No-Rise Technical Report

Prepared For

Oxbow Farm & Conservation Center

10819 Carnation Duvall Rd NE

Carnation, WA

December 29, 2022

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December 29, 2022

Living Water Innovations, LLC

Background

Oxbow Farm & Conservation Center (Oxbow) hired consultants to perform surveying, engineering, and permit support bringing into compliance unpermitted fill and structures in the Snoqualmie River. Living Water Innovations, LLC, was hired to complement this work by others to complete a no-rise analysis.

Property Description

The Oxbow property is within King County, and is located northwest of Carnation, Washington. The subject portion of the property lies within the 100-year floodplain of the Snoqualmie River and covers about 130 acres. Public Rights-of-Way owned by King County parks for a trail and by Washington State Department of Transportation for SR 203 roughly delineate the extent of the floodplain on the northern boundary of the floodplain portion of the property. The Snoqualmie River borders the property to the south. The floodplain portion of the property is used to grow vegetables and includes numerous structures and driveways in the northeast portion of the property. Oxbow also owns about 110 acres of upland property just north of the trail and highway.

Fill Description

Existing unpermitted floodplain fill and obstructions at Oxbow can generally be described as minor and include rock to provide all-weather driving surfaces, drainage under a greenhouse, raised planters, and a bulk material storage structure. Unlike most of the other nearby structures that lack sides or whose sides roll up to provide unimpeded conveyance of flood water, the greenhouse structure has rigid plastic panels down to ground level that do not displace floodwater but does create an area of ineffective flow. The lowest elevation of the unpermitted fill and obstructions is about 51.5 feet, though most of it is above 52 feet.

Compensatory Storage

We reviewed FEMA FIRM panels 53033C0405G and 53033C0415G and determined that cross-sections BV, BU, BT, and BS cover the farm. In order to detemine the appropriate values for the various compensatory storage elevation bands defined by King County Code, we extracted the water surface elevation values from the published profiles in the FIS and present that information in the table below.

	Snoqualmie River Cross Section			
	BS	BT	BU	BV
100-yr	54.9	55.3	55.3	55.6
50-yr	54.0	54.4	54.5	54.8
10-yr	51.5	52.0	52.0	52.4

Per King County Code, since the difference between the 50-year and 100-year water surface elevations are less than one foot, only the 10-year and 100-year elevations are being used for compensatory storage analysis and compliance. Because nearly all the unpermitted fill that will be retained is between cross sections BT and BU and because the 10-year water surface elevation is constant between these two cross-sections, we are using a 10-year water surface elevation of 52.0 feet for the entire project.

Compenstory storage that is required to maintain effective base flood storage will be met by excavating existing floodplain soil from an area a short distance west of the proposed fill.

On-site test holes were dug to estimate the depth of gravel fill for each of the unpermitted fill areas. The existing conditions model represents our attempt to represent the topography of the site prior to the placement of any fill that is not permitted.

Figure 1 shows the locations of fill and the areas where excavation is proposed to meet the compensatory storage requirement.

Table 1 summarizes the proposed fill areas and quantities.

No-Rise Model

Effective Model

The effective models were obtained from Kyle Comanor, King County Engineer that works in the River and Floodplain Management Section of DNRP/WLRD . He provided one model that covered the FEMA Floodway and another that covered the floodplain. The naming convention of the folders received include a date of 2020_12_16. He also provided the technical memo that described the modeling approach that was used by the consultants to develop the models.

We note that the existing effective models include modeling for a permitted and constructed farm flood pad on this property. In the Floodplain model, the included geometry files were named FarmPads2017.g11 and FarmPads2017.g20.

Duplicate Effective Model

The effective models provided to us were copied to our computer and run on HEC-RAS version 3.1.3, which is the version that Kyle said he used to run these models.

The model results are reported in tabular form from Snoqualmie River Mainstem reaches 3 through 6, which is well beyond the limits of the project, which is within reaches 4 and 5. These results, along with the comparison of the model results described below, are presented in Table 3. The Duplicate Effective Model results are similar to the published regulatory water surface elevations.

Corrected Effective Model

No corrections were made to the duplicate effective model.

Existing Conditions Model

A topographic map of the floodplain portion of the property was created by others and provided to us by Oxbow. We understand that this topographic map represents an on-the-ground topographic survey in the areas where fill has been placed and where compensatory storage excavation is proposed, whereas the surrounding topography was represented with the best publicly available digital terrain model that was generated from LiDAR, dated 2021. This hybrid digital terrain model was used as the basis to extend the topography to the extent needed for modeling the hydraulics of this project.

For the Existing Conditions Model, many cross-sections were added to provide detail where the unpermitted fill is located and where compensatory storage excavation is proposed. The basis of the topography is as mentioned above. The Snoqualmie River channel bathymetry within the Duplicate Effective Model was interpolated to create the river channel portion of the new cross-sections added to the Effective Model. Comparing recent aerial photography with the cross sections and overbank stations confirmed that this approach seems reasonable.

Within the project area, the manning roughness values were extracted from the Duplicate Effective Model and were mapped as polygons in ArcGIS. The mannings roughness values were interpolated for the new cross-sections by intersecting the cross-sections with the polygons of manning roughness values.

Within the Duplicate Effective Model, the downstream reach lengths for left overbank, channel, and right overbank were noted. Within the Effective Conditions Model, the totals of the downstream reach lengths for all three areas for the new cross-sections and the pre-existing cross-sections upstream from them were set with the aid of ArcGIS, making sure that the collective lengths matched the Duplicate Effective Model. For example, if the channel length between two cross sections in the Duplicate

Effective Model was 500 feet, then the sum of the channel lengths between the new and pre-existing cross-sections within the Effective Conditions Model covering the same area was also 500 feet.

See Table 2 for information on the new and modified cross-sections.

The maximum water surface elevations for each cross-section in the Existing Conditions Model was higher than in the Duplicate Effective Model. The model was sensitive to densifying the cross-sections throughout the project area. There does not seem to be any other explanation. One other thing to note is that while the Duplicate Effective Model had the computation interval set to 4 minutes, the Existing Conditions Model required an interval of 1 minutes to be stable. No other settings were changed.

Proposed Conditions Model

The difference in the topography of the Existing Conditions model and the Proposed Conditions model includes floodwater displacement from fill and the corresponding excavation of soil to meet compensatory storage requirements. The fill creates all-weather driving surfaces, raised planters, and a bulk material storage structure.

A comparison of the Proposed Conditions Model and the Existing Conditions Model reveals that the maximum water surface elevation will remain unchanged or be slightly lower.

Table 3 shows the data from each model and the differences between each of them.

<u>**Summary**</u>

The proposed project meets King County Code requirements to provide compensatory storage and meet no-rise criteria.

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Code references

> 21A.24.240.A – Compensatory storage required to maintain effective base flood storage.

> 21A.24.240.A.1 – Compensatory storage elevation equivalents (OHWM, 10-yr, 50-yr, 100-yr; omit 50-yr if <1-foot different from 100-yr).

> 21A.24.240.C – Depth and velocity analysis – does not apply for agricultural structures, farm pads, and roads.

> 21A.24.260.B – Development shall not increase the base flood elevation. Using standard engineering practice, show that proposed development would not result in any increase in flood levels during the base flood discharge.

> 21A.24.260.D – New nonresidential buildings are prohibited in FEMA floodway, except for agricultural buildings within an agricultural production district that meet applicable compensatory and conveyance standards.

Table 1 Fill Areas and Quantities
Compensatory Storage Calculations

AREA	DESCRIPTION (FILL MATERIAL)	Revised Area (SF)	Compensatory Storage			Comment
			Measured Fill Depth (IN)	Est Fill Volume (CF)	Est Fill Volume (CY)	
S1A	Outdoor Kitchen (concrete pavers)	541	8	360.7	13.4	Assumed that a few inches of sand or gravel is under pavers
S1E	ADA Raised Garden Bed (gravel)	334	4	111.3	4.1	4 inches of gravel for ADA surfacing
S1F	AG. Accessory Structure (concrete slab)	1,847	6	923.5	34.2	Concrete slab; no gravel base found
S1F	AG. Accessory Structure (ecoblock walls)	258	36	774.0	28.7	Footprint of the ecoblock walls; empty contents prior to flood season each year
S1G	Native Plant Nursery (gravel)	8,896	7	5,189.3	192.2	Measured gravel depth was 6-7 inches to weed block over native soil
S2H	NPN Sun Yard	3,750	7	2,187.5	81.0	
S2I	NPN Shade Yard	3,431	7	2,001.4	74.1	
S3B	Parking (gravel) below 100-yr flood	4,577	5	1,907.1	70.6	Gravel area east of fill pad; estimated area is only that portion below 100-yr elevation
S3C N	East Driveway (gravel) North	11,931	6	5,965.5	220.9	Area measured from PDF
S3C S	East Driveway (gravel) South	10,045	6	5,022.5	186.0	Area measured from PDF
					905	

24 Cubic Yards of fill in S3C S is below 52 feet. The remaining fill is all above 52 feet.
Therefore, 24 cubic yards of compensatory storage are needed below 52 feet and 881 cubic yards above 52 feet.

Table 2 New and Modified Cross-sections

XS	LOB DS	Channel Distance DS	ROB DS	RM Used	XS Length (GIS)
BS	715.27		1,130.29	15.84	4,771.63
O1	288.00	328	195.00	15.9	4,884.74
O2	307.00	381	184.00	15.97	4,995.95
O3	467.00	461	137.00	16.06	4,843.82
O4	657.00	510	135.00	16.15	4,930.37
BT	123.00	108	31.00	16.18	5,004.72
O5	129.00	136	34.00	16.2	4,081.09
O6	129.00	134	37.00	16.22	4,028.53
O7	129.00	133	40.00	16.25	3,977.28
O8	129.00	133	45.00	16.27	3,927.30
O9	53.00	55	20.00	16.28	3,907.16
O10	53.00	55	21.00	16.29	3,887.25
O11	54.00	47	22.00	16.3	3,867.25
O12	46.00	47	19.00	16.31	3,850.50
O13	45.00	46	20.00	16.32	3,834.29
O14	57.00	58	26.00	16.33	3,813.99
O15	87.00	88	43.00	16.35	3,783.51
O16	68.00	69	36.00	16.36	3,760.14
O17	56.00	58	32.00	16.37	3,741.27
O18	78.00	81	48.00	16.39	3,715.34
O19	74.00	75	49.00	16.4	3,701.80
O20	31.00	31	22.00	16.41	3,696.36
OF1	60.00	58	47.00	16.42	3,687.38
O21	116.00	110	39.00	16.44	3,669.76
OF2	127.00	113	39.00	16.46	3,644.08
BU	130.00	91	34.58	16.48	3,676.27
OF3	0.93	1	0.30	16.4801	3,676.22
O22	35.00	30	17.00	16.486	3,657.62
O23	36.00	34	36.00	16.492	3,625.01
O24	38.00	32	18.00	16.498	3,603.94
OF4	33.00	31	34.00	16.50	3,574.04
OF5	324.20	376	127.38	16.58	3,494.64
BV	868.66	930	193.10	16.75	4,011.61

☐ Modified Cross-sections
▨ Added Cross-sections

Table 3 No-rise Summary

Row Number	LOCATION (RM)	FIS Cross Section	FIS ELEV (FEET)	Dup Eff ELEV (FEET)	Existing ELEV (FEET)	Proposed ELEV (FEET)	Existing-Dup Eff (FEET)	Prooosed-Existing (FEET)
1	23.9			79.26	79.39	79.39	0.13	0
2	23.9			79.09	79.22	79.22	0.13	0
3	23.88			78.51	78.63	78.63	0.12	0
4	23.79			77.75	77.86	77.86	0.11	0
5	23.75			78.05	78.16	78.16	0.11	0
6	23.7			77.71	77.82	77.82	0.11	0
7	23.61			76.88	76.99	76.99	0.11	0
8	23.56			76.43	76.54	76.54	0.11	0
9	23.51			75.94	76.05	76.05	0.11	0
10	23.21			74.11	74.2	74.2	0.09	0
11	23			72.5	72.59	72.59	0.09	0
12	22.95			71.9	71.99	71.99	0.09	0
13	22.94			71.77	71.86	71.86	0.09	0
14	22.91			71.61	71.69	71.69	0.08	0
15	22.89			71.53	71.61	71.61	0.08	0
16	22.84			71.16	71.24	71.24	0.08	0
17	22.71			69.75	69.84	69.84	0.09	0
18	22.56			68.74	68.83	68.83	0.09	0
19	22.55			68.81	68.91	68.91	0.1	0
20	22.5			68.73	68.83	68.83	0.1	0
21	22.49			68.68	68.78	68.78	0.1	0
22	22.43			68.59	68.69	68.69	0.1	0
23	22.355			68.42	68.52	68.52	0.1	0
24	22.34			68.4	68.5	68.5	0.1	0
25	22.31			68.37	68.47	68.47	0.1	0
26	22.27			68.35	68.45	68.45	0.1	0
27	22.24			68.3	68.4	68.4	0.1	0
28	22.175			68.15	68.25	68.25	0.1	0
29	22.15			68.2	68.3	68.3	0.1	0
30	22.13			68.16	68.27	68.27	0.11	0
31	22.11			68.1	68.2	68.2	0.1	0
32	22.09			68.04	68.14	68.14	0.1	0
33	22.005			67.94	68.05	68.05	0.11	0
34	22			67.91	68.01	68.01	0.1	0
35	21.98			67.9	68.01	68.01	0.11	0
36	21.96			67.89	67.99	67.99	0.1	0
37	21.93			67.9	68.01	68.01	0.11	0
38	21.89			67.84	67.95	67.95	0.11	0
39	21.87			64.19	64.29	64.29	0.1	0
40	21.82			63.99	64.08	64.08	0.09	0
41	21.81			63.95	64.05	64.05	0.1	0
42	21.785			63.95	64.05	64.05	0.1	0

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Row Number	LOCATION (RM)	FIS Cross Section	ELEV (FEET)	Dup Eff ELEV (FEET)	Existing ELEV (FEET)	Proposed ELEV (FEET)	Existing-Dup Eff (FEET)	Proosed-Existing (FEET)
43	21.77			63.79	63.89	63.89	0.1	0
44	21.71			63.55	63.65	63.65	0.1	0
45	21.55			62.8	62.9	62.9	0.1	0
46	21.4			62.29	62.39	62.39	0.1	0
47	21.28			61.65	61.77	61.77	0.12	0
48	21.222			61.48	61.61	61.6	0.13	-0.01
49	21.163			61.3	61.43	61.43	0.13	0
50	21.105			61.16	61.29	61.29	0.13	0
51	21.047			61	61.14	61.13	0.14	-0.01
52	20.988			60.82	60.96	60.95	0.14	-0.01
53	20.93			60.81	60.95	60.95	0.14	0
54	20.893			60.79	60.93	60.93	0.14	0
55	20.857			60.72	60.86	60.86	0.14	0
56	20.82			60.63	60.77	60.76	0.14	-0.01
57	20.783			60.54	60.69	60.68	0.15	-0.01
58	20.747			60.43	60.57	60.56	0.14	-0.01
59	20.71			60.27	60.42	60.41	0.15	-0.01
60	20.49			59.69	59.84	59.83	0.15	-0.01
61	20.375			59.55	59.71	59.7	0.16	-0.01
62	20.27			59.47	59.63	59.62	0.16	-0.01
63	20.07			59.14	59.31	59.3	0.17	-0.01
64	19.82			58.84	59	58.99	0.16	-0.01
65	19.58			58.61	58.78	58.76	0.17	-0.02
66	19.3			57.56	57.78	57.75	0.22	-0.03
67	19			56.99	57.22	57.2	0.23	-0.02
68	18.7			56.83	57.07	57.05	0.24	-0.02
69	18.7			56.83	57.07	57.05	0.24	-0.02
70	18.43			56.83	57.07	57.05	0.24	-0.02
71	18.41			56.81	57.05	57.03	0.24	-0.02
72	18.37			56.76	57.01	56.98	0.25	-0.03
73	18.35			56.74	56.99	56.96	0.25	-0.03
74	18.28	BZ	56.7	56.69	56.95	56.92	0.26	-0.03
75	18.27			56.71	56.96	56.93	0.25	-0.03
76	17.89	BY	56.2	56.14	56.46	56.42	0.32	-0.04
77	17.87			56.1	56.42	56.38	0.32	-0.04
78	17.78			55.94	56.27	56.24	0.33	-0.03
79	17.77			55.91	56.24	56.21	0.33	-0.03
80	17.63	BX	55.8	55.74	56.08	56.05	0.34	-0.03
81	17.585			55.74	56.08	56.04	0.34	-0.04
82	17.558			55.73	56.07	56.04	0.34	-0.03
83	17.534			55.72	56.06	56.02	0.34	-0.04
84	17.5			55.7	56.05	56.01	0.35	-0.04
85	17.42	BW	55.7	55.7	56.04	56	0.34	-0.04
86	16.75	BV	55.6	55.53	55.87	55.83	0.34	-0.04

Table 3

Row Number	LOCATION (RM)	FIS Cross Section	ELEV (FEET)	Dup Eff ELEV (FEET)	Existing ELEV (FEET)	Proposed ELEV (FEET)	Existing-Dup Eff (FEET)	Proosed-Existing (FEET)
87	16.58			55.49	55.83	55.8	0.34	**-0.03**
88	16.5			55.43	55.8	55.75	0.37	**-0.05**
89	16.498				55.77	55.72		**-0.05**
90	16.492				55.74	55.69		**-0.05**
91	16.486				55.72	55.67		**-0.05**
92	16.48			55.37	55.74	55.67	0.37	**-0.07**
93	16.48	BU	55.3	55.3	55.7	55.67	0.4	**-0.03**
94	16.46			55.29	55.69	55.66	0.4	**-0.03**
95	16.44				55.65	55.6		**-0.05**
96	16.42			55.24	55.65	55.57	0.41	**-0.08**
97	16.41				55.6	55.54		**-0.06**
98	16.4				55.59	55.52		**-0.07**
99	16.39				55.56	55.5		**-0.06**
100	16.37				55.52	55.46		**-0.06**
101	16.36				55.52	55.46		**-0.06**
102	16.35				55.53	55.47		**-0.06**
103	16.33				55.54	55.48		**-0.06**
104	16.32				55.53	55.47		**-0.06**
105	16.31				55.53	55.47		**-0.06**
106	16.3				55.52	55.46		**-0.06**
107	16.29				55.52	55.46		**-0.06**
108	16.28				55.51	55.45		**-0.06**
109	16.27				55.5	55.44		**-0.06**
110	16.25				55.47	55.42		**-0.05**
111	16.22				55.46	55.4		**-0.06**
112	16.2				55.44	55.38		**-0.06**
113	16.18				55.44	55.38		**-0.06**
114	16.15	BT	55.3	55.24	55.4	55.4	0.16	**0**
115	16.06				55.29	55.29		**0**
116	15.97				55.17	55.17		**0**
117	15.9				55	55		**0**
118	15.84	BS	54.9	54.85	54.94	54.94	0.09	**0**
119	15.63	BR	54.7	54.61	54.7	54.7	0.09	**0**
120	15.29	BQ	54.5	54.47	54.57	54.57	0.1	**0**
121	15.08	BP	54.4	54.37	54.46	54.46	0.09	**0**
122	15.079			54.36	54.46	54.46	0.1	**0**
123	15.077			54.36	54.46	54.45	0.1	**-0.01**
124	15.076			54.36	54.45	54.45	0.09	**0**
125	15.074			54.36	54.46	54.45	0.1	**-0.01**
126	15.072			54.36	54.46	54.45	0.1	**-0.01**
127	15.069			54.36	54.45	54.45	0.09	**0**
128	15.067			54.36	54.45	54.45	0.09	**0**
129	15.065			54.36	54.45	54.45	0.09	**0**
130	15.061			54.37	54.46	54.46	0.09	**0**

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| Row Number | LOCATION | FIS | | Dup Eff | Existing | Proposed | Existing- | Proosed- |
| | | Cross | ELEV | ELEV | ELEV | ELEV | Dup Eff | Existing |
	(RM)	Section	(FEET)	(FEET)	(FEET)	(FEET)	(FEET)	(FEET)
131	15.058			54.36	54.45	54.45	0.09	0
132	15.057			54.35	54.45	54.44	0.1	-0.01
133	15.053			54.36	54.45	54.45	0.09	0
134	15.039			54.36	54.45	54.45	0.09	0
135	15.036			54.36	54.45	54.45	0.09	0
136	15.03			54.35	54.44	54.44	0.09	0
137	15.025			54.35	54.44	54.44	0.09	0
138	15.019			54.34	54.43	54.43	0.09	0
139	15.012			54.33	54.42	54.42	0.09	0
140	14.998			54.32	54.41	54.41	0.09	0
141	14.972			54.32	54.41	54.41	0.09	0
142	14.949			54.32	54.41	54.41	0.09	0
143	14.906			54.32	54.41	54.41	0.09	0
144	14.845			54.3	54.39	54.39	0.09	0
145	14.838			54.29	54.38	54.38	0.09	0
146	14.79			54.2	54.29	54.29	0.09	0
147	14.769			54.21	54.3	54.3	0.09	0
148	14.76			54.19	54.28	54.28	0.09	0
149	14.72			54.12	54.21	54.21	0.09	0
150	14.67			54.07	54.16	54.16	0.09	0
151	14.59			53.88	53.96	53.96	0.08	0
152	14.53			53.78	53.87	53.87	0.09	0
153	14.5			53.73	53.81	53.81	0.08	0
154	14.3			53.53	53.61	53.61	0.08	0
155	14.1			53.38	53.47	53.46	0.09	-0.01
156	13.9			53.17	53.25	53.25	0.08	0
157	13.87			53.04	53.12	53.12	0.08	0
158	13.82			52.96	53.04	53.04	0.08	0
159	13.28			52.89	52.97	52.97	0.08	0
160	13.15			52.83	52.9	52.9	0.07	0
161	12.76			52.74	52.81	52.81	0.07	0
162	12.4			52.57	52.65	52.65	0.08	0
163	12.2			52.43	52.5	52.5	0.07	0
164	11.96			52.25	52.32	52.32	0.07	0
165	11.76			52.11	52.18	52.18	0.07	0
166	11.47			52.02	52.09	52.09	0.07	0
167	11.32			52	52.06	52.06	0.06	0
168	11.315			52	52.06	52.06	0.06	0
169	11.31			51.99	52.06	52.06	0.07	0
170	11.3			51.98	52.05	52.05	0.07	0
171	11.28			51.98	52.05	52.05	0.07	0
172	11.275			51.98	52.05	52.05	0.07	0
173	11.27			51.97	52.04	52.04	0.07	0
174	11.26			51.97	52.04	52.04	0.07	0

Table 3

Row Number	LOCATION	FIS		Dup Eff ELEV	Existing ELEV	Proposed ELEV	Existing-Dup Eff	**Proosed-Existing**
		Cross Section	ELEV (FEET)					
	(RM)		(FEET)	(FEET)	(FEET)	(FEET)	(FEET)	**(FEET)**
175	11.25			51.97	52.04	52.03	0.07	**-0.01**
176	11.24			51.97	52.03	52.03	0.06	**0**
177	11.23			51.96	52.03	52.03	0.07	**0**
178	11.22			51.96	52.03	52.03	0.07	**0**
179	11.215			51.96	52.03	52.03	0.07	**0**
180	11.21			51.96	52.03	52.03	0.07	**0**
181	11.19			51.96	52.03	52.03	0.07	**0**
182	11.13			51.93	52	52	0.07	**0**
183	10.92			51.81	51.88	51.88	0.07	**0**
184	10.76			51.74	51.8	51.8	0.06	**0**
185	10.51			51.7	51.77	51.77	0.07	**0**
186	10.25			51.68	51.75	51.75	0.07	**0**
187	10.02			51.62	51.68	51.68	0.06	**0**
188	9.89			51.54	51.6	51.6	0.06	**0**
189	9.75			51.38	51.44	51.44	0.06	**0**
190	9.645			51.39	51.45	51.45	0.06	**0**
191	9.55			51.33	51.39	51.39	0.06	**0**
192	9.4			51.02	51.07	51.07	0.05	**0**
193	9.19			50.54	50.59	50.59	0.05	**0**
194	9.17			50.36	50.4	50.4	0.04	**0**
195	9			50.11	50.14	50.14	0.03	**0**
196	8.89			50.12	50.15	50.15	0.03	**0**
197	8.79			50.05	50.08	50.08	0.03	**0**
198	8.55			49.79	49.82	49.82	0.03	**0**
199	8.27			49.72	49.75	49.75	0.03	**0**
200	7.965			49.7	49.72	49.72	0.02	**0**
201	7.67			49.64	49.66	49.66	0.02	**0**
202	7.31			49.6	49.62	49.62	0.02	**0**
203	7.11			49.58	49.6	49.6	0.02	**0**
204	6.91			49.58	49.6	49.6	0.02	**0**
205	6.61			49.56	49.58	49.58	0.02	**0**
206	6.31			49.52	49.54	49.54	0.02	**0**
207	6.31			49.53	49.55	49.55	0.02	**0**
208	6.06			49.53	49.55	49.55	0.02	**0**
209	5.97			49.52	49.54	49.54	0.02	**0**
210	5.845			49.52	49.54	49.54	0.02	**0**
211	5.74			49.52	49.54	49.54	0.02	**0**
212	5.62			49.51	49.53	49.53	0.02	**0**
213	5.51			49.51	49.53	49.53	0.02	**0**
214	5.18			49.48	49.5	49.5	0.02	**0**
215	4.88			49.46	49.47	49.47	0.01	**0**
216	4.66			49.43	49.45	49.45	0.02	**0**
217	4.51			49.41	49.43	49.43	0.02	**0**
218	4.28			49.38	49.39	49.39	0.01	**0**

Table 3

| Row Number | LOCATION | FIS | | Dup Eff | Existing | Proposed | Existing- | Proosed- |
| | | Cross | ELEV | ELEV | ELEV | ELEV | Dup Eff | Existing |
	(RM)	Section	(FEET)	(FEET)	(FEET)	(FEET)	(FEET)	(FEET)
219	4.03			49.35	49.36	49.36	0.01	0
220	3.81			49.29	49.3	49.3	0.01	0
221	3.49			49.22	49.23	49.23	0.01	0
222	3.27			49.18	49.19	49.19	0.01	0
223	3.27			49.18	49.19	49.19	0.01	0

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