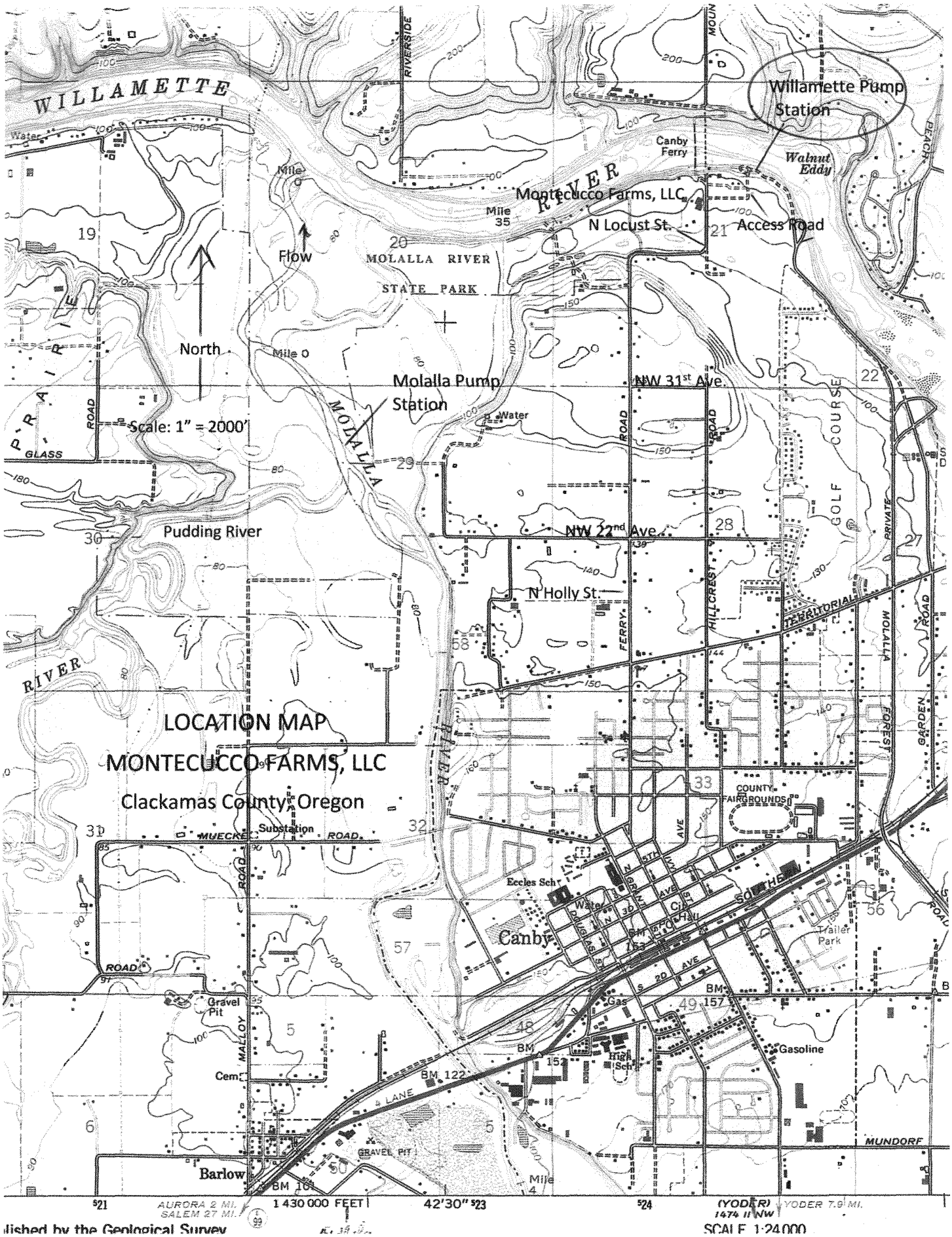
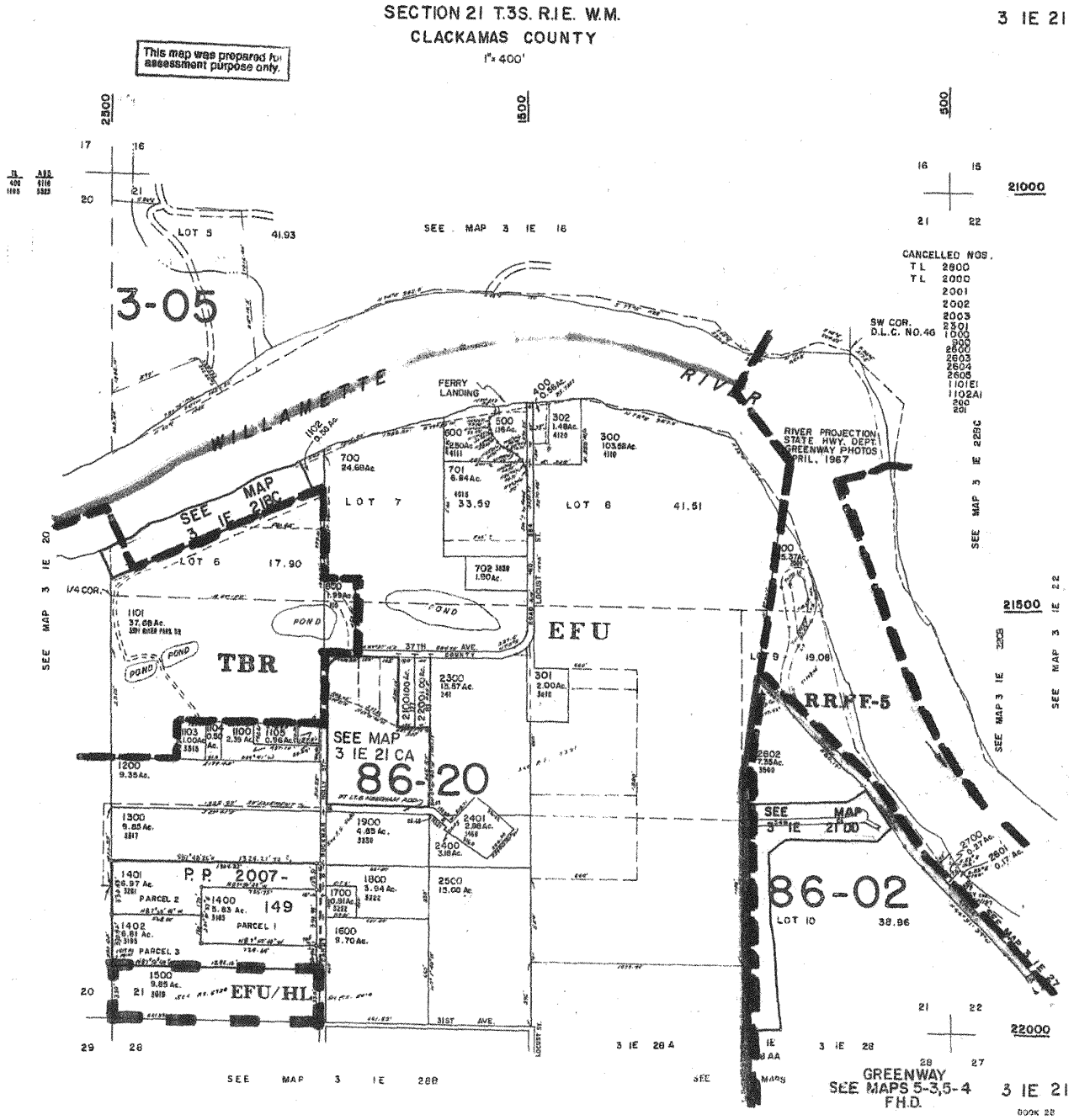
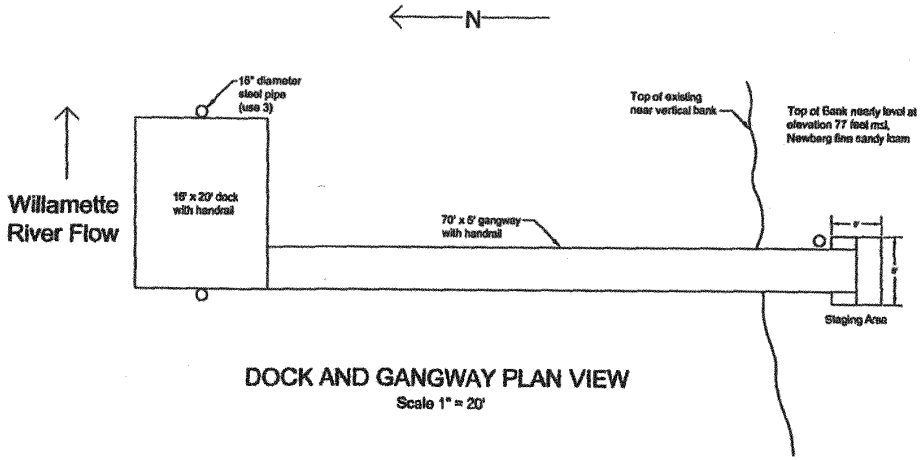
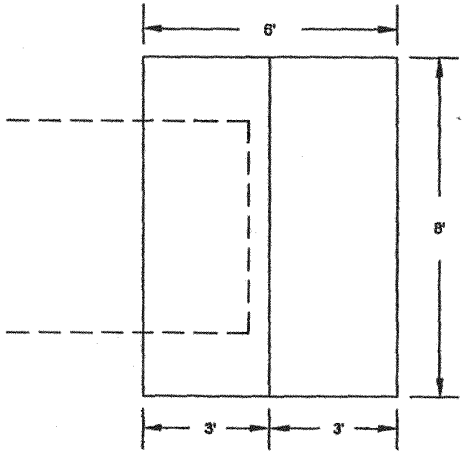

Willamette Pump Station
Montecucco Farms, LLC
N Locust St.
Access Road
Flow
North
Molalla Pump Station
NW 31st Ave.
NW 22nd Ave.
N Holly St.
Scale: 1" = 2000'
LOCATION MAP
MONTECUCCO FARMS, LLC
Clackamas County, Oregon
WILLAMETTE RIVER
MOLALLA RIVER STATE PARK
Pudding River
Canby
Barlow
Gravel Pit
Eccles Sch
High Sch
Gasoline
Trailer Park
COUNTY FAIRGROUNDS
GOLF COURSE
MUNDORF
1 430 000 FEET
42'30"

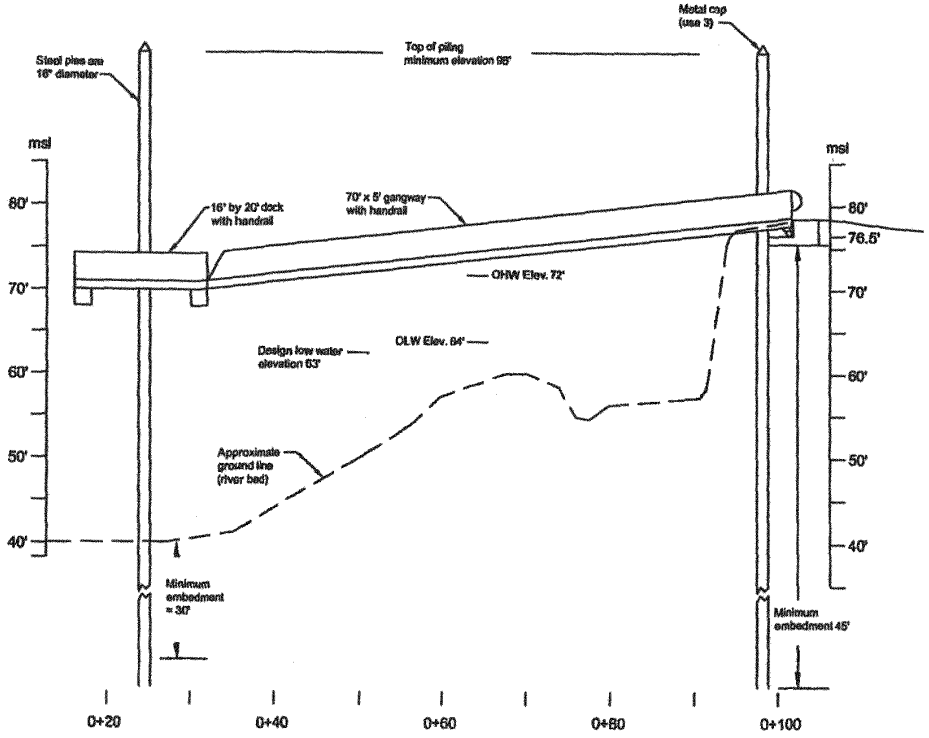

SECTION 21 T.3S. R.1E. W.M.
CLACKAMAS COUNTY
1"= 400'
3 1E 21
This map was prepared for assessment purpose only.
3-05
SEE MAP 3 1E 16
LOT 5
41.93
WILLAMETTE RIVER
FERRY LANDING
SEE MAP 3 1E 21BC
LOT 7
LOT 6
17.90
LOT 6
41.51
RIVER PROJECTION STATE HWY. DEPT. GREENWAY PHOTOS APRIL, 1967
CANCELLED NOS.
TL 2800
TL 2000
2001
2002
2003
2301
1000
900
2600
2603
2604
2605
1101E1
1102A1
200
201
SW COR. D.L.C. NO. 46
SEE MAP 3 1E 22BC
SEE MAP 3 1E 20
1/4 COR.
POND
TBR
EFU
37TH AVE.
COUNTY
SEE MAP 3 1E 21CA
86-20
RR/F-5
SEE MAP 3 1E 21DD
86-02
LOT 10
38.96
P.P. 2007-149
PARCEL 1
PARCEL 2
PARCEL 3
EFU/HL
31ST AVE.
LOCUST ST.
SEE MAP 3 1E 28B
3 1E 28A
SEE MAP 3 1E 28
GREENWAY
SEE MAPS 5-3,5-4
F.H.D.
3 1E 21
BOOK 28
21000
21500
22000



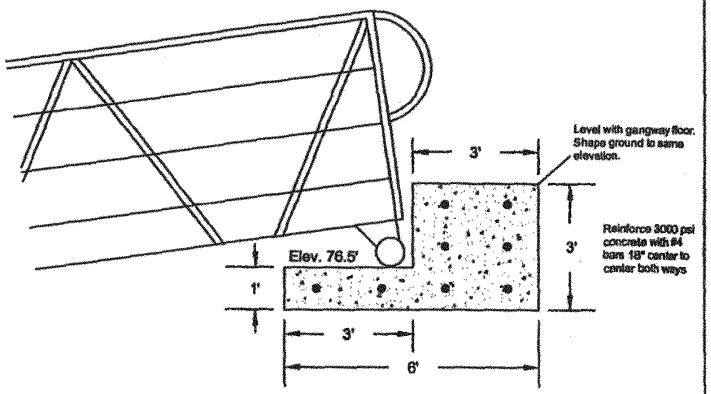
DOCK AND GANGWAY PLAN VIEW
Scale 1" = 20'



GANGEWAY BANK FOUNDATION PLAN VIEW
Scale 1" = 4'



PROFILE ON GANGWAY CENTERLINE
Scale 1" = 20'



GANGWAY BANK FOUNDATION ON GANGWAY ℄
Scale 1" = 4'

REGISTERED PROFESSIONAL ENGINEER
6,801
OREGON
JULY 14, 1989
LELAND A. HARDY
SIGNED: 12/19/13
EXPIRATION DATE: 6/30/2015

MONTECUCCO WILLAMETTE PUMP STATION PROJECT
Dock and Gangway
Clackamas County, Oregon

H & H Engineering LLC
SALEM, OREGON

DESIGNED BY: L. Hardy
DRAWN BY: J. Hardy

January 2014

MONTECUCCO FARMS, LLC

COMPENSATORY MITIGATION PLAN

TO MITIGATE PRECEIVED NEGATIVE IMPACTS
CAUSED BY
INSTALLING 16' X 20' DOC AND GANGWAY ON WILLAMETTE RIVER
Re: NWS-2014-74
September 2, 2014

Summary:

Fishery habitat diversity in the Molalla River (RM 1.2) will be improved by installing a proposed large woody debris (LWD) structure adjacent to the east bank. Since 2010 the soil exposed, near vertical 15' high river bank has been eroded horizontally over 30'. Bank erosion has claimed a dense stand of over 60' high cottonwood trees and other woody vegetation over 500' long. In addition to providing a fishery velocity refuge when river water velocities are high, some protection will be provide to the upstream end of the eroded bank.

Background:

The proposed LWD structure site is Molalla River Mile 1.2. At the proposed location the braided river channel is over 300' wide. River thalwag position changes from year to year. The site location is about 500' downstream from the Pudding River / Molalla River confluence. The site was chosen by having river bank access without disturbing riparian vegetation. River substratum consists of loose to consolidated sand to cobble size rock. Sandy loam overlays the rock on each bank.

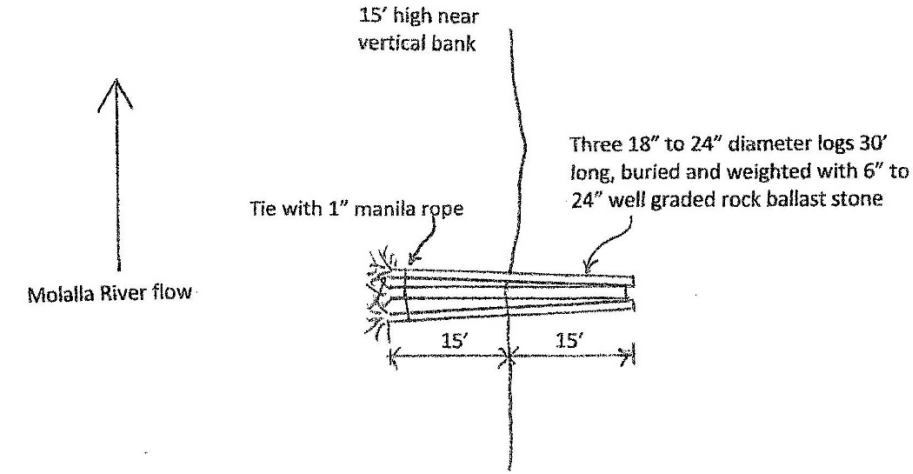
Accelerated Molalla River east bank erosion began in 2010. During the 2012 – 2013 runoff season the Pudding River outlet moved downstream on the Molalla River. This accelerated east bank erosion upstream a few hundred feet, at the site and for over 500' downstream, claiming dense 60' high cottonwood trees and other woody vegetation.

River water velocities at the site can be very high (>12 – 15 fps) or very low (< 2 fps). When high volume storm water runoff in the Molalla River watershed, including Pudding watershed, is combined with low volume watershed runoff in the Willamette River watershed, water velocities at the site can be very high, primarily due to a steep hydraulic gradient. The opposite is true when high volume storm water runoff takes place in the Willamette River watershed and medium to low volume runoff is present in the Molalla watershed. Molalla River water velocities can be low (<2 – 5 fps) due inundation caused by a high Willamette River water surface elevation and resulting back water.

Compensatory Mitigation:

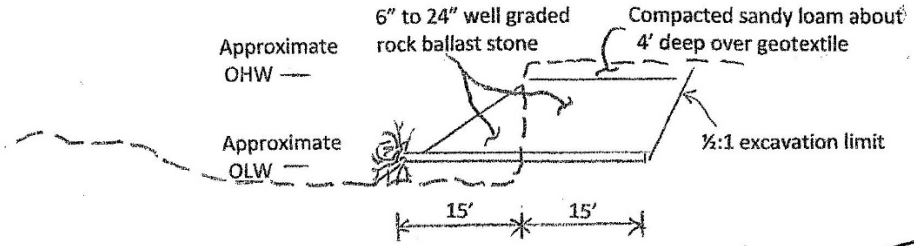
Montecucco Farms proposed compensatory mitigation action is installing three logs with root wads pointing into the river, secured in place with loose rock riprap ballast stone. In addition, logs with root wads will be tied together with 1" manila rope and have log ends buried in the bank for additional stability. Other logs and woody debris are expected to collect on the upstream side.

Leland Hardy, PE
H & R Engineering, LLC



LARGE WOODY DEBRIS PLAN VIEW
Scale 1″ = 20′

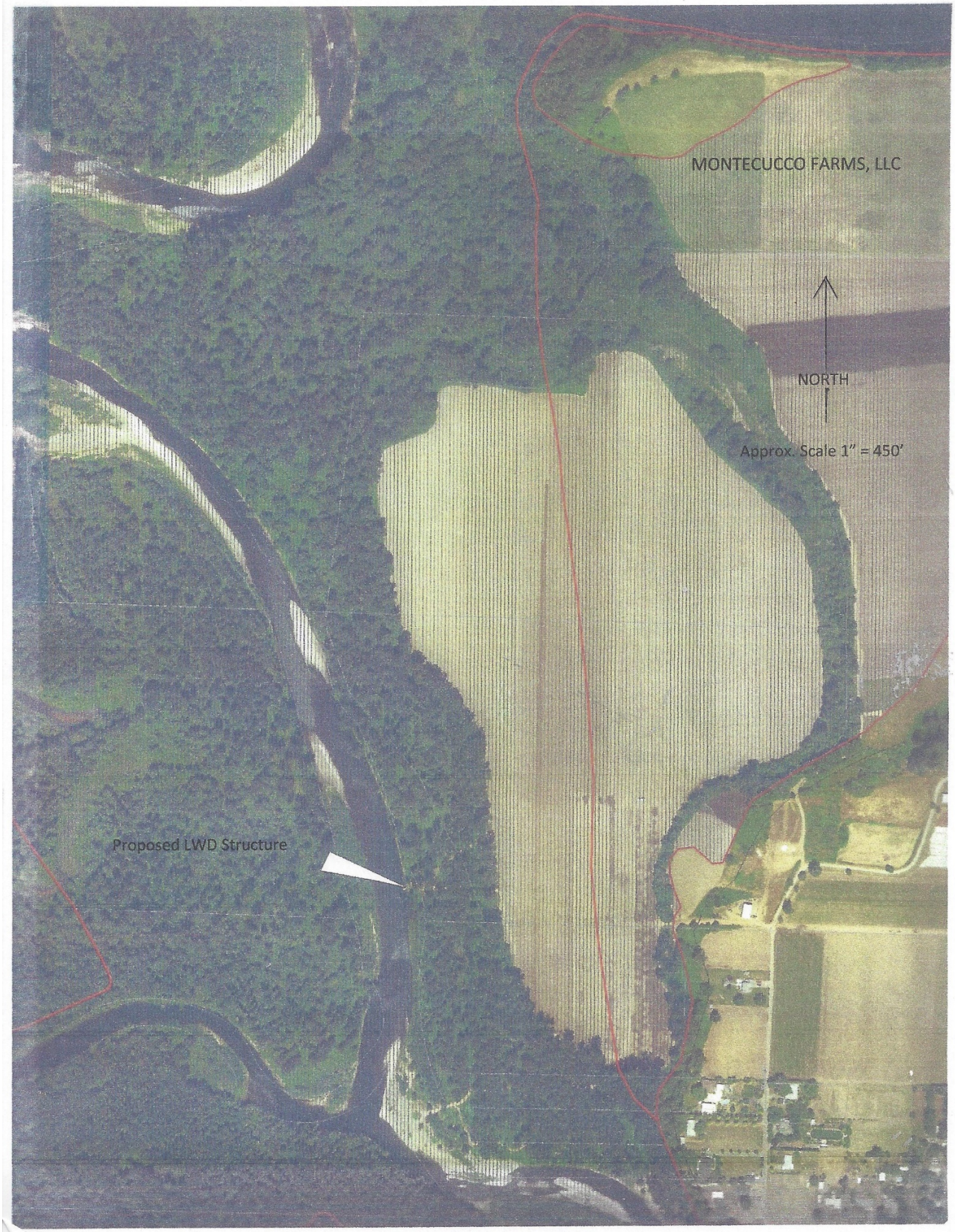
Proposed LWD to be installed on the Molalla River east bank near river mile 1.2



LARGE WOODY DEBRIS
CROSS SECTIN ON LOG CENTERLINE
(Looking Downstream)
Scale 1″ = 20′

REGISTERED PROFESSIONAL ENGINEER
5901
Leland A. Hardy
OREGON
JULY 14 1967
LELAND A. HARDY
6/15

LARGE WOODY DEBRIS
At
MOLALLA RIVER MILE 1.2
Montecucco Farms, LLC
H & R Engineering, LLC
Designed by: L. Hardy, PE Date: September 2, 2014


MONTECUCCO FARMS, LLC
NORTH
Approx. Scale 1" = 450'
Proposed LWD Structure