Wetland and Riparian Enhancement Project

(COL-F20-W-3017-DCA)

2019-20 (F20) Activity Report

1 April 2019 to 31 March 2020

Prepared for: Fish & Wildlife Compensation Program

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Ministry of Forests, Lands, Natural Resource Operations and Rural Development, Resource Management (FWCP – Section)

Prepared with financial support from the Fish & Wildlife Compensation Program, on behalf of its program partners BC Hydro, the Province of B.C., Fisheries and Oceans Canada, First Nations and Public Stakeholders

Date: 15-June-2020

Executive Summary

For the F20 fiscal year the Annual and Ongoing Wetland and Riparian restoration project completed tasks involving pre and post restoration monitoring and wetland restoration planning. Pre-treatment monitoring was completed at 6 sites within the Six-mile Slough wetland compartment at the Creston Valley Wildlife Management area. Sampling included water and sediment quality, nutrient status, habitat parameters, macroinvertebrate enumeration, macroinvertebrate richness calculations based as well as site-level and whole wetland mapping and classification. Post treatment monitoring was completed at the DL70 wetland restoration complex in Meadow Creek and at CVWMA constructed wetlands. Monitoring included Amphibian Visual encounter surveys, water level monitoring and invasive plant monitoring. Restoration planning was completed for Burgess James Gadsen Provincial park. This large wetland complex also known as Moberley Marsh has seen several habitat modifications through its history and understanding and remediating these modifications can restore wetland habitat and benefit many species.

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1. Introduction

Wetland and riparian habitats were significantly impacted by reservoir footprint habitat losses, support diverse arrays of fish and wildlife species and have high primary productivity and a functional role in the transfer of primary production between terrestrial and aquatic habitats. Given these impacts to these important values the need for FWCP to increase its efforts to compensate and mitigate for wetland habitat losses was identified.

The Wetland Riparian Enhancement Project was added to the Annual and Ongoing wildlife projects in 2014 on the recommendation of the Board and Wildlife Technical Committee in order to increase FWCP's capacity to support and deliver wetland and riparian enhancement project work. The project includes tasks such as; identify candidate restoration sites, compile background information, pre-treatment inventory of sites, complete restoration plans working with a wetland specialist, and develop the partnerships, permits and budgets for implementation of the restoration projects

The Wetland and Riparian Enhancement Project is a component of the annual and ongoing fish and wildlife projects delivered by the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD) through a Letter of Agreement (LoA).

In 2019 -2020 project work was delivered by FLNRORD staff and contractors working in close partnership with project partners including; BC Parks, The BC Wildlife Federation Wetlands program, Nature Trust of BC, Nature Conservancy of Canada, Creston Valley Wildlife Management area, The Lower Kootenay band and the BC Northern Leopard Frog Recovery Team.

2. Goals and Objectives and Linkage of FWCP Action Plans and specific action(s)

Components of the Wetland Restoration project for F20 include the following:

1. Monitoring and Maintenance of wetland restoration projects, includes both pre and post treatment monitoring. Monitoring sites include Six-mile Slough for pre-treatment monitoring and Meadow Creek DL881, DL570 and Creston for Post treatment monitoring.
2. Wetland restoration construction
3. Wetland Restoration Planning - develop wetland restoration plans for priority sites working with wetland experts and project partners

This project addresses the following Priority 1 actions in the Columbia Riparian and Wetland Action plan.

COLWRA.ECO.ME.21.01 Effectiveness monitoring of past projects-P1
Monitor and evaluate the effectiveness of previous FWCP wetland and riparian restoration projects (for monitoring of species see Action #38 below). Include an approach for adaptive management, documenting and assessing ecological conditions and parameters (pre- and post-

restoration), information sharing and collaboration among agencies and the public stakeholders to increase the efficacy of conservation action.

COLWRA.ECO.HB.13.01 Restore and create wetland/riparian habitat-P1
Restore and create wetland and riparian habitat to address impacted, degraded or lost habitat. Where possible collaborate and engage with the community, and upon project completion share information with appropriate regional organizations and agencies.

COLWRA.ECO.HB.12.01 Development of ecosystem restoration plans-P1
Support the development of ecosystem restoration (ER)plans for priority wetland and riparian habitats as per the direction of Action #11. These plans should assess limiting factors, describe opportunities for FWCP investment, guide future work in these areas with specific actions and targets, and describe how results should be monitored. Updates to existing ecosystem plans may be required.

3. Study Area

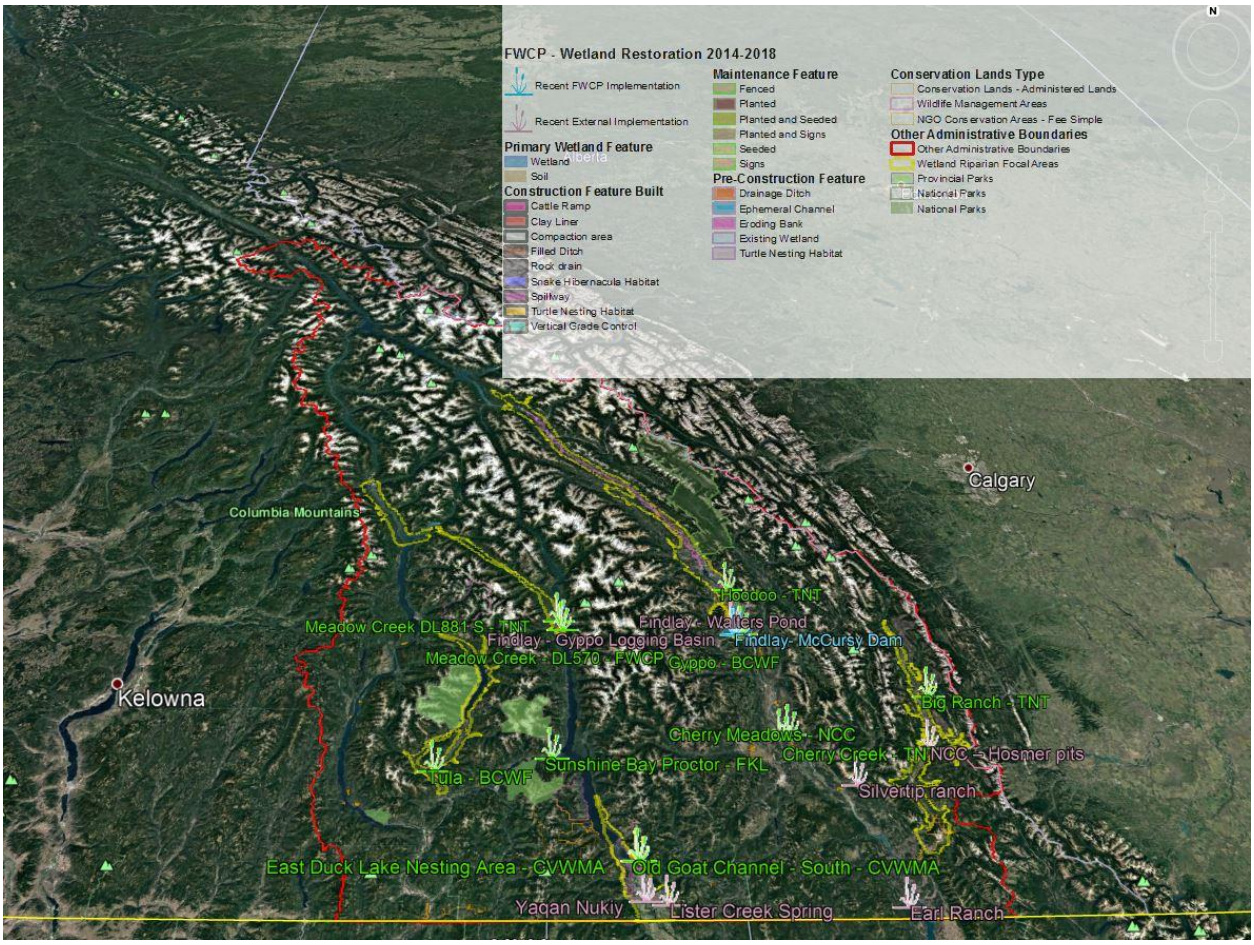


Figure 1: Wetland and Riparian Restoration projects location map.

4. Methods

Project Methods are documented in detail in the technical reports for the project located on the Species Inventory Web Explorer at the following link http://a100.gov.bc.ca/pub/siwe/details.do?projectId=4955&pagerOffset=0

Please refer to the above link for detailed project information.

General methods in 2019 included Spring calling and egg mass surveys to locate egg masses. Following breeding, visual encounter surveys and tadpole surveys are completed to monitor metamorphosis and the status of summer habitats. During the late summer and fall, surveys are completed on migration corridors, roads and overwintering areas. During these surveys captured frogs are implanted with PIT tags to determine population trends and parameters. Genetic samples are also collected to support genetic population studies

5.0 Results and Outcomes

Results for 2019 work are briefly summarized here. Please refer to the specific project report references for more detail.

5.1 Monitoring and Maintenance

Wetland Restoration Monitoring- Six-mile Slough- Pre-treatment monitoring

In 2019, our first year of data collection, we identified reference sites that can be used to compare to trends following changes due to restoration activities in Six Mile Slough over time. Outputs from the project in include evaluations of water and sediment quality, nutrient status, habitat parameters, macroinvertebrate enumeration, macroinvertebrate richness calculations based as well as site-level and whole wetland mapping and classification.

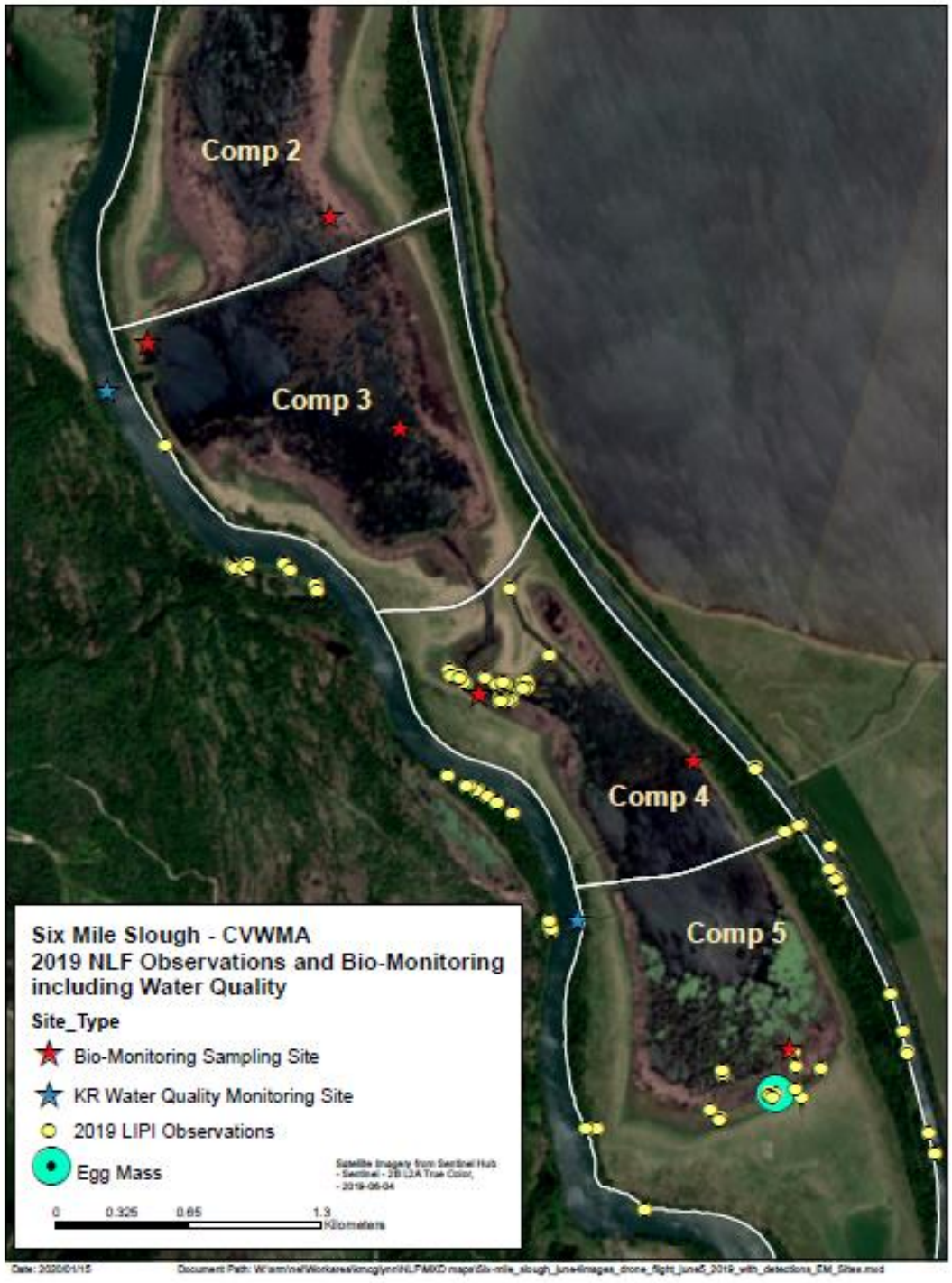
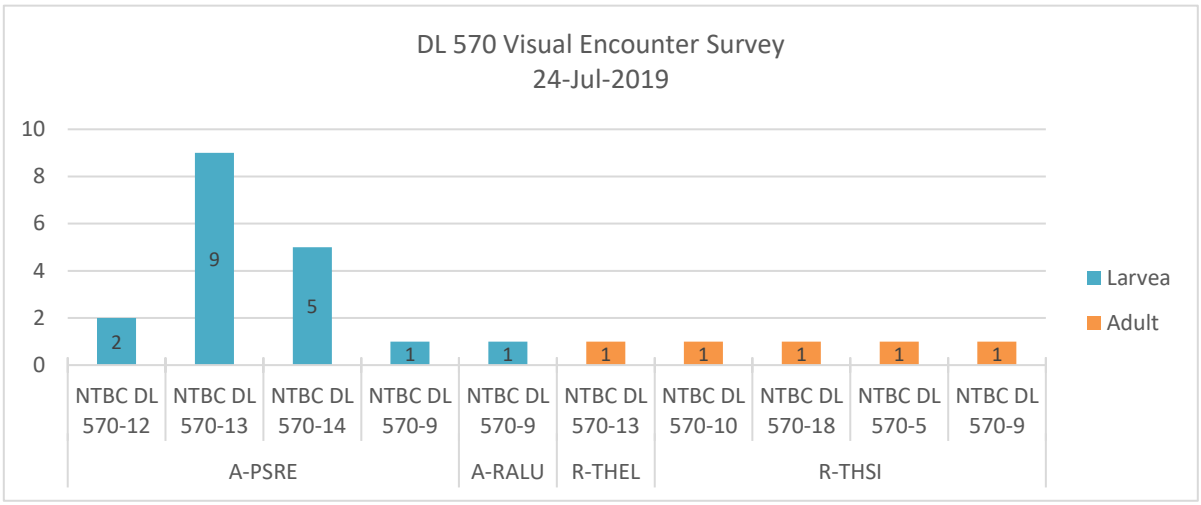


Figure 2: Six -mile Slough Northern Leopard frog observations and sampling locations.

- Four species of reptiles and amphibians were documented at DL570 restored wetlands in July 2019.



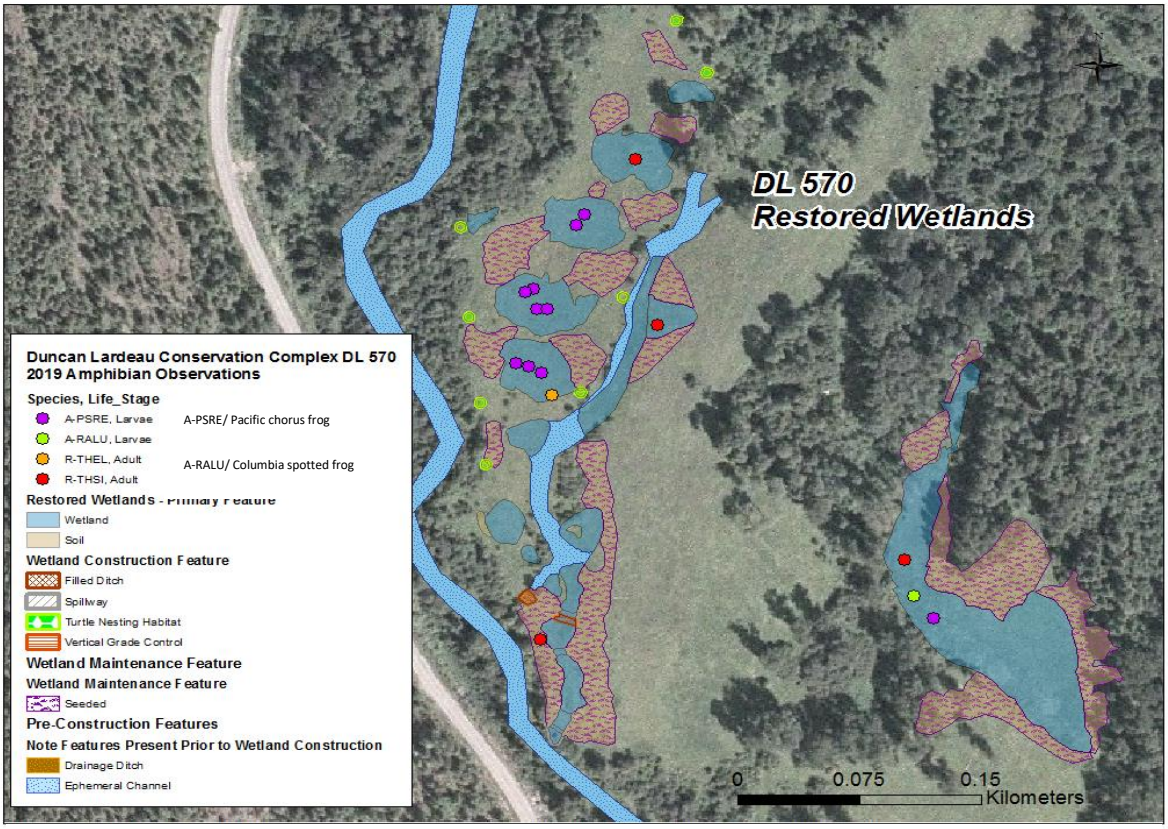


Figure 3: Amphibian detections at DL570 Meadow Creek

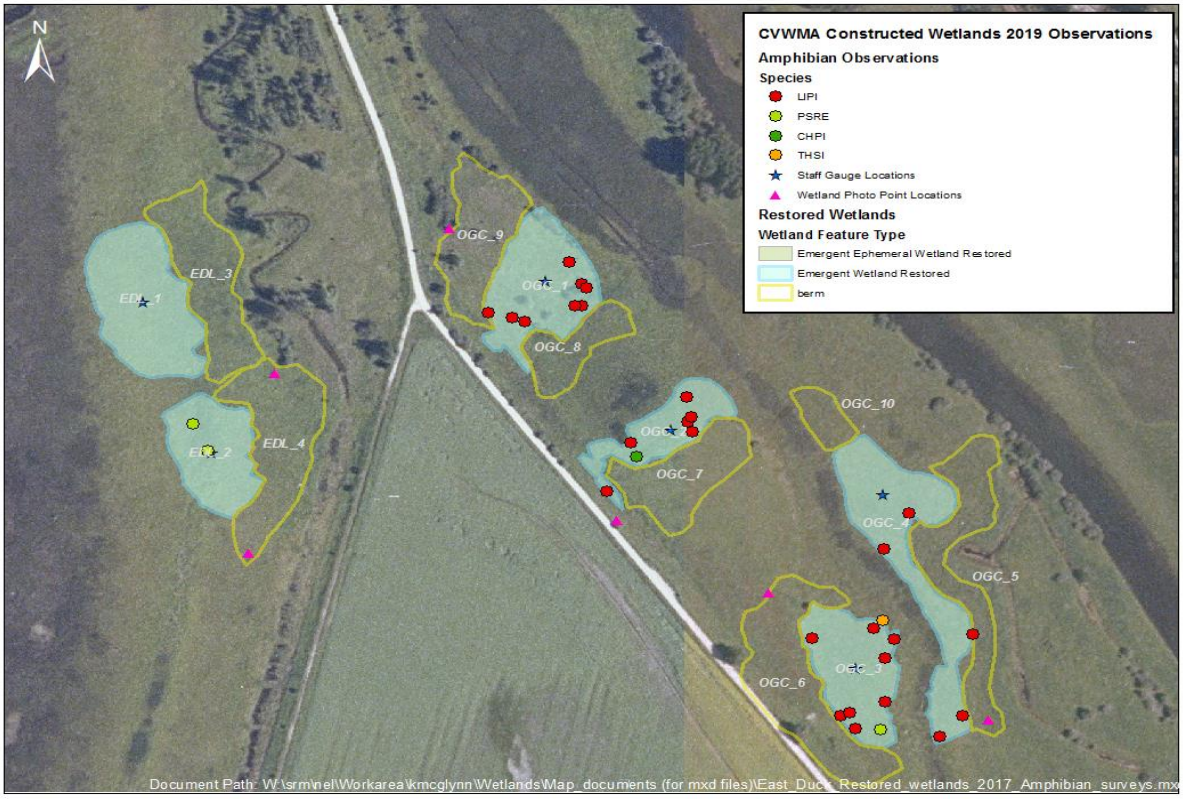


Figure 4: Amphibian locations at Creston restored wetlands

- Four species of reptiles and amphibians were documented at Creston restored wetlands in 2019.
- Northern Leopard Frogs were documented using four of the six constructed wetland pools in 2019

Report References / Deliverables

Pre- restoration biomonitoring of Six Mile Slough. Prepared for BC Forest, Lands Natural Resource Operations and Rural Development and Creston Valley Wildlife Management Area. Prepared by: Darcie Quamme, MSc., R.P.Bio., Integrated Ecological Research, Rhia MacKenzie, MSc. Candidate, BArch., BIT, And Ryan Durand, MSc., R.P.Bio., EcoLogic June 1, 2020.

Summary of Monitoring Activities for FWCP Constructed Wetlands 2019. Prepared by: Katherine McGlynn For Ministry of Forests, Lands and Natural Resource Operations and Rural Development. December 2019

Wetland restoration construction

Wetland Construction was not completed in 2019. We had planned to contribute to a project in the 5-year plan however projects were fully funded from other sources.

Wetland Restoration Planning

Wetland restoration planning for Burgess James Gadsen Provincial Park was completed in an extensive report documenting the history of wetland modifications at the site. The report details how historic water levels, wildlife, and vegetation within Burges James Gadsden Provincial Park may be restored by removing approximately 8.26 km of dikes, filling 14.70 km of ditches and borrow pits, reshaping and restoring natural levees along the Columbia River to restore flooding, and by returning flow from Moberly Creek into the Park. These improvements would require little, if any maintenance and would improve habitat for many species.

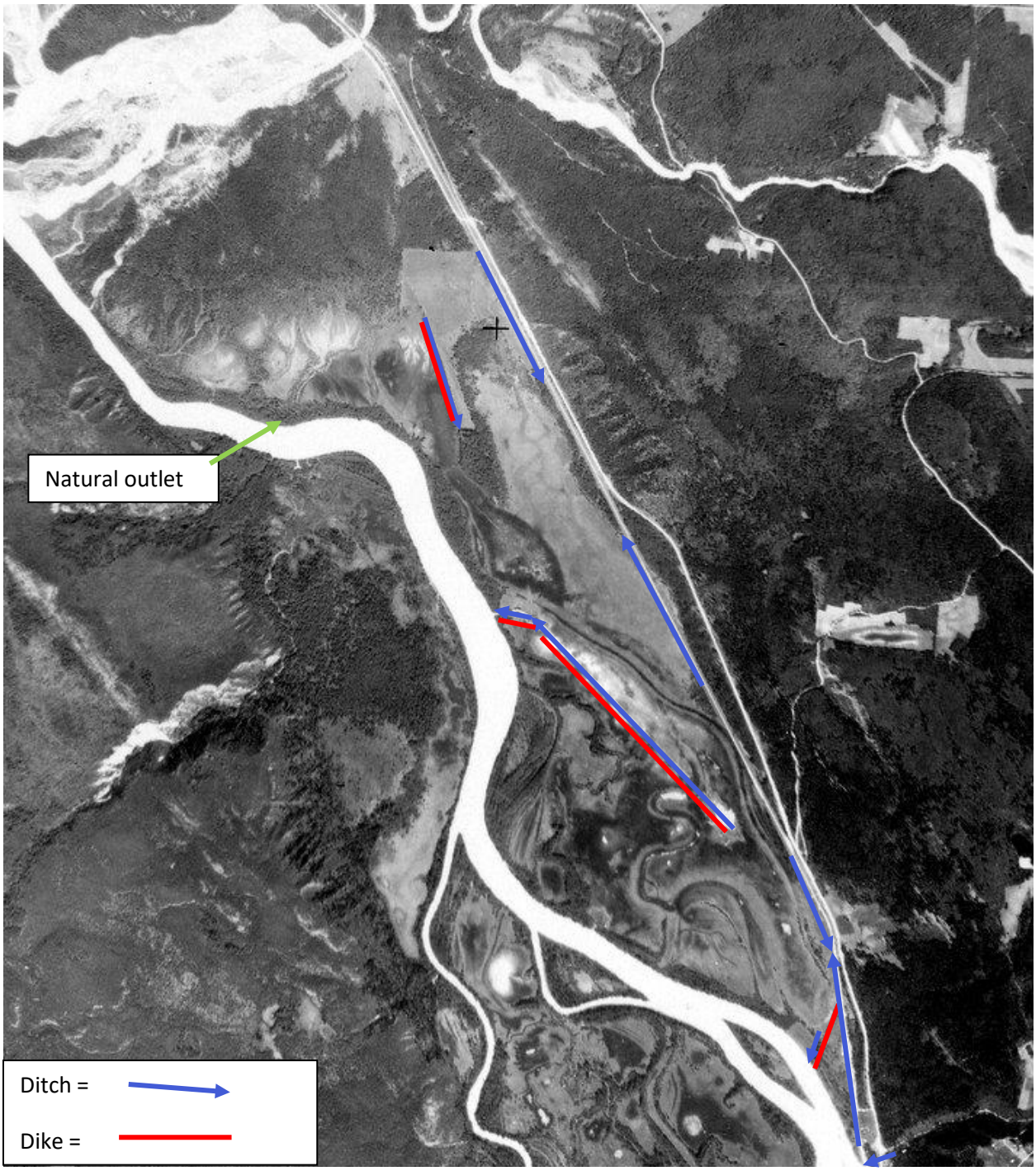


Figure 5: Changes made to Moberly Marsh are shown on this 1949 aerial photograph. The Canadian Pacific Railroad and TransCanada Highway are not marked in this figure.

Report References / Deliverables

Burgess James Gadsen Provincial Park Wetland Restoration Design Plan. Report prepared for BC Parks. Prepared by Thomas R. Biebighauser. July 2019 110 pp

6. Discussion and Recommendations

2019 was the 5th year of the Wetland Restoration Project within the FWCP annual and ongoing program. After several years of implementing restoration projects, the focus has now shifted to planning and monitoring.

Monitoring work has demonstrated great success of constructed projects in providing amphibian breeding habitat. All 4 species of Amphibians have been documented breeding at the Meadow Creek wetland restoration projects on DL 881 and DL570. In Creston the constructed wetlands have been used by Northern Leopard frogs for foraging, but no breeding has been documented to date. Invasive plant issues have been documented on upland polygons of restored wetland sites. Ongoing efforts will be needed to maintain upland areas adjacent to wetlands

2019 was the first year of pre-restoration monitoring at the Six-mile Slough project. Large scale wetland restoration projects like this one will require more intensive pre and post restoration monitoring. Unlike other projects at Creston and Meadow Creek that converted field habitat to wetland, Six-mile Slough is a managed wetland being restored to a more natural functioning wetland. As such pre-restoration monitoring is necessary to understand the current habitat conditions. As wetland restoration work moves towards these more complex large-scale projects more pre and post restoration monitoring will be required.

Wetland restoration planning continues to be a good investment ensuring well designed projects continue in the region. Investing in these shovel ready plans allows project partners to have a head start on securing funding from other available sources.

Successes and Challenges

- Partnerships with First Nations and Non-government organizations have increased the scope of wetland restoration in the Columbia region.
- FWCP funds have successfully leveraged funding form federal and other sources.
- Monitoring has documented that restored wetlands are providing breeding habitat for many amphibian species and other wildlife
- Future wetland restoration projects will be larger in scale and more complex integrating riparian and wetland habitats and connection. Additional professional expertise will be needed for these projects.
- Disturbed soil upland of restoration projects requires ongoing monitoring and maintenance to deter invasive plant in growth

7. Acknowledgements

This project was completed with financial support Fish & Wildlife Compensation Program on behalf of its partners, BC Hydro, the Province of B.C., Fisheries and Oceans Canada, First Nations, and Public Stakeholders to conserve and enhance fish and wildlife in watersheds impacted by BC Hydro dams. Wetland restoration experts Tom Biebighauser and Robin Annschild have guided our project work and we thank them for sharing their expertise and passion for wetland restoration. Thanks also to our many project partners; BC Parks Amanda Weber-Roy, CVWMA Marc Andre Beaucher, BCWF Neil Fletcher, Lower Kootenay Band Norm Allard, Nature Trust BC Chris Bosman and Joe Strong, Nature Conservancy of Canada Richard Klafki and Adrian Leslie.

8. References

Burgess James Gadsen Provincial Park Wetland Restoration Design Plan. Report prepared for BC Parks. Prepared by Thomas R. Biebighauser. July 2019 110 pp

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