Emergent citizen groups and command and control:

Competing paradigms in the 2005 Lake Wabamun, Alberta disaster response

by

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Abstract

For decades, scholarly research on emergency management has been characterized by two competing paradigms, each with different implications for policy and practice. In the field of disaster studies, this theoretical debate between emergent groups and the traditional approach of command and control revolves around the benefits and challenges of incorporating emergent citizen groups into disaster response activities. The purpose of this research is to examine this debate in light of the 2005 Lake Wabamun, Alberta disaster, with an emphasis on "communications" as its core point of focus. Specifically, this case study will identify the key factors that lead to the formation of an emergent citizen group and the ways current official emergency management policy and practice might recognize, hinder and/or support the activities of such groups.

Data was gathered through a review of documents pertaining to the incident and through focused interviews with key stakeholders.

Analysis of findings revealed that access to information (or lack thereof) was a key factor in the formation of an emergent citizen group at Wabamun during the recovery phase of the incident. Conflict was greatly diminished once the group was included in recovery efforts and once included, their activities were acknowledged to have enhanced those efforts. The value assigned to group contributions, however, did vary among participants.

Findings of the study also suggest that the nature of the disaster and community demographics may be other key factors involved in the emergence of such groups, factors not accounted for in standards based on command and control. This suggests a paradigm shift in emergency management policy is required and highlights the need for further research in this area.

1. Introduction

Emergent phenomenon has been a central feature of the disaster literature since Samuel Prince's dissertation on the Halifax explosion in 1917, and the existence and contributions of emergent citizen groups during emergency response in particular, is well documented by disaster researchers. During times of community crisis, emergent citizen groups represent "a potential source of knowledge, funds, equipment, and human resources" that may be critical to response or recovery efforts (Wachtendorf, 2001, p.11). On the other hand, as they commonly operate independent of traditional authority, such groups also have the potential of further disrupting response efforts that may already be strained. This fact lies at the center of a current debate among scholars and emergency managers: do the potential benefits of emergent citizen groups outweigh the challenges they present in disaster response? If so, how can these challenges be minimized or overcome? In today's technical environment, this is becoming even more crucial. According to Palen, Hiltz and Liu (2007), "in a future in which nearly everyone will have a GPS-enabled camera phone in their pockets, the creation of information and its easy dissemination requires conscious incorporation of citizens-as-participants in managing emergencies" (p.57). In other words, with the widespread adoption of advanced communications technologies by the general public, it is likely that emergent citizen groups will not only continue to be relevant but their involvement in emergency response will grow and change significantly in years to come.

For this reason, it is important to better understand how these groups react to and interact with "official" emergency management policies and practices.

1.1 The approach and purpose of research

In order to examine this important theoretical debate from an empirical standpoint, this study will look at the 2005 Lake Wabamun, Alberta disaster as a recent case study in the

formation of an emergent citizen group in response to a community-wide emergency incident. The aim of this case study is to relate the literature on emergent citizen groups to current emergency management response policy and practice in Alberta. It will do so through a review of documents pertaining to the incident and through interviews with key stakeholders as identified in the documents and as suggested by a review of current Alberta emergency management policy and practice.

As the research literature suggests that access to information (or lack thereof) is a key factor leading to the formation of emergent citizen groups, this will be the initial focus of investigation. Depending on initial findings, the investigation may also explore other factors beyond access to information, but will continue to emphasize "communications" as its core point of focus. Findings from the study will be based on an examination of Alberta emergency management practices; however, the overall aim of the study will be to critically examine current theories of emergent citizen groups using empirical evidence, with the view to improving our understanding of how actual emergency management policy and practice might better accommodate emergent citizen groups in the future.

1.2 Research question

The research project will be informed by an overarching research question grounded in an empirical analysis of the 2005 Lake Wabamun incident: What key factors lead to the formation of emergent citizen groups during emergencies and in what ways does current official emergency management policy and practice recognize, hinder and/or support such groups?

To explore this question, one must first apply a theoretical framework to the debate that is the underlying focus of this study. One must also define the concepts involved. The following section therefore reviews the research literature surrounding this debate and provides the

theoretical framework of disasters, emergent groups and current emergency management philosophies.

2. Competing Paradigms in Emergency Management Philosophy

As this study intends to examine a longstanding theoretical debate between emergent groups and command and control philosophies in emergency management, it is important to understand its underlying theoretical framework. This framework appears to characterize emergent groups and command and control as competing paradigms that have an impact on emergency planning and policy. In this section, a review of the work of key researchers in the area, peer-review and practitioner articles from major emergency management-related journals, conference proceedings and disaster-related websites informs the debate between these two paradigms and provides some answers to its underlying questions.

The current accepted definition of a "disaster" provides background on the subject. Put in most basic terms, a disaster is an event that "exceed[s] the capacity of a single organization to effectively respond to the situation" (Alberta Emergency Management Agency (AEMA), 2007, p.2). "Planned communication links break down. Information about the disaster arrives at a pace, level of detail, level of credibility and connectedness, and across a variety of sources that make any planned response…inadequate for the task" (Majchrzak, Jarvenpaa & Hollingshead, 2007, p. 147). To fill this gap, "citizens and organizations often cease routine activities" and spontaneously "take on new disaster-related tasks and responsibilities" (Auf der Heide, 1989, p.54 as cited in Drabek & McEntire, 2003, p.99). Invariably, there is a convergence of resources into the affected community, a "'mass assault' of independent and decentralized activity" (Perry, 1991, p.202; Wenger, 1992, p.3; Scawthorn and Wenger, 1990, p2-3; Auf der Heide, 1989, p.75; Wenger et.al., 1987, p.20 as cited in Drabek & McEntire, 2003, p.100). Often, "groups of

survivors…emerge to begin automatically responding to the needs of one another" without official sanction (Fischer, 2002, p.124). This means they have the potential to further disrupt response efforts that may already be strained to the utmost.

Scholars suggest that emergent behavior is a necessary component in any effective response to disaster. Practitioners, on the other hand, claim that, "as history has shown, volunteers and unauthorized personnel responding on their own must be corralled and properly placed, if needed, within the organizational structure" (Reardon, 2005, p.156).

In fact, the value of emergent groups in disaster response and recovery appears to be central to this debate. In other words, do the potential benefits such groups could provide outweigh the challenges in coordination and communication they present to emergency managers? If so, how can these challenges be minimized or overcome? What is the current philosophy and response of official organizations towards these groups and their often unsanctioned activities? In what ways does current practice and policy recognize, hinder and/or support emergent citizen group activity in disaster response or recovery?

An understanding of how an emergent citizen group is defined and when, why and how they form is a first step towards answering these questions. The next section will therefore provide a review of the literature with regard to such groups and their role in disaster response and recovery.

2.1 Emergent behavior and emergent citizen groups

To fully define an emergent citizen group, one must first look at the theory of emergent behavior: "When a disaster occurs, people and resources will flow to the scene and new organizations will appear almost instantaneously" (McEntire, 2004, p.16). According to Majchrzak et. al. (2007), these organizations are "characterized by a sense of great urgency and

high levels of interdependence", are generally volatile – often "resembling swarms rather than traditional groups" and commonly operate independent of traditional response authority (p.147-148). In disaster research, they are referred to as emergent groups.

Further evidence to support this concept can be found in the Typology of Disaster developed by Dynes in 1970, which states there are four distinct types of organizations that typically respond in emergency situations: established, expanding, extending, and emergent (Scanlon, 1999). This typology is explained as follows:

- Type I: Established – pre-established organizations carrying out their regular task of disaster response
- Type II: Expanding – an organization which expands to include disaster response when needed, the core elements of which, while not its regular line of business, do exist as a result of organizational planning prior to the disaster event.
- Type III: Extending – organizations which undertake non-regular tasks.
- Type IV: Emergent – groups that form to engage in non-regular tasks, usually "ad hoc" and "composed of persons who combine to assist in the wake of disaster without official sanction" (Zurcher, 1968 as cited in Scanlon, 1999, p.2).

Research has also shown that the level of disaster determines the involvement of the four main types of responding organizations and that this involvement nearly always occurs in sequence. Local emergencies may only involve Types I and II. As emergencies become disasters by exceeding the response capacity of these organizations, Types III and IV begin to appear.

In their extensive review of the literature, Drabek & McEntire (2003) mention at least seven different categories of emergent groups, each with their own definitions (p.100). The scope of this study, however, is limited to emergent citizen groups in disaster recovery and Stallings and Quarantelli's definition appears most applicable: an emergent citizen group is a group of "private citizens who work together in pursuit of collective goals relevant to actual or potential disasters but whose organization has not yet become institutionalized" (Kendra & Wachtendorf,

2001, p.8). A key determining factor is "whether or not the collectivity develops new relations and tasks before, during or after disaster" (Drabek & McEntire, 2003, p.100). Other important factors involved in the formation of such groups is the perception of a crisis occasion as requiring further action to avoid further problems (Scanlon, 1999, p.31), as well as Quarantelli's (1984) claim that "the perceived insensitivity of officials to the questions of newly developing emergent citizen groups can help crystallize such groups" (p.55). In their study of spontaneous volunteers after the September 11, 2001 terrorist attacks on the World Trade Center in New York, Lowe and Fothergill (2003) further suggest "victimization" has an affect on "emergent volunteerism". When the community "personalizes" the disaster, altruistic emergent behavior becomes an "effective strategy for…recovery" on both a community and individual level (p.307-308).

In keeping with this "personalization" of disaster, Quarantelli (1984) claims that emergent citizen group members "tend to be property owners" (p.25). Furthermore, the "major activities" of such groups are generally carried out by an "active core" with the ability to mobilize a "significant proportion of the non-active members for public show of numbers" (p.28). Quarantelli also claims that the goals of such groups tend to "involve matters of security and health (which usually directly affect the family home and life of [its] members)… [and that] a typical initial goal [is] locating the responsible authorities who can take the action necessary to solve the problem" (p.28). If this is true, it is not unreasonable to suggest that the majority of such groups are concerned mainly with the recovery stages of disaster, in other words, with returning the community to pre-disaster status.

In order to fully explore the research question at hand, however, in addition to defining an emergent citizen group, one must also define current emergency management policy and

practice in Alberta. As preliminary investigation suggests such policy and practice is based on the command and control approach, the following section provides an overview of this dominant model of emergency management.

2.2 The dominant approach - the command and control model

According to Drabek & McEntire (2003):

> Studies suggest that many emergency managers subscribe to the command and control model [of emergency management]…This approach is strict, rigid and centralized [Neal and Phillips, 1995, p.327; Britton, 1989a, p.13] and is based on: 'clearly defined objectives, a division of labor, a formal structure, and a set of policies and procedures' that governments rely upon to oversee disaster operations [Schneider, 1992, p.138]. Dynes [1994, p.142] points out that this model assumes chaos after any crisis event; the difficulty that people have in responding to disaster impels many emergency managers to seek command and control as a means to bring order to the situation (p.106).

Scholars have also argued, however, that the model is "based on inadequate theory, incomplete evidence and a weak methodology" and "often produces misguided conclusions" (p.106). The model's dependence on disaster myths which past research has largely debunked is a notable illustration of the foregoing claim. Furthermore, research has proven that such an approach does not readily accommodate emergent citizen groups (Walker, 2005) through an overemphasis on hierarchy or "chain of command" and distrust of the informal networks through which emergent citizen groups commonly operate (Moynihan, 2008, p.224).

If the foregoing is true, then why does command and control continue to remain the dominant model of emergency management? Canton (2007) contends it is due to the fact that "many emergency managers are unaware of information…that has been available in social science for years" (p.224), but most scholars attribute it mainly to the military and/or paramilitary background of most official response personnel (Drabek & McEntire, 2003, p.106). For responders with this background, the hierarchical, top down "Chain of Command" is the

most natural response; it removes uncertainty and provides clear direction in times of great stress.

Because disasters often require a response from multiple agencies, however, this emphasis on chain of command has necessitated the creation of standards to "ensure effective coordination during emergencies". One such "proven process for ensuring the right people are in charge and that the right resources are available", which "is becoming the standard in all emergency management organizations throughout North America", is the Incident Command System (ICS) (Alberta Environmental Protection Commission, 2006, p.20). In order to explore the ramifications of the foregoing claims, the following section provides some background on this emergency management standard.

2.3 Incident Command System (ICS)

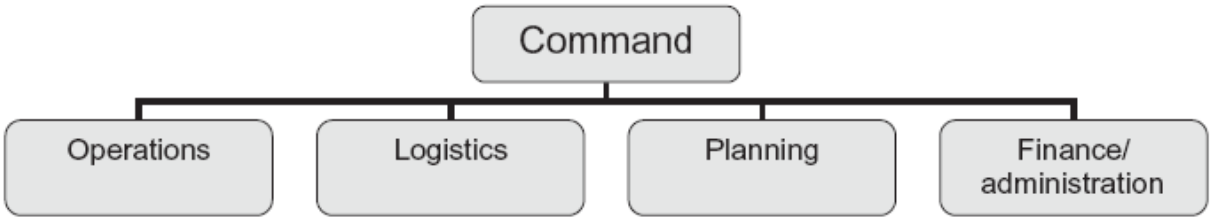
According to the AEPC, ICS "provides a process for determining who is in charge at the incident site and all emergency operations centres…[,] lays out the roles and responsibilities of all key functions" and ensures appropriate "communication with affected members of the public". In theory, it removes "confusion out of incident command operations" (p.20).

But where did this standard come from and what does it actually look like? According to O'Neill (2008), it "originated from the California wildland firefighting program know[n] as FIRESCOPE (Firefighting Resources of Southern California Organized for Potential Emergencies)" (p.8). FIRESCOPE was developed during the early 1970's to provide a "comprehensive plan aimed at the command and control of vast wildland fire incidents" (p.9). In the early 1980's, Chief Alan Brunacini of the Phoenix Fire Department applied FIRESCOPE principles to structural firefighting and called this "revised version" the Incident Management System (IMS) (p.10).

Following the events of "911", the United States Government used many of the principles of FIRESCOPE and IMS to develop the National Incident Management System (NIMS), which later incorporated the ICS standard. More recently, Homeland Security Presidential Directive (HSPD)-5 "essentially declares the command structure as the US national standard, making adoption of the ICS…a prerequisite for any US agency receiving federal preparedness assistance beginning in 2005" (Thomas, et. al., 2004, p.19 as cited in O'Neill, 2008, p.11). This had the effect of expanding the use of ICS to "every emergency incident; not just fires", making it an "all-hazards" approach.

As noted above, ICS has seen many revisions since its inception, leading to many "similar but separate versions" and confusion when multiple jurisdictions are involved (O'Neill, 2008, p.11). In theory, however, ICS follows a general structure as outlined in Figure 2.1 below.

Figure 2.1: The Basic Structure of the Incident Command System.



(Moynihan, 2008, p.207)

Under this standard, the Incident Commander (IC) "establishes a command post from which to control the ICS hierarchy… [and] has a command staff consisting of a Liaison Officer, who defines and coordinates the activities of the responding groups, such as police, fire, and …relief agencies" (the network component); a Public Information Officer (PIO) who "authorizes the release of information to the public and the media; and a Safety Officer, who is responsible for the safety of responders and the public". The next level is comprised of the "general staff, who oversee Operations, Planning, Logistics and Finance" (Irvine, 2007, p.360). As the purpose of this study is to examine how current emergency management policy and practice

accommodate the activities of emergent citizen groups, specifically with regards to communications, it is important to note that the task of communicating with the public and other stakeholders falls under the "Command" function (Self-Teach.com, 2008). This would appear to stress the importance of communications during response activities. It is significant to note, however, that ICS traditionally defines this function as the "release" of information, rather than a "two-way" information flow, which would better accommodate the resources that newly forming groups have the potential to provide.

A further issue with the use of ICS when volunteers are involved is pointed out by Irvine (2007): "For the inexperienced, and for civilians, in general, the quasi-military terminology of the ICS requires explanation, if not justification" (p.361). It is reasonable to suggest that this factor equally applies to emergent citizen groups (most members of such groups are inexperienced civilian volunteers). Furthermore, "ICS has no capacity to integrate 'unattached' or independent volunteers from the general public" (p.360). This suggests there is "no place at the table" under ICS for emergent citizen groups. In fact, as previously noted, some ICS adherents have advocated the need to "corral" them at the first sign of their emergence, which works directly against the spontaneous and improvisational nature of such groups.

According to Moynihan (2008), the benefit of ICS is that it "pushes practitioners to learn, accept, and use a hierarchical structure rather than developing a structural design of their own choosing" and to "foster the development of a single and common set of goals and strategies….to optimize network effectiveness" (p.207). In other words, ICS is essentially a "crisis management policy tool…which has combined hierarchy and network in the same structural form" (p.205), albeit with an emphasis on the former.

This, however, presents another paradox. Hierarchies and networks are generally portrayed in research as “stark alternatives” (p.205), which raises a significant question: “Can hierarchical and network principles be [successfully] melded together” as ICS suggests (p.206)? This question is especially pertinent when one considers that these opposing philosophies could be the basis of the tension that often arises between official responders and emergent groups during disaster response (official responders operate through top-down hierarchy while emergent groups operate largely through flattened, informal and creative social networks [Quarantelli, 1984]). Moynihan (2008) suggests that the logic behind ICS presents a “contrarian view on the question of whether hierarchies and networks can be combined” (p.209), and points to a “need for a more structured analysis of practitioner insights to identify” exactly how and why it works (p.224).

The foregoing illustrates a gap in the research and the suggestion that, while ICS may resolve issues of jurisdiction and coordination among official responders, it cannot be said to fully address the accommodation of emergent citizen groups and their activities into official response efforts.

There is, however, an alternative approach that appears to incorporate the benefits of ICS in the response phase where it is most effective, while retaining the flexibility to anticipate and incorporate emergent citizen groups at other stages of disaster management. In order to better understand this claim, the following section provides a brief overview of this risk-based, harm-based and place-based approach.

2.4 An alternative approach – the emergent behavior model

Unlike the command and control model, this alternative approach is supported by disaster research, which concludes: “disasters, by their very nature, lead to emergence and require the

participation of multiple actors whose legitimacy is derived from alternative authority sources" (Drabek & McEntire, 2003, p.108). This new model of emergency management, sometimes called the emergent behavior approach, suggests "the need for standard operating procedures in certain circumstances and altered bureaucratic structures and processes in other situations (Schneider, 1992 as cited in Drabek & McEntire, 2003, p.105). This approach is risk-based, harm-based and place-based (in other words, can be easily tailored according to the varying needs of each situation) and appears better suited than command and control to accommodating emergent citizen group activities into disaster response and recovery efforts. Proponents of the emergent behavior approach contend that it minimizes ritual behavior, tolerates decentralization and learning, fosters effectiveness; and illustrates there is order even in chaos, the existing social structure is effective, and that there is continuity before and after disaster (Drabek & McEntire, 2003, p.107).

This means that this approach not only has the ability to incorporate ICS during the response phase (where this approach is proven effective), it also has the flexibility to deal with factors the command and control model, in and of itself, does not address (such as the need for alternating sources of authority when different priorities present themselves at different phases of the incident).

In stark contrast to command and control, the emergent behavior approach does appear to mesh well with emergent group activities. It suggests that emergency managers be "viewed not as technocrats but as program managers…a manager [who] prepares the community as a whole by engaging all the resources of the community under a shared vision of resilience" (Canton, 2007, p.336). This places more emphasis on the mitigation and recovery phases of disasters than does command and control (which focuses on the response phase), and stresses the need for good

emergency planning well in advance of potential disaster. But can an emergent citizen group, something that appears on such a spontaneous, improvisational and sporadic basis, be effectively planned for? According to Wachtendorf and Kendra (2006), the answer is to place more importance on the "*planning process*" than on the plan itself:

> …in addition to outlining appropriate courses of action [this] also allows participants to learn about one another's skills and capabilities and to assemble those as needed to meet unexpected dangers – in other words, to improvise. Good *planning* enables flexibility, construction of shared visions, awareness of capacities and vulnerabilities, and communication that facilitates the improvisation that is needed in disaster (p.8).

"Further research on learning, modeling, and decision support in the context of improvisation" may help us better understand the full implications on "how organizations may identify and respond to unplanned-for contingencies" (Mendonca & Wallace, 2007, p.558). It will also better inform the current debate on the benefits of incorporating emergent citizen groups into disaster response.

Despite this gap in the research, the foregoing does suggest a paradigm shift in emergency management policy may not only help resolve the debate on emergent citizen groups, but is also required before true accommodation of emergent group activity can be accomplished in disaster response. Notwithstanding its obvious benefits, however, it is also reasonable to suggest that the emergent behavior approach requires more work on the part of emergency managers in order to prepare for something that may never happen. It follows therefore, that the benefits and ramifications of such a fundamental change in emergency management policy and practice must be unequivocally proven before any recommendation can be made to replace the "tried and true" method of command and control with this alternative and potentially more costly approach.

Exploration of some of the benefits and challenges emergent citizen groups present in disaster response provides further insight into the debate. The following section will therefore discuss some of the issues and tensions involved.

2.5 Implications for emergency managers

It is evident from empirical studies that emergent citizen groups do have value in disaster situations and that if they are included early on in the overall emergency response, tensions and conflicts between official and unofficial groups can be drastically reduced (Scanlon, 1999, p.30). Identification of key leaders of emergent citizen groups and their implementation as a resource "before they become a problem" can "enhance coordination" (Federal Emergency Management Agency (FEMA), n.d., p.20). Other research suggests that "the local system is the logical and viable base for all stages of emergency action" (Dynes, 2002, p.43) and that enhancing social networks between official and non-official groups is a key element in disaster mitigation. This concept not only "has the advantage of seeing social systems as active resources, not passive victims", but also "the advantage of shifting the focus away from human vulnerability toward an emphasis on human capability" (p.47). This echoes Lowe and Fothergill's (2003) contention that emergent behavior is a form of coping mechanism, of instilling some control over an unstable environment and suggests that involving emergent citizen groups in disaster response is beneficial in all stages of emergency management. Quarantelli (1998) takes this claim one step further and states, "a response that tries to involve only established organizations is a clear indication that there has been poor disaster management" (p.23).

Such benefits notwithstanding, emergent citizen groups can also be an irritant to emergency managers. "They are another potentially uncontrollable element in the response milieu whose appearance can create complications for security and site safety" (Kendra &

Wachtendorf, 2002, p.138). “Many of these volunteers are untrained and may create serious problems for first responders (e.g. well-intentioned individuals may injure or kill victims when performing search and rescue operations)….and spontaneous organizations often outstrip the capacity of emergency managers to effectively utilize them” (McEntire, 2004, p.16). Under the current model of command and control, the creativity displayed by such groups during a response is, “paradoxically, often regarded as dysfunctional” (Kendra & Wachtendorf, 2002, p.128) and their emergence often “perceived as an indication of failure” (p.142). “Emergence is therefore associated with both liability and capability challenges” (McEntire, 2004, p.16) and emergent citizen groups “were initially viewed…as an aberration that needed to be stopped”. More recent research, however, “concludes that such groups are not aberrations at all, but can be observed in all large-scale disasters; that emergent behavior cannot be stopped; and that emergent activity fills a void that cannot be filled by command and control approaches to disaster response” (Tierney et. al., 2001 as cited in Majchrzak et. al., 2007, p.150).

When one considers that the challenges outlined occur mainly in the response phase of disaster, while the “voids” appear to lie primarily in the other phases, it could be argued that emergent group activity is more appropriate to the mitigation, preparedness and/or recovery stages. This highlights the applicability of the emergent behavior approach to emergency management, which allows for alternating sources of authority at different stages in the incident. According to Quarantelli (1998), the “problem [with emergent groups] is one of coordination, not control…disasters have implications for many different segments of social life and the community, each with their own pre-existing patterns of authority and each with the necessity for simultaneous action and autonomous decision-making… [which] makes it impossible to create a centralized authority system” (as cited in Fredholm & Uhr, 2005, p.6).

If this is true, then the need for a major paradigm shift in emergency management philosophy appears self-evident. That this shift is already occurring is evident in the fact that the US Federal Emergency Management Agency (FEMA) (n.d.a) is now teaching sessions on this alternate approach, which they term the "Professional Model". But although the adoption of this alternative to command and control may better anticipate the emergence of citizen groups and incorporate their activities in recovery efforts, it does have its weaknesses. According to FEMA, it "downplays" the "unique difficulties of civil hazards" and "the role of government and first responders"; "fails to see details of field level operations" and "the importance of hierarchical leadership"; and "overlooks" the benefit of standard operating procedures (p.14). Other concerns with this model, aggravated by today's information technology, revolve around knowledge and information flow, specifically issues such as:

> …problematic rumors; privacy protection of information and its source…and potential failure of ICTs. Furthermore, information generated from the "bottom up" without known validation cannot be assured to be accurate nor timely nor appropriate for a particular audience" (Palen, Hiltz & Liu, 2007, p. 58).

As previously mentioned, further research into the ramifications of this alternative approach is required before such a major shift in emergency management thinking can be effectively accomplished. One major unanswered question is what this model might actually look like. Although much has been written to advocate this new approach, there appears to be a significant lack of pragmatic details in the research on this model; a critical gap which needs to be addressed.

Research into the variables that affect the operation of ICS may also provide more insight into how this standard may be modified to not only minimize jurisdictional issues, but also maximize its network capabilities in terms of competing priorities, resources and recovery needs. This would more easily manage the potential information and/or resource overload emergent

citizen groups may present in disaster response. In other words, there is "a need for further theoretical development, which could integrate top-down, bottom-up and side-to-side influences and their dependence on different conditions in the operational context" (Fredholm & Uhr, 2005, p.7).

But how does the foregoing research relate to the Wabamun case? In order to explore this question, it is first necessary to have some background on the case. The next section not only provides a brief history of the incident, an overview on the formation and activities of what appears to be an emergent citizen group, but also demonstrates that the Lake Wabamun case is an illustration of how the competing paradigms in emergency management play out in real life, in terms of policy and practice.

3. The Lake Wabamun Case

3.1 Case Background: The Disaster

On August 3, 2005, at approximately 5:00 a.m., 43 Canadian National Railway Company (CN) freight train cars derailed in three separate locations near the community of Whitewood Sands, approximately 7.5 km west of Wabamun, Alberta (Transportation Safety Board of Canada (TSB), 2005). According to the AEPC (2006), "what began as a derailment turned into a major environmental, [economic and] social …disaster" (p.4).

The TSB (2005) report states an estimate of "88,000 litres of [pole treating oil] PTO and 712,117 litres of Bunker C [oil] were lost during the derailment, wrecking operations, and cleanup. In all, 11 Bunker C tank cars lost product", affecting a "land area of approximately 1 km^2; [including] CN's right-of-way as well as land to the south of the rail line towards the lake's north shore. A portion of the spilled material ended up in the lake" (p.12). It was eventually

announced that this material was toxic and the environmental damage it caused was severe enough to prompt a charge against CN under Alberta's environmental protection act, "an offence punishable by a maximum penalty of $500,000" (Alberta Environment, 2006, para. 2). As of October 2007, the case remained unresolved (CBC News, 2007). (Please see Appendix I for an aerial map of the spill. Visual images of the damage, taken during the recovery phase, are available at http://www.wabamunresidents.com/spill_gallery.php?id=1).

Other economic impacts on both the community and CN were also significant. The incident caused the "TransAlta power station, located on the north shore a few miles east of the spill, to temporarily shut down to prevent fouling of the cooling system and turbines" (TSB, 2005, p.13). It also affected the reserve lands of the Paul Indian Band "on the eastern side of the lake" where "prevailing winds" caused much of the oil to end up (Loyie, 2008, para. 6). "Alleging the oil permanently damaged the plants and animals its members use for food, medicine and spiritual ceremonies" (Canadian Press, 2008, para 6.), the band launched a $775 million lawsuit against CN, the federal and provincial governments for damages suffered (CN, 2007, p.16; Loyie, 2008, para. 2). This lawsuit was resolved on September 12, 2008 with a "$10 million settlement from the railway company" (Loyie, 2008, para. 6).

Of most significance to this study were the social effects of the disaster. "Where clear information should have been readily available to everyone affected by the spill, there was confusion" (AEPC, 2006, p.4), a fact which negatively influenced the community's perception of the official response right from the start. Although residents of Whitewood Sands were evacuated "within 15 to 20 minutes of the crash", they were told only that "there was an incident on the tracks – no other information was available" (Lake Wabamun Residents Committee (LRWC), August 2007, p.1). Later that morning, residents were allowed to return to their homes

under escort "to retrieve some personal items and were permanently allowed back to their properties later that evening." No information beyond that already provided by "RCMP, the Wabamun Fire Department and their neighbours was forthcoming," but according to the Lake Wabamun Residents Committee (LWRC), "it was clear that what had been called an "incident" was in fact a catastrophe for the community" (p.1). Further evidence to support this claim can be found in the fact that the consequences of the spill continue to be felt in the Lake Wabamun area more than three years after the derailment first occurred (Canadian Press, 2008).

It should be noted that several volunteer groups emerged in the wake of the Lake Wabamun disaster; however, this study chose to focus on only one of these groups, the LWRC, which emerged in the recovery phase. A brief description of the emergence, characteristics and activities of this group is thus necessary to provide further background for the study and is presented in the following section.

3.2 Case Background: The LWRC

On August 4, 2005 (day 2 of the incident), residents visiting the derailment site observed that "oil was continuing to spread and minimal activity was underway…to address immediate clean up needs. CN's concentration continued to be directed towards fixing the damaged tracks" and residents believed "we had to act to save our lake" (LWRC, August 2007, p.3). Their offers of assistance were initially rebuffed and after attempts to obtain further information failed, residents resorted to civil disobedience. In spontaneous protest, hundreds of residents converged to block the tracks at the main crossing in Wabamun in an effort to coerce CN to meet with them (other smaller blockades also occurred simultaneously at other locations). "Their objective was simple: to be heard, to receive assistance and to get accurate and honest information" (p.4). As

could be expected, conflict ensued as CN objected to this further disruption in their service. According to the LWRC (2005):

> Residents received hostile responses at those blockades from CN officials, and one particular incident provided a telling glimpse into CN's community relations. While blocking the track, one resident was approached aggressively by a CN official shouting profanities and urging the resident to move. Only the intervention of a CN track employee diffused the situation. This exchange had taken place between a resident and a senior member of the CN Management Team (p.5).

Approximately five hours after the main crossing was blocked, a meeting was finally arranged between CN officials, Alberta Environment and residents. "One of the results of this first meeting…was the creation of the Lake Wabamun Residents Committee" (p.5).

Preliminary investigation suggests that the core of this committee was formed on an ad hoc basis during the protest. It was quickly formalized, however, under the leadership of a prominent lawyer with "20 years of experience in law, politics and negotiations" (LWRC, October 2007, para. 41). Created as "a mechanism for the people most affected by the spill – the residents – to have meaningful involvement in resolving the crisis" (para.46), its mandate was threefold:

1. To expedite short and long-term clean up;
2. To ensure residents are fairly compensated; and,
3. To do everything possible to prevent a similar incident. (LWRC, 2005, p.6)

To help meet this mandate, the committee recruited their own scientific and environmental experts to help guide the recovery efforts, as well as independent legal council to deal with compensation issues (LWRC, October 2007, para. 49). It submitted two separate and comprehensive reports to appropriate government agencies (the AEPC and the Railway Safety Act Review Advisory Panel) and its leader participated as one of the seven members of the AEPC, a commission specifically established after the Wabamun disaster to "review and make

recommendations on Alberta's ability to respond" to such incidents (AEPC, 2006, p.1). Within two months of the incident, the LWRC had set up a website to provide updates on recovery activities, as well as information on the resources available to affected residents.

Membership in the committee was open to any interested party and appears to have been based on a fluid and informal agreement. No evidence of a recruitment effort, formal membership application, fee or prerequisite was discovered. At its height, it is estimated to have had approximately 60 to 70 members. Perusal of available documentation suggests that the majority of the group was comprised of peripheral members surrounding a small active core. Communication within the group was conducted largely through informal social networks, email and the internet. Regular newsletters and updates were published and archived on the committee's website at http://www.wabamunresidents.com/index.php.

According to the final LWRC (October 2007) newsletter:

> There was no precedent in Alberta for such a group. [Its] message resonated from Moonlight Bay to Seba Beach: although residents were not responsible for the disaster, we recognized that we had a duty to the lake to find solutions (para.46).

Documented evidence shows they did find these solutions, including the negotiation of the first "loss of use" settlement in Canadian history ($7.75 million to be shared among affected residents) and "unprecedented…clean up end points" which insisted the lake be restored to its "pre-spill condition" (para.54-55).

For an overview of LWRC activities in relation to the incident, please see Table 3.1 below.

Table 3.1 Lake Wabamun disaster Timeline

Date	CN	Gov't Agencies	LWRC
Onset and Response Activities (August 3, 2005)			
August 3, 2005	Derailment occurs Several hours after initial impact, CN sets up their command post	Response initiated by WFD and RCMP Residents evacuated; no details on incident or product spilled available	Residents request further information Participate in initial efforts to contain spilled material
Recovery and Clean up Activities (August 2005 – Fall 2007)			
August 4	Minimal activity on lake focus on clearing tracks	WFD/RCMP official involvement ends provincial agency involvement begins	Meeting with CN requested by residents
August 5 – 6	No show by CN for meeting Minimal clean activity observed on lake trains running again	Environmental Protection Order issued	residents block track for 5 hours at main crossing in Wabamun various other blockades occur
August 7	First Town Hall Meeting Agrees to fund LWRC in retaining independent experts	Participates in Town Hall Meeting	LWRC Forms
August 8 – 10	Second Town Hall Meeting	Toxicity of material publicly announced 2nd evacuation takes place	hires own scientific and environmental experts and legal counsel at CN expense
August 11 – 14	Arranges transport of clean drinking water for 18 months	AEPC Forms	Representative invited to join AEPC Begins "watchdog" activities and ongoing negotiations with CN for resident compensation and environmental remediation, which continues for next two years
September 30		AEPC issues interim report	
October	Clean up activities suspended until spring thaw		Issues Report to the AEPC (Oct 24) Website goes live 4 newsletters posted on website re clean up efforts

Table 3.1 Lake Wabamun disaster Timeline

Date	CN	Gov't Agencies	LWRC
Recovery and Clean up Activities (August 2005 – Fall 2007)			
Nov – Dec, 2005			4 newsletters posted on website
Jan – Mar, 2006			3 newsletters; 2 special legal updates posted on website
April – May	3rd Town Hall Meeting	Clean up activities resume; Shoreline Clean up Assessment Team (SCAT) formed	4 newsletters; 2 special updates posted on website
June – August	Sunken Oil Treatment Plan completed CN maintains presence to respond to resident concerns	SCAT completed	5 newsletters; 1 special update posted on website
September – October		AEPC issues final report and disbands	1 newsletter posted on website
November – December	recovery activities deemed complete; CN's environmental experts announce no lasting damage to lake occurred		1 special bulletin posted on website
January – August 2007			Issues report to Railway Safety Act Review (Aug 31) 1 update posted on website which reports oil again seen on surface of lake
September – October, 2007			1 newsletter posted on website disbands as of October 1, 2007

Source: Alberta Environment (2006a); Capital Health (2005); Wabamunresidents.com (2007)

As noted above, the LWRC formally disbanded as of October 1, 2007, more than two years after the disaster occurred. Though it was never intended to be more than a temporary organization, documented evidence suggests its members continue to strongly believe that the committee was instrumental in helping CN to realize "it would be in its self-interest to fulfill its

ethical obligations" (LWRC, October 2007, para. 48). According to the LWRC (August 2007), "it was not until the committee was formed that CN began to truly take notice of residents, attend meetings and provide information" (p.6). More important to this study is the fact that documented evidence also suggests that committee members feel their contributions were vital to recovery efforts: "more has been accomplished as a result of this group effort than would have been otherwise" (p.9).

These claims notwithstanding, in order to support the choice of the Lake Wabamun disaster for this case study, it is necessary to show how the research literature relates to this case. The next section will explore this question and lead to the observations that will define the scope of this study.

3.3 An illustration of competing paradigms in emergency management

In light of the foregoing, it could be argued that the Wabamun disaster is a striking illustration of the competing paradigms of emergent groups and command and control in disaster response and recovery. This section will demonstrate not only that the LWRC can be defined as an emergent citizen group, but also that current Alberta emergency management policy and practice may have precipitated the emergence of this group, inadvertently caused the conflict that occurred and hindered this group in their initial recovery efforts.

For example, Dynes' Typology of Disaster could be easily applied to the Wabamun case:

- Type I: Established – the RCMP and Wabamun Fire Department which are pre-established organizations carrying out their regular task of disaster response
- Type II: Expanding – CN, whose organization expands to include disaster response when needed, the core elements of which, while not its regular line of business, do exist as a result of organizational planning prior to the disaster event.
- Type III: Extending – Alberta Environment; it could be argued that their involvement in the first meeting with residents was a non-regular task, extending

above and beyond their mandate of ensuring only "that the clean up is done properly and in an appropriate time frame" (Alberta Environment, para.5).

- Type IV: Emergent – LWRC; volunteer citizens carrying out non-regular tasks such as ensuring resident compensation and environmental remediation.

As previously outlined, the LWRC did display characteristics of an emergent citizen group, and as predicted by Dynes, the four types of responding groups did appear in sequence at Wabamun, as the magnitude of the disaster became evident (with the LWRC being the last involved). According to their report, this group did not formalize until after the first meeting with CN, and the Types I, II and III organizations (already involved) acknowledged that additional resources were required for effective community recovery from the disaster. Furthermore, as predicted by Quarantelli, all members of the LWRC were property owners and the citizen's blockade of the track, which began with approximately 30 members, soon "grew to hundreds"; evidence of the group's ability to mobilize other citizens "to show support…and demonstrate community solidarity" (LWRC, August 2007, p.4-5). In light of Quarantelli's claims as to the initial goals most commonly attributed to such groups, it is also significant that the initial goal of the LWRC was to "retain its own independent legal counsel, environmental assessment team and communications specialists" (p.6). It is reasonable to argue, therefore, that it is appropriate to describe the LWRC as an emergent citizen group operating through an informal network to perform non-regular tasks during the recovery stage of this disaster.

Preliminary investigation also supports the claim that command and control was the model of emergency management used at Wabamun. As mentioned in section 2.2, research bases the dominance of this model on the military and/or paramilitary background of most practitioners and no evidence was found to suggest that Alberta practitioners are an exception to this rule. Furthermore, examination of initial response activities also provides evidence of the use of this

approach. Consistent with command and control philosophies, in an effort to maintain control of potentially alarming information, CN initially attempted to restrict access to the crash site. "Many residents visited the [CN Command] Centre only to be told that the public was not welcome there, and that the spill was contained at the crash site and on the lake." As the message received "did not correspond to what was being seen", it only served to further erode public confidence in the official response (p.3). This example illustrates a paradox in command and control: by restricting the flow of information, official responders appeared to have created the very chaos they were attempting to forestall.

According to the AEPC (2006), however, in addition to the use of command and control, in Alberta there is also a "long-standing principle that the person or industry that creates the environmental incident should clean up the problem and pay for that clean-up". Evidence of this policy can also be found in the Wabamun case. What caused the disaster was the derailment of a CN train apparently due to a "train-initiated emergency brake application" caused by a faulty track (TSB, 2005, p.1). Because they "caused" the incident, CN was in command and the official responders (who had greater knowledge of local dynamics) were under their control.

CN, however, was in charge not only by reason of having caused the incident, but also by reason of jurisdictional authority. The derailment occurred upon the CN "right-of-way", causing it to fall outside of the provincial jurisdiction. Because of this, neither the province nor the municipality, itself, had any power to assist beyond the interim response until invited to do so by CN. As the AEPC notes, "such cautious approaches that are overly sensitive to issues of jurisdiction leave the [community] vulnerable" (p.2). The fact that CN needed time to mobilize its emergency response team caused delay and confusion. The local responders, who initiated the interim response, had no knowledge of the products spilled and no control over CN's focus on

clearing the track rather than containing the spill. The result of this initial "blind" response was to increase the magnitude and complexity of recovery efforts later required to return Lake Wabamun to its pre-spill condition, an attempt that has not been entirely successful to this day.

To address these issues in future, two of the major recommendations of the AEPC's final report are for the creation of "a senior agency for Alberta responsible for a comprehensive, all-hazards approach to emergency, disaster and security issues management" (p.17) and the universal adoption of the Incident Command System (ICS) (p.20). It could be argued that these recommendations remain reflective of the command and control approach: the Alberta Emergency Management Agency (AEMA) (created in response to the first recommendation) represents the "command", with ICS (the second recommendation) as the means of "control".

The foregoing claims notwithstanding, if it is true, as suggested by the literature, that emergent behavior cannot be stopped and is a common occurrence in the wake of disaster, it is likely that this group may have emerged whatever CN did or did not do. What makes this case unique, however, is that it appears to provide a striking illustration of how the scholarly debate previously outlined might play out in real life, which leads to the observations presented in the following section.

3.4 Observations

The following observations, derived from both the research literature and preliminary investigation into the Wabamun case, are used to define the scope of this study.

A) The occurrence of emergent citizen groups is well documented in large-scale disasters (Drabek, 1986; Drabek & McEntire, 2003; Dynes, 1983; Neal and Phillips, 1995; Tierney et. al., 2001; Wachtendorf, 2004 as cited in Majchrzak et. al., 2007); they may also occur in smaller scale disasters.

B) When they occur, emergent citizen groups have value in emergency response if their energy can be properly directed; early identification and inclusion of emergent citizen groups lessens potential conflict and increases communication flow between official responders and such groups (Scanlon, 1999).

C) Command and control "overemphasizes hierarchy… [and] neglects the network components" emergent citizen groups can provide in disaster response (Moynihan, 2008, p.224) (i.e. additional resources in terms of manpower, supplies and communication networks). Standards such as ICS that are based on this approach should be modified to not only minimize jurisdictional issues, but also to maximize network capabilities when competing priorities and recovery needs are present.

These observations define the initial scope of the study. The following section provides information on the methodology employed.

4. Methodology

This section will outline the research design, data collection and recruitment process used in the study. It will also summarize the operationalization of the observations and concepts derived from the literature and define the method of analysis employed to generate the findings provided in section 5.

4.1 Research Design

The purpose of this research is to identify key factors which lead to the formation of emergent citizen groups during emergencies and the ways official emergency management response policy and practice recognize, hinder and/or support such groups. To address this question, the study will look at the Lake Wabamun incident and relate the literature on emergent

citizen groups to current emergency management response policy and practice in Alberta. As such, the selection of a single case study design appears most appropriate. This design seeks to "understand complex social phenomena" and "retain the holistic and meaningful characteristics of real-life events" (Yin, 2003, p.2). A particular strength of the case study lies in its incorporation of multiple research techniques to provide reliability through triangulation. In other words, the "events or facts of the case study have been supported by more than a single source of evidence" (p.99). A weakness of the case study is that it is difficult to generalize beyond the current case; however, Tellis (1997) argues that this "criticism is directed at the statistical and not the analytical generalization that is the basis of case studies" (p.6). In fact, as Soy (1997) contends: "social scientists…have made wide use of this qualitative research method to examine contemporary real-life situations and provide the basis for the application of ideas and extension of methods" (p.1). In other words, "generalization of results…is made to theory and not to populations" (Tellis, 1997, p.4), which is the objective of this study.

4.2 Data Collection and Recruitment Process

Because the use of multiple techniques requires "several data collection methods" (O'Neill, 2008, p.43), this case study will use both document research and focused audio recorded interviews as a means of collecting data. Published reports on the incident from various sources (including reports submitted by the LWRC) were collected via the internet or obtained directly from the participant. Focused interviews were chosen as a technique to ensure the interviews "stay on track and on the relevant topics" (Rodriguez, 2005, p.4). They would be conducted with one representative from each of the three key stakeholders (as identified in the documents and suggested by a review of current emergency management policy in Alberta), with their signed consent: CN (the "owner" of the incident); Wabamun Fire Department (the official

responders) and the LWRC (the emergent citizen group). As it was anticipated that CN might decline to participate due to litigation underway at the time of request, an interview was also requested from a representative of Alberta Transportation Safety Services Division to provide insights into rail policies and issues surrounding the transportation of dangerous goods and related emergency response in Alberta.

Representatives of each group who had first hand knowledge of the incident were identified through contacts within the emergency management industry and through perusal of the LWRC and AEPC reports. These participants were first contacted by phone to request their permission to email them a letter of introduction. The results were encouraging as all four representatives, including CN, gave this initial permission. Although CN, as anticipated, eventually declined to participate, interviews with the other three participants were arranged and conducted within a two week span, one via cell phone (with faxed consent) and two in person. (Please see Appendix II and III for samples of the invitation letter and consent form). All interviews (and transcription) were conducted by the researcher. At the close of each interview, participants were offered the opportunity to provide any additional information they felt important to the study, and were given Tim Horton's gift cards as a token of thanks for their time and participation.

One obstacle encountered in this process was the difficulty inherent in conducting an interview at long distance over a cell phone; the connection deteriorated over time, causing the researcher to cut the interview short and thus perhaps miss potentially important information. It is believed, however, that this did not prove to affect results to any great degree as the information provided in the interview was consistent with reports previously provided by that same participant.

No reasonably foreseeable harm arose from participation, and as previously mentioned, the participant who was uncomfortable with the study did not consent to participate. Complete anonymity could not be assured as all participants are members of a distinct group; however, personal identifying information is replaced by coded numbers in this final report. Although pertinent excerpts from transcripts are included in section 5 to provide evidence of support for the concepts explored, the complete transcripts are not included in the appendices of this report in a further attempt to maintain anonymity to the fullest extent possible.

It is interesting to note that the study appeared to have "struck a chord" with participants. All three volunteered additional information, which was gratefully received and which proved extremely useful in the final analysis.

4.3 Operationalization of Theoretical Claims

In order to critically examine current theories of emergent citizen groups and the impact current emergency management policy and practice may have upon such groups, the concepts or theoretical claims derived from the literature that would support the observations outlined in section 3.4 must first be operationalized. This process not only involves identifying these theoretical claims and corresponding indicators, but also composing the interview questions to solicit evidence that would support or contradict these claims. In the end, seven theoretical claims (or propositions) on emergent citizen groups and four on emergency management policies and practices were chosen for exploration. Table 4.1 below outlines the link between the original observations and their propositions, their related indicators and the questions meant to solicit this evidence.

Table 4.1: Summary of the operationalization of study concepts

Observation		
A) The occurrence of emergent citizen groups is well documented in large-scale disasters; they may also occur in smaller scale disasters.		
Proposition/Claim in Theory	**Indicator**	**Interview Questions**
1. Emergent Citizen Groups		
a) an emergent citizen group is a group of private citizens who work together in pursuit of collective goals relevant to actual or potential disasters but whose organization has not yet become institutionalized	▸ evidence to verify applicability of definition	▸ What was the purpose of creating/joining the LWRC?
b) the collectivity develops new relations and tasks before, during or after disaster	▸ evidence to verify applicability of definition	▸ Had you worked with other members of the group before this incident? ▸ How did you identify and/or recruit members to the group?
c) if there is the perception of a crisis occasion as requiring further action to avoid further problems, then such action will be taken	▸ evidence to indicate motivation for involvement (perception existed that further action was required)	▸ At what point in time did you feel it necessary to become involved in response efforts? ▸ Why do you think the members of the community felt it was necessary to create the LWRC and become involved in the response efforts?
d) the perceived insensitivity of officials to the questions of newly developing emergent citizen groups can help crystallize such groups	▸ evidence to indicate access to information (or lack thereof) was a key factor in the formalization of the LWRC (perception existed that officials were insensitive to residents' request for information)	▸ What frustrated you most during the initial formal response to the incident and did this lead directly to the creation of the LWRC? Were you involved in any planning or other meetings with regard to the disaster prior to your protest? ▸ Did you involve residents in any planning or other meetings with regard to the disaster prior to their protest? Why/why not?

Table 4.1: Summary of the operationalization of study concepts

Observation		
B) When they occur, emergent citizen groups have value in emergency response if their energy can be properly directed; early identification and inclusion of emergent citizen groups lessens potential conflict and increases communication flow between official responders and such groups.		
Proposition/Claim in Theory	**Indicator**	**Interview Questions**
1. Emergent Citizen Groups		
e) when the community personalizes the disaster, altruistic emergent behavior becomes an effective strategy for recovery on both a community and individual level	▸ Evidence to indicate motivation for civil protest (altruistic motives/personalization of incident) ▸ Perceived outcome of the civil protest (evidence for it as an 'effective strategy')	▸ Why did you organize your civil protest? ▸ What did the protest seek to achieve? Was it successful? What alternative strategies were available? ▸ Did the event bring neighbors closer together? Were you surprised by anything you witnessed from your neighbours as part of this event? Why do you think people joined the LWRC?
f) emergent citizen groups have value in emergency response (as a potential source of additional resources, i.e., knowledge, funds, equipment, human resources and communication networks) if their energy can be properly directed	▸ evidence to indicate the contributions of the LWRC in response efforts	▸ Do you feel inclusion of the LWRC enhanced or detracted from formal response efforts? ▸ Would you do it again? If so, what would be different or the same ▸ Would you work to encourage or discourage such activity in future?
g) identification of key leaders of emergent citizen groups and their implementation as a resource before they become a problem can enhance coordination in response efforts	▸ evidence to indicate inclusion of LWRC enhanced cooperation between officials and residents ▸ evidence of perception that earlier inclusion of group leaders may have prevented later conflict	▸ How do you think cooperation between officials and residents could be improved in the future? ▸ Do you feel earlier inclusion of key leaders of this group may have prevented conflict and mitigated the cost of recovery

Table 4.1: Summary of the operationalization of study concepts

Observation		
C) Command and control overemphasizes hierarchy and neglects the network components emergent citizen groups can provide in disaster response (i.e. additional resources in terms of manpower, supplies and communication networks). Standards such as ICS that are based on this approach should be modified to not only minimize jurisdictional issues, but also to maximize network capabilities when competing priorities and recovery needs are present		
Proposition/Claim in Theory	**Indicator**	**Interview Questions**
2. Command and Control		
a) Command and control as the dominant model of emergency management was used in this case	▸ evidence to verify model of emergency management practiced ▸ evidence of any changes since the Wabamun disaster	▸ How would you describe the organizational structure and approach of your emergency response plan at the time of the incident? ▸ Has anything changed since then based on the lessons you learned?
b) Command and control is strict, rigid and centralized and is based on clearly defined objectives, a division of labor, a formal structure, and a set of policies and procedures; because this approach assumes chaos after any crisis event, it restricts access to information as a means of controlling the situation	▸ evidence of a formal set of objectives and structure for official communications ▸ evidence of concerns about legal or other issues associated with public response to communications ▸ officials perceive restricted information flow as the most appropriate strategy during response	▸ What was the primary goal(s) of your communication strategy with the public during the incident? ▸ Who was responsible for communicating with the public and how was the reporting structure established? ▸ What legal restrictions or concerns did you face or need to consider with regard to public
c) Command and control does not readily accommodate emergent citizen groups through an overemphasis on hierarchy or "chain of command" and distrust of the informal networks through which such groups commonly operate	▸ Responders emphasize need for chain of command ▸ evidence of distrust of informal, social networks	▸ What was the initial response of officials to the community's offer of assistance? Did this change over time? ▸ How did your organization eventually accommodate (or not) the activities and communications of the LWRC? Has this led to changes in the way you will conduct response efforts in future?
d) cautious approaches that are overly sensitive to issues of jurisdiction leave the community vulnerable	▸ evidence of sensitivity to issues of jurisdiction ▸ evidence of perception that this sensitivity enhanced or detracted from the response	▸ Should emergency response operations in the province seek to better anticipate and accommodate groups like LWRC? ▸ If so, what could be done in planning and policy to do so? If not, then what could/should be done to deal with groups like LWRC in future?

Please see Appendix IV for the complete operationalization table (including expected sources of information) and Appendix V for interview schedules.

To encourage insight into the topic and avoid "reflexivity" (i.e. "when the interviewee gives what the interviewer wants to hear" – a potential weakness of focused interviews) (O'Neill, 2008, p.49), questions were composed in an open-ended form. Unfortunately, in order to keep within the allotted interview times and because of technological issues noted in the previous section, some of these questions were never asked. It is interesting to note, however, that much of the information these unasked questions were designed to solicit was provided voluntarily by the participants or included in their answers to other questions.

4.4 Method of Analysis

Document analysis and direct observation during the interviews were the methods of analysis selected for this case study. Published reports on the incident from various sources were analyzed based on the "theoretical propositions of the study" and used in the preliminary investigation (Tellis, 1997, p.9). For a list of published documents, their source and their relevance to the study, please see Table 4.2 below.

Table 4.2: Documents analyzed

Document Title	Source (Date)	Relevance to Study
Rail 2005	TSB (2005) Obtained via the internet	▸ Official federal government report on the incident ▸ Provided background information on the history, cause and magnitude of the disaster
Wabamun Update, October 1	LWRC (Oct 2007) Obtained via the internet	▸ Final Committee newsletter ▸ Provided first-hand summary of the emergence, purpose and activities of the LWRC

Table 4.2: Documents analyzed

Document Title	Source (Date)	Relevance to Study
The Lake Wabamun disaster: A catalyst for change.	LWRC (Aug 2007) Obtained via the internet	▸ Committee Report to the Railway Safety Act Review Advisory Panel Provided: ▸ additional first-hand details on the emergence, purpose and activities of the LWRC ▸ initial evidence on relevance of this case to observations derived from the literature with regard to emergent behavior and emergent citizen groups ▸ basis of preliminary investigation
The Lake Wabamun disaster: A catalyst for change.	LWRC (Oct 2005) Provided by LWRC representative	▸ Committee Report to the Alberta Environmental Protection Commission Provided: ▸ additional first-hand details on the emergence, purpose and activities of the LWRC ▸ additional evidence on the relevance of this case
A Review of Alberta's environmental and emergency response capacity; learning the lessons and building change	AEPC (Fall, 2006) Obtained through the internet	▸ Final Report of the Alberta Environmental Protection Commission Provided: ▸ evidence of current Alberta emergency management policy and practice ▸ initial evidence on relevance of this case to observations derived from the literature with regard to Alberta emergency management policy and practice ▸ basis of preliminary investigation
Interview Transcripts 01, 02 and 03	Transcripts of focused participant interviews	▸ Used to triangulate, corroborate and augment evidence previously obtained from published reports

As outlined above, focused, audio-recorded interviews were used to "corroborate and augment evidence" obtained from the published reports (Yin, 2003, p.87). Because the transcription process enforces stability and allows for repeated review, once the interviews are transcribed, the transcripts, themselves, essentially become documents. For this reason, the transcripts are included in Table 4.2 and document analysis was also employed in their analyzation.

The stability of documents and their availability for repeated review is a major strength of document analysis (p.86), but it does have weaknesses as well. Two notable weaknesses are "irretrievability and the reporting bias of the originating author" (O'Neill, 2008, p.49). Analysis of data for this study was affected by irretrievability in that the CN Annual Report could no longer be retrieved by the time data collection was complete. For this reason, it was removed from the above list of published reports used in the study. The CN report, however, focused mainly on the financial ramifications of the incident to the company and its investors rather than on the incident, itself, and had limited usefulness for this study. Thus, its irretrievability and non-inclusion cannot be considered to have any great affect upon the findings.

It must also be recognized that evidence of author biases did exist in both published reports and interview transcripts. It is exactly for this reason that data was collected from "both sides" of the incident (i.e. the "official" responders and the emergent citizen group), and although the interview questions were tailored to the participant, a strong effort was made to ensure consistent questions were asked in each interview.

Data collected was then categorized according to which theoretical claim or proposition it appeared to either support or contradict. In the case of the interview transcripts, a data table was created for each transcript and evidence sorted by proposition, regardless of which question the participant had actually answered. The three data tables were then compared and examined for common or contradictory themes in the categorized information for each proposition.

Interpretation of data, however, was based not only on what was actually said, but also on direct observation of the non-verbal messages received by the interviewer during each interview (i.e. volume and tone of voice, thoughtful pauses, facial expression and other forms of "body language"). Direct observation can "range from formal to casual data collection activities" (Yin,

2003, p.92) and can reveal “valuable information that may not have been discovered using other research methods”. One weakness of this tactic is the possibility of “observer bias” (O’Neill, 2008, p.49) in that the interviewer may have misinterpreted some of these non-verbal messages. To minimize this possibility, only non-verbal messages that were supported by the verbal answers documented have been included in the findings, which are explored in the following section.

5. Findings

This section presents the findings of the study, concentrating on the data obtained through the focused interviews which would either corroborate or oppose evidence previously obtained through the published documents. As the study sought to prove or disprove observations and related propositions derived from the literature, the resulting evidence is presented according to the observation it appears to support or contradict.

5.1 Overview of Findings

Findings from this study appeared to support all observations and related theoretical claims derived from the research literature, although this support varied for the proposition most closely related to the benefits of emergent citizen group activity in emergency recovery. In addition to anticipated findings, one new observation was generated during data analysis. Although outside the original scope of this study, this new observation offers significant insight into the overarching research question and emphasizes the need for further research in this area. It is therefore included as Observation D) as outlined in Table 5.1 below:

Table 5.1: Observation D) Overview

Observation	
D) The "nature" of the disaster (i.e. natural vs. man-made) and community demographics may be other key factors involved in the formation of emergent citizen groups; emergency management policies (including the scope, frequency and level of communication to the community) that are risk-based, harm-based and place-based (in other words, are tailored according to each situation) are better suited than command and control to the anticipation and accommodation of emergent citizen groups in disaster response	
Proposition/Claim in Theory	**Indicator**
a) Access to information is more likely to be restricted in "man-made" disasters when the question of "blame" and litigation is more likely to occur. This in turn increases the likelihood of an emergent citizen group forming during the recovery stage	▸ Evidence to verify applicability of claim in this case
b) Community demographics and response capability are other key factors involved	▸ Evidence to verify applicability of claim in this case
c) policies that are tailored to the community are better suited to the anticipation/accommodation of emergent citizen group activity in all stages of disaster with the possible exception of the actual response	▸ Evidence to verify applicability of claim in this case

In-depth reviews of findings for each Observation and their related propositions are provided in the following sections. For the reader's convenience, the pertinent excerpt from Table 4.1 is reproduced at the beginning of each section to provide context for the discussion.

5.2 Qualitative results: Observation A)

As outlined in section 5.1 above, Observation A) appeared to be supported by the data collected in this case study. For reiteration of this observation and its associated theoretical claims, as well as an overview of evidence of support/non-support of these claims in this case, please see Table 5.2 below.

Table 5.2: Observation A) Overview of Findings

Observation	
A) The occurrence of emergent citizen groups is well documented in large-scale disasters; they may also occur in smaller scale disasters.	
Proposition/Claim in Theory	**Evidence of support/non-support**
1. Emergent Citizen Groups	
a) an emergent citizen group is a group of private citizens who work together in pursuit of collective goals relevant to actual or potential disasters but whose organization has not yet become institutionalized	▸ data verified applicability of definition
b) the collectivity develops new relations and tasks before, during or after disaster	▸ data verified applicability of definition
c) if there is the perception of a crisis occasion as requiring further action to avoid further problems, then such action will be taken	▸ data indicated motivation for involvement was perception that further action was required
d) the perceived insensitivity of officials to the questions of newly developing emergent citizen groups can help crystallize such groups	▸ data indicated access to information (or lack thereof) was a key factor in the formalization of the LWRC and that the perception existed that officials were insensitive to residents' needs

As previously outlined in section 3, documentary evidence strongly suggested this group not only fit into Dynes' Typology of Disaster as an emergent group, but also that the definition adopted for the study was appropriately applied. Further evidence to support these concepts was provided in all interviews. Participant 02 confirmed the timing of the appearance of the group as fitting the sequence predicted by Dynes, while participant 03 tacitly accepted the definition of the LWRC as an emergent group and indirectly referred to them as such throughout the interview. The most direct evidence in support of this definition, however, was provided by participant 01 who stated:

> [the group] really was formed…in the actions of concerned citizens who were worried about their lake and their property...[to] make sure that…the damage was…minimized…and doing what we could to make sure this happened" (Transcript 01).

Data collected from all three participants also indicated (both directly and indirectly) that the group did indeed develop new relations and tasks in the recovery stage of this disaster, and that it disbanded once recovery efforts were deemed complete.

Propositions 1c) and d) were designed to verify whether or not communication issues led directly to the emergence of this group. As noted in proposition 1c), such groups tend to emerge and act when there is the perception that further action is required. Again, both published reports and all three participants confirmed this was the case at Wabamun. According to participant 01:

> …within a day or a day and a half…the trains were running again but there was nobody on the lake. And that's when we marched into the Town of Wabamun and sat on the tracks till CN would talk…the first two days there wasn't a whole lot going on….Nor was there any indication that…there was going to be an effective action plan to get the lake cleaned up (Transcript 01).

According to participant 02:

> The citizens out here were concerned and upset because CN was trying to rebuild their track…I think that after they got organized …and really...realized what the problem was, that they became very proactive and started working with CN and other agencies…to get this done (Transcript 02).

Participant 03 offered further insight:

> The community, I think, at that point, felt that the priorities were wrong and…their needs were not being assured….How do you assure…not just by communication, but by action, that the public needs are being met? If it's not being met, then I believe the public will then step into the void and make their needs or the outcome that they're seeking, quite apparent to everybody (Transcript 03).

Findings thus suggest that the perceived insensitivity of officials to their requests for information truly did help crystallize this group. In fact, this communication breakdown is one of the key findings of the AEPC (2006) report. All data confirmed that the lack of a consistent message and the initial inability of citizens to obtain clear and complete information, coupled with the perceived insensitivity of officials to the consequences of the spill on the affected

community was indeed the key impetus for the emergence of this group. As stated by participant 01:

> [The group] was basically formed on the tracks of…CN…two days after the spill when we couldn't get a meeting with CN and people said…we need to…form a group to see if we can…make them talk to us. They caused the spill. They caused all the damage, so we wanted to know what they were going to do to fix it….there seemed to be nobody representing and protecting the interests of the citizens…. nobody seemed to be in charge and nobody seemed…there…with any type of plan that said…you guys are going to be ok….In fact…it was four days after the spill…that there was actually a person that determined that some of the substances that had been spilled in fact were toxic….the residents have to wait four days…[to learn] they were living in…apparently toxic [environments]…. People who are affected, need to know within a matter of minutes – not days – about what the substances are, or what risks there are to their property and their families…in fact, that, you know, was a major…flaw of…the whole spill, itself, and…one of the major findings of the Environmental Protection Commission on what has to be changed for effective response (Transcript 01).

Participant 03 agreed with this assessment:

> The fact that [this group was] impeded…therefore created…different interests. When they finally came together, there was a lack of trust…suspicion, a lack of communication…That was a mistake….[The community] were looking at this and saying…we don't like the outcome and nobody's talking to us… (Transcript 03).

The inability to obtain information, however, not only affected the LWRC, it also affected the official responders, themselves. Participant 02 repeatedly referred to a "lack of communication" and freely expressed his own frustration at the lack of immediate public disclosure on the toxicity of the spilled material:

> CN did not report…back to us immediately some of the concerns….when that…pole treating oil episode arrived about five days later…I was…probably very vocal on it, because I…couldn't get any answers out of anybody…And I had to go back…and say what the hell is going on?...I need some answers. What do these people do?...these…things were upsetting these…committee people – and rightfully so…we're not getting the answers… (Transcript 02).

One could argue, therefore, that Observation A) is supported by these findings. The citizens group that appeared following the onset of this disaster can indeed be classified as an

emergent citizen group, proving that the magnitude of the disaster has little to no affect on the emergence of such groups. The ability of all interested parties to access consistent and complete information, however, does appear to be a definitive factor in whether or not such a group will appear in the wake of disaster. When coupled with the perception that further action is required for a successful outcome (according to the community's priorities), the predictability of such a group emerging is increased.

5.3 Qualitative results: Observation B)

As outlined in section 5.1 above, Observation B) appeared to have received only partial support from the data collected in this study. For reiteration of this observation and its associated theoretical claims, as well as an overview of evidence of support/non-support of these claims in this case, please see Table 5.3 below.

Table 5.3: Observation B) Overview of Findings

Observation	
B) When they occur, emergent citizen groups have value in emergency response if their energy can be properly directed; early identification and inclusion of emergent citizen groups lessens potential conflict and increases communication flow between official responders and such groups.	
Proposition/Claim in Theory	**Evidence of support/non-support**
1. Emergent Citizen Groups	
e) when the community personalizes the disaster, altruistic behavior becomes an effective strategy for recovery on both a community and individual level	▸ data indicated altruistic motives and personalization of incident as motivation for civil protest and formation of group ▸ data indicated perception of the successful outcome as evidence of the civil protest as an 'effective strategy'
f) emergent citizen groups have value in emergency response if their energy can be properly directed	▸ data indicated varying perceptions of the value of LWRC contributions in recovery efforts
g) identification of key leaders of emergent citizen groups and their implementation as a resource before they become a problem can enhance coordination in response efforts	▸ Data indicated inclusion of LWRC enhanced coordination between officials and residents ▸ Data indicated perception existed that earlier inclusion of group leaders may have prevented conflict

As previously outlined in section 3, documentary evidence supported the applicability of these propositions in the Wabamun case. The LWRC reports in particular, suggested strong altruistic motivation for the citizen's spontaneous protest: "we had to act to save our lake" (LWRC, August 2007, p.3). That the citizens group regarded their activities as having been highly effective was unequivocally stated by participant 01:

> Oh yeah! Highly successful!...We accomplished everything we…wanted in the…span of about 11 months….it was positive to see the resources that were brought to bear by CN on the lake to get it cleaned up…it's important, I think, [for] people …[to] be vigilant about their rights, about public safety and about their properties" (Transcript 01).

Also evident in their reports was the fact that the citizens did feel "victimized": "Having been victims of the spill, we were then re-victimized by the processes to address the spill" (LWRC, 2005, p.7). This claim is further supported by participant 02, who stated that "there was a lot of people that were…really emotional over this thing" (Transcript 02), and by participant 03, who referred to the initial exclusion of residents in recovery efforts as "a mistake" (Transcript 03).

It is significant that findings varied for proposition 1f) (the claim most closely related to the debate on the value of incorporating emergent citizen groups into response or recovery activities). Although evidence pulled from the published reports consistently acknowledged that the activities of this group did enhance the response, participants appeared to disagree on the level of enhancement these efforts provided. Participant 03 expressed strong agreement with the proposition; in fact, this participant referred to the inclusion of this group as being "**essential** to a successful conclusion" (Transcript 03; emphasis provided by participant). Participant 02, however, appeared less certain:

> …there was a number of people that offered assistance. A number of [*sigh*] – and there was no coordination…And some of the products that were brought out was

> a detrimental thing. It just – made a mess!...I think there's a place for [such groups], but…they've got to also…realize…that their role may not be as significant…as they may want it to be" (Transcript 02).

Even participant 01 stressed that their role was limited:

> There wasn't really a lot of help to give. I mean, there was 600,000 litres of oil floating around in our lake and there was…nothing anybody could do about that…except…make sure the…resources were brought to bear to do whatever it took to make sure that…the damage was…minimized…from then on and that's the way it got cleaned up (Transcript 01).

Participant 01, on the other hand, also had no hesitation in stating that if he saw something like this happen again, "sure, I probably would get involved" (Transcript 01).

All participants, however, strongly agreed that inclusion of this group when it finally did happen, greatly enhanced cooperation between officials and residents and that inclusion of community leaders in future incidents, right from the onset, in planning and information meetings at the very least, are vital to any successful outcome. Although participant 01 simply expressed the belief it was very important that "whoever's responding…to the incident…immediately get in touch with people" (Transcript 01), participant 02 stated:

> I think that the other turning point was when the Minister of Environment…made the announcement that there was going to be a committee set up to look at that and we will include you people as part of that committee – that really helped. And that diffused a lot of the stuff that was going on (Transcript 02).

According to participant 03:

> I think that there needs to be a whole series of work that's done prior to the incident, during the incident phase, during the response phase and in the post response clean up phase. And at all times, you need to make sure that those groups that have an interest in the outcome be included…in whatever discussions are happening (Transcript 03).

The foregoing evidence reveals that while propositions 1e) and g) are supported by the study, findings for proposition 1f) were not definitive. One can reasonably argue, therefore, that further research into Observation B) is required.

5.4 Qualitative results: Observation C)

As outlined in section 5.1, Observation C) appeared true in this case. For reiteration of this observation and its associated theoretical claims, as well as an overview of evidence of support/non-support of these claims in this case, please see Table 5.4 below.

Table 5.4: Observation C) Overview of Findings

Observation	
C) Command and control overemphasizes hierarchy and neglects the network components emergent citizen groups can provide in disaster response (i.e. additional resources in terms of manpower, supplies and communication networks). Standards such as ICS that are based on this approach should be modified to not only minimize jurisdictional issues, but also to maximize network capabilities when competing priorities and recovery needs are present.	
Proposition/Claim in Theory	**Evidence of support/non-support**
1. Command and Control	
a) Command and control as the dominant model of emergency management was used in this case	▸ Data verified use of command and control approach
b) Command and control is strict, rigid and centralized and is based on clearly defined objectives, a division of labor, a formal structure, and a set of policies and procedures; because this approach assumes chaos after any crisis event, it restricts access to information as a means of controlling the situation	▸ Data indicated a formal set of objectives and structure for official communications ▸ Data indicated concerns about legal issues associated with public response to communications ▸ Data indicated perception of restricted information flow as the most appropriate strategy during response
c) Command and control does not readily accommodate emergent citizen groups through an overemphasis on hierarchy or "chain of command" and distrust of the informal networks through which such groups commonly operate	▸ Data indicated responders emphasize need for chain of command ▸ Data indicated distrust of informal, social networks
d) cautious approaches that are overly sensitive to issues of jurisdiction leave the community vulnerable	▸ data indicated sensitivity to issues of jurisdiction ▸ data indicated perception that this sensitivity detracted from the response and complicated recovery efforts

As mentioned previously, no evidence was found in the published reports to suggest command and control was **not** the approach taken by official responders. More definitive evidence was provided by participant 02 and by participant 03 (albeit less certainly). Both these participants cited clearly defined objectives, a division of labor and a formal structure in the

response which can reasonably be taken as support for propositions 2a) and b). Participant 03, however, did point out that while there was evidence of a division of labor, it was obviously not a "unified command" and while protocol was followed, it appeared that response leaders were each following their own organizational priorities, a fact supported by participant 02. Furthermore, both participants 02 and 03 cited jurisdictional issues as a major impediment to immediate and clear communication not only between the "officials" and the community, but also between the two responding groups and provincial authorities, causing delays, confusion and conflict at the beginning of the response.

On the other hand, both verbal and non-verbal messages received from participant 02 in response to questions related to proposition 2c) appeared evident of distrust and distancing from the informal networks of emergent citizen groups:

> We had…very little to do with them…I don't think it's incumbent upon us as first responders to do that. I think it's incumbent upon the community leaders – you know, the elected officials and the…Alberta Emergency Management Agency to be…working with these people (Transcript 02).

The most definitive support for both 2c) and d) was supplied by participant 03:

> CN…had priorities – operational priorities. And…the communities were there, but they were essentially…of nuisance value… and therein lies one of the issues around the command and control system…I think that if there…had been a different…response philosophy…If we had moved away from this who's in charge, who's controlling the message, who's controlling the outcome, I think it would have been different… (Transcript 03).

Questions related to propositions 2a), b) and d) were not posed to participant 01. Strong impressions were received by the researcher during the interview (i.e. tone of voice and slight impatience in response to other related questions) that led to the belief this participant felt it should not be up to citizens to understand emergency management principals – that was up to "officials". It is interesting to note, however, that with regard to proposition 2c), even participant

01 appeared to distrust the informal network through which his group operated. His statements implied that, once sorted out, the hierarchical nature of current response policy appeared to work well; although he did express frustration at the length of time it took for this "sorting out" to happen.

The foregoing evidence thus suggests that the initial confusion and inconsistency of the messages provided to the community were not caused by either an emphasis on hierarchy, distrust of informal networks or jurisdictional issues alone, but rather by a complex combination of all three. As previously mentioned, one of the key recommendations of the AEPC was the adoption of ICS as the most practical answer to such issues. Participant 03, however, appeared to have reservations as to this claim:

> ICS inherently relies on a command and control structure. Until such time as we've resolved the…problem of jurisdiction and multiple ICSs that are not working in unified command structure mode, we're never going to get to the…point where we say, ok, now we need to establish the lines of communication with the residents and with the community leaders and so on…. ICS and the command structure works in response. It doesn't work in recovery, because there's different technologies, there's different…issues, there's different phasing that has to happen in a recovery phase (Transcript 03).

The foregoing evidence reveals strong support for Observation C) as a whole. Command and control was employed at Wabamun and the hierarchical and jurisdictional issues inherent in this approach delayed an effective response and the provision of a complete and consistent message to the community. Furthermore, although adoption of the ICS standard may help to resolve jurisdictional issues and encourage "collaboration, coordination and cooperation" among official responders (AEPC, 2006, p.16), it cannot be said to truly address the accommodation of emergent citizen group activities. It can reasonably be argued, therefore, that a paradigm shift in the basic underlying philosophy of emergency management policy and practice (as outlined in

section 2.4 appears required before emergent citizen group activity can be smoothly anticipated and utilized in disaster recovery.

In support of this claim, the following section outlines an unanticipated finding of this study, which provides significant insight into the question at hand.

5.5 Unanticipated results: Observation D)

As previously mentioned, one unanticipated but significant result of the data analysis was the generation of Observation D). For reiteration of this observation and its associated theoretical claims, as well as an overview of evidence of support/non-support of these claims in this case, please see Table 5.5 below.

Table 5.5: Observation D) Overview of Findings

Observation	
D) The "nature" of the disaster (i.e. natural vs. man-made) and community demographics may be other key factors involved in the formation of emergent citizen groups; emergency management policies (including the scope, frequency and level of communication to the community) that are risk-based, harm-based and place-based (in other words, are tailored according to each situation) are better suited than command and control to the anticipation and accommodation of emergent citizen groups in disaster response	
Proposition/Claim in Theory	**Evidence of support/non-support**
a) Access to information is more likely to be restricted in "man-made" disasters when the question of "blame" and litigation is more likely to occur. This in turn increases the likelihood of an emergent citizen group forming during the recovery stage	▸ data verified applicability of claim in this case
b) Community demographics and response capability are other key factors involved	▸ data verified applicability of claim in this case
c) policies that are tailored to the community are better suited to the anticipation/accommodation of emergent citizen group activity in all stages of disaster with the possible exception of the actual response	▸ data verified applicability of claim in this case

This observation suggests the need for a paradigm shift to the alternative model of emergency management previously outlined; in other words, an emergent behavior approach that

can recognize and adapt to situations "where a command and control structure doesn't necessarily fit" (Transcript 03).

As participant 03 pointed out, the most recent disasters in Alberta have all been "natural disasters where the issue of jurisdiction and blame…are off to one side" and command and control worked well (Transcript 03). This was not the case at Wabamun. Wabamun was a "man-made", technological disaster further compounded by initial response efforts directed by operational priorities rather than environmental or social concerns. There is no question that the nature of this disaster was technological failure (TSB, 2005, p.1). One could also argue that the conflict that arose at the beginning of the response can be attributed to the "failure of a social system operating within a technical system" (Shrivastava and Mitroff, 1987 as cited in Denis, 1991, p.3). In other words, the command and control model of emergency management and its formal priorities failed to perform up to expectations and, in fact, added to the complexity of the recovery phase. As previously mentioned, CN's "focus…on repairing their line" made it "apparent to residents that CN did not view the issue of containing the spill as urgently as we did" (LWRC, August 2007, p.3). This brought in the question of responsibility or blame and the issue of trust. "In the absence of CN being willing to accept its full responsibilities to us, residents felt that we had to get our own team of advocates in place" (LWRC, 2005, p.5). "They caused the spill…they caused all the problems and we wanted to know what they were going to do about it" (Transcript 01). As previously mentioned, it seems evident from both published reports and all three interviews, that this was a major impetus, for both the citizens' protest and the emergence of the citizen group. The question then becomes, would this group have emerged had the question of responsibility, blame or trust not also emerged? According to participant 03:

> The moment you have this issue of who's to blame…and who's in charge and who's controlling the message to the media, you get a number of different…

> biases coming out in the messaging. And that's where the public now doesn't trust anybody…and so now they feel the need to engage and find the answers for themselves – control the process, because it seems to be – appears on the surface, at least, a void of leadership (Transcript 03).

Further support for this claim can be found in a study on the 1988 Saint-Basile-le-Grand, Quebec PCB fire. Like Wabamun, this incident was an industrial accident that turned into a crisis for the community. According to Denis (1991): "Gaining the public's trust is the most important challenge facing disaster managers and politicians alike in technological accidents" and "mistrust is growing fast in our society, as people react to what they perceive as carelessness in the use of technology" (p.16). Denis' claim also appears supported by evidence from both LWRC reports: "How can a major multi-national not be prepared to the fullest extent to deal with any emergency?" (LWRC, August 2007, p. 7; LWRC, 2005, p.6).

Issues of trust, guilt or blame, however, are only one aspect of Observation D). Although Quarantelli (1984) asserts that social "class position, …linkages… [and] experiences" appear to have more influence than community demographics on the composition of emergent citizen groups (p.25); in this case, it appeared to have considerable effect on the emergence of such a group. There was a "limited response capability" at Wabamun (Transcript 03) and an affected community composed of about 70 km of scattered lake front temporary homes, some of which are "not equipped with telephones, let alone the internet" (Transcript 01). These facts would definitely have affected the ability of responders to efficiently communicate with these residents, even without the problem of cellular "dead zones" which also affected the area of impact. Despite its remote nature, the community was also "knowledgeable", and "had some very strong leaders" who had other means to access all the information they needed. According to participant 03:

> If the Wabamun incident had happened in Edmonton, the whole response would have been different. The outcome would have been different. The reaction from the public would have been different… What would happen if it happened further down the road? Would we necessarily get the same kind of level of public, social, community issues? (Transcript 03).

From the foregoing evidence, it seems reasonable to infer that the nature of this incident and community demographics were other key factors involved in the emergence of the LWRC. As this concept lies outside the original scope of the current study, it is not explored in more detail in this report. This, however, is not meant to lessen its significance to the overarching question as it does reveal a crucial need for further research in this area.

5.6 Summary of Findings

Findings therefore suggest that the observations and theoretical claims derived from the research literature are either supported or partially supported by the data collected from the Wabamun disaster. The use of command and control in response to the incident, compounded by jurisdictional issues, affected the provision of a clear, consistent message to the community. This, in turn, led to the emergence of the citizen group and conflict created by the tensions between two opposing philosophies of hierarchy and network. Furthermore, the initial response priorities of the "owner" of the incident, coupled with the strict control of potentially alarming information (as dictated by command and control), increased the complexity of later recovery efforts. This contributed not only to the citizens' perception that further action was required, but also to their perception of being "victimized" and that officials were insensitive to their questions, all of which helped to crystallize this group. Other factors that appeared to have had great impact were issues of blame, responsibility and trust arising from the nature of the disaster (which the community perceived as being caused by the careless use of technology), as well as the demographics of the community involved.

The following section will discuss the limitations of the study, the implications of these findings for emergency managers and the opportunities for future research that were revealed.

6. Discussion

6.1 Limitations Identified

As with all human endeavours, this study did have limitations, which affected the outcome to greater or lesser degree. One major limitation was the unavailability of a CN representative participant. Due to litigation underway at the time of request, CN determined they were not in a position to participate, which meant that insights from the incident's "owner" could not be directly obtained. Although the substitution of an alternative participant in the Alberta Transportation Safety Services Division representative did mitigate this limitation, it cannot be denied that data collected directly from CN may have informed the findings.

The fact that findings are based only on an examination of Alberta emergency management policy and practice in the Wabamun case is another limitation of this study. Further comparison to the policy and practice of other municipalities, provinces, territories and countries, as well as comparison to other "natural" and "man-made" events, may well reveal opposing results. Furthermore, factors such as the difficulties of and time involved in obtaining the necessary resources and the expertise required to use these resources properly in order to prevent further damage (factors that compounded the complexity of recovery efforts) also came into play at Wabamun, and were discussed in both the published reports and interviews. Although these factors may well have had an impact on the emergence of the citizen group, they were not the focus of this study and therefore not included in its findings. Other limitations of this study included time constraints and technological issues.

These limitations are mitigated, however, in that the study does appear to meet its stated objective of providing a "basis for the application of ideas and extension of methods" (Soy, 1997, p.1) and in the fact that, in accordance with the acknowledged scope of a case study, "generalization of results… is made to theory and not to populations" (Tellis, 1997, p.4).

6.2 Implications of Findings

Notwithstanding the limitations listed above, it appears evident from the findings of this study that in the case of the Wabamun disaster, delayed, inadequate and inconsistent communication to the public created the perception of an inadequate response, misplaced priorities and "official insensitivity" towards the community's questions. It can therefore be argued that access to information (or lack thereof) was indeed a key factor in the formation of the LWRC. Other factors that appeared to have great impact on the emergence of this group were the perception that further action was required, issues of blame and responsibility arising from the nature of the disaster (which the community perceived as being caused by carelessness and lack of foresight) and the demographics of the community involved.

Furthermore, it can also be argued that hierarchical and jurisdictional issues implicit in the command and control approach to emergency management contributed to the aforementioned public perception, and were further compounded by the Albertan policy that the organization that caused the incident is responsible for controlling the response. This created initial confusion, which delayed an effective response, inhibited the community's access to vital information and increased the magnitude of later recovery efforts. This in turn led to conflict, civil disobedience and public mistrust. Conflict was greatly diminished, however, once CN agreed to meet with the leaders of this emerging group, thus acknowledging their concerns and providing access to vital information. Final resolution of this conflict, however, did not occur until the group was included

in recovery efforts, not only through an invitation to participate in the newly formed AEPC, but also through an increased willingness on the part of CN to involve the group in matters of resident compensation and environmental remediation.

This suggests that a paradigm shift in emergency management philosophy is “long overdue” (Transcript 03). While the ICS standard recommended by the AEPC may help to resolve hierarchical and jurisdictional issues, it does not appear to have the capacity to easily anticipate the formation of emergent citizen groups and accommodate their activities into the overall response. If it is true that emergent behavior cannot be stopped, the necessity of a change in policy and practice becomes self-evident. One recommendation for such change, discovered in both the research literature and collected data, is to place more emphasis on the planning process in order to “develop communication and structural coordination mechanisms” flexible enough to accommodate competing needs and priorities (Denis, 1991, p.17).

Research suggests the application of the emergent behavior model (a more risk-based, harm-based and place-based approach) to emergency management policy and practice is a viable alternative to command and control. This philosophy inherently encourages the recommended emphasis on planning, as well as an ability and willingness on the part of emergency managers to “consider disaster management as an open process in which there is no one best way but, on the contrary, in which different contingencies need to be addressed” at different times in the response (p.17).

There are, however, barriers to the implementation of such a philosophy. These will be addressed in the next section, along with other opportunities for further research revealed in this case study.

6.3 Directions for future research

Although findings from this study appeared to indicate that current emergency management policies and practices in Alberta, based on command and control, did indeed have an impact on the appearance of the emergent citizen group and impeded their initial activities, further research into how such policies and practices could be amended is still required. Further study on the appearance of emergent citizen groups and their contributions in other comparable disasters would also be useful in confirming their value in all phases of emergency management.

As previously touched upon, a crucial need for further research lies in discovering practical solutions to the problems encountered in adequately planning for disasters. By their very nature, disasters are unpredictable and the cost entailed in in-depth planning for what may never happen is often prohibitive for business reasons. As stated by participant 03:

> It's like a novice climber trying to…scale Everest. It just seems too big. We've not broken it down to its manageable chunks. We've not said, ok, let's take a look at the high risk communities – those communities where there is the risk of something like Wabamun happening, establish the base of communications – it may never happen, but we've got [to have] a constant open…line of communications. What are their priorities? (Transcript 03).

A list of other barriers to effective risk communication can be found in the research literature. Sandman (2005), for example, whose "formula for effective risk communication" is "Risk = Hazard + Outrage", states:

> Many understand the principles of effective risk communication: openness, dialogue, accountability, etc. But three sets of barriers often make these principles difficult to implement. Cognitive barriers range from the belief that no one is especially concerned to the belief that open communication may fuel the controversy or lead to liability suits. Among the organizational barriers are opposition to the new approach from an immediate superior or elsewhere in the organization, an internal climate that makes external openness difficult, and skepticism by employees that management really intends the new approach. Psychological barriers include anger at activists and feeling insulted by community mistrust (para.12).

One could reasonably argue that all of these barriers to open communication were present to some degree at Wabamun. This concept is not fully addressed in this report as it was deemed to lie outside the original scope of this study; however, further research in this area also appears crucial to the issue at hand.

Findings from this study thus highlight the critical need for further research into the benefits and ramifications of a paradigm shift in basic emergency management philosophy. This research is not only required, it is essential before any serious recommendation can be made in this regard.

7. Conclusion

As previously outlined, findings from this case study confirm much of the existing research on the appearance of emergent citizen groups in disasters and their potential contributions to disaster recovery efforts. More importantly, these findings highlight the fact that, in today's technical environment, where it is difficult to control the flow of information, open, two-way communication and trust between official responders and the communities they protect is becoming increasingly crucial. But how can this open communication and trust be created and maintained before, during and after an incident, under varying degrees of complexity, resource-constraints and competing priorities, not to mention a certain level of confidentiality that responders must maintain?

Research suggests the answer lies in overcoming barriers to effective risk communications and planning, as well as the adoption of an alternative approach to command and control, such as the emergent behavior model. The built-in flexibility and creativity of this approach could provide an effective risk-based, harm-based and place-based response if and

when disaster strikes. Although the research literature is strikingly silent on such pragmatic details as what this model might actually look like, it is reasonable to speculate that it would place a higher emphasis on the mitigation, preparedness and recovery stages of disaster (place-based risk analysis and early identification and utilization of community leaders, response capabilities and potential resource requirements), while still employing command and control based standards like ICS during the actual response phase. Findings from this study support this claim and suggest the adoption of this alternative model may be required before true accommodation of emergent group activity can be effectively accomplished in disaster response and recovery.

On the other hand, adoption of this model would entail a major paradigm shift in emergency management policy and practice. It is also reasonable to suggest that this alternative approach requires more work on the part of emergency managers than does the current model in order to prepare for something that may never happen. For this reason, it is important that further research into the benefits and ramifications of such a paradigm shift be undertaken before any serious recommendation is made to abandon command and control in favor of new and potentially more costly alternatives. Furthermore, it is also reasonable to suggest that, in order to be truly effective, such research and recommendation for change must be initiated by the agency created to be an overarching authority in Alberta for emergency and security affairs, the AEMA.

Although one can only speculate on the benefits or costs entailed in such a shift, the consequences of **not** making any change at all to current policy and practice seem evident in the Wabamun case. It is a striking illustration of how the competing paradigms in emergency management might lead to confusion, conflict and public mistrust in official response efforts. The major contribution of this study, however, lies in the identification of crucial knowledge

gaps in emergency management research. These gaps include practical solutions to the problems encountered in effective risk communication and planning, an understanding of exactly how ICS incorporates the opposing philosophies of hierarchy and network and the benefits and ramifications of a paradigm shift in current emergency management policy and practice. Such gaps must be addressed before the theoretical debate between the two competing paradigms of emergent groups and command and control can be truly resolved.

Research has proven that emergent behavior cannot be stopped. The importance of resolving the aforementioned debate becomes even more evident when one considers that the increasing complexity of today's disasters and their response also increases the likelihood that the role of emergent citizen groups in emergency response will not only continue to be relevant, but will grow and change significantly in years to come.

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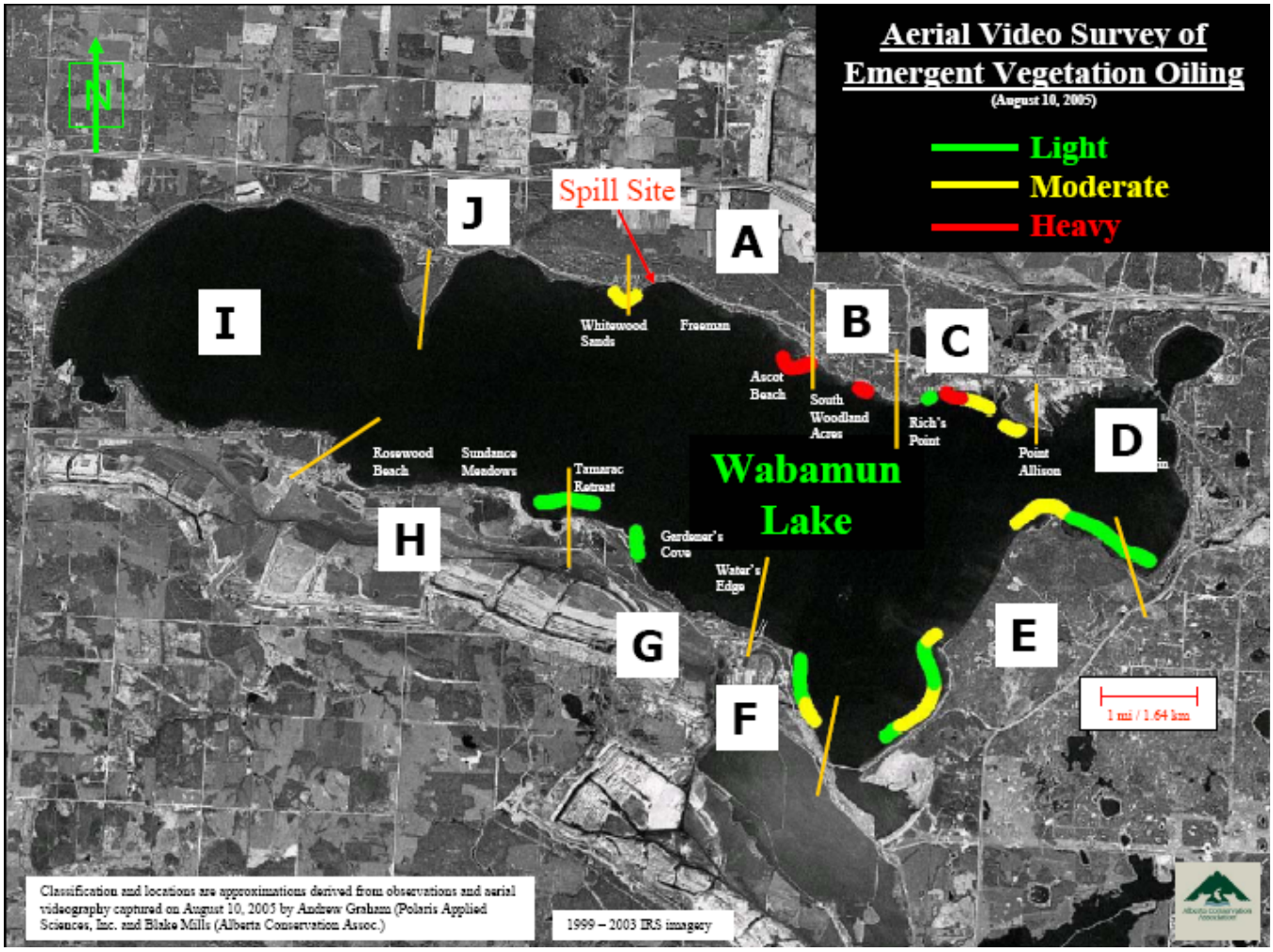
10. Appendices

Appendix I
Map of Lake Wabamun Oil Spill



Source: http://www.wabamunresidents.com/_documents/wabamunoilspillmapasofaug10.pdf .
Retrieved June 4, 2008

Appendix II
Sample Invitation Letter

Re: Invitation to participate in research project
Emergent citizen groups and command and control: Communication issues in the 2005 Lake Wabamun, Alberta disaster

I would like to invite a key representative of your organization to participate in the above study. As a major stakeholder, your organization's firsthand experience with the 2005 Lake Wabamun, Alberta disaster response is a valuable resource. In order to obtain your informed consent, I would like to provide the following details.

Investigator/researcher:
Beverley Fowler 780-464-8459 or 780-298-2026 (cell)
fowler@strathcona.ab.ca or heitman@ualberta.ca
Master of Arts in Communication and Technology (MACT) Candidate

Supervisor:
Dr. Gordon Gow 780-492-6111
MACT Program, University of Alberta
gordon.gow@ualberta.ca

Purpose of the Study:
Emergent phenomenon has been a central feature of the disaster literature since Samuel Prince's dissertation on the Halifax explosion in 1917, and the existence and contributions of emergent citizen groups during emergency response in particular, is well documented by disaster researchers. During times of community crisis, emergent citizen groups represent a potential source of additional resources that may be critical to response efforts, but as they commonly operate independent of traditional authority, such groups also have the potential of further disrupting response efforts that may already be strained. This fact lies at the center of a current debate among scholars and emergency managers: do the potential benefits of emergent citizen groups outweigh the challenges they present in disaster response? In today's technical environment, the answer to this question is becoming even more crucial. With the widespread adoption of advanced communications technologies by the general public, it is likely that emergent citizen groups will not only continue to be relevant but their involvement in emergency response will grow and change significantly in years to come. For this reason, it is important to better understand how these groups react to and interact with "official" emergency management practices and policies.

In order to examine this important theoretical debate from an empirical standpoint, this study will look at the 2005 Lake Wabamun, Alberta disaster as a recent case study in the formation of an emergent citizen group in response to a community-wide emergency incident. The aim of this case study is to relate the literature on emergent citizen groups to current emergency management response practice and policy in Alberta. It will do so through a review of documents pertaining to the incident and through interviews with key stakeholders as identified in the documents and as suggested by a review of current Alberta emergency management policy.

As the research literature suggests that access to information (or lack thereof) is a key factor leading to the formation of emergent citizen groups, this will be the initial focus of investigation. Depending on initial findings, the investigation may also explore other factors beyond access to information, but will continue to emphasize "communications" as its core point of focus. Findings from the study will be based on an examination of Alberta emergency management practices; however, the overall aim of the study will be to critically examine current theories of emergent citizen groups using empirical evidence, with the view to improving our understanding of how actual emergency management practice might better accommodate emergent citizen groups in the future.

Method: Description of research procedures, nature of participation and expected duration
Data will be gathered through published reports and focused, audio-recorded interviews with one representative of key stakeholders, with their signed consent. Participants are free to decide whether or not to answer any question and to lead the interview in any direction relevant to them. Interviews will be transcribed by the researcher and data from both published reports and interviews analyzed to identify key factors which lead to the formation of emergent citizen groups during emergencies and the ways official emergency management response policy and practice recognize, hinder and/or support such groups. Participant representatives will be provided with a copy of their interview transcript and offered the opportunity to retract or amend any statement at their discretion.

Interviews will commence in July 2008, are expected to take approximately 30 minutes and will be scheduled at the participant's convenience. As project deadlines require that I complete all interviews by mid August, I will need to look for an alternate participant if I have not received a response from a representative of your organization by July 31, 2008.

Researcher's Background
As I will be conducting all research, interviews and transcription, some personal background may inform your decision to consent. In addition to completing the MACT program, I am currently employed in an administrative capacity with Strathcona County Emergency Services (who are sponsoring my degree). This has provided the basis of my interest and experience in the area of emergency management.

Confidentiality
Although complete anonymity cannot be assured (all participants will be members of a distinct group), personal identifying information will be replaced by coded numbers in the final report. Representatives may also feel a certain amount of risk is involved in honestly describing their experience, in that it could be perceived as criticism or negativity toward other stakeholders. The intent of this study, however, is not to cast any aspersions or blame, but rather to create a better understanding of this human experience. No reasonably foreseeable harm should arise from participation, but if participants are uncomfortable with this, they should not consent to the study.

All data gathered in the course of this study must be kept for a minimum of 5 years following completion of research, but will be safeguarded in an appropriately secure manner. Any dissemination of this data will be handled in compliance with the University of Alberta Standards for the Protection of Human Research Participants http://www.ualberta.ca/~unisecr/policy/sec66.html.

Withdrawal from Study:
Your representative is free to withdraw their consent at any time without any adverse consequences up to the point s/he approves her/his interview transcript. Should your representative decide to withdraw, all data provided by them to that point will be destroyed and not included in the study.

This research is being conducted in partial completion of the Master of Arts in Communication and Technology Program offered through the University of Alberta. The plan for this study has been reviewed for its adherence to ethical guidelines and approved by the Faculties of Education, Extension and Augustana Research Ethics Board (EEA REB) at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Chair of the EEA REB at (780) 492-3751.

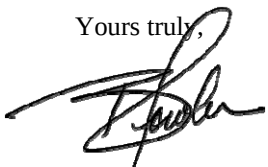
The participation of other pertinent stakeholders has also been requested. Research results in the form of the final written report will be shared upon request with all interested parties, specifically, the MACT Program of the University of Alberta, Wabamun Fire Department, CN Rail, Alberta Transportation, the Lake Wabamun Resident's Committee and Strathcona County Emergency Services.

To set up your interview, or for further clarification of this study, please have your chosen representative contact me at fowler@strathcona.ab.ca or heitman@ualberta.ca or by phone at 780-464-8459 (bus) 780-471-0023 (res) or 780-298-2026 (cell) at their earliest convenience.

In the case of concerns or complaints you may also contact Dr. Gordon Gow, Project Supervisor, at gordon.gow@ualberta.ca (780-492-6111); or Dr Marco Adria, MACT Program Director, at marco.adria@ualberta.ca (780-492-2254).

I appreciate your consideration of my request and look forward to your response.

Yours truly,



Beverley Fowler
MACT Candidate, 2006 Cohort

Appendix III
Sample Information/Consent Letter

Re: Consent to participate in research project
Emergent citizen groups and command and control: Communication issues in the 2005 Lake Wabamun, Alberta disaster

You are invited to participate in the above study. As a key representative of a major stakeholder, your firsthand experience with the 2005 Lake Wabamun, Alberta disaster response is a valuable resource. In order to obtain your informed consent, I would like to provide the following details.

Investigator/researcher:
Beverley Fowler 780-464-8459 or 780-298-2026 (cell)
fowler@strathcona.ab.ca or heitman@ualberta.ca
Master of Arts in Communication and Technology (MACT) Candidate

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Purpose of the Study:
Emergent phenomenon has been a central feature of the disaster literature since Samuel Prince's dissertation on the Halifax explosion in 1917, and the existence and contributions of emergent citizen groups during emergency response in particular, is well documented by disaster researchers. During times of community crisis, emergent citizen groups represent a potential source of additional resources that may be critical to response efforts, but as they commonly operate independent of traditional authority, such groups also have the potential of further disrupting response efforts that may already be strained. This fact lies at the center of a current debate among scholars and emergency managers: do the potential benefits of emergent citizen groups outweigh the challenges they present in disaster response? In today's technical environment, the answer to this question is becoming even more crucial. With the widespread adoption of advanced communications technologies by the general public, it is likely that emergent citizen groups will not only continue to be relevant but also that their involvement in emergency response will grow and change significantly in years to come. For this reason it is important to better understand how these groups react to and interact with "official" emergency management practices and policies.

In order to examine this important theoretical debate from an empirical standpoint, this study will look at the 2005 Lake Wabamun, Alberta disaster as a recent case study in the formation of an emergent citizen group in response to a community-wide emergency incident. The aim of this case study is to relate the literature on emergent citizen groups to current emergency management response practice and policy in Alberta. It will do so through a review of documents pertaining to the incident and through interviews with key stakeholders as identified in the documents and as suggested by a review of current Alberta emergency management policy.

As the research literature suggests that access to information (or lack thereof) is a key factor leading to the formation of emergent citizen groups, this will be the initial focus of investigation. Depending on initial findings, the investigation may also explore other factors beyond access to information, but will continue to emphasize "communications" as its core point of focus. Findings from the study will be based on an examination of Alberta emergency management practices; however, the overall aim of the study will be to critically examine current theories of emergent citizen groups using empirical evidence, with the view to improving our understanding of how actual emergency management practice might better accommodate emergent citizen groups in the future.

Method: Description of research procedures, nature of participation and expected duration
Data will be gathered through published reports and focused, audio-recorded interviews with one representative of key stakeholders, with their signed consent. Participants are free to decide whether or not to answer any question and to lead the interview in any direction relevant to them. Interviews will be transcribed by the researcher and data from both published reports and interviews analyzed to identify key factors which lead to the formation of emergent citizen groups during emergencies and the ways official emergency management response policy and practice recognize, hinder and/or support such groups. You will be provided with a copy of your interview transcript and offered the opportunity to retract or amend any statement at your discretion.

Interviews will commence in July 2008, are expected to take approximately 30 minutes and will be scheduled at your convenience. As project deadlines require that I complete all interviews by early August, I will need to look for an alternate participant if I have not received a response from you by *[date]*.

Researcher's Background
As I will be conducting all research, interviews and transcription, some personal background may inform your decision to consent. In addition to completing the MACT program, I am currently employed in an administrative capacity with Strathcona County Emergency Services (who are sponsoring my degree). This has provided the basis of my interest and experience in the area of emergency management.

Verification/review
Arrangements will be made at the close of each interview to provide you with a written transcript for verification and feedback purposes. At that time, you will be free to retract or amend any statement at your discretion.

Rights
Participants are free to withdraw from this study at any time without prejudice to pre-existing entitlements, and to continuing and meaningful opportunities for deciding whether or not to continue to participate up to the date they approve their interview transcript. Should you decide to withdraw prior to approving your interview transcript, all data provided by you to that point will be destroyed and not included in the study.

Please advise at time of interview if your organization wishes a copy of the final report of research findings.

Other uses and ethical guidelines
This research is being conducted in completion of the Master of Arts in Communication and Technology Program offered through the University of Alberta. The plan for this study has been reviewed for its adherence to ethical guidelines and approved by the Faculties of Education, Extension and Augustana Research Ethics Board (EEA REB) at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Chair of the EEA REB at (780) 492-3751.

The participation of other pertinent stakeholders has also been requested. Research results in the form of the final written report will be shared upon request with all interested parties, specifically, the MACT Program of the University of Alberta, Wabamun Fire Department, CN Rail, Alberta Transportation, the Lake Wabamun Resident's Committee and Strathcona County Emergency Services.

To set up your interview, or for further clarification of this study, please contact me at fowler@strathcona.ab.ca or heitman@ualberta.ca or by phone at 780-464-8459 (bus) 780-471-0023 (res) or 780-298-2026 (cell) at your earliest convenience.

In the case of concerns or complaints you may also contact Dr. Gordon Gow, Project Supervisor, at gordon.gow@ualberta.ca (780-492-6111); or Dr Marco Adria, MACT Program Director, at marco.adria@ualberta.ca (780-492-2254).

Participant Representative Informed Consent:
I consent to participate in the study as outlined above. I acknowledge that the research procedures have been explained to me, and that any questions I have asked have been answered to my satisfaction. In addition, I know that I may contact the persons designated on this form if I have further questions either now or in the future. I have been assured that the personal records relating to this study will be kept confidential. I understand that I am free to withdraw from the study up to the point I approve my interview transcript and I will not be asked to provide a reason.

_____
(Date)

_____	_____
(Printed Name of Representative and Organization)	(Signature of Representative)
_____	_____
(Printed Name of Investigator)	(Signature of Investigator)

Note: Two copies of the consent form have been provided. Please sign and date both copies and return one to the Researcher. The other copy is for your records.

Appendix IV

Operationalization Table			
Observation			
Proposition/Claim in Theory	**Indicator**	**Interview Questions / Coding of Documents**	**Sources**
A. The occurrence of emergent citizen groups is well documented in large-scale disasters; they may also occur in smaller scale disasters.			
2. Emergent Citizen Groups			
f) an emergent citizen group is a group of private citizens who work together in pursuit of collective goals relevant to actual or potential disasters but whose organization has not yet become institutionalized	▸ evidence to verify applicability of definition	▸ What was the purpose of creating/joining the LWRC?	▸ Kendra & Wachtendorf, 2001, p.8 ▸ LWRC report ▸ LWRC representative ▸ CN representative ▸ AB Transportation representative ▸ WFD representative
g) the collectivity develops new relations and tasks before, during or after disaster	▸ evidence to verify applicability of definition	▸ Had you worked with other members of the group before this incident? ▸ How did you identify and/or recruit members to the group?	▸ Drabek & McEntire, 2003, p.100 ▸ LWRC report ▸ LWRC representative
h) if there is the perception of a crisis occasion as requiring further action to avoid further problems, then such action will be taken	▸ evidence to indicate motivation for involvement (perception existed that further action was required)	▸ At what point in time did you feel it necessary to become involved in response efforts? ▸ Why do you think the members of the community felt it was necessary to create the LWRC and become involved in the response efforts?	▸ Scanlon, 1999, p.31 ▸ LWRC report ▸ LWRC representative ▸ CN representative ▸ AB Transportation representative ▸ WFD representative
i) the perceived insensitivity of officials to the questions of newly developing emergent citizen groups can help crystallize such groups	▸ evidence to indicate access to information (or lack thereof) was a key factor in the formalization of the LWRC (perception existed that officials were insensitive to residents' request for information)	▸ What frustrated you most during the initial formal response to the incident and did this lead directly to the creation of the LWRC? Were you involved in any planning or other meetings with regard to the disaster prior to your protest? ▸ Did you involve residents in any planning or other meetings with regard to the disaster prior to their protest? Why/why not?	▸ Quarantelli, 1984, p.55 ▸ LWRC report ▸ LWRC representative ▸ CN representative ▸ AB Transportation representative ▸ WFD representative

Operationalization Table			
Observation			
Proposition/Claim in Theory	**Indicator**	**Interview Questions / Coding of Documents**	**Sources**
B. When they occur, emergent citizen groups have value in emergency response if their energy can be properly directed; early identification and inclusion of emergent citizen groups lessens potential conflict and increases communication flow between official responders and such groups.			
1. Emergent Citizen Groups			
j) when the community personalizes the disaster, altruistic emergent behavior becomes an effective strategy for recovery on both a community and individual level	▸ Evidence to indicate motivation for civil protest (altruistic motives and personalization of incident) ▸ Perceived outcome of the civil protest (evidence for it as an 'effective strategy')	▸ Why did you organize your civil protest? ▸ What did the protest seek to achieve? Was it successful? What alternative strategies were available? ▸ Did the event bring neighbors closer together? Were you surprised by anything you witnessed from your neighbours as part of this event? Why do you think people joined the LWRC?	▸ Lowe and Fothergill, 2003, p.307 ▸ LWRC report ▸ LWRC representative ▸ CN representative ▸ AB Transportation representative ▸ WFD representative
k) emergent citizen groups have value in emergency response (as a potential source of additional resources, i.e., knowledge, funds, equipment, human resources and communication networks) if their energy can be properly directed	▸ evidence to indicate the contributions of the LWRC in response efforts	▸ Do you feel inclusion of the LWRC enhanced or detracted from formal response efforts? ▸ Would you do it again? If so, what would be different or the same ▸ Would you work to encourage or discourage such activity in future?	▸ Wachtendorf, 2001, p.11 ▸ Majchrzak et. al., 207, p.150 ▸ LWRC report ▸ LWRC representative ▸ CN representative ▸ AB Transportation representative ▸ WFD representative
l) identification of key leaders of emergent citizen groups and their implementation as a resource before they become a problem can enhance coordination in response efforts	▸ evidence to indicate inclusion of LWRC enhanced cooperation between officials and residents ▸ evidence of perception that earlier inclusion of group leaders may have prevented later conflict	▸ How do you think cooperation between officials and residents could be improved in the future? (Do you feel earlier inclusion of key leaders of this group may have prevented conflict and mitigated the cost of recovery?	▸ Federal Emergency Management Agency (FEMA), n.d., p.20 ▸ LWRC representative ▸ CN representative ▸ AB Transportation representative ▸ WFD representative

Operationalization Table			
Observation			
Proposition/Claim in Theory	**Indicator**	**Interview Questions / Coding of Documents**	**Sources**
C: Command and control overemphasizes hierarchy and neglects the network components emergent citizen groups can provide in disaster response (i.e. additional resources in terms of manpower, supplies and communication networks). Standards such as ICS that are based on this approach should be modified to not only minimize jurisdictional issues, but also to maximize network capabilities when competing priorities and recovery needs are present.			
2. Current emergency management practices in Alberta – Command & Control (C&C)			
e) Command and control as the dominant model of emergency management was used in this case	▸ evidence to verify model of emergency management practiced	▸ How would you describe the organizational structure and approach of your emergency response plan at the time of the incident? ▸ Has anything changed since then based on the lessons you learned?	▸ Drabek & McEntire, 2003, p.106 ▸ CN representative ▸ AB Transportation representative ▸ WFD representative
f) Command and control is strict, rigid and centralized and is based on clearly defined objectives, a division of labor, a formal structure, and a set of policies and procedures; because this approach assumes chaos after any crisis event, it restricts access to information as a means of controlling the situation	▸ evidence of a formal set of objectives and structure for official communications ▸ evidence of concerns about legal or other issues associated with public response to communications ▸ officials perceive restricted information flow as the most appropriate strategy during response	▸ What was the primary goal(s) of your communication strategy with the public during the incident? ▸ Who was responsible for communicating with the public and how was the reporting structure established? ▸ What legal restrictions or concerns did you face or need to consider with regard to public communications during the incident?	▸ Drabek & McEntire, p.106 ▸ Dynes, 2002, p.43, 47 ▸ AEPC Report ▸ LWRC representative ▸ CN representative ▸ AB Transportation representative ▸ WFD representative
g) Command and control does not readily accommodate emergent citizen groups through an overemphasis on hierarchy or "chain of command" and distrust of the informal networks through which such groups commonly operate	▸ Responders emphasize need for chain of command ▸ evidence of distrust of informal, social networks	▸ What was the initial response of officials to the community's offer of assistance? Did this change over time? ▸ How did your organization eventually accommodate (or not) the activities and communications of the LWRC? Has this led to changes in the way you will conduct response efforts in future?	▸ Walker, 2005 ▸ Moynihan, 2008, p.224 ▸ LWRC representative ▸ CN representative ▸ AB Transportation representative ▸ LWFD representative

Operationalization Table			
Observation			
Proposition/Claim in Theory	**Indicator**	**Interview Questions / Coding of Documents**	**Sources**
C. *continued*			
2. *continued*			
h) cautious approaches that are overly sensitive to issues of jurisdiction leave the community vulnerable	▸ evidence of sensitivity to issues of jurisdiction ▸ evidence of perception that this sensitivity enhanced or detracted from the response	▸ Should emergency response operations in the province seek to better anticipate and accommodate groups like LWRC? ▸ If so, what could be done in planning and policy to do so? If not, then what could/should be done to deal with groups like LWRC in future?	▸ AEPC, 2006, p.2 ▸ CN representative ▸ AB Transportation representative ▸ WFD representative

Appendix V
Focused Interview Schedules

Each focused interview will take a maximum of 30 minutes. The following questions will be used to provide a starting point. Participants will be informed that they are free not to answer any question and to provide any additional information they feel relevant to the study.

Interviews with CN, Wabamun Fire Department and Alberta Transportation Safety Services Division representatives will commence with the following questions:

1. How would you describe the organizational structure and approach of your emergency response plan at the time of the incident? Has anything changed since then based on the lessons you learned?
2. a) What was the primary goal(s) of your communication strategy with the public during the incident?
   b) Who was responsible for communicating with the public and how was the reporting structure established?
   c) What legal restrictions or concerns did you face or need to consider with regard to public communications during the incident?
3. a) What was the initial response of officials to the community's offer of assistance? Did this change over time? Did you involve residents in any planning or other meetings with regard to the disaster prior to their protest? Why/why not?
   b) Why do you think the members of the community felt it was necessary to create the LWRC and become involved in the response efforts?
   c) How did your organization eventually accommodate (or not) the activities and communications of the LWRC? Has this led to changes in the way you will conduct response efforts in future?
4. a) Do you feel inclusion of the LWRC enhanced or detracted from formal response efforts?
   b) How do you think cooperation between officials and residents could be improved in the future? (Do you feel earlier inclusion of key leaders of this group may have prevented conflict and mitigated the cost of recovery?)
5. a) Should emergency response operations in the province seek to better anticipate and accommodate groups like LWRC? (If so, what could be done in planning and policy to do so? If not, then what could/should be done to deal with groups like LWRC in future?
   b) Would you work to encourage or discourage such activity in future?

Interviews with the LWRC representative will commence with the following questions:

1. a) What was the purpose of creating/joining the LWRC?

   b) Had you worked with other members of the group before this incident? How did you identify and/or recruit members to the group?

2. a) At what point in time did you feel it necessary to become involved in response efforts?

   b) What was the initial response of officials to the community's offer of assistance? Did this change over time?

3. a) What frustrated you most during the initial formal response to the incident and did this lead directly to the creation of the LWRC? Were you involved in any planning or other meetings with regard to the disaster prior to your protest?

   b) Why did you organize this protest? (What did it seek to achieve? Was it successful? What alternative strategies were available?)

   c) Did the event bring neighbours closer together? Were you surprised by anything you witnessed from your neighbours as part of this event? Why do you think people joined the LWRC?

4. a) Do you feel inclusion of the LWRC enhanced or detracted from formal response efforts?

   b) Would you do it again? If so, what would be different or the same?

5. How do you think cooperation between officials and residents could be improved in the future? (Do you feel earlier inclusion of key leaders of this group may have prevented conflict and mitigated the cost of recovery?)