Preliminary
Wetland Mitigation Plan

for

Ritchie Bros. Properties
Auction Facility – Exit 68

Lewis County, Washington

Prepared For:

Ritchie Bros. Properties
4000 Pine Lake Road
Lincoln, Nebraska 68516
(778) 331-5549

Prepared By:

Ecological Land Services, Inc.
1157 3rd Avenue, Suite 220
Longview, WA 98632
(360) 578-1371
Project Number 1801.02

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Critical Areas Report (April 13, 2010)

SUMMARY

On behalf of Ritchie Bros. Auctioneers, Ritchie Bros. Properties proposes to construct a auction facility consisting of approximately 203 +/- gross acres located west of Exit 68 off of Interstate 5 in Lewis County, Washington. Ritchie Bros. specializes in the sale of agricultural, forestry, construction and mining equipment. Auctions take place at the Ritchie Bros. facility four to eight times per year. Construction of the facility is proposed for late 2010 or early 2011 after permit approval. Ecological Land Services, Inc. (ELS) was contracted to develop a mitigation plan for wetland impacts proposed by the construction of the facility. Impacts to the wetland and stream habitat onsite were avoided and minimized to the full extent practical. Ritchie Bros. currently operates a 41 +/- acre facility in Olympia (Maytown, WA), approximately 25 miles north of the proposed new location. Ritchie Bros. has outgrown its current facility and therefore is proposing to construct a new and more efficient facility. The new site consists of open fields historically used for hay production and cattle grazing. A small scrub-shrub and forested area is located in the east-central portion of the site (Figure 2). Open agricultural fields, forested areas, and single-family residential homes are located west of the site.

Twenty-one wetlands ranging from 44 square feet to 154,952 square feet have been delineated onsite by ELS. ELS previously drafted a *Critical Areas Report for Ritchie Bros. Properties Auction Facility – Exit 68*, April 13, 2010 that summarizes the findings of a site investigation completed between October and November 2009. The *Critical Areas Report* followed the requirements of the local jurisdiction and the *Lewis County Code (LCC), Critical Areas, Chapter 17.35A.*

Eight of the onsite wetlands (Wetlands B, D, L, M, N, O, P, and T) are considered exempt to *LCC* regulations because the wetland square footage is 1,000 square feet or less (*LCC 17.35A.591(1))*. Three onsite wetlands (Wetlands C, F, and K) are also considered exempt by *LCC.* The square footage of Wetlands C, F and K is 2,500 square feet or less and they have habitat scores of 20 points or less on the Washington Department of Ecology (WDOE) Wetland Rating Form. The on-site wetlands considered exempt from the *LCC* regulations, are still considered jurisdictional by state and federal agencies. Wetland buffers are regulated by the local jurisdiction (*LCC).* No wetland buffers are required for Wetlands B, C, D, F, K, L, M, N, O, P, and T due to their exempt status per *LCC.* See Table 1 below for wetland details.

Impacts to onsite wetland habitat and Type F stream habitat in the northern portion of the site were avoided and wetland habitat within the southern portion of the site was minimized to the full extent practical for the construction of the proposed 203 +/- gross acre facility. The proposed project will impact low functioning Category IV emergent wetlands (Wetlands B, C, D, E, F, and G), and low functioning Category III emergent wetlands (Wetlands A, H, and I) located in the central portion of the site. The proposed facility will impact a total of 0.99 acres of Category III and Category IV wetlands (Wetlands B, C, D, E, F, and G). In addition, three non USACE jurisdictional agriculture ditches will be filled and hydrology integrated into a new onsite stormwater facility system.

This mitigation plan proposes onsite wetland creation at a 2:1 ratio to compensate for onsite wetland impacts. Additionally, wetland and wetland/stream buffer will be enhanced with native trees and shrubs providing further screening and protection to the onsite mitigation areas. Native upland landscape berms will be located along North Military and Koontz Road and cover approximately eleven acres onsite. Dimensions on the landscape berms will be approximately 100 +/- feet wide by 15 +/- feet at top of berm. Native trees are proposed for the landscape berms.

The proposed wetland mitigation will create 1.98 acres, of Category III, forested and scrub-shrub wetland to mitigate for the 0.99 acres of impacts to onsite Category III and IV wetlands. The mitigation will also include the preservation and enhancement of 4.68 acres of existing onsite wetland as well as 18.03 acres of onsite wetland/stream buffer habitat. The existing wetland and buffer habitat consists primarily of monotypic emergent vegetation and provides little habitat value or functional value. The proposed enhancement of existing habitat and creation and enhancement of new wetland habitat will increase habitat corridor connections on and offsite and increase the overall function and value of the onsite habitat.

Hydrology within the onsite wetland creation area will be maintained by the shallow groundwater table and seasonal overbank flooding from the adjacent Type F stream. We estimate that the soils within the wetland creation area will be saturated at or near the surface for at least one month of the year during the growing season. The wetland creation area is designed to meet its performance standards in ten years.

The overall mitigation plan goal is to achieve greater wetland functions and protection than what is provided by the wetlands to be impacted, while allowing for development according to local, state, and federal regulations. Ritchie Bros. Properties has worked together with County staff to select a site that complies with the County's land use plans.

PROJECT DESCRIPTION

PROJECT LOCATION

The project site is located near Napavine, in Lewis County Washington and is bordered to the east by Interstate 5, to the west by North Military Road, to the south by Avery Road West, and to the north by Koontz Road (Figure 1). The site is located in a portion of Section 1, Township 12 North, Range 2 West of the Willamette Meridian, and includes Lewis County Parcel Numbers:

014859000000	014860001000	014860002000	014860012000
014860003000	014860004000	014860006000	014860007000
014860008000	014860011000	014860010000	014860009000
014872008001	014872008003	014872008004	014872008002

RESPONSIBLE PARTIES

Ritchie Bros. will be responsible for implementing the wetland mitigation, monitoring and maintenance, as detailed in this mitigation plan for a 10-year period.

PROJECT DESCRIPTION

The proposed relocation site for the Ritchie Bros. facility is approximately 203 +/- gross acres in total size. Currently it is used for hay production and livestock grazing. The applicant proposes to grade and improve 123 +/- acres of the site and make it suitable for the construction of industrial style buildings, display of equipment, parking area and access road, which will impact 0.99 acres of Category III and Category IV emergent wetlands (Wetlands A, B, C, D, E, F, G, H, and I). Three buildings will be constructed onsite: an auction building, providing for the administration of the facility as well as the actual auction event, a refurbishing building, providing optional improvements for the equipment to be sold, and a check-in building monitoring the incoming and outgoing equipment from the site. The remaining 80 +/- acres primarily located along the south, west and north property lines will be set-aside for open space, native landscaped earthen berms for a visual barrier, stormwater facilities, mitigation areas and buffer zones to be preserved.

The proposed facility will be located within an area rated as a Category II - Moderate Aquifer Sensitivity. The aquifer sensitivity rating is directly based off of the mapped soil type. The *Critical Areas Report for Ritchie Bros. Properties Auction Facility – Exit 68*, (ELS, April 13, 2010) provides details for the mapped aquifer recharge area and soil types located onsite. A stormwater report will contain the Stormwater Pollution Prevention Plan (SWPPP) used during construction of the site improvements to prevent groundwater contamination. Once the site is constructed an NPDES Industrial Stormwater Permit with the Department of Ecology will be applied for that will outline the Best Management Practices (BMP's) needed to prevent groundwater contamination from the facility operations. A treatment train will be provided onsite before detention and controlled release of the storm runoff onsite. The stormwater ponds will provide pre-treatment with oil water separators before discharging into the water quality ponds.

Table 1. Wetland details.

Name	Category	Cowardin Class	HGM Class	Size (square feet onsite)	Required Buffer Width	Lewis County Jurisdiction
Wetland A*	III	EM,SS	Slope	154,952	80 feet	Yes
Wetland B	(IV)	EM	Depressional	282	N/A	Exempt^
Wetland C	IV	EM	Depressional	1,498	N/A	Exempt^^
Wetland D	(IV)	EM	Depressional	44	N/A	Exempt^
Wetland E	IV	EM	Depressional	14,778	80 feet	Yes
Wetland F	(IV)	EM	Depressional	211	N/A	Exempt^^
Wetland G	IV	EM	Depressional	4,523	50 feet	Yes
Wetland H	III	EM,SS	Depressional	7,897	50 feet	Yes
Wetland I	III	SS	Depressional	8,612	80 feet	Yes
Wetland J	III	EM,SS	Depressional	10,577	80 feet	Yes
Wetland K	(IV)	EM	Depressional	2,094	N/A	Exempt^^
Wetland L	(IV)	EM	Depressional	156	N/A	Exempt^
Wetland M	(IV)	EM	Depressional	264	N/A	Exempt^
Wetland N	(IV)	EM	Depressional	924	N/A	Exempt^
Wetland O	(IV)	EM	Depressional	255	N/A	Exempt^
Wetland P	(IV)	EM	Depressional	416	N/A	Exempt^
Wetland Q	IV	EM	Depressional	15,860	80 feet	Yes
Wetland R*	IV	EM	Depressional	4,734	50 feet	Yes
Wetland S*	IV	EM	Depressional	10,368	50 feet	Yes

Wetland T	(IV)	EM	Depressional	350	N/A	Exempt^
Wetland U*	IV	EM, SS	Slope	2,936	50 feet	Yes
			Total	241,731		

*Wetland continues offsite, ^Wetland is considered exempt by *LCC 17.35A.591(1)*, ^^Wetland is considered exempt by *LCC 07.35A.591(2).*

Wetland Impacts and Mitigation

The project was designed to avoid and minimize wetland impacts to every extent possible and still allow for the proposed facility within the Rural Development District (RDD 10, 10 acre minimum lot size) zoned site. The areas to be impacted are low quality emergent wetlands located on the central and southern portions of the site.

The proposed mitigation strategy for the 0.99 acres of wetland impacts is wetland creation at a 2:1 ratio. The remaining onsite wetlands and wetland/stream buffer habitat is additionally proposed as preservation/habitat enhancement area that will complement the creation area as well as improve the existing habitat functions from that present onsite today. The Lewis County Code (LCC) *17.34.620*, requires impacts to Category IV or III wetlands (Class B wetlands) be mitigated at a replacement ratio of 1.5:1 when proposing creation. *LCC 17.35.620* requires that the created wetland provide equivalent or greater functions and values than the impacted wetlands. The Washington Department of Ecology (WDOE) recommends a replacement ratio of 1:1 creation for impacts to Category IV wetlands and a replacement ratio of 2:1 creation for impacts to Category III wetlands (2004a). The above ratios were considered to determine the size of the wetland creation area. This plan proposes to create a 1.98 acres of Category III, forested/scrub-shrub wetland with a minimum 100-foot buffer (preservation/habitat enhancement), area to mitigate for the loss of a total of 0.99 acres of emergent and scrub-shrub wetlands, of which 0.496 acres are Category IV wetlands, and 0.495 acres are Category III wetlands (Table 3; Figure 2).

The wetland creation area will include a more diverse plant community and will provide additional wildlife habitat. The goal of the created wetland is to achieve greater functions and greater protection than provided by the wetlands to be impacted. The plan proposes to create wetland habitat in the northern portion of the site, preserve and enhance the remaining wetlands and buffer habitat onsite (Figures 5 and 6). The wetland and buffer habitat will be enhanced with native vegetation and habitat features consisting of woody debris and bird boxes. The onsite mitigation areas will provide permanent long-term protection and greater wildlife habitat than the impacted wetlands due to the proposed habitat enhancement. The proposed wetland and buffer enhancement areas located in the northern portion of the site will provide protection to the proposed wetland creation area as well as protection to the existing low quality Type F stream habitat. In addition, the site will be protected and buffered by large earthen berms vegetated with native trees (Figure 5). The mitigation areas will be preserved under a deed restriction and/or a conservation covenant. All soil graded onsite to prepare for construction of the proposed facility will be utilized to construct the landscape berms along North Military and Koontz Roads. No soil will be exported from the site.

The wetland impact areas currently provide moderate water quality and quantity functions, and low habitat suitability functions. These low functions will be temporarily

lost as the project is constructed but will be regained and enhanced over time as the wetland mitigation areas become established. We have designed the wetland mitigation areas to provide moderate to high water quality functions, high water quantity functions, and moderately high habitat suitability functions. The perimeter berms and enhancement plantings will provide screening, forage and corridor connections. The habitat features will provide habitat opportunity and diversity and the wetland creation will provide flood storage and the opportunity to delay and filter water, thereby improving water quality within the watershed.

Table 2. Wetland impact details.

Name	Category	Cowardin Class	HGM Class	Onsite Wetland Impact (square feet)
Wetland A	III	EM,SS	Slope	5,190
Wetland B	IV	EM	Depressional	282
Wetland C	IV	EM	Depressional	1,498
Wetland D	IV	EM	Depressional	44
Wetland E	IV	EM	Depressional	14,778
Wetland F	IV	EM	Depressional	211
Wetland G	IV	EM	Depressional	4,523
Wetland H	III	EM,SS	Depressional	7,897
Wetland I	III	SS	Depressional	8,612
			Total	**43,035 sq.ft., (0.99 acres)**

Table 3. Wetland impacts and mitigation summary.

IMPACT		MITIGATION		
Location	**Acres**	**Method**	**Ratio**	**Details**
Category III Wetlands: A, H, I Category IV Wetlands: B, C, D, E, F, G	0.99	Creation	2:1	1.98 acres of Category III Forested/Scrub-Shrub Wetland Creation (Enhanced with Native Vegetation, Habitat Features and Preservation under a Deed Restriction and/or Conservation Covenant)
		Wetland Enhancement & Preservation	n/a	4.68 acres of Wetland Enhancement (Wetlands A, J, K, L, M, N, O, P, Q, R, S, T & U) Native Vegetation, Habitat Features and Preservation under a Deed Restriction and/or Conservation Covenant)
		Enhancement & Preservation of Wetland Buffer and Stream Buffer	n/a	18.03 acres of Buffer Enhancement (Wetland J, Q, R, S and the Type F stream buffer) Native Vegetation, Habitat Features and Preservation under a Deed Restriction and/or Conservation Covenant)

WETLAND DELINEATION

ELS evaluated the study area for wetlands in October and November 2009 (Appendix A). Wetlands were flagged using consecutively numbered fluorescent flagging tape or pin flags. Boundaries were subsequently surveyed by Foresight Surveying, Inc. Vegetation, hydrology, and soil data were collected from twenty-eight test plots to verify boundaries of the wetlands. The ELS wetland delineation followed the Routine Determination Method according to the U.S. Army Corps of Engineers, *Wetlands Delineation Manual* (Environmental Laboratory 1987) and *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region*

(USACE 2008), and the Washington State Department of Ecology, *Washington State Wetlands Identification and Delineation Manual* (DOE 1997). Twenty-one USACE jurisdictional wetlands (labeled Wetland A through U onsite), and one jurisdictional stream were delineated onsite, as shown in Figure 2 and Table 1. Lewis County has been adopted the WDOE *Western Washington Wetland Rating Form, LCC 17.35A.580(1)*. Based on the Wetland Rating Form, the onsite wetlands are considered Category III and Category IV wetlands (Table 1).

ECOLOGICAL ASSESSMENT OF IMPACT AREAS

EXISTING VEGETATION

The majority of the onsite wetlands proposed for impact are dominated by emergent vegetation. Dominant vegetation in the emergent wetland test plots consists of common rush (*Juncus effusus*, FACW), bird's-foot trefoil (*Lotus corniculatus*, FAC), and slough sedge (*Carex obnupta*, OBL). The onsite emergent wetlands scored low in habitat functions partially due to the lack of vegetative structure and variety.

Wetlands H and I contain both emergent and scrub-shrub vegetation. Dominant scrub-shrub vegetation identified within these wetlands consists of Oregon ash (*Fraxinus latifolia*, FACW), Spiraea (*Spirea douglasii*, FAC), Nootka rose (*Rosa nutkana*, FAC), Sitka willow (*Salix scouleriana*, FAC), crabapple (*Pyrus fusca*, FAC), Cascara (*Rhamnus purshiana*, FAC), Bitter cherry (*Prunus emarginata*, FACU), and Quaking aspen (*Populus tremuloides*, FAC).

Dominant vegetation in the upland test plots associated with the wetland buffers proposed for impact consists of Kentucky bluegrass (*Poa pratensis*, FAC), tall fescue (*Schedonorus phoenix*, FAC), unidentified bentgrass species (*Agrostis* sp., FAC), white clover (*Trifolium repens*, FAC), hairy cat's ear (*Hypochaeris radicata*, FACU) and dandelion (*Taraxacum officinale*, FACU).

Dominant vegetation found onsite is recorded on routine on-site wetland determination forms included with the ELS *Critical Areas Report* (Appendix A). The indicator status, following the scientific names, indicates the likelihood of the species to be found in wetlands. Listed from most likely to least likely to be found in wetlands, the indicator status categories are:

- **OBL** (obligate wetland) - occur almost always (estimated probability >99%) under natural conditions in wetlands.
- **FACW** (facultative wetland) - usually occur in wetlands (estimated probability 67%-99%), but occasionally found in non-wetlands.
- **FAC** (facultative) - equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).
- **FACU** (facultative upland) - usually occur in non-wetlands (estimated probability 67%-99%), but occasionally found in wetlands (estimated probability 1%-33%).
- **UPL** (obligate upland) - occur almost always (estimated probability >99%) under natural conditions in non-wetlands.
- **NI** (no indicator) - insufficient data to assign to an indicator category.

EXISTING WATER REGIME

Wetlands A and U are emergent and scrub-shrub slope wetlands. These wetlands receive water from both on and offsite sources. These wetlands contain small depressions onsite providing area for seasonal ponding. Wetland A outlets offsite and south-southwest to the Olequa Creek watershed and Wetland U outlets offsite and north to the Stearns Creek Watershed. Wetland A is associated with a drainage that flows southwest across the southern portion of the site. This drainage does not have a defined channel and therefore does not meet the definition of a stream. Hydrology is supplied to the Wetland A/Drainage A area primarily from drainage east of I-5 and a culvert under I-5. Sheet flow (east to west) within Wetland A/Drainage A was observed by ELS during a site visit after a high rainfall event in October 2009. Hydrology within Wetland A/Drainage A ultimately flows offsite and southwest into the scrub-shrub portion of the Wetland A unit. From this offsite portion of Wetland A, the drainage is directed west under Avery Road West (at the North Military Road intersection) continuing through the Olequa Creek watershed

Wetlands H and J are emergent and scrub-shrub depressional wetlands. These wetlands are isolated wetlands with no surface outlet.

Wetlands B, C, D, E, F, G, I, K, L, M, N, O, P, Q, R, S and T are emergent depressional wetlands, containing areas of saturation and seasonal ponding.

The onsite wetlands primarily receive hydrology from groundwater and are supplemented by runoff from surrounding uplands and precipitation. Wetlands J, Q, R, and S may receive seasonal overbank flooding from the nearby stream and are also supplemented by groundwater, runoff from surrounding uplands, and precipitation. Standing water was observed within Wetlands A, C, E, G, H, I, and T during our November 2009 field investigation (Appendix A).

EXISTING SOILS

The USDA Natural Resources Conservation Service (NRCS) *Soil Survey of Lewis County Area, Washington (1987)* maps Prather silty clay loam soil across the majority of the site. Prather silty clay loam (167) is generally found across 0 to 5 percent slopes and is a moderately well drained soil located on broad till plains and terraces. Lacamas silt loam (118) is mapped on the remaining portions of the site. This soil is generally found across 0 to 3 percent slopes and is a poorly drained soil located on broad plains, terraces, and bottom lands. Drainage of Lacamas soil is often altered by tiling. Both soils are listed as hydric on the NRCS *Hydric Soils List for Washington* (2010).

EXISTING FAUNA

ELS has been contracted to conduct a detailed wildlife and habitat inventory onsite over the spring of 2010. The separate *Wildlife and Habitat Report* will provide a summary of the wildlife found to be utilizing the site and description of the available habitat.

FUNCTIONS ASSESSMENT OF WETLAND IMPACT AREAS

Functions were assessed for the wetland impact areas (Wetlands B, C, D, E, F, G, H, and I) using the *Methods for Assessing Wetland Functions* (Hruby *et al.* 1999). Wetlands B, C, D, E, F, and G were assessed together as emergent, closed depressional, wetlands. Wetlands H and I were assessed as emergent/scrub-shrub, closed depressional, wetlands and Wetland A was assessed separately as an emergent/scrub-shrub, outflow wetland.

Habitat

Small mammals such as moles, voles, and rabbits are likely present on-site. Larger mammals such as coyote, deer, raccoons, and opossum are also likely to utilize the site. Song birds and waterfowl have been observed onsite utilizing the open pastures and wetland habitat. See the *Wildlife and Habitat Report* drafted by ELS for description of wildlife found to be utilizing the site and the available habitat.

Wetlands B, C, D, E, F, and G

The habitat suitability for flora and fauna in Wetlands B, C, D, E, F, and G are low, because they are dominated by a single stratum of emergent plants, have solely herbaceous buffer vegetation providing a very limited connective habitat corridor for wildlife, contain one dominant water regime (saturated or occasionally flooded or inundated), and contain no woody debris or habitat snags.

Wetlands H and I

The habitat suitability for flora and fauna in Wetlands H and I are moderately low, for emergent/scrub-shrub closed depressional, wetlands. The northern portion of Wetland H consists of scrub-shrub wetland habitat, with the eastern portion consisting of a single stratum of emergent plants. Wetland H provides moderately low habitat suitability as the wetland area proposed for impact consists of two vegetative strata (emergent and scrub-shrub) with no forested component, (Figure 10). Wetland I is dominated by scrub-shrub wetland habitat, and provides moderate habitat suitability. Neither wetland contains woody debris or habitat snags.

Wetland A

The habitat suitability for flora and fauna in the onsite portion of Wetland A is moderately low as the wetland area proposed for impact is limited to a single stratum of vegetation providing limited habitat value and has a predominately herbaceous buffer providing a very limited connective habitat corridor for wildlife. The wetland unit for which Wetland A is associated with is considered an emergent and scrub-shrub wetland; however the majority of Wetland A onsite is dominated by emergent vegetation, (Figure 10). Occasionally flooded depressional pockets within Wetland A provide habitat for migrating waterfowl. No woody debris or habitat snags are present within the onsite emergent portion of Wetland A proposed for impact.

Water Quality and Hydrology

Wetlands B, C, D, E, F, and G scored between 6 and 16 points (out of a possible 32) for water quality functions. Their low water quality functions are primarily due to their association with grazed fields and therefore disturbed vegetation and lack of seasonal ponding. Wetlands B, C, D, E, F, and G have low hydrologic functions, due their low

potential for removing sediment, nutrients, and toxics, reducing peak flows, and decreasing downstream erosion. These wetlands are dominated by the saturated water regime or hydroperiod, which provides no flood storage for the watershed, Figure 11. These wetlands to have a high potential for recharging groundwater, as groundwater contributes to greater than 90 percent of the wetlands' hydrology. All wetlands in western Washington are assumed to have a link to ground water and, therefore, have a high potential for recharging ground water (Hruby *et al*. 1999).

Wetlands H and I
Wetlands H and I contain one water regime or hydroperiod (saturated only), which provides no flood storage for the watershed, Figure 11.

Wetland A
Wetland A contains two water regimes or hydroperiods (saturated and occasionally flooded or inundated), Figure 11. The emergent onsite portion of Wetland A provides multiple small depressions that allow water to collect seasonally. The ponding depth is shallow, less than 6-inches and therefore the depth of storage provided by this outflow wetland to the watershed is minimal.

Buffers

Wetlands B, C, D, E, F, G
The buffer vegetation associated with Wetlands B, C, E, F and G is comprised of a single stratum of emergent herbaceous vegetation, which provides a low level of protection and screening from adjacent disturbances. There is also a general lack of habitat structure and diversity limiting use by wildlife. The herbaceous vegetation does not function to connect the wetland habitat with other habitat corridors onsite or in the area.

Wetlands H and I
The buffer habitat suitability for flora and fauna in Wetlands H and I is moderate. The buffer vegetation north of Wetlands H and I is dominated by a woody, deciduous trees and shrub area approximately 13 acres in size. The buffer vegetation is of limited maturity and, therefore, large downed woody debris and/or snags are lacking. The southern buffer of Wetlands H and I consist of solely herbaceous vegetation, which provides very limited buffer functions such as screening, connectivity and habitat opportunity to the wetlands.

Wetland A
The buffer vegetation associated with the onsite portion of Wetland A is comprised of a single stratum of emergent herbaceous vegetation which provides a low level of protection and screening from adjacent disturbances. The presence of a single stratum of vegetation limits the ability of the buffer to provide screening for a wide variety of wildlife habitat. The buffer vegetation associated with this wetland consists of grasses and herbs. This herbaceous vegetation does not provide a high functioning habitat due to the very limited buffer functions such as screening, connectivity and habitat opportunity to the wetland. The offsite portion of Wetland A consists of scrub-shrub vegetated corridor that is intersected with roads, driveways and residential properties.

Wetland Ratings

Lewis County follows the WDOE's *Washington State Wetland Rating System for Western Washington* (2006). In this rating method, wetlands are rated from a Category I (highest quality) to a Category IV (lowest quality), which has been adopted by Lewis County. Lewis County refers to Category I and II wetlands as Class A wetlands and Category III and IV wetlands as Class B wetlands (*LCC 17.35.590*). Wetlands A, H and I are rated as Category III (Class B) wetlands and Wetlands B, C, D, E, F, and G are rated as Category IV (or Class B) wetlands. Wetland rating forms are attached as part of the *Critical Areas Report* within Appendix A.

Landscape Position and Geomorphology

Wetlands B, C, D, E, F, G, H and I are best described as Depressional Closed Wetlands and Wetland A is a Slope Outflow Wetland (Hruby *et al*. 1999).

The geomorphology of the central portion of the site is consistent with the summit landform definition. Summit landforms are found on top of hills and ridges which may drain in opposite directions. The central portion of the site acts as the division between the Stearns Creek (north) and the Olequa creek (south) watersheds (Figure 2).

MITIGATION SEQUENCING

WETLAND IMPACT AREAS

The proposed Ritchie Bros. facility has followed the preferred sequence of first avoiding, then minimizing, and finally compensating for wetland impacts. Specifically, the project will avoid approximately 4.56 acres (198,696 sf) of the total 5.55 acres (241,731 sf) of wetlands identified in the project site. Site access road to the western property boundary to reduce wetland impact to Wetland A (5,190 sf) was not feasible. Site access is planned to be located on the southern portion of the site to minimize the distance travelled on county roads by trucks and trailers. The local jurisdiction and traffic engineers advise that this distance be kept at a minimum to reduce congestion on county roads. Additionally, a main access along the western property line would entail sending the trucks and trailers en route to the facility through the a ninety-degree right turn on North Military Road at the four-way intersection of North Military Road and Avery Road West. Trucks and trailers attempting to turn at this tight intersection would present a traffic congestion problem on the county road. Improvements at this four-way intersection or construction of a North Military Road turn lane (north) would also incur wetland impacts. Site access was not proposed from the north to avoid impacts to the Type F stream and because there is no direct I-5 access (on or off ramps) located off of Koontz Road. Koontz Road spans I-5, and acts as an overpass. The facility requires a main access point within close proximity to an I-5 access point. Exit 68 provides access to I-5 north and south and is located in proximity to the southern boundary of the site.

The auction facility has been designed for current and future needs. Ritchie Bros. has outgrown the current 41 +/- acre facility and is at operational capacity. Ritchie Bros. is proposing to construct the new 123 +/- acre facility to take the place of the current 41 +/- acre facility. Issues with the existing 41 +/- acre facility include lack of event parking for passenger and oversize vehicles, lack of parking for oversize auction items, and blockage

or congestion of county roads. The new facility will have approximately nine acres reserved onsite for event parking. Ritchie Bros. has been forced to lease additional off-site space for equipment staging and event parking. The fragmented facility has reduced the efficiency of the Ritchie Bros. operations at the current site. The new larger and efficient facility proposed by Ritchie Bros. allows sufficient space for onsite event parking.

This plan proposes compensatory mitigation following the Washington State Department of Ecology's *Guidance on Wetland Mitigation in Washington State* (2004a) recommendation of a replacement ratio of 2:1 creation for impacts to Category III and Category IV wetlands onsite (See Table 1). Wetland and stream buffer enhancement is also proposed onsite. The wetland creation and wetland/buffer enhancement areas onsite were configured to preserve and enhance the two existing habitat corridors within the northern and southern portions of the site.

MITIGATION GOALS, OBJECTIVES, & PERFORMANCE STANDARDS

WETLAND CREATION AND NORTHERN ENHANCEMENT AREAS

The goal of the wetland creation area is to create a 1.98 acre, Category III, forested and scrub-shrub wetland to mitigate for the loss of 0.99 acres of Category III and IV, predominately emergent wetlands. The created wetland will achieve higher functions than what is provided by the wetlands proposed for impact. Additionally, the existing Wetlands J, K, L, M, N, O, P, Q, R, S, and T, and the locally regulated 50-foot wetland buffers (Wetlands J, Q, R and S), and the onsite stream buffer – all located in the northern portion of the site are to be enhanced. The goal of this wetland creation and northern wetland/stream buffer preservation/habitat enhancement is to preserve and enhance the northern onsite wetlands (1.06 acres) and preserve and enhance (14.36 acres of wetland/stream buffer) area to provide greater screening and wildlife habitat potential than what currently exists in these areas as well as that provided by the impacted wetlands onsite. To accomplish this goal the following objectives and performance standards are appropriate to ensure the success of the mitigation area:

Wetland Acreage

Objective 1: Create a 1.98 acre wetland north of the Type F stream onsite.

Performance Standard 1a. The total excavated area will be 1.98 acres and will be located north of the Type F stream onsite (Figure 2). Include a surveyed or "to scale" As-built drawing in the Year 1 monitoring report that identifies the size and location of the excavated area will be provided.

Objective 2: Enhance the northern wetland and stream buffer habitat onsite.

Performance Standard 1a. Enhance 1.06 acres of onsite wetland (Wetlands J, K, L, M, N, O, P, Q, R, S and T) and 14.36 acres of wetland/stream buffer within the northern portion of the site. Native enhancement species and quantities are to be documented on an As-built map and included within the Year 1 Monitoring Report.

Water Regime

Objective 2: Develop hydrologic characteristics that meet the 1987 U.S. Army Corps of Engineers manual guidelines for hydrology.

Performance Standard 2a. The hydrology will meet the criteria for positive hydrologic indicators after three years as measured by observing hydrology in the monitoring plots. Positive hydrologic indicators include the primary and secondary indicators listed in the Routine Onsite Wetland Determination Data Forms (Appendix A).

Soils

Objective 3: Develop soil characteristics that meet the 1987 U.S. Army Corps of Engineers manual guidelines for soils.

Performance Standard 3a. The soils will meet the criteria for positive soil indicators after 3 years as measured by soil pits in the monitoring plots. Positive hydric soils indicators are listed in the Routine Onsite Wetland Determination Data Forms (Appendix A).

Vegetative Structure

Objective 4: Establish a diverse, multi-strata, native-plant community dominated by a forested class.

Performance Standard 4a. Native vegetation is to be installed within the wetland creation area (1.98 acres), northern Wetlands J, K, L, M, N, O, P, Q, R, S and T (1.06 acres) and northern wetland buffers and Type F stream buffer, (14.36 acres) as specified within Table 6. Native enhancement species and quantities are to be documented on an As-built map and included within the Year 1 Monitoring Report.

Performance Standard 4b. The cover of native trees will be at least 80 percent after 10 years as measured by monitoring plots (see Table 3 for annual performance standards). Report percent cover in the monitoring reports.

Performance Standard 4c. The cover of native shrubs will be at least 60 percent after 10 years as measured by monitoring plots (see Table 3 for annual performance standards). Report percent cover in the monitoring reports.

Performance Standard 4d. The survival of native trees and shrubs will be at least 60 percent after 5 years as measured by monitoring plots (see Table 3 for annual performance standards). Report percent survival in the monitoring reports.

Performance Standard 4e. The cover of non-native, invasive plant species will not exceed 20 percent during the 10-year monitoring period as measured by monitoring plots (see Table 3 for annual performance standards). Report percent cover in the monitoring reports.

Habitat Attributes

Objective 5: Provide diverse habitat features for wildlife.

Performance Standard 5a. At least six cedar bird boxes for songbirds will be installed within the created wetland. The performance standard 5a for Objective 5 is completed when the bird boxes are installed and documented in the Year 1 monitoring report.

Performance Standard 5b. At least four horizontal logs and two snags will be installed within the created. The performance standard 5b for Objective 5 is completed when the logs and snags are installed and documented in the Year 1 monitoring report (see the Mitigation Site Plan section for specifications for logs and snags).

Performance Standard 5c. Install at least four woody debris/brush piles along the created wetland and stream buffer boundary in the northern portion of the site**.** The performance standard 5c for Objective 5 is completed when the brush piles are installed and documented in the year 1 monitoring report (see the Mitigation site Plan section for specifications on the brush piles).

Long-Term Protection

Objective 6: Provide long-term, legally-binding protection.

Performance Standard 6a. A permanent and irrevocable deed restriction and/or conservation covenant will be established for the created wetland as required by the USACE. The performance standard 6a for Objective 6 is completed when the deed restriction and/or conservation covenant are recorded and copy provided in the Year 1 monitoring report.

WETLAND A AND WETLAND U HABITAT ENHANCEMENT

The goal of the Wetland A and U wetland and buffer habitat enhancement is to preserve and enhance 3.62 acres of existing onsite wetlands and 3.67 acres of wetland buffer area to provide greater screening and wildlife habitat potential than what currently exists in these areas as well as that provided by the impacted wetlands onsite. To accomplish this goal, the following objectives and performance standards are appropriate to ensure the success of the mitigation area:

Vegetative Structure

Objective 1: Establish a diverse, multi-strata, native-plant community.

Performance Standard 1a. Native vegetation is to be installed within the Wetland A (3.56 acres) and Wetland U (0.07 acres) wetland enhancement areas, totaling 3.62 acres and Wetland A buffer (3.25 acres) and Wetland U buffer (0.42 acres) enhancement areas, (totaling 3.67 acres) as specified within Table 6 and documented within an As-built map and Year 1 Monitoring Report.

Habitat Attributes

Objective 2: Provide diverse habitat features for wildlife.

Performance Standard 2a. Install at least four horizontal logs, one vertical snag and four brush piles within the Wetland A and U wetland buffer enhancement areas. The performance standard 1a for Objective 2 is completed when the horizontal logs, snag and brush piles are installed and documented in the As-built and year 1 monitoring report (see the Mitigation Site Plan section for specifications on horizontal logs and vertical snags).

Performance Standard 2b. Install a minimum of five cedar songbird boxes (boxes will be on metal poles attached to the horizontal logs or installed on existing trees) within the Wetland A and Wetland U buffer enhancement areas. The performance standard 1b for Objective 2 is completed when the bird boxes are installed and documented in the Year 1 monitoring report.

Long-Term Protection

Objective 3: Provide long-term, legally-binding protection.

Performance Standard 3a. A permanent and irrevocable deed restriction and/or conservation covenant will be established for the wetland and buffer preservation/habitat enhancement areas as required by the USACE. The performance standard 3a for Objective 3 is completed when the deed restriction and/or conservation covenant are recorded and a copy is provided in the Year 1 monitoring report.

Table 4. Monitoring performance standards for native trees, shrubs, herbs, and non-native invasive plants.

Vegetative Layer	Percent Cover[1] and Survival					
	Year 1	Year 2	Year 3	Year 5	Year 7	Year 10
Tree Stratum						
Tree Cover	--	--	--	> 20 %	> 40 %	> 60 %
Tree Survival	> 90 %	> 80 %	> 70 %	>60 %	--[2]	--[2]
Shrub Stratum						
Shrub Cover	--	> 20 %	> 40 %	> 60 %	> 70 %	> 80 %
Shrub Survival	> 90 %	> 80 %	> 70 %	>60 %	--[2]	--[2]
Other						
Non-native/Invasive Plant Cover	< 20 %	< 20 %	< 20 %	< 20 %	< 20 %	< 20 %

[1] Percent cover includes native, naturally colonizing species.
[2] Survival estimates are anticipated to be non-applicable after 5 years. After the canopy begins to close, it is expected that the natural progression of plant communities will create competition for light, water, and nutrients, which will eliminate some individual plants.

PROPOSED MITIGATION AREAS

SITE DESCRIPTION

The proposed mitigation strategy combines wetland creation and wetland and wetland/stream buffer preservation/habitat enhancement to mitigate for the wetland impacts (Table 2; Figure 5). The proposed 1.98 acre creation area is located onsite, north of the stream. The proposed wetland and wetland/stream buffer preservation/habitat enhancement areas are located south of the onsite stream in the northern portion of the site and also in the southern portion of the site within and adjacent to Wetland A. The 1.98 acre created wetland will be additionally buffered by a large native landscape berm to the north and a stormwater facility to the south (Figures 5 and 6).

As previously mentioned, ELS conducted the field work required for a jurisdictional wetland determination followed the Routine Determination Method according to the U.S. Army Corps of Engineers, *Wetlands Delineation Manual* (Environmental Laboratory 1987) and *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (USACE 2008), and the Washington State Department of Ecology, *Washington State Wetlands Identification and Delineation Manual* (DOE 1997). The completed *Critical Areas Report* is dated April 13, 2010 (Appendix A). This preliminary mitigation plan is based on the April 2010 *Critical Areas Report* completed by ELS and discusses the onsite soils and other environmental features (2009).

OWNERSHIP

Ownership of the created wetland, wetland and wetland/stream buffer preservation/habitat enhancement areas will be held by the Ritchie Bros., and will include an irrevocable deed restriction and/or conservation covenant to protect the mitigation areas for conservation purposes in perpetuity. A copy of the deed restriction, conservation covenant, and any other legal agreements will be forwarded to the appropriate agencies once the documents are recorded.

Ritchie Bros. will be responsible for implementing the wetland and buffer mitigation, and the ten years of monitoring and maintenance as detailed in this Mitigation Plan or longer, if deemed necessary by contingency actions.

RATIONALE FOR CHOICE

The wetland creation area was selected based on the following criteria:

- The creation area must be located on-site
- The creation area must be able to provide wetland hydrology and wetland soils by Year three after the mitigation areas are established.
- The creation area must have sufficient acreage to mitigate for wetland impacts and lost functions, and allow for a standard buffer.
- The creation area must be located in an area not subject to future development.

The total 1.98 acre proposed wetland creation area will be excavated north of the onsite stream. The overall goal of the creation area is to achieve greater wetland functions than those provided by the wetlands to be impacted. The wetland creation area is proposed in an area that will integrate with the natural landscape and topography of the surrounding area and provide habitat enhancement to a deteriorated riparian corridor. A preserved and enhanced buffer will extend from the southern wetland creation area boundary. Based on our field investigations, the soils are poorly drained silt loam which agrees with the mapped soil survey. The soils are mapped as Lacamas silt loam and Prather silty clay loam, poorly drained, hydric soils (NRCS 2010). The wetland creation area will be maintained by a shallow ground water table and the seasonal overbank flooding provided by the adjacent stream hydrology. Soil excavated from the created wetland area will be utilized to help construct the berm south of Koontz Road.

The wetland and wetland/stream buffer preservation and enhancement areas were selected based on the following criteria:

- The wetland and wetland/stream buffer preservation and enhancement areas are located onsite and are in proximity to the wetland creation area.
- The wetland and wetland/stream buffer preservation and enhancement areas will complement the wetland creation area and provide additional buffer habitat to the mitigation onsite.
- The wetland and wetland/stream buffer preservation and enhancement areas are located in an area not subject to future development.

The wetland and wetland/stream buffer preservation and enhancement areas proposed includes 4.68 acres of wetland (including Wetlands A, J, K, L, M, N, O, P, Q, R, T, and U) and 18.03 acres of buffer enhancement(including the buffers of Wetlands A, J, Q, R, S, U and the Type F stream buffer). The wetland and buffer enhancement areas will be enhanced with native trees, shrubs, and habitat features. The wetland creation and enhancement areas will be preserved with a deed restriction and/or conservation covenant, which will dedicate the area for conservation purposes in perpetuity.

ECOLOGICAL ASSESSMENT OF MITIGATION AREAS (WETLAND CREATION, WETLAND AND BUFFER PRESERVATION / HABITAT ENHANCEMENT)

Existing Vegetation

Wetland Creation Area

The wetland creation area is upland pasture north of the Type F stream onsite. The area has been used as cattle pasture and is dominated by herbaceous plants such as redtop (*Agrostis gigantea*, FAC), tall fescue (*Schedonorus phoenix*, FAC), Kentucky bluegrass (Poa pratensis, FAC), white clover (*Trifolium repens*, FAC), and dandelion (*Taraxacum officinale*, FACU). The invasive Canada thistle *(Circium arvense,* FACU) is also present within this area.

Wetland Preservation/Habitat Enhancement Areas

The wetland enhancement areas consist predominately of emergent wetland species and herbaceous vegetation that has been historically grazed by cattle. The wetland enhancement areas are dominated by soft rush (*Juncus effusus*, FACW), slough sedge (*Carex obnupta*, OBL), velvetgrass (*Holcus lanatus*, FAC), buttercup (*Ranunculus repens*, FACW), bentgrass (*Agrostis capillaris*, FAC), and birds foot trefoil (*Lotus corniculatus*, FACW). Wetlands J and T are the only wetlands proposed for enhancement that currently contain scrub-shrub vegetation. Wetland T currently has hardhack (*Spirea douglasii*, FAC), nootka rose (*Rosa nutkana*, FAC), red-osier dogwood (*Cornus sericea*, FACW), crabapple (*Pyrus fusca*, FAC), and Oregon ash saplings (*Fraxinus latifolia*, FACW). Wetland J contains quaking aspen (*Populus tremuloides*, FAC) in addition to the herbaceous species mentioned above.

Wetland/Stream Buffer Preservation/Habitat Enhancement Areas

The wetland and stream buffers onsite consist of upland pasture that has been historically grazed by cattle. The buffer areas are dominated by herbaceous plants and grasses such as redtop, tall fescue, Kentucky bluegrass (*Poa pratensis*, FAC), curly dock (*Rumex crispus*, FAC), white clover, and English plantain (*Plantago lanceolata*, FAC), oxeye daisy (*Chrysanthemum leucanthemum*, FACU), and dandelion (*Taraxacum officinale, FACU).* Clusters of snowberry (*Symphoricarpos albus*, FACU) are present within the buffer area of Wetland N. The invasive Canada thistle is also present within these areas.

Existing Water Regime

Wetland Creation Area

A soil pit within the proposed wetland creation area lacked positive indicators of wetland hydrology. The creation area is approximately 1-2 feet higher in elevation than the Type

F stream to the south. Currently, surface water likely infiltrates and drains to the stream from this area.

Wetland Preservation and Habitat Enhancement Areas
The wetland preservation and habitat enhancement areas demonstrated either primary (surface water, saturation, oxidized rhizospheres along living roots) or secondary indicators (drainage patterns, geomorphic position) of hydrology according to the data plot information gathered as part of the wetland delineation.

Existing Soils

Wetland Creation Area
The soils within the wetland creation area are mapped as Prather silty clay loam, a moderately well drained hydric soil (NRCS 2010). The evaluated soils were consistent with the mapped soil type described by the NRCS.

Wetland and Wetland/Stream Buffer Preservation and Habitat Enhancement Areas
The soils within the wetland enhancement and buffer areas are mapped as Lacamas silt loam, a poorly drained, hydric soil and Prather silty clay loam, a moderately well drained hydric soil (Soil Conservation Service 1987). The evaluated soils were consistent with both soil types. Redoximorphic features were present within the soil profiles of the wetland test plots (Appendix A).

Functions Assessment of the Wetland Mitigation Areas
The functions were anticipated for the wetland mitigation areas 10 years after the implementation of the mitigation plan. The wetland mitigation areas will compensate for impacts to Category III Wetlands A, H, and I and Category IV Wetlands B, C, D, E, F, and G whose functions were assessed in a previous section. The mitigation plan has designed the mitigation areas to generally increase both function and category from what is currently provided by the existing wetlands proposed for impact.

The wetland creation and enhancement areas will contribute to a higher level of water quality, water quantity and habitat functions than the existing wetlands. Ten years after the mitigation is completed, the wetland creation area will have a high opportunity to improve water quality and water quantity functions and a moderately high potential to provide general wildlife habitat functions.

Habitat
The habitat suitability for flora and fauna in the wetland creation area will be moderately high because the wetland creation area will provide a greater diversity of native plant species than what currently exists in the wetlands proposed for impact. In addition, the enhancement of the wetland and buffer adjacent to the wetland creation area and onsite stream will allow the future development of a scrub-shrub and forested riparian corridor that will provide greater habitat suitability than what currently exists for the onsite stream. The addition of habitat features such as horizontal logs, vertical snags, woody debris piles, and bird boxes will provide greater habitat opportunity for birds, small mammals, and amphibians within the overall mitigation area than what is currently present within the wetland impact areas or the proposed mitigation areas.

Water Quality and Quantity

The wetland creation area is expected to have the lower elevation cell inundated with standing water during the peak rainy season in the winter, and will likely be saturated to dry during the summer months. Therefore the hydroperiods anticipated for the wetland creation area will not differ greatly from that of the impacted wetlands. However, the opportunity for flood storage will be provided by the wetland creation area due to its proximity to the nearby stream. Seasonal high flood waters from the onsite stream will be retained within the wetland creation area. Currently there is no wetland habitat onsite that provides flood storage for the Type F stream. The created wetland will have a higher opportunity to remove sediments, nutrients, heavy metals and toxic organics than the impacted wetlands. With development of the site, the cattle historically pastured onsite will be removed which will subsequently reduce the amount of nitrogen released to the Type F stream as well as reduce the impacts to onsite wetlands and streams from grazing activities. Furthermore, the created wetland will provide high opportunities for reducing peak flows and decreasing downstream erosion, which improves upon the low opportunity for water quantity functions currently provided by the wetlands to be impacted.

Buffers

The buffers around the created wetland area currently have a low-level of connection to other habitat areas, no screening functions, and limited habitat diversity but the proposed wetland and buffer preservation/habitat enhancement area around the created wetland and the additional onsite wetland and buffer enhancement areas will provide the mitigation areas with a measure of protection from disturbances that is not provided onsite today. The vegetative strata and plant density within buffer areas will be enhanced with native trees and shrubs, and wildlife habitat features will be created by installing large woody debris, vertical snags, brush piles and bird boxes to provide additional habitat opportunity. The mitigation proposal will also increase the buffer's current moderate level of connection to other habitat areas.

Wetland Rating

The wetland creation area has been designed to provide the functions equivalent or greater than those provided by a Category III wetland 10 years post-implementation of the mitigation plan. The existing Category IV wetlands proposed for enhancement will provide functions equivalent or greater than those provided by a Category III wetland.

Position and Function of Wetlands in Landscape

The wetland creation area will be classified as a closed depressional wetland. By Year 10, both the wetland creation and enhancement areas will be well vegetated with a diverse native plant community that forms multiple strata—low understory, mid-understory, and overstory—to increase the native plant richness, primary production, and habitat suitability to higher functional levels than what currently exist for the wetlands to be impacted. We anticipate that the overall habitat suitability of both the created wetland and wetland enhancement areas will be moderately high, an increase from the condition of the wetlands to be impacted because of the improved plant community and the addition of habitat features such as large woody debris and bird boxes.

It is anticipated that the potential for water quality and water quantity functions will improve over existing functions of the wetland impact areas because a dense, native plant community with multiple strata will be established. The created wetland and wetland enhancement areas will likely have a moderate to moderately high opportunity for removing sediments, nutrients, and toxic organics. We also anticipate that the created wetland will have a high potential for slowing peak flows and decreasing downstream erosion.

CONSTRAINTS

The Ritchie Bros. will be responsible for the maintenance and monitoring of the mitigation areas. Maintenance and monitoring should be undertaken under the consultation of a qualified wetland or environmental consultant. Legal ownership of the mitigation area will remain with the Ritchie Bros. and will be secured with an irrevocable deed restriction and/or conservation covenant.

MITIGATION SITE PLAN

CONSTRUCTION SCHEDULE

Wetland mitigation is expected to begin the first dry season after permit approval and will likely occur concurrently with project construction. The created wetland will be excavated, the wetlands proposed for fill and onsite agriculture ditches onsite will be re-routed and the overall grading and berm construction will occur during this first dry season after permit approval. Large woody debris and other habitat features will also be installed in the late summer to early fall when the site conditions are dry. Planting will occur in the late fall to early spring, when site conditions are wet and plants are dormant.

The construction sequence for preparing the site and installing habitat features, installing the plants, and maintaining the sites is outlined below (Tables 5 and 6). The tasks are listed in the order that they are anticipated to occur; however, some tasks may occur concurrently or may precede other tasks because of site and/or procedural constraints.

SPECIFICATIONS FOR SITE PREPARATION

Wetland Creation Area and Northern Enhancement Areas

- Stake or flag the construction zone.
- Set control stakes to monitor the elevation of the wetland creation area.
- Install silt fencing around the creation area and northern wetland buffer boundaries (Wetlands J, K, L, M, N, O, P, Q, R, S and T) proposed for wetland and buffer enhancement.
- Flag any areas of native vegetation to be retained.
- Use a dozer, backhoe, or excavator, to excavate the wetland creation area to the same elevation of the onsite streambed. Excavated soil from the creation area will be utilized in building the berm south of Koontz Road, just north of the creation area.
- Install a minimum of four horizontal logs and two snags within the wetland creation area and northern wetland and buffer enhancement area.
- Install at least four woody debris/brush piles in the buffer of the wetland creation and northern wetland and buffer enhancement area.

- Install a minimum of six cedar bird boxes a minimum of 6 feet above ground on metal posts, existing trees, or snags.
- Till compacted soils as necessary.
- Add certified, weed-free straw at a rate of 2 tons per acre for erosion control (as required).

Brush Pile Specifications

- Brush piles will be at least 3-feet high and 10-feet wide;
- Contain 3 layers of brush (ranging from approximately ¼- to 6-inch in diameter) with the largest diameter brush layer on the bottom of the pile, with progressively smaller diameter brush towards the top of the pile.

Horizontal Log Specifications

- Coniferous logs, preferably western red cedar;
- At least 12-inches dbh for at least 20-feet in length;
- Of hard to medium decay; and
- With ends rough cut, mashed, or ripped, and as many lateral branches retained as possible.

Snag Specifications

- Large coniferous logs with cavities drilled in them or large existing coniferous cavity trees of hard to medium decay;
- Greater than 20-feet tall after installation, with as many lateral branches retained as is feasible;
- At least 15-inches dbh; and
- With above ground ends rough cut, mashed, or ripped.

Wetland A Preservation and Buffer Enhancement Area

- Install a minimum of four horizontal logs, and one snag, (see above specifications).
- Install a minimum of four cedar bird boxes (see above specifications).
- Install at least three woody debris/brush piles in the buffer (see above specifications).

Wetland U Preservation and Buffer Enhancement Area

- Install a minimum of one cedar bird box (see above specifications).
- Install at least one woody debris/brush piles in the buffer (see above specifications).

Table 5. Habitat feature specifications by mitigation area.

Mitigation Area	Minimum No. of Woody Debris Units	Minimum No. of Bird Boxes
Wetland Creation Area/ Northern Enhancement Area*	4 logs 2 snags 4 brush piles	6
Wetland A Preservation and Buffer Enhancement Area	4 logs 1 snag 3 brush piles	4
Wetland U Preservation and Buffer Enhancement Area	1 brush pile	1

*Habitat features specified for the wetland creation area are in proximity to the existing Wetlands J, K, L, M, N, O, P, Q, R, S, and T and therefore no additional habitat features will be called out specifically for the northern wetland enhancement area.

SPECIFICATIONS FOR PLANTING

Plant Materials

Plant materials will conform to the following criteria:

Bare-root Stock

- Bare-root species will be salvaged from on-site or local off-site sources or purchased from a native plant nursery.
- Bare-root stock will be protected until installation by being refrigerated, covered with damp burlap, and placed in moist sand, peat, or other method of keeping the roots cool and moist.
- The bare-root stock will have well-developed roots and sturdy stems, with an appropriate root-to-shoot ratio.
- No damaged or desiccated roots or diseased plants will be accepted. In particular, bare-root trees must not have damaged or "J-rooted" taproots.
- All bare-root stock must be kept cool and moist prior to installation.
- Unused bare-root stock must be properly stored at the end of each planting day to prevent the roots from desiccating.
- The environmental consultant will be responsible for inspecting the bare-root stock prior to and during planting; the inspector will cull unacceptable plant materials.
- Bare-root trees will be a minimum of 18- to 36-inches tall.

Cutting Stock

- Cuttings will be purchased from a native plant nursery or cut from a local source.
- Cuttings will be a minimum of 3-feet long and between ¼- and ½-inch diameter.
- Cuttings will be kept cool and moist prior to being planted.
- Cutting stock should be installed within 1 to 2 days of cutting.
- Unplanted cutting stock will be properly stored at the end of each planting day to prevent desiccation.
- The environmental consultant will be responsible for inspecting the cutting stock prior to and during planting, and culling unacceptable plant materials.

Planting Specifications

The following table summarizes plant species, type of stock, spacing requirements, and quantities for each planting area. If possible, salvage native vegetation onsite prior or during grading activities. Native salvaged stock can be substituted for any of the below stock as appropriate. The plant specifications are provided as a baseline for the site enhancement. Increasing the density or stock size of the enhancement vegetation to allow for the most native and natural appearance is suggested as deemed appropriate at the time this plan is implemented.

Table 6. Planting specifications.

COMMON NAME	SCIENTIFIC NAME	TYPE	SPACING (feet)	QUANTITY		
Wetland Creation Area (86,070 s.f., 1.98 acres)						
Trees						
Western red cedar	*Thuja plicata*	18-36" bare-root	10	100		
Black cottonwood	*Populus balsamifera spp. trichocarpa*	18-36" bare-root	10	100		
Oregon ash	*Fraxinus latifolia*	18-36" bare-root	10	100		
Red alder	*Alnus rubra*	18-36" bare-root	10	100		
Quaking aspen	*Populus tremuloides*	18-36" bare-root	10	100		
Shrubs						
Pacific crabapple	*Pyrus fusca*	18-36" bare-root	6	225		
Red-osier dogwood	*Cornus sericea*	18-36" bare-root	6	225		
Pacific ninebark	*Physocarpus capitatus*	18-36" bare-root	6	225		
Douglas spirea	*Spiraea douglasii*	18-36" bare-root	6	225		
Sitka willow	*Salix sitchensis*	3' cuttings	6	225		
Nootka rose	*Rosa nutkana*	18-36" bare-root	6	225		
			Total:	**1,850**		
Wetland Enhancement Areas (203,886 sf., 4.68 acres)						
Northern Wetlands (45,998 sf., 1.06 acres) = N *Wetland A (154,952 sf., 3.56 acres) = A* *Wetland U (2,936 sf., 0.07 acres) = U*				*N*	*A*	*U*
Trees						
Western red cedar	*Thuja plicata*	18-36" bare-root	10	20	60	2
Black cottonwood	*Populus balsamifera spp. trichocarpa*	18-36" bare-root	10	20	60	2
Oregon ash	*Fraxinus latifolia*	18-36" bare-root	10	20	60	2
Red alder	*Alnus rubra*	18-36" bare-root	10	20	60	2
Cascara	*Rhanus purshiana*	18-36" bare-root	10	20	60	2
Shrubs						
Pacific crabapple	*Pyrus fusca*	18-36" bare-root	6	50	150	6
Douglas hawthorne	*Crateagus douglasii*	18-36" bare-root	6	50	150	6
Red-osier dogwood	*Cornus sericea*	18-36" bare-root	6	50	150	6
Pacific ninebark	*Physocarpus capitatus*	18-36" bare-root	6	50	150	6
Douglas spirea	*Spiraea douglasii*	18-36" bare-root	6	50	150	6
Black twinberry	*Lonicera*	18-36" bare-root	6	50	150	6

COMMON NAME	SCIENTIFIC NAME	TYPE	SPACING (feet)	QUANTITY		
	involucrata					
Sitka willow	*Salix sitchensis*	3' cuttings	6	50	150	6
Nootka rose	*Rosa nutkana*	18-36" bare-root	6	50	150	6
			Totals:	**500**	**1,560**	**58**
Wetland/Stream Buffer Enhancement Areas (785,323 sf., 18.03 acres)						
Northern Wetland/ Stream Buffer Area (625,509 sf.,14.36 acres) = N *Wetland A Buffer Area (141,528 sf., 3.25 acres) = A* *Wetland U Buffer Area (18,286 sf., 0.42 acres) = U*				*N*	*A*	*U*
Trees						
Western red cedar	*Thuja plicata*	18-36" bare-root	10	200	50	4
Western hemlock	*Tsuga heterophylla*	18-36" bare-root	10	200	50	4
Big-leaf maple	*Acer macrophyllum*	18-36" bare-root	10	200	50	4
Douglas-fir	*Pseudotsuga menziesii*	18-36" bare-root	10	200	50	4
Red alder	*Alnus rubra*	18-36" bare-root	10	200	50	4
Quaking aspen	*Populus tremuloides*	18-36" bare-root	10	200	50	4
Shrubs						
Cascara	*Rhamnus purshiana*	18-36" bare-root	10	200	50	4
Bitter cherry	*Prunus emarginata*	18-36" bare-root	10	200	50	4
Indian plum	*Oemlaria cerasiformis*	18-36" bare-root	10	200	50	4
Beaked hazelnut	*Corylus cornuta*	18-36" bare-root	6	600	100	10
Mock-orange	*Philadelphus lewisii*	18-36" bare-root	6	600	100	10
Black twinberry	*Lonicera involucrata*	18-36" bare-root	6	600	100	10
Red elderberry	*Sambucus racemosa*	18-36" bare-root	6	600	100	10
Serviceberry	*Amalanchier alnifolia*	18-36" bare-root	6	600	100	10
Snowberry	*Symphoricarpos albus*	18-36" bare-root	6	600	100	10
Nootka rose	*Rosa nutkana*	18-36" bare-root	6	600	100	10
			Totals:	**4,200**	**1,150**	**106**

Planting

- Plant the specified trees in the fall (October-November) or early spring (March-April) at the spacing specified above (10 feet). Space the trees somewhat irregularly to create heterogeneity in the density and appearance of the revegetated area. Trees will be planted with a tree shovel or comparable tool.
- Plant the shrubs in the fall (October-November) or early spring (March-April) on approximately 6-foot centers. Bare-root shrubs will be planted with a tree shovel or comparable tool. Cuttings will be planted with an iron bar.
- Place the bare-root species in the planting holes so that their roots are able to extend down entirely and do not bend upward or circle inside the hole.
- Position the root crowns of bare-root species so that they are at, or slightly above, the level of the surrounding soil.
- Firmly compact the soil around the planted species to eliminate air spaces.

- Install a minimum 3-foot by 3-foot weed barrier around the base of planted species where they are susceptible to being invaded by invasive plants. Secure weed barrier with landscape staples.
- Install anti-herbivory devices, such as seedling protection tubes or mesh protection netting, around the stems of plants species as appropriate. Secure with stakes.
- Irrigate all newly-installed plants as site and weather conditions warrant.

SPECIFICATIONS FOR MAINTENANCE

Maintenance at this site will involve removing invasive plant species, watering, fertilizing, and re-installing failed plants. The maintenance specifically involves the following activities:

- Remove and control non-native vegetation, such as Scot's broom (*Cytisus scoparius*), evergreen blackberry (*Rubus laciniatus*), and Himalayan blackberry (*Rubus armeniacus*), around all newly-installed plants a minimum of three times during the growing season in May, July, and August for the first 3 years. During Years 4 through 10, invasive species will be removed and suppressed as often as necessary to meet the performance standard of no greater than 20 percent cover of invasive species as measured by monitoring plots.
- Irrigate planted species as necessary during the dry season, approximately July 1 through October 15. We recommend that watering occur at least three to four times per dry season for the first four years. Water will be provided by a temporary above-ground irrigation system or a water truck.
- Fertilize planted species as necessary.
- Replace dead or failed plants as described for the original installation to meet the minimum annual performance standards (Table 4).

If mitigation areas are failing or the performance criteria are not met, steps will be taken to rectify the situation in a timely manner. The following steps will be implemented when an area is identified as failing or potentially failing:

- Consultation with a qualified wetland consultant to identify the cause(s) and extent of the failure or potential failure.
- Implement corrective actions such as irrigating, fertilizing, and replanting.
- Document the activities and include this data in the annual monitoring and maintenance reports.
- In the event that a routine corrective action will not correct the problem, immediately consult with the appropriate agencies.
- Evaluate recommendations from resource agency staff and implement recommendations in a timely manner.

MONITORING PLAN

All mitigation sites will be monitored for a 10-year period following project construction, in years 1, 2, 3, 5, 7, and 10. Monitoring reports will be submitted by Ritchie Bros. to Lewis County, WDOE, and the U.S. Army Corps of Engineers by December 31 of each monitored year. The goal of monitoring is to determine if the previously stated

performance standards are being met. The mitigation areas will be monitored once during the growing season.

During the first annual monitoring and maintenance event, representative sample plots will be selected in wetland and buffer areas and permanently marked with metal posts. Sample plots will be established in the wetland creation, and wetland/buffer preservation/habitat enhancement areas. Sample plot locations will be placed on an as-built drawing and included in the annual monitoring reports.

VEGETATION

Vegetative monitoring will be conducted within the created wetland and wetland and stream buffer enhancement areas. The following information will be included in each of the sample plot locations:

- Percent cover for herbaceous species (3.28 feet quadrat) using ocular estimation
- Percent cover for sapling/shrub species (10-foot radius) using ocular estimation
- Percent cover of tree species (30-foot radius) using ocular estimation
- Density of trees and shrubs
- Species occurrence including non-native, invasive species
- Ocular estimation of standing (snags) and downed, large woody debris (greater than 10-inches in diameter)
- Photo documentation of vegetative changes over time

WATER REGIME

Hydrologic monitoring will be conducted within the created wetland and wetland and stream buffer enhancement areas. The following information will be included in the sample plot location:

- Depth to saturation
- Depth of water in the soil pit
- Inundation by observing location of drift lines and watermarks
- Areas of concern, either too wet or too dry
- Photo documentation of hydrological conditions over time

SOILS

Soil monitoring will track the development of hydric conditions in the created wetland and wetland and stream buffer enhancement areas. The following will be included in the sample plot location:

- Soil color using Munsell Soil Chart
- Soil texture
- Redoximorphic features
- Organic content
- Depth to saturation

FAUNA

General observations will be recorded, and photographs will be taken of wildlife during site visits to the mitigation areas. Invertebrate, amphibian, reptile, avian, and mammal observations will be recorded and documented in the annual monitoring reports.

FUNCTIONS AND VALUES

Development of Habitat Structure

Habitat-structure monitoring will be conducted within the created wetland and wetland and stream buffer enhancement areas. The following information will be included in each of the sample plot locations:

- Existing tree structure including live and dead trees
- Ocular estimation of standing (snags) and downed woody debris (greater than 10 inches diameter)
- Canopy cover
- Qualitative observations of wildlife use within the created wetland area

Water Quality

Visual observations of surface-water quality will be made in the created wetland and wetland enhancement areas. Observations will be documented in the annual monitoring reports.

Buffers

Wetland and buffer preservation/habitat enhancement areas will be evaluated for effectiveness in protecting the wetlands from disturbances. Observations of buffer conditions will be documented in the annual monitoring reports.

MONITORING REPORT CONTENTS

The annual monitoring reports will contain at least the following:

- Location map and as-built drawing
- Historic description of project, including dates of plant installation, current year of monitoring, and restatement of mitigation goals, objectives, and performance standards
- Description of monitoring methods
- Documentation of large woody debris and bird boxes
- Documentation of plant survival, cover, and overall development of the plant communities
- Assessment of non-native, invasive plant species and recommendations for management
- Assessment of site hydrology and soils if they appear to be limiting plant survival
- Assessment of buffer conditions, e.g. surrounding land use, use by humans, and use by wild and domestic animals
- Observations of wildlife including, amphibians, invertebrates, birds, and mammals
- Photographs from permanent photo points
- Summary of maintenance and contingency measures proposed for the next season and completed for the past season

CONTINGENCY PLAN

If the performance standards are not met by the 7th year following project completion, or at an earlier time as specified by project objectives during the 10 year monitoring period, a contingency plan will be developed and implemented. All contingency actions will be undertaken only after consulting and gaining approval from Lewis County, WDOE, and the U.S. Army Corps of Engineers. Ritchie Bros. will be required to complete a contingency plan that describes (1) the causes of failure, (2) proposed corrective actions, (3) a schedule for completing corrective actions, and (4) whether additional maintenance and monitoring are necessary.

SITE PROTECTION AND FINANCIAL SECURITY

The mitigation sites will ultimately be owned, maintained, and managed by Ritchie Bros. The Ritchie Bros. will establish and record a permanent and irrevocable deed restriction and/or conservation covenant on the mitigation areas as a means of site protection.

REFERENCES

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SIGNATURE PAGE

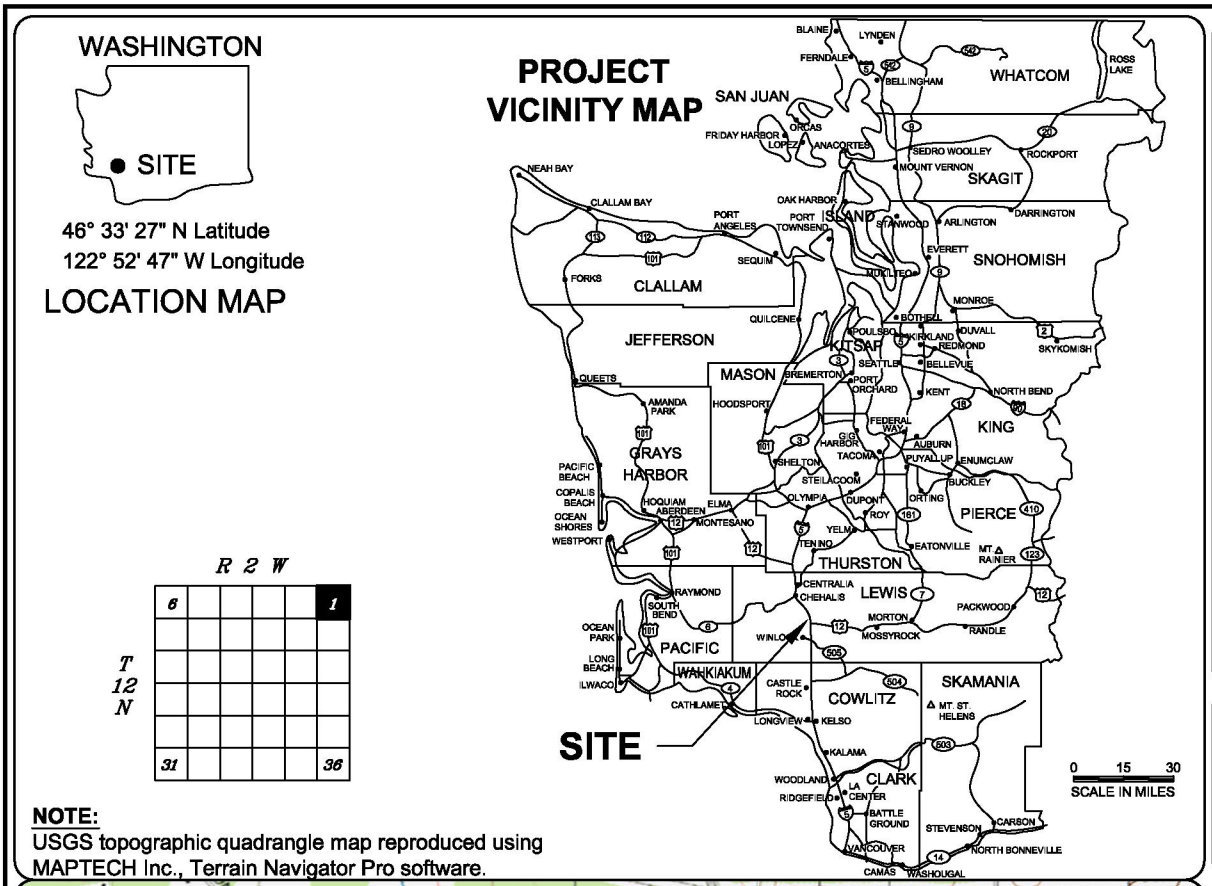
The information and data in this report were compiled and prepared under the supervision and direction of the undersigned.

Andrea Aberle
Sr. Biologist

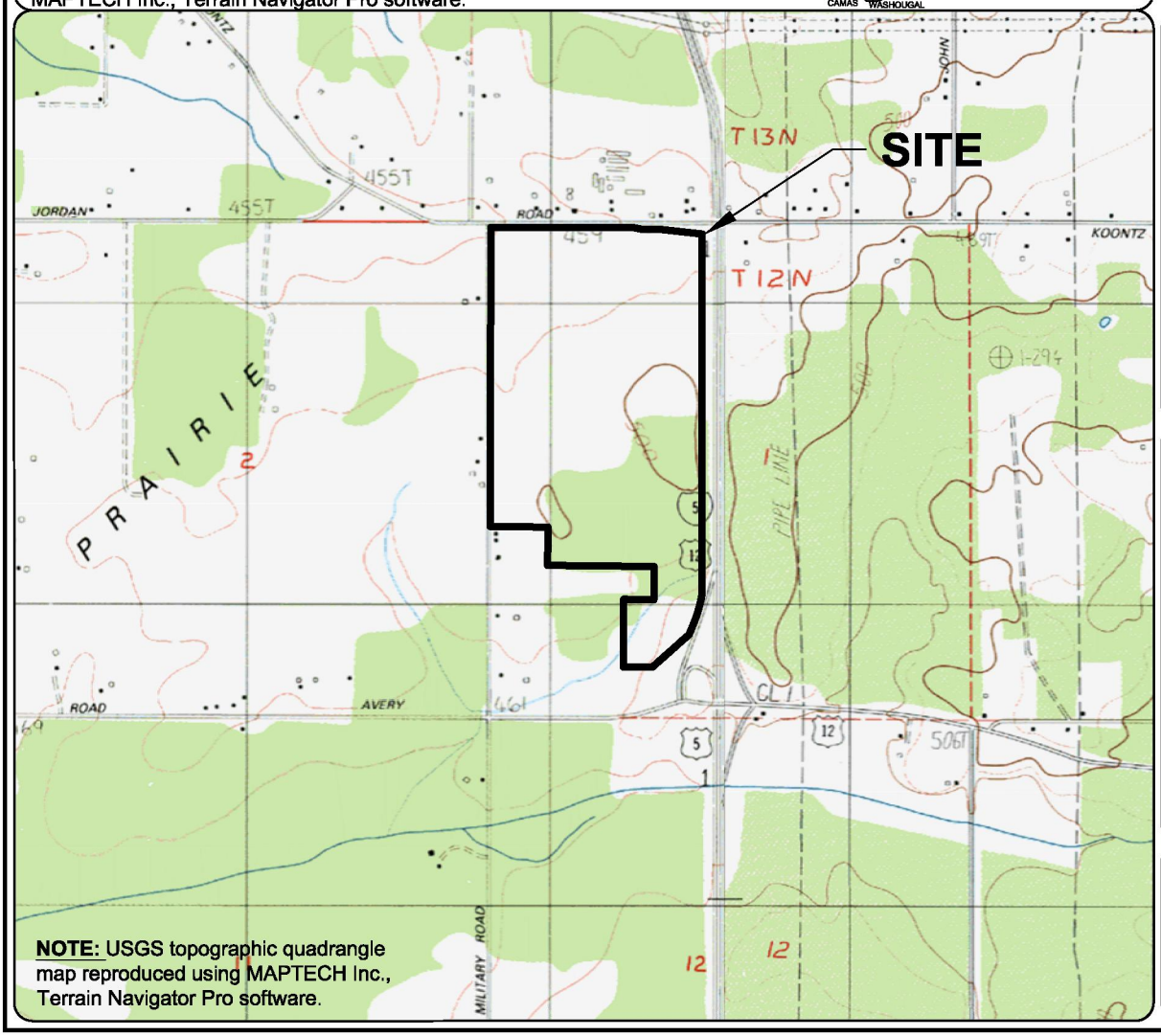
Tim Haderly
Sr. Ecologist, Principal

Appendix A

Figures



NOTE:
USGS topographic quadrangle map reproduced using MAPTECH Inc., Terrain Navigator Pro software.



NOTE: USGS topographic quadrangle map reproduced using MAPTECH Inc., Terrain Navigator Pro software.

Figure 1
VICINITY MAP
Exit 68 Facility
Ritchie Bros. Properties
Lewis County, Washington
Section 1, Township 12N, Range 2W, W.M.

DATE: 6/8/10
DWN: JKJ
REQ. BY: TH
PRJ. MGR: TH
CHK:
PROJECT NO: 1801.02

ECOLOGICAL LAND SERVICES, INC.
1157 3rd Ave., Suite 220
Longview, WA 98632
Phone: (360) 578-1371 Fax: (360) 414-9305

0 2000 4000
SCALE IN FEET
1" = 2000'

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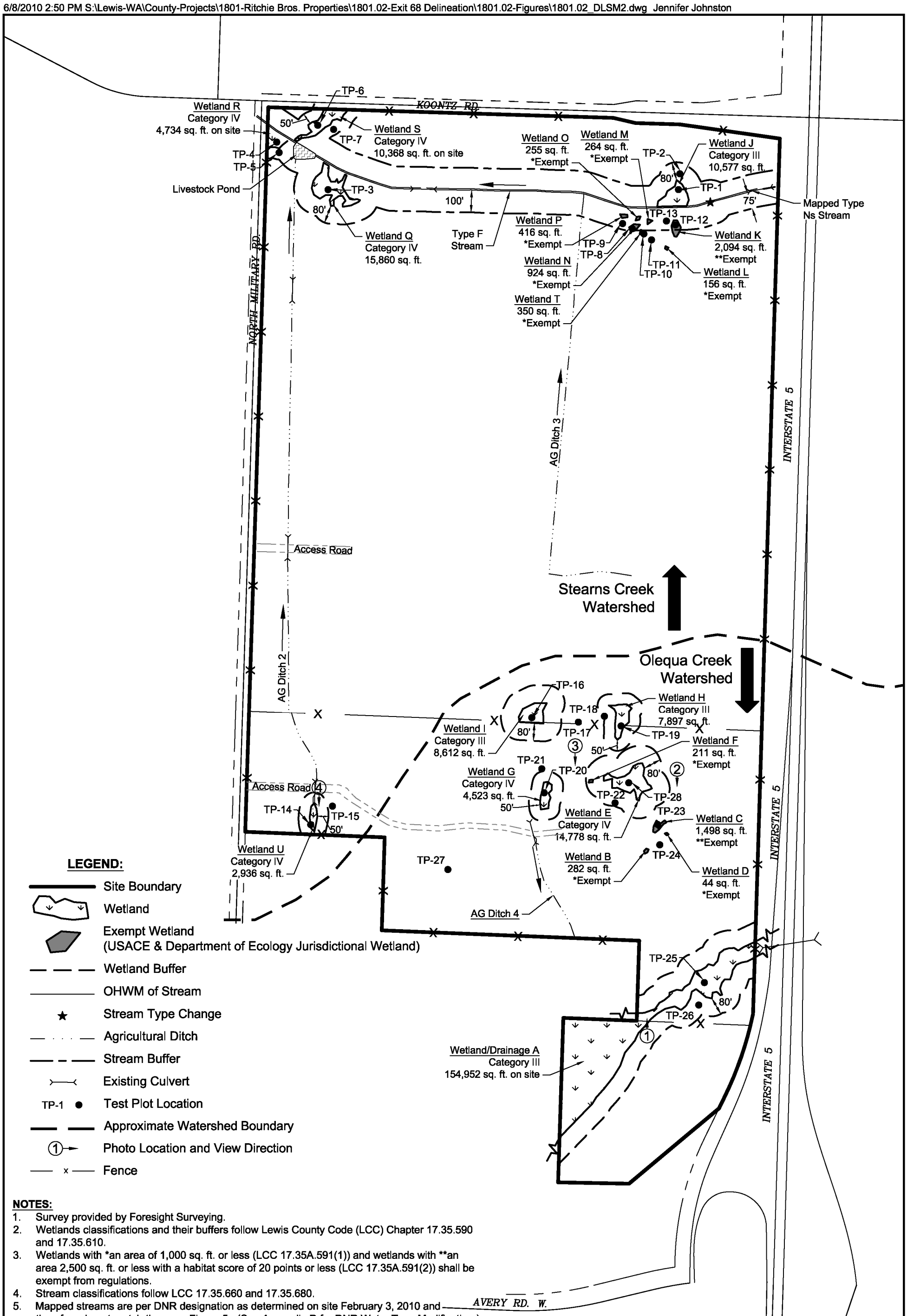
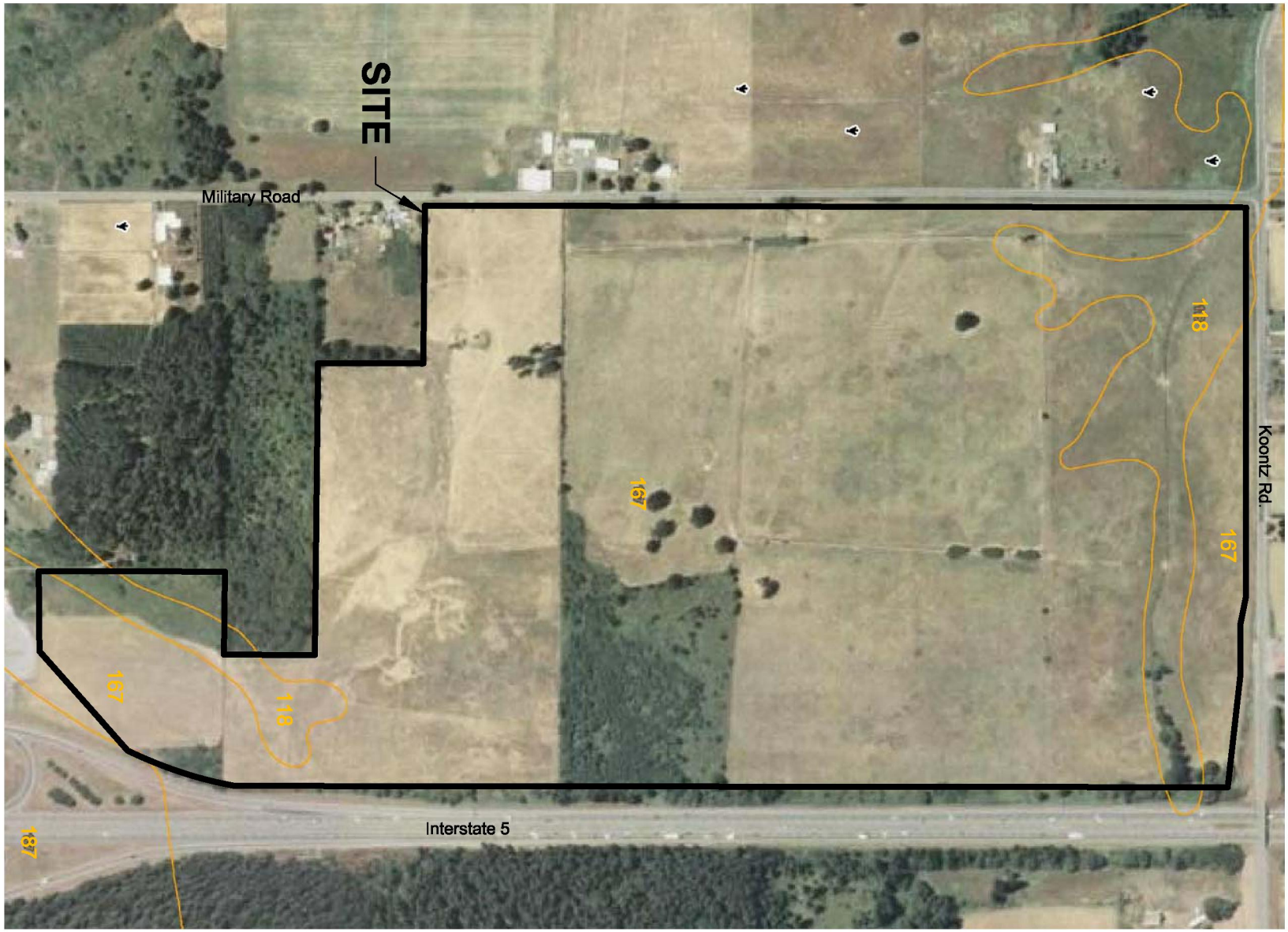


NOTES:

1. Survey provided by Foresight Surveying.
2. Wetlands classifications and their buffers follow Lewis County Code (LCC) Chapter 17.35.590 and 17.35.610.
3. Wetlands with *an area of 1,000 sq. ft. or less (LCC 17.35A.591(1)) and wetlands with **an area 2,500 sq. ft. or less with a habitat score of 20 points or less (LCC 17.35A.591(2)) shall be exempt from regulations.
4. Stream classifications follow LCC 17.35.660 and 17.35.680.
5. Mapped streams are per DNR designation as determined on site February 3, 2010 and therefore do not match those on Figure 5. (See Appendix D for DNR Water Type Modification.)

Figure 2
EXISTING SITE CONDITIONS
Exit 68 Facility
Ritchie Bros. Properties
Lewis County, Washington
Section 1, Township 12N, Range 2W, W.M.



LEGEND:

118 Lacamas silt loam, 0 to 3 percent slopes. **Hydric.**
167 Prather silty clay loam, 0 to 5 percent slopes. **Hydric.**

NOTE: Map provided on-line by NRCS at web address: *http://websoilsurvey.nrcs.usda.gov/app/*

W S Z E

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SCALE IN FEET
1" = 600'

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Figure 3
SOIL SURVEY MAP
Exit 68 Facility
Ritchie Bros. Properties
Lewis County, Washington
Section 1, Township 12N, Range 2W, W.M.

LEGEND:

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

PEMC Palustrine, emergent, seasonally flooded.

PSSC Palustrine, scrub-shrub, seasonally flooded.

NOTES:

1. Map provided on-line by US Fish & Wildlife Service at web address: *http://www.fws.gov/wetlands/data/index.html*
2. 2006 aerial photo provided by Google Earth™.

Figure 4
NATIONAL WETLANDS INVENTORY MAP
Exit 68 Facility
Ritchie Bros. Properties
Lewis County, Washington
Section 1, Township 12N, Range 2W, W.M.

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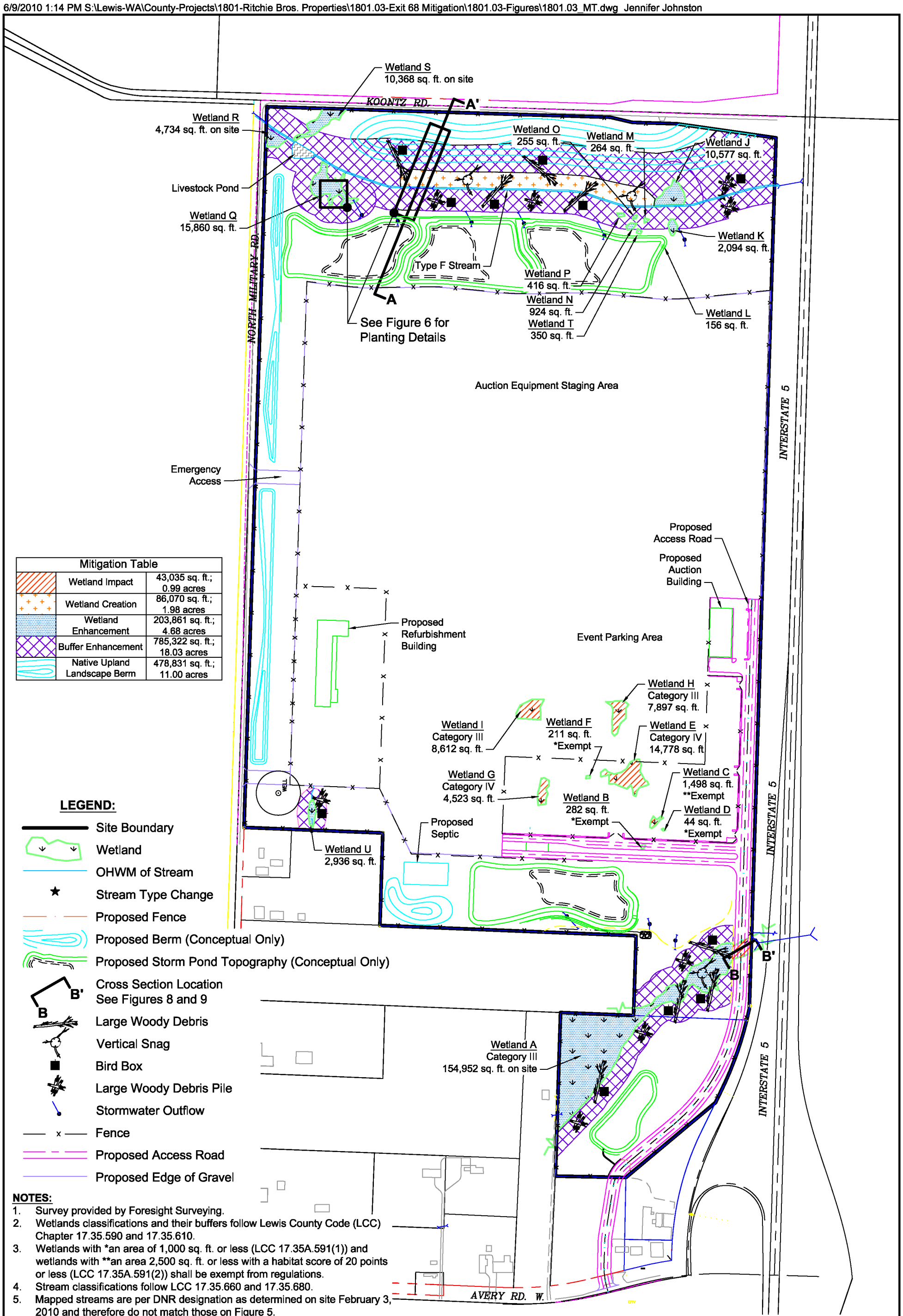
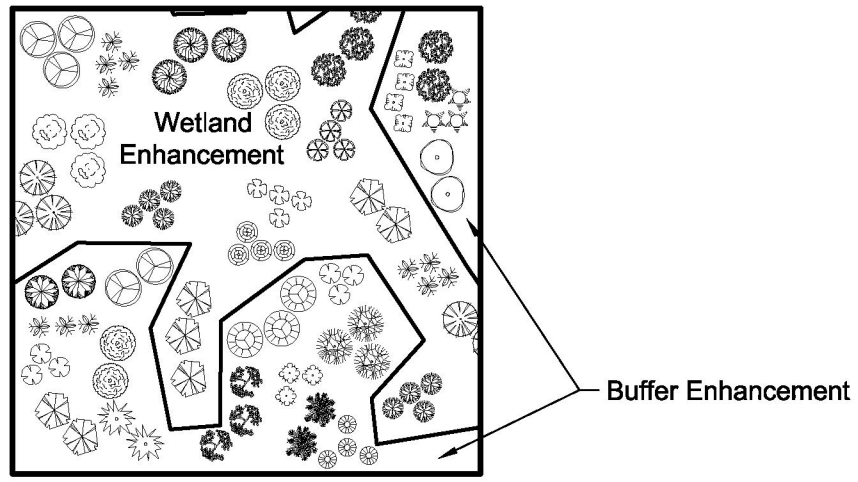
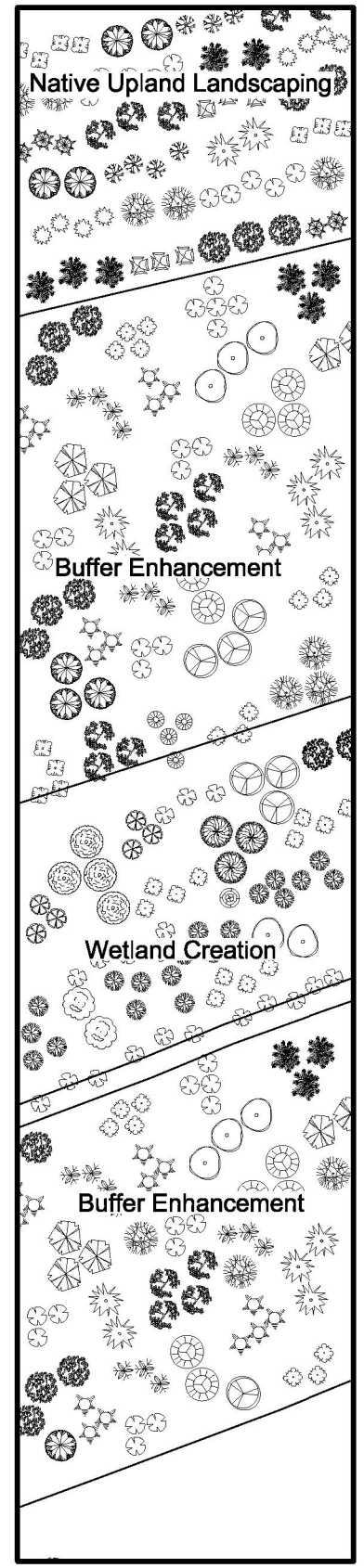
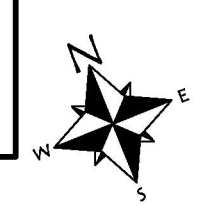




Wetland Enhancement Areas (203,886 sf., 4.68 acres)						
Northern Wetlands (45,998 sf., 1.06 acres) = N *Wetland A (154,952 sf., 3.56 acres) = A* *Wetland U (2,936 sf., 0.07 acres) = U*				*N*	*A*	*U*
Trees						
Western red cedar	*Thuja plicata*	18-36" bare-root	10	20	60	2
Black cottonwood	*Populus balsamifera spp. trichocarpa*	18-36" bare-root	10	20	60	2
Oregon ash	*Fraxinus latifolia*	18-36" bare-root	10	20	60	2
Red alder	*Alnus rubra*	18-36" bare-root	10	20	60	2
Cascara	*Rhanus purshiana*	18-36" bare-root	10	20	60	2
Shrubs						
Pacific crabapple	*Pyrus fusca*	18-36" bare-root	6	50	150	6
Douglas hawthorne	*Crateagus douglasii*	18-36" bare-root	6	50	150	6
Red-osier dogwood	*Cornus sericea*	18-36" bare-root	6	50	150	6
Pacific ninebark	*Physocarpus capitatus*	18-36" bare-root	6	50	150	6
Douglas spirea	*Spiraea douglasii*	18-36" bare-root	6	50	150	6
Black twinberry	*Lonicera involucrata*	18-36" bare-root	6	50	150	6
Sitka willow	*Salix sitchensis*	3' cuttings	6	50	150	6
Nootka rose	*Rosa nutkana*	18-36" bare-root	6	50	150	6
			Totals:	500	1,500	58





COMMON NAME	SCIENTIFIC NAME	TYPE	SPACING (feet)	QUANTITY
Wetland Creation Area (86,070 s.f., 1.98 acres)				
Trees				
Western red cedar	*Thuja plicata*	18-36" bare-root	10	100
Black cottonwood	*Populus balsamifera spp. trichocarpa*	18-36" bare-root	10	100
Oregon ash	*Fraxinus latifolia*	18-36" bare-root	10	100
Red alder	*Alnus rubra*	18-36" bare-root	10	100
Quaking aspen	*Populus tremuloides*	18-36" bare-root	10	100
Shrubs				
Pacific crabapple	*Malus fusca*	18-36" bare-root	6	225
Red-osier dogwood	*Cornus sericea*	18-36" bare-root	6	225
Pacific ninebark	*Physocarpus capitatus*	18-36" bare-root	6	225
Douglas spirea	*Spiraea douglasii*	18-36" bare-root	6	225
Sitka willow	*Salix sitchensis*	3' cuttings	6	225
Nootka rose	*Rosa nutkana*	18-36" bare-root	6	225
			Total	**1,850**

Wetland and Stream Buffer Enhancement Areas (785,323 s.f., 18.03 acres)						
Northern Wetland and Stream Buffer Area (625,509 sf.,14.36 acres) = N *Wetland A Buffer Area (141,528 sf., 3.25 acres) = A* *Wetland U Buffer Area (18,286 sf., 0.42 acres) = U*				*N*	*A*	*U*
Trees						
Western red cedar	*Thuja plicata*	18-36" bare-root	10	200	50	4
Western hemlock	*Tsuga heterophylla*	18-36" bare-root	10	200	50	4
Big-leaf maple	*Acer macrophyllum*	18-36" bare-root	10	200	50	4
Douglas-fir	*Pseudotsuga menziesii*	18-36" bare-root	10	200	50	4
Red alder	*Alnus rubra*	18-36" bare-root	10	200	50	4
Quaking aspen	*Populus tremuloides*	18-36" bare-root	10	200	50	4
Shrubs						
Cascara	*Rhamnus purshiana*	18-36" bare-root	10	200	50	4
Bitter cherry	*Prunus emarginata*	18-36" bare-root	10	200	50	4
Indian plum	*Oemlaria cerasiformis*	18-36" bare-root	10	200	50	4
Beaked hazelnut	*Corylus cornuta*	18-36" bare-root	6	600	100	10
Mock-orange	*Philadelphus lewisii*	18-36" bare-root	6	600	100	10
Black twinberry	*Lonicera involucrata*	18-36" bare-root	6	600	100	10
Red elderberry	*Sambucus racemosa*	18-36" bare-root	6	600	100	10
Serviceberry	*Amalanchier alnifolia*	18-36" bare-root	6	600	100	10
Snowberry	*Symphoricarpos albus*	18-36" bare-root	6	600	100	10
Nootka rose	*Rosa nutkana*	18-36" bare-root	6	600	100	10
			Totals	**4,200**	**1,150**	**106**

NOTE: Plants are not to scale and locations are approximate as shown. Actual planting locations will be determined in the field, with consideration to the listed spacing and density to produce the most natural appearance possible.

Figure 6
MITIGATION PLANTING DETAIL
Exit 68 Facility
Ritchie Bros. Properties
Lewis County, Washington
Section 1, Township 12N, Range 2W, W.M.

DATE: 6/8/10
DWN: JKJ
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PRJ. MGR: TH
CHK:
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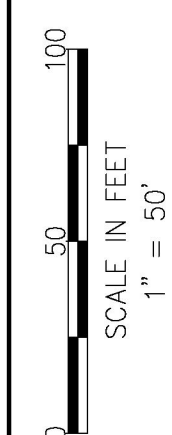

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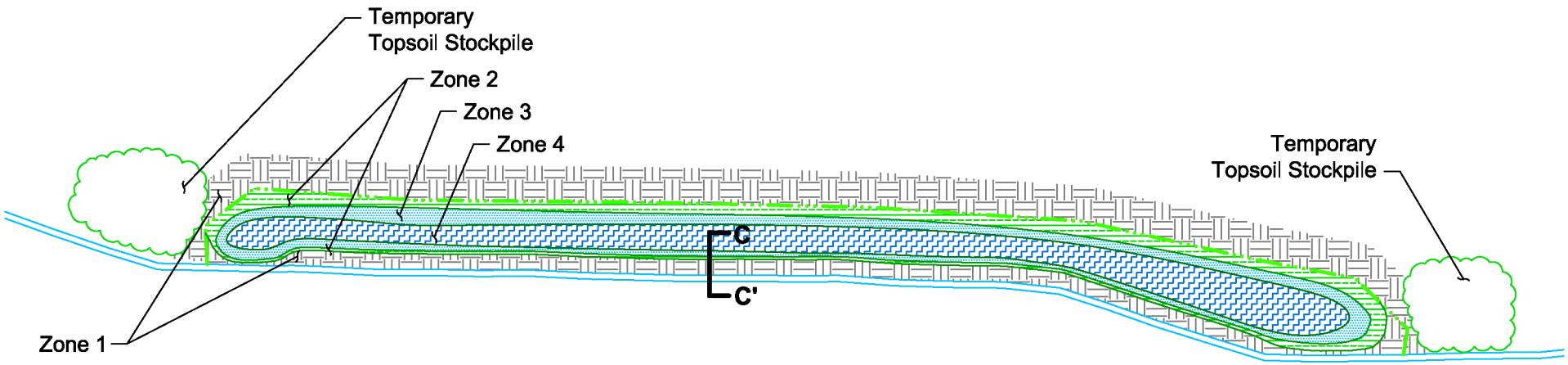
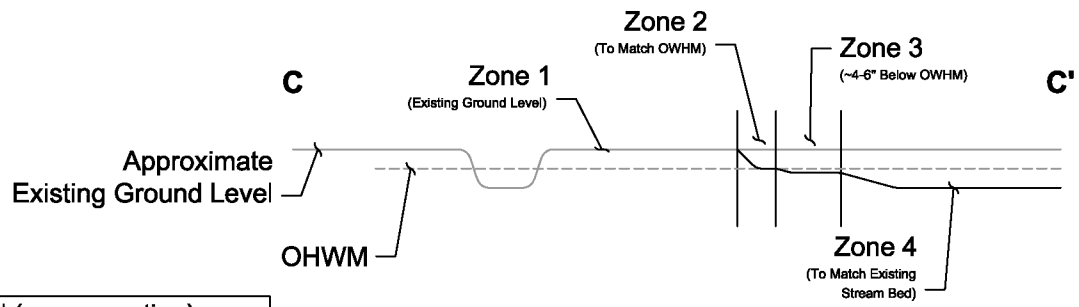


LEGEND:

Wetland Creation Area Boundary

OWHM of Existing Stream.

C C' Cross Section Location



	Zone 1	Elevation = Existing ground level (no excavation)
	Zone 2	Elevation = Excavate to match OHWM elevation
	Zone 3	Elevation = Excavate to ~4-6" below OHWM elevation
	Zone 4	Elevation = Excavate to match stream bed elevation

N W E S

0 150 300

SCALE IN FEET
1" = 150'

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DATE: 6/8/10
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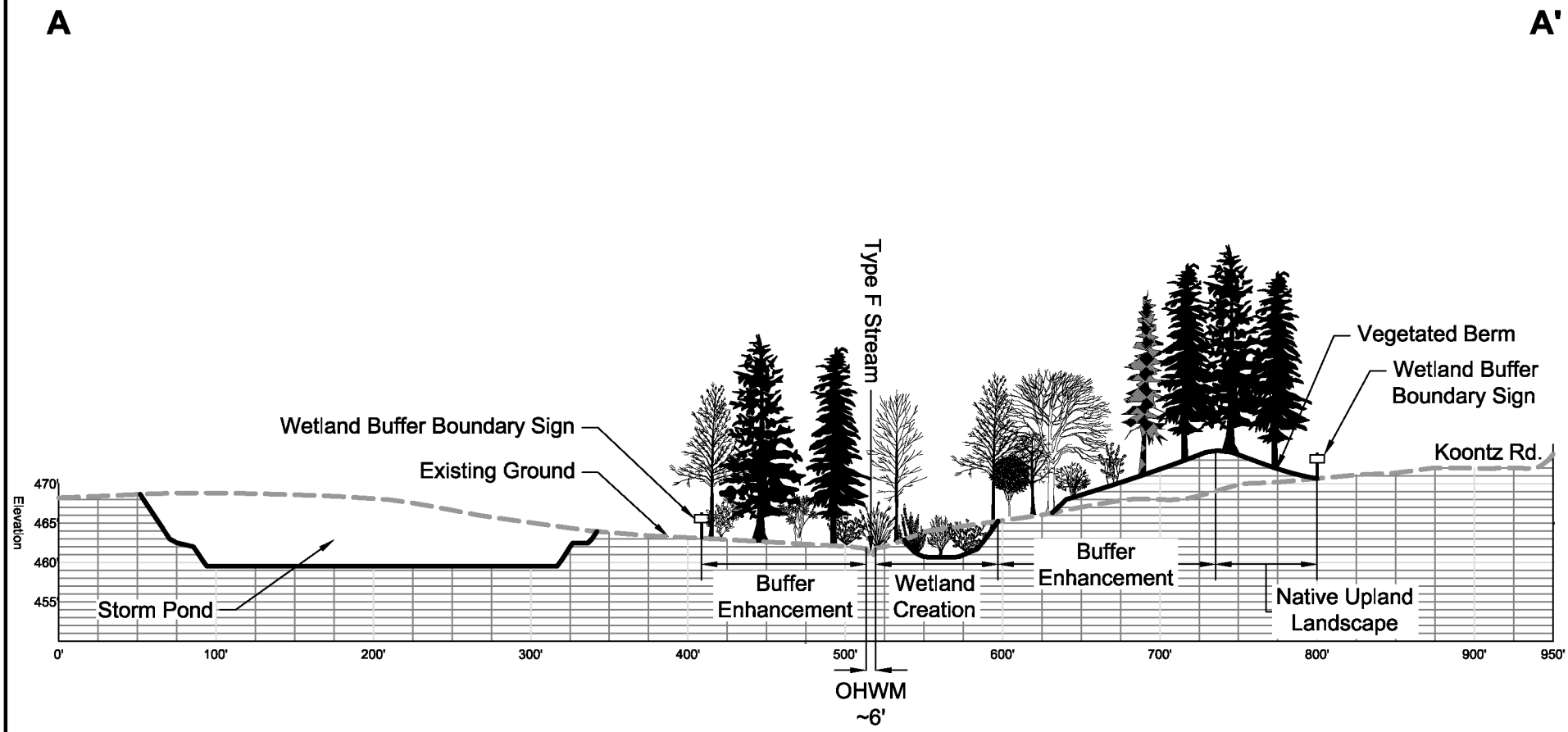
CHK:
PROJECT NO: 1801.02

Figure 7
WETLAND CREATION EXCAVATION DETAIL
Exit 68 Facility
Ritchie Bros. Properties
Lewis County, Washington
Section 1,Township 12N, Range 2W, W.M.



N
W E
S

0 100 200
HORIZONTAL SCALE IN FEET
1" = 100'
VERTICAL EXAGGERATION=10X

ECOLOGICAL LAND SERVICES, INC.
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Longview, WA 98632
Phone: (360) 578-1371 Fax: (360) 414-9305

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REQ. BY: AA
PRJ. MGR: TH
CHK:
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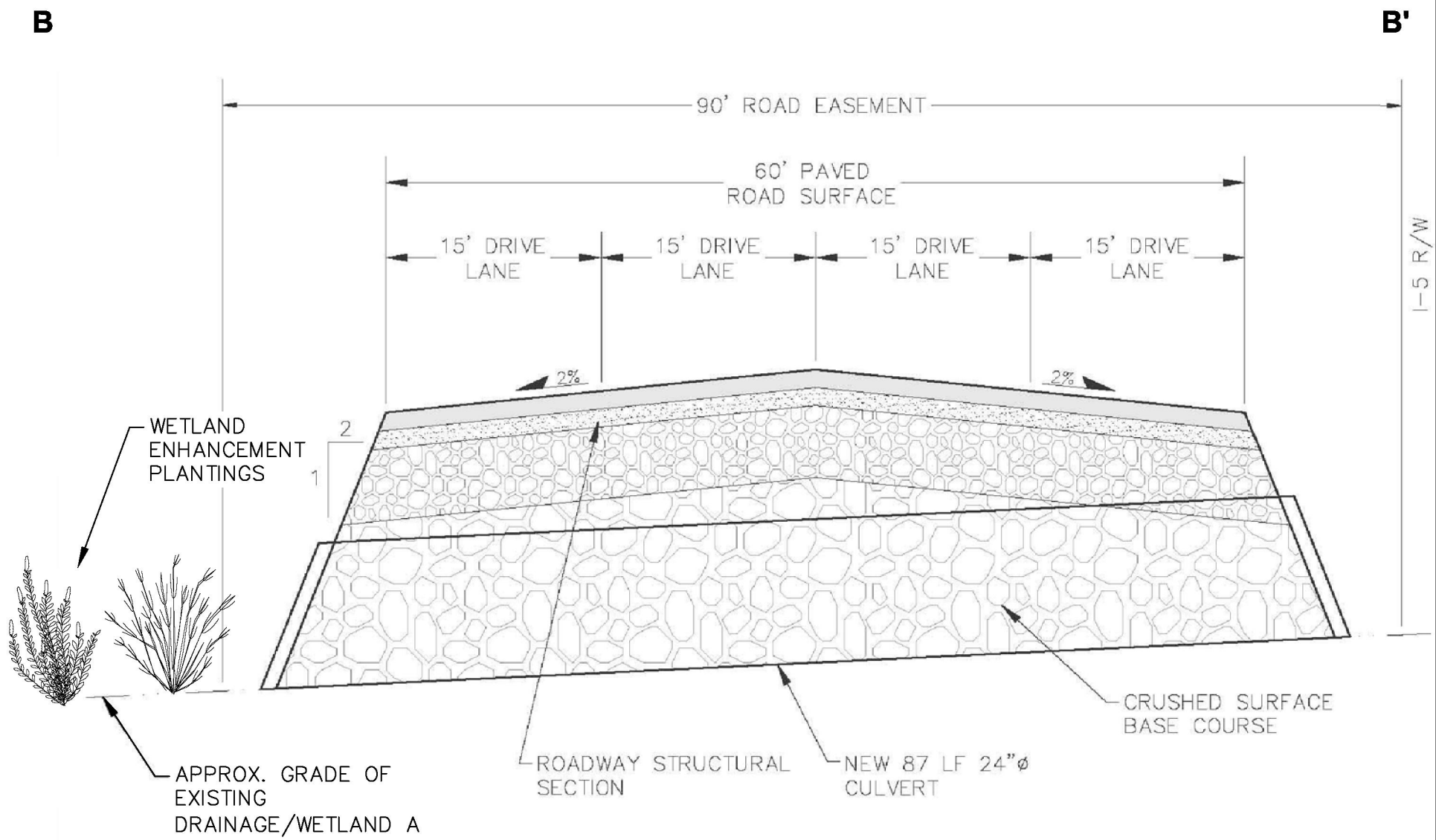
Figure 8
CROSS SECTION A-A'
Exit 68 Facility
Ritchie Bros. Properties
Lewis County, Washington
Section 1, Township 12N, Range 2W, W.M.



NOTE: Cross section provided by RB Engineering.

NOT TO SCALE

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Figure 9
CROSS SECTION B-B'
Exit 68 Facility
Ritchie Bros. Properties
Lewis County, Washington
Section 1, Township 12N, Range 2W, W.M.

4/19/2010 1:00 PM S:\Lewis-WA\County-Projects\1801-Ritchie Bros. Properties\1801.02-Exit 68 Delineation\1801.02-Figures\1801.03_Cow_Hyd.dwg Jennifer Johnston

LEGEND:

- Site Boundary
- Wetland Boundary
- EM Emergent
- SS Scrub-shrub

NOTES:

1. Map depicts Cowdarin vegetation classes per Western Washington Rating form numbers D 1.3, R 1.2, R 3.1, R 3.2, L 1.2, L 3, S 1.3, H 1.1, and H 1.4.
2. Aerial photograph (2005) provided by Google Earth™.

N W E S

0 400 800
SCALE IN FEET
1" = 400'

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CHK:
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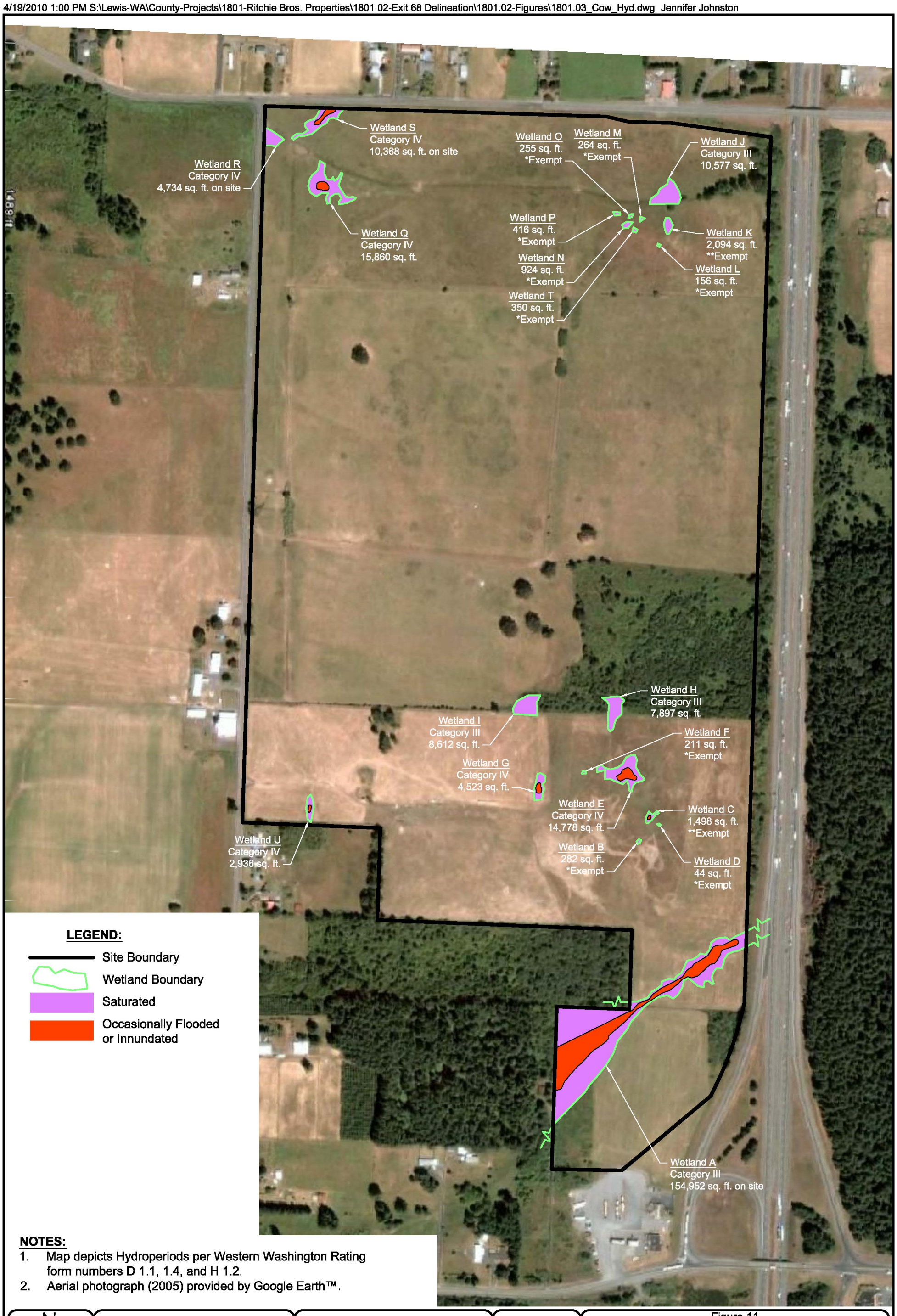
Figure 10
COWARDIN CLASSES
Exit 68 Facility
Ritchie Bros. Properties
Lewis County, Washington
Section 1, Township 12N, Range 2W, W.M.

4/19/2010 1:00 PM S:\Lewis-WA\County-Projects\1801-Ritchie Bros. Properties\1801.02-Exit 68 Delineation\1801.02-Figures\1801.03_Cow_Hyd.dwg Jennifer Johnston



NOTES:

1. Map depicts Hydroperiods per Western Washington Rating form numbers D 1.1, 1.4, and H 1.2.
2. Aerial photograph (2005) provided by Google Earth™.

N
W E
S

0 400 800
SCALE IN FEET
1" = 400'

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Figure 11
HYDROPERIODS
Exit 68 Facility
Ritchie Bros. Properties
Lewis County, Washington
Section 1, Township 12N, Range 2W, W.M.