT FISH REMOVAL (SEINING) IN PROPOSED WORK AREA PRIOR TO ANY EXCAVATION, GRADING OR CONSTRUCTION OF INSTREAM STRUCTURES.
- INSTALL BLOCK NETS TO ISOLATE WORK AREA.
- CONTRACTOR SHALL DEWATER AS NECESSARY FOR CONSTRUCTION AND INSPECTION.
- STREAM DIVERSION SHALL BE ACCOMPLISHED BY EITHER PUMPING OR BY TEMPORARY CHANNEL DIVERSION.
- CONTRACTOR SHALL SUBMIT A WATER MANAGEMENT PLAN 14 DAYS PRIOR TO ANY INSTREAM ACTIVITY FOR APPROVAL BY ENGINEER.
- TEMPORARY CHANNEL DIVERSION SHALL BE LINED WITH GEOMEMBRANE TO LIMIT EROSION. TEMPORARY CHANNEL SHALL BE BACKFILLED AND COMPACTED FOLLOWING CONSTRUCTION.
- CONSTRUCT HEAD CUT EROSION PREVENTION STRUCTURE AT COMPLETION OF WATER DIVERSION.

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SKAGIT ENVIRONMENTAL BANK
PHASE I

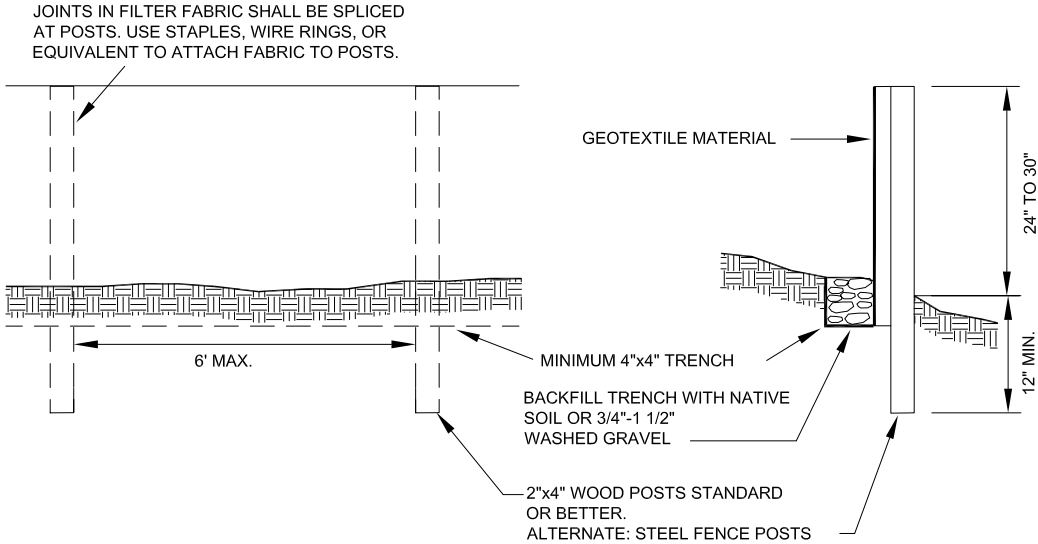
EROSION AND SEDIMENT CONTROL PLAN

DATE: JULY 2007
PROJECT NO: 04-02822-003
DRAWING NO: ESC-1
SHEET NO: 24
OF 35

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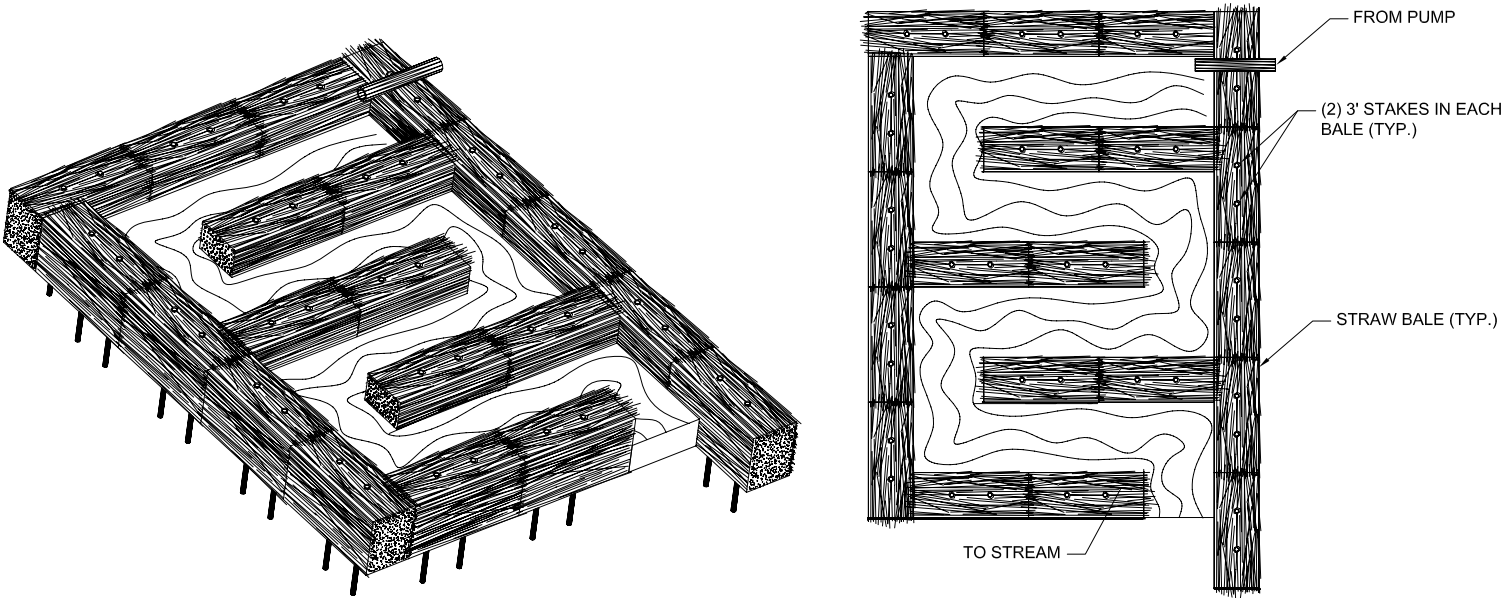
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SILT FENCE ELEVATION DETAIL
SCALE: NTS

SILT FENCE STAKING DETAIL
SCALE: NTS



ENERGY DISSIPATER DETAIL
SCALE: NTS


EROSION AND SEDIMENT CONTROL NOTES:

1. APPROVAL OF THE CONTRACTOR'S TEMPORARY WATER AND SEDIMENT CONTROL PLAN DOES NOT CONSTITUTE AN APPROVAL OF PERMANENT ROAD OR DRAINAGE DESIGN (E.G., SIZE AND LOCATION OF ROADS, PIPES, RESTRICTORS, CHANNELS, RETENTION FACILITIES, UTILITIES, ETC.).
2. THE IMPLEMENTATION OF EROSION AND SEDIMENT CONTROL (ESC) PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF ESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS APPROVED.
3. THE ESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED PRIOR TO OR IN CONJUNCTION WITH ALL CLEARING AND GRADING SO AS TO ENSURE THAT THE TRANSPORT OF SEDIMENT TO SURFACE WATERS, DRAINAGE SYSTEMS, AND ADJACENT PROPERTIES IS MINIMIZED.
4. THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND MODIFIED TO ACCOUNT FOR CHANGING SITE CONDITIONS (E.G., ADDITIONAL SUMP PUMPS, RELOCATION OF DITCHES AND SILT FENCES, ETC.).
5. THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE CONTRACTOR'S ESC SUPERVISOR AND MAINTAINED TO ENSURE CONTINUED PROPER FUNCTIONING. WRITTEN RECORDS SHALL BE KEPT OF WEEKLY REVIEWS OF THE ESC FACILITIES.
6. ANY AREAS OF EXPOSED SOILS, INCLUDING ROADWAY EMBANKMENTS, THAT WILL NOT BE DISTURBED FOR SEVEN DAYS SHALL BE IMMEDIATELY STABILIZED WITH THE APPROVED ESC METHODS (E.G., SEEDING, MULCHING, PLASTIC COVERING, ETC.).
7. ANY AREA NEEDING ESC MEASURES THAT DO NOT REQUIRE IMMEDIATE ATTENTION SHALL BE ADDRESSED WITHIN SEVEN (7) DAYS.
8. THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED OR WITHIN TWENTY FOUR (24) HOURS FOLLOWING A STORM EVENT.
9. STABILIZED CONSTRUCTION ENTRANCES AND ROADS SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES, SUCH AS WASH PADS, MAY BE REQUIRED TO ENSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.
10. WHERE STRAW MULCH FOR TEMPORARY EROSION CONTROL IS REQUIRED, IT SHALL BE APPLIED AT A MINIMUM THICKNESS OF 2 TO 3 INCHES.

NOTES:

1. THE FILTER FABRIC (CONSTRUCTION GEOTEXTILE FOR TEMPORARY SILT FENCE) SHALL BE PURCHASED IN A CONTINUOUS ROLL, 5FT WIDE, CUT TO THE LENGTH OF THE BARRIER TO AVOID USE OF JOINTS. WHEN JOINTS ARE NECESSARY, THE FILTER FABRIC SHALL BE SPliced TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6 INCH OVERLAP, AND SECURELY FASTENED TO THE POST.
2. THE FENCE POSTS SHALL BE SPACED A MAXIMUM OF 6 FEET APART AND DRIVEN SECURELY INTO THE GROUND A MINIMUM OF 12 INCHES.
3. A TRENCH SHALL BE EXCAVATED A MINIMUM OF 4 INCHES WIDE BY 4 INCHES DEEP, UPSLOPE AND ADJACENT TO THE POST TO ALLOW THE FILTER FABRIC TO BE BURIED.
4. THE FILTER FABRIC SHALL BE STAPLED OR WIRED TO THE POSTS, AND 18 INCHES OF THE FABRIC SHALL BE EXTENDED INTO THE TRENCH. THE FABRIC SHALL NOT EXTEND MORE THAN 30 INCHES ABOVE THE ORIGINAL GROUND SURFACE. FILTER FABRIC SHALL NOT BE STAPLED TO TREES.
5. THE TRENCH SHALL BE BACKFILLED WITH NATIVE SOIL OR WITH 3/4"-1 1/2" WASHED GRAVEL.
6. SILT FENCES SHALL BE REMOVED AT DIRECTION OF ENGINEER, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED.
7. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL EVENT AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
8. SILT FENCE PERFORMANCE SHALL BE EVALUATED AND SILT FENCE LOCATIONS SHALL BE EVALUATED AND ADJUSTED AS DIRECTED OR APPROVED BY THE ENGINEER AND THE PERMITTING AUTHORITY.
9. SILT FENCE SHALL BE INSTALLED AS SHOWN ON DRAWINGS.
10. ANY DEVIATION OR CHANGE TO SILT FENCE DETAILS MUST BE APPROVED BY AN INSPECTOR FOR KING COUNTY DDES.
11. THE CONTRACTOR SHALL MAINTAIN A COPY OF THE MANUFACTURER'S SPECIFICATIONS FOR FILTER FABRIC ON SITE.
12. MAINTENANCE STANDARDS:
 - A. ANY DAMAGE SHALL BE REPAIRED IMMEDIATELY.
 - B. IF CONCENTRATED FLOWS ARE EVIDENT UPHILL OF THE SILT FENCE, THEY MUST BE INTERCEPTED AND CONVEYED TO A SEDIMENT TRAP OR POND, OR OTHERWISE DIVERTED TO A LOCATION THAT DOES NOT RESULT IN TURBID DISCHARGES TO SURFACE WATERS.
 - C. THE UPHILL SIDE OF THE SILT FENCE SHALL BE CHECKED FOR SIGNS OF THE SILT FENCE CLOGGING, ACTING AS A BARRIER TO FLOW, AND CAUSING CHANNELIZATION OF FLOWS PARALLEL TO THE FENCE. IF SUCH CHANNELIZATION OCCURS, THE CONTRACTOR SHALL REPLACE THE FENCE OR REMOVE THE TRAPPED SEDIMENT.
 - D. SEDIMENT SHALL BE REMOVED AND PROPERLY DISPOSED OF WHEN THE SEDIMENT IS 6 INCHES HIGH.
 - E. IF THE FILTER FABRIC HAS DETERIORATED DUE TO ULTRAVIOLET BREAKDOWN, IT SHALL BE REPLACED.

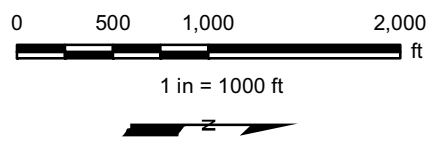
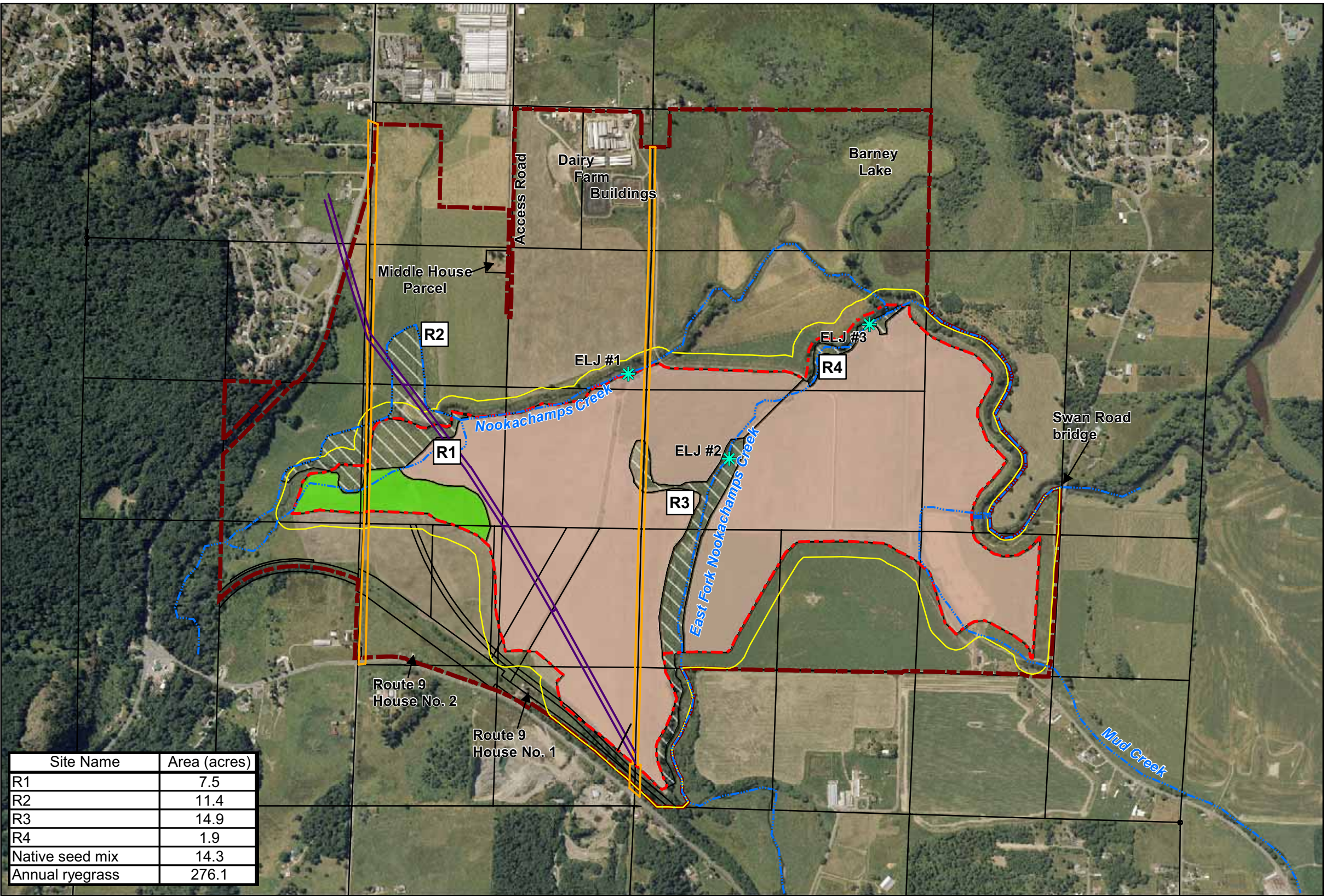
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ONE INCH
AT FULL SIZE, IF NOT ONE
INCH SCALE ACCORDINGLY

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Legend :

- Seeding Plan**
- Native seed mix
 - Annual ryegrass
 - R1** Reed canarygrass
 - ELJ - Grade control structure
 - Stream
 - Waterline easement
 - Powerline easement
 - Mitigation bank boundary
 - Clear Valley Farm property boundary
 - Project site
 - Parcel boundary

Site Name	Area (acres)
R1	7.5
R2	11.4
R3	14.9
R4	1.9
Native seed mix	14.3
Annual ryegrass	276.1

Note:
1. Annual ryegrass will be applied to fallows areas to provide a temporary herbaceouscover prior to Phase II grading activities.

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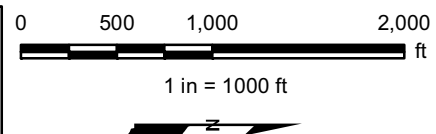


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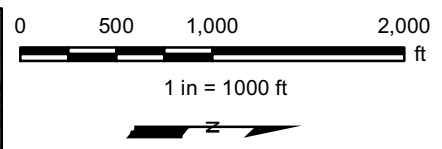
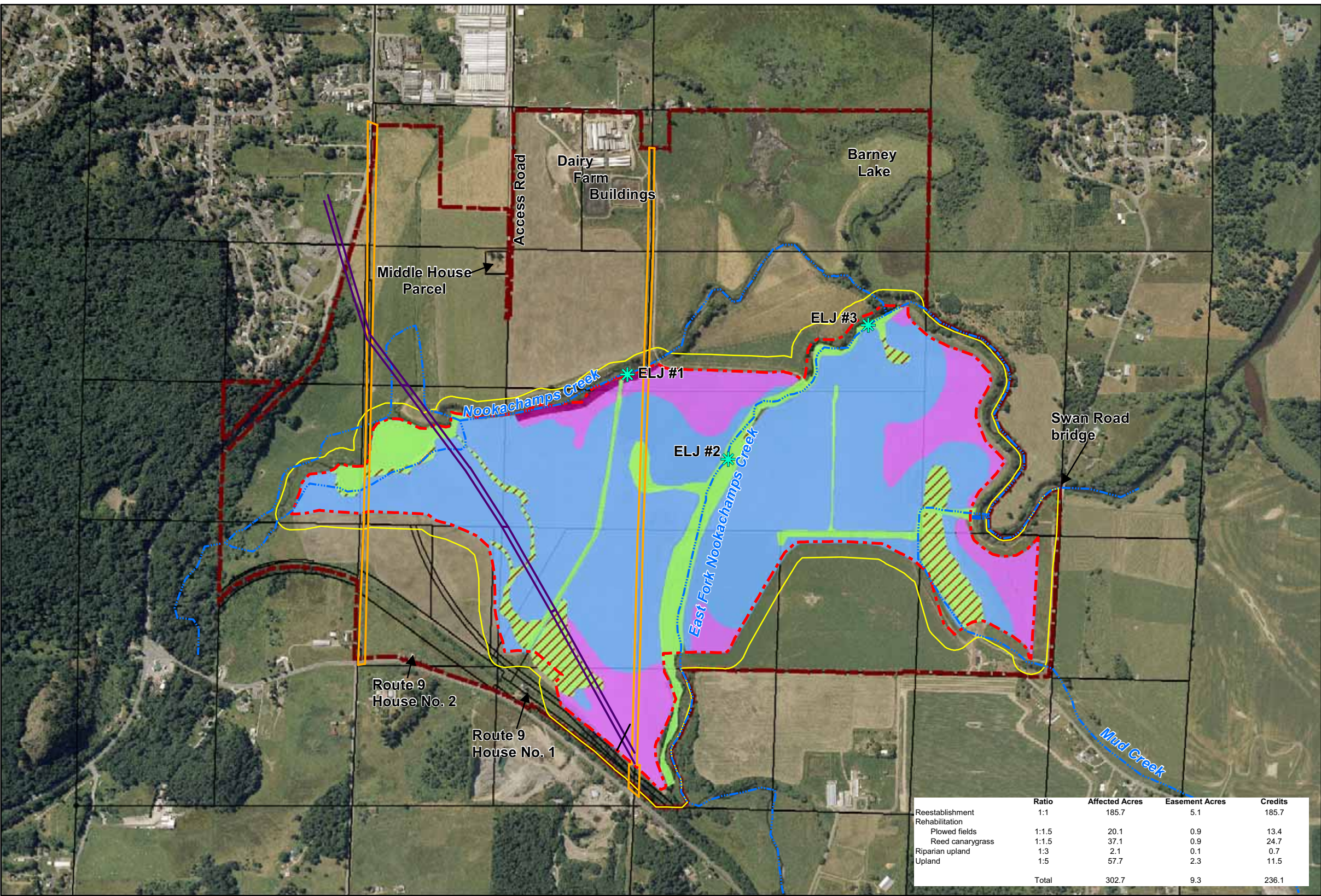
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**SKAGIT ENVIRONMENTAL
BANK
PHASE I
REED CANARYGRASS AND
SEEDING PLAN**

DATE:	SEPTEMBER 2007
PROJECT NO:	04-02822-003
DRAWING NO:	C-16
SHEET NO:	20 of 43

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- Legend :**
- Reestablishment
 - Rehabilitation
 - Reed canarygrass
 - Plowed fields
 - Riparian upland
 - Upland
 - ELJ - grade control structure
 - Stream
 - Waterline easement
 - Powerline easement
 - Mitigation bank boundary
 - Clear Valley Farm property boundary
 - Project site
 - Parcel boundary

	Ratio	Affected Acres	Easement Acres	Credits
Reestablishment	1:1	185.7	5.1	185.7
Rehabilitation				
Plowed fields	1:1.5	20.1	0.9	13.4
Reed canarygrass	1:1.5	37.1	0.9	24.7
Riparian upland	1:3	2.1	0.1	0.7
Upland	1:5	57.7	2.3	11.5
Total		302.7	9.3	236.1

Note:
1. This figure represents the total amount of credits generated after Phase III activities.
2. Credit totals do not include areas within utility easements.

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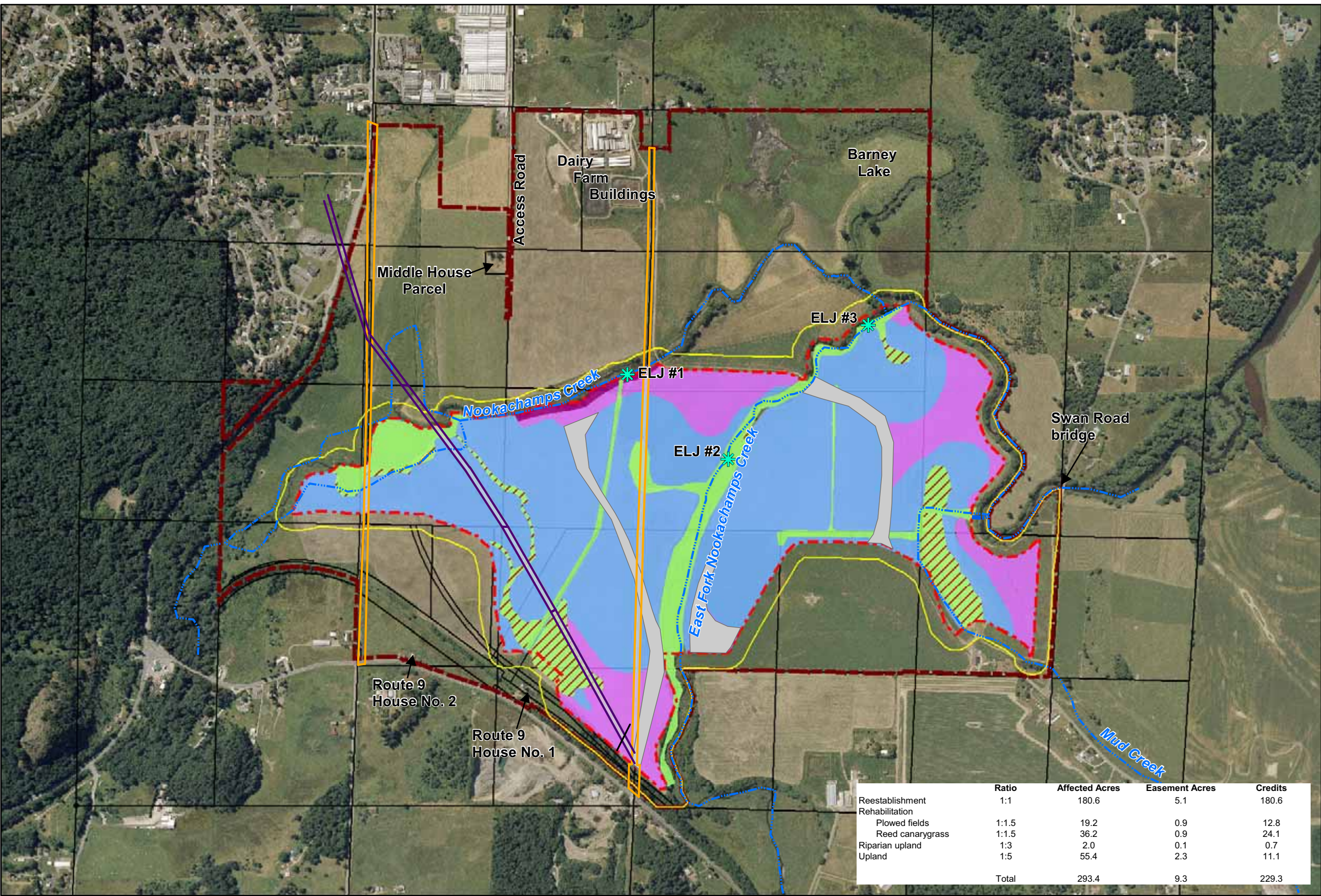
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SKAGIT ENVIRONMENTAL
BANK

PHASE III CREDIT GENERATION PLAN

DATE: SEPTEMBER 2007
PROJECT NO: 04-02822-003
DRAWING NO: C-25B
SHEET NO: 31 of 43

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0 500 1,000 2,000
ft
1 in = 1000 ft
N

Legend :

- Reestablishment
- Rehabilitation
- Reed canarygrass
- Plowed fields
- Riparian upland
- Upland
- ELJ - grade control structure
- Stream
- Waterline easement
- Powerline easement
- Mitigation bank boundary
- Clear Valley Farm property boundary
- Project site
- Parcel boundary

Note:
1. This figure represents the total amount of credits generated after Phase III activities.
2. Credit totals do not include areas within utility easements.

	Ratio	Affected Acres	Easement Acres	Credits
Reestablishment	1:1	180.6	5.1	180.6
Rehabilitation				
Plowed fields	1:1.5	19.2	0.9	12.8
Reed canarygrass	1:1.5	36.2	0.9	24.1
Riparian upland	1:3	2.0	0.1	0.7
Upland	1:5	55.4	2.3	11.1
Total		293.4	9.3	229.3

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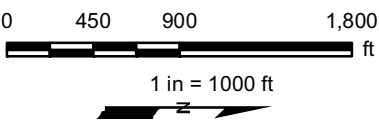
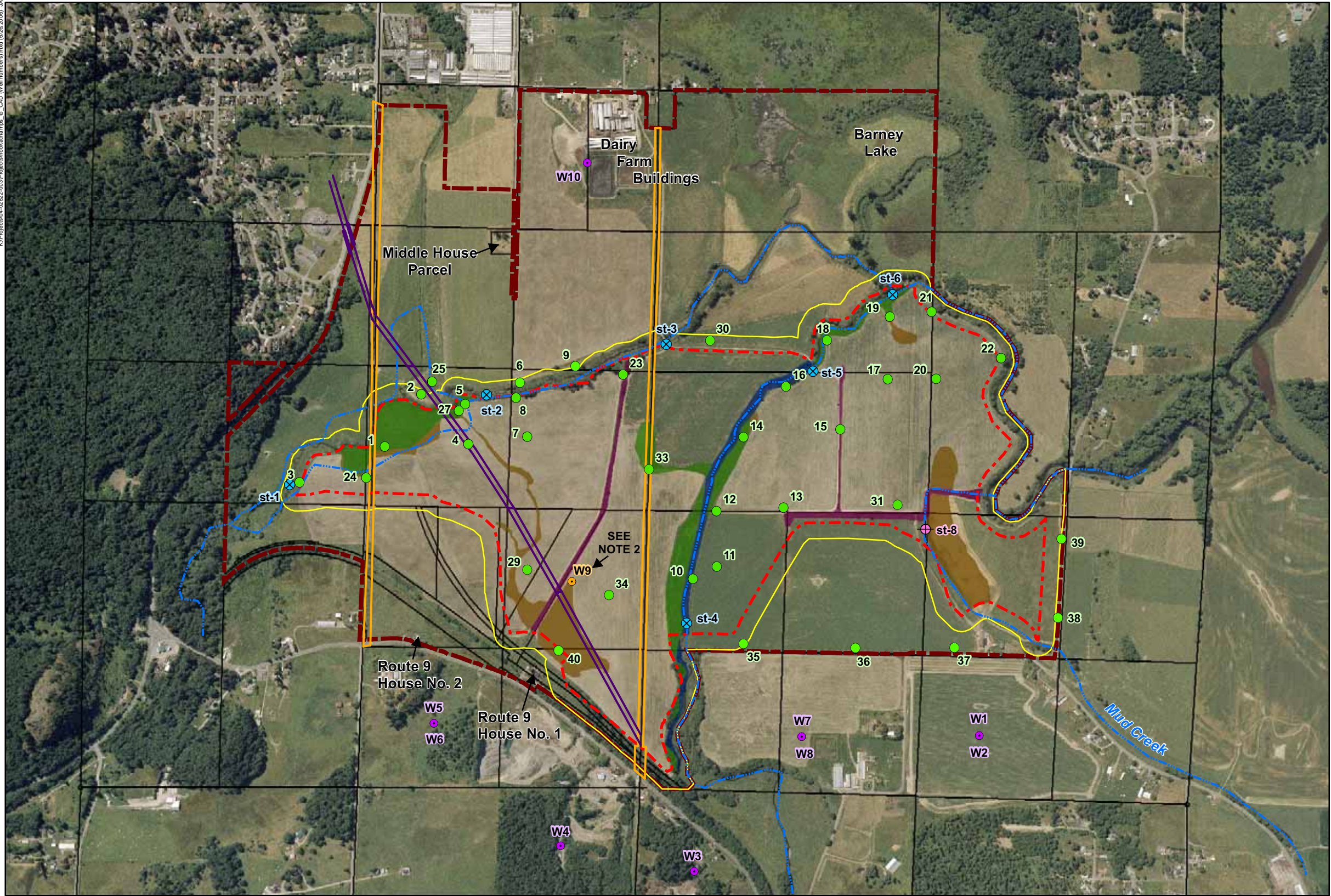
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SKAGIT ENVIRONMENTAL
BANK

PHASE III CREDIT GENERATION PLAN

DATE: SEPTEMBER 2007
PROJECT NO: 04-02822-003
DRAWING NO: C-25B
SHEET NO: 31 of 43

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Legend :

- 23 Well location and number
- W1 Offsite well location
- ⊗ st-1 Staff gauge location
- ⊗ st-8 Proposed staff gauge location
- Stream
- Waterline easement
- Powerline easement
- Mitigation bank boundary
- Clear Valley Farm property boundary
- Project site
- Parcel boundary

Existing wetlands

- Palustrine: persistent
- Palustrine: non-persistent and plowed
- Palustrine: ditch
- Riverine

Note:
1. Offsite wells are not part of Skagit Environmental Bank.
2. Well W9 is an abandoned irrigation well from the previous land owner.
3. Information on onsite and offsite wells can be found in Appendix 3 of the *Skagit Environmental Bank Response to Skagit County and Public Comments*.

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No.	REVISION	BY	APPD	DATE



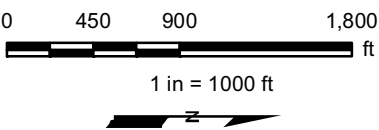
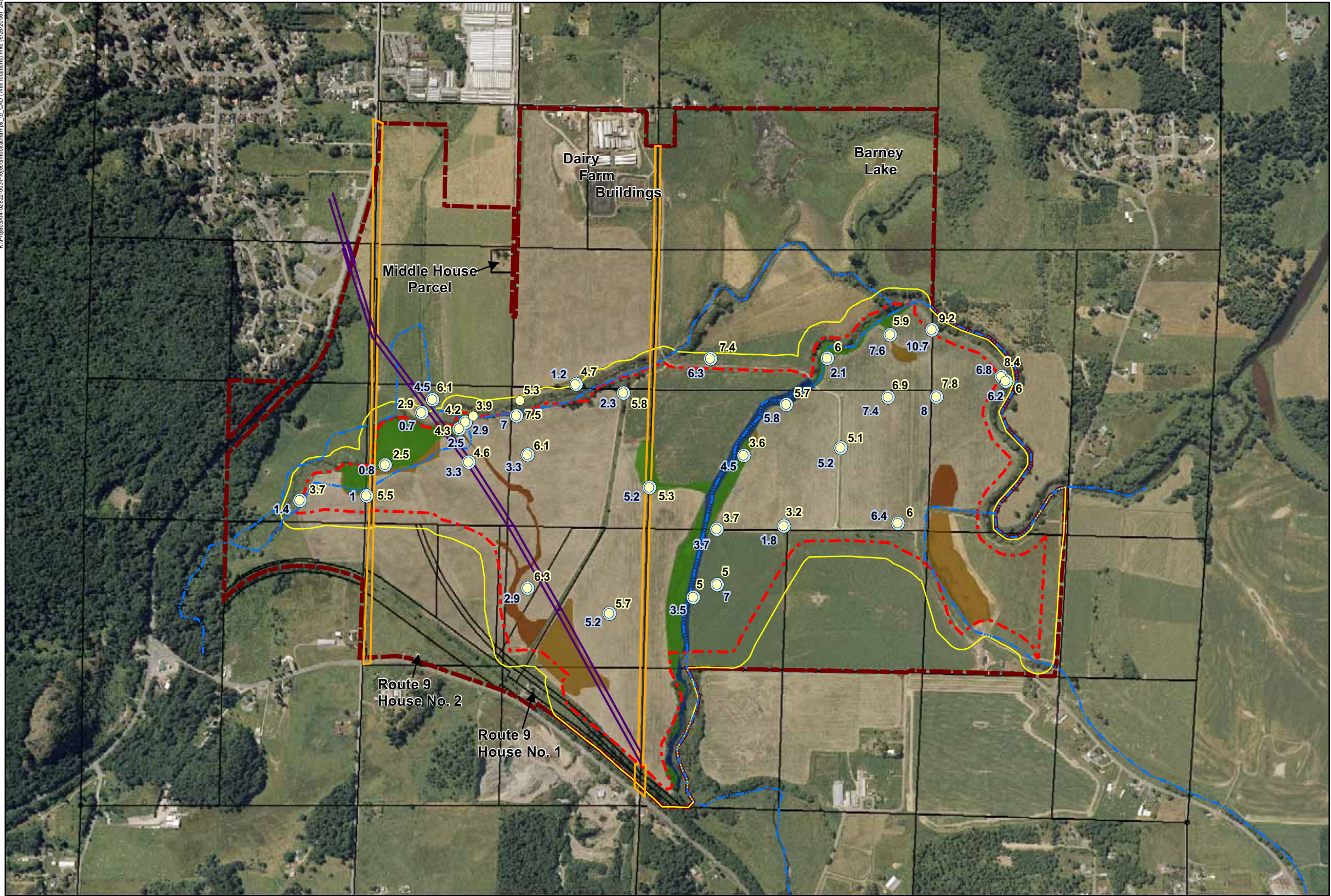
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**SKAGIT ENVIRONMENTAL
BANK
WELL LOCATIONS AND STAFF
GAUGE LOCATIONS
(INDICATING WELL NUMBER)**

DATE:	SEPTEMBER 2007
PROJECT NO:	04-02822-003
DRAWING NO:	R-1
SHEET NO:	34 of 43

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Legend :

- 7.6 Ground water depth - second quarter 2005 (ft)
- 7.6 Ground water depth - third quarter 2005 (ft)
- Stream
- Waterline easement
- Powerline easement
- Mitigation bank boundary
- Clear Valley Farm property boundary
- Project site
- Parcel boundary

- Existing wetlands**
- Palustrine: persistent
 - Palustrine: non-persistent and plowed
 - Palustrine: ditch
 - Riverine

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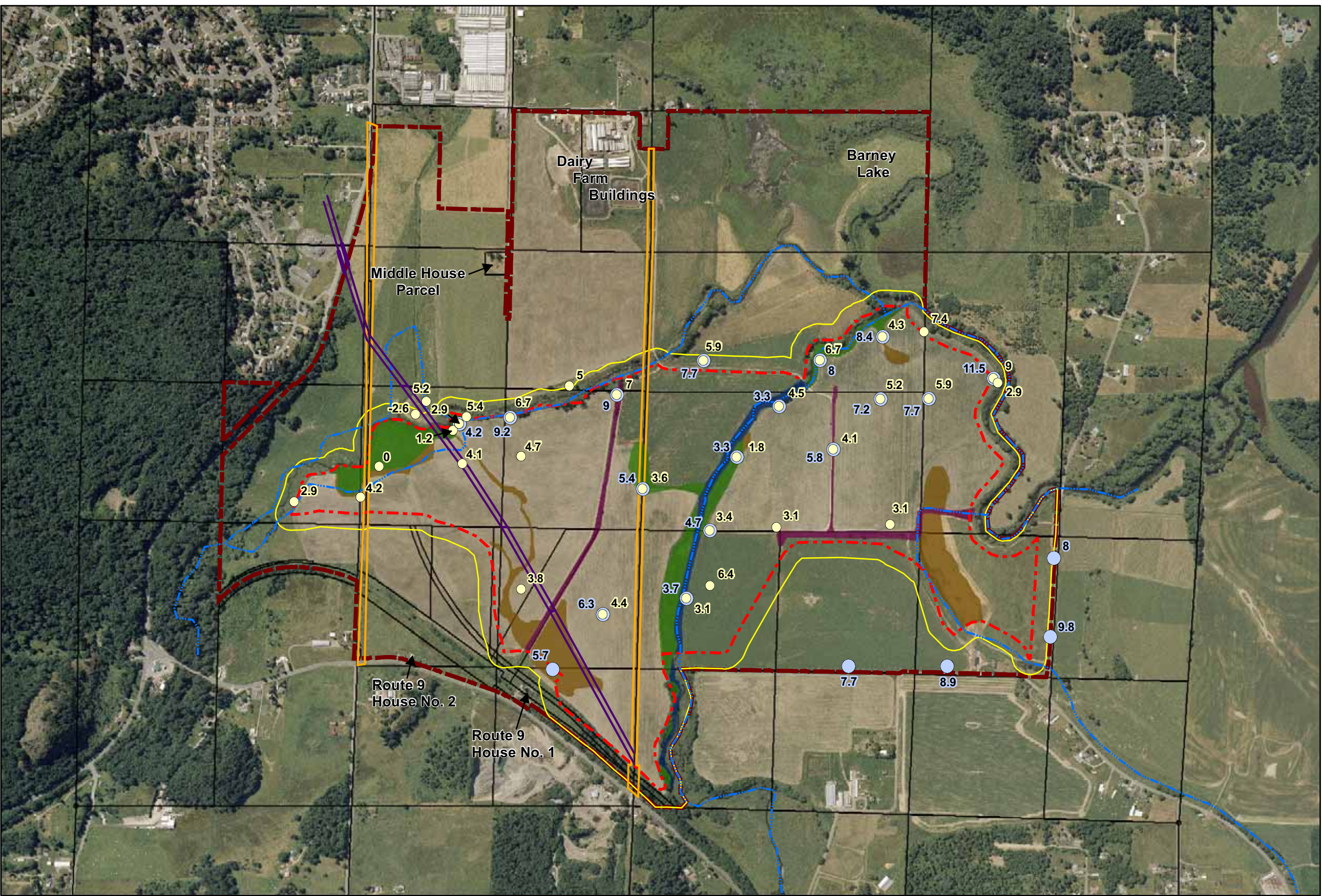
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**SKAGIT ENVIRONMENTAL
BANK**
**WELL DEPTH TO GROUNDWATER
(SECOND AND THIRD QUARTER 2005)**

DATE: SEPTEMBER 2007
PROJECT NO: 04-02822-003
DRAWING NO: R-2A
SHEET NO: 35 of 43

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04509001800

ft

1 in = 1000 ft

Legend :

7.6

Ground water depth - second quarter 2006 (ft)

7.6

Ground water depth - third quarter 2006 (ft)

Stream

Waterline easement

Powerline easement

Mitigation bank boundary

Clear Valley Farm property boundary

Project site

Parcel boundary

Existing wetlands

Palustrine: persistent

Palustrine: non-persistent and plowed

Palustrine: ditch

Riverine

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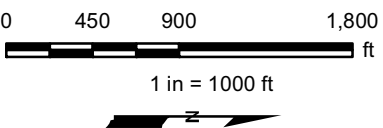
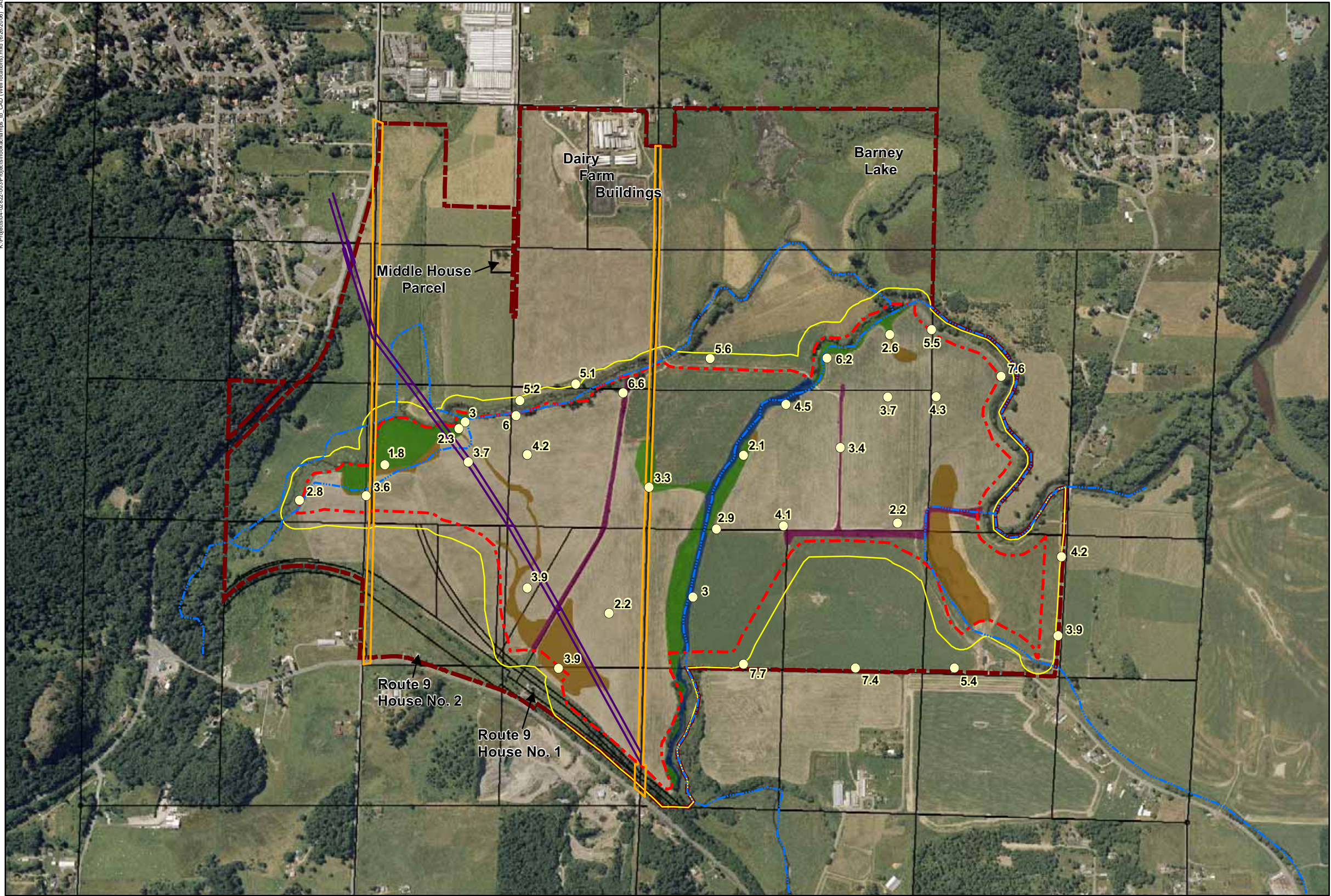
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SKAGIT ENVIRONMENTAL
BANK
WELL DEPTH TO GROUNDWATER
(SECOND AND THIRD QUARTER 2006)

DATE: SEPTEMBER 2007
PROJECT NO: 04-02822-003
DRAWING NO: R-2B
SHEET NO: 36 of 43

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Legend :

- 7.6 Ground water depth - second quarter 2006 (ft)
- Stream
- Waterline easement
- Powerline easement
- Mitigation bank boundary
- Clear Valley Farm property boundary
- Project site
- Parcel boundary

Existing wetlands

- Palustrine: persistent
- Palustrine: non-persistent and plowed
- Palustrine: ditch
- Riverine

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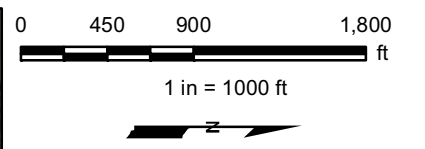
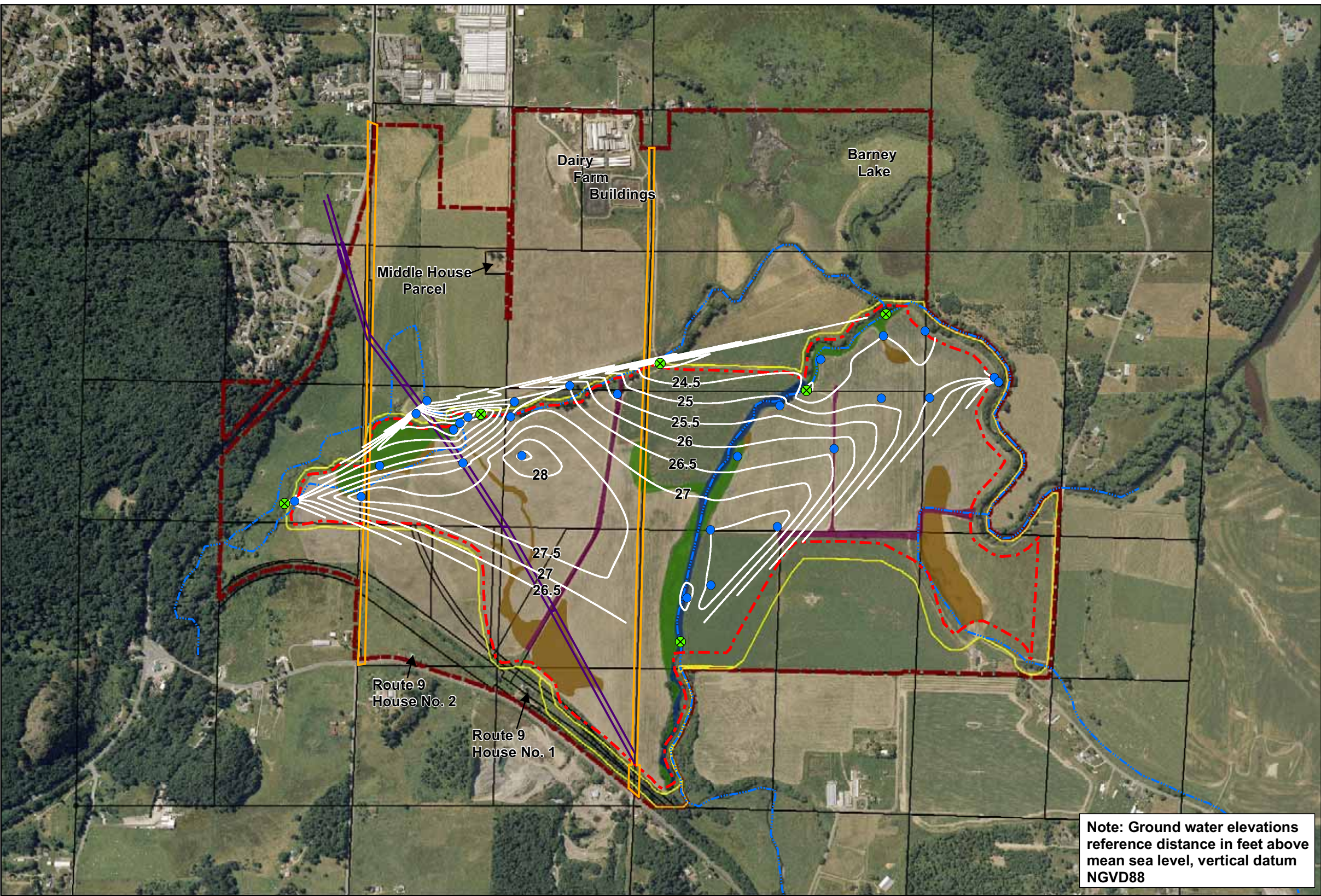
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**SKAGIT ENVIRONMENTAL
BANK**
**WELL DEPTH TO GROUNDWATER
(SECOND QUARTER 2007)**

DATE: SEPTEMBER 2007
PROJECT NO: 04-02822-003
DRAWING NO: R-2C
SHEET NO: 37 of 43

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- Legend :**
- Well location
 - Staff gauge location
 - 27.5 Ground water elevation contour (0.5 foot interval)
 - Stream
 - Waterline easement
 - Powerline easement
 - Wetland bank boundary
 - Property boundary
 - Project site
 - Parcel boundary
- Existing wetlands**
- Palustrine: persistent
 - Palustrine: non-persistent and plowed
 - Palustrine: ditch
 - Riverine

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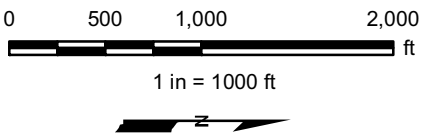
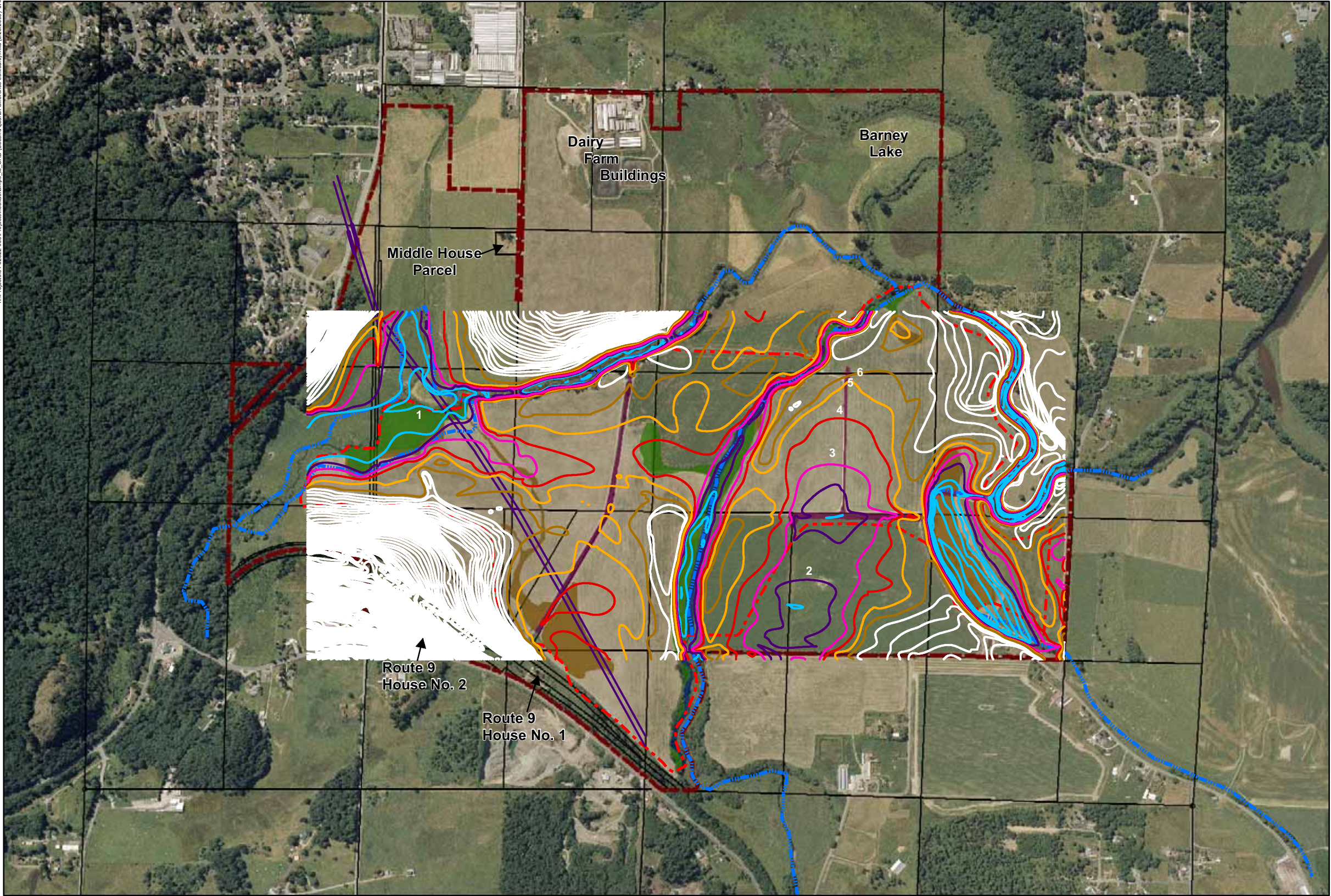
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DESIGNED:	CHECKED: M. MERKELBACH
DESIGNED:	APPROVED: M. SPILLANE

SKAGIT ENVIRONMENTAL
BANK

GROUND WATER CONTOURS SECOND
QUARTER 2005

DATE: SEPTEMBER 2007
PROJECT NO: 04-02822-003
DRAWING NO: R-3
SHEET NO: 38 of 43

K:\Project\04-02822-003\Project\workchamps to CAD (second quarter difference contours).mxd (8/26/2007) JAS



- Legend :**
- Depth to ground water from surface (in feet)**
- 0 - 1
 - 1 - 2
 - 2 - 3
 - 3 - 4
 - 4 - 5
 - 5 - 6
 - > 6
- Stream**
- Waterline easement**
- Clear Valley Farm property boundary**
- Project site**
- Parcel boundary**
- Existing wetlands**
- Palustrine: persistent
 - Palustrine: non-persistent and plowed
 - Palustrine: ditch
 - Riverine

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3	REVISION NO.3	MM	MS	08/07
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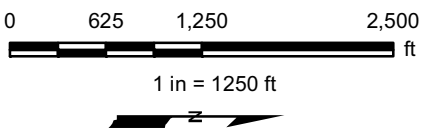
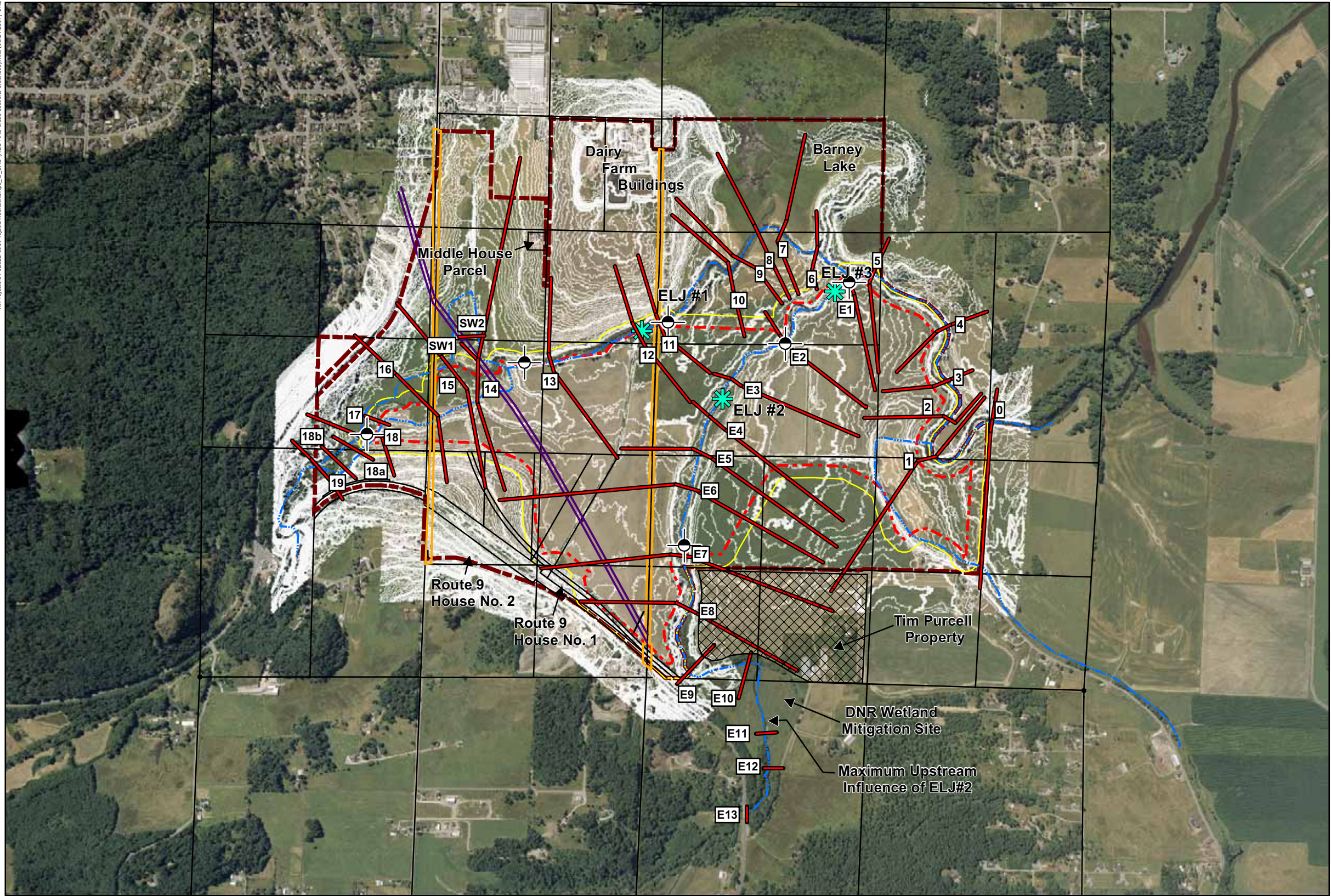
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**SKAGIT ENVIRONMENTAL
BANK**

**DIFFERENCE BETWEEN GROUND SURFACE
AND GROUND WATER ELEVATIONS (SECOND
QUARTER 2005/2006/2007)**

DATE: SEPTEMBER 2007
PROJECT NO: 04-02822-003
DRAWING NO: R-4
SHEET NO: 39 of 43

K:\Project\04-02822-003\project\hockchamps_in_CAD\HEC_RAS_cross-sections_updated.mxd (06/12/2007) JAS



Legend :

- Proposed Engineered logjam (ELJ)
- Stream
- Water line easement
- Power line easement
- Mitigation bank boundary
- Clear Valley Farm property boundary
- Project site
- Parcel boundary
- Stream gage
- HEC-RAS cross-section location
- 10-foot contours
- 1 foot contours

Notes:
1. Updated hydraulic analysis is found in the Skagit Environmental Bank Response to Skagit County on Public Comments (2007).

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4	REVISION NO.4	MM	MS	09/07
3	REVISION NO.3	MM	MS	07/07
No.	REVISION	BY	APPD	DATE



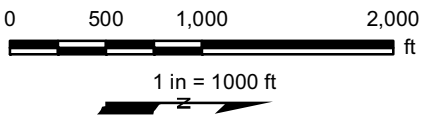
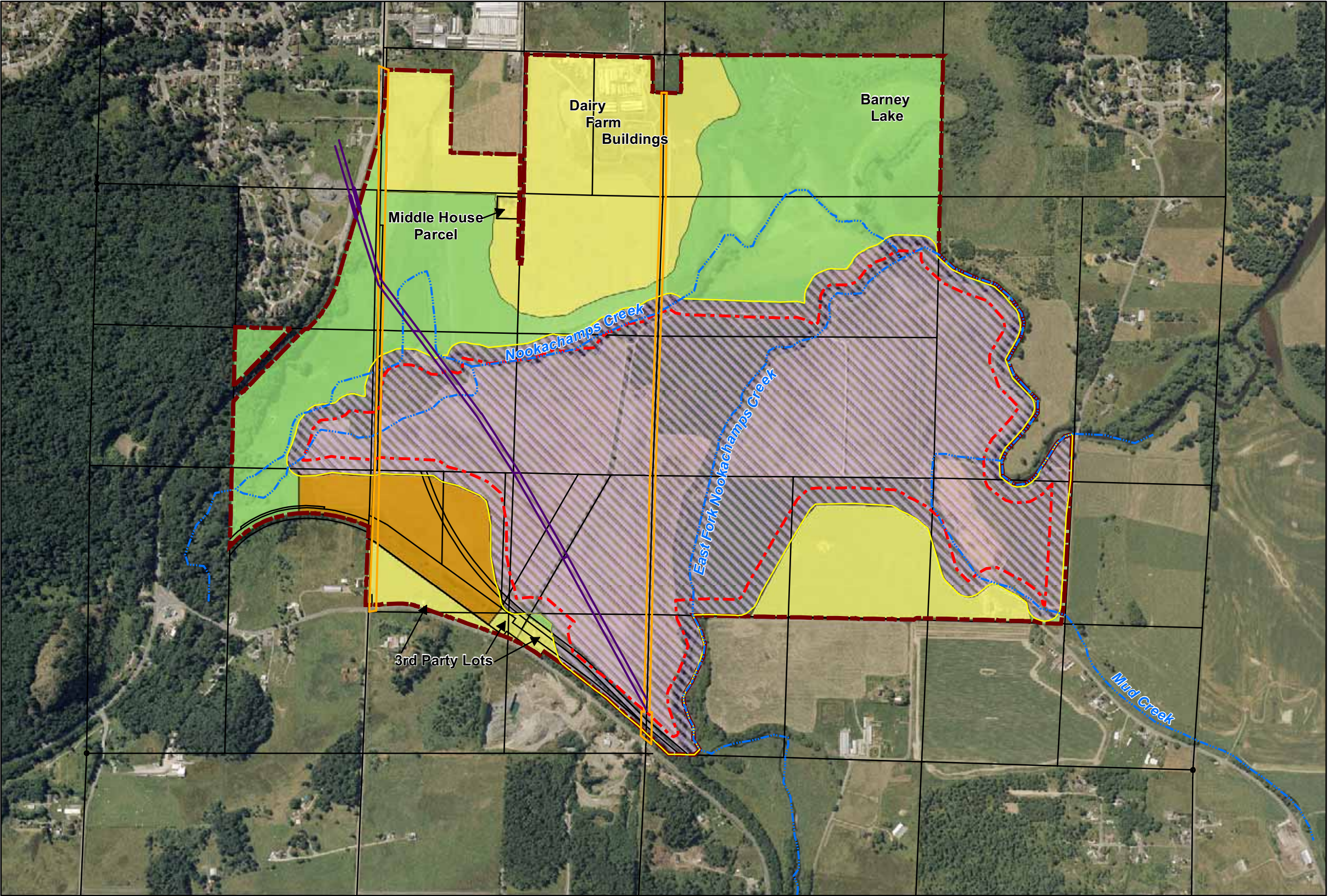
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**SKAGIT ENVIRONMENTAL
BANK**
**UPDATED HEC-RAS CROSS-
SECTION LOCATIONS**

DATE:
SEPTEMBER 2007
PROJECT NO:
04-02822-003
DRAWING NO:
R-5
SHEET NO:
40 of 43

K:\Projects\01-01948-370\Projects\nookachamps_b CAD (future land use).mxd (1/8/2007) JAS



- Legend :**
- Stream
 - Water line easement
 - Power line easement
 - Mitigation bank boundary
 - Clear Valley Farm property boundary
 - Project site
 - Parcel boundary
 - Third-party lots (167 acres)
 - 37-acre development site
 - Skagit Land Trust (200 acres)
 - Wetland mitigation bank (397 acres)

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**SKAGIT ENVIRONMENTAL
BANK**
**FUTURE LAND USE AT
CLEAR VALLEY FARM**

DATE: SEPTEMBER 2007
PROJECT NO: 04-02822-003
DRAWING NO: R-8
SHEET NO: 43 of 43