



# Securing Water Right Mitigation for Source Development Projects

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# Outline

- Background
  - Watershed Planning Process in Washington State
  - Implementation Plan
  - Mitigation
- Case Study: City of Ridgefield Junction Well

# Watershed Planning Process

- Watershed Planning Act Passed in 1998
  - Development of Watershed Plans
    - Inventory of Allocated Uses (Water Rights)
    - Defines Inchoate Rights
    - Establishes Reservations
  - Implementation by lead agency which will differ according to Planning Unit

# Implementation Plan

- Implements policies defined in Watershed Plan
- Establishes protocol for obtaining new water rights
- Defines strategy for assessing mitigation



# Reservation Water from Watershed Plan

**Table ES-3**

**Water Right Reservation Summary for WRIAs 27/28**

Water User <sup>(1)</sup>	Net Stream flow Depletion Allowance After Mitigation (cfs) <sup>(2)</sup>
<i>Kalama River Subbasin</i> <sup>(5)</sup>	
Kalama	1.92
Small Systems and Domestic Wells	0.35
<b>Subbasin Total</b>	<b>2.26</b>
<i>North Fork Lewis Subbasin</i>	
Cowlitz County Portion	
Small Systems and Domestic Wells	0.26
Clark County Portion	
Small Systems and Domestic Wells	0.49
Skamania County Portion	
Domestic Wells	0.40
Small Systems	0.40
Commercial	0.21 <sup>(6)</sup>
<b>Subbasin Total</b>	<b>1.76</b>
<i>East Fork Lewis Subbasin</i> <sup>(5)</sup>	
Clark County Portion	
CPU, Battle Ground, and Ridgefield <sup>(4)</sup>	2.20
Small Systems and Domestic Wells	0.66
Skamania County Portion	
ms and Domestic Wells	0.00
<b>I</b>	<b>2.85</b>

# What is Mitigation?

- Compensation for the effects of a water withdrawal.
  - Flow Related
  - Habitat Related



# Flow Related Mitigation

- Directly mitigates for impacts by returning allocated water to the impacted waterway
- Flow related mitigation does not debit from the reservation
- Requires retirement of an existing water right (typically an irrigation right)
- Weighted according to stream reach

# Habitat Related Mitigation

- Indirectly mitigates for impacts by creating or restoring aquatic, riparian, or wetland habitat
- Requires a debit to the basin's in stream flow reservation
- Provides the opportunity for funding partnerships on priority habitat projects

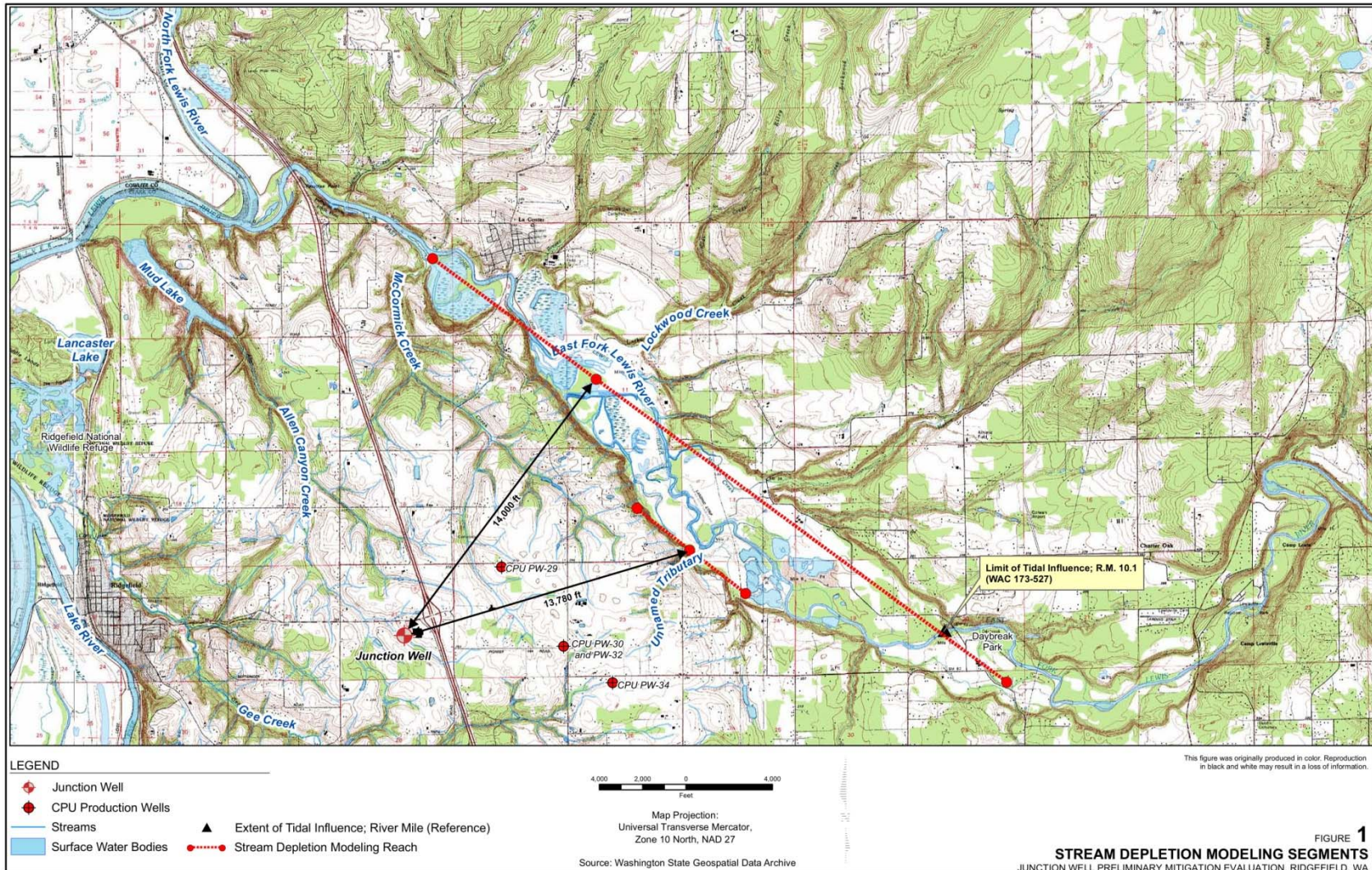


## Case Study:

# City of Ridgefield Junction Well

- The City of Ridgefield was seeking to develop its Junction Well (~400 gpm) as a municipal water source
  - Applied for water right in 1995
  - Entered cost reimbursement program with Ecology in 2007
  - WRIA 27/28 Watershed Plan adopted in 2006
- Hydrogeologic modeling showed that pumping the well at 400 gpm has impacts on the East Fork of the Lewis River
  - Estimated Average Impact = 0.25 cfs
- Mitigation was required for impacts to instream flows

# Modeled Impacts

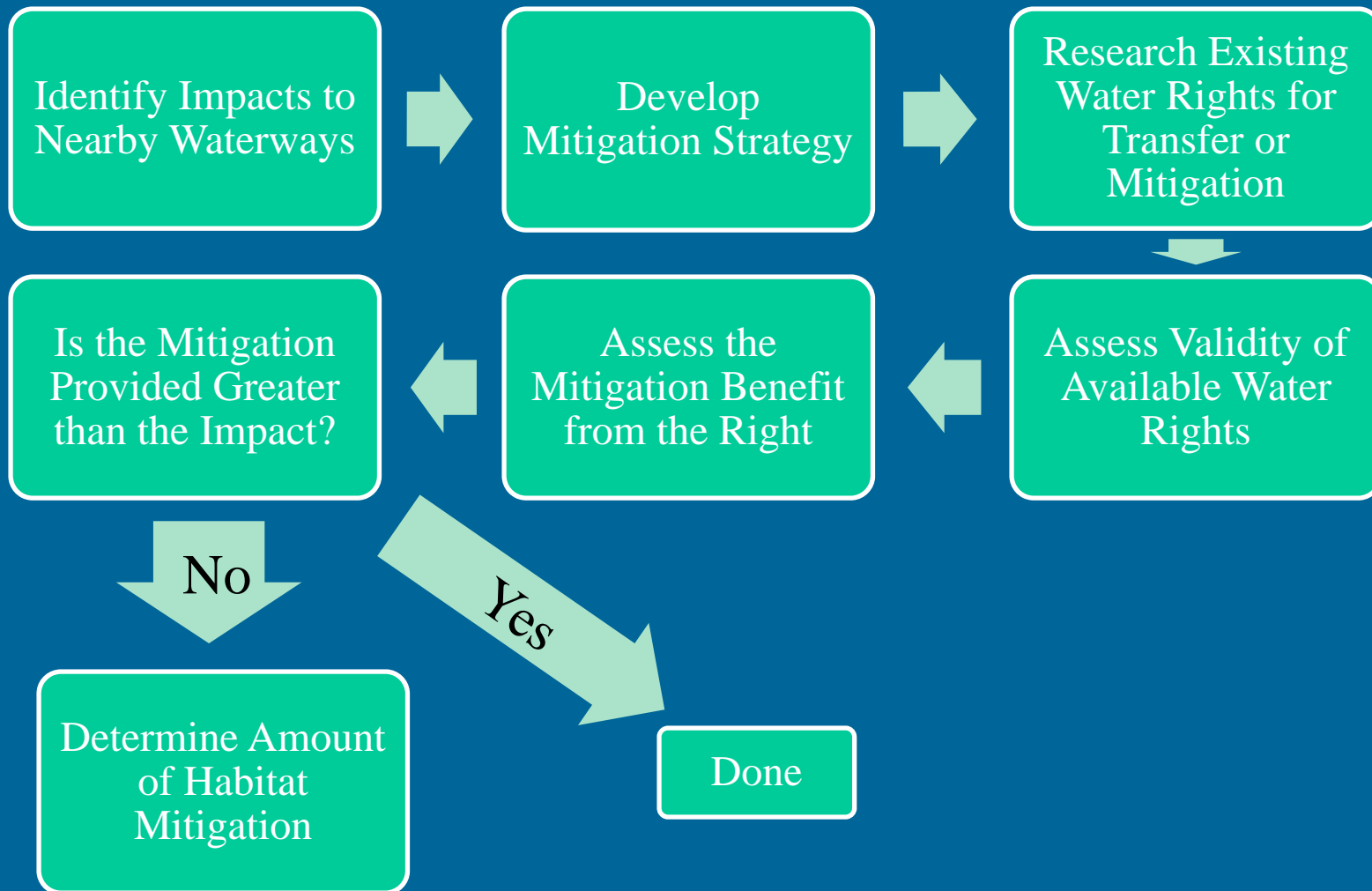


063-1118 eastForkLewisRiverStreamDepletionReach.mxd | MOD: 9/22/2009 | KDJ

FIGURE 1  
STREAM DEPLETION MODELING SEGMENTS  
JUNCTION WELL PRELIMINARY MITIGATION EVALUATION, RIDGEFIELD, WA

Golder Associates

# Mitigation Approach

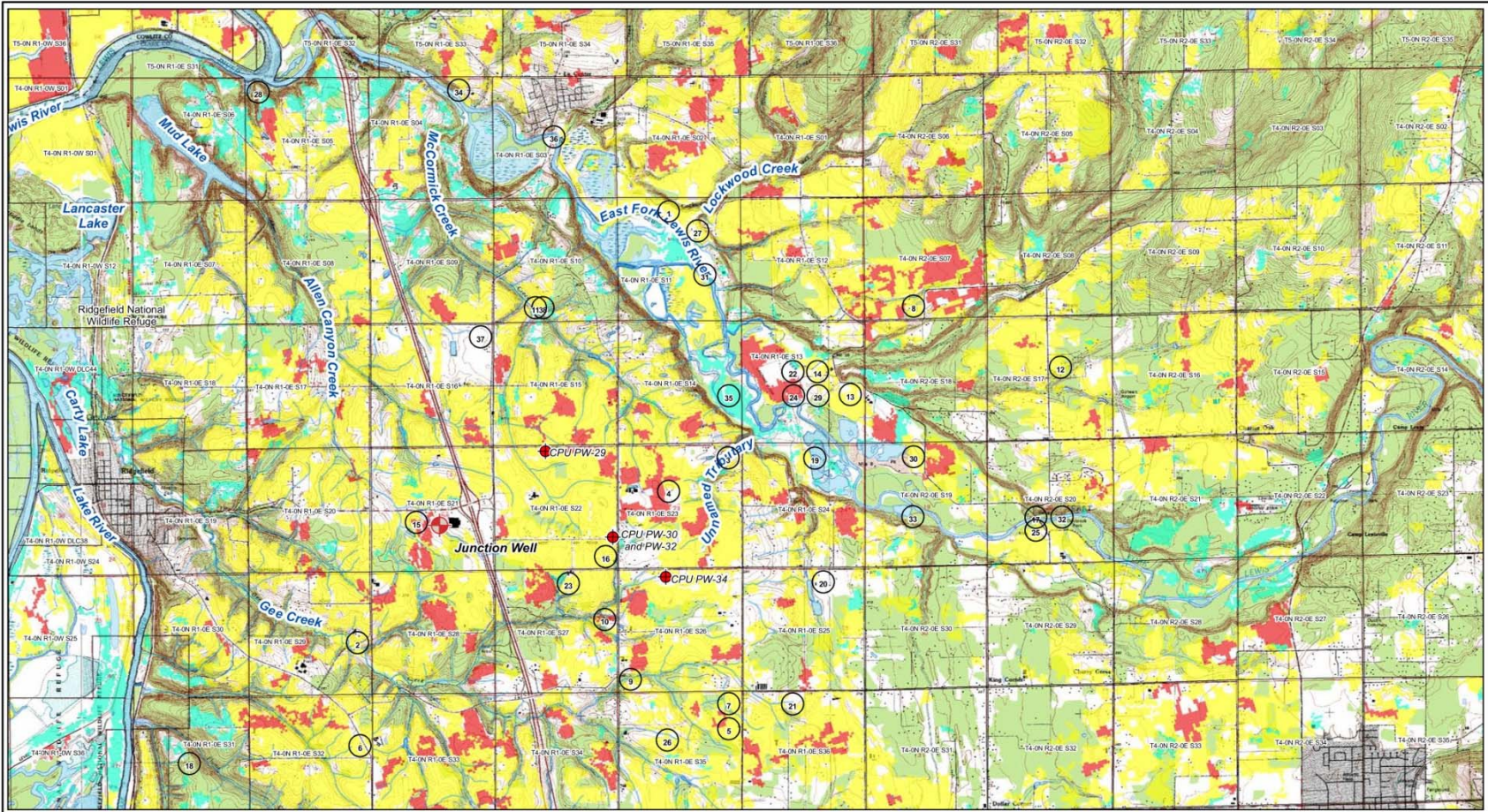




# Flow Mitigation Pathway

- Quantified required mitigation
- Reviewed Ecology Water Right Database
- Screened over 900 potential water rights.
- Located surface water rights along the East Fork of the Lewis River
- Located groundwater water rights with potential withdrawal from the same aquifer as the Junction Well
- Ultimately, only one feasible surface water right was located

# Initial Right Screening



**LEGEND**

- Junction Well
- CPU Production Wells
- Streams
- Surface Water Bodies
- Grasslands/Herbaceous
- Pasture/Hay
- Row/Cultivated Crops
- Approximate Location of diversion/well and water right ID No. (Table 3)



Map Projection:  
Universal Transverse Mercator,  
Zone 10 North, NAD 27

Sources: Washington State Geospatial Data  
Archive and USGS National Land-Cover Dataset

This figure was originally produced in color. Reproduction in black and white may result in a loss of information.

**FIGURE 2**  
**WATER RIGHTS LOCATIONS AND LAND USE MAP**  
JUNCTION WELL PRELIMINARY MITIGATION EVALUATION, RIDGEFIELD, WA





# Flow Mitigation Calculation

Amount Available in Reservation:

Stream Flow Depletion (cfs):

Flow-Related Mitigation (cfs):  at point of impact

Does Flow-Related Mitigation Meet 50% Requirement?

Net Stream Flow Depletion (cfs):  (amount to be debited from reservation)

Amount Remaining in Reservation:

---

Weighting of Flow-Related Mitigation:

Water Quality Adjustment:

Flow Mitigation Credit after weighting:

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Stream Flow Depletion Remaining to be Mitigated through Habitat Mitigation:

Depletion Points:

Mitigation Points:

# Flow Mitigation Feasibility

- Met with holder of irrigation right on East Fork of the Lewis River
- Owner was unwilling to relinquish
- No viable flow related mitigation pathway
- Therefore, 100% habitat related mitigation was proposed



# Habitat Mitigation Pathway

- Assessed partnership opportunities on existing habitat projects
- Developed estimated costs to implementing habitat project
- Quantified Required Mitigation

# Habitat Mitigation Calculation

Depletion Points:		173.6				
LCFRB Reach:	Reach tier:	Points per 0.1 cfs-mile	Quantity of remaining flow depletion (cfs)	Length of reach affected by flow depletion (0.1 mi):	Is flow limiting? (y/n)	Depletion Points per reach
EF Lewis 1 A	4	1	0.25	0.60	y	2 3.0
EF Lewis 1 B	4	1	0.25	0.24	y	2 1.2
EF Lewis 1 C	4	1	0.25	0.65	y	2 3.3
EF Lewis 2 A	4	1	0.25	0.05	y	2 0.3
EF Lewis 2 B	4	1	0.25	0.89	y	2 4.5
EF Lewis 3	4	1	0.25	1.24	y	2 6.2
EF Lewis 4 A	1	5	0.25	0.37	y	2 9.3
EF Lewis 4 B	1	5	0.25	0.53	y	2 13.3
EF Lewis 4 C	1	5	0.25	0.35	y	2 8.8
EF Lewis 5A	1	5	0.25	1.29	y	2 32.3
EF Lewis 5B	1	5	0.25	0.36	y	2 9.0
EF Lewis 6A	1	5	0.25	0.27	y	2 6.8
EF Lewis 6B	1	5	0.25	0.51	y	2 12.8
EF Lewis 6C	1	5	0.25	1.19	y	2 29.8
EF Lewis 7	1	5	0.25	0.09	y	2 2.3
EF Lewis 8A	1	5	0.25	1.25	y	2 31.3
EF Lewis 8B	1	5		5.47	y	2 0.0
McCormick Cr 1A2		3		0.95	y	2 0.0
McCormick Cr 1B4		1		0.87	n	1 0.0
McCormick Cr 1C2		3		0.43	y	2 0.0
McCormick Cr 1D1		5		0.03	y	2 0.0
McCormick Cr 1E4		1		0.13	n	1 0.0
McCormick Cr 1F4		1		0.41	n	1 0.0
McCormick Cr 1G1		5		0.11	n	1 0.0
McCormick Cr 1H1		5		0.10	n	1 0.0
McCormick Cr 1I 2		3		0.13	y	2 0.0
Total depletion points:						173.6

Mitigation Points:		1312.5		
Side Channel/Off-Channel Restoration:				
# sq ft created/restored	LCFRB Reach	Reach Tier	Tier Points	Total Points
8,750	EF Lewis 8A	1	15	1312.5
			0	0
			0	0
			0	0
			0	0
			0	0
			0	0
			0	0
			0	0
			0	0
			0	0
Total Side Channel Mitigation Points:				1312.5

174 Mitigation Points are Required

1290 Mitigation Points are Provided

# Required Habitat Mitigation

- A habitat project(s) generating a minimum of 174 mitigation points:
  - Unfunded project(s) which can be wholly or partially funded in order to receive required mitigation points
  - Funded project(s) to which mitigation credit can be earned through additional scope

# Habitat Mitigation Proposal

- EF-20 Upper Daybreak Habitat Enhancement Project
  - Partnership on a habitat creation/restoration project on the East Fork of the Lewis River.
    - Project designed by Clark County
  - A 0.25 cfs debit to the basin's water right reservation will result.

# EF-20 Project Summary

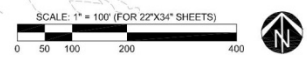
- Placement of woody debris in a side channel of the East Fork of the Lewis River
  - 18 Red Alder
  - 2 Ash
  - 13 Douglas Fir
  - 1 Western Red Cedar
  - 1 Cottonwood
- All woody debris was onsite material and ranged in diameter from 6” to 24”





- NOTES
1. ENTER SITE ON EXISTING TREE FARM ACCESS ROADS.
  2. NO NEW ACCESS ROADS SHALL BE CONSTRUCTED FOR THIS WORK.
  3. SEE SHEETS C1.1 - C1.4 FOR TREE FALLING AND WOOD PLACEMENT LOCATIONS.

**SITE PLAN & OVERVIEW**  
SCALE: 1"=100'




DESIGNED	AS/JP
DRAWN	WV
PROJECT	028377
SCALE	AS INDICATED
DATE	8/7/11
DWG.	028
SHEET	02

DESIGN & ENGINEERING DIVISION  
DESIGN SECTION  
**UPPER DAYBREAK STREAM  
HABITAT ENHANCEMENT, EP-20**  
SITE PLAN & OVERVIEW

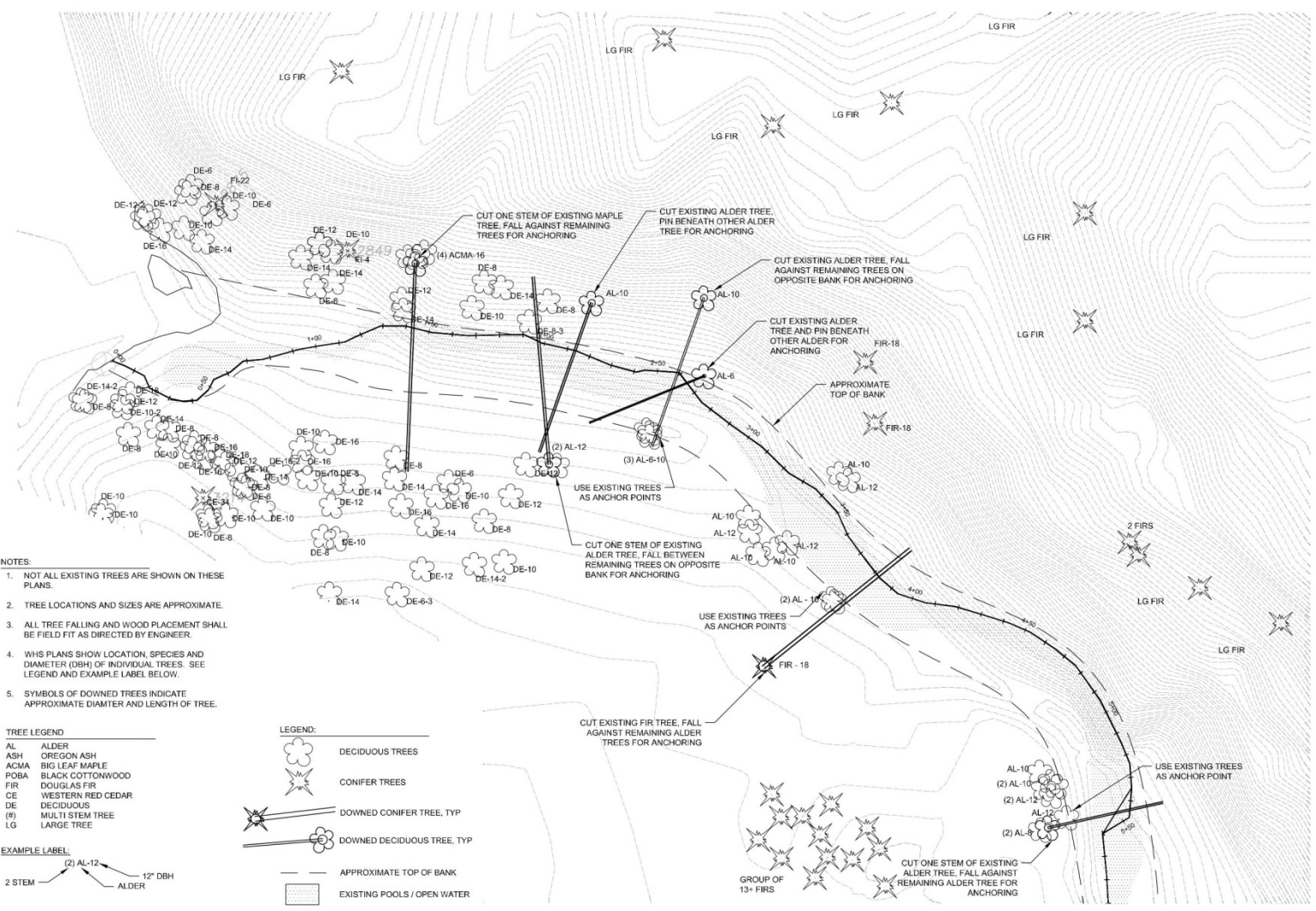
**PERMITTING  
PLAN SET**

**VIGIL AGRIS**  
design professionals  
10000 1st Street  
Bainbridge, GA 30217-2008  
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WWW.VIGILAGRIS.COM

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- NOTES:**
1. NOT ALL EXISTING TREES ARE SHOWN ON THESE PLANS.
  2. TREE LOCATIONS AND SIZES ARE APPROXIMATE.
  3. ALL TREE FALLING AND WOOD PLACEMENT SHALL BE FIELD FIT AS DIRECTED BY ENGINEER.
  4. WHS PLANS SHOW LOCATION, SPECIES AND DIAMETER (DBH) OF INDIVIDUAL TREES. SEE LEGEND AND EXAMPLE LABEL BELOW.
  5. SYMBOLS OF DOWNED TREES INDICATE APPROXIMATE DIAMETER AND LENGTH OF TREE.

**TREE LEGEND**

AL ALDER  
 ASH OREGON ASH  
 ACMA BIG LEAF MAPLE  
 POBA BLACK COTTONWOOD  
 FIR DOUGLAS FIR  
 CE WESTERN RED CEDAR  
 DE DECIDUOUS  
 (M) MULTI STEM TREE  
 LG LARGE TREE

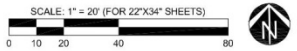
**EXAMPLE LABEL:**

(2) AL-12  
 2 STEM ALDER  
 12" DBH

**LEGEND:**

DECIDUOUS TREES  
 CONIFER TREES  
 DOWNED CONIFER TREE, TYP  
 DOWNED DECIDUOUS TREE, TYP  
 APPROXIMATE TOP OF BANK  
 EXISTING POOLS / OPEN WATER

**WHS PLAN - 1**  
 SCALE: 1"=20'



DESIGNED	MJP
DRAWN	LMB
CHECKED	028377
PROJECT	05-2-134
SCALE	AS INDICATED
DATE	8/7/11
DWG:	CL1
SHEET:	01

DESIGN & ENGINEERING DIVISION  
 DESIGN SECTION  
 UPPER DAYBREAK STREAM  
 HABITAT ENHANCEMENT, EF-20  
 WHS PLAN - 1

**PERMITTING  
 PLAN SET**

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 WASHINGTON, WA

C1.1

# Summary

- Navigating the water right process can be intimidating
- Watershed Planning provides a roadmap to help navigate this process
  - Quantifies existing water resources and provides point of reference for interested parties.
    - Planning Unit
    - Department of Ecology
    - Applicant
- Cost of Entire process ~ \$150,000



# Questions?

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