# CHILDREN, CARING, AND CONTEMPORARY ENVIRONMENTAL POLITICS ON THE PEACE RIVER

by

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### Abstract

This thesis concerns the place of children within the contemporary politics of environmental change on the Peace River in northeastern British Columbia. Significant environmental controversies exist over the past and possible future hydroelectric development of the river and while children are not central to these, they have to come to be involved through various forms of outreach and education. I consider school units on the proposed 'Site C Clean Energy Project' and a regional stewardship education program in which children learn about and rear kokanee salmon, a material legacy of existing hydroelectric development on the Peace River. Specifically, I ask how and why children have come to figure within the contemporary environmental politics of the Peace. Drawing on theoretical and methodological scholarship in Children's Geographies and Political Ecology, I lend close attention to the content, context, and 'feelings' of these cases. I argue that whether children have been enrolled intentionally or inadvertently, notions of care and responsibility frame their enrollment as part of environmental controversies on the Peace in both educational contexts. This thesis attests to the importance and interesting results of attending to children with relation to environmental politics. Echoing the students and teachers involved in the research, it draws attention to the importance of caring for children as young people relative to largescale environmental change, while also encouraging attention to the potential implications of doing so, particularly in a (post)colonial context of environmental change. As a whole, this thesis contributes to recent political ecological scholarship that complicates questions of where environmental politics take place, and expands upon who and what are considered relevant to environmental politics. Its primary contribution is in its analysis of the two cases, and as it may encourage further consideration of the complexities of contemporary controversies of environmental change on the Peace River.

# Preface

Amongst other methods, the research presented in this thesis involved participant observation and interviews. I conducted interviews with both students and teachers. This research was approved by the UBC Behavioural Research Ethics Board Certificate # H12-00739.

Towards the end of writing, I revisited again the interviews that I did with students. The following excerpt from the interview that I did with Maria, a grade 7 student from Fort St John, felt particularly fitting as a preface to this thesis:

Maria: How many pages is your essay? Lisa: I think when it's done it'll be about 150.

•••

Maria: But don't you have like nothing to write about?

Lisa: Well, why do you think I have nothing to write about?

Maria: I don't know, because on my third paragraph I didn't know what to write about.

Lisa: (laughter) Yeah, you know, I definitely feel that way. But I think it's a really interesting topic. Because I'm writing about what young people, like you... what you know about and think about the dam. But I'm also interested in how school projects like the one you did [about Site C] are one way that you learn about the dam. But, I think a lot of people think that young people either don't care or don't count, in a way. So I'm writing about why young people do count...

As I attempted to describe to Maria, my thesis calls attention to the importance of considering children as part of environmental controversies. Children do figure as part of contemporary politics of environmental change on the Peace River. This thesis attends to the meaning and contexts of how and why they do.

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I am also pleased to extend gratitude to the institutions and individuals who have seen this project through. My studies and research as part of the Department of Geography at the University of British Columbia were made possible through the financial support of the department and of the Social Sciences and Humanities Research Council of Canada. Moreover, at UBC Geography, I am deeply grateful to my supervisor, Dr. Matthew Evenden. He has been a patient and insightful guide through the research and writing process, and has never ceased to offer encouragement. Dr. Evenden inspires me to write with more clarity and precision. He has taught me to have more confidence in my ideas. I am also grateful to Dr. Juanita Sundberg, who, in addition to acting as the second reader on this thesis, has been a key mentor for me. I am inspired by her work and appreciative for the thorough and thoughtful consideration that she has offered both in relation to my ideas and regarding the challenges involved in writing a document such as this. Dr. Jim Glassman and Dr. Graeme Wynne also require my thanks. Each generously offered their time and advice at key moments in the summer of 2013. Of the faculty and staff at UBC Geography, I would also like to extend my gratitude to the current department head, Dr. Marwan Hassan, and to our graduate program administrator, Suzanne Lawrence, who have both supported me in many ways over the last two and a half years.

In the process of writing, I have only benefitted from having others read, and sometimes re-read, earlier drafts. Matthew Evenden and Sarah Mathisen-Przedpelska have read drafts of the entire thesis. Sarah Lone has reviewed an early draft of chapter 2. Torrance Coste has reviewed drafts of both chapters 2 and 3. Chapter 4 especially has benefitted from the insight of numerous readers, having been read early on by Matthew Evenden and then by participants in the "Animality" mini-conference organized by Rosemary-Claire Collard and Katie Gillespie and held at the University of British

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Columbia in May 2013. Rosemary-Claire Collard and Dawn Hoogeveen have engaged thoughtfully with a later draft. More recently still, Helen and Gary Dumoulin have also read and helped me to clarify my ideas in this chapter. Finally, Lauren MacHattie has read, commented on, and helped me to pull together my final reflections in Chapter 5.

I am also indebting to those people who have helped me out in other ways. The teachers and students with whom I worked during my fieldwork, made this project possible and enjoyable. New friends in and around Fort St. John, BC made my research visits the full and fulfilling experiences that they were. Thanks are due to Ken Darby and Tara Forest who helped me to make a number of key contacts. Danielle Layman welcomed me into her home. Together, Danielle and friends Mike and Val truly made my stays feasible and memorable. Thank you for your generosity. I am also grateful to Ken and Arlene Boon, and to Andrea Morison who spent considerable time in conversation with me about my project and about the contemporary environmental politics tied to the hydroelectric development of the Peace River more generally. Finally, back in Vancouver, and now Victoria, I have benefitted from the friendship and support of the people with whom I have lived, and those with whom I have studied. I would like especially to acknowledge fellow UBC Geography grad students Sarah Mathisen-Przedpelska, Jonathan Luedee, Caroline Grego, and Rosemary-Claire Collard with whom I have spent significant time engaging as friends and colleagues.

Most of all, I would like to thank Torrance Coste and my parents, Helen and Gary Dumoulin, for their endless patience, love, and support.

To mom and dad, and Torrance

# **Chapter 1: Introduction**

#### June 12, 2013; Bear Flats

It is a spectacularly sunny day in late June; the prairie sky is big and blue, hanging just barely above our heads. Having arrived a bit early this morning, I join Ken and Arlene Boon for a coffee as we wait out in the yard. It is a great chance to talk with the Boons, long-time residents and environmental activists in the Peace River valley, but I hardly need the coffee. Along with my nerves – today is my first day of fieldwork - the sun is already enough. Soon, the sun catches and glints off the side of a school bus on the road to the east. We watch as the bus weaves its way down the long, steep and twisting hill from the plateau to the valley bottom at 'Bear Flats.' Here, the bus makes the sharp right turn, now moving parallel to, but in the opposite direction of, the Peace River. After dipping below the embankment, the bus only re-appears once it is about half way up the Boon's driveway. It comes into view just as it pulls past the wooden sign marking the anticipated flood line of the reservoir for the proposed 'Site C' dam (figure 1). While it is below our sightline where we stand to greet the bus, I know the students passed another sign at the entrance of the driveway. "Site C Sucks. Hay for Sale" it says (figure 2). This, undoubtedly, has caught some students' attention.



Figure 1. Flood reserve marker at Bear Flats (Photo by author).



Figure 2. 'Site C Sucks' sign at Bear Flats. This sign is sure to catch the attention of almost anyone driving by their driveway at Bear Flats (Photo by author).

As they might suggest to the students who spot them, and as they confirmed to me, the signs at the Boons' speak to the Peace River as a significant site of environmental politics in British Columbia. Specifically, these signs reference the contemporary proposal to build a third hydroelectric dam and reservoir on the Peace River. "Site C", as it is known, is a highly contentious project, strongly favoured and opposed within the region and not least because of changes already experienced as a result of the two large dams built on the river in the 1960s and 1970s. While they do not garner their own signs today, these changes continue to be the subject of environmental controversies within the region as well.

The students disembark enthusiastically, and after a short round of introductions we make our way as a group out to the same grassy ridge marked by the 'flood reserve level' about 50m away. While it is part of a fun fieldtrip at the end of the school year, the students' stop here at Bear Flats *en route* to the district's outdoor education centre is meant to be somewhat more serious than the camp-out to follow. The students are here to learn about the proposed Site C Dam and the anticipated changes that its reservoir would create in the valley.

For my part, I'm here to learn about the students learning about Site C.

#### 1.1 Children and environmental politics?

My morning at the Boon's began much like that of these children, with the drive from where I was staying in Fort St John to Bear Flats, about 30km west. But for me, it also began earlier that week with the longer drive, over 1200km, northeast from Vancouver where I was living and studying at the time. Unlike these children who live in the Peace River region, this place is not my home. Whether they have been here for a year as part of families tied to the oil and gas industry in the region or whether they have lived here for their entire lives, in some instances as part of families who have lived here for many generations, this is a place where they are more deeply rooted than I am. It was, in fact, my first time visiting the Peace River region of the province, the traditional and ancestral territories of Tsek'ene and Dane-zaa First Nations. Passing east through the Rockies and coming out on the rolling prairies into which the Peace River cuts deeply just to the north, the landscape is remarkably different from the plateau of the interior of the province, and strikingly so from the damp coolness characteristic of the southwest coast. Like the rural bits of southern Ontario near where I grew up, the rather flat landscape is wooded with deciduous trees and it felt somewhat familiar. And yet a number of things hinted to the northern region's rather recent history of industrial resource-development. There is, for example, the Peace Canyon Dam at Hudson Hope, the high volume of fuel trucks and other large transport-trucks with which I share the road, and the gas lines going off from the highway to crisscross agricultural fields, First Nations reserves, and small rural-urban centers – and these with their particular drab charm, wide-roads, and industrial feel (see figure 3).

Of course, taking part on this field trip also required a number of other things: approval from the Boons, the teachers, and the School District; a police record check; as well as ethics approval from the University of British Columbia required for much Social Science research, if not especially that involving children.



Figure 3. Map of the Peace River region in the northeast of British Columbia. Cartography by Eric Leinberger.

Beyond these logistical details, my participation in this fieldtrip to the Boons' was also deeply rooted in my interest to explore the social and cultural dimensions of environmental controversies. More particularly still, I was interested in recent scholarship that complicates understandings of where environmental politics take place and of who and what are involved. In turning my attention to the hydroelectric development of the Peace River, this literature prompted me to ask about the place of children in contemporary environmental controversies. As is generally true of environmental politics in BC and beyond, children are not often considered at the center of contemporary environmental controversies related to large dams and their impacts in the Peace. As I will discuss further in Chapter 2, the environmental politics here are conflicts over what the Peace River and region were, are, and of what they could become relative to environmental changes experienced and anticipated of large-scale hydroelectric development. Nonetheless, children are involved in the contemporary environmental politics of the Peace River and this thesis makes sense of how and why.

I began by asking these questions of a small collection of school units focused on the contemporary Site C proposal and recently undertaken in elementary and middle school classrooms in the Peace River region of BC. While children also figure with relation to the contemporary environmental controversies on the Peace in other ways for instance, taking part in protests or community events related to Site C - I chose to narrow my focus to these units for methodological and ethical reasons. Although the reasons go beyond it, they were largely related to unique considerations required of research involving children (see, for example, van Blerk and Kesby 2009). For one, these school units lent themselves to study more readily than other contexts, which were not as appropriate research sites or to which I did not necessarily have access a researcher or otherwise.<sup>1</sup> Second, focusing on school units facilitated a flexible mixed-methods

<sup>&</sup>lt;sup>1</sup> Other contexts included the annual 'Paddle for the Peace', a community event co-organized by the Peace Valley Environment Association and West Moberly First Nation; an indigenous youth camp – part of the Save the Sachii Nachey/Saagii Naachii Movement'- held in the summer of 2012 (see Dean 2012; Team 2012, 21); interviews with youth conducted for the Treaty 8 Baseline Community Assessment submitted to the environmental assessment process for Site C (Team 2012); as well as less obviously political contexts like fishing derbies on Dinosaur Reservoir and/or fieldtrips to the WAC Bennett or Peace Canyon Dams. While I did conduct participant observation at the 6<sup>th</sup> Annual 'Paddle for the Peace' with the permission of the co-organizers, I ultimately experienced participant observation focused on children in the setting of this

approach. In this way I could lend attention to the content and practices of the units, including the roles that children played as part of them (Horton and Kraftl 2006). I could also attend to the discursive and, as it turned out, emotive or even 'affective' registers through which children were brought into conversations about Site C. I compiled collections of materials used in or produced through these units, took part in participant observation, and conducted key informant interviews with both teachers and students. Importantly then, I could address and incorporate children's experiences of and perspectives on the controversies over environmental change in the Peace as they took part in these school units and, in some instances, as they spoke of other contexts. That is, through my research into the school units, I also learned about some of the other ways in which children have been involved as part of these controversies. At the same time, I learned about the extent to which their involvement has been limited, as I will discuss in Chapter 3. For most of the children involved, these units were a key context in which they were engaged in ongoing conversations about the controversial Site C proposal. Finally, narrowing my focus to the school units allowed me to conduct research in a school setting where there are already strong protocols regarding interactions with children.

It was through my research into these school units that I came to learn about the *Kokanee in the Classroom* program. In this thesis, I consider this program as a second context through which children have come to be involved as part of contemporary environmental politics of the Peace. In contrast to the school units focused on Site C, *Kokanee in the Classroom* did not seek to engage children with environmental controversies tied to hydroelectric development of the Peace River. Rather, it was developed as part of the efforts undertaken to mitigate the impacts of hydroelectric

large (>400 people) and public event both practically and ethically challenging. My experiences resonate with others (e.g van Blerk and Kesby 2009). Moreover, towards the beginning of my project I attempted to forge research connections with the Treaty 8 Tribal Association, and later with the organizers of the indigenous youth camp. I received preliminary consent from Treaty 8. However, given that the way in which my project took shape, the fact that I was living in Vancouver and only able to be in the region over a series of short visits, and the trust and relationship building that would have been appropriate and necessary to sustaining this research relationship (Tuhiwai Smith 1999),I ultimately chose to pursue research focused on the school units instead. The organizers of the indigenous youth camp did not reply to my research inquiries. This was an event to which I did not have access.

development for fish and wildlife. *Kokanee in the Classroom* was a stewardship education program that engaged students in learning about – and actually in rearing – a material legacy of the large dams and reservoirs on the Peace River: kokanee salmon. *Kokanee in the Classroom* sparked my interest as this program itself had become the subject of environmental politics locally, with its controversial focus on and celebration of the non-indigenous kokanee and their roles within the new reservoir ecosystems. Learning about *Kokanee in the Classroom* proved particularly important, allowing me to refract my research into the school units focused on Site C. Most especially, it helped me to elaborate my thinking on how and why children figure as part of the politics of environmental change on the Peace River. Whereas I had been primarily focused on the ways in which children engaged themselves or were enrolled to engage as 'voices' in and as the subjects of contemporary environmental controversies in the Peace River region, *Kokanee in the Classroom* allowed me to understand that children could be - and are – involved as part of them in other ways as well.

Indeed, the two contexts that I consider speak to different ways in which children figure as part of contemporary environmental controversies related to hydroelectric development on the Peace. Responding to the general exclusion or overlooking of children as part of these conversations, the school units focused on Site C were developed and undertaken as explicit attempts to bring children into the frame of the environmental politics tied to Site C by bringing these politics into the classroom. In contrast, children had become involved as part of the contemporary environmental controversies on the Peace much more inadvertently through their participation in the *Kokanee in the Classroom* program.

However, as much as the Site C school units and the *Kokanee in the Classroom* program speak to different reasons for how children have come to figure relative to environmental politics on the Peace, they point to similar reasons for why. In both cases, notions of care and responsibility by and for children figured prominently. As they engaged children in learning related to environmental change, these educational contexts share a hopefulness regarding the potential for children to imagine, live, and enact different social and environmental futures. The "elision of childhood with hope" (Kraftl

2008, 81; see also Katz 2008) is an idea as widely held as it is deeply embedded in Environmental Education (EE) and/or Education for Sustainable Development (ESD) paradigms like those that underlie the curricular resources used in both cases (e.g. BC Ministry of Education 2006; Fisheries and Oceans Canada 2005a).<sup>2</sup> In addition to this, a shared sense of caring for and being responsible towards children were equally important to why children became involved as part of contemporary controversies related to environmental change on the Peace in each case.

In the case of the Site C units, notions of care and responsibility are inspired by feelings of hope and anxiety about the place of children relative to environmental change (see Kraftl 2008 and Katz 2008 for discussions of contemporary attachments of hope and anxiety, respectively, with children). There is hope for the potential for children to be caring and responsible in the face of uncertain social and environmental futures. However, if feelings of hope seem to express particularly powerfully with relation to children, anxiety does to an even greater extent. For some teachers, anxieties about the anticipated social and ecological impacts of Site C, particularly for children who would grow up alongside the project, inspire an urgency to enact care and responsibility towards children and thus bring them in to contemporary controversies.

In the *Kokanee in the Classroom* program, notions of care similarly work to involved children as part of contemporary controversies related to the hydroelectric development of the Peace River. A sense of hopefulness about the program's possibilities to encourage regional stewardship values and practices through the experience of rearing kokanee salmon from egg to fry underpins its development. Moreover, the program's endurance - running year after year in the region, and often in the same schools - was driven by how this program allowed teachers to successfully meet an even wider range of curricular goals and the good experiences and feelings that children experienced as part of this.

The individual children involved in these cases also matter immensely. In their specific relations with others – classmates, teachers, laptops, salmon, children allowed the school units and program to take place. This is true of the units focused on Site C, but

<sup>&</sup>lt;sup>2</sup> Environmental Education (EE) and Education for Sustainable Development (ESD) are their own fields of research and practice. The available literature is extensive. While I do not engage with it in this thesis, I have found Pavlova (2012) and Kopnina (2012) useful introductions to these paradigms.

is most evident of the case of *Kokanee in the Classroom*, which relied on the mutual interactions of the children and kokanee and the changes that they would enact on one another. Significantly, the children involved in both the Site C school units and the *Kokanee in the Classroom* program also inspired the ideas and feelings of care and responsibility towards them through which they became wrapped up as part of the contemporary environmental politics on the Peace. They did so in a very pragmatic sense given the particulars of the Site C project, for example, and how they were situated as young people and along other axes of difference with relation to its projected timeline and impacts. Further, in what might be described as more of an emotive – or even affective – dimension of the school units focused on Site C and of the *Kokanee in the Classroom* program, the students can be understood as often inspiring feelings and practices of care from their teachers and others as they shared and showed their own worries, confusions, curiosities, or joy. It was these experiences and feelings that teachers then sought to quell or foster.

As a final note, the case of *Kokanee in the Classroom* also helps me to consider that while caring for children is truly important (Lawson 2007), it does not necessarily translate into the only priority relative to environmental change. Care is itself a flexible and situated concept and there is a politics, and not only an ethics, of care. *Kokanee in the Classroom* became the subject of concerns by local First Nations, given its focus on and celebration of a non-indigenous species of fish and one correlated with declines of indigenous species that they value. Attending to the concerns expressed about *Kokanee in the Classroom* reminds me that other priorities for care and responsibility are also valid, especially in the larger postcolonial context in which contemporary environmental politics on the Peace take place.

In sum, I argue in this thesis that children have been enrolled both intentionally and inadvertently in the contemporary environmental politics on the Peace. Notions of care, variously understood, frame this process and help me to understand both the meaning and context of their enrollment.

#### **1.2 Literature and contributions**

Recent scholarship in Human Geography and Anthropology has complicated the way environmental politics have been treated. Environmental politics are often approached as conflicts between entrenched interests and in very particular sites. For example, in British Columbia, frequently environmental politics are analyzed as conflicts between a triad of government/industry, First Nations, and environmentalists and which take place through formal processes around negotiating tables and review panels, or more informal yet highly visible sites such as blockades like the iconic and oft cited, 'War in the Woods' (in this observation I echo Dempsey 2010; see also Wynn 2013). In contrast, recent scholarship loosely collected as 'political ecology' and 'environmental history' has encouraged examining environmental politics as the stuff of everyday life, and therefore looking to consider other things that may not be immediately apparent but are also important to these conflicts (e.g. Kosek 2006; Tsing 2005).

Not least, drawing on insights from feminist, post-structural and (post)colonial theory, scholars have sought to consider race and gender as important dimensions of environmental politics and environmental struggles (see, for example, Rocheleau, Thomas-Slayter, and Wangari 1996; Kosek 2006; Sundberg 2006). More recently, scholars have also lent attention to the ways in which non-humans are not only the subjects of environmental controversies but may also be central to the ways in which these controversies take shape (see Dempsey 2010; Sundberg 2011; Robbins 2012; Collard 2012). As Jake Kosek (2006, 22) has written, these more complex accountings of environmental controversies require "attending to both the struggles between people over [natural] objects and to the... process through which objects and subjects, their identities and meanings are forged and discerned through daily practices... to enrich our understandings and approaches by extending what we consider relevant to environmental politics." If this process can often be "intensely political," as Kosek (2006, 22) describes, it is always effected through the interplay of the material and discursive, and even the 'affective,' as recent scholarship has striven to show and to theorize, drawing especially on feminist, poststructuralist, and performative theories (e.g. Nightingale 2011; Kosek 2006; Collard 2012; Dempsey 2010; see Elmhirst 2011 for commentary on the evolution

of feminist political ecology). Efforts to expand the scope of who and what to consider as relevant to environmental politics, however, have less often considered children.<sup>3</sup>

The 'overlooking' of children within this scholarship is not, in itself, surprising. In fact, this relative silence reflects a general oversight of children within Human Geography and some branches of the Social Sciences. Notably, sub-disciplines have emerged in response, critiquing and interrogating this 'overlooking' to affirm that children are both affected by and affect their worlds with interesting and important consequences for children, society, and social theory (Holloway and Pimlott-Wilson 2011; Horton and Kraftl 2006; see also Holt 2011 for a recent overview of the field; and for foundational texts, see Holloway and Valentine 2000; James, Jenks, and Prout 1998). Significantly, however, the sub-disciplines that have emerged - Children's Geographies and the New Social Studies of Childhood - have themselves generally overlooked environmental politics as relevant to the study of children and childhood. Children are seen as beyond the scope of environmental politics as much as environmental politics are seen as beyond the scope of children's lives.

Of course, this double oversight of children is not simply maintained within the scholarly literature. Rather, it reflects the reality that children generally do not figure prominently within contemporary environmental struggles whether as participants or as the subjects of concern. Often, environmental controversies are considered beyond their comprehension or interest. However, children may also be intentionally excluded where they are thought to be irrelevant to or even inappropriate for the process. Recently, for example, a mining corporation developing a mining proposal near Williams Lake, BC submitted to the federal review panel a request that children not be allowed to take part in the environmental assessment process. This request came following a performance by a group of children as part of the public hearings held for the proposed mine. The mining corporation considered the children's performance to be "too emotional" and thus to be

<sup>&</sup>lt;sup>3</sup> Throughout this thesis I use the term 'children'. I adopt the term children given that the ages of the young people involved in my study align approximately with what James, Jenks, and Prout (1998) define as 'middle childhood.' There is significant debate and politics within the fields of Children's Geographies and New Social Studies of Childhood about the terms 'children', 'youth' and 'young people', given the recognition underpinning these fields that these categories of historically and geographically situated. My thesis is not meant as an attempt to contribute to these debates specifically.

interfering the objectivity of the review process (O'Neil, 2012).<sup>4</sup>

Significantly, the limited scholarship that does consider the intersections between children and environmental politics has shown the study of these intersections to be important. For example, in what is perhaps the most well known effort, Cindi Katz (2004) has explored the social and ecological consequences effected by a Structural Adjustment Program for children in southern Sudan. Katz' work resonates with, and indeed grows out of, the parallel conviction in feminist political ecology that "there are real... differences in experiences of, responsibilities for, and interests in 'nature' and environment" (Rocheleau, Thomas-Slayter, and Wangari 1996, 3). As Katz shows, in as much as this is true for gender differences, this can also be argued for children as compared to adults. Katz considers the ways in which children especially may become "marooned" by large-scale environmental change, in this case as it disrupts social reproduction tied to environmental knowledge. She calls attention to how children may be uniquely positioned with relation to environmental change, exploring the impacts for them in their day-to-day lives.

In addition to exploring how environmental politics may involve 'a politics of difference' (see Kosek 2006), here tied to age, scholars have also begun to draw attention to the potential political implications of intersections between ideologies of environments (or specific 'natures') and children as part of the study of environmental politics (Wall 2009; see also Lulka and Aitken 2011). In a recent and notable contribution, Sharon Wall (2009) considers the ways in which children and 'natures' were imbricated through the phenomenon of the Ontario Summer Camp during the early to mid-20<sup>th</sup> Century. Concerned with the meaning of the summer camp, Wall attends to ideologies of children and natures, their intersections, and their material consequences. These intersections had implications for children, as well as for the 'natures'- the physical environments – where the camps were staged. Most perniciously, these

<sup>&</sup>lt;sup>4</sup> This speaks to the general dismissal of the "emotional" and "irrational" within much of environmental politics, as critiqued by feminist political ecologists (e.g. Seager 1996). In this particular case, it also has a distinctly racialized dimension. In the same letter to the federal government in which Taseko requested that children be barred from participation, the corporation also suggests and requests that First Nations "spirituality" not be considered as part of the evidence evaluated in the decision on the proposal for similar reasons (O'Neil 2012). It is important to consider these two dimensions in relation as their exclusion is interconnected.

intersections are also implicated as part of the larger histories and geographies of dispossession of First Nations territories (Wall 2009, 216-250; see Kraftl 2008 and Katz 2008 for further discussions of the implications of ideas and feelings that express particularly powerfully relative to children).

This thesis contributes to this small but nonetheless significant body of scholarship which considers the intersections of children and environmental politics. In addition, I hope that it will reflect experiences and prompt discussion for people in the Peace River region for whom the contemporary environmental politics tied to hydroelectric development are a part of their day-to-day lives, including those who assisted with this research to various degrees.

My focus has primarily been to attend to the material and semiotic interplay through which children have become involved as part of contemporary environmental controversies on the Peace. That is, I attend to the practices, discourses, and material and affective contexts - the "lived material practices" (Kosek 2006, 23; see also Sundberg 2011, 322) and 'feelings' - that make up the two contexts that I consider: the small collection of school units focused on Site C and the Kokanee in the Classroom program. In doing so, this thesis goes some way to answering John Horton and Peter Kraftl's (2006) call for Children's Geographies to engage more thoroughly with these theoretical and empirical terrains. Moreover, it affirms their conviction that "given the nature of its extant concerns and efforts – 'Children's Geographies' could do much more to speak back to these wider contemporary lines of thought" (Horton and Kraftl 2006, 69). As they elaborate, this is particularly true given that research on children's geographies invites attention to the materialities, practices, and emotive and affective registers of significance to children's lives (see also Horton and Kraftl 2011; Tipper 2011; for discussions of childhood as an "affective condition" see Horton and Kraftl 2006, 80, 88; Katz 2008; Kraftl 2008).

My thesis contributes to understanding how and why children are involved as part of the contemporary politics of environmental change of the Peace River. In it, I argue that it is crucial to attend to impacts of large-scale environmental change for children, as I consider the potential impacts that the pending decision on a further large-scale

hydroelectric development on the Peace River is anticipated to have for children through the perspectives of both children and teachers. At the same time, I also consider how the practices and discourses of care and responsibility that bring children and environmental politics together take place within larger contexts themselves and can potentially have impacts for others too.<sup>5</sup> This thesis speaks to a growing interest in Geography to the ethics and politics of care and responsibility. Drawing on Alison Jaggar's concept of "care ethics" and other feminist thought on care and responsibility, Victoria Lawson (2007) considers the importance of "care" in Geography in a recent AAG address. Lawson argues that Human Geography is, to a great extent, built on an ethic of care, but also that attention to geographies of care is growing, and should continue to grow, within the discipline. More recently, this message was amplified and pursued again as "Responsible Geographies" was engaged as the theme of the 5th Nordic Geographers Meeting, which I had the opportunity to attend in June 2013. This thesis participates in these conversations, speaking to the significance of caring for the world and for children within it, while also drawing attention to the potential for different ways to care with different geographical implications.

First and foremost, however, this thesis is a locally and context-focused study. Its primary contribution is in its analysis of the two cases that I present, and as this analysis inspires further consideration of the contemporary controversies of environment change on the Peace River in all their complexities.

#### 1.3 Thesis overview

This thesis takes place in three substantive chapters. Chapter 2 provides an overview of contemporary environmental politics tied to the hydroelectric development of the Peace River. Following a brief history of the hydroelectric development of this large north river, I sketch the contours of contemporary controversies related to large-scale environmental change experienced and/or anticipated. To do this, I have drawn

<sup>&</sup>lt;sup>5</sup> In this case, I have focused my critique on the postcolonial context in which these controversies take place. It would also be possible, however, to consider the biopolitical context of programs such as *Kokanee in the Classroom*. Although I do not pursue it in any depth here, I am grateful to the reviewers who participated in workshop "Animality" hosted at the University of British Columbia in May 2013 for this insight.

together scholarly analyses related to the hydroelectric development of the Peace and the environmental controversies to which it is subject within the region today, the electronic archive of relevant reports, newspaper articles, videos, and websites, as well as my own experiences and understandings of these controversies. This chapter provides context to help make sense of the two educational contexts that were the focus of my empirical research.

Recent school units in which children were encouraged to know and to 'care' about Site C are the focus of Chapter 3. Specifically, I consider five units that took place within the region in the years 2011-2013, in classes ranging from grades 3-8. While they were not part of any coordinated program, these units were all similarly developed and undertaken in response to the general exclusion of children from ongoing conversations, whether official or otherwise, about the proposed project. Despite Site C's anticipated impacts for the region, including for the students' own lives, it is not something that local children know about comprehensively or even at all. Reflecting a sense shared amongst the various teachers who developed and undertook school units focused on Site C, one of the teachers, Mrs. Trottier (2012, personal communication), explained in our interview: "It's part of our responsibility to give them that awareness."<sup>6</sup>

In this chapter, I attempt to make sense of their shared project and process, as it emerged and thus needs to be understood relative to the contemporary environmental politics tied to the hydroelectric development of the Peace River. These units encouraged students to know about Site C and to understand it as significant, engaging students to learn and think critically about the proposed project and to come to express their own perspective on it. However, as much as these units made a critique of the oversight of children within debates about Site C, they were not undertaken with the aim of inflecting or influencing these ongoing debates with children's perspectives. In addition to professional and practical limitations to such efforts, this can also be attributed to a general sense of disillusionment about the ongoing process of review and consultation for Site C shared by the teachers – if not also many students – involved with these units. Rather, teachers often explain these units as a way to foster social and ecological

<sup>&</sup>lt;sup>6</sup> This document uses a mix of true names and pseudonyms, respecting each participant's preference.

responsibility required for the world in the face of anticipated environmental change. Still, even as these units were most often made sense of relative to a hopefulness for the potential for young people to be caring and responsible for the world, for some teachers, these units were also or otherwise undertaken as an expression and/or practice of care towards students as part of it. Anxieties about the proposed Site C project become amplified relative to the ways in which these children in particular are situated with relation to it. As much as engaging students to learn and think critically about Site C gives them a unique opportunity to be part of the ongoing conversations about it, these units are one way in which teachers felt they could enact responsibility – and perhaps felt that they could act at all – relative to the pending decision on the proposed project.

Similarly, a sense of responsibility and care towards children frames the way in which children came to be caught up as part of contemporary controversies tied to the hydroelectric development of the Peace River through their participation in a regional stewardship education program: Kokanee in the Classroom. Recently reviewed and cancelled as a result of concerns raised about its focus on kokanee, a species nonindigenous to the Peace watershed before hydroelectric development, this program was well-loved but ultimately controversial and is the focus of Chapter 4. I begin by elaborating on the program's development. As part of the efforts of the conservation body charged with mitigating upstream impacts of the WAC Bennett and Peace Canyon dams for fish and wildlife populations, this program was developed to engage the public, through children, to learn about and celebrate the roles of kokanee salmon within the newly created reservoir systems. Following this, I describe the program as it took place year after year at one elementary school in Fort St John. Attending to the ways in which children and salmon change each other through their interactions and celebrations, it is clear that the program came to be valued and practiced as more than it was initially intended. Most significantly, Kokanee in the Classroom came to be valued and endured for the good experiences that children had in taking part in it: deep learning experiences and engagement, strong social connections, and feelings of joy. Not surprisingly, these good experiences and feelings also drove the significant lament expressed by many people involved with the program in response to its cancellation, announced in 2011. By

way of conclusion, I explore my own ambivalence about the program and its cancellation relative to the larger (post)colonial context in which this program was developed, practiced and loved and to which the concerns raised called attention.

Finally, in Chapter 5 I offer final reflections in a brief conclusion.

## **Chapter 2: Contemporary environmental politics on the Peace River**

#### **2.1 Introduction**

I should probably begin with the river, but I have to begin with the sky. Having grown up in southern Ontario and having lived the last number of years on the south coast of British Columbia, only ever flying the distance between, it was the big prairie sky of the Peace River region that really captured my imagination. The memory of that sky is at the front of my mind as I sit to write about the region. By contrast, the Peace River – while beautiful as it snakes its way out of the Rockies, east through the valley, and then across low rolling prairies, as if cutting the golden northeast of the province in two – did not seem so new or so different to me. While the Peace is certainly different from other rivers that I have known, like the Grand or the Fraser, it nonetheless felt like a river during my visits to the region. It was a river transformed, I knew; but its appearance did not reveal its history.

Admittedly, even when I visited both of the large dams on the Peace I found it difficult to understand or even imagine that what I was seeing behind each of them was not a river nor a lake, but actually a reservoir. Indeed, it is really only with the view provided by aerial maps - not unlike the 'bird's eye view' taken by those who envisioned and designed the Peace River power systems in the first place (Loo 2007; see also Loo and Stanley 2011) - that I could grasp the scale of the reservoirs created as part of the hydroelectric development of the river. Later, as I paddled a short section of the river as part of the 6<sup>th</sup> annual 'Paddle for the Peace,' I admired the beauty of the river and valley alongside other paddlers. Weaving in and out of the small islands that break up the river's breadth, I found it easy to understand the ecological significance of the river and valley. Taking part in this event, I also came to appreciate more deeply the many histories, both settler and indigenous, written into the landscapes of the river valley. The Peace River is a storied place: a social as well as a natural geography. But in its form, as it flowed, the Peace River did not seem anything but natural to me. On this day or any other, I could not sense the fluctuations caused by the regulation of the hydroelectric output of the dams upstream. I visited the Peace too little in my fieldwork for this, or at

least too sporadically. I stayed for 6 weeks, but this was over a number of visits and all in different seasons. Moreover, for most of my visits to the region, I stayed in the town of Fort St John. This small city is on the plateau north and east of the river, and while I would pass by the river often during my time in the region, it was not part of my everyday routine. As a newcomer, I never registered the Peace as changed or changing.

However, for many of the "peoples of the Peace", as Tina Loo (2007, 896) has written, the Peace River is a changed river. Undoubtedly for other lives too - like the grizzlies and caribou, which have seen significant disruption to their ranges and migrations - the Peace is changed in ways that someone like me, visiting a few times over a year, truly cannot know. With the construction of two major dams, the Peace River was transformed into a hydroelectrical system between 1960 and 1980. In addition to the extensive impoundment of reservoirs upstream of the dams, significant changes to the river also occurred along its course downstream. Changes resulting from the construction of the dams have not only visibly altered the regional landscapes of the Peace, but the large dams and reservoirs have also affected weather patterns, ecologies, sounds, and other sensory experiences within them (Loo 2007; see also Parr 2010 for a more general discussion on the sensory dimensions to experiences of environmental change). If today many of these changes might seem a part of a 'new normal', the drawdowns and floodings that take place as part of hydroelectric regulation remain a material reminder for those living and recreating on and around the river both downstream of the dams or out on the reservoirs.

And yet at the same time that it is a river transformed, the Peace River is also still 'unchanged' by a long-standing proposal for a third hydroelectric dam and reservoir downstream of the existing dams, near the city of Fort St. John. Initially planned to be constructed in sequence with the other two dams, the Site C hydroelectric project was never built. However, while no physical transformations to the river have occurred, the proposed Site C project is like other 'unbuilt' mega-projects (Peyton 2011), in that it has nonetheless had effects in the region. Not least, Site C has cast "a shadow in the valley," as one sign along the side of Highway 29 through the Peace River Valley claims. It has done so both as a longstanding proposal within BC provincial energy planning and

policy and more materially with the establishment flood reserve in 1957 and the process of land acquisition that took place when the project was first formally proposed in the early 1980s.

Ecological and social changes tied to the physical transformation of the Peace as a result of hydroelectric development – whether already experienced, ongoing, or anticipated - are not benign. If I found it difficult to register the actual changes themselves, it was much easier for me to register the contentiousness of large-scale environmental change in the region. With its recent revival in 2007, the province's proposal to dam the Peace River a third time has become a significant matter of debate for many regional residents and municipal governments.<sup>7</sup> Moreover, in gaining familiarity with the controversies surrounding Site C, it became clear to me that there are also ongoing controversies surrounding the changes already experienced as a result of hydroelectric development on the Peace. As scholars have discussed in numerous contexts, environmental change is often experienced as social and cultural change (e.g. Cruikshank 2005; Parr 2010); and so it has been lived in the Peace. In as much as largescale hydroelectric development was considered economically and politically important for the province at the time the existing dams on the Peace were built, the social and environmental detriment of the Peace River power projects also proved to be significant and significantly uneven. At the time of the construction of the large dams and reservoirs on the Peace, no extensive regulatory reviews like the contemporary environmental assessments carried out by provincial and federal governments existed to assess the potential for these impacts. While some people could and did make their concerns known either at water license hearings or by correspondence, the water licenses were granted on the understanding that "there was nothing tangible that anyone owned or had the right to use (such as a mining claim or trapline) that could not be itemized, valued and compensated for" (Stanley 2010, 107). However, as Stanley (2010, 105) also acknowledges this approach overlooked more "intangible losses", losses that included memories, histories, and ways of life. The impacts of these projects - ecological, social,

<sup>&</sup>lt;sup>7</sup> As just one example, signs either explicitly against Site C or more subtlety indicating the anticipated flood level of the proposed reservoir - signs such as those I had seen at the Boon's property (Chapter 1) - could be found at various points along Highway 29, running through the Peace River valley.

cultural, and as they intersect – continue to be subjects of controversies, taking shape contemporarily as negotiations for appropriate compensation and as efforts to mitigate impacts. Importantly, efforts to mitigate the impacts of hydroelectric development on the Peace have themselves become the focus of contemporary environmental politics.

This chapter is meant to provide an overview of these contemporary politics of environmental change. To do so, I draw together existing scholarly accounts of the largescale environmental change wrought by or anticipated of large dams and reservoirs on the Peace River, relying most heavily on critical scholarly accounts concerned with contemporary controversies related to these changes. While the history of hydroelectric development of the Peace has not received extensive scholarly attention, the environmental and social histories of the construction of the existing Peace River dams and, to an extent, their impacts have recently been the subject of thoughtful analyses by two environmental historians, Meg Stanley and Tina Loo (Loo 2007; Loo and Stanley 2010; Stanley 2011). Similarly, as Matthew Evenden remarked in his preface to a 2009 edited collection of short op-ed pieces on the proposed Site C project published in BC Studies, "[d]espite considerable media coverage and BC Hydro's multi-million dollar consultation process, the potential Site C dam has yet to attract much sustained academic research or debate" (Evenden 2009, 94). While this collection attests to the complexities of the debates surrounding this proposed project in its varied submissions and goes some way towards filling the gap, Nichole Dusyk's (2013) recent doctoral dissertation provides the most comprehensive consideration of the contemporary revival of the Site C project to date. As Dusyk (2013, 6) notes, however, while her study of Site C is one of local actors, her primary research did not involve research into the perspectives of Indigenous communities within the Peace River region; this was not an oversight but nonetheless a "significant omission."

Building from these sources, my own account is thus also weighted in particular ways. I have found it useful to supplement these accounts by drawing on additional materials published on these contemporary controversies – videos, statements, newspaper archives – most often available online, as well as my own experiences and conversations (both informal and formal interviews) conducted in the region. This

particular telling is also certainly inflected with my own environmentalist/environmental justice leanings, as well as lessons that I have gleaned from my immersion in political ecology and environmental history literatures.

I begin by offering a brief history of hydroelectric development on the Peace. Then I review contemporary controversies that concern the existing dams and reservoirs on the Peace. Following this, I give an overview of Site C and the controversies that surround it, focusing particularly on the controversies within the Peace River region of BC.

#### 2.2 A brief history of the hydroelectric development of the Peace River

While the Peace River has changed over time, the period between 1960 and 1980 witnessed significant alterations as a result of the construction of two major hydroelectric dams. Flowing east out of the Rocky Mountains from the confluence of the Finlay and Parsnip rivers, the Peace River carves a narrow canyon and deep valley through the northeast of British Columbia. It then courses over 1000 km through a wide prairie to flood the Peace-Athabasca Delta, eventually draining north to the Arctic via the Slave and Mackenzie Rivers. Between 1961 and 1974, the head of the canyon and the Rocky Mountain trench upstream were transformed with the construction of the WAC Bennett Dam. Standing 183 meters tall and spanning a distance of over 2 kilometers, the Bennett Dam was named for BC's longest standing Premier, who was also the political driver behind the hydroelectric development of the Peace. The Bennett Dam further attests to this drive in other ways as well. Specifically, it was built by the new crown utility BC Hydro and Power Authority (BC Hydro) that was nationalized in order to make it, and the hydroelectric legacies to which it would prove foundational, possible. Behind the Bennett dam, the Williston Reservoir covers a surface area of roughly 177,000 hectares. Impounding large portions of the Peace, Finlay, and Parsnip Rivers when it filled between 1968 and 1971, it remains among the world's largest reservoirs measured by volume (BC Hydro 2013a; BC Hydro 2013b). The Peace River canyon was further transformed between 1974 and 1980 with the construction of the smaller Peace Canyon Dam, 23 kilometers downstream. The 'Dinosaur Lake' reservoir (800 hectares) impounds the canyon to the base of the Bennett Dam. Moreover, with the construction of

the Peace River dams, two parallel transmission lines were built running 585 ground miles between Hudson Hope and Vancouver, connecting these dams to the provincial grid (Stanley 2010, 123–124).

Together, the dams and reservoirs on the Peace can provide a maximum output of 3484 megawatts (MW), or 29% of BC's current electricity production (BC Hydro 2013c.). Indeed, the dams do operate as a system: the immense storage potential of the Williston Reservoir is critical to the generating potential of both dams. While the productive output of the Peace River power system is contingent - complicated by a number of factors including forecasting models, seasonal and sustained climate variations, and energy markets domestically and internationally - the hydroelectric development of the Peace was and remains significant.

The physical changes effected by hydroelectric development of the Peace River have proven substantial and sustained for the river and its ecologies. As both Tina Loo and Meg Stanley have argued, this was particularly the case upstream of the dams, where hundreds of square kilometers of boreal forest in the Rocky Mountain trench were cleared and flooded in the creation of the massive Williston Reservoir. Moreover, the scale of clearing the impoundment area proved too extensive to complete with the finances and time allocated, with additional consequences: large amounts of dead wood caused enormous log jams on the newly formed Williston Reservoir, while submerged trees and debris created the risk of dead-heads and contributed high concentrations of heavy metals like mercury to the reservoir water. Today, the regular sloughing of the unstable reservoir banks exacerbated by the 'draw-downs' and 'flooding' of hydroelectric regulation demonstrates that these reconfigurations are ongoing rather than complete.

Here and elsewhere, the river was reconfigured both within and beyond its waters. In addition to changing sediment regimes and ice formation patterns, hydroelectric development has altered weather patterns - increasing fog, wind, and dust around the reservoir areas. Crucially, a number of wildlife populations and/or their migrations have been disrupted as a result of the reservoirs, as much as the dams themselves. Significantly, while others, including some fish and bird populations and

beavers have enjoyed an increased presence in these areas (Church 2009), these changes mark a change in species composition that reflects ecological differences between reservoir and riverine habitats more than it necessarily reflects any measure of ecological integrity. Although some species have indeed 'flourished' in numbers, their flourishing must be contextualized as occurring in correlation to other species' decline. Furthermore, the high levels of mercury and other heavy metals that have built up in the tissues of many reservoir residents as a result of submerged wood and debris, renders these potentially toxic to both human and non-human consumers (Loo 2007, 901, 908). Looking downstream, the transformation of the Peace for hydroelectric generation altered the river's temperature, morphology, and flow; not least through the reversal of seasonal highs and lows as a result of the regulation of the reservoirs. The ecological effects of these changes have been studied principally with relation to the contemporary drying of Peace-Athabasca Delta, a phenomenon that has significantly and detrimentally impacted mammal, fish, and bird populations that depend on the delta's annual floods. The relationship of the hydroelectric development of the Peace River to this drying, however, remains a matter of controversy and study (Stanley 2010, 116-119).8

The construction of the dams and reservoirs on the Peace River also created new political and economic contexts in and for the province of British Columbia. In addition to supporting Bennett's 'province-building' agenda through the generation of large amounts of reliable electricity, the Peace power projects also altered the province's political standing nationally and internationally. As Tina Loo (2007, 901) explains:

[B]uilding the Peace gave [Bennett] a good deal of leverage over Ottawa in the Columbia River Treaty negotiations. British Columbia managed to force the federal government to allow the province to export electricity to the United States, something it had forbidden until that point. While British Columbians continue to enjoy the economic benefits of such exports to this day, the impact of this change went well beyond the province's borders, shaping Canada's energy policy and

<sup>&</sup>lt;sup>8</sup> As Tina Loo (2007) suggests, the drying of the Peace-Athabasca Delta has prompted important questions regarding how ecological change is understood at different temporal and spatial scales, and offers a discussion of the potential implications of differences in understandings legally, practically, and for scholars of nature and society.

federal-provincial relations.

The Columbia River Treaty negotiations also had political significance of a different kind. The concurrent hydroelectric development of the Peace and Columbia Rivers, the 'Two River Policy' that emerged out of and also drove the Treaty negotiations, also stabilized policy which would allow the Fraser River to remain undammed and fisheries and fisheries interests to remain intact (Evenden 2004; see also Stanley 2010).

In addition to providing substantial amounts of electricity to the provincial grid, the construction of the large dams on the Peace spurred the development of the northeast of the province as an important dimension of the provincial economy. Indeed, northern industrial development is one the most profound regional legacies of the hydroelectric development of the Peace River. Logging, mining, and oil and gas development in the Peace River region are all interlinked with the histories and geographies of the Peace power projects (Dusyk 2013, 45). The hydroelectric development of the Peace facilitated these developments in the Peace region both ideologically and materially. As Tina Loo (2007, 900) has described, the Peace power projects and their electrical prospects were the foundation for Premier's Bennett's vision for an economically vibrant 'north': a vision she suggests was realized to a rather surprising extent. For example, the 'instant town' of Mackenzie sprung up in response to financial investment in this same 'northern vision.' The physical infrastructure and flow of electricity resulting from the dams grounded this investment. Similarly, the development of natural gas reserves near Fort Nelson was made possible with the extension of a transmission line constructed as part of these projects. Moreover, northern development was equally facilitated by the environmental reconfigurations that large-scale hydroelectric development required. The logging town of Mackenzie, for example, was also founded on the immediate need to clear the anticipated reservoir area of the WAC Bennett Dam of its boreal forest coverage (Stanley 2010, 66–67, 114–115). In short, the Peace Canyon power projects reshaped the economic landscape of the northeast of the province. In so doing, they also

changed the economic geography of the province as whole. The northeast of the province was developed as and remains an important dimension of the provincial economy.<sup>9</sup>

Within the Peace River region, the construction of the dams and reservoirs created new social contexts. The many people who migrated to the region because of these projects or who grew up as part of these families created new lives/social geographies in relation to these projects (Loo and Stanley 2011; see also Stanley, 2010).<sup>10</sup> However, these geographies were also constitutive of new socio-ecologies effected and experienced within the region by those for whom it was already an "intimate geography of belonging" (Loo 2007, 909). Indeed, as Meg Stanley (2010, 113) has similarly written, "[e]ven as the new power network linked Hudson's Hope and Vancouver, traditional social and economic ties within the Peace were fractured." The Peace River power projects altered a lived geography configured and reconfigured over thousands of years of First Nations histories, as well as more recent settler-colonial histories of the fur-trade, homesteading in the valley, the designation of First Nations reserves, transportation networks, resource development, and the growth of small urbanrural centres like Fort St John. Human homes, livelihoods, and memories intimately bound up with the places and ecologies changed were, for many, altered in challenging ways, displaced, or negated. For example, in the Rocky Mountain Trench, several settlements were simply flooded. The Williston Reservoir impounded significant portions of traditional and unceded Tsek'ene territory and the economies, communities

<sup>&</sup>lt;sup>9</sup> This is the case even if it is not always 'visibly' so. Significantly, the scale of hydroelectric infrastructure and public investment in it (both financially and through provincial imaginaries) have allowed the oil and gas sector, for example, to remain peripheral to regulation and oversight (Dusyk 2013, 41–42). It is also of note that the hydroelectric projects on the Peace continue to support industry in the region today, albeit in new ways. Most recently, the Williston Reservoir has become a source of water for the rapidly growing sector of the extraction of non-conventional shale gas via hydraulic fracturing ('fracking') in the region. <sup>10</sup> In another context, Joy Parr (2010) discusses an example of the creation of highly local and embodied geographies by those working and living with relation to a mega-project: Bruce Power, a nuclear power plant in southwestern Ontario. Whereas Parr situates her study in relation to a call for increased attention to embodied histories of environmental change, Tina Loo's study of sensed changes are sensed, but also considering these relative to other scales of understanding environmental change, with implications for environmental justice struggles.
and homes, settler and Aboriginal, that had come to be a part of it.<sup>11</sup> Further, in addition to flooding many boats and motors, the flooding also rendered the primary mode of transportation through the trench – the river itself - essentially non-navigable (Stanley 2010, 105–106).

Like the impacts of large-scale human-induced environmental change elsewhere, the social changes that the Peace power projects effected were experienced unevenly. Certainly, in relation to the province of British Columbia, the Peace River region in the northeast – and indeed beyond the province, given the river's transboundary context bore the brunt of changes, whether ecological, economic, social and whether experienced positively, negatively or more ambivalently. It was a region deemed transformable as part of province-building schemes. If the physical geography of the place was suitable and even inspired transformation – indeed being referred to as "the canyon of destiny" (Stanley 2010, 53 see also pp. 34-35), its social geography was also deemed to be similarly waiting to benefit from development. Writing in the context of Quebec, Caroline Desbiens (2004, 104) has argued that hydroelectric development materialized the 'north' as "a space of economic development predominantly scripted for and by the south." In the case of the Peace relative to BC, the north posited for development was certainly one of resource extractive potential. But this was moreover envisioned as a potential through which the region would itself modernize, if not urbanize. The hydroelectric development of the Peace River was attempted so as to link the north with the south not only by transmission lines and economic ties, but also through shared modern lives (Stanley 2010, see especially 27, 71).

More locally, within the regions directly affected by the construction of the Peace River power projects, the impacts of these physical, ecological, and social changes that accompanied it were also experienced unevenly. Significantly, these impacts were – and continue to be – disproportionately borne by Aboriginal people.<sup>12</sup> As Tina Loo (2007)

<sup>&</sup>lt;sup>11</sup> The communities that were flooded were: Fort Grahame, Igenika, Gold Bar, Finlay Forks, Indian Reserves No<sub>1</sub> McLeod Lake; No<sub>2</sub> Park River, No<sub>5</sub> McLeod Lake; No<sub>1</sub> Finlay Forks; and No<sub>2</sub> Police Meadows (Stanley 2010, 106-113).

<sup>&</sup>lt;sup>12</sup> Both Loo (2007) and Stanley (2010) provide more comprehensive discussions regarding differential impacts experienced by human residents of Peace River region of BC and further address controversies surrounding the effects of the Peace River power system downstream in the Peace-Athabasca Delta.

has discussed, in addition to the fact that the dams and reservoirs caused different changes in different places, the same physical change (e.g. the flooding of the Rocky Mountain Trench) also meant different things for different people. Displacement for settlers, for example, was generally less disruptive, if only societally and not personally, given the greater access that settlers had to employment and other securities. Trap-lines and communities were treated as dispensable: 'in the way', if considered at all. In a recent film, youth from the community of Tsay Keh Dene at the northern end of the Williston Reservoir confirm this experience for their community formerly at Igenika/Fort Grahame and Finlay Forks. "The men who built the Bennett Dam," one youth explains, "didn't know we existed at all" (Constandinau, Reid, and Seymour 2008).

Further, it bears emphasizing that the changes caused by the Peace River dams and reservoirs are difficult to separate from other changes related to interlinking economic development within the region. As Stanley (2010, 112) suggests, for the First Nations for whom the Peace region was their traditional and ancestral territory, "The loss of the river was merely one part of a larger problem." Industrial activities such as logging, the building of new roads, and the influx of non-native hunters that was amplified by and followed the construction of the dams further eroded their available land-base and the diminished game populations. Having more than economic significance, the industries that hydroelectric development helped to foster have had compounding effects ecologically, socially, and culturally (Team 2012; see also Booth and Skelton 2011).

It is against the backdrop of experiences with the existing dams that the first official proposal to construct a third dam downriver at "Site C" was opposed by many people locally, as they expressed in the regulatory review. Only a year after construction of the Peace Canyon Dam was started in 1974, BC Hydro began initial discussions with landowners about a proposal to build a third major hydroelectric dam on the Peace River at "Site C". Seven kilometers south of the city of Fort St John and 83 km downstream of the Peace Canyon Dam in the Peace River valley, Site C was marked in the initial surveys to dam the Peace River as one of four potential sites for a hydroelectric dam and generating facility downstream of Hudson Hope (Site C of A,B,C,D; another 8 were

marked upstream, of which sites 1 and 3a were developed as the Peace Canyon and WAC Bennett Dams, respectively (Stanley 2010, 34). The prospective project was further marked by a flood reserve in 1957, with all of its anticipated and lived implications.

BC Hydro made an official proposal to begin construction at Site C in 1980. Notably, this proposal was the first to be reviewed by the newly formed BC Utilities Commission (BCUC), a regulatory body created by the Utilities Commission Act in 1980 to regulate energy policy and new projects in British Columbia. In contrast to the previous dams then, the Site C proposal was subject to regulatory review, which included public hearings held by the BCUC to provide an opportunity for public input on the proposed project. Particularly locally, opposition to the proposal for a third dam and reservoir on the Peace referenced the impacts of the ongoing hydroelectric development on the river both for the local environment and in its disruption and dislocation of peoples' lives. In 1983, the BCUC deferred construction at Site C, questioning "both the lack of demonstrated need for the electricity as well as on the inadequate evaluation of alternative projects and resources" (Dusyk 2013, 111). While the BCUC decision to defer Site C's development was ultimately not made on the grounds of local opposition, the concerns did play a role, as Matthew Evenden (2009, 94) explains. The concerns "highlighted the controversial legacy of British Columbia's big dam era, underlined the new role of environmentalism in large infrastructure planning and raised the possibility that future developments should be imagined and handled differently." An attempt to reopen the development plan in the late 1980's went through contingency investigations in the early 1990's but also ended at the proposal stage. Most recently, the proposal to dam the Peace River a third time at 'Site C' was again revived and updated as of 2007. At the time of writing an environmental assessment for the proposed project is still underway.

Figure 4 depicts the BC section of the Peace River as it is today, as well as how it would be changed if the Site C project is approved and constructed following its review.



Figure 4. Map of the Peace River within British Columbia, showing the existing dams and reservoirs, as well as the projected area of the Site C Dam and reservoir. Cartography by Eric Leinberger.

## 2.3 Contemporary controversies: the existing dams and reservoirs

At the time when the Bennett and Peace Canyon Dams were built there was no system of environmental or regulatory review in place in the province for large-scale infrastructural projects of this kind. Thus, while some pre-emptive efforts were made to mitigate the anticipated impacts of the changes these projects would create,<sup>13</sup> the dams were built in the momentum of Bennett's 'province building' agenda, for their economic and political promise. The local social and ecological consequences of large-scale environmental change were seen as a small price to pay, often not anticipated or even not recognized as detrimental until later. While the Peace River power systems were built a long time ago now, the social and ecological consequences of these projects are ongoing today. That is, the impacts of changes wrought by hydroelectric development on the Peace continue to be the focus of contemporary struggles for conservation, safety, and environmental justice. Indeed, impacts of the changes also continue to come into focus; impacts that have revealed themselves over a longer time-scale, in cumulative effect with other changes experienced in the region, or that have only more recently come to be differently valued and understood. As a result, efforts to mediate, mitigate, or compensate the negative social and ecological impacts of hydroelectric development – whether as conservation efforts, settlements with affected Aboriginal communities, or otherwise - on the Peace have primarily taken place after the fact (see Stanley 2010, 120).

However, just as the impacts of hydroelectric development have proven contentious, efforts to mitigate these impacts – whether socially or ecologically – are often fraught as well. Just as large-scale infrastructural projects are developed and carried out from particular perspectives and within particular geographical and historical

<sup>&</sup>lt;sup>13</sup> A massive effort was undertaken, for instance, to clear the projected impoundment area of the Williston Reservoir. Moreover, some efforts were also made to relocate, and in some cases recompensate, the people who were to be displaced by the reservoir. These efforts themselves caused significant impacts. As mentioned above, the task of clearing the Williston Reservoir proved too huge to complete and large sections of boreal forest remained uncleared and/or uncut when the reservoir was flooded. Significantly, too, if the effort was undertaken for ecological and/or navigational purposes, it was also propelled by the economic potential of removing salvageable timber from the impoundment area, as well as the aesthetic priority of creating recreational spaces along the southeastern shore. But as Loo (2007) and Stanley (2010) have both discussed, these efforts also failed to a great extent, leading to experiences of isolation, alienation, and dependence for many.

moments, so too are efforts to mitigate the changes and their impacts that these projects create. Not only *whether* the impacts of environmental change are mitigated but *how* may also be a source of conflict and controversy in itself (Robbins 2012; Rikoon 2006; Loo 2007).<sup>14</sup> Indeed, there are ongoing controversies related not only to the changes experienced as a result of the existing dams on the Peace, but also to the ways in which these changes have been defined and approached in efforts to lessen or compensate for their impacts. For example, writing about the attempts of hydrologists, geomorphologists, and engineers to restore the water of the Peace-Athabasca Delta to levels prior to the drying that was experienced in correlation with the completion of the Bennett Dam, Tina Loo (2007, 909) argues, "in terms of restoring the social and economic role of the water to the delta...these engineering solutions fell far short." As Loo goes on to explain, "[t]he failure of the task force to formulate solutions that addressed the social as well as the environmental impacts of the Bennett Dam was due to the different scales at which the problem in the delta was perceived." That is, the scientists and the First Nations communities of the delta had different understandings of where exactly the problem was occurring, and so where it could be best addressed. Moreover, they had different understandings of when the problem had started, and so what it encompassed. Again quoting Loo (2007, 910), conflicts over the necessary mitigations involved "different notions of when history started," and for the First Nations, "the damage caused by the dam merged almost seamlessly into the larger impacts of centuries of colonization and structural changes in the economy that rendered many northern communities poor."

Contemporary controversies similarly concern mitigation efforts undertaken to address ecological consequences experienced upstream of the dams, especially as a result of the reservoirs. Here, the Peace Williston Fish and Wildlife Compensation Program was established as a joint initiative funded by BC Hydro and the provincial and federal governments in the late 1980's to compensate for the impacts of the WAC Bennett and Peace Canyon Dams on fish and wildlife populations, their habitats, and recreational opportunities (Bergmann et al. 2003). In contrast to efforts to restore the 'natural' water

<sup>&</sup>lt;sup>14</sup> This is, in fact, a central tenet of the field of political ecology (see Robbins 2012).

levels of the Peace-Athabasca Delta, mitigation efforts of the PWFWCP upstream were undertaken in the context of a decidedly socio-technical system, concretized through the hydroelectric development of the Peace River. The team of biologists and technicians were formally established to fulfill the terms of BC Hydro's water license to *compensate* for fisheries and wildlife losses experienced upstream of the Peace Canyon Dam, something they sought to achieve first through interventions such as stocking programs and habitat restoration, and subsequently through more explicitly conservation-oriented research and public education programs (see, for example, Blackman n.d.).<sup>15</sup> As with downstream efforts to mitigate the impacts of the drying of the delta, the mitigation efforts that the PWFWCP has identified and developed as important to the ecological health of the fish and wildlife of the reservoir watershed, have been found at odds with alternative understandings of what it would require and mean to compensate and/or mediate the impacts of environmental change caused upstream of the dams. This became clear, for example, in the case of one of their public education programs. *Kokanee in the Classroom* was recently reviewed and cancelled in response to concerns raised regarding its focus on and celebration of the roles of kokanee salmon within the Williston Reservoir, a non-indigenous species established as part of the PWFWCP's earliest work and correlated with declines of indigenous fish species. I return to this program as the focus of chapter 4.

## 2.4 Contemporary controversies: the proposed Site C hydroelectric project

While conflicts over the changes wrought by the existing dams if not also over efforts to mitigate their impacts are ongoing, conflicts over the proposed Site C Clean Energy Project (hereafter Site C) are perhaps most readily recognized as the terrain of contemporary environmental politics in the region.

<sup>&</sup>lt;sup>15</sup> There is no history on the PWFWCP currently available, albeit and interesting history awaits writing. Former PWFWCP staff declined my requests to speak to them about the program. The official history that was available as part of the PWFWCP website (http://www.bchydro.com/pwcp/admin\_reports.html) has since been removed since the program's effective disbanding in 2010. However, something of an institutional history of the PWFWCP can be gleaned from the reports that are available on this webpage, however.

Following the deferral of the proposals made in both the 1980's and 1990's, BC Hydro once again re-initiated investigations into the proposal for a third dam for the British Columbian portion of the Peace River, in 2004. At this time, BC Hydro conducted a 'high-level review' of existing information and plans for the Site C project, acting on instructions from the BC Liberal Government.<sup>16</sup> Then, in 2007, the BC Government institutionalized a new commitment to the Site C Hydroelectricity Project in *The BC Energy Plan: A Vision of Clean Energy Leadership* (Ministry of Energy Mines and Petroleum Resources, 2007 cited in Dusyk, 2013, p. 67). Framed in accordance with increasing provincial, national and international attention in the first decade of the 21<sup>st</sup> century to environmental degradation and to climate change in particular, this plan posits Site C as a key means to meet the 'clean energy' and energy self-sufficiency targets defined within the same plan. Instructed to begin consultation with First Nations and land owners at this stage, BC Hydro entered into stage 2 ("Consultation and Technical Review") of the five-stage development process laid out for the project (for a more detailed discussion see Dusyk 2013, 116).

In April of 2010, the BC Government announced that BC Hydro would proceed with 'Stage 3: Environmental and Regulatory Review' of the assessment process, a move foregrounded earlier that same year with the articulation of a provincial clean energy strategy in the February Throne Speech. This strategy was formalized in May 2010 when the *Clean Energy Act* was tabled and passed, despite calls by First Nations, other residents of the Peace River region, and conservationists that Stage 2 consultation remained insufficient (see, for example, "AFN and Treaty 8 First Nations Call for Full Panel Review on Site C Hydroelectric Dam and Fulfillment of Duty to Consult with First Nations" 2010; Simpson 2010; McWilliams 2010). As part of this act, Site C was rebranded as the 'Site C Clean Energy Project.' Moreover, this act legislated a commitment to this project with the removal of regulatory oversight by the BCUC and with the 'stream-lining' of the environmental assessment as a joint federal-provincial review to be conducted within an expedited time frame.<sup>17</sup>

<sup>&</sup>lt;sup>16</sup> Dusyk (2013, p. 114) reports this to have occurred in 2005, and suggests third 'incarnation' really begun in 2007. I use 2004, given that BC Hydro considers 2004 as the starting date for Stage 1 (BC Hydro 2013d).

<sup>&</sup>lt;sup>17</sup> In her recent dissertation concerned with the relation of Site C to energy policy and planning in BC,

In its most recent (2011) articulation, Site C is described as a large-scale 'run of river' dam and generating station, with a generating capacity of approximately 1100MW. Comparatively, the anticipated generating potential of Site C is 35% of the WAC Bennett Dam with a reservoir area only 5% of that the Williston Reservoir (BC Hydro 2013e). The projected reservoir area is 9,330 hectares, at a length of 84 km and a width 2-3 times that of the river at present. It is anticipated to flood approximately 5,550 hectares of land. According to BC Hydro (2013e), the Site C Dam is not anticipated to have any effect on the flow regime of the Peace-Athabasca Delta. The proponent's Environmental Impact Statement was submitted in February 2013 and the amended statement was accepted in August 2013, so that at the time of writing the project for engineering and construction is expected in 2013. If approved at stage 3, the project will undergo further detailed engineering design work in stage 4 of the process, and finally, construction in stage 5. If approved, Site C is anticipated to come 'on line' by 2020 (BC Hydro 2013e).

From the perspective of project proponents, Site C has been a long-time coming. Site C has been almost continuously favoured by the provincial government of BC since the establishment of the Site C flood reserve.<sup>18</sup> As Nichole Dusyk (2013) has argued, the

Nichole Dusyk (2013, 70–71) has recently summarized the significance of the of naming Site C a 'clean energy project', suggesting that this title works to both uphold "the vision of creating a clean energy powerhouse since large hydroelectricity accounts for the majority of electricity generation in the province" and "situates clean energy as both the province's past and its future, directly referencing the province's natural resources as well as its political, cultural and infrastructural history." The latter is particularly salient, as Site C was again reimagined and justified in 2012 with relation to a newly articulated provincial *Natural Gas Strategy* (e.g. Waterman 2012). This strategy bolsters provincial dependence on Site C, naming it a key source of power for prospective LNG development at the same time that it officially extends the label of 'clean energy' to include natural gas to be extracted and liquefied (LNG) for export. Notably, this re-articulation of Site C remains unlegislated and is not formalized as a specific justification for the construction of Site C included in the environmental impacts statement submitted by project proponent, BC Hydro, in February 2013. It is not, however, inconsistent with the stated purposes given in the EIS (see BC Hydro 2013f, 5-6).

<sup>&</sup>lt;sup>18</sup> The newspaper archive on Site C suggests that since it was first officially proposed in 1979, Site C never truly 'went away' within provincial energy discussions. Rather, in both the 1980's and 1990's the project was truly deferred and not excised from the potential energy portfolio of BC. Moreover, considering Dusyk's (2013) recent analysis of clean-energy discourse within BC energy planning and policy, it is clear that while Site C and all large-hydro were only officially removed from the provincial energy agenda with the 2002 energy plan *Energy Our Future: A Plan for BC*, this move was very brief. Three years prior to Site C being official re-endorsed in the 2007 provincial energy plan *The BC Energy*.

most recent articulation of Site C as a clean energy project seems to work more to legitimize the longstanding project proposal with relation to contemporary energy planning discourse, than it does to operationalize any commitment to emissions reduction or energy self-sufficiency within the province. Indeed, it is a project that has what Dusyk calls significant "infrastructural and narrative inertia," given the infrastructural base of large hydro on the Peace and in the province more broadly and the fact that "narratives and interests embedded within" the infrastructure of large-scale hydroelectric developments on the Peace and, in relation, those on the Columbia, "have resisted change" (2013, 82). Written otherwise, the Site C proposal depends on the existing hydroelectric systems built as part of the Two River Policy and most specifically those on the Peace: existing large dams, reservoirs and transmission corridors. In fact, the approval and construction of Site C would bring to fruition a long-standing proposal to maximize the potential (hydroelectric and economic) of the Peace River power systems and is, as it was in 1980, one of the three primary purposes identified by BC Hydro in their Environment Impact Statement for Site C (BC Hydro 2013f, 5). Furthermore, as Dusyk (2013) has shown, the Site C proposal supports the continued endurance of narratives of a) a need for low-cost, reliable energy (re-articulated today as energy security or even as 'ethical/green' energy security); and b) economic development (contemporarily reframed through the export of energy, most recently LNG) concomitant with large-scale hydroelectric development, in and for BC. Significantly, both the desire to maximize the potential of the existing hydroelectric systems on the Peace and narratives of cheap and reliable energy are well supported in the province, including by many people in the Peace River region where the regional economy continues to be largely based on resource development (Anderson Insight cited in BC Hydro 2013e).

As with the initial Site C proposal made in 1980, however, the most recent 'incarnation' of Site C faces strong opposition from within the region. Moreover, the anticipated environmental and social impacts of the project have also elicited

*Plan: A Vision of Clean Energy Leadership,* BC Hydro was instructed by the Province to reinitiate investigations into the feasibility of the project in 2004.

comparatively more concern beyond the region this time around, including the concerns of First Nations communities downstream of the project and of a number of provincial, national, and international environmental organizations. Many of the same things that have led to the support and promotion of Site C have also prompted significant concerns. For example, large-scale hydroelectric development is a highly contentious form of energy production. At the same time that both existing infrastructure, narratives, and new 'clean energy' discourses support large-scale hydroelectric development at Site C over other forms of energy production and policy "fundamentally... the physical characteristics of the technology, [and] as it is developed in British Columbia, have contributed to opposition and conflict" as well (Dusyk 2013, 124).

Moreover, whereas further large-scale hydroelectric development in the province is supported at Site C in large part because of the existing dams on the Peace River, the proposal for further development on this one river has also raised significant concerns. For many people, opposition to large-scale hydroelectric development at Site C is articulated with reference to the Peace River region and often even more specifically to the valley where the river and its tributaries would be impounded for the Site C reservoir. Opposition to the project includes, amongst other things, concerns about Site C's anticipated impact for agricultural production given that the Site C reservoir would flood high-quality agricultural land; for wildlife that would lose important winter refugia and calving habitats, and whose migrations would be disrupted; for property, personal memories, local histories, and important cultural sites which would be impounded by the reservoir; for its potential to create and/or exacerbate cultural disjuncture; and as an infringement on Treaty rights and title. Notably, while many of these concerns are similar to those raised with regards to the initial Site C proposal, they are also articulated with relation to broader contemporary contexts including climate change, international frameworks of biodiversity conservation, the Canadian Constitution and specific legal contexts related to Aboriginal rights and title.<sup>19</sup>

Further, these concerns are also articulated specifically with relation to legacies of hydroelectric development on the Peace. Whereas Dusyk lends more attention to the

<sup>&</sup>lt;sup>19</sup> See Booth and Skelton 2011b, p. 369-372 for a discussion of this relative to Treaty 8 Tribal Association of BC member nations and environmental impact assessments.

relation between contemporary opposition to Site C and past personal experiences with BC Hydro in particular (see Dusyk 2013, p 127 for discussion of this 'history of antagonism'), I find it important to emphasize that concerns about Site C are very often, and very urgently, tied to changes wrought by the existing dams, reservoirs, and related industrial development, if not direct experiences of these changes. Indeed, environmentalist organizations such as the local Peace Valley Environment Association (a group first formed in reaction to the initial Site C Dam proposal); provincial groups like the Wilderness Committee and Sierra Club of BC; and international organizations like the David Suzuki Foundation and the Yukon to Yellowstone Conservation Initiative (Y2Y) all voice their concern about Site C as a project that must be understood within the context of the existing dams and the other extensive developments occurring within and proposed for the region for the ecological, as well as agricultural, consequences it would cause and exacerbate. The concerns of the Treaty 8 Tribal Association of British Columbia<sup>20</sup> regarding the project are even more consistently articulated as a response to cumulative impacts of energy and resource development in the region. As the Treaty 8 Baseline Community Assessment submitted to the Environmental Assessment for Site C explains:

Much has changed in the Peace River valley in the past century. The amount of land use and occupancy within the immediate Peace River valley by Dane-zaa - the "Real People" in Beaver language - has been reduced in recent years due to the alienating effects of modern industrial activities. These activities, including the uptake of lands for farming and other private holdings, habitat fragmentation resulting from increased oil and gas development, and forestry, and reduced faith in certain food sources (especially fish in the Dinosaur Lake and Williston Reservoirs) have undermined the ability of the T8FNs to exercise the rights promised to the T8FNs under Treaty 8. There are roads now, and farms, and two dams that have altered the flows of the River, the climate, transportation, and the ecology of the area. And, there are towns small (Hudson's Hope, Taylor) and large (Fort St. John) in close proximity to the Peace River (Team, 2012, p. vi; for a

<sup>&</sup>lt;sup>20</sup> Member Nations of the Treaty 8 Tribal Association (the Doig River, Halfway River, Prophet River and West Moberly First Nations) have expressed unanimous opposition to the project (Treaty 8 Tribal Association 2010). Notably, Blueberry First Nation, Fort Nelson First Nation, McLeod Lake First Nation, Kwadacha First Nation and Tsay Keh Dene are other regional First Nations in British Columbia are not member Nations of the Treaty 8 Tribal Association. Research and summary of each First Nations relationship to the Site C project falls beyond the scope of this paper.

more in depth discussion of cumulative impacts see Team, 2012, pp 51-94; see also Booth and Skelton, 2011b, especially Figure 2).

Importantly, they often also reference longer histories of change arising from Euro-Canadian settlement, as well as the longstanding failure of the provincial and federal governments to engage in full consultation and responsibilities to Treaty rights and Aboriginal title (Treaty 8 Tribal Association 2010).

Thus, like contemporary controversies regarding the ongoing impacts of the hydroelectric development of the Peace at the WAC Bennett and Peace Canyon dams and the ways these have been defined, evaluated, and mitigated, controversies surrounding the current Site C proposal can be understood to be controversies about what the river and region are. That is, they are controversies about different definitions and experiences of what this place is; what large-scale hydroelectric development would alter; where it would take place; what this place could be if the project goes through, as well as if it does not. This is what Tina Loo (2007) speaks to when she writes about the 'intimate geographies' that were disrupted by the construction of the dams on the Peace (ecologically, socially, culturally, as well as physically in the ways that transportation networks were cut off). I see this to also be true of conflicts over Site C.<sup>21</sup> What the Peace River, and more specifically the Peace River Valley, is understood and experienced as may well be different for different people whether they are in support of, opposition to, or more ambivalent about the project. But ultimately it seems that the conflicts about Site C are conflicts about what this place was, is, and could be.

Finally, contemporary controversies about Site C also extend beyond project parameters to the ongoing process of consultation and regulatory review. For many opponents to the project, the most recent proposal is particularly contentious given a strong sense of its inevitability this time around, especially in light of the 2010 *Clean Energy Act*, which both rebranded Site C as the cornerstone of BC's current energy policy and removed regulatory oversight to a great extent. While an environmental and

<sup>&</sup>lt;sup>21</sup> Dusyk (2013, 135-136) employs the analytic concept of the 'siting perspective' of Michel Callon to make a similar argument.

regulatory review for Site C is currently underway, many people feel disillusioned with this process itself. Writing about the Stage 2 public consultation process for the contemporary Site C proposal, Dusyk (2013, 120) argues:

[A] number of the problems were related to the larger institutional and political context of and how the consultation was integrated with decision-making. As consultation goes, it may have met international standards of best practice but it still failed to address issues that mattered most to local stake-holders and to adequately and transparently link public input to project decision-making.

As Dusyk (2013) has recently concluded and as my own research conversations and experiences further confirm for Stage 3 of the process, there is a strong sense of anticipation that the decision on Site C will be a 'political', rather than a 'scientific' or 'constitutional' one. The 'inertia' behind the rationale and support for the approval and construction of Site C has made many people feel overlooked. For example, the Treaty 8 Tribal Association within British Columbia has issued a statement of their concern that the province approved the project's progression into Stage 3 of environmental and regulatory review despite incomplete consultation at Stage 2 (Treaty 8 Tribal Association 2010). Concerns have also been raised about the format of consultation and review – the ways in which funding is allocated, its structuring as a series of public open houses as opposed to opportunities to provide official testimony during public hearings - which may render participation difficult, or at the least limiting participation to be on the proponent's terms (Dusyk 2013).<sup>22</sup> As a result, people have come up with alternative ways to engage with the issue and to voice their concerns and questions about the project and anticipated impacts of further environmental change. Controversies about Site C have come to play out beyond the official 'forums' for participation, taking the shape of community organizing, protests, Letters to the Editors, and forming alliances across scales, amongst others (see Dusyk 2013, 120-122 for a more comprehensive discussion;

<sup>&</sup>lt;sup>22</sup> As Dusyk (2013) suggests, this frustration with the process may be particularly potent for those people and organizations that also took part in the regulatory review of the Site C proposal in the early 1980's. Drawing on Michel Callon, Dusyk (2013, 111-112) has argued that in contrast to the current process of review, this initial project review in the 1980's served a transformative role in altering energy policy trajectories in British Columbia.

see Chapter 3 for an analysis of one of the alternative ways in which Site C has been engaged and interrogated specifically in relation to children).

### 2.5. Conclusions

#### February 28, 2013; Fort St John

Careful not to slip on the ice, we make our way from the car to the barrier along the edge of the ridge. From the barrier, the hill where we stand spills steeply to the river and flats, about 200m below. Somewhat ironically, even though it is one of my last days of fieldwork in the Peace, it is the first time – and will be the only time – that I've made the short trip south of the Fort St John's city center to this spot looking upstream towards the site on the Peace River where the Site C dam will be built if approved. My friends – my hosts in the region who have brought me down here today - point out a number of 'landmarks' to orient me: "Old Fort" to our left, downstream of where the dam would be; and to right, upstream of the landfill, "Site C". It ends up being a short trip all around. It's too cold to stay for long and we are quickly shivering, antsy to get back. Indeed, unlike anything that I've experienced in the last number of years that I've lived on the south coast of British Columbia in Victoria and Vancouver, it is much more like a winter day where I grew up outside the snowbelt of the great lakes in southern Ontario - only colder. And yet, whereas I'm highly aware of the ice at my feet, the Peace River flowed below us. If I had never really come to register the Peace River as changed - regulated before now, this was the closest that I came to doing so. Flowing and unfrozen, the Peace River revealed something of the social and technical histories of hydroelectric development written into its course. Flowing and unfrozen, the Peace River revealed something of the social and technical histories of hydroelectric development written into its course.

If not always obvious, the changes to the Peace River resulting from the hydroelectric development and regulation – changes to its temperature, morphology, ecology – are substantial. Indeed, both as they have been experienced as a result of the dams built on the Peace in the 1960s and 1970s and as they are anticipated of the Site C

dam, they are at the heart of contemporary environmental controversies in the Peace. Significantly, such changes have become the subject of controversies, as they are not only symbolic of social and cultural change in the region but also deeply tied to it as well. This chapter has tried to sketch the contours of these contemporary environmental politics tied to the hydroelectric development of the Peace River. Turning now to my empirical research, I use this sketch to make sense of how and why children have come to be caught up within them in the two cases that I consider below.

# Chapter 3: Students best for the world, a world best for students: teaching and learning about the Site C hydroelectric project

## **3.1 Introduction**

On January 27, 2012, the *Dawson Creek Daily News* (DCDN) featured an unusual series of fifteen Letters to the Editor about the proposed Site C hydroelectric project. It was not the subject matter that made these letters particularly interesting; it is not uncommon for the DCDN, as one of the two primary newspapers of the Peace River region of BC, to run letters about the locally contentious proposal. In fact, and as Nichole Dusyk (2013) has discussed in her recent doctoral dissertation, Letters to the Editor have become an important way in which people, often frustrated with the official process of regulatory review and consultation being conducted for the Site C Clean Energy Project, can voice their concerns. At the same time, Letters to the Editor have also been used as a venue for local supporters of the project, as well as the project proponents – BC Hydro and relevant ministries of the provincial government - to defend its necessity and importance (e.g. Stoekl 2011; Coleman 2011; Conway 2011). Nonetheless, the series of letters published late in January of 2012 were unique as the letters' authors were grade 5 and 6 students of a Dawson Creek elementary school.

These letters were unique for another reason as well. At the time that they were published they provided the only public record of children's perspectives on the proposed Site C project.<sup>23</sup> However, while they may be the only children to be published as contributors to the debates on the issue, the students who wrote these letters as their final project for a unit focused on Site C are not alone in learning about the issue at school. The proposed dam, its anticipated effects, and the ongoing debates surrounding it have been taken up within a small number of elementary and middle school classrooms in the region as the focus of recent units. These school units are the focus of this chapter.

<sup>&</sup>lt;sup>23</sup> The Treaty 8 Tribal Association's Baseline Community Assessment submitted to the environmental assessment for Site C and available online as of November 2012, also includes youth voices. This document also comments on the importance of children and youth as part of communities, and on the potential for Site C to have impacts uniquely related to young people, including amongst others impacts for intergenerational learning, for cultural health and continuity, attention and care for future generations (Team 2012).

Specifically, this chapter considers five school units focused on the issue of Site C undertaken during the 2011-2012 or 2012-2013 school years.<sup>24</sup> These units took place in 5 classrooms and 4 schools within School Districts 59 (Peace River South) and 60 (Peace River North). They took place across grades 3 to 8, and as part of English, Science or Social Science blocks, albeit always with a cross-curricular focus. Whereas all of the units were practiced to meet provincial curricular links and learning standards, one was also undertaken as part of the First Nations Studies Program developed and run at a School District 60 middle school and diverged from mainstream Social Studies curriculum to teach content focused on Aboriginal cultures and colonial legacies and through Aboriginal worldview (see table 1 for an overview of these units). Significantly, while these units were not developed as part of any coordinated program or mandate to teach about the project specifically at either the district, regional, or provincial levels, in all of them a focus on Site C lends itself to meeting a range of curricular aims, 'prescribed learning outcomes' (PLOs), embedded in the provincial curriculum. This certainly could include PLOs like those related to electricity in grade 6 Science (see BC Ministry of Education 2006). But, as the units focused squarely on Site C as an important local 'issue' - and one for which a decision either way is anticipated to have social and ecological effects - they were undertaken first and foremost in alignment with PLOs related to critical thinking: writing to 'communicate ideas' about complex issues as part of English Language Arts, and/or principles of social and ecological responsibility embedded within the Science and Social Science curricula. These units could also be undertaken as a way to assess students on the provincial 'Social Responsibility Quick Scale.' As Mr. Peterson explains:

[It]'s not for a grade, but it is reported on their report cards for how they're doing behavior-wise, and social responsibility... And, one of those things is, uh, 'Do they actively work towards making the world a better place?'...Well, how do you assess that in a kid? In a student, right? But you can assess that if they're talking about conservation, about/of our [unclear] energy and resources in a power point. And they're giving their reasons why we should use less electricity. Or what their opinions are on different forms of energy. They are making the world a better place as they're putting forth their opinions on that (K. Peterson, personal communication).

The provincial curriculum invites critical thinking about complex issues and a local issue like Site C can help to make the lessons more relevant to students. Learning about something local, Mrs. Trottier explained, "It's more meaningful than national news or...provincial news" (J. Hammer and S. Trottier, personal communication).

But in as much as curriculum is met through these units – guiding, facilitating and indeed legitimizing their focus on such a contentious subject - "there are," as Mrs. Puttick assured, "bigger ideas going on here" (B. Puttick, personal communication). For all their differences, these units can and should be considered in their similarities, developed and undertaken out of a shared concern that their students, as young people, only had a very limited knowledge about the proposed project and the social and environmental changes anticipated of it. In addition to providing a local example of a complex issue in alignment with PLOs, the specific issue of Site C and as it relates to the students as young people is critically important to these units. 

 Table 1. Summary table of the 5 school units focused on Site C. This table has been compiled drawing on interviews with the teachers involved, participant observation, and BC provincial curriculum documents (BC Ministry of Education 2006).

Teacher(s)	Students	City and	Curricular Links	Approximate Time Period
		School	And Provincial Assessment Tools	
		District		
Mrs. Hammer	Grades 5 and 6	Dawson	English Language Arts	September – December
and Mrs.		Creek, SD 59		2011
Trottier				
Mrs. Simon	Grade 3	Fort St. John,	Social Studies;	June 18-20, 2012
		SD 60	Based on the lesson plan "A Powerful Thirst: based on	
			Letting Swift River Go" in Into the Story: Language in	
			Action Through Drama (Miller and Saxton 2004)	
Mr. Peterson	Grades 5 and 6	Fort St. John,	Social Studies 5 and 6;	May-June 2012; November
		SD 60	Science 6;	2012 + fieldtrip in June
			Social Responsibility Quick Scale	2013
Mrs. Puttick	Grade 8	Fort St. John,	First Nations Studies Program;	February-May, 2013
		SD 60	English Language Arts	
Mr. Nock	Grade 7	Fort St. John,	Science;	February-May, 2013
		SD 60	English Language Arts	

This chapter attempts to make sense of these units relative to the contemporary environmental controversies that are their focus. To do this, I conducted research that was – to borrow a phrase from Anna Tsing (2005, x) – "variously ethnographic, journalistic, and archival". I recruited teachers who had or were planning to teach a unit focused on Site C over the 2011-2012 and 2012-2013 school years through a call sent out through school districts 59 and 60, as well as via research contacts in the area. I spent time with 4 of the 5 classes doing participant observation, conducted interviews with the teachers involved, and collected and reviewed unit materials (e.g. handouts, web links). Where possible, I also collected student assignments and conducted interviews with students regarding their perspectives on the proposed Site C dam as well as their experiences learning about it through these units. This mixed-methods approach allowed me to lend attention to the content but also the context and 'feeling' of these units. My analysis is embedded in my own experiences within the classrooms and within the region more broadly, as well as primary and secondary research into the contemporary controversies of the Peace (see Chapter 2).

Drawing on this research, in section 3.2, I elaborate on the context of these units, as they were similarly developed and undertaken as efforts to engage students to learn and, ultimately, to care about the contemporary Site C proposal and the debates that surround it. Following this, I review how the units attempted this in action (section 3.3), to finally ask, in section 3.4, to what ends the units sought to respond to the exclusion of children from conversations about this locally significant issue. Understood in the context of general disillusionment about the inevitability of Site C, I argue that these units were not designed primarily to insert children's voices into the ongoing debates about Site C, although this did occur in one case. Rather, the teachers sought to educate the students about the project as one dimension of world awareness and social and ecological responsibility understood to be the significant potential of young people. Moreover, this was often prompted by an ethic of care for children. As Mrs. Trottier (personal communication) explained: "Teachers... I think it's part of our responsibility to give them that awareness." Notably, in these units 'responsibility' takes on additional meanings related to strong moral concerns as hopes and anxieties related to proposed and pending environmental change "express powerfully" with relation to children (cf. Wall

2009, 254 speaking the similar way in which anxieties of anti-modernism were attached to children; see also Katz 2008; Kraftl 2008). These hopes and anxieties underpin a sense of responsibility and care for the world and for their students within it through which these units are made and made sense of. Engaging students to know and care about Site C is tied to a hopefulness about educating children in this way about Site C and thus about the roles that children can play in making good (better) social and ecological decisions necessary in the future, and perhaps most especially if Site C is approved. Furthermore, some teachers also express a pressing sense of responsibility and care for their students, given their anxieties about the anticipated impacts of the Site C project alongside which their students will grow up if it is approved.

## 3.2 "I hope that by the end you do care..."

## February 19, 2013; Fort St. John

Following an afternoon of fieldwork at a local middle school, I head off across town to the BC Hydro public open house being held at the Cultural Centre in Fort St John. It is a happy coincidence that the open house for public review of BC Hydro's Environmental Impact Statement (EIS) on Site C submitted to the Canadian Environmental Assessment Agency (CEAA) and British Columbia Environmental Assessment Office (BCEAO) earlier this month has coincided with my final fieldwork visit to the area. And, although I've already narrowed my research focus to explore questions of how and why children have come to figure as part of contemporary environmental controversies on the Peace River in the contexts of the school units focused on Site C and the *Kokanee in the Classroom* program (Chapter 4), I'm still curious to see if any children or youth attend this event.<sup>25</sup>

Coming in out of the cold, I take in the open house from the doorway while I hang my coat on the racks provided. The open house is being held in a large open room with information boards – enlarged, glossy print outs of BC Hydro's Environmental Impact

<sup>&</sup>lt;sup>25</sup> A small number of young people attended the previous year's open house in Dawson Creek as part of a protest, and I'm interested to see if this might happen again.

Statement Executive Summary – set up around the perimeter, with a smaller circle of boards and pamphlets at its centre. BC Hydro, CEAA, and BCEAO staff are stationed throughout the room, available to answer questions and have one-on-one conversations on their area of expertise. A fair number of people circle through while I am there, but it is never overly busy. Even though the issue is a significant 'bone of contention' within the region, the open house seems to mostly draw people opposed to the project. Both the presences and absences may well reflect that for many people there is a sense of Site C being 'a done deal'. Given that I have the chance, I take time at the open house to ask my own questions both about the project and the environmental assessment process.

My experience at the open house proved helpful to me for what it reflected about the exclusion of children from the contemporary politics of Site C. It confirmed for me that while children are not explicitly excluded from conversations about anticipated environmental and social change, nor are they intentionally included. The EIS does not consider children as a demographic that could experience these changes in unique ways.<sup>26</sup> Moreover, their participation is not solicited. This is true of the format of the consultation process, like this open house, which was set-up to allow everyone to move around, approach each other on their own time, and to have one-on-one conversations: what Nichole Dusyk (2013) describes as a "non-adversarial" format. If the experience is mundane for me, it was aggravating for some of the local people who attended and who expressed considerable concern not only about the impacts of Site C but also about the transparency of the process. Interestingly, this format might actually allow for greater participation by young people than would a question-and-answer format in a public hearing, to which they may have less access to participate socially, if not officially. Indeed, during the hour that I spent at the open house, two children arrived and took part in reading and asking questions about the information boards alongside the adult whom they accompanied. But if the open house did not explicitly deny the participation of children, nor did it invite their participation in any substantive way either.

<sup>&</sup>lt;sup>26</sup> This is not unique to the Site C assessment, however. In Canada there is not precedent nor expectation that environmental assessments, which include the assessment of social impacts of proposed 'mega-projects', consider children. Similarly, and equally worrisome, there is no precedent or expectations for these assessments to consider unique impacts of large-scale infrastructural developments for women either, despite the well-recognized, if not well-documented impacts of these sorts of projects (for hydroelectric developments specifically, see Braun 2011).

I noted the same thing later when I submitted my comments on the EIS via the online forms provided by the BCEAO and CEAA. As opportunities for participating in environmental assessment processes become increasingly digitized, they may indeed be more conducive to young people than formats previously used. Nonetheless, the content and style of these online forms serve to remind that within these processes for Site C, there is no attempt to intentionally solicit the participation of children.<sup>27</sup>

As much as this lack of attention to children can be critiqued in the ongoing process or environmental and regulatory review, the teachers – if not also the students – involved with school units on Site C spoke of the still more general exclusion of children from conversations about the project. Despite its profile as a 'hot button' issue in and for the region, for example, teachers explained that Site C was not something that their students seemed to know about comprehensively, or even at all. As Mrs. Trottier makes clear, while Site C is a contemporary and contentious issue in the region, it is something that remains decidedly beyond the scope of what local children are generally engaged in learning or thinking about:

Site C – it's really immediate stuff that probably, normally they wouldn't have an opportunity to learn about. Like kids, I don't know, I find they don't really know what's going on in our community... They're insulated because of all their other stuff. And, I was probably the same way as a kid, but they wouldn't have had ways to find out about that (J. Hammer and S. Trottier, personal communication).

Moreover, in addition to condoning the general resistance to engage with children about the issue of Site C within their communities, including from both parents/guardians and teachers, the teachers involved with these units also acknowledged the complexity of the Site C proposal, the debates surrounding it, and the process of regulatory review

<sup>&</sup>lt;sup>27</sup> Moreover, since the time of writing, public comment period on the panel review has been announced for period over winter holidays, can only be cone by people living north of Prince George and involves a highly detailed form (Preprost 2013).

underway.<sup>28</sup> This complexity makes it a challenging subject for anyone, and this may be amplified for children. "Because myself growing up," Mrs. Puttick reflected:

I was never educated on – because they've been talking about Site C forever – um, what it was going to do to us, how it was going to impact us. And I want them to know that kind of stuff. Because even for me as an adult having to go out and learn this kind of stuff, it's not easy" (B. Puttick, personal communication).

For their part, students often confirmed that these school units were indeed the first time that they had encountered the topic of Site C, or at least as a proposed project for which the decision could potentially result in significant changes to the regional landscape and, to a greater or lesser degree, their communities. During class, as well as in interviews, many students expressed that they had not known about Site C prior to learning about it in these units. And, while some students were clear and confident that they knew quite a lot 'going in' to these units, students more often felt their prior knowledge to be much more partial than comprehensive, if they had any at all. Sebastian's (grade 8 student, personal communication) experiences resonate with what many of the other students involved in these units expressed. Responding to my question of whether or not he had known about Site C beforehand, he explained, "I only really knew about the dam itself... I just knew Site C was going to happen but I didn't really know anything else though... I just heard about it in the newspaper one time." That is, if it was something that they already did know about, it was most likely something which they had learned about or been engaged with really only in passing, and sometimes quite literally so. Site C was not something that students had learned about in such a focused way before in school; rather, as students explained, it was something they had more likely encountered in the newspaper, heard about at the grocery store, or recognized from

<sup>&</sup>lt;sup>28</sup> In addition to the format of public consultation as public open houses which may often be challenging to engage in, as I reflect on above and as Dusyk (2013) has discussed more comprehensively, the complexity of the issue itself can only be said to be underscored (if not amplified) by the 15,000 page EIS statement submitted by BC Hydro.

the infamous "Site C Sucks Hay for Sale" sign on highway 29 on the drive between Fort St John and Hudson Hope, on the way to Chetwynd.<sup>29</sup>

Responding to the limited efforts and substantial challenges to engaging children with the issue of Site C, these units were undertaken in an effort to include students in conversations about the proposed project and different perspectives on it. As the teachers emphasized both to their students at the beginning of these units and again to me in interviews, *any decision* on Site C could have significant impacts for the region where they live, not least for these students as young people who will grow up in its wake. "I hope that their questions will be answered," Mrs. Puttick (personal communication) explained. Moreover, as Mr. Peterson (personal communication) sought to clarify what he understood to be his student's worries related to proposed project, including potential misunderstandings about its effects, he spoke to the ways in which some students may already be impacted by the proposed project: "…they worry. They think that Fort St John will be flooded…So, we try to clarify that for them."

Not surprisingly, however, while some students were enthusiastic about the opportunity to learn about Site C - whether they were truly taken with the issue or, as Mrs. Trottier and Mrs. Hammer (personal communication) suggested, "just keen" in general - for others, Site C proved a topic that failed to "touch" them. Some students were interested to learn about Site C from the beginning. In fact, Site C was chosen as the focus for one unit after students showed repeated interest in the topic during weekly 'newspaper reading' exercises, and in another after a student gave a speech on the topic. Moreover, for many students, learning about Site C for the first time, or learning about new facets of the issue, immediately provoked real interest and strong reactions. My field notes and interviews tell of multiple instances where students expressed surprise, upset, regret, curiosity, or, if less often, excitement about the proposed dam and reservoir. Just as often, though, my notes tell of more measured, dispassionate reactions. Still other

<sup>&</sup>lt;sup>29</sup> If travelling through the valley is one way through which some students confirmed that they had come to know, however minimally, about Site C, it is relevant to note that 'knowing about' Site C in this way is likely still less likely for students from Dawson Creek, for whom travelling through the Peace River Valley may be uncommon given that another highway, Highway 97, connects Dawson Creek to Chetwynd more directly.

students responded with more passionate indifference: "one boy - you heard it – [said] he didn't care either way," Mrs. Puttick (personal communication) recalled of a student who had exclaimed his disinterest with pride and exuberance.

Significantly, as Mrs. Puttick suggests in response to her student's indifference, these units are meant to do more than inform students about Site C and the debates that surround it. "I hope that by the end of the unit you do care either way," she explained, chiding but serious, "I'm not going to say there's a right way or there's a wrong way. But you do need to care, because this is our world" (B. Puttick, personal communication). Indeed, encouraging students to understand Site C as an important local issue is at the heart of what these units would strive to do over the days, weeks, and months that they took place. As Mr. Nock stressed to his students at the very beginning of their unit, Site C is not something that is simply important to know about. Rather, it is something so important that having an opinion on it is, as he understands it, a "responsibility" that he has "as a citizen of the region", and one that he hopes to foster in his students as well (Fieldnotes Feb 19, 2013). Clarifying that the unit is not meant as a pro-Site C lesson nor as a lesson against Site C, he explains that it is meant as an exercise through which students will form their own opinions and communicate these as their final assignment.

In the following section, I describe these units in action, detailing how they similarly engage children to learn and to care about the proposed Site C project.

## 3.3 "I just kind of expected that everyone would have an opinion..."

### June 19, 2012; Fort St. John

It's late morning when all of Mrs. Simon's students find themselves seated on the floor of the classroom, back to back, eyes closed and listening, or silently following along as she reads the letter they have received from the hydro commissioner. "The drowning of your town will make available the millions of gallons of water that will enable our cities and industries to thrive," they are told by the commissioner, Mr. Banks.

Their government had "voted unanimously to flood the towns and valley of Swift River" (Miller and Saxton 2006, 143). The notice of their impending displacement comes after two intensive mornings spent creating the fictional town of Swift River: following the story "Letting Swift River Go" by Jane Yolen (1995) about the creation of the Quabbin Reservoir near Boston, Massachusetts; painting a large mural; and then assuming their roles - Mayor, banker, teacher, "old wise woman", student, farmer – as part of their community. Together they had built collective memory discussing all that they valued about their town by the river, as well as through one-on-one interviews with a radio host from the 'big city'. But just as the announcement upset Sally Jane, the main character of the Swift River story, the commissioner's letter proves equally disturbing for her fellow 'town's people' sitting on the linoleum floor of their grade 3 classroom in Fort St John, BC. Mouths open. Eyes drop. Heads droop into the children's hands in sadness or back onto slumped shoulders in an attempt to comprehend. After about a minute of quiet but quite visceral reactions, Mrs. Simon gently prompts the students to collect their thoughts and write a reply to Mr. Banks. Peeling themselves from the floor and pairing or tripling off, the sadness and surprise is, for many, transformed into defiance. An energy captures the room as students set about writing to Mr. Banks. "No, no, no! This is war!" one group writes before erasing it and rewriting their staunch opposition in slightly gentler terms before presenting it to the class. The room becomes full with the chatter of the many small groups as they deliberate what to write in response, as much as what to think and feel about the announcement.

Watching this take place from my seat at the back of the classroom and then in joining and talking with the small groups as they wrote their letters, I was struck by the intensity with which these students were enrolled in struggles for and against environmental transformation. While this occurred first and foremost through their roleplaying and in relation to the fictional community of Swift River, it was also encouraged in relation to the ongoing debates regarding further hydroelectric development in their (non-fictional) home region in northeastern British Columbia. Later in the week, the class took a field trip to a site in the Peace River valley that would be dramatically transformed by the proposed Site C reservoir. After being asked to form and share an opinion on the impending dam and reservoir that would displace the community of Swift

River in the letters that they wrote to the 'commissioner', they were further encouraged to extend these feelings to the context of Site C; the students were encouraged to make connections between their Swift River experience and this contemporary local issue. Significantly, while they learned a bit about the proposed project both from their teacher prior to the fieldtrip and then again from the fieldtrip hosts, it is primarily in reflecting on the embodied, imaginative experiences of role-playing that these students were encouraged to understand and weigh the anticipated implications of a decision on the proposed Site C dam and reservoir.

In their shared concern to encourage students to know and care about Site C, the other units similarly engaged students to think critically about Site C as a locally significant issue. However, where Mrs. Simon's unit did so through fostering empathy, the other units employed a more traditional critical thinking approach, engaging students to study and evaluate different facets of and perspectives on the proposed project, before coming to their own. While admittedly the topic might not, and need not, incite passionate concern from students, the correlation between learning comprehensively about Site C and coming to an opinion on it was generally assumed and expected by teachers. As Mrs. Trottier reflected: "I just kind of expected that everyone would have an opinion on an important local issue...I just kind of thought that they'd had enough information that everyone would be for or against" (J. Hammer and S. Trottier, personal communication). Indeed, through a process of research and debate on the issue, the students were asked to develop and communicate their own informed opinion on Site C. While students were not assessed on what their opinion was, they were assessed on how they formed and supported an opinion on the proposed project.

To do this, all of the units had students gather information on the proposed project and debates from a variety of sources and perspectives: the internet, people in their lives, and guest speakers. Importantly, despite the units' focus on a local issue and one related to existing hydroelectric developments within the region, fieldtrips – however intuitive this may seem - were not a primary way in which students got 'to know' about Site C and the politics tied to it. Limited by financial and time constraints, fieldtrips only occurred toward the end of the units, sometimes even months afterwards,

if they were undertaken at all.<sup>30</sup> Mr. Peterson's approach to gathering information was typical. "I've asked them to go home and ask their parents about the Site C Dam," he explained before elaborating on other resources that they considered together in class:

I showed them a CBC documentary on the Site C dam. I figured CBC would be a national, sort of neutral source. And then I showed them a local source of a website created by the PVEA. They have a website, and we made that link and watched some of the articles from there, which gave them a view completely against the dam. And then we went to the BC hydro website and watched a little clip from there to show how BC Hydro is presenting the dam (K. Peterson, personal communication).

As Mr. Peterson's reflections suggest, access to the internet proved particularly significant in these units, perhaps especially with the limited possibilities for fieldtrips (figure 5). As part as of the grade 6,7 and 8 Science and/or Social Studies provincial curricula and facilitated by prioritizing access to technologies by the respective school districts,<sup>31</sup> the students in these grades – and their classmates in grade 5, in the case of the two '5/6 splits' - use the internet regularly for these subject areas. Students were directed on 'webquests' of different resources from various different stakeholders to explore what they had identified as relevant information about hydroelectric development and other energy sources quite generally and about Site C specifically. These 'webquests' were, as Mr. Nock explained to his students as they 'embarked', opportunities to gather facts about hydroelectric generation, as well as to develop questions, including ones to ask to the guest speakers who could come later in the unit.

<sup>&</sup>lt;sup>30</sup> The Swift River unit was undertaken at the end of the year. As a dynamic, cross-curricular unit, it was well suited to being taught at this point in the school year, when fieldtrips were also more favourable (K. Simon, personal communication). Given the timelines of the other units, undertaken in the fall or early spring, fieldtrips were less feasible. For one, there is more time for fieldtrips at the end of the school year. (In fact, as I've mentioned in the introduction to this thesis, the fieldtrip that I speak of in the first field note was made possible as part of a longer fieldtrip about something else entirely). Moreover, while fieldtrips to the existing dams were often desired for comparison, these dams are not open for tours until the late spring. All in all, the other ways of learning about Site C and environmental changes associated with an anticipated of hydroelectric development, and different perspectives on them, took precedence in these units, and became more important still given the limitations on fieldtrips.

<sup>&</sup>lt;sup>31</sup> In School District 60 in particular, improving student access to computers and the internet has been prioritized as part of their Wireless Writing Program. To learn more see http://www.prn.bc.ca/?page\_id=59.



Figure 5. Screenshot of a youtube video produced by Treaty 8 Tribal Association. This video provides a virtual aerial 'tour' of the proposed Site C reservoir. This particular video was used in at least two of the units that I consider in this chapter. The use of the Internet was important in most of the units, particularly given the limited opportunities for fieldtrips.

Moreover, whether or not they were explicitly encouraged to ask their parents, guardians or other people in their lives outside of school about the issue, for some students this was a key way through which they learned about at least one facet of or perspective on it. Reflecting on the research that she did for her persuasive essay on Site C during our interview, one student explained:

I went to my grandpa to help me with the wildlife... He took me down to the place where the Site C dam was going to be. And then we saw a deer and then a couple of baby deers. And we saw like an owl nest that had a whole bunch of baby owls in it. And my grandpa said all of those animals and babies are going to be gone. And I felt so sad... And then for my [section on impacts to] First Nations, I got a lot of that there too (Brittany, grade 8 student, personal communication).

Although she first spoke to me about finding most of her information from the materials that her teacher and the guest speakers provided for students, she also spoke animatedly about visiting the proposed dam site with her grandfather. Finally, guest speakers were arranged to provide additional sources of information for students in most of the units. Whether invited into classrooms or acting as hosts on fieldtrips when they did take place, guest speakers could reinforce perspectives already explored in class while providing a different, if not also more engaging, format. This was what Mrs. Hammer and Mrs. Trottier attempted in their unit, bringing in both a representative from BC Hydro, local farmers and "No Site C" activists representing perspectives that the students had already encountered from the BC Hydro website and through at least one newspaper article, respectively. Alternatively, guest speakers could be brought in to present still different perspectives or facets of the issue than those examined using other resources. This was the approach taken in Mrs. Puttick's class, and is likely both a reflection of her students being in grade 8 and of the unit being undertaken as part of the First Nations Studies program, in which they "try to stay away from the black and the white because there is so much grey and it depends on whose perspective you're looking from" (B. Puttick, personal communication).

To bring their research together, formal debates or 'dialogues' were held in a number of the units in the lead up to having students communicate and support their opinion in their final written assignments. Moreover, and indeed more often, informal debates occurred over the course of the units during class discussions, like the one Mr. Peterson recounted during our interview. Watching a youtube video about the projected Site C reservoir as a class:

One of the things was, 'I don't want them to flood. That's where we go hunting...Things like that. But I also had one student today who said, 'I went home and talked to my mom about it, and she said 'I'm not ready to give up my electronics. I'm in favour of the dam.' So we talked about that for a while (K. Peterson, personal communication).

In gathering information from diverse sources and perspectives, students were encouraged to evaluate it relative to other information, as well as with their own and others' experiences, concerns and perspectives encountered through the unit. Thereby, they were to form their own opinion on the issue or, if they had already had one to begin with, were encouraged to change or strengthen it given what they had learned. Through all of this, students were often encouraged *and interested* to understand how a decision on Site C could have implications for the places they know, the things that they do, and for their social geographies. If this was sometimes used as a way to foster student interest in the issue more generally, it was also something that teachers seemed to impress as particularly significant to their units. "It get's them thinking," Mrs. Simon described of her unit:

[I]f Site C goes through, that will affect our community. It could affect many things in our community - from being a small town to, or a smaller city, to a much larger city. And physically, geographically, it's going to look a lot different. And so if you're used to going out on the river with your family, and going fishing and boating on the weekend, and now all of a sudden you can't do that because there's dams and you're stopped, or its not safe, those are all things that they need to be ok with it or, I guess, reconcile (K. Simon, personal communication).

Amongst other things, students inquired about and expressed interest in how a decision would impact their use of electronics on the one hand, and, on the other, recreational and cultural activities on the land, as well as housing, schools and other social arenas within their communities and how their experiences within them could change.<sup>32</sup> Students were also encouraged to understand their own place not only geographically but also temporally relative to a decision on the proposed project. This was especially true of Mrs. Puttick's unit, approached as part of her class' larger efforts for students to place themselves and the proposed dam with relation to histories and geographies of colonialism. Of the units more broadly, Site C was often presented and engaged as

<sup>&</sup>lt;sup>32</sup> Whereas student assignments provide insight into students' interests or concerns in the issue, they generally focus more on the 'big picture' of the issue rather than providing any insight to impacts unique for or uniquely cared about by students. Interestingly, students also seemed to interpret the interviews that I conducted with them more as a forum where they needed to recall or perform their knowledge on the topic than the informal semi-structured conversations that I had hoped for. In our interviews students spoke much more often about the impacts of the issue for the region than to the ways in which they understood it to be of particular relevance for them. Being present in the classes, however, did allow me to understand this as a significant part of the units. Nonetheless, how Site C would affect their own personal geographies was not the only thing that caught student attention and opinions in class discussions. Nor did it always or equally in the different classes. In fact, this seems to have been less part of the conversation in the school unit undertaken in Dawson Creek where the impacts on the day to day of these students would be anticipated to be less than in and around Fort St John, closer to the site of the proposed project.

particularly relevant to students as young people, given that the implications of a decision on the project are expected to play out over the course of their lives. As Mr. Peterson reflected on a discussion with his students:

[O]ne of them is like, "I heard somewhere that if they build the dam, it'll take seven years to build it anyways. We're going to be in high school then. We're going to be about to graduate!" I'm like, "You're right. It would be really interesting to talk to you then to see what happens" (K. Peterson, personal communication).

Moreover, in their final essay, one student summarized what was also a particularly lively conversation in Mrs. Puttick's class on the subject:

This dam will create a hundred years of power. Sounds like a lifetime doesn't it, well that's actually what it is. A life time not only for us but for Site C. What happens when the hundred years is up? (Cade, Grade 8 student, final essay).

In addition to the projected timeline for the construction of Site C if it is approved, the 'life' of the proposed project also spurred student reactions as it could impact them as adults looking out for future generations (human and non-human).

Importantly, in all of the units, students were encouraged 'to care' about Site C not only because of what they were learning but also, if more inadvertently, by how. As the informal debates might suggest, students were encouraged to care about Site C - encouraged to inform and form their own opinion – by the general openness that teachers showed to considering what students found interesting and/or important about the topic at hand. That is, in addition to engaging students with perspectives and facets of the issue of particular relevance to the respective curricular links being made in each unit, teachers also addressed or attempted to address the students' interests, questions, concerns, and contributions as part of these units. This is reflected in the relative breadth of student assignments – citing details and perspectives beyond what was taught in class. It is also something that I observed of class discussions and of the units' 'trajectories'. For example, students' repeated questions and concerns about the implications of the

proposed dam for fish, and later about the possible implications of the hydroelectric project for the community of Taylor and a favorite local campground just downstream, each formed the basis of a focused discussion for one teacher and his grade 7 students. In another instance, students' strong reactions to a particular line of a video that they watched as part of their unit – the video quotes a question from the BC Hydro Website: "Are Aboriginal people responsible for their own poverty?" – moved their conversations about Site C still more concretely and substantively towards issues of racism and stereotypes than their teacher had anticipated, even as this particular unit was developed to fit with the broader focus on contemporary colonial legacies of the First Nations Studies Programs. In our interview, Mr. Peterson spoke to this openness that I am gesturing towards in another context still. Recounting what students were taught and what they researched about the anticipated implications of Site C for wildlife, he explained:

I just sort of teach that when they bring up, "Oh! It's going to kill all the animals!" It's like, "Well. Sort of. But not really." So then when I said 'conservation', then one of the boys is like, "Oh. Are you talking about conserving the animals?" So I said, "Well, I did mean conserving energy. But when you think about it, if we conserve energy then we don't have to build dams for more energy. Then we don't have to worry about conserving the animals because they won't be displaced (K. Peterson, personal communication).

This openness to student contributions, questions and concerns may, to a great extent, reflect the pedagogical practices of these teachers more generally. Nonetheless, it also reflects the degree of professionalism that is required of teachers engaging their students with a politically fraught issue like Site C, embedded in the approaches for critical thinking advocated in the curricular PLOs with which these units on Site C are meant to align.

Moreover, the independence and inventiveness that the units allowed students in engaging with the issue was equally important. This may be most evident of the Swift River unit, given that role-playing invites student contributions almost by definition. Similarly, however, the regular use of computers and the Internet as key elements of the

other units – perhaps especially given the limitations for field trips – allowed for these opportunities. Significantly, while students had access to the computers and internet during class time at least once a week and in some cases much more, they coveted it. Indeed, using the laptops or other computer technologies could infuse the classroom atmosphere, filling it up with a certain energy of activity, with at least an initial hum coming both from computers turning on and from the students' enthusiasm (J. Hammer and S. Trottier, personal communication; K. Peterson, personal communication). Particularly given that the access to computers or ipads facilitated independent inquiry as students used these technologies individually or in small groups, students experienced relative freedom in gathering information on hydroelectric development and Site C. While many students followed the 'webquest' or similar web-search directions given by their teachers - if only after checking their emails, changing their desktop photos, or 'gaming' before getting down to work - these technologies allowed other students to find alternative 'routes' through the assigned exercises. Many students became frustrated by the tediousness of retyping long 'urls' from handouts or with the layout, content, and other aspects of particular websites. Or, they became interested in what else they found in the process of 'googling' words and ideas inspired by the instructions they had been given, things brought up in class discussions, or their own interest in the topic. As a result, students often drew on additional or different web sources, information, and perspectives in their assignments and in contributions to class discussions.

Over the course of these units, students are engaged to form, inform, and finally share their perspectives on the proposed project. Even as students may not have been "hugely passionate or anything like that," as Mrs. Trottier (J. Hammer and S. Trottier, personal communication) reflected of the unit that she co-taught with Mrs. Hammer, by the end of the units most students did come to appreciate the pending decision on Site C as something potentially significant for their home region and their lives within it. "There was no one who was like, 'I don't care what happens'…" Mrs. Trottier explained, "…everyone had an opinion." If in some cases only because this was what they were being assessed on, students came to share their perspectives in power points, persuasive essays, and Letters to the Editor on the topic of Site C.
#### 3.4 Caring for the world; caring for children

The BC Hydro Site C dam is a dam that should not be built because there are amazing things in the Peace River that I'm going to tell you about. Here's what they are; plants that are awesome because they look amazing. There are animals that are amazing to look at because they are all around the Peace River. There's amazing farm land that would be destroyed like class A soil...So in conclusion I think it would only be a loss for us.

(Grade 5 Student, Letter to the Editor)

I believe we should put a check mark on the construction of the proposed third hydroelectric dam on the Peace River named Site C. If Site C is no built there will not be enough energy to power British Columbia...

(Grade 6 Student, Letter to the Editor)

...I think that the dam should not be built because of all these reasons even if there are benefits it still affects a ton of things. The main point is that it affects people, their homes, animals, fish, land, farms etc. My future prediction of the dam is that their [sic] probably going to build it from all of thinking of the dam that they've been doing.

(Grade 7 Student, final essay)

Considering the students' final assignments produced in the school units focused on Site C, it might seem that these units were undertaken as attempts to provide children a voice within the very debates about which they are engaged to learn and to care. In their assignments, students echo and draw together information and perspectives about Site C; and if they are more bluntly honest, less often accurate, and more linguistically and stylistically creative, these assignments do provide something of a window into the students' feelings and perspectives about the proposed project (see epigraphs above). The Letters to the Editor especially give this understanding material weight, considered in their context, published in one of the principal local newspapers that commonly report on Site C. Beyond the assignments, this might be argued of these units in other ways as well. For example, throughout the units, students and teachers alike spoke of the particular relevance of Site C to these students' lives, given the project's projected timeline, scheduled to be constructed and to come 'online' by 2020 if it is approved: the same period of time in which the students will transition through high school and into

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early adulthood. Moreover, one teacher defends this as the penultimate aim of her unit, explaining:

[I]f I've done nothing else with this lesson, that's sort of what I would have wanted it to do: for them to be more aware, and more discerning and question[ing] about the practices, and to go up to the powers that be and say, 'How come I don't have a say?' (K. Simon, personal communication).

But even as hopes like Mrs. Simon's articulate a strong a desire to see young people challenge their exclusion from contemporary conversations and decision making processes on Site C, her unit, like the others, does not seek only or even especially to do this.

Instead, teachers and students alike recognized and met the limits - professional, practical, and situational - to such hopes and aims. First, in as much as the topic of Site C facilitates meeting a range of provincial PLOs, there are nonetheless professional limitations structuring how and to what ends teachers can engage their students in learning about contentious or explicitly political issues. Further, even as teachers did try to provide their students an opportunity to add their voices to the ongoing debates about Site C, these sorts of intentions proved equally limited in a practical sense. If I was confronted with this over the course of my fieldwork, so were the students and teachers who may have initially understood this to be the ends to which these units were developed and undertaken. For instance, while there was one class that had planned to make a youtube video as a way to share the students' perspectives on Site C, this became unrealistic given other timelines and priorities. Amongst other things, fire alarms and assemblies took priority over the units that they had planned to be working on and that I had hoped to be observing. Social Studies, Science, English - each class is over when the bell rings and it is time to move on to the next. Put simply, these units are school units taking place within the bounds of this context.

Significantly, these sorts of aims were also understood to be limited specifically with relation to the issue of Site C. Reflecting what Dusyk (2013, especially 120-122)

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found in her conversations with local 'no-Site C activists' and municipal officials and staff, the teachers involved with these units often spoke explicitly in our interviews of a sense of disillusionment with the ongoing process of review and decision-making for the proposed Site C project (see section 2.4 or Chapter 2 above). Any drive to have children's voices inflect or influence the debates on Site C seems to have been tempered by a shared understanding that the decision on Site C will be a 'political' and 'economic' one, much more than one made in relation to public input – from *anyone*. Similarly, whether they were in favour of or contemptuous about the proposed project, many students voiced a sense of inevitability about a decision in favour of Site C in their class discussions, assignments, and in interviews with myself. As the student quoted in the third epigraph above suggests, she maintains little illusion that weighing in on the issue of Site C, as she has, is enough to substantially change the debates about Site C.

However, if feelings of disillusionment with or a sense of inevitability about Site C worked to limit the units in the way discussed above, these same feelings are nonetheless intimately tied to the units' shared project to enroll students to know and care about the issue of Site C.

In most cases, these units seem to be driven by a shared a sense of hopefulness regarding the possibilities of fostering social and ecological values and practices in their students through these sorts of critical thinking exercises. For example, reflecting on what he describes as the "growing group of kids in our society who are really invested in the environment and recycling and things like that, more than their parents," Mr. Peterson spoke in our interview to what he understood to be the roles that young people can play in enacting different, indeed better, social and environmental futures:

They'll go home and teach their parents, "We should recycle." Or, "we should not waste energy." You know, they'll go home, and I think with their research and what they come up with on their own, they may end up going home and telling their parents stuff that their parents don't know yet about the whole [Site C] concept... So I think that's what's going to happen. Just like recycling. It's the same thing... And I think that's a good analogy, because there are a lot of people who have always thrown things

in the garbage, so why would they change? But kids, that's the first thing that they learn how to do it, so they'll just always do it that way. So...I think the same with them on this topic, that if they feel passionate now then they will, as adults (K. Peterson, personal communication).

In this, the ends to which the teachers sought to engage children to know and to care about Site C align closely with the principles of social and environmental citizenship embedded in the PLOs on which they were drawing, as well as the regional and provincial educational contexts in which they were working. Consider, for example, the School District 60 goal to "develop socially responsible citizens who are 'Best FOR the world!'" (School District 60 2013). Importantly, as Mr. Peterson suggests, most of the teachers involved with these units were specifically hopeful about the potential of fostering environmentally and socially-minded young people with relation to Site C. To an extent, teachers did maintain some hope about the roles that children can play relative to the current conversations about Site C. However, the practice of fostering principles of social and ecological citizenship - or even just critical thinking - was anticipated to be increasingly important for the future, given the shared sense of disillusionment and/or inevitability about the proposed project's approval and construction. In engaging their students to know and care about Site C, partly with a view to their futures, teachers involved with these units acted with a sense of responsibility to the world.

In addition to hopefulness regarding the roles that children can play relative to uncertain social and ecological futures, and especially with respect to Site C, for some teachers these units were undertaken out of concern for their students as part of these futures. More than attempting to foster students who are best for the world, these units express teachers' concerns regarding Site C's implications for a *world best for their students*. The disillusionment and a sense of inevitability about the pending decision on Site C may be tied to anxiety and confusion about the negative consequences anticipated of the project. Significantly, these anxieties seem to become amplified or gain a sense of urgency for these teachers when they are considered with relation to their students as young people who would grow up alongside the project. Acknowledging her own worries or discomforts about Site C, for example, Mrs. Simon expresses these as tied to the potential for Site C to constitute the geographies that young people and future generations beyond them will "inherit":

I think of the Boons and how they've lived there all their lives. And I think of the land, and the soil quality. I think those things really bother me about the Site C Project... We're not, we're not thinking about the future and we're not thinking about our children if we're going to put that grade one soil that can grow so much to feed a community under water. Like, I feel that that's not a very responsible thing to be doing for our future generations. So, um, those are the sorts of things that I would want the kids to get out of it. But I don't know what they'll do with that particular lesson. But, if you were to do more with it and extend it...that might be valuable (K. Simon, personal communication).

Mrs. Puttick elaborates on this further. Reflecting on her anxieties about what Site C could mean for her students as young urban Aboriginal people, and differentially for them as boys and girls, she speaks to the importance of considering how anticipated changes may impact children not only as young people, but also as they are additionally situated in relation to it in their intersections with gender, race, history, and geography:

When you look at the statistics for, you know, some of the social problems that come out of when the economy booms and all the amount of people that are coming in and all of the problems that it can bring, I'm really worried for my girls. What's going to happen to them? I worry about what my boys are going to have access to. I worry about the type of people that are going to be in town. I worry about housing prices and food prices. And I worry about-- Because all of our, our kids are struggling with that on a daily basis. So, basically I'm scared (B. Puttick, personal communication).

Thus, just as students were engaged to learn about Site C because of the ways in which it could, does, or should matter to them, these same reasons prompted teachers to engage Site C in their classrooms as an act of responsibility and care towards their students.

In relation to a sense of disillusionment and inevitability about Site C, a sense that there is not a lot that can otherwise be done, teaching about Site C can be an expression – an ethics, and really a pragmatics - of care. Indeed, even when teachers would make sense of their units by invoking a sense of hopefulness regarding the potential for children to enact different social and ecological futures, they expressed a sense of responsibility and care towards their students as children. Often unarticulated verbally, it could be conveyed in other ways. It came out less in the precise words of the interviews that I did with teachers than in their tone, body language, and interpretations; more in considering the interviews as wholes rather than in parts; and overall through the participant observation of the units that I did. Significantly, if engaging students to know and care about Site C could be undertaken as an act of care in itself, Mrs. Puttick also spoke to her unit clearly, intentionally and powerfully as a practice of care towards her students. While the "bigger", normative, and truly emotive or moral aims at work in her unit ring true of what I sensed in the other units as well, she addresses them directly and as they articulated with her aims for the First Nations Studies Program of which this unit was a part:

[T]he goal of our program is for them to really take responsibility of, for themselves, for their learning, for their future. And this really is part of it. They need to be able to speak up for themselves and for their beliefs and have facts to back it up. I just want them to know that. I think for a long time, and some people still believe that Aboriginal people have kind of been reactive, and things have happened to us. And that's definitely true. Things have happened to us but now we're kind of taking, we're trying to teach them to be proactive and to know what they're getting into and this is just... This unit is a good way to practice that. Just kind of life skills, I think... They're not only going to be ready for grade nine, they're going to be ready especially for grade ten social studies. And they're going to be ready to be an Aboriginal adult, and that's the goal of this program. (B. Puttick, personal communication)

As she explains, engaging students to practice forming and supporting an informed opinion on Site C are skills important not only for the ways they will act in and for the

world, but also for their own success relative to uncertain social and environmental circumstances now and through their lives.

## **3.5 Conclusions**

The small number of school units recently undertaken in the Peace region with a focus on Site C are significant in that they are one of the only experiences in which the children involved have been, and perhaps will be, engaged directly with questions and conversations regarding the pending decision on the proposed hydroelectric project. These units are also significant, if for the students than especially for the teachers involved with them, as one of a number of ways in which people in the region have sought to engage with the issue of Site C beyond the official process of environmental and regulatory review for the project. Importantly, the teachers frame efforts to engage with Site C as particularly important when considered with relation to children. These units speak to the place of children within environmental politics, expressing hope for the roles that children can play relative to environmental change, as well as anxiety and concern about the ways in which their students may be, and perhaps already are, impacted by the proposed project. Responsibility and care for children is a reaction to these feelings of concern and anxiety and is ultimately the reason that the students involved in these units have come to be enrolled as part of conversations about Site C.

The following chapter is about another context in which expressions of responsibility and care have similarly caused children, albeit less intentionally, to be caught up as part of contemporary environmental controversies on the Peace. As a regional stewardship education program that became the subject of controversies related to politics of environmental change and mitigation, *Kokanee in the Classroom* offers something more to consider about notions of care for children and priorities in environmental politics.

# Chapter 4: Caring for salmon and children: the *Kokanee in the Classroom* program

# 4.1 Introduction

#### February 21, 2013; Fort St John

Although Mrs. Maundrell and I have never met before today, we seem to have no trouble spotting one another as she walks into the coffee shop. We greet each other with enthusiasm. Mrs. Maundrell has agreed to meet with me to talk about Kokanee in the *Classroom*, a stewardship education program with which she was intimately involved for over a decade at the school where she teaches. Over the next hour and half, and with the same enthusiasm with which she arrived, Mrs. Maundrell shares her experiences with the program. From our conversation it is easy to see how, for many students, the opportunity to raise kokanee salmon in their schools and classrooms as part of this program was the highlight of their elementary school experience. Rearing kokanee from egg, to alevin, to fry, students taking part in this program took responsibility for and experienced joy in doing so; monitoring the water temperature and quality of their tank daily and feeding the fish once they become fry. The rapidly developing salmon also provided inspiration for a variety of class and school-based activities, as well as unstructured 'visits' by students. Once the fish were reared to a particular size - and before school let out for the summer - children, educators, and salmon would all board a bus together for a fieldtrip to the Williston Reservoir to release the fish into their 'natural' habitat.

*Kokanee in the Classroom* is part a long tradition of salmon education in British Columbia, first formalized through Fisheries and Oceans Canada's *Salmonids in the Classroom* program in the early 1980's (see Fisheries and Oceans Canada 2005a). However, it also differs from it in important ways. In contrast to its 'parent program' centered on ocean-going salmon, this region-specific program focuses on the nonanadromous kokanee salmon, a "land-locked" version of the sockeye (*Onchorhyncus nerka*). More importantly still, *Kokanee in the Classroom* is different from other salmon education programs implemented throughout BC in that it is only relevant here in the Peace because of the history of hydroelectric development. As a result of the two large dams built on the Peace River between the 1960's and 1980's, reservoirs were created where before there was a river. As part of their earliest work, the Peace/Williston Wildlife Conservation Program (PWFWCP), a provincially administered conservation body, was charged with compensating for the upstream impacts to fish and wildlife populations as a result of the construction of the WAC Bennett and Peace Canyon. As part of this work, the PWFWCP carried out a stocking program to establish viable kokanee populations in the Williston Reservoir. Not indigenous to the Peace River, kokanee were initially, and successfully, stocked in the newly created Williston Reservoir given their known suitability to reservoir habitats and importance to reservoir food webs (PWFWCP 2006).

While this was initially done with the aim of creating a sport fishery, the ecological significance of kokanee to the new ecological systems within and beyond the reservoir became more evident and more valued with time (see, for example, Bergmann et al. 2003). As one fisheries biologist with the PWFWCP recently explained: "I believe the direct ecological effect of the kokanee population growth in Williston watershed may be the most significant change to occur, next to the actual formation of the reservoir itself" (Langston cited in PWFWCP 2006, 1). Over the 1990s, the PWFWCP expanded its conservation mandate and *Kokanee in the Classroom* was developed as part of these efforts in the latter part of the decade. Just as kokanee had proven ecologically beneficial through their presence in the reservoir, by encouraging stewardship values and practices, they could prove doubly so through their presence in classrooms. For over ten years, and to the joy of many students (and teachers), *Kokanee in the Classroom* was implemented in elementary schools throughout the Peace River region, teaching them about kokanee salmon, their lifecycles, and their roles in reservoir ecologies.

However, as for many other conservation and ecological restoration or mitigation efforts (see Robbins 2012, especially 176-198 for an overview), including others undertaken in response to the hydroelectric development of the Peace River (Loo 2007; see also Chapter 2, above), *Kokanee in the Classroom* was not uncontested. Late in the

spring of 2011, the program came under review by its funders to consider, at least in part, concerns raised by a local Dane-zaa First Nations about the program's focus on kokanee salmon, a species non-indigenous to the Peace (now Peace-Williston) watershed within their traditional and ancestral territories.<sup>33</sup> These concerns call attention to the (post)colonial context in which environmental change has not only been wrought on the Peace but also continues to be 'addressed'. At odds with the program's understanding and celebration of kokanee salmon as ecologically important within the reservoir ecosystem, the First Nations' concerns point to kokanee salmon as something different. Not least, the presence of kokanee within the reservoir watershed has been correlated with declines in the populations of indigenous species of fish of significance to the cultural and traditional economies of the First Nations (City of Fort St. John 2010; Team 2012, 151–152). While kokanee were stocked into the reservoir there has also been escapement downstream of the dams on the Peace River which has affected populations of fish such as whitefish. Coupled with the effects of high mercury content compromising the safety of fish found within the reservoirs, these additional declines have raised concern (Team 2012, especially 88-89). In response, but to the disappointment of many people involved with the program, Kokanee in the Classroom was cancelled following the PWFWCP review.<sup>34</sup>

This chapter offers a portrait of the well-loved, but ultimately controversial, *Kokanee in the Classroom* program. Considering how it took place at one elementary school – CM Finch Elementary School in Fort St John, BC - this chapter sketches how

<sup>&</sup>lt;sup>33</sup> This chapter is not meant as an analysis of the actual controversies about the program. This is the case because, these concerns, while noted in public documents (e.g. City of Fort St John 2010; District of Hudson's Hope 2012), have not been discussed publicly in detail. Nonetheless, it is important to note that while these concerns were certainly central to the program's review and cancellation - as the PWFWCP and BC Hydro have officially communicated (Coyle cited in CM Finch 2010a; BC Hydro staff 2013, email to author) – the review and cancellation took place alongside a comprehensive review of the PWFWCP. The cancellation of the *Kokanee in the Classroom* was a part of the restructuring of how PWFWCP operated more generally (see City of Fort St John 2010). A history of the PWFWCP and its intersections with energy planning and policy within the province, if not also provincial ideologies and policies regarding large-scale environmental change, mitigation and conservation, awaits analysis.
<sup>34</sup> Currently, efforts are underway to create a new regional stewardship education program, responsive to the histories of environmental change experienced on the Peace and more diverse understandings of stewardship relative to these changes. As I have been led to understand, this is a planned to be a computerbased education program being developed by BC Hydro in consultation with First Nations of the Peace River region (I discuss this further in section 4.5).

the program emerged as a stewardship education program and how it came to be valued as something more than this. I consider *Kokanee in the Classroom* as a second context in which children came to be involved as part of contemporary environmental controversies tied to the hydroelectric development of the Peace River, albeit less intentionally than they did in the case of the school units focused on Site C discussed in Chapter 3. My description and analysis of this program builds on a mixed method approach, of: a) key informant interviews with two teachers deeply involved with the program and b) an archive of materials on *Kokanee in the Classroom* available online and/or courtesy of the teachers with whom I spoke. Ultimately, from my encounters with teachers and their own research related to the program, as well as student letters, photographs, youtube videos, and other descriptions of the program 'in action', participation in this program created experiences of deep engagement and joy for students. A desire to create and extend these experiences and feelings came to underlie how and why *Kokanee in the Classroom* was practiced at CM Finch year after year.

In what follows, I begin with a brief history of the stewardship education program. I elaborate on the program's history as part of the PWFWCP's efforts at ecological mitigation of the impacts of large-scale environmental transformation upstream of the Peace River dams in section 4.2. Then, in section 4.3, I describe Kokanee in the Classroom as it took place at CM Finch where the program was practiced for over a decade. Over the course of each year, and in the care of the children, kokanee salmon change from egg to fry and were finally released in the Williston Reservoir. At the same time, the children were also changed through their interactions with the salmon, becoming responsible for the fish, if not also -as it was hoped - for the region beyond their classroom. Moreover, the program's focus on and celebration of the development of the kokanee through the early stages of their lifecycle was, in practice, matched by a focus on children's related scholastic and socio-emotional development. Turning to this more directly in section 4.4, I argue that at CM Finch Kokanee in the Classroom came to be valued and practiced for reasons beyond encouraging regional stewardship and most especially for the positive educational experiences and feelings that it created for children.

Finally, by way of conclusions, I return to the program's cancellation to reflect on the significant lament that this has caused for many people deeply invested in the program. If this has led to difficult questions regarding environmental change, environmental politics and the place and prioritizing of children, I approach these with ambivalence given the larger postcolonial context in which this program was developed, practiced, contested, cancelled, and lamented.

#### 4.2 Kokanee in the Classroom: a 'natural' history

"Something that I learned is that a lake is different than a reservoir. Go figure!" (Student letter to PWFWCP staff cited in CM Finch 2010a)

Salmon are important symbols in British Columbia, often thought of as ubiquitous and even synonymous to this place. Bound up with the geography of the province, salmon are a highly visible, as well as a highly affective presence, connecting the coast to the interior, like the flow of the majority of the province's rivers. Through their flashing red bodies and even the smells that tell of the annual run's end, salmon are often celebrated as connecting the past to the present and future; Indigenous peoples to their cultures and to each other; as well as settler society to the Indigenous peoples and cultures of the pacific northwest (Evenden 2004; Taylor 1999). Although ocean-going Pacific salmon (Onchorhyncus sp.) – sockeye, chum, coho, chinook/spring, pink, steelhead - lie at the center of provincial imaginaries, the 'landlocked' kokanee and their ecologies are also celebrated in Interior regions such as the Kootenays, Okanagan, and the Peace in which they are found (e.g. Fisheries and Oceans Canada 2005a, 2005b; Petch 2007), as is reflected in the content of salmon education curricula. However, unlike the Columbia Watershed in the Kootenays and Okanagan to which Pacific salmon - both ocean-going and not - are indigenous, the Peace River is part of the arctic drainage where rivers flow to the north rather than west to the Pacific. In the Peace River region of BC, there are no ocean-going salmon. The historical presence of kokanee is also highly contested. While kokanee populations are considered indigenous to the

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headwaters of the Parsnip and Finlay Rivers that feed into the Peace, kokanee salmon are non-indigenous to the Peace River watershed.<sup>35</sup>

Today, however, significant kokanee populations do inhabit the Peace/Williston watershed. As noted in the introduction above, these populations are the legacies of hydroelectric development on the Peace River where large dams have dramatically changed former riverine ecologies. Put simply, reservoirs are not rivers. But, as the student explains in the epigraph above, reflecting on what they've learned in the *Kokanee* in Classroom program, reservoirs are not lakes either. "Go figure!" Rather, they are new socio-ecological systems with different species and elemental compositions. Specifically in the case of reservoirs created by hydroelectric dams, these are habitats with low stability due to the 'draw-downs' from hydroelectric dams with few insects but abundant zooplankton. While these are difficult habitats for many species, kokanee, by contrast, can thrive. Indeed, kokanee are recognized as "good establishers" in such lacustrine and newly created environs (Blackman et al. 1990; MOE fisheries biologist, personal communication). This proved to be the case on the Peace; kokanee from headwater populations of the Finlay and Parsnip Rivers were found and gradually established small populations in the Williston Reservoir following its impoundment of significant portions of each.

More significantly, however, the presence of kokanee within the Williston Reservoir today can be especially attributed to a stocking program carried out through the 1990's (PWFWCP 2006, 1). This stocking program was a major component of the early work of the Peace/Williston Fish and Wildlife Compensation Program (PWFWCP), a conservation body of biologists and technicians funded as a joint initiative of BC Hydro and the BC Ministry of the Environment to "compensate for impacts to fish and wildlife

<sup>&</sup>lt;sup>35</sup> PWFWCP suggest that kokanee are indigenous to Thudate Lake, the headwaters of the Finlay River and also to Arctic Lake, the headwaters of the Parsnip River. (Both rivers feed into the Peace River. Together the Peace, Finlay and Parsnip Rivers were impounded in significant proportions with the creation of the Williston Reservoir behind the WAC Bennett Dam). The presence of kokanee within the Williston Reservoir has 'gradually increased' since 1968 (Fielden 1991). To the best of my knowledge, the Dane-zaa First Nations of the region do not accept kokanee as an indigenous species to areas of the Peace River watershed within their traditional and ancestral territories in which they now occur (former lands manager, personal communication). More recently, BC Hydro correspondence around the issues raised about the program seem to be in agreement that kokanee salmon are considered a 'non-indigenous species' to the Peace-Williston watershed (District of Hudson's Hope 2012) .

associated with the construction of the W.A.C. Bennett and Peace Canyon dams on the Peace River... to address any losses to fish, wildlife and recreation upstream of the Peace Canyon dam to achieve naturally diverse and abundant fish and wildlife populations in a healthy ecosystem" (Bergmann et al. 2003, 1). Specifically, kokanee were introduced to the reservoir watershed from hatcheries in the Kootenays, as well as new hatcheries established within the Peace region, to fulfill the terms of BC Hydro's water license for the WAC Bennett Dam to compensate for fisheries losses experienced as a result of the creation of the Williston Reservoir (Blackman et al. 1990). In addition to meeting a legal responsibility, stocking kokanee also seems to have been undertaken to go some way to meet the promise of a recreational and tourist attraction in the shape of the Williston Reservoir that the provincial government had made from the beginning of the Peace River power projects (Stanley 2010, 66). The choice to stock kokanee, a species nonindigenous to the waters of the reservoir before impoundment, was not incidental. As the PWFWCP wrote in the earliest *Williston Lake fisheries compensation management plan*:

On Williston Lake itself much of the initial effort will be directed towards kokanee. A major constraint on fish production in the reservoir is the large drawdown and the resulting lack of stable littoral environment. Kokanee, being pelagic planktivores, do not depend on the littoral zone and are proven performers in other B.C. reservoirs... A major objective will be to provide an expanded kokanee fishery by introducing stock into tributaries draining into embayments that are accessible to anglers. This should provide a terminal fishery for kokanee as they return to these tributaries to spawn. Additionally, kokanee can be utilized as forage by larger piscivorous species such as bull trout, lake trout, and Gerrard rainbow trout (Blackman et al. 1990, ii).

But if the initial goal set out for the management plan was to create a viable sport fishery economy, as much as ecology, the role of kokanee as "nutrient pumps" within the reservoir ecosystems became increasingly recognized and valued by the PWFWCP as it seems to have evolved more concretely into a conservation-oriented body. The PWFWCP came to advocate for the importance of "the ripple effect" they were found to have through the entire watershed ecosystem. In addition to forage for larger fish species, kokanee provide food for species such as bears and eagles as well. Kokanee moreover inject large amounts of nitrogen into the system at their death, negating the need for artificial fertilizers used in other systems and further contributing to ecological productivity of both aquatic and terrestrial ecosystems (PWFWCP 2006; McPhail 2007; MOE biologist, personal communication).

Kokanee in the Classroom emerged from this history. For the PWFWCP, public education fostering stewardship is valued as a crucial part of their broader mandate to compensate for the impacts of the Peace River dams and their reservoirs on fish and wildlife (e.g. PWFWCP 2000a, 4). Indeed, in addition to 'interventions' such as stocking programs like that for kokanee, research and public participation and education are central tenets of the PWFWCP's efforts to "conserve and enhance fish, wildlife and their habitat in the program area for diverse benefits, now and in the future", as defined in their 2001-2005 strategic plan (Bergmann et al. 2003, 2). The Kokanee in the Classroom program was developed as part of this, providing a forum to engage the public, and specifically children, with salmon lifecycles, reservoir ecologies, and conservation values; to teach about, but also further, the ecological benefits that salmon had in the reservoir (PWFWCP 1999; PWFWCP 2006).<sup>36</sup> In the words of PWFWCP fisheries biologist Arne Langston (cited in PWFWCP 1999, 4), in this program students "gain an understanding of the fish life cycle, the dangers fish are exposed to, and the role fish play in the ecology of the reservoir." Moreover, the PWFWCP contends that "[b]y raising the fish, the students will develop a sense of ownership for the health of the streams and reservoir, and an overall appreciation for fish and wildlife resources."

In its content, *Kokanee in the Classroom* largely draws on the *Salmonids in the Classroom* curriculum developed by Fisheries and Oceans Canada and used throughout the province of British Columbia (G. Maundrell, personal communication; BC Hydro

<sup>&</sup>lt;sup>36</sup> From the late 1990's onwards, the PWFWCP consistently lists public consultation and participation as an important part of their efforts (Bergmann et al. 2003; Andrusak and Langston 2000; PWFWCP 2000b). Specifically, the PWFWCP describes one of four strategic objectives for the fish program to be to "promote public awareness, appreciation and understanding of Northern aquatic ecosystems" (PWFWCP 2000b, 5). It is interesting to note that while the *Kokanee in the Classroom* program is not referred to on the website or in the general or in the Fish Program specific Strategic Direction report (PWFWCP 2000b), it – as an educational opportunity and not part of kokanee management - is noted as one of the highest priority tasks (#6 of 31) for the PWFWCP's Fish Program for the period of 2001-2006 (Andrusak and Langston 2000).

staff, email to author). Yet, *Kokanee in the Classroom* was developed by the PWFWCP to meet somewhat different objectives. More precisely, Kokanee in the Classroom was implemented to meet similar stewardship objectives to those defined in the Salmonids in the Classroom curriculum, but at somewhat different scales. Salmonids in the Classroom strives to provide the "building blocks towards a stewardship ethic" for salmon and their habitats and, to a lesser extent, an ethic of care for children's own bodies and wellbeing. "In short," it sums up, "this resource is about teaching kids how to 'take care in our own lives so that salmon thrive!" (Fisheries and Oceans Canada 2005a, vii). In contrast, the PWFWCP's Kokanee in the Classroom program promotes education about kokanee salmon and their reservoir habitats as less a way to build a stewardship ethic about salmon in particular, and more about building a stewardship ethic for the Peace/Williston watershed to which kokanee are (now) a part. That is, as part of their efforts to mitigate the impacts of hydroelectric development for fish and wildlife in the Williston Watershed, this program is built on a hopefulness that in rearing kokanee as a component of the local reservoir ecologies child participants will also gain an interest in and a sense of responsibility for these regional ecologies writ large.

Notably, many of the same life history characteristics of kokanee salmon that have made kokanee a successful and ecologically important species in the Williston Reservoir are also key to the feasibility and success of *Kokanee in the Classroom*. What kokanee salmon require to survive when reared in an artificial habitat like a hatchery or classroom aquarium is well understood and documented (see ATU chart, figure 6, for example). Kokanee are also relatively resilient and easy to care for in the early stages of their life cycle, even in a school setting. Conveniently, the early stages of the kokanee lifecycle jive with the rhythms of the public school year: kokanee spawn in the late fall with their eggs developing over the winter, turning to alevin and then to fry as they gain sufficient 'accumulated thermal units' (ATU's) by early spring. Importantly, too, kokanee are not harmed by minor manipulations of their ATU accumulation, which allows teachers to delay the hatching of the eggs until after the winter holidays. Even with these manipulations, the fry can predictably be of "fingerling" size and ready to be released into the reservoir by June when the school year is winding down. Other aspects of rearing kokanee further contribute to the program's success in schools, if in more surprising ways. For instance, the eggs and alevin require that the tank be kept dark for the first number of months. Far from being disappointing, teachers involved with the program at CM Finch reported that their students (and they themselves) enjoyed the intrigue and fun in having a covered tank with a small window cut into the cover. This window allowed students to peek through to watch the eggs (and, if they are lucky, see one hop!)<sup>37</sup>; notice when they've disappeared; and catch fleeting glimpses of alevin when they emerge from their hiding spots amongst the gravel. And, this only added to the experience of finally being able to watch more freely once the alevin become fry and the tank is uncovered (G. Maundrell, personal communication).<sup>38</sup>

Finally, in addition to their 'rearability' in a classroom, the 'releasability' of the kokanee fry is also an important to the feasibility, and indeed the legitimacy, of the program. Importantly, as the PWFWCP emphasize, *Kokanee in the Classroom* is not a hatchery program, particularly given that, true to 'wild reared' salmon ecology, very few if any of the 20-50 fry released by each participating school or class are expected to survive to spawn (PWFWCP 1999, 4; PWFWCP 2006, 1).<sup>39</sup> Nevertheless, the presence of stocked kokanee populations in the Williston Reservoir allows the annual release of classroom-kokanee to be taken as an unproblematic addition to an existing set of ecological relationships.

In the next section I trace the *Kokanee in the Classroom* program as it took place over the course of each school year, and year after year between the late 1990s and 2010,

<sup>&</sup>lt;sup>37</sup> Eggs "hop" when the salmon embryos flex their newly formed muscles (Fisheries and Oceans Canada 2005b, 97; Maundrell 2013, personal communication).

<sup>&</sup>lt;sup>38</sup> The importance of kokanee and not just any live animals or 'real experience' in their school seems to have became critically clear to teachers when the program was under review and a temporary program was attempted in which the PWFWCP provided habitats with a variety of fish from the watershed. To their disappointment, though perhaps not to their surprise, the teachers who I spoke with explained this temporary program did not seem to have the same positive effects as rearing kokanee. If this might be because the disappointment over the cancellation of the kokanee program may have dampened much of the excitement invested in the kokanee program and/or because celebrating the cultural significance of salmon became less relevant, the teachers also spoke specifically to the importance of the biological and ecological characters of the salmon that generated excitement, as I have described.

<sup>&</sup>lt;sup>39</sup> Naturally reared Pacific salmon egg-fry survival rates have been found to be about 8%, and 7% for *Onchohyncus nerka*, specifically (Bradford 1995). While this estimate is for anadromous (ocean going) *O. nerka*, it provides an approximate estimate for non-anadromous egg-fry survival *O. nerka* (kokanee) (e.g. Wood and Foote 1990).

at one elementary school in Fort St John. As much as the kokanee salmon were crucial to the program's development, it was the interactions between children and kokanee on which this program was built. As I show, through their interactions both the kokanee and children were changed. The kokanee developed from eggs to fry able to be released into the Williston Reservoir. For their part, in becoming responsible for and interested in the salmon, the children developed new knowledge, skills, and experiences that the PWFWCP and teachers hoped would inspire stewardship values and practices going forward.

bay temp C	Alus	hatch*	notes	
Day 1	8	8	55	Eggs laid, very sensitive.
Day 2	8	16	54	
Day 3	8	24	53	
Day 4	9	33	46	
Day 5	9	42	45	
Day 6	10	52	40	
Day 7	9	61	43	•
Day 8	8	69	48	
Day 9	8	77	47	
Day 10	9	86	40	
Day 11	8	94	45	
Day 12	7	101	50	
Day 13	6	107	57	
Day 14	5	112	68	
Day 15	6	118	55	
Day 16	5	123	65	
Day 17	4	127	81	Low temperature warning.
Day 18	4	131	80	
Day 19	5	136	63	
Day 20	5	141	62	
Day 21	6	147	51	
Day 22	7	154	42	
Day 23	8	162	36	
Day 24	8	170	35	
Day 25	9	179	30	
Day 26	9	188	29	
Day 27	9	197	28	
Day 28	9	206	27	
Day 29	10	216	23	
Day 30	10	226	22	Eyes become visible
Day 31	11	237	19	
Day 32	11	248	18	
Day 33	12	260	16	
Day 34	12	272	15	
Day 35	13	285	13	
Day 36	13	298	12	
Day 37	14	312	10	High temperature warning
Day 38	13	325	10	
Day 39	14	339	8	
Day 40	13	352	8	
Day 41	12	364	7	
Day 42	12	376	6	
Day 43	11	387	6	
Day 44	10	397	5	
Day 45	11	408	4	
Day 46	10	418	3	
Day 47	8	426	3	
Day 48	7	433	2	
Day 49	7	440	1	
Day 50	10	450	0	Hatch out
f ci day's	te perater	e continui sitin	til hat/h o?	24

Figure 6. An accumulated thermal units (ATUs) chart. Calculating the ATUS that salmon require at different stages of their early development helps to make rearing salmon in the classroom feasible. Reproduced with permission of Fisheries and Oceans Canada (Fisheries and Oceans Canada 2005b, 104).

# 4.3 Making salmon, making children: Kokanee in the Classroom at CM Finch<sup>40</sup>

For the decade that Kokanee in the Classroom took place at CM Finch Elementary, the children at the school would gather excitedly in the gym each year on a day in late October. This was the day when the PWFWCP biologists would deliver the salmon eggs to be reared by students at the school over the next number of months. For students who had been at the school in the year or two before, they also knew that the biologists would deliver something more: a highly anticipated presentation about kokanee salmon. Even when the presentation was given before a gymnasium full of over 200 students from kindergarten to grade seven, as can be seen in figure 7, the students were rapt (H. Gilbert, personall communication; G. Maundrell, personal communication; see also Day 2010). As Mrs. Maundrell detailed, this was an elaborate and creative endeavor orchestrated by the lead biologist from the PWFWCP who would take "one of the smaller kids and strap onto the front of them a backpack full of Cheetos and goodies. And he'd put earnuffs on the kids' ears for big eyes... And he'd put them into this big orange plastic Rubbermaid..." (G. Maundrell, personal communication). The student-come-Rubbermaid-come-egg then became the focus of and a participant in demonstrating the egg's physiology:

[The biologist] had different coloured tennis balls... And they represented oxygen, carbon dioxide and waste material. And they would have to pass it...in and out. ...And then he would stuff all kinds of things in and...talk about, "Well what if your soggy sandwich is in there, and it sits there?" You know, he would cover it with a big tarp: "What if it gets muddy? Well then the waste products can't get out? You know: that's your moldy sandwich."

"And this would go on," she continued to explain. "Each stage was *enacted*." Indeed, teachers at CM Finch describe this presentation as nothing short of amazing, engaging students' interest and attention, as well as the students themselves (as rocks, alevin,

<sup>&</sup>lt;sup>40</sup> This subtitle makes reference to Taylor's (1999) *Making Salmon*, which explores the ways in which salmon were made significant to the Pacific Northwest materially and symbolically.

mature kokanee, bears etc.), to teach about salmon lifecycles and their ecologies in the Peace River region.



Figure 7. Students rapt in learning about kokanee salmon. The presentation given at the beginning of the program each fall was always highly anticipated (photo courtesy of CM Finch Elementary).

To the enthusiasm of many students and teachers, the sort of 'hands-on' learning that kick-started the program each year could be, and was, carried forward over the course of the entire program. With the delivery of the kokanee salmon eggs, children in participating classes take on the roles of regularly maintaining and monitoring the salmon and their habitat in the tank. These regular interactions are crucial, given that the developing salmon require water of the right temperature and quality to survive and grow. They are also important for students in terms of learning and practicing specific, assessable skills. From the first day of receiving the kokanee eggs, the children learn how to measure and adjust the temperature of water. They also learn to check the water quality: to observe and describe the clarity of the water, to *smell* it, to monitor its

aeration and filtration, and to look for any other clues that something could be amiss. Three times a day, students undertake these tasks. And, while the tasks are shared amongst students of the same class, or even shared by multiple classes participating in the program in a given year, they provide daily opportunities for all of the participating children to grow and hone new skills. Students report their observations to their peers and their teachers, and these observations inform what they do next as a class or a school. An algal bloom requires immediate and exceptional reactions on the part of the students, teachers, and the PWFWCP biologists. More mundanely, the regular measurement and reporting of the water temperature creates an important 'log' used for predicting and monitoring the healthy development of the kokanee. At CM Finch, the measurements were compiled daily and used by students to calculate the total Accumulated Thermal Units (ATU's) – units of thermal energy correlate with kokanee development and growth - that the developing kokanee would have gained over the previous day. The students shared their calculations with the whole school by updating the ATU 'meter' on a school bulletin board, colouring in the ATUs gained each day. Together, then, they would refine their predictions of when the kokanee would reach the different stages of their development: when the eggs would hatch to become alevin, when the fry would emerge from the gravel, and then how quickly they would grow.<sup>41</sup>

As the kokanee develop from egg to alevin to fry, students take on additional responsibilities. First gradually raising the water temperature in the habitat to approximate a transition to spring, students then have to start checking for and counting the fry around mid-February, knowing from their ATU calculations that the fry should be about to emerge. Then, once they're 'all up,' students become responsible for feeding the fish. As one teacher suggested to me, this is no marginal task. Rather it is an event around which participating classes must structure their days to some extent. "First, they had to feed every hour," she explains. "Then we cut it back to every two hours. Then we raised the temperature and it got to be... three or four times a day" (G. Maundrell,

<sup>&</sup>lt;sup>41</sup> If these predictions were not realized, this would provide a significant indicator that something had 'gone wrong' in the habitat or with the eggs received by a class. The ATU graph is a tool that has been adopted from hatchery science for schools. As mentioned in section 4.2, because of the predictability it allows, it is a crucial part of what makes kokanee, and other salmon, so 'rearable' in artificial habitats (Fisheries and Oceans Canada 2005b, 101–104).

personal communication). When cared for through these practices, the fry reliably grow to approximately 3cm in size by the time they are released in early June.

Though less obviously important for the physical development and flourishing of the young salmon, students also gain skills and knowledge relevant to caring for the salmon in other ways over the course of the program. Students could, and did, visit the salmon regularly on their own time and in their own ways. In response to student wishes to stay connected to the project even as they moved on to different grades and teachers, these opportunities were increased for every one at the school beginning in 2009 when tank was first stationed in the shared space of the school library rather than a single classroom. Indeed, in surveys developed by the school's educators for both the 2009/2010 and 2010/2011 school years, at least 88% of students (primary and intermediate, first and repeat participants) reported that they had visited the fish in the library or that they "went to the library just to see the fish sometimes" (CM Finch 2010a; CM Finch 2010b; CM Finch 2011). In the same surveys, teachers further explain that children would take time to visit the fish not only during their class library time but also on their recesses, at lunch times, and before and after school. Students also describe this in letters that they wrote to the PWFWCP staff involved in the program. This time allowed them to become intimately familiar with the fish through watching them with interest and even becoming 'lost in the moment'. One student, for example, explains, "Finn the salmon is the fish I mostly watched. He is near the plants but when it comes to food he looks so much smaller than most the fish but he's the fastest." Another student shares: "I would watch the salmon in the library for so long that I sometimes completely forgot about book exchange!" (student letters cited in CM Finch 2010a). In visiting and watching the salmon, students like Finn's companion above, can make close observations that increase their knowledge as a result of their interest (and vice versa) in the salmon.

Moreover, tied to this, students are also encouraged to – and often did - share their questions and thoughts about the kokanee in their care with each other, with their teachers and other adults in the school community, and with their families (CM Finch 2010b; CM Finch 2011). Whether out of interest alone or for assessment-based research projects, the students took part in directing their own learning, that of their peers, and even of the larger school community of CM Finch when they wrote their questions and predictions on the 'Question Board' set up next to the tank. With their teachers' assistance, students could also direct questions to the PWFWCP staff, who attempted to maintain a connection to the students between their visit to the school in the fall and the fieldtrip in the spring (CM Finch 2010b; CM Finch 2011).

Finally, celebration is also an important way in which children rearing salmon at CM Finch gained interest in, knowledge about, and feelings of care for the developing fish. The kokanee were celebrated at each stage of their development with art projects, poetry, and even school assemblies, especially in the lead up to the salmon release. In 2011, for example, an atmosphere of celebration and shared excitement was bolstered across the whole school in the spring, when every class created and displayed art projects connected to the kokanee. Around the same time, the annual school-wide assembly gathered students and educators to watch a power point presentation of the many 'kokanee events' they had participated in since the beginning of the project back in October, this year set to the music of a song the grade 4s had composed earlier that year in tribute to the salmon. The release is also imagined and practiced as a celebration. Indeed, some years upwards of 110 children from CM Finch would take the two-hour bus ride out to Portage Yacht Club on Williston Reservoir, the site where they would learn more about reservoir ecologies and salmon habitat, and release the fingerling fry. Here, much like the initial presentation delivered each fall, the PWFWCP staff 'turn all the children into salmon fry' and send them scurrying about, delighted, to search for their food: insects hidden amongst the gravel of bug traps set in the reservoir shore. The actual release is signaled as especially significant. Each child is actively involved in releasing a salmon, performing the release with an ode to the fish and with the individual attention and encouragement of the program biologist (figure 8) (H. Gilbert, personal communication; G. Maundrell, personal communication; CM Finch 2011).

The release is itself celebrated as a transformative experience. For all the children – and indeed the salmon – involved, the release physically transforms the scope and scale of their relationships to each other and to the reservoir. The children and the kokanee fry

encounter the reservoir for the first time at the same time that they share their final encounter with each other. Thus, in as much as the aim of fostering stewardship is embedded in the program's delivery as a whole, it is perhaps most clearly grounded in the release, reconfiguring the children and salmon's relations from ones knotted by individual responsibilities, needs, and even friendships to ones reliant on a more expansive sense of their respective 'roles' in relation to the reservoir ecologies. Kokanee fry become part of the established kokanee population and part of the 'circle of life' ecological rather than educational 'drivers' – even if it is only short-lived, as they may be quickly gobbled up as forage for one of many possible creatures. For their part, the children are hoped to become stewards enriched with a sense of care and 'ownership' for an enlarged and enlivened geography, now and into the future. As the PWFWCP (2006, 1) has written of the program, "The students release the kokanee annually to Williston watershed streams knowing that the odds of their fifty fish surviving are very low, but with a greater understanding and appreciation of nature."

Importantly, the transformative potential of the release is understood to go far beyond this. As one teacher explains, for some students "[b]eing part of this activity was so important that they tackled things that they would normally find challenging such as a noisy bus and large groups to release the salmon" (CM Finch 2010b, 8). And, for other students who might experience school as variously challenging, uncomfortable, or boring - students who might seem otherwise "hard to motivate" - participating in the release became a goal that they could, and did, work toward (H. Gilbert, personal communication; G. Maundrell, personal communication). While the fieldtrip for the release could only accommodate so many students (given both financial and time constraints), students in classes not taking part in the release in a given year were encouraged to "apply" and compete for the additional seats on the bus by developing independent art and research projects. The school principal, Mrs. Gilbert (personal communication) recalls one student who "did the best work of their elementary schooling to be able to go." While she lamented that the quality of their work for this was something she wished the student could have done all the time, she also recognized that there was something about the kokanee project and the fieldtrip that inspired

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students. This is something, she suggested, that perhaps cannot be described in words and exceeds measurement in surveys.



Figure 8. Releasing the kokanee. This was an especially valued part of the Kokanee in the Classroom program (photo courtesy of CM Finch Elementary).

## 4.4 "...we continued it for years and years and years!"

Rearing kokanee in the classroom is no small feat. It is, however, a remarkable one and one that was truly loved by many who took part in it. While it was developed as an educational program to promote regional stewardship values and practices as part of the PWFWCP's mitigation efforts, considering how Kokanee in the Classroom took place in practice at CM Finch, it is clear that this program came to be valued for reasons beyond this as well. Indeed, for the teachers at CM Finch, their reasons for undertaking the program were never specifically tied to its significance for the region, per se. In fact, reflecting on their school's initial experiences with Kokanee in the Classroom, a teacher deeply involved with the program at CM Finch explained that in the beginning it seemed quite simply like a potentially fun and engaging way to meet a broad range of curriculum objectives at different grade levels. Signing up, following the encouragement of local fishery biologists, the teachers at CM Finch had thought, "Ok, whatever, that would be kind of fun," and were happily surprised at what they found. Left with 50 eggs and a sheet of instructions, it was, undoubtedly, a "huge experiment." "And then it just went so well," Mrs. Maundrell (personal communication) went on to explain, "we continued it for years and years and years!"

In addition to quickly proving an interactive and dynamic way to meet a broad range of knowledge and skill-based curriculum objectives (provincial PLOs) - from Science and Math to English Language Arts, Art, and Social Studies – teachers also found that *Kokanee in the Classroom* provided an effective way to meet more abstract and/or normative PLOs as well. They came to value the program emphatically for the opportunities it allowed for students to develop an ethic of personal, social, and ecological responsibility (CM Finch 2010b; CM Finch 2011; H. Gilbert; personal communication; G. Maundrell, personal communication). Many of these opportunities are anticipated by *Salmonids in the Classroom* activities developed to align with PLOs for BC and the Yukon: activities that encourage discussion and appreciation of healthy ecological systems, for example (e.g. Fisheries and Oceans Canada 2005b, xi–xvi; see BC Ministry of Education 2006 for PLOs).<sup>42</sup> These also included activities designed to complement the everyday responsibilities of feeding and monitoring the developing salmon; through different interactive games and even a salmon dissection teachers sought to draw parallels between salmon and child development, emphasizing healthy nutrition and environments as important to their respective flourishing (Fisheries and Oceans Canada 2005a; Fisheries and Oceans Canada 2005b; H. Gilbert, personal communication).

Teachers also used the opportunity of rearing salmon to encourage their students to learn and perform responsibility and care in other ways as well, extending their lesson plans beyond those suggested by the Salmonids in the Classroom resource and extending the normative focus beyond that already inherent to the PLOs.<sup>43</sup> In 2010, for example, CM Finch partnered with another local elementary school rearing kokanee in one of their classrooms to experiment and learn about climate change as part of their day-to-day practices. CM Finch reared their salmon at consistently one degree Celsius less than their partner school and, using their ATU charts, calculated and compared predictions for when their salmon would reach the different stages of their development. Students literally embodied their learning in this experiment, having made their predictions about the effect of climate change on salmon development at the beginning of the program that year by holding one hand in 5°C water and the other in 6°C degree water. While the students predicted that it would make no difference to the salmon – feeling no difference between the water on their hands – they revised their predictions over the course of their year, comparing their ATU calculations and observations with their partner school. Sure enough, the fry at CM Finch emerged ten days later than those at the partner school (G. Maundrell, personal communication).

This experiment exemplifies the aims that the teachers at CM Finch came to hold with respect to the *Kokanee in the Classroom* program. As for the PWFWCP, for the teachers encouraging students to be responsible for the developing salmon was never an

<sup>&</sup>lt;sup>43</sup> In addition to teaching principles of ecological and personal health, other concepts implicit to PLO's for K-7 Science Curriculum include 'ecological balance' and 'scientific method', for instance (BC Ministry of Education 2006).

end in itself. Rather, it was valued as something that could encourage a sense of social and ecological responsibility beyond the salmon too. However, in contrast to the program's development as a *regional* stewardship education program, for the teachers at CM Finch these were values and practices that they hoped students would extend both at larger and small scales still. That is, more narrowly than the PWFWCP, the teachers hoped that by taking responsibility for the kokanee, the children would also take responsibility for their own bodies and learning. At the same time, as my conversation with Mrs. Gilbert (personal communication) suggests, they also understood it as a way for children to learn about and practice themselves as part of and responsible to 'the world' more broadly:

Lisa: What was your aim with the project? ... [W]hat were you hoping students would develop out of this project?

H. Gilbert: I think the concept of connectedness beyond the whole concept [of] school connectedness. But that connectedness, that we are part, an integral part of a much bigger world and ecosystems and things like that. Because, I mean, you could - that fish tank - you could talk social responsibility. You could make connections to, "Well, you know, what would happen if we didn't feed the fish or we didn't look after the fish?" There were just so many different ways that you could connect it. And it was something that was concrete and tangible that you had that common experience of the kids having seen - There were just so many ways to do it. But then out of that you made those connections to a much larger world, whether it be social or environmental.

Lisa: And, within that, a sense of responsibility? Is that what you were saying earlier?

H. Gilbert: Yeah. A sense of responsibility and a sense of, "Well, if I do this, then this happens": that whole concept of not acting in isolation.

Lisa: Oh, I see.

H. Gilbert: "I do this and it impacts here, here, here, here and here."

Mrs. Maundrell (personal communication) explained it still more directly:

Lisa: And do you think it was about... the Peace Region, too?

G. Maundrell: No! I think it's about the world.

Lisa: About the world? Yeah?

G. Maundrell: I think it's about the world.

Even more so, however, *Kokanee in the Classroom* came to be valued for the more immediate, but perhaps still less tangible, benefits that students derived in taking part in the program at CM Finch. More than anything, *Kokanee in the Classroom* came to be valued for what it 'did' for the students, and how it made them feel. This is certainly captured, for example, in the enthusiasm with which Mrs. Maundrell and Mrs. Gilbert spoke about the program in our interviews, as well as in the ways that they and other teachers have written about the program elsewhere (CM Finch 2010b; CM Finch 2011). For example, Mrs. Maundrell wrote about the program to the Fort St. John City Council:

[T]his project does not just connect the children directly attached to the project. It connects all the children within the school. It connects the parents of these children and it connects all those who have been involved in the project before, in Fort St. John and in other communities in the Peace Region. It also connects our communities on the east side of the rockies with those on the west side of the mountains, who live with Pacific salmon in their watersheds. Perhaps most importantly, in this time where our children our experiencing an increasing level of disconnect with the natural world, this is a project that directly connects them to the world outside the classroom, to the natural environment, and to the planet (Maundrell cited in CM Finch 2010a).

Moreover, in addition to the truly transformative possibilities that the program (and especially the fieldtrip) fostered for some students; the teachers also extoll the deep

learning experiences and engagement that *Kokanee in the Classroom* could facilitate for all students; and, no less importantly, the joy students experienced in taking part and which fueled their enthusiasm to do so again. The teachers at CM Finch came to value not only the connections it enabled, but also what they recognized as a sense of "connectedness" in their students: "engagement, enjoyment, involvement, connections to others and personal connections" (CM Finch 2010b). Engaging the international model of "Comprehensive School Health', the teachers at CM Finch understood this "connectedness" to be critically important to a child's social and emotional health and wellness (CM Finch 2010b; CM Finch 2011; Healthy Schools Network BC 2013).

It is equally clear of the ways in which the PWFWCP interacted with students and the school community: just recall the initial presentation described above, the individual attention paid to each child during the release, the camaraderie that students were encouraged to feel in being able to maintain their connections to them over the program year. In practice – that is, in its actual practices, as I've tried to capture above in section 4.2 – it was undoubtedly more elaborate, creative, and celebratory than was necessary to successfully rear salmon. If these feelings and experiences also encourage social and ecological responsibility in children for the region and beyond, they were also valued in and of themselves.<sup>44</sup>

At the heart of it, *Kokanee in the Classroom* was practiced to foster and extend experiences and feelings of care and love not only between children and salmon, but also towards children. That is, as much as children seemed to show, and even exude, these feelings in taking part in this program, they also inspired these feelings in and from teachers and PWFWCP staff while also serving the primary goals of meeting curricular goals. Indeed, as previously discussed, the students' enthusiasm to stay connected to the project inspired that the decision to move the tank to the school library to increase participation and access for the whole school. Thereafter, the teachers suggest that they observed an even further deepening of engagement from students - whether participating intensively or more peripherally in the program. They were inspired to conduct research

<sup>&</sup>lt;sup>44</sup> It is clear that this program moves beyond an instrumental enrolling of children as 'vectors of change' which has been critiqued as strongly liberal and neoliberal models of individuals creating change (e.g. Evans and Honeyford 2012; see also Katz 2008).

and analysis to better understand what they were experiencing with their students (if not also amongst teachers and in the school community more broadly) and interested in furthering still: specifically what they had come to understand as a sense of "connectedness." Aligned with the characteristics of "connectedness" outlined by the BC Ministry of Education's Health Schools Network, the teachers' surveys of students and colleagues at CM Finch confirmed that high percentages of students were actively engaged; asked "powerful questions" (e.g. questions of depth); took ownership of their own learning (e.g. finding answers to their questions); produced high quality academic work; talked about their experiences with others; and expressed a desire to continue to participate in following years (CM Finch 2010b; CM Finch 2011; Healthy Schools Network BC 2013). Based on these surveys, then, the teachers found evidence for the connectedness that they felt they could "already [sometimes quite literally] see" (H. Gilbert, personal communication).<sup>45</sup>

Students also speak to their depth of engagement and enjoyment in taking part in the program in their own letters to PWFWCP staff. For example, students repeatedly describe *Kokanee in the Classroom* as "fun" and "amazing". More unexpectedly, perhaps, student also repeatedly note and lament the fact that one of the biologists (Randy) was not present on the fieldtrip to the reservoir, suggesting the degree of camaraderie students often felt towards the PWFWCP staff who they met each fall and often many years in a row. In these same letters students also emphasize how much they have learned and the ways in which the program actively involves and trusts them in this learning, from watching the salmon grow, to doing habitat and bug surveys out at the reservoir. A student like Blair (cited in CM Finch 2010a) captures this directly, writing,

<sup>&</sup>lt;sup>45</sup> Mrs. Maundrell shared a captivating example with me. "You talk about connectedness," she reflected, trying to capture something of it in words, speaking here about the presentation given by the PWFWCP each fall as an example:

<sup>[</sup>After a couple of years] we started to notice. We looked around our gym and we thought, 'Look at all the red shirts.' And we looked at where the red shirts were and the red shirts were in the older kids. And we thought, "What is that?" So I asked one of my kids, 'What's with the red shirts?' And he said, 'Well, if you wear a red shirt, he'll probably pick you to be salmon.' So - And one kid said, 'I'm wearing brown because I want to be picked to be rocks' - so, those kids had seen that, like some of those kids had *seen* that presentation every year for four years or five years because they'd started in like grade 2/3. So, by the time they're in grade 6/7 they're already anticipating, 'If I wear that colour, I might get picked to do that job'" (G. Maundrell, personal communication).

"It has been really amazing watching the "real thing" grow from egg to fry rather than just looking at pictures. I have done the project for two years now and last year before I started this I new [sic] almost nothing and now I know ALOT." Other students convey this more implicitly. For example, some of the children compare this program to school more generally, noting that it both made learning easier and school 'better' (see CM Finch 2010a). These students' letters affirm the teachers' stories about students for whom this program, and especially the field trip, became an important motivator. More implicitly still, in describing their close observations they made while visiting the salmon fry, like those students quoted above, these students revealed the depth of their engagement and the confidence with which they reflect on their experiences. The mixture of engagement and learning is well expressed in one of the student's letters: "I learned that the water at Williston Reservoir can rise really high. And salmon under trees can go out of them and with wood over top of them can hide them from predators," before adding, "I almost forgot...say 'hi' to Randy" (cited in CM Finch 2010a).

## 4.5 Conclusions

Please be advised that a decision has been made to defer the Environmental Awareness-Kokanee Rearing (Kokanee in the Classroom) program after this year's release of the Kokanee...I do recognize the value of these types of programs to our communities and am appreciative of the concerns expressed by folks when programs have to be deferred or cancelled. In order to effectively manage the program we also need to critically assess the work we do to ensure it meets budget targets, is aligned with our planning objectives and is supported by our client groups (Bob Coyle, Program Manager PWFWCP, email to CM Finch sent May 28, 2010 cited in CM Finch 2010a).

The decision to defer - and eventually to cancel - *Kokanee in the Classroom* was made in the spring of 2011 in response to local First Nations concerns to question rather than celebrate the role of kokanee salmon in the Peace/Williston watershed.

Given their enthusiasm for the program and its possibilities, the cancellation of *Kokanee in the Classroom* came as a great disappointment for many of the program's

participants, including PWFWCP staff, students, and teachers. In fact, for teachers and students at CM Finch, the disappointment was so great that they formed a delegation to the Fort St. John City Council to support their petition to have the program reinstated. Coming to understand the program as I have through my research and writing has challenged me to understand the delegation that was formed in response to the cancellation as not simply dismissing the First Nations' concerns about the program, but as a way for those intimately involved to ask questions regarding priorities related to legacies of large-scale environmental change and, in this case, including changes resulting from the controversial mitigation efforts. In relation to the large-scale environmental changes experienced in the region as a result of the formation of the reservoir and the subsequent establishment of kokanee populations, the delegation sought to emphasize care for children as a priority in the politics of environmental change on the Peace.

While the controversies to which the program had become subject were conflicts over what kokanee salmon were understood to be, and indeed what they were ecologically within the Peace/Williston watershed, at CM Finch, kokanee salmon also came to be valued as something else again. Over the decade that the Kokanee in the *Classroom* program had run at their school, the kokanee had come to be valued as important for the children who were engaged in rearing them. The kokanee had come to be valued as important for intensive learning, transformative experiences, friendships (human and non-human), and other good experiences and feelings that teachers and the PWFWCP program staff sought to foster and extend. In as much as these good experiences and feelings could be hoped to foster social or ecological responsibility for the region or otherwise, it was the loss of the more grounded and immediate benefits the "connectedness" - that the children experienced that drove the delegation in an effort to defend and preserve what they experienced as such an invaluable program. Especially as the cancellation of the school-based program would not reverse the presence of kokanee salmon within the Peace/Williston watershed, the delegation emphasized care and responsibility towards children as a priority. If the environmental change had already occurred, should the region not derive some benefit from it? In this program the benefits

for children were significant. As Mrs. Maundrell asked towards the end of our conversation on the day we met:

[We have] Kokanee in the Williston Reservoir and, you know, is, is our not having kokanee in the classroom, is that going to change what's happening at Williston Lake? Or is, you know, is teaching our kids about this issue, um, is there a bigger benefit to teaching our kids about, you know, what happened here, we're still going to do this, but here's what we need to think about? (G. Maundrell, personal communication).

Notably, while efforts are underway to create a new regional stewardship education program, responsive to the histories of environmental change experienced on the Peace and more diverse understandings of stewardship relative to these changes (BC Hydro staff, email to author), the teachers involved still express disappointment. First an alternative program using a variety of fish species was attempted. Currently, a computerbased education program is being developed by BC Hydro in consultation with the First Nations of the Peace River region of BC. But the loss of kokanee in particular is lamented as significant. The physiological and ecological characteristics of the kokanee and the types of interactions these facilitated worked especially well in a primary educational setting, fostering the experiences and feelings that teachers valued as important to and for their students.

However, the First Nations concerns about the program need to be understood as an important counterpoint to its celebration. Their concerns suggest other priorities for care and responsibility relative to the legacies of environmental change in the Peace. Prioritizing care for children, while undoubtedly important, is also a situated concept. Experiences and feelings that are prioritized as important for children go on within broader political contexts and with their own implications. The concerns raised about the program's focus on and celebration of kokanee speak to other ways to and priorities for care and perhaps especially in the context of the pending decision on Site C, which would be the third hydroelectric dam and reservoir impacting the traditional and ancestral territories of the Dane-zaa First Nations of the region (see Booth and Skelton 2011; Treaty 8 Tribal Association 2010; Team 2012). As the Treaty 8 Tribal Association

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has declared on behalf of their member Nations, Site C is anticipated to further compromise the possibilities of sustaining "our way of life and exercise our treaty rights" (Treaty 8 Tribal Association 2010; see also Team 2012; Booth and Skelton 2011). <sup>46</sup> Understanding this underpins my own ambivalence about the Kokanee in the Classroom program: it is not only caring for children in the specific way of fostering and extending experiences of deep learning, social connections, and joy that can or should be prioritized. In fact, prioritizing care for children takes place within a broader political and postcolonial context of environmental change and mitigation, and is only one 'answer.'

Thus, while the questions that the cancellation of the program raised for many people involved with it are valuable and challenging and deserve consideration, I also understand the program's cancellation as appropriate and necessary. Prioritizing care for children, while undoubtedly important, is one priority amongst others. While teachers strive to derive benefits from the already existing environmental change, in calling attention to the contentiousness of efforts to mitigate environmental change, the First Nations' concerns invoke other priorities for care and responsibility, such as the interlinking of ecological and cultural health and as these are necessary for cultural – and ecological – continuity (e.g. Team 2012; Booth and Skelton 2011), and other ways to enact it. The First Nations concerns about the program are about kokanee. But I see that they need to be understood to be about the implications of celebrating the ecological roles of the kokanee in a reconfigured physical, cultural, social and economic landscape facing yet further change as a result of hydroelectric development.

Considered within the postcolonial context in which the program and its cancellation took place, the concerns raised about the program and those raised in response speak to the fact that responsibility and care for the future can be defined and practiced in different ways, and indeed with implications for others. If the cancellation of *Kokanee in the Classroom* compromises care for children as defined and experienced at CM Finch, prioritizing *Kokanee in the Classroom* as a practice of care for children can itself compromise other priorities for and efforts to enact care and responsibility.

<sup>&</sup>lt;sup>46</sup> While I did not conduct research into these concerns specifically, this understanding is one that I draw from familiarity with the position on Site C of the First Nations' that raised the concerns about the *Kokanee in the Classroom* program.
## **Chapter 5: Final reflections**

To many people, there may seem to be few intersections between children and environmental politics. If not irrelevant, instances where children have come to figure as part of these issues may seem to fall beyond more immediate and pressing concerns (perhaps most of all for some people who are deeply invested in contemporary environmental controversies related to the hydroelectric development of the Peace River). However, as the cases that I have explored in this thesis suggest, children are involved as part of these environmental controversies when and where they are understood to be of particular significance relative to environmental change on the Peace River.

Care and responsibility by and for children frame these intersections. This is the case whether students are engaged intentionally with environmental politics of the Peace River in learning about and being asked to 'weigh in' on Site C or whether they have come to figure as part of the controversies more inadvertently through their participation in the controversial Kokanee in the Classroom program. In both cases, teachers engaged their students to learn about environmental change tied to hydroelectric development on the Peace in the hope that the children will become caring and responsible citizens in a world that has been and may continue to be subject to such large-scale environmental changes. This engagement implies hopefulness that children can learn to care about their environment and enact more socially and ecologically responsible futures. As much as children are themselves important and lively actors in both educational contexts, they are also important in that they inspire in educators a sense of care and responsibility for children that also deeply underpins their practice. Notions of caring for children bring children still more centrally into the contemporary controversies tied to the hydroelectric development of the Peace. The children involved inspire these feelings of care in a very pragmatic and situation-specific way, given their unique 'position' as young people relative to social and ecological impacts experienced and anticipated of large-scale environmental change in the region. Further, they also invite feelings of care expressed towards them in expressing their own. For example, as I have discussed, for a number of teachers who undertook school units focused on Site C, the uncertainties or worries that

their students expressed motivated them to teach the units as a way to act on their hopes or anxieties related to the proposed Site C project. Relatedly, the success of the *Kokanee in the Classroom* program can be largely attributed to students expressing fun and joy through their experiences: feelings that teachers then aimed to foster.

These arguments provide new dimensions to the literature within which I have framed this project. In relation to literature that has tried to expand who and what are considered relevant to environmental politics, this thesis shows that children are important. As has been explored with gender, race, and non-humans within recent political ecological scholarship, this thesis bolsters interest and understanding in exploring the material and discursive intersections of children and environmental politics. This thesis draws on concepts of Children's Geographies to understand both the material, discursive, emotive and perhaps affective importance of children within and with relation to environmental controversies tied to the hydroelectric development of the Peace. Moreover, it highlights the value of considering children in analyses of environmental politics - for children, for others, and for scholarship. Attending to children does not simply add an additional subject of inquiry to the study of environmental conflicts. Curiosity as to how and why children are involved as part of contemporary environmental politics on the Peace, for example, has also required that I adopt an expansive understanding of spatial and temporal dimensions of these environmental controversies as well.

This thesis also supports efforts to attend to and include the embodied, emotional, and more affective dimensions of environmental politics. In fact, children may be particularly good subjects for future studies in this area. Echoing Horton and Kraftl (2006), I understand that compared to adult subjects, attending to children may elicit geographers to think in different ways. "This may be," as Children's Geographer Becky Tipper (2011, 151) has similarly found, "because of children's particular orientation to the material, physical, spatial and sensory aspects" of their social worlds and geographies. As Children's Geographers have explored (Horton and Kraftl 2006; Holt 2011; Tipper 2011), and as I have found in my own research experiences, the inclusion of children in research effects the types of questions asked and methodologies pursued; it

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invites questioning of concepts and assumptions; and it lends itself to the study of everyday practices and contexts, and the meanings and feelings that they constitute and through which they are constituted. To a certain extent, then, this thesis answers recent calls for this sort of attention within political ecology and environmental history (e.g. Kosek 2006; see also Parr 2010). For political ecology, the embodied, emotive, and affective dimensions of environmental struggles are important considerations more generally and research attentive to children may offer significant insights, for example, in exploring topics like iconic species or emotions within environmentalism and which this thesis has really only been able to hint at. Considering the Kokanee in the Classroom program, I am convinced that an environmental history of salmon education in BC could have much to offer to these discussions!

Further, this thesis speaks to the importance of caring about the place of children in relation to contemporary controversies tied to the hydroelectric development of the Peace River. Along with the teachers who agreed to work with me for this research, I share anxieties about the ecological and social impacts anticipated of further hydroelectric development at Site C and see the significance of calling attention to the unique ways in which young people may be affected by a decision on the project but which have been thoroughly overlooked. Moreover, this thesis has also allowed me to reflect on the importance of attending to care and responsibility within Human Geography and the Social Sciences more broadly, while also understanding care as a situated concept. What it means to care, while being extremely important in itself, can have different meanings. And, what is prioritized as the subject or object of care and responsibility can similarly differ. It is crucial to recognize this in the contexts of environmental politics broadly, in postcolonial British Columbia generally, and as these relate contemporarily to hydroelectric development on the Peace River. Including and caring for children is a priority in the context of large-scale environmental change, while also being mindful of the contexts in which priorities for care are defined and defended.

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