

2019 Rinearson Monitoring Annual Report

Rinearson Natural Area

August 27, 2020



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1.0	6/22/2020	First Draft	Daniel Elefant, PE	Gary Howard
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Cover Photo: Rinearson Natural Area 2019, Gary Howard

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1 Introduction

This report documents maintenance efforts completed at the Rinearson Natural Area (Rinearson) during 2019 or “Year 1” as defined in the project’s Habitat Development Plan (HDP). Cardno was hired by Columbia Restoration Group on October 25, 2019, to document maintenance efforts and coordinate and complete monitoring per the HDP. Since Cardno was late to the table in 2019, the group made the decision to combine both Year 1 (2019) and Year 2 (2020) monitoring efforts. Cardno is fully on schedule to complete the monitoring effort as such. What follows is a detailed account of 2019 maintenance activities that occurred on the site as documented in the 2018/2019 Maintenance Log (the Log), which is provided in Appendix A (2019 Maintenance Log). Note that the Log contains some but not all of the construction and maintenance activities for 2018. The log does contain a full list of all work completed at Rinearson in 2019.

This report Version 2.0 addresses the comments received from the Trustees Council dated 7/29/2020 and includes a new Appendix E which details the adaptive management actions that are occurring for 2020 accomplished by the Contractor, Ash Creek. Furthermore, Appendix B has been updated to show the list of actively managed invasive species and not just the complete list as was given in the HDP.

2 2018 & 2019 Maintenance

2.1 Winter 2018 and 2019 Phase II Planting

Beginning in December of 2018 and ending in February of 2019, a large Phase II planting effort was undertaken at Rinearson. This effort was contracted to Ash Creek Forest Management, LLC. The crews installed 5,700 bare-root plantings and 5,030 live cuttings. The following is a comprehensive list of the new plantings:

Bare-root Plants	Live Cuttings
▪ <i>Fraxinus latifolia</i> /Oregon ash	▪ <i>Salix rigida</i> /Mackenzie willow
▪ <i>Malus fusca</i> /Western crabapple	▪ <i>Salix fluviialis</i> or <i>Spirea douglasii</i> /Columbia River willow
▪ <i>Philadelphus lewisii</i> /Mock orange	▪ <i>Salix sitchensis</i> /Sitka willow
▪ <i>Symphoricarpos albus</i> /Snowberry	▪ <i>Salix lasiandra</i> /Pacific willow
▪ <i>Rosa pisocarpa</i> /Swamp rose	▪ <i>Cornus sericea</i> /Red osier dogwood

Figure 1 shows the Rinearson site prior to Phase II planting efforts, and Figure 2 shows the site after all new plantings were installed. The new plantings covered an area of about 1 acre. In spring of 2019, it was observed that many of the new plantings were being harvested by beavers as both forage and dam building material (Figure 3).



Figure 1 July 16, 2018, Google Earth aerial of the Rinearson Natural Area prior to Phase II planting efforts of winter 2018/2019.



Figure 2 May 8, 2019, Google Earth aerial of the Rinearson Natural Area after the Phase II planting efforts of winter 2018/2019. The green polygon shows approximate extents of the Phase II planting.



Figure 3 Spring 2019 photograph showing Phase II plantings with signs of new leaf formation and browse effects.

2.2 Invasive Species Control

Invasive species were controlled at the Rinearson site throughout 2019. The types of invasive species encountered at Rinearson are documented in Appendix F of the HDP and provided here for ease of reference in Appendix B (Invasive Species List). According to personnel who worked at Rinearson during the control efforts, 98 percent of hand-weeding efforts focused on control and removal of Himalayan blackberry (*Rubus armeniacus*). For dates, times, and personnel efforts involved, please refer to the Log in Appendix A.

In addition to hand weeding, spraying of herbicides was conducted at Rinearson to control invasives. The following are the chemicals and additives including trade names that have been used over the course of the project; all are approved for aquatic use in Oregon:

- > Garlon 3A is an amine solution of triclopyr, which is a broadleaf selective treatment. It was mostly used for control of Himalayan blackberry.
- > Rodeo is an aquatic formulation of glyphosate. This was used for control of grasses, yellow flag iris, and other minor weeds.
- > The Habitat brand of Imazapyr is a broad-spectrum herbicide used for pre-emergent control. This was used to treat knotweed.
- > Competitor is a vegetable oil-based surfactant used for improved spray coverage.
- > Hi-Light is a blue marking dye that was used to mark areas that had been sprayed.

Figure 4 shows a closer view of one area that was planted in 2017 and received hand weeding and spray treatments for invasive species control in 2019.



Figure 4 Closer view of 2017 plantings as visible in the May 8, 2019, Google Earth aerial of the Rinearson Natural Area. The 2017 plantings are visible as rows of dots in the beige area and were sprayed and hand weeded in 2019 for invasive species control.

2.3 Log Structure Maintenance

In 2019, log structures were maintained by hand as described in the Log (Appendix A). Beavers had eaten and removed the vertical log members that functioned as ties. Beavers used those “ties” to construct dams at the site. Figure 5 shows the log structures with verticals gone prior to 2019 maintenance. In October of 2019, crew members re-installed vertical log pieces by hand using post pounders. Results of the maintenance effort are shown in Figure 6, with new crossing vertical “tie” logs brightly colored and freshly purchased. During 2019 maintenance, all log structures were located per the original intent of their design as documented in Appendix C (2018 Log Structure Engineering Plans).



Figure 5 Log structures in 2019 prior to maintenance activities.



Figure 6 Log structures with completed maintenance showing new “ties” and crossing vertical logs brightly colored and freshly purchased. The new vertical members were installed by hand to avoid impacts to the wetland.

3 Monitoring

3.1 General Observations

As stated in the introduction, formal HDP monitoring efforts for Year 1 are currently being completed in conjunction with 2020 efforts. In fact, an interim 2020 monitoring report has been created and can be submitted if requested. That said, observations were completed on the ground in 2019. For example, bald eagles and extensive beaver use were documented on the site as shown in Figure 7. Beavers were physically observed using the large pond in January of 2019 via visual inspection and binoculars. Furthermore, in August 2019, mink were observed living in the constructed wood pile closest to the constructed roughened channel. No beaver dams were manipulated or removed in any way during 2019. The Sponsor is not aware of any beaver related management activities by private landowners or the City of Gladstone. The maintenance contractors have not documented any trash removal in their maintenance logs, but they’ve made verbal confirmation that only nominal (small) amounts of trash were removed when on site. Trash is not considered a current problem for the site and will be removed when encountered in the future.



Figure 7 Photograph at left showing one of many examples of documented use of the Rinearson Natural Area by bald eagles in 2019. Photograph at right taken in August 2019 showing a beaver dam at the upper end of the project near the upstream most constructed log structures. As of June 17, 2020, this dam still exists as do several others.

3.2 Headcut Monitoring

Headcuts were monitored at the Rinearson site on July 17, 2019, and again on April 3, 2020. Figure 8 shows the locations of both headcut monitoring efforts as originally reported to Lauren Senkyr of the National Oceanic and Atmospheric Administration (NOAA) Federal for both of those dates. The headcuts had no movement horizontally over these 2 years. Original headcut monitoring efforts were communicated per Appendix D (Headcut Documents). Both headcuts (#1 and #2) decreased in height. As of May 2020, the original channel that had formed the headcuts had dispersed flow across the entire width of the large pond due to beaver activity. Hence, the headcuts have partially filled with sediment and, most likely, will continue to do so.



Figure 8 Locations of headcuts #1 and #2 did not change from July 17, 2019, to April 3, 2020. Their vertical height was reduced in size.

4 2020 Adaptive Management

4.1 2020 Activities

Appendix E contains an updated list of adaptive management activities that have already occurred for 2020 (Year 2). Invasive species management continues and the appendix gives a detailed list of managed species and removal counts. The Sponsor will continue to use a combination of herbicide, manual, and mechanical treatment depending upon the target species and location. They will evaluate whether vegetative growth on the beaver dam at the pond outlet is native or non-native. If non-native, the Sponsor will manually remove non-native species. Furthermore, the Sponsor will manage turtle habitat in coordination with Susan Barnes (ODFW); however, the Sponsor will take a measured approach to any further and significant habitat changes and improvements. The Sponsor will not access northern areas of the Site since plantings and aquatic habitat would be disturbed unnecessarily.

The Sponsor has agreed with The Trustees Council not to disturb beaver dams in any way and to observe the site for any changes to beaver dam locations by private landowners or others. The Sponsor plans to remove and dispose of any remaining erosion control netting.

About Cardno

Cardno is an ASX-200 professional infrastructure and environmental services company, with expertise in the development and improvement of physical and social infrastructure for communities around the world. Cardno's team includes leading professionals who plan, design, manage, and deliver sustainable projects and community programs. Cardno is an international company listed on the Australian Securities Exchange [ASX:CDD].

Cardno Zero Harm

Cardno
ZERO
HARM
EVERY JOB. EVERY DAY.

At Cardno, our primary concern is to develop and maintain safe and healthy conditions for anyone involved at our project worksites. We require full compliance with our Health and Safety Policy Manual and established work procedures and expect the same protocol from our subcontractors. We are committed to achieving our Zero Harm goal by continually improving our safety systems, education, and vigilance at the workplace and in the field. Safety is a Cardno core value and through strong leadership and active employee participation, we seek to implement and reinforce these leading actions on every job, every day.

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APPENDIX

A

2019 MAINTENANCE LOG

2019 Maintenance Log

Date Range	Task	Equipment	Comments
2018			
6/25/18-7/1/18	Large rock and large uplant log structure	Excavator placement	Note that 2018 activities listed are not comprehensive as this is intended as a 2019 log
7/9/18-7/15/18	Work on large upland habitat log structures	Excavator placement	
7/30/18-8/5/18	Work on large upland habitat log structures	Excavator placement	
8/13/18-8/19/18	Haul, fish rescue, trucking	Fish capture by contractor with seine nets (30ft), salmonids returned to willamette, non-native fish were euthanized (blue gill and gold fish).	
8/27/18-9/2/18	Work on slashpile and rocks	Excavator placement in upland	
10/10/2018 to November 12, 2018	Log and rock structures, clear paths, removed turtle nets	logs place by hand, posts pounded by hand, and tied by hand (6 to 12" diameter, varied length 8' to 12ft. Rock placed with mini excavator Caterpillar 305: see volume on plans (~20CY per structure)	
12/10/18-12/16/18	Build fence		
2019			
Dec 2018 to Jan 2019	Replanting: 5700 bareroot and 5030 cuttings	See planting list in 2019 Annual Report	Ash Creek Forest Management, LLC.P.O. Box 231208 Tigard, OR 97281-1208, (503) 624-0357, ar@ashcreekforestry.com
Month of January 2019	Beaver Observation	binoculars and visual inspection	Beaver was in the pond swimming, den in the lower pool in Cornel's bank (north), also den in the upper pond (north side bank den) within upper extents of construction
Month of March 2019	Spraying rounds	Backpack sprayers, 2 people, sometimes 4 people (8hrs/day). Spray list pending (type and concentration). Lunch breaks at 11:30. 2 to 4 days.	
Month of May 2019	Spraying rounds	Backpack sprayers, 2 people, sometimes 4 people (8hrs/day). Spray list pending (type and concentration). Lunch breaks at 11:30. 2 to 4 days.	
9/2/19-9/9/19	Spray and pull weeds	2018/2019 areas were sprayed, 2017./2018 plantings were hand weeded. 99% Himalayan Blackberry. Backpack sprayers, 2 people, sometimes 4 people (8hrs/day). Spray list pending (type and concentration). Lunch breaks at 11:30. 2 to 4 days.	
Month of October 2019	Spray and pull weeds	2018/2019 areas were sprayed, 2017./2018 plantings were hand weeded. 99% Himalayan Blackberry	
Month of October 20119	Log structure mainitenance	By hand in the "swamp." Redrive wooden stakes that were holding the logs with posthole driver. Beavers had chewed off vertical posts. Retied down. These were called "pseudo-beaver-dams." When beavers chewed off verticals, they built dams out of these verticals.	
Month of August2019	Mink observations	binoculars and visual inspection	Observed to live in the woodpile closest to rock hardened channel
2019	Beaver dams not maintained in 2019	none	Columbia Restoration Group and all associated contractors did not maintain beaver dams in any way
2020	Beaver dams not maintained in 2020	none	Columbia Restoration Group and all associated contractors did not maintain beaver dams in any way

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INVASIVE SPECIES LIST

Actively Managed Invasive Species for 2019 and 2020 (Years 1 and 2)

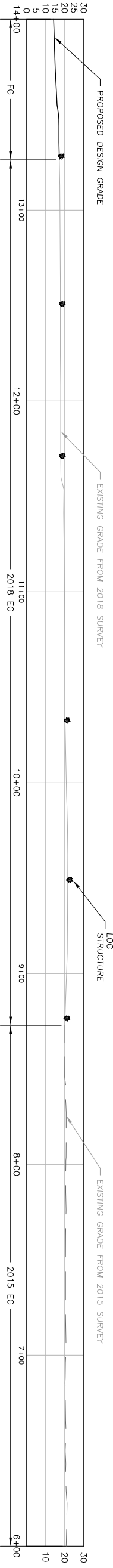
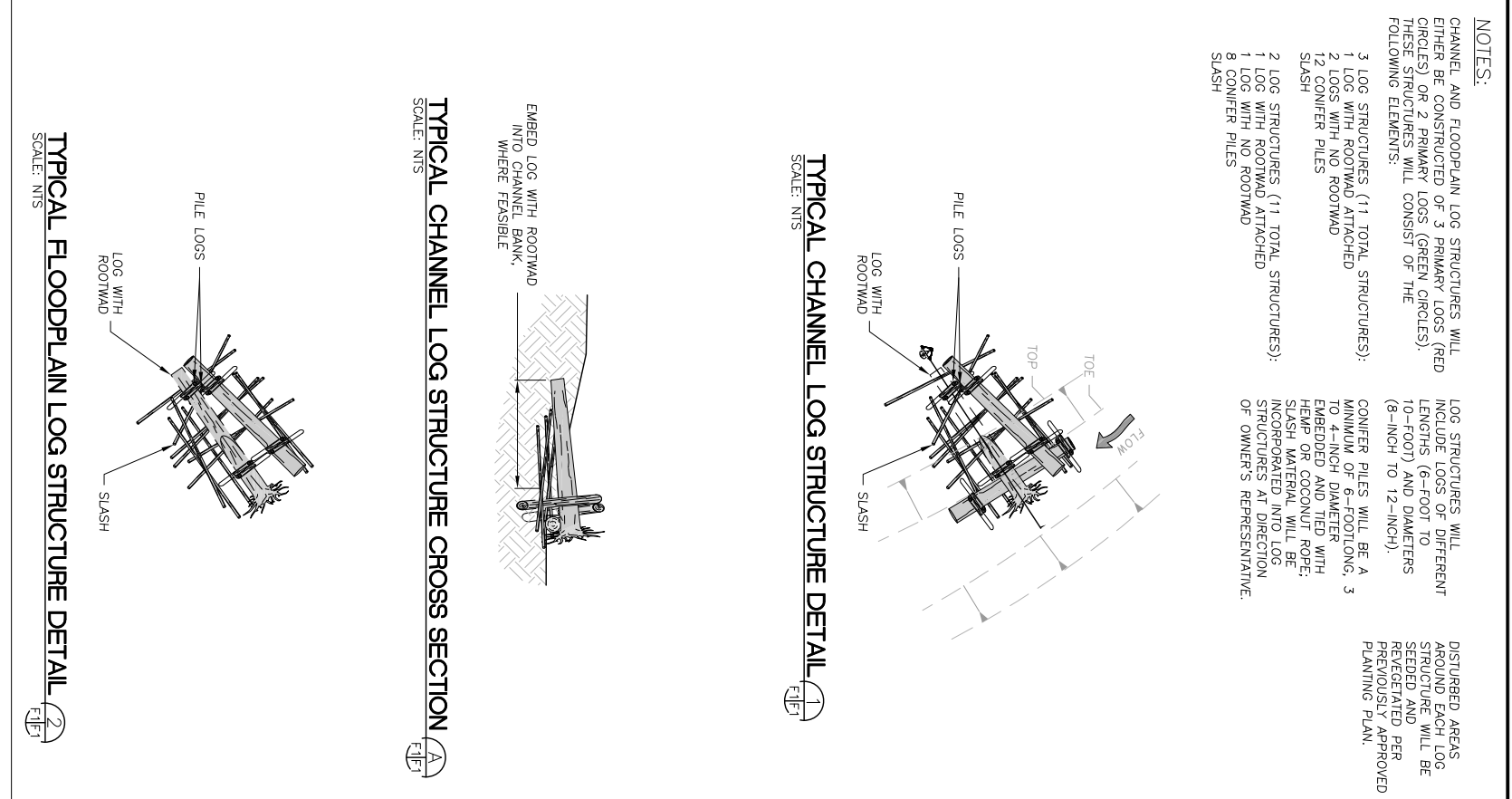
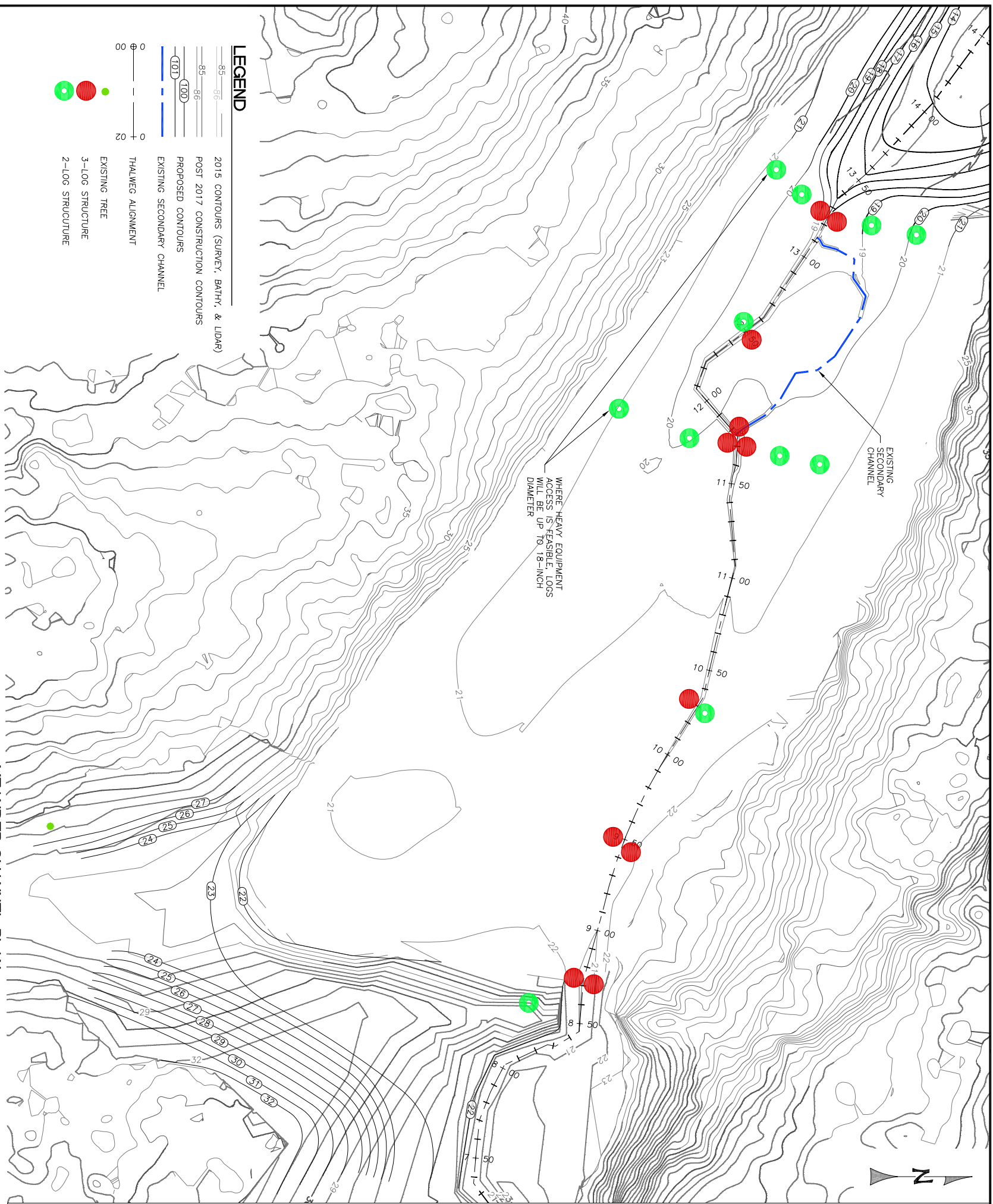
1. *Senecio jacobaea*, Tansy Ragwort
2. *Tanacetum spp.* Dune Tansy
3. *Dipsacus fullonum*, Teasel
4. *Cirsium arvense*, Canada Thistle
5. *Cirsium vulgare*, Bull Thistle
6. *Lythrum salicaria*, Purple Loosestrife
7. Chicory
8. *Verbascum thapsus*, Common Mullein
9. *Buddleja (Buddleia) davidii*, Butterfly Bush
10. *Hedera helix*, English Ivy (trees)
11. *Rubus armeniacus*, Himalayan blackberry

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2018 LOG STRUCTURE
ENGINEERING PLANS



RINEARSON NATURAL AREA RESTORATION PROJECT
MEANDER CHANNEL 2018 EXISTING AND PROPOSED CONDITIONS
JUNE 22, 2018

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HEADCUT DOCUMENTS

Columbia Restoration Group
1061 NE 9th Ave. Ste. 106
Portland, Oregon 97232

To: Lauren Senkyr
From: Gary Howard

Rinearson Project
Current location of Headcuts 1 and 2 as of July 17, 2019. Please see coordinates, and headcuts height below.



Headcut #1
45° 22' 46.13" N
122° 36' 49.14 W
18 inches in Height

Headcut #2
45° 22' 46.27" N
122° 36' 49.09" W
14 inches in Height

Please contact me if you have any questions.

Gary

Gary Howard
Columbia Restoration Group
gary@columbiarestorationgroup.com

Columbia Restoration Group
1061 NE 9th Ave. Ste. 106
Portland, Oregon 97232

To: Lauren Senkyr
From: Gary Howard

Rinearson Project
Current location of Headcuts 1 and 2 as of April 3, 2020. Please see coordinates, and headcut height below.



Headcut #1
45° 22' 46.13" N
122° 36' 49.14 W
14 inches in Height

Headcut #2
45° 22' 46.27" N
122° 36' 49.09" W
9 inches in Height

Please contact me if you have any questions.

Gary

Gary Howard
Columbia Restoration Group
gary@columbiarestorationgroup.com

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E

2020 Adaptive Management Maintenance

ASH CREEK WEEKLY STATUS REPORT

Week of: 7/20/20, 7/27/20

- 1) **Date:** 7/21/20 **Site:** Rinearson
Total Hours: 64
Crew Members: Nick Lewis, Bryant Young, Chris Conrad, Parker Steele, Logan Insinga, Emma Davis, Holden Jones, David Okert (8)

Equipment: Hand snips, contractor bags

Activity Notes (species treated, estimated # of plants treated, methods, etc.):
Deadhead and bag inflorescences. Grid site focusing on large Loosestrife and Tansy patches

Estimates:

Tansy Ragwort 400
Dune Tansy 50
Teasel 150
Canada Thistle 100
Bull Thistle 200
Purple Loosestrife 36,000 – 50,000
Chicory 75
Common Mullein 50
Butterfly Bush 15
English Ivy (trees) 5

Treatment Maps:



Photos:

ASH CREEK WEEKLY STATUS REPORT



ASH CREEK WEEKLY STATUS REPORT



2) Date: 7/22/20

Site: Rinearson

Total Hours: 80

Crew Members: Nick Lewis, Bryant Young, Chris Conrad, Parker Steele, Logan Insinga, Emma Davis, Holden Jones, Zach Vande Slunt, Kyle Sorenson, Daniel Baik (10)

Equipment: Hand snips, contractor bags

Activity Notes (species treated, estimated # of plants treated, methods, etc.):

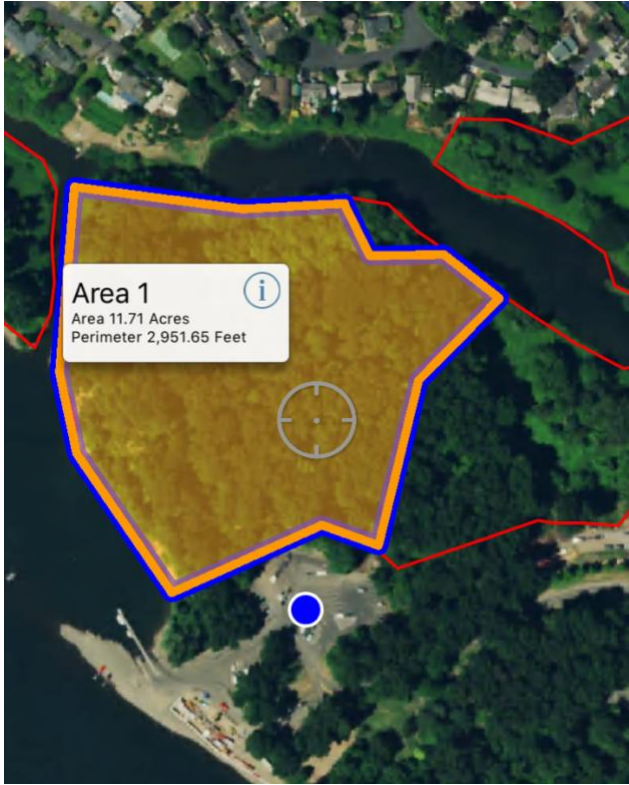
Deadhead and bag inflorescences.

Estimates (total):

Tansy Ragwort 2000
Dune Tansy 50
Teasel 250
Canada Thistle 350
Bull Thistle 350
Purple Loosestrife 100
Chicory 500
Common Mullein 50
Butterfly Bush 50
English Ivy (trees) 20

ASH CREEK WEEKLY STATUS REPORT

Treatment Maps:



Photos:

ASH CREEK WEEKLY STATUS REPORT



ASH CREEK WEEKLY STATUS REPORT



ASH CREEK WEEKLY STATUS REPORT

3) Date: 7/23/2020

Site: Rinearson

Total Hours: 53

Crew Members: Nick Lewis (5hr), Bryant Young, Chris Conrad, Logan Insinga, Emma Davis, Holden Jones, David Okert

Equipment: Hand Snips, Contractor bags

Activity Notes (species treated, estimated # of plants treated, methods, etc.):

Deadhead and bag inflorescences.

Estimates:

Tansy Ragwort 3000

Dune Tansy 3

Teasel 60

Thistle 3000

Purple Loosestrife 15

Chicory 40

Common Mullein 30

Butterfly Bush 5

English Ivy (trees)0

Treatment Maps:



ASH CREEK WEEKLY STATUS REPORT

Photos:



ASH CREEK WEEKLY STATUS REPORT



ASH CREEK WEEKLY STATUS REPORT



4) Date: 7/24/20
Total Hours: 40.5

Site: Rinearson

ASH CREEK WEEKLY STATUS REPORT

Crew Members: Nick Lewis, Spencer Hansen, Scott Brennan, Justine Brumm, Joe Dahlke, Theodore Peterschmidt, Owen Phinney, Olivia Barnes

Equipment: Hand snips, contractor bags

Activity Notes (species treated, estimated # of plants treated, methods, etc.):
Deadhead and bag inflorescences in large dense Teasel patch.

Estimates:

Teasel 12,768-22,344 (4-7 per ft²)

Chicory 75

Treatment Maps:



Photos:

ASH CREEK WEEKLY STATUS REPORT



ASH CREEK WEEKLY STATUS REPORT



5) Date: 7/27/20

Site: Rinearson

Total Hours: 96 hrs

Crew Members: Heather Tippit (6hr), Justine Brumm (1hr), Kyle Gibbs, Bryant Young, David Okert, Holden Jones, Logan Insigna, Emma Davis, Parker Steele, Owen Phinney, Joe Dahlke, Teddy Peterschmidt, Lauren Swett, Daniel Baik (12)

Equipment: Hand Snips, contractor bags

Activity Notes (species treated, estimated # of plants treated, methods, etc.): Deadhead and bag inflorescences of Teasel, Tansy, Thistle, Mullein, Butterfly Bush, and Purple Loosestrife

Estimates:

Teasel - 8,200

Thistle - 350

Tansy - 25

Mullein - 100

Butterfly Bush - 20

Purple Loosestrife – 0

Treatment Maps:

ASH CREEK WEEKLY STATUS REPORT



Photos:

ASH CREEK WEEKLY STATUS REPORT



ASH CREEK WEEKLY STATUS REPORT



ASH CREEK WEEKLY STATUS REPORT

6) Date: 7/28/20

Site: Rinearson

Total Hours: 97

Crew Members: Logan, Bryant, Emma, Parker, Holden, David, Owen, Theodore, Joseph, Kyle, Daniel, Justine

Equipment: hand snips, contractor bags

Activity Notes (species treated, estimated # of plants treated, methods, etc.):

Thistle -800

Tansy-130

Butterfly bush- 60

Teasel- 4300

Purple loosestrife- 400

Mullen- 300

Treatment Maps:



Photos:

ASH CREEK WEEKLY STATUS REPORT



ASH CREEK WEEKLY STATUS REPORT



ASH CREEK WEEKLY STATUS REPORT



ASH CREEK WEEKLY STATUS REPORT



ASH CREEK WEEKLY STATUS REPORT



ASH CREEK WEEKLY STATUS REPORT

7) Date: 7-29-20

Site: Rinearson

Total Hours: 105

Crew Members: Bryant Young, David Okert, Holden Jones, Logan Insigna, Emma Davis, Parker Steele, Owen Phinney, Joe Dahlke, Teddy Peterschmidt, Daniel Baik, Zach Vandeslunt, Drake Kutkat-Tonkin, Kyle Sorensen, Nick Lewis, Kyle Gibbs

Equipment: handsnips and contractor bags

Activity Notes (species treated, estimated # of plants treated, methods, etc.):

Cut and bag seed heads and inflorescences.

3,000 tansy

10,000 teasel

2000 purple loosestrife

5 butterfly bush

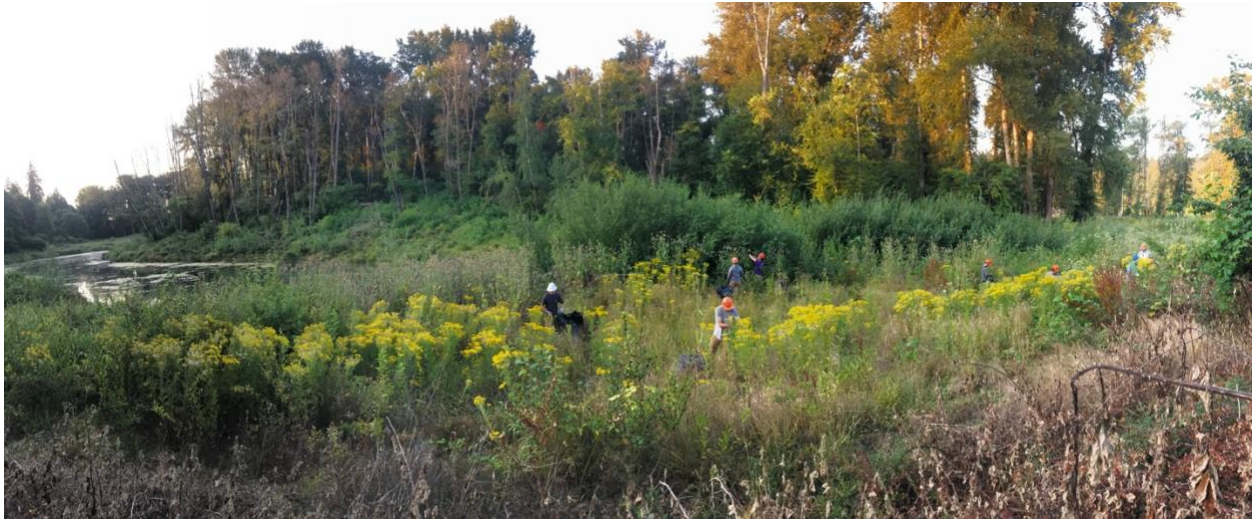
200 Mullen

Treatment Maps:



Photos:

ASH CREEK WEEKLY STATUS REPORT



About Cardno

Cardno is an ASX-200 professional infrastructure and environmental services company, with expertise in the development and improvement of physical and social infrastructure for communities around the world. Cardno's team includes leading professionals who plan, design, manage, and deliver sustainable projects and community programs. Cardno is an international company listed on the Australian Securities Exchange [ASX:CDD].

Cardno Zero Harm

Cardno
**ZERO
HARM**
EVERY JOB. EVERY DAY.

At Cardno, our primary concern is to develop and maintain safe and healthy conditions for anyone involved at our project worksites. We require full compliance with our Health and Safety Policy Manual and established work procedures and expect the same protocol from our subcontractors. We are committed to achieving our Zero Harm goal by continually improving our safety systems, education, and vigilance at the workplace and in the field. Safety is a Cardno core value and through strong leadership and active employee participation, we seek to implement and reinforce these leading actions on every job, every day.