

Appendix J. R6 Stream Survey and PIBO Effectiveness Monitoring Data for the Bear and York Allotments

Table 1. Summary of Available R6 Stream Survey Data vs. Fish Habitat Standards for Streams within the Bear Creek Allotment. Mosquito Creek

<b>PIBO Data<sup>1</sup> (Bold)</b> <i>R6 Survey Protocol</i> <i>(Italics)</i> <b>Both (Bold &amp; Italics)</b>	<b>R6 Level II Stream</b> <b>Survey Data</b>	<b>PAC</b> <b>FISH RMO</b>	<b>Amend 29</b> <b>DFC</b>	<b>NMFS Matrix of Pathways and Indicators</b> <b>Ranges of Criteria</b>		
				<b>Properly Functioning</b>	<b>At Risk</b>	<b>Not Properly Functioning</b>
Stream Name	<b>Mosquito Creek Reach 1</b>	-	-	-	-	-
Percent of reach within Pasture	76.8	-	-	-	-	-
Pasture Name	Bear Creek Unit H					
Survey Date	1992 (Jul 13)	-	-	-	-	-
<b>Site ID</b>	-					
<b>Sample Type</b>	-	-	-	-	-	-
6 <sup>th</sup> Field HUC	170702030301	-	-	-	-	-
<b>Ave Wetted Width (feet)</b>	2.8	-	-	-	-	-
<b>Ave Wetted Width to Depth (riffles)</b>	-	-	-	-	-	-
<b>Ave Bankfull Width (feet)</b>	64.0	-	-	-	-	-
<b>Ave BKFL W/D</b>	19.5	<10 <sup>6</sup>	<10 <sup>6</sup>	<10 <sup>7</sup>	10-12 <sup>7</sup>	>12 <sup>7</sup>
<b>Av Gradient (%)</b>	6.0	-	-	-	-	-
<b>Residual Pool Depth (feet)</b>	0.5	-	-	-	-	-

Appendix J. R6 Stream Survey and PIBO Effectiveness Monitoring Data for the Bear and York Allotments

<b>Pool Frequency (#/mi)</b>	105.9	96 <sup>2</sup> 56 <sup>3</sup> 47 <sup>4</sup> 26 <sup>5</sup>	75-132 <sup>2</sup> 38-66 <sup>3</sup> 30-53 <sup>4</sup> 15-26 <sup>5</sup>	Meets pool freq & LWD recruitment standards channel width # pools/mile 5 feet 184 10 " 96 15 " 70 20 " 56 25 " 47 50 " 26	Meets pool freq standards but not LWD recruitment	Does not meet pool freq standards
<b>Pool Quality</b>	0.0	-	-	Pools >1m (3.28ft) deep, good cover, cool water, minimal filling	Few >1m pools or inadequate cover/temp, moderate filling	No >1m pools & inadequate cover/temp, major filling with sediment
<b>Percent Pools</b>	35.0	-	-	-	-	-
<b>D50 (mm), or Dominant Substrate &amp; Embeddedness</b>	Sand/silt; Embeddedness >30%	-	Embedded <=20%	Dominant substrate gravel (2-64 mm) or cobble (64-256 mm) (interstitial spaces clear), or embeddedness <20%	Gravel or cobble subdominant, or embeddedness 20-30% if dominant	Bedrock, sand, silt, or small gravel dominant, or embeddedness >30% if gravel or cobble dominant
<b>Pct Fines &lt;2 mm in Riffles (R) or Pool Tails (P)</b>	-	-	-	<12% fines <sup>8</sup> in gravel	12-20% fines <sup>8</sup> in gravel	>20% fines <sup>8</sup> in gravel
<b>Percent Stable Banks (CS &amp; FB)</b>	95%	>80	>90	>90% stable	80-90% stable	< 80% stable
<b>Percent Stable Banks (CS, FB, US)</b>	-	-	-	-	-	-
<b>Percent Undercut Banks</b>	-	>75	50-75% undercut <sup>9</sup>	-	-	-

Appendix J. R6 Stream Survey and PIBO Effectiveness Monitoring Data for the Bear and York Allotments

<b>Large Wood Frequency (#/mi)<sup>14</sup></b>	198.0	>20 <sup>13</sup>	20-70 <sup>10</sup> 80-120 <sup>11</sup> 100-350 <sup>12</sup>	>20 <sup>13</sup> and adequate sources for recruitment	>20 but lacks recruitment to maintain	<20 and lacks recruitment
<i>Percent Shade/Canopy Closure</i>	>60%	-	40-55 <sup>15</sup> 50-65 <sup>16</sup> 60-75 <sup>17</sup> 80 <sup>18</sup>	-	-	-
<b>Dominant Overstory</b>	Alder, fir	-	-	-	-	-
<b>Greenline Wetland Rating</b>	-	-	-	-	-	-
<b>Greenline Woody Cover</b>	-	-	-	-	-	-
<i>Off-channel Habitat &amp; Refugia</i>	3.4	-	-	Low energy backwaters & side channels	Some backwaters & high energy side channels	Few or no backwaters
<i>Physical Man-made Barriers<sup>19</sup></i>	3	-	-	Any in watershed allow passage @ all flows	Any don't allow passage @ base flows	Any don't allow passage @ range of flows

Notes: **1)** All PIBO data units converted from metric to English except for mm measurements; **2)** Channels of <10 feet in width; **3)** Channels of >10 to 20 feet in width; **4)** Channels of >20 to 25 feet in width; **5)** Channels of >25 to 50 feet in width; **6)** Criteria is for wetted W/D ratio; **7)** Criteria is for bankfull W/D ratio; **8)** Fines defined as <0.85mm in gravel; **9)** In non-forested systems with 2% or less gradient; **10)** In Ponderosa pine ecosystems (at least 12 inches in diameter and 20% > 20 inches in diameter; and at least 35 feet long or 1.5 times bankfull width); **11)** In mixed conifer ecosystems (at least 12 inches in diameter and 20% > 20 inches in diameter; and at least 35 feet long or 1.5 times bankfull width); **12)** In Lodgepole pine ecosystems (at least 6 inches in diameter and 10% > 12 inches in diameter; and at least 18 feet long or 1.5 times bankfull width); **13)** LWD defined as >12 inch diameter and > 35 ft length; **14)** Stream surveys conducted in 1995 and earlier **a)** included not only LW material within the bankfull channel, but also leaning trees that have the potential to fall into the stream, and **b)** included a “Brush” LWD category that is not considered functional LWD as per Amendment 29 DFCs and the MPI unless in Lodgepole Pine ecosystems. Stream surveys conducted in 1996 and later **a)** only included trees actually within the bankfull channel interacting with stream flow during bankfull conditions, and **b)** included a “Small” LWD category that is not considered functional LWD as described above; **15)** In Ponderosa pine ecosystems; **16)** In mixed conifer ecosystems; **17)** In Lodgepole pine ecosystems; **18)** In hardwood/meadow complexes; **19)** Culvert barrier data from MNF Culvert Assessment GIS layer.

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Table 2. Summary of R6 Stream Survey and PIBO Data vs. Fish Habitat Standards for Streams within the York Allotment. Slide Creek

PIBO Data <sup>1</sup> (Bold) <i>R6 Survey Protocol</i> <i>(Italics)</i> <b>Both (Bold &amp; Italics)</b>	R6 Level II Stream Survey Data	PAC FISH RMO	Amend 29 DFC	NMFS Matrix of Pathways and Indicators Ranges of Criteria		
				Properly Functioning	At Risk	Not Properly Functioning
Stream Name	Slide Creek Reach 1	-	-	-	-	-
Percent of reach within Pasture	74.4	-	-	-	-	-
Pasture Name	York					
Survey Date	1992 (Aug 12)	-	-	-	-	-
Site ID	-					
Sample Type	-	-	-	-	-	-
6 <sup>th</sup> Field HUC	170702030304	-	-	-	-	-
<i>Ave Wetted Width (feet)</i>	5.0	-	-	-	-	-
<i>Ave Wetted Width to Depth (riffles)</i>	-	-	-	-	-	-
<i>Ave Bankfull Width (feet)</i>	10.6	-	-	-	-	-
<i>Ave BKFL W/D</i>	11.3	<10 <sup>6</sup>	<10 <sup>6</sup>	<10 <sup>7</sup>	10-12 <sup>7</sup>	>12 <sup>7</sup>
<i>Av Gradient (%)</i>	5.0	-	-	-	-	-
Residual Pool Depth (feet)	0.7	-	-	-	-	-

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PIBO Data <sup>1</sup> (Bold) <i>R6 Survey Protocol</i> <i>(Italics)</i> <b>Both (Bold &amp; Italics)</b>	R6 Level II Stream Survey Data	PAC FISH RMO	Amend 29 DFC	NMFS Matrix of Pathways and Indicators Ranges of Criteria		
				Properly Functioning	At Risk	Not Properly Functioning
<b><i>Pool Frequency</i></b> <b><i>(#/mi)</i></b>	89.0	96 <sup>2</sup> 56 <sup>3</sup> 47 <sup>4</sup> 26 <sup>5</sup>	75-132 <sup>2</sup> 38-66 <sup>3</sup> 30-53 <sup>4</sup> 15-26 <sup>5</sup>	Meets pool freq & LWD recruitment standards channel width # pools/mile 5 feet 184 10 " 96 15 " 70 20 " 56 25 " 47 50 " 26	Meets pool freq standards but not LWD recruitment	Does not meet pool freq standards
<i>Pool Quality</i>	0.0	-	-	Pools >1m (3.28ft) deep, good cover, cool water, minimal filling	Few >1m pools or inadequate cover/temp, moderate filling	No >1m pools & inadequate cover/temp, major filling with sediment
<b><i>Percent Pools</i></b>	35.0	-	-	-	-	-
<b><i>D50 (mm), or Dominant Substrate &amp; Embeddedness</i></b>	Gravel, <20% embedded	-	Embedded <=20%	Dominant substrate gravel (2-64 mm) or cobble (64- 256 mm) (interstitial spaces clear), or embeddedness <20%	Gravel or cobble subdominant, or embeddedness 20-30% if dominant	Bedrock, sand, silt, or small gravel dominant, or embeddedness >30% if gravel or cobble dominant
<b><i>Pct Fines &lt;2 mm in Riffles (R) or Pool Tails (P)</i></b>	-	-	-	<12% fines <sup>8</sup> in gravel	12-20% fines <sup>8</sup> in gravel	>20% fines <sup>8</sup> in gravel
<b><i>Percent Stable Banks (CS &amp; FB)</i></b>	85%	>80	>90	>90% stable	80-90% stable	< 80% stable
<b><i>Percent Stable Banks</i></b>	-	-	-	-	-	-

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PIBO Data <sup>1</sup> ( <b>Bold</b> ) <i>R6 Survey Protocol</i> ( <i>Italics</i> ) <b>Both (Bold &amp; Italics)</b>	R6 Level II Stream Survey Data	PAC FISH RMO	Amend 29 DFC	NMFS Matrix of Pathways and Indicators Ranges of Criteria		
				Properly Functioning	At Risk	Not Properly Functioning
<b>(CS, FB, US)</b>						
<b>Percent Undercut Banks</b>	-	>75	50-75% undercut <sup>9</sup>	-	-	-
<b><i>Large Wood Frequency (#/mi)</i></b> <sup>14</sup>	48.6	>20 <sup>13</sup>	20-70 <sup>10</sup> 80-120 <sup>11</sup> 100-350 <sup>12</sup>	>20 <sup>13</sup> and adequate sources for recruitment	>20 but lacks recruitment to maintain	<20 and lacks recruitment
<i>Percent Shade/Canopy Closure</i>	23%	-	40-55 <sup>15</sup> 50-65 <sup>16</sup> 60-75 <sup>17</sup> 80 <sup>18</sup>	-	-	-
<b>Dominant Overstory</b>	Alder, grand fir	-	-	-	-	-
<b>Greenline Wetland Rating</b>	-	-	-	-	-	-
<b>Greenline Woody Cover</b>	-	-	-	-	-	-
<i>Off-channel Habitat &amp; Refugia</i>	3.4	-	-	Low energy backwaters & side channels	Some backwaters & high energy side channels	Few or no backwaters
<i>Physical Man-made Barriers</i> <sup>19</sup>		-	-	Any in watershed allow passage @ all flows	Any don't allow passage @ base flows	Any don't allow passage @ range of flows

Notes: **1)** All PIBO data units converted from metric to English except for mm measurements; **2)** Channels of <10 feet in width; **3)** Channels of >10 to 20 feet in width; **4)** Channels of >20 to 25 feet in width; **5)** Channels of >25 to 50 feet in width; **6)** Criteria is for wetted W/D ratio; **7)** Criteria is for bankfull W/D ratio; **8)** Fines defined as <0.85mm in gravel; **9)** In non-forested systems with 2% or less gradient; **10)** In Ponderosa pine ecosystems (at least 12 inches in diameter and 20% > 20 inches in diameter; and at least 35 feet long or 1.5 times bankfull width); **11)** In

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mixed conifer ecosystems (at least 12 inches in diameter and 20% > 20 inches in diameter; and at least 35 feet long or 1.5 times bankfull width); **12)** In Lodgepole pine ecosystems (at least 6 inches in diameter and 10% > 12 inches in diameter; and at least 18 feet long or 1.5 times bankfull width); **13)** LWD defined as >12 inch diameter and > 35 ft length; **14)** Stream surveys conducted in 1995 and earlier **a)** included not only LW material within the bankfull channel, but also leaning trees that have the potential to fall into the stream, and **b)** included a “Brush” LWD category that is not considered functional LWD as per Amendment 29 DFCs and the MPI unless in Lodgepole Pine ecosystems. Stream surveys conducted in 1996 and later **a)** only included trees actually within the bankfull channel interacting with stream flow during bankfull conditions, and **b)** included a “Small” LWD category that is not considered functional LWD as described above; **15)** In Ponderosa pine ecosystems; **16)** In mixed conifer ecosystems; **17)** In Lodgepole pine ecosystems; **18)** In hardwood/meadow complexes; **19)** Culvert barrier data from MNF Culvert Assessment GIS layer.

**Table 3. Summary of R6 Stream Survey and PIBO Data vs. Fish Habitat Standards for Streams within the Bear Creek Allotment. Middle Fork John Day**

<b>PIBO Data<sup>1</sup> (Bold)</b> <i>R6 Survey Protocol</i> <i>(Italics)</i> <b>Both (Bold &amp; Italics)</b>	<b>R6 Level II Stream Survey Data</b>	<b>PAC FISH RMO</b>	<b>Amend 29 DFC</b>	<b>NMFS Matrix of Pathways and Indicators Ranges of Criteria</b>		
				<b>Properly Functioning</b>	<b>At Risk</b>	<b>Not Properly Functioning</b>
Stream Name	<b>Middle Fork John Day Reach 1</b>	-	-	-	-	-
Percent of reach within Pasture	78.8	-	-	-	-	-
Pasture Name	Bear Creek Unit G					
Survey Date	2008 (Jul 28)	-	-	-	-	-
<b>Site ID</b>	-					
<b>Sample Type</b>	-	-	-	-	-	-
6 <sup>th</sup> Field HUC	170702030301	-	-	-	-	-
<b><i>Ave Wetted Width (feet)</i></b>		-	-	-	-	-

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<b>Ave Wetted Width to Depth (riffles)</b>	-	-	-	-	-	-
<b>Ave Bankfull Width (feet)</b>	64.0	-	-	-	-	-
<b>Ave BKFL W/D</b>	19.5	<10 <sup>6</sup>	<10 <sup>6</sup>	<10 <sup>7</sup>	10-12 <sup>7</sup>	>12 <sup>7</sup>
<b>Av Gradient (%)</b>	0.5	-	-	-	-	-
<b>Residual Pool Depth (feet)</b>	2.0	-	-	-	-	-
<b>Pool Frequency (#/mi)</b>	0.6	96 <sup>2</sup> 56 <sup>3</sup> 47 <sup>4</sup> 26 <sup>5</sup>	75-132 <sup>2</sup> 38-66 <sup>3</sup> 30-53 <sup>4</sup> 15-26 <sup>5</sup>	Meets pool freq & LWD recruitment standards channel width # pools/mile 5 feet 184 10 " 96 15 " 70 20 " 56 25 " 47 50 " 26	Meets pool freq standards but not LWD recruitment	Does not meet pool freq standards
<b>Pool Quality</b>	1.0	-	-	Pools >1m (3.28ft) deep, good cover, cool water, minimal filling	Few >1m pools or inadequate cover/temp, moderate filling	No >1m pools & inadequate cover/temp, major filling with sediment
<b>Percent Pools</b>	3.3	-	-	-	-	-
<b>D50 (mm), or Dominant Substrate &amp; Embeddedness</b>	30.0	-	Embedded <=20%	Dominant substrate gravel (2-64 mm) or cobble (64-256 mm) (interstitial spaces clear), or embeddedness <20%	Gravel or cobble subdominant, or embeddedness 20-30% if dominant	Bedrock, sand, silt, or small gravel dominant, or embeddedness >30% if gravel or cobble dominant

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<b><i>Pct Fines &lt;2 mm in Riffles (R) or Pool Tails (P)</i></b>	<2%	-	-	<12% fines <sup>8</sup> in gravel	12-20% fines <sup>8</sup> in gravel	>20% fines <sup>8</sup> in gravel
<b><i>Percent Stable Banks (CS &amp; FB)</i></b>	>80%	>80	>90	>90% stable	80-90% stable	< 80% stable
<b><i>Percent Stable Banks (CS, FB, US)</i></b>	-	-	-	-	-	-
<b><i>Percent Undercut Banks</i></b>	-	>75	50-75% undercut <sup>9</sup>	-	-	-
<b><i>Large Wood Frequency (#/mi)<sup>14</sup></i></b>	3.5	>20 <sup>13</sup>	20-70 <sup>10</sup> 80-120 <sup>11</sup> 100-350 <sup>12</sup>	>20 <sup>13</sup> and adequate sources for recruitment	>20 but lacks recruitment to maintain	<20 and lacks recruitment
<b><i>Percent Shade/Canopy Closure</i></b>	5%	-	40-55 <sup>15</sup> 50-65 <sup>16</sup> 60-75 <sup>17</sup> 80 <sup>18</sup>	-	-	-
<b><i>Dominant Overstory</i></b>	Ponderosa pine	-	-	-	-	-
<b><i>Greenline Wetland Rating</i></b>	-	-	-	-	-	-
<b><i>Greenline Woody Cover</i></b>	-	-	-	-	-	-
<b><i>Off-channel Habitat &amp; Refugia</i></b>	0.0	-	-	Low energy backwaters & side channels	Some backwaters & high energy side channels	Few or no backwaters
<b><i>Physical Man-made Barriers<sup>19</sup></i></b>	0	-	-	Any in watershed allow passage @ all flows	Any don't allow passage @ base	Any don't allow passage @ range of flows

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Notes: **1)** All PIBO data units converted from metric to English except for mm measurements; **2)** Channels of <10 feet in width; **3)** Channels of >10 to 20 feet in width; **4)** Channels of >20 to 25 feet in width; **5)** Channels of >25 to 50 feet in width; **6)** Criteria is for wetted W/D ratio; **7)** Criteria is for bankfull W/D ratio; **8)** Fines defined as <0.85mm in gravel; **9)** In non-forested systems with 2% or less gradient; **10)** In Ponderosa pine ecosystems (at least 12 inches in diameter and 20% > 20 inches in diameter; and at least 35 feet long or 1.5 times bankfull width); **11)** In mixed conifer ecosystems (at least 12 inches in diameter and 20% > 20 inches in diameter; and at least 35 feet long or 1.5 times bankfull width); **12)** In Lodgepole pine ecosystems (at least 6 inches in diameter and 10% > 12 inches in diameter; and at least 18 feet long or 1.5 times bankfull width); **13)** LWD defined as >12 inch diameter and > 35 ft length; **14)** Stream surveys conducted in 1995 and earlier **a)** included not only LW material within the bankfull channel, but also leaning trees that have the potential to fall into the stream, and **b)** included a “Brush” LWD category that is not considered functional LWD as per Amendment 29 DFCs and the MPI unless in Lodgepole Pine ecosystems. Stream surveys conducted in 1996 and later **a)** only included trees actually within the bankfull channel interacting with stream flow during bankfull conditions, and **b)** included a “Small” LWD category that is not considered functional LWD as described above; **15)** In Ponderosa pine ecosystems; **16)** In mixed conifer ecosystems; **17)** In Lodgepole pine ecosystems; **18)** In hardwood/meadow complexes; **19)** Culvert barrier data from MNF Culvert Assessment GIS layer.