



COOKE SCIENTIFIC

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September 12, 2018

Jim Ball
18401 Salmon La Sac Road
Ronald, WA, 98940

RE: Critical Areas Assessment for Potential Buffer Impacts Due to Past Septic Installation, Lake Cle Elum, Wa

Dear Mr. Ball,

At your request, I visited your property at 18401 Salmon La Sac Road in Ronald Washington on August 30, 2018. My scope included investigating current conditions in the vicinity of the septic and drainfield and writing a letter report to the County describing the results of the site investigation, documenting the site conditions overall for critical areas, including wetland and streams and rating any wetlands (there weren't any), and identifying the Ordinary High Water Mark (OHWM) of Lake Cle Elum. The buffers required by the County also needed to be identified should I find any critical areas. It also included development of a mitigation plan that also addresses management needs for the buffer area that includes the septic area and drainfield identified. A final mitigation plan will be developed once the County approves the concept put forth here.

The County specifically wanted any residual impacts that resulted from the installation of the septic system within the Shoreline setback to be mitigated for. This also included any buffer impacts that may result from the installation of the house and associated development of the residential infrastructure. All details about development of the site need to be in compliance with Kittitas County Critical Areas Ordinance Title 17A KCC updated in 2017.

Site History

The property is part of the Anna Bell plat that appears to have been recorded in 2006. The Ball property is recorded as Lot #6 (See Figure 1). Although the actual lot is an oddly shaped property (seen on Figures 6-9), the actual development area is only that part identified on Figures 3 and 5.

The septic permit that included an almost identical site plan to that currently proposed was submitted by the Ball family in 2008. There is a County stamp on the plans that make it look like it was approved and it is my undersanding that all of the development team thought the permit was approved at that time so the septic installation was done the third week of October 2008. Now, 10 years later, the County is asking for the impact of that installation to be mitigated for the

acreage lost because current County staff have no record that the permit was issued (Pers comm., Calvana Carper, August 2018). The County also asked for a site reconnaissance for wetlands, streams, and shoreline and a delineation of any resources found, because the County's maps show these resources on the property (Figures 6, 7, 8, and 9).

Site Review

Septic area: The septic tanks can be seen as three circular lids on the slope that grades down to the beach area. Their location can be seen on Figures 2, 3, 4, and 5, and Photo Sheet 3. All the area around the tanks consisted of installing tanks below the ground. It has been ten years since the installation and the area has since completely restored itself (except for the actual lids) to the same vegetation that is found elsewhere on the slope that grades down to the lake edge.

Drainfield: The area where the drainfield was installed had recently been disturbed (Photo sheet 3). An area 12 feet x 32 feet was bare of plants, so this area will be replanted with shallowly rooted shrubs and forbs. No deeply rooted trees or shrubs will be planted there because of the potential to cause problems with the leachfield, but shallowly rooted species will be used. See the mitigation section below.

House site: Is currently somewhat open, as is typical with east-side forests. It is still vegetated with a few trees (mapped on Figure 3, photo on Photo page 2) and understory vegetation consisting of shrubs and forbs. As is the area to the north that will be set aside for mitigation (Figure 5).

Status of Critical Areas on the Property

Wetland: The County shows a wetland on the property (Figure 9). They also mention a wetland on page 3 of the PSA #18-00194. ***There is no wetland anywhere on the property.*** I investigated the entire property off the Salmon La Sac Road and down below the cliff on the beach associated with Lake Cle Elum. There were no jurisdictional wetlands anywhere on the property. This is based on 35 years of wetland delineation expertise and using the criteria required under Section 17B.05.020F of the Kittitas County code and outlined in the US Army Corps of Engineers protocol "*The Regional Supplement to the Corps of Engineers Wetland Delineation Manual for Western Mountains, Valleys, and Coast Region* (May 2010) nor "*The Regional Supplement to the Corps of Engineers Wetland Delineation Manual for the Arid West* (Version 11-1-2006)". I examined for soils, hydrology, and vegetation indicators and they just did not exist, especially in the areas shown on the County's map on Figure 9. I have included photos of the property attached on Photo Sheets 1-4. The beach area identified on the County's wetland map are shown in their actual ground conditions on Photo Sheets 2, 3, and 4. As can be seen, the area identified as wetland is beach cobble with less than five percent vegetation. I found a few scattered clumps of shore sedge (*Carex lenticularis*, FACW) and a few clumps of newly germinated Scouler willow, (*Salix scouleriana*, FAC) and one very small lady's thumb (*Persicaria maculosa*, FACW). The soils were sand and cobbles.

Stream: While the County's Critical areas mapping for streams shows Bell Creek on the property (Figure 8), it is actually east of Salmon La Sac Road and passes under the road – through the easement owned by the Ball family and there is no stream on the property that is to be developed west of Salmon La Sac Road. The stream (Bell Creek) comes from east of the road and it enters a culvert and passes under the road, well south of the Ball property where the house and other areas to be developed exist. This stream did not appear to affect the development of the lot (13) where it actually exists so there should be no issue of its presence on the lot the Ball family now want to develop.

Lake edge: The Ordinary High Water Mark (OHWM) was evaluated using the methodology outlined by the Department of Ecology in their "*Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State*, 2016 Publication # 16-06-029. As required, the "mark upon the landscape" down below the property at the toe of the slope (see topography Figures 3, 5, 6, and 7) would be identified at the eroded edge on the beach seen on Photo Page 4 and on Figure 4 the GPS map I produced during the field work. The aerial photograph Google selected as the base map for mapping the GPS data (Figure 4) was showing the lake during an obviously much higher water level than where the water level was on the day I visited the site (Photo Pages 4 and 5). As stated above in the Wetlands section, there was almost no vegetation (less than 5 percent aerial cover overall), the soils are sand and cobbles and the only obvious indicator was the eroded edge. The County has mapped the OHWM at the toe of the slope (Shown in Figures 6 and 7).

As stated in the manual, "Common misunderstandings in determining lake OHWMs include: (1) assuming that the OHWM is limited to the area of open water and not following the continuous and contiguous water surface elevation to its landward limit within fringing wetlands and, (2) in lakes with a significant groundwater input, not accounting for a seasonal lag time in the highest water levels; high water does not necessarily occur at the wettest time of year. In those rare circumstances on lakes (and streams) where the OHWM cannot be determined from field indicators, the SMA directs that the OHWM shall be the line of mean high water (RCW 90.58.030(2)(c))."

The area above the eroded line on the on the beach is above the area that commonly floods or there would be an erosive feature, vegetation, algal lines on the bedrock (Photo Page 4) at the toe of the slope. No such erosive feature exists there and the other indicators of vegetation, and soils, and indicators of hydrology are also missing. Although the aerial photograph seen in the photo section of this report (7/10/2012 and the aerial on the GPS mapping) show the water at a much higher elevation (right at the toe of the slope), there are two marks upon the beach visible in the other aerials and found during this summer's site investigation in August. The beach below the toe of slope is almost devoid of vegetation except for a few tufts of shore sedge (*Carex lenticularis* var. *lenticularis*) and Scouler willow (*Salix scouleriana*). In using the OHWM methodology, it was clear that the OHWM is where it is shown on the GPS map shown on Figure 4 and on the aerials from 7/15/2014 and 7/13/2017, where you can see the erosive lip shown on Photo Page 5.

Obviously given the discrepancy between the County's mapping and my findings, the County has to make the final determination on this.

Mitigation

Septic Pit Mitigation

In exchange for the "impact" to the septic pit area 100-foot Shoreline buffer (which should be revisited as discussed above), - an equivalent area (28' x 28' = 784 FT²) will be set aside north of the house (Figure 5). This will be set aside as a permanent "no touch" buffer and will be recorded on the plat map on file with the County. Photo page 2, (lower photo) shows this area. The existing natural vegetation will be left untouched and no future activity will be planned that will affect this area. It is fully vegetated and so needs no additional plantings in-situ.

Leachfield

The leachfield is located outside of the buffer zone (Figures 2, 4, 5; and Photo Page 3) but this area will be replanted as compensation for the disturbance that occurred as a result of the recent disturbance in situ and the future construction of the house and driveway. The following will be planted:

Common Name	Scientific Name	# to be installed*
oceanspray	<i>Holodiscus discolor</i>	3
Dewberry	<i>Rubus ursinus</i>	15
Snowberry	<i>Symphoricarpos albus</i>	10
Western serviceberry	<i>Amelanchier alnifolia</i>	5

- All plantings are to be 1-gallon size nursery stock and installed in a random fashion at least 3-feet O.C. from the next plant

Management Plan

Monitoring

Monitoring will occur twice yearly after weeding has been done

- April
- late August.

Monitoring will consist of:

1. Taking photos every year at the photo stations established at the following locations:
 - Septic pits
 - Mitigation area for the septic pits north of the house
 - Leachfield

A photo station will be established by installing a stake where the photos are to be recorded in all locations. Photos of each location will be recorded every year monitoring is required to document both the mitigation and the septic pit areas are left untouched and the vegetation in the leachfield is surviving and thriving.

2. Documenting (and removing) weeds and any open spaces larger than 3-feet in diameter on a detailed site map (Figure 5) and developing a plan for removing the weeds and planting in any “open” spaces. This should be done as early in April as possible after the April monitoring, and in October/November, after the August monitoring. This will be simple, The number of open spaces will be identified and plants from the table shown above can be selected – one per open space will be ordered and installed.

An email or letter report will be submitted to the County each year in the spring (by the end of May) and fall (by the end of October) documenting the current site conditions for years 1, 2, 3, and 5. The family will contact the field ecologist if any questions arise.

Maintenance

Weeds located on or near the three mitigation areas will be removed on a regular basis. This should occur (as needed) in:

- March
- early May
- July,
- early August

The field ecologist will monitor the site the first year after the planting and identify all the weedy species anticipated to be present in the area. A simple field identification manual with photos will be produced for the Ball family so they can identify the weeds, and they will help with setting up the photo stations so they know how and where to take photos. It is anticipated that the Ball family will be able to remove the weeds after that point. Any plants that appear that weren't previously present and which seem to be spreading can be identified by the field ecologist (by the family taking photos and emailing the photos to the field ecologist). The field ecologist will tell the family if they are weeds and the family will add them to the list of plants to be removed. Removal will consist of hand-pulling and bagging and removing the weeds from the site. If a suitable compost bin can be constructed or obtained, the weeds may also be composted.

Kittitas County Permitting

The county will determine the need for a Shoreline Exemption once the site plan and this report have been submitted. Typically, construction from 115'-200' of OHWM requires a Shoreline Exemption. All shoreline exemptions can be found via this link: <http://app.leg.wa.gov/WAC/default.aspx?cite=173>. Given the fact that you will be building on top of a bluff and there will be no impacts from up above

on the Shoreline below, this exemption should be straightforward.
Please contact me if you have any additional questions or concerns.

Sincerely,

A handwritten signature in black ink, appearing to read "Sarah Spear Cooke". The signature is fluid and cursive, with a large initial "S" and "C".

Sarah Spear Cooke, Ph.D.

Wetland Ecologist

Fellow, International Society of Wetland Scientists

Native veg on the Property



Native veg on the Property



Few Willows on beach



House Site

**Photo Page 2. Ball Property,
Anna Bell Plat, Kittitas County, Wa**

House Site





Leachfield area



Septic tank area

**Photo Page 3. Ball Property,
Anna Bell Plat, Kittitas County, Wa**



Base of slope top of beach



Beach lacking veg



Beach looking back at Ball property

**Photo Page 4. Ball Property,
Anna Bell Plat, Kittitas
County, Wa**



Eroded Ledge



Eroded Ledge in front of property



very little veg on beach

Photo Page 5. Ball Property Plat, Kittitas County, Wa

18401 Salmon La Sac Rd



18401 Salmon La Sac Rd



Google Aerial 7/15/14

18401 Salmon La Sac Rd



P-05-39

ANNA BELL PLAT

PTN. NW1/4 OF SECTION 21, T.21N., R.14E., W.M.
KITKITAS COUNTY, STATE OF WASHINGTON

SURVEY NOTES:

1. BASIS OF BEARINGS AND SECTION BREAKDOWN... UNDER AUDITOR'S FILE NUMBER 8004500002.
2. THE PURPOSE OF THIS DOCUMENT IS TO PLAT... BY EASTSIDE CONSULTANTS INC. IN BOOK 31 OF SURVEYS PAGE 89, UNDER AUDITOR'S FILE NUMBER 8006000000.
3. KITKITAS COUNTY RELIES ON ITS RECORD THAT A SUPPLY OF POTABLE WATER EXISTS... NO GUARANTEE OR ASSURANCE THAT THERE IS A LEGAL RIGHT TO WITHDRAW GROUNDWATER WITHIN THE LAND DIVISION.
4. LOTS 1 AND 6 SHALL ACCESS SALMON LA SAC ROAD.

GRAPHIC SCA
(IN FEET)
1 inch = 200'



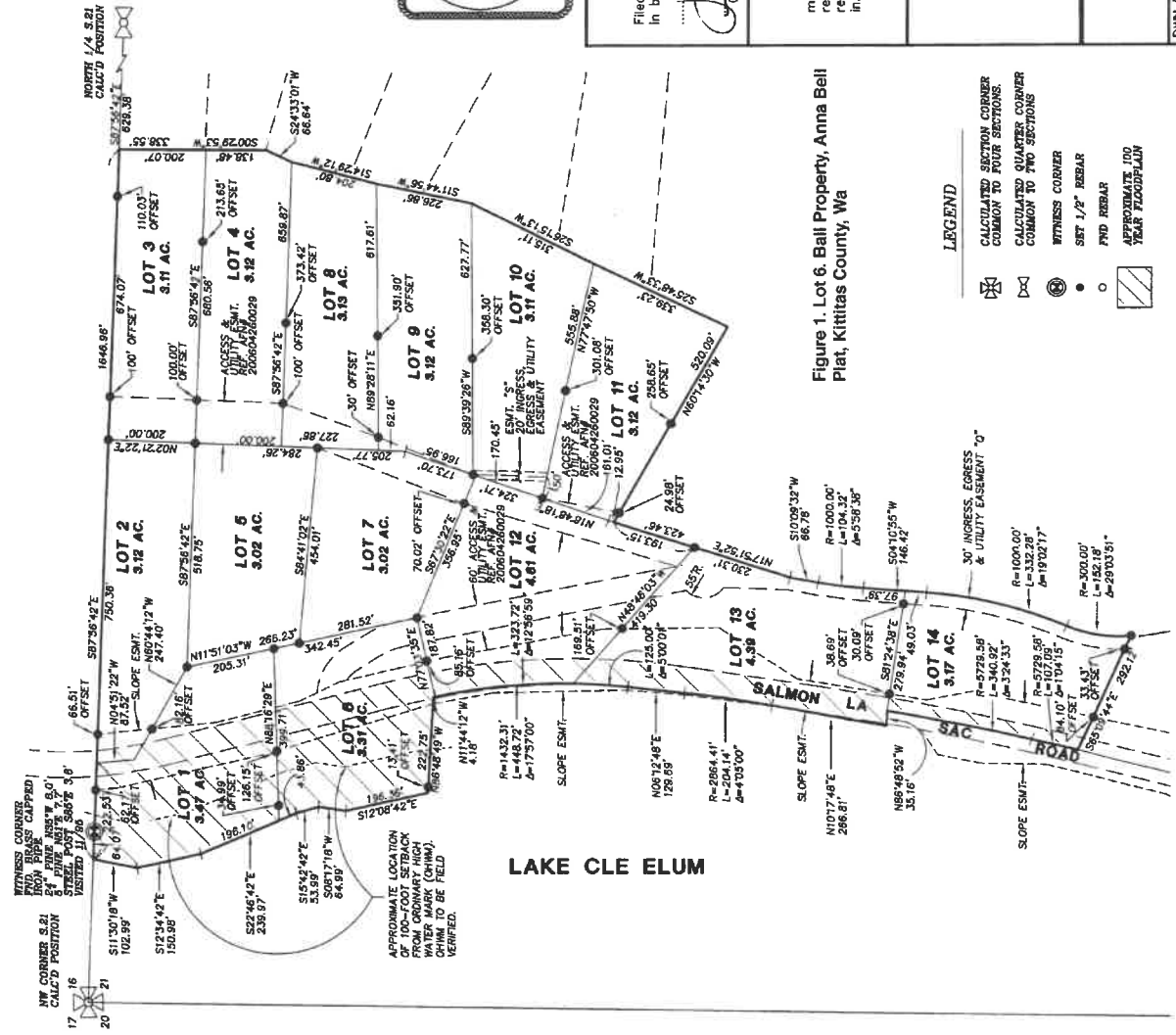
RECORDER'S CERTIFICATE 200109272-0067
Filed for record this 22 day of Sept, 2001, at page 167 of the request of the Recorder of Kitsitas County, Washington.
DAVID P. NELSON
Surveyor's Name
County Auditor
Date

SURVEYOR'S CERTIFICATE
This map correctly represents a survey made by me or under my direction in conformance with the requirements of the Surveyors Act of the State of Washington, as amended, and in response to the request of NEWPORT HILLS LAND DEVELOPMENT, INC. in APRIL, 2001.
DAVID P. NELSON
DATE
Certificate No. 18092

Encompass
ENGINEERING & SURVEYING
108 EAST 2ND STREET
CLEVELAND, WA 98922
PHONE (509) 674-7433
FAX: (509) 674-7416

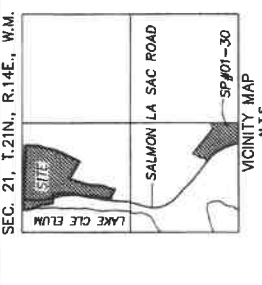
ANNA BELL PLAT
LOCATED IN SECTION 21, T. 21N., R. 14E., W.M.
KITKITAS COUNTY, STATE OF WASHINGTON

DWN BY	G. WEISER	DATE	08/06	JOB NO.	01515
CHKD BY	D. NELSON	SCALE	1"=200'	SHEET	1 of 2



LEGEND

- CALCULATED SECTION CORNER COMMON TO FOUR SECTIONS.
- CALCULATED QUARTER CORNER COMMON TO TWO SECTIONS.
- WITNESS CORNER.
- SET 1/2" REBAR.
- FOUND REBAR.
- APPROXIMATE JUDICIAL PLAT BOUNDARY.



APPROVALS

KITKITAS COUNTY DEPARTMENT OF PUBLIC WORKS
EXAMINED AND APPROVED THIS 17th DAY OF September, A.D., 2001
John C. Eyr
DEPARTMENT OF PUBLIC WORKS

KITKITAS COUNTY HEALTH DEPARTMENT
I HEREBY CERTIFY THAT THE ANNA BELL PLAT HAS BEEN EXAMINED BY ME AND I FIND THAT THE SEWAGE AND WATER SYSTEM HEREIN SHOWN DOES MEET AND COMPLY WITH ALL REQUIREMENTS OF THE COUNTY HEALTH DEPARTMENT.
DATED THIS 17th DAY OF Sept, A.D., 2001
David Nelson
KITKITAS COUNTY HEALTH OFFICER

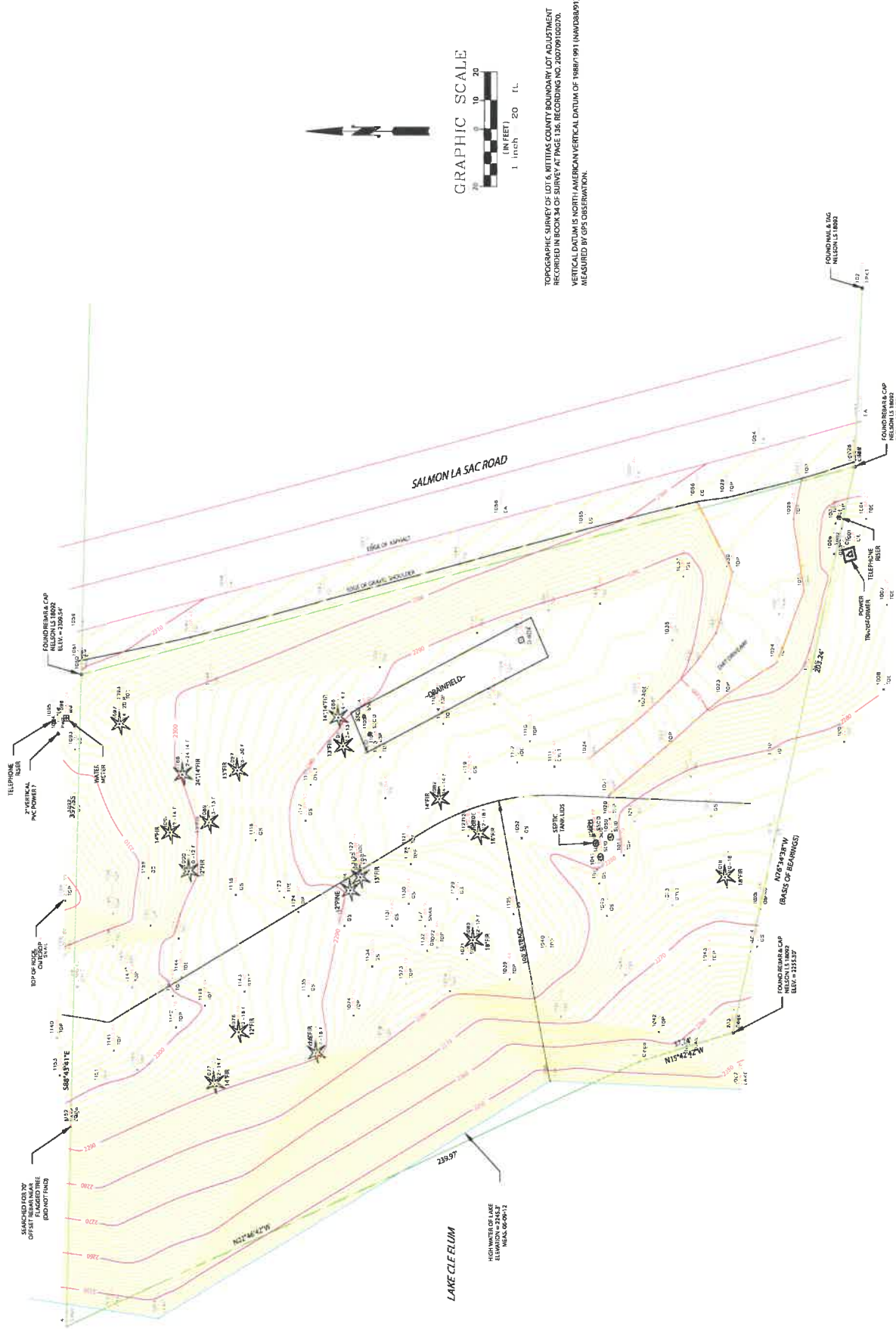
CERTIFICATE OF COUNTY PLANNING DIRECTOR
I HEREBY CERTIFY THAT THE ANNA BELL PLAT HAS BEEN EXAMINED BY ME AND I FIND THAT IT CONFORMS TO THE COMPREHENSIVE PLAN OF THE KITKITAS COUNTY PLANNING COMMISSION.
DATED THIS 17th DAY OF September, A.D., 2001
Archie J. Stellan
KITKITAS COUNTY PLANNING DIRECTOR

CERTIFICATE OF KITKITAS COUNTY ASSESSOR
I HEREBY CERTIFY THAT THE TAXES AND ASSESSMENTS ARISE FROM THE PRECEDING YEARS AND FOR THIS YEAR IN WHICH THE PLAT IS NOW TO BE FILED.
PARCEL NO. 21-14-21000-0015
DATED THIS 19th DAY OF September, A.D., 2001
Archie J. Stellan
KITKITAS COUNTY ASSESSOR

CERTIFICATE OF KITKITAS COUNTY ASSESSOR
I HEREBY CERTIFY THAT THE ANNA BELL PLAT HAS BEEN EXAMINED BY ME AND I FIND THE PROPERTY TO BE IN AN ACCEPTABLE CONDITION FOR PLATTING. PARCEL NO. 21-14-21000-0015
DATED THIS 19th DAY OF September, A.D., 2001
Archie J. Stellan
KITKITAS COUNTY ASSESSOR

KITKITAS COUNTY BOARD OF COMMISSIONERS
EXAMINED AND APPROVED THIS 17th DAY OF September, A.D., 2001
David B. Bowen
BOARD OF COUNTY COMMISSIONERS
KITKITAS COUNTY, WASHINGTON
BY: *David B. Bowen*
CHAIRMAN

John C. Eyr
CLERK OF THE BOARD
NOTICE: THE APPROVAL OF THIS PLAT IS NOT A GUARANTEE THAT FUTURE PERMITS WILL BE GRANTED.



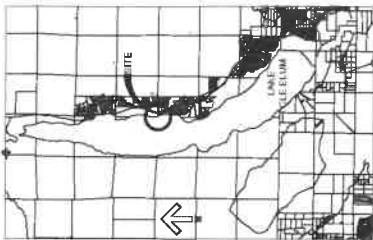
TOPOGRAPHIC SURVEY OF LOT 6, MITTAS COUNTY BOUNDARY LOT ADJUSTMENT
 RECORDED IN BOOK 34 OF SURVEY AT PAGE 136 RECORDING NO. 2007916020.
 VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM OF 1988/991 (NAD83/991)
 MEASURED BY GPS OBSERVATION.

Figure 2. Ball Property, Septic and Leachfield Layout



Figure 4. Ball Property, GPS mapping from Site Assessment

VICINITY MAP



ZONING CODE NOTES
 ZONE: RURAL RECREATION
 LOT AREA: 55,448 SF
 LOT DIMENSIONS: IRREGULAR - APPROX. 228x358' (SEE SURVEY)
 BUILDING HEIGHT (SHORELINE): 15'
 AVERAGE GRADE = 141.2823.3'

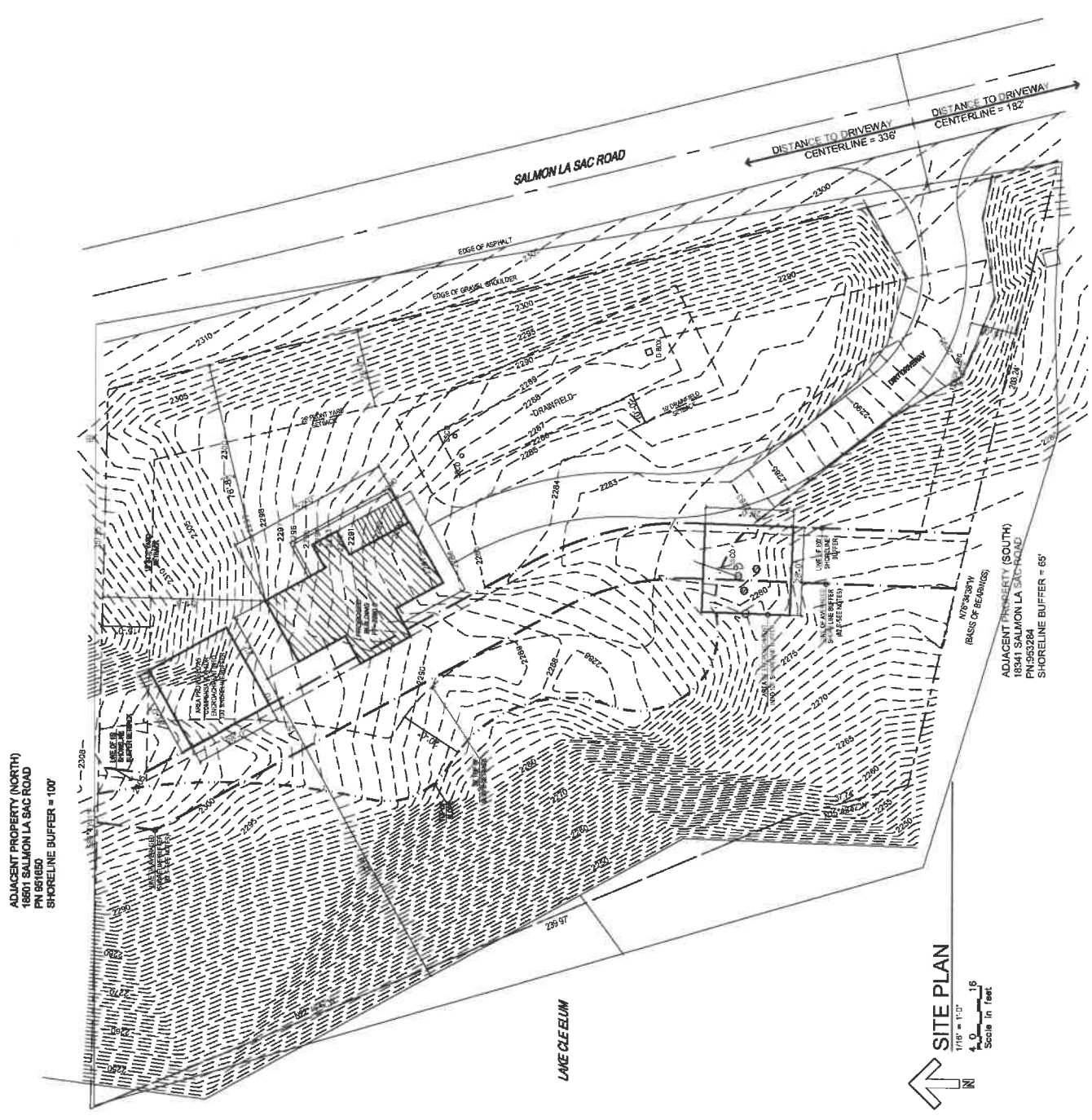
- (C) - 2294.1' +
- (D) - 2295.0' +
- (E) - 2295.5' +
- (F) - 2294.0' +
- (G) - 2293.5' +
- (H) - 2293.0' +
- (I) - 2288.8' +
- (K) - 2287.9' +
- (L) - 2292.0' +
- = 27594.3712 = 2293.02'
- PERMITTED HEIGHT = 2292.02 + 35 = 2327.02'
- PROPOSED GROUND FLOOR ELEVATION = 2290.0
- PROPOSED ROOF PEAK ELEVATION = 2323.02'

BUILDING SETBACKS:
 FRONT - 25'
 SIDE - 15'
 REAR - PER. 178.05.2007:
 Common line shoreline buffer: To insure new single-family dwellings have common line shoreline buffer, wherever necessary, determine where existing common line shoreline buffer is located and determine whether the buffer for each of the adjacent residential dwelling units on the shoreline may be utilized for the development of a single-family dwelling...

- ADJACENT DWELLING (NORTH)
 18501 SALMON LA SAC ROAD
 SHORELINE BUFFER = 100'
- ADJACENT DWELLING (SOUTH)
 18341 SALMON LA SAC ROAD
 PH533384
 SHORELINE BUFFER = 65'
- COMMON LINE SHORELINE BUFFER
 100' - 65' = 165' 161/2" = 82.5'
- SHORELINE BUFFER BUILDING SETBACK = 15'
 82.5' + 15' = 97.5'

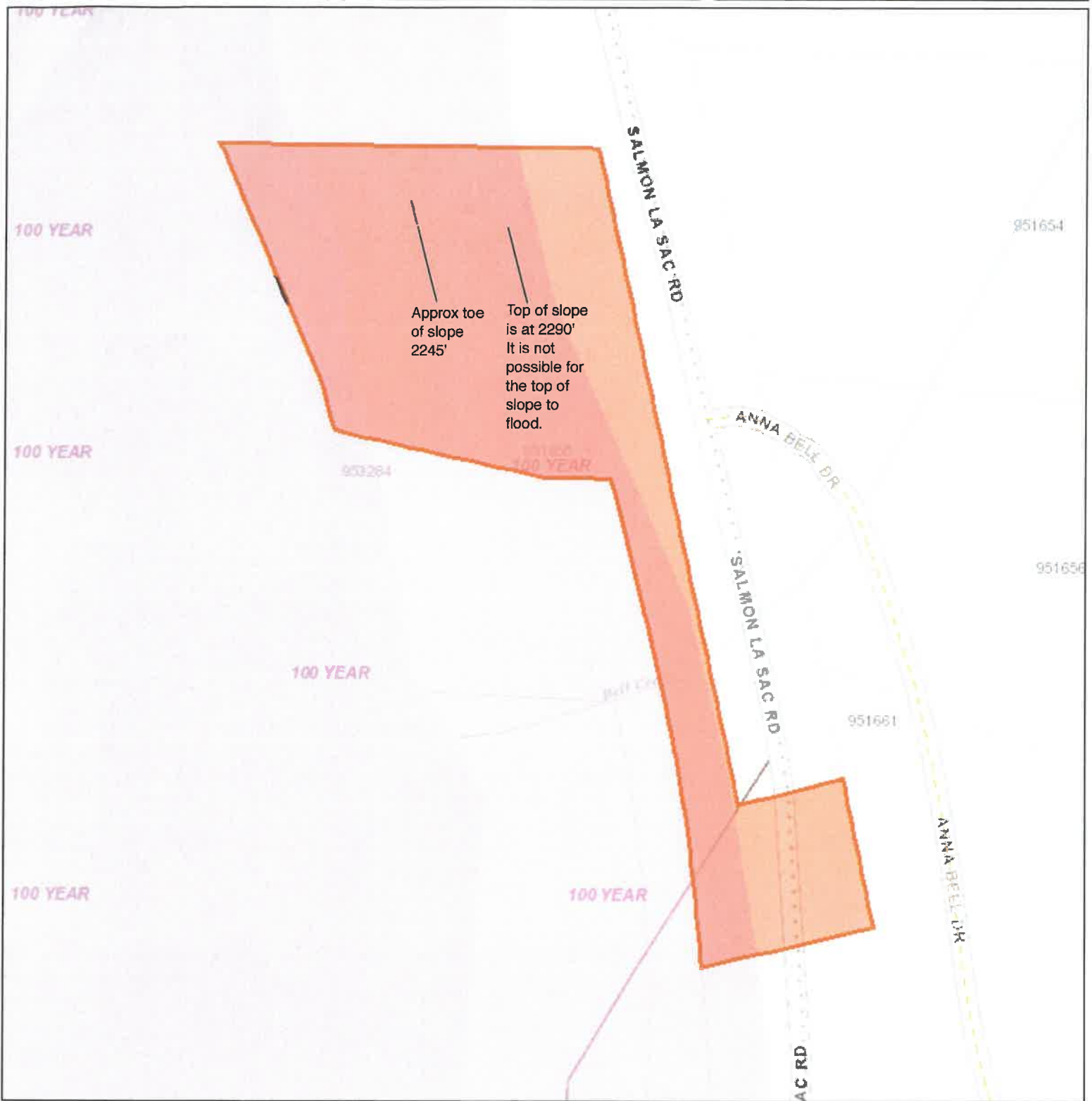
PER. 178.05.2007(1) d
 There is less than fifteen (15) feet of elevation difference between the vacant lot and adjacent lots and less than ten hundred fifty (250) cubic yards of gravel or fill is required to accommodate use of the common line shoreline buffer...
 PROPOSED AVERAGE GRADE (SEE ABOVE) = 2292.03'
 AVERAGE GRADE AT NORTH PROPERTY LINE (PL1) = 2306.8'
 2306.8' - 2292.03' = 14.87' OK
 AVERAGE GRADE AT SOUTH PROPERTY LINE (PL1) = 2275.5'
 2292.03' - 2275.5' = 16.53' OK

Figure 5. Ball Property, Septic and Leachfield Layout



SITE PLAN
 1/16" = 1'-0"
 1" = 16'-0"
 Scale in feet

Flood map for PSA PSA-18 00194



Date: 5/7/2018

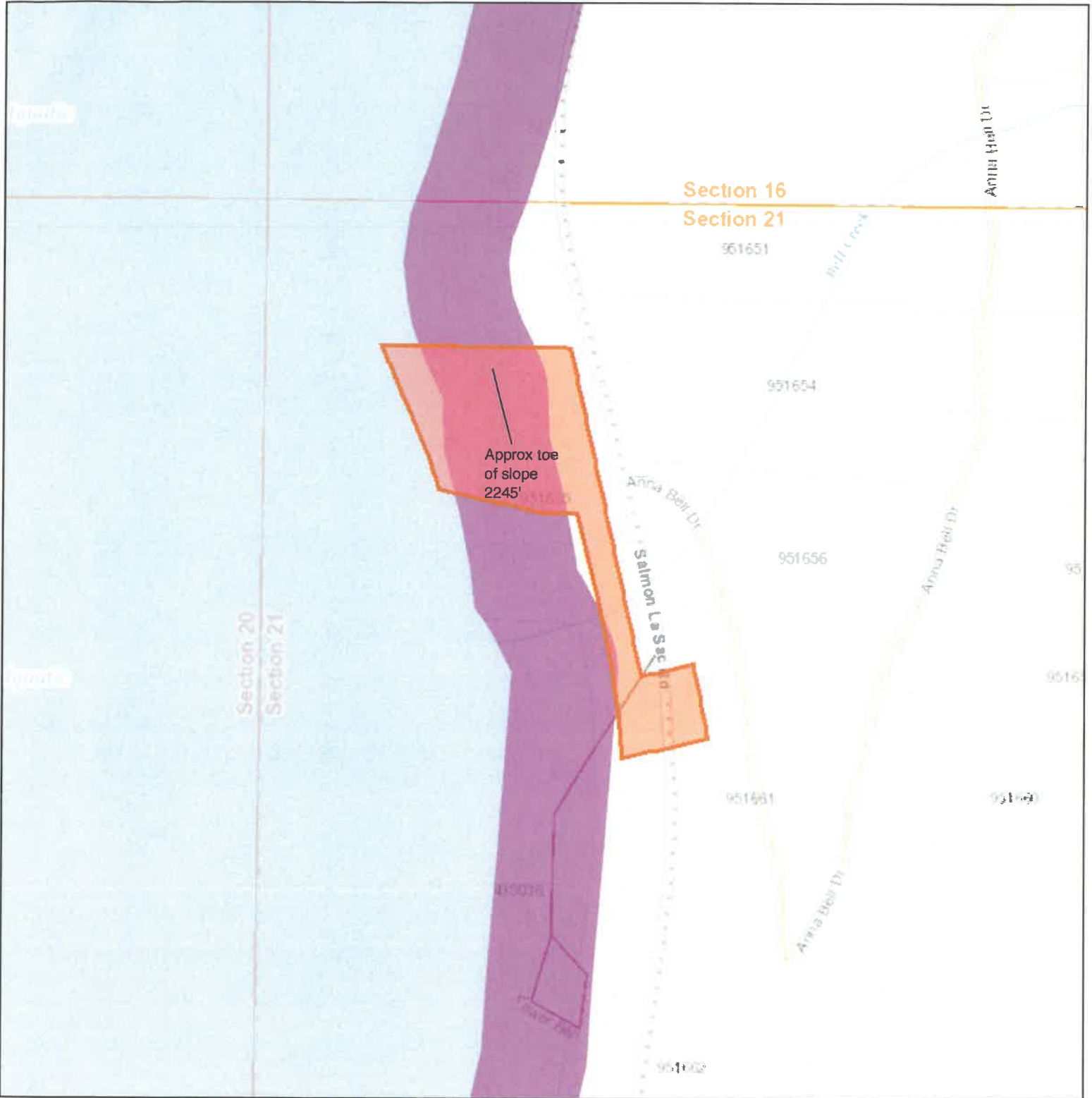
1 inch = 188 feet
Relative Scale 1:2,257

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Figure 6. Ball Property, Inaccurate Floodmap



Shoreline map for PSA PSA-12-00194

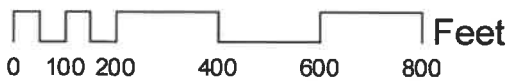


Date: 5/2/2018

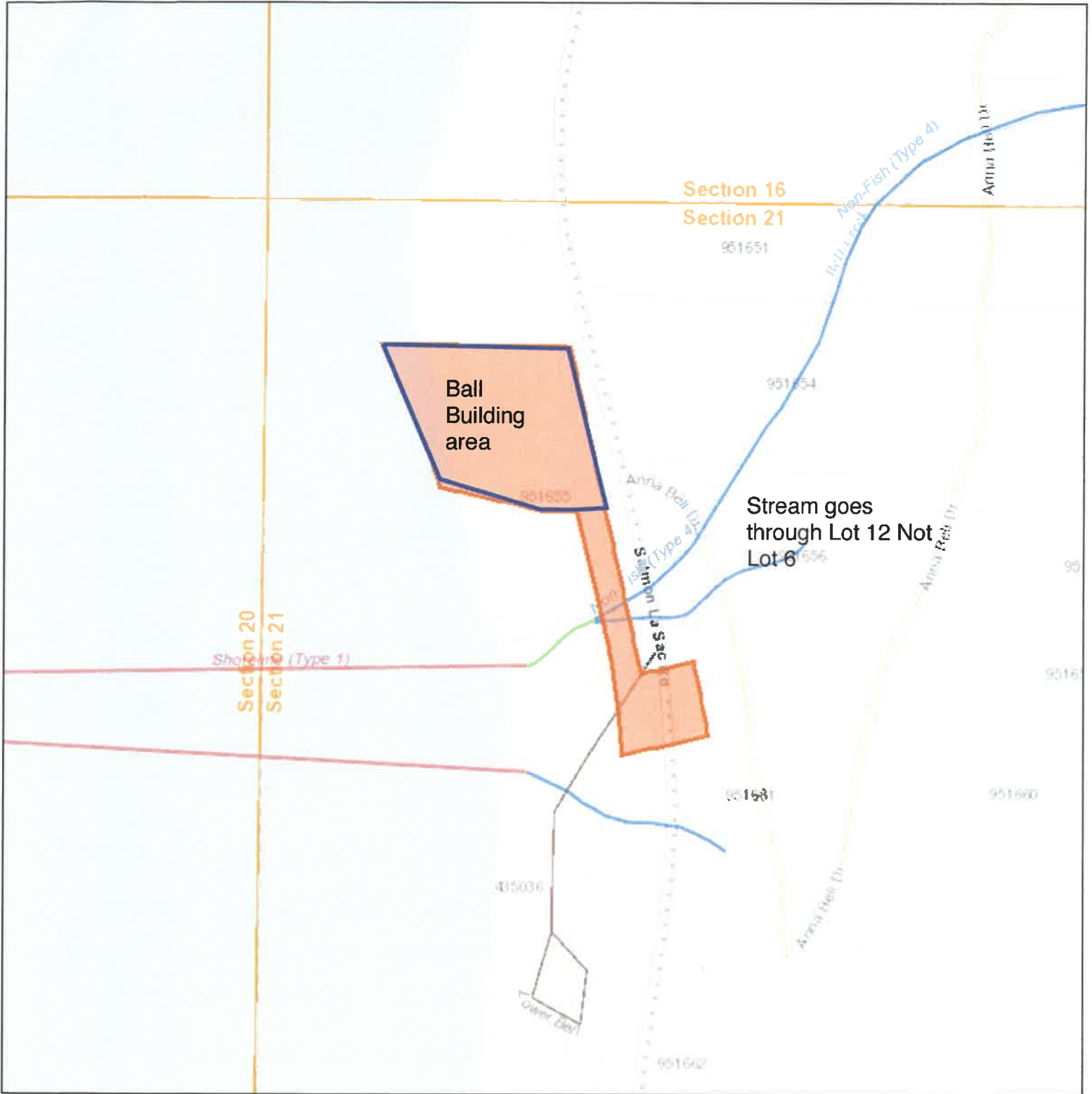
1 inch = 376 feet
Relative Scale 1:4,514

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Figure 7. Ball Property, Shoreline Map



Stream map for PSA PSA-18 00194



Date: 5/2/2018

1 inch = 376 feet
Relative Scale 1:4,514

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Figure 8. Ball Property, Stream Map



Wetland map for PSA PSA-1, 00194



Date: 5/2/2018

1 inch = 376 feet
Relative Scale 1:4,514

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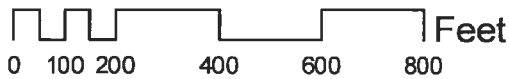


Figure 9. Ball Property, Incorrect Wetland Map