

**Review of the Status of Parks Communities
No Net Negative Environmental Impact Frameworks**

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**Performance, Audit and Review Group
Strategy and Plans**

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EXECUTIVE SUMMARY

The Agency has made a commitment to manage the environmental impact of townsites by adopting and implementing the principles of No Net Negative Environmental Impact (NNNEI). This commitment is reflected in section 33(2) of Canada's National Parks Act. The development of the NNNEI frameworks need to permit some aggregation of data so that the Agency could report nationally on the implementation of community plans and the environmental impacts of parks communities.

This paper reports on the status of national parks townsites' NNNEI frameworks, the next steps on how to proceed for reporting of these frameworks, and action needed to be able to report on the environmental impact of townsites using a core set of indicators.

Although the development of the NNNEI frameworks is varied among the townsites, there are common environmental aspects that all townsites monitor, or could begin to monitor and report on in an affordable manner. These include sewage effluents, landscape development and its impact on native/exotic vegetation, contaminated sites in townsites, solid waste and energy consumption.

The paper presents the following recommendations for advancing the implementation and reporting of the NNNEI frameworks:

- 1) The Agency create a single strategy, including specified resources and a timeframe, for developing and implementing the NNNEI frameworks at all of the townsites it manages, by November 2004.
- 2) Develop elements of 3NEI framework for the Jasper Townsite be a priority since it is one of the larger sites and has not started work in this area.
- 3) A core of readily identifiable, easily obtained, indicators of environmental impact and stewardship be identified for all townsites for use in national reporting by April 30, 2004.
- 4) The selection of measures and protocols for 3NEI Frameworks be coordinated with the bio-regional approach to monitoring of ecological integrity now under development for overall ecosystem monitoring.

INTRODUCTION

As part of Parks Canada's performance reporting, national parks townsites are expected to report on the environmental impacts of their operations. The Agency's 1999-2000 Annual report provided a report on progress toward the development and implementation of community plans, No Net Negative Environmental Impact (NNNEI) statements and associated performance indicators. The main concern expressed was whether the developing performance frameworks would permit some aggregation of data so that Parks Canada could report collectively on the implementation of community plans and the environmental impacts of park communities.

The purpose of this paper is to report on the status of national parks townsites' NNNEI frameworks, the next steps on how to proceed for reporting of these frameworks and action needed to be able to report on the environmental impact of townsites using a core set of indicators.

BACKGROUND

There are seven townsites in national parks, all located in western Canada. They are: Banff (Banff National Park), Field (Yoho National Park), Jasper (Jasper National Park), Lake Louise (Banff National Park), Wasagaming (Riding Mountain National Park), Waskesiu (Prince Albert National Park), and Waterton (Waterton Lakes National Park). Banff and Jasper are incorporated and self-governed municipalities; the other five townsites are managed by Parks Canada.

The smallest national park communities, Waskesiu, Wasagaming and Waterton, are seasonal visitor communities with permanent populations of less than 100. They have well developed physical infrastructure including roads, water and wastewater facilities, waste collection, power supply, but little social infrastructure such as schools or hospitals. Winter activities in these communities are significantly less than in the summer. At the other end of the spectrum, Banff and Jasper possess more extensive physical and social infrastructure, larger permanent populations, and serve as year round destinations for visitors. Field and Lake Louise represent communities between these ends of the spectrums.

As a federal Agency responsible for national parks townsites, Parks Canada is in a unique position within the government, to influence development in these communities toward an "eco-community" ideal. Parks Canada and residents of national parks communities such as Banff are working to bring life to the concept of no net negative environmental impact as part of Parks Canada's effort to maintain the ecological integrity of national parks.

Development of human facilities and services can have lasting, negative impacts on the health of national park ecosystems. In order to manage these impacts, the Agency has made a commitment to manage the environmental impact of townsites in part by adopting and implementing the principles of no net negative impact. This commitment is reflected in section 33(2) of Canada's

National Parks Act, states that:

A community plan for park community must

- (a) be consistent with the management plan for the park in which the park community is located;*
- (b) accord with any guidelines established by the Minister for appropriate activities within the park community;*
- (c) provide a strategy for the management of growth within the park community;*
and
- (d) be consistent with the principles of:*
 - (i) no net negative environmental impact, and*
 - (ii) responsible environmental stewardship and heritage conservation.*

NO NET NEGATIVE ENVIRONMENTAL IMPACT PRINCIPLE¹

No net negative environmental impact (NNNEI) for communities and ski areas means everyone working together to ensure that wildlife, plants, water, air, soil and the processes that connect them will be better off or no worse tomorrow than they are today. The cumulative impact of development decisions on the ecological well-being of parks, from this day forward, will be positive, not negative.

Parks Canada has adopted the NNNEI principle to help fulfil Canada's National Parks Act promise to ensure the ecological integrity of national parks for future generations. Parks Canada's challenge is to provide for human enjoyment of national parks without incrementally eroding their ecological health.

The overall goal for Parks Canada in this context is ecological integrity. This means we are obligated to keep all of the pieces of the ecosystem and to make sure that those pieces can function in natural ways that will ensure the survival of the whole. NNNEI is part of the effort to achieve ecological integrity. NNNEI compels us to look at how we use park communities and ski areas, and to take action to ensure that their development and use does not threaten the ecosystems we all value.

The Elements of NNNEI

The NNNEI principle is defined as a cumulative effects management tool with environmental management targets related to valued ecosystem components at its core. The NNNEI avoids the idea of compensatory trades in favour of a broad, multi-variable, adaptive management process.

¹ The material in this section is from the paper "Guidelines for the No Net Negative Environmental Impact principle"; John Snell, Dave Dalmann, et al; 2002.

The NNNEI is evaluated not through compensations or improvements to a single environmental variable but as a trend demonstrating continuous improvement across a selected set of variables measured against a set of science and value based environmental management targets.

The No Net Negative Environmental Impact framework defines a process by which environmental quality targets are identified for valued ecosystem components; a baseline for monitoring purposes is established, and progress is evaluated using a set of indicators as measures of change in valued ecosystem components. The elements of the framework are discussed below.

Shared responsibility

Achieving the goal of NNNEI will require the commitment and cooperation of Parks Canada, the communities, the private sector, individual visitors and the residents to a form of development and use which places our protection of ecosystems as a first priority. As part of the community planning process, Parks Canada in cooperation with community representatives will develop an environmental management framework identifying significant issues, their related valued ecosystem components, environmental quality targets and a process for achieving the targets.

Baseline knowledge

Good data and knowledge on the current condition of Valued Ecosystem Components (VECs), and how existing levels of use and development impacting them are necessary in order to measure changes in the condition of the valued ecosystem components. Scientific assessment of significant cumulative effects provides the extent and magnitude of the impact, and monitoring and assessment of conditions with reference to the targets will form the basis of determinations regarding the net environmental effect of community development and operations. Knowing the baseline and the influences which created that condition are critical for ensuring we focus on what is important and for setting relevant and achievable targets to manage effects on the ecosystem.

Environmental Quality Targets

Environmental Quality Targets are defined as the desired condition for valued ecosystem components such as water, wildlife, air, and plants in relation to the baseline condition. They represent our best effort to define what we mean by “better off” for the ecosystem.

Indicators

Monitoring Indicators are defined as measures of things which will provide information about the status of a significant process or component of the ecosystem, and of those which provide information about the magnitude and nature of human uses which affect the ecosystem. Two types of indicators are needed under the NNNEI framework:

- 1) those that measure the results of development and human use, such as measuring sewage effluent quality or energy consumption, and
- 2) those that measure the direction, amount and nature of change to the ecosystem and its parts.

Evaluation

The NNNEI principle requires that an ongoing process be undertaken for evaluating the trends those indicators reveal and for planning the appropriate responses. The evaluation step is an assessment of the condition of the indicators and change toward or away from our targets. Based upon periodic evaluations, Parks Canada, communities, public groups and businesses can determine how best to move toward an ecosystem that is better off in meaningful ways.

Standards

The principles of NNNEI are to be achieved primarily through the application of the following tools and standards:

- leadership in environmental stewardship,
- projects are assessed in accordance with the Canadian Environmental Assessment Act,
- standards for appropriate development (including growth limits), and
- standards for appropriate business activity.

Implementing the NNNEI Principle

The first step to implementing NNNEI is determining the current state of the ecosystem. This involves identification of ecological issues which past use and development have created and an understanding of the limiting factors in the ecosystem which provide the basis for establishing the limits to growth. The appropriate nature of development and existing operations will depend on the potential to impact the ecosystem and from this a set of standards and mitigating actions will be developed. These will include sewage effluent targets suited to the receiving environment, landscaping specifications to reduce wildlife attraction, building energy efficiency specifications, prescriptions for the restoration of native vegetation with each new development and other specific and tangible measures to ensure NNNEI.

Applying the standards/mitigations and moving toward the NNNEI targets will be achieved through:

- The development approvals process and Canadian Environmental Assessment Act - as new development and human use proposals are assessed Parks Canada approval will be conditional on the proponents demonstrating a clear contribution to achieving NNNEI targets and applying the precautionary principle.

- The application of Environmental Management Systems (EMS) - since NNNEI requires that there be no additional burden on the ecosystem from new development, existing operations will have to “move over” or make room by significantly reducing their current impact on the environment. An EMS is a way for an organization to take control of its environmental effects and to act to minimize them to an accepted standard.

Managing for NNNEI will be conducted within the zone of environmental impact generated by the community. The first step will be determining the zone of impact based within which net improvement in impact will be calculated.

The purpose of the NNNEI is not to permit damage in one place and compensate for it in another. For the purpose of determining net environmental impact comparisons may only be made within a class of environmental impacts affecting similar processes or components of the ecosystem. It is therefore not appropriate to measure success as a tradeoff between components of the ecosystem (e.g. more mice does not compensate for fewer squirrels) . The principle of NNNEI requires that all elements of the ecosystem benefit and its overall structure and function remain intact. Hence, a diverse range of indicators is needed, and the goal is maintenance or improvement in most or all of them.

Parks Canada in partnership with community representatives could develop and implement strategic environmental mitigations to address significant cumulative impact issues to standards defined by the environmental quality targets. Mitigations will be implemented within the area define by the zone of impact to neutralize the impact of development or contribute to ecosystem improvement by focusing on the reduction of accumulated impacts from past development. Where projects triggering the Canadian Environmental Assessment Act are proposed in a community, all identified cumulative effects will be mitigated in a manner, which contribute to the achievement of the NNNEI environmental quality targets. Proponents will contribute to community scale strategic mitigation intended to address a significant environmental issue with reference to the environmental quality target.¹

PROGRESS TO DATE / STATUS OF THE NNNEI FRAMEWORKS

As stated earlier, the townsites vary in size, population, physical infrastructure, and use and development pressures. As results, the scope of the NNNEI frameworks will vary significantly. The intent is for the townsites to measure a common set of indicators against which the Agency would measure and report progress.

To date, townsites have had varied levels of progress in developing and implementing their NNNEI framework. The following is a summary of each townsite’s NNNEI monitoring components and indicators. A more detailed overview of the NNNEI progress at each townsite is provided in annex 1.

Town of Banff

The Town of Banff has been implementing the elements of the NNNEI framework since 1999.

The Banff municipality uses a matrix to assess the environmental impact of human use and development aspects on a number of environmental components. The environmental aspects consist of: town residents and visitors, electrical energy use, energy use and air emissions from oil and gas heating systems, vehicle traffic impacts, water use, waste water, construction and operation of municipal, commercial and residential infrastructure and facilities, town footprint, solid waste and storage and handling of fuels, chemicals and hazardous material. The environmental components impacted include: air quality, surface water, ground water, aquatic resources, soils and terrain, vegetation, wildlife, resource use, noise, light, visual and odour. The net negative impact of the factors was categorized on a scale of "Low, Medium, High, and Unknown".

The Town undertook a baseline audit to conduct gap analysis for ecological and operational indicators, and to develop a monitoring program for ecological indicators. The baseline indicators were in two categories:

- Operational indicators: traffic volumes, fireplace use, wastewater treatment plant effluent discharge, stormwater watersheds, town footprint, trail condition and use
- Ecological indicators: air quality, water quality of the Bow River, aquatic resources of Whiskey Creek, wildlife movement, vegetation communities.

Wasagaming Townsite, Riding Mountain National Park

Wasagaming does not have a NNNEI framework in place yet, however, the park has been monitoring a number of indicators both in terms of human use and development as well as ecosystem components. The park monitors water quality using the Canadian Water Quality Guidelines, sewage effluents using provincial standards, stormwater run-off, impact of hard landscaping and tree removal, contamination of groundwater and soil from contaminated sites, townsite garbage measured by kg / per person, per day, and energy consumption.

Waskesiu, Prince Albert National Park

Prince Albert National Park has developed a draft NNNEI framework that highlights six priority environmental impact issues facing the Waskesiu townsite. The framework also describes, under each issue, a number of sub-issues/factors and background to the issue, mitigating actions, environmental quality indicators and targets. The priority issues are:

- impacts on water quality within the Waskesiu Townsite and adjacent Waskesiu Lake
- impacts to ground and surface water quality and primary productivity from the discharge

- of sewage effluent
- impact to groundwater, soils and to human and wildlife receptors from known contaminated sites and hazardous materials storage (primarily fuel storage sites)
- loss of native vegetation as a result of historical and proposed landscape conversion
- impacts to aspects of the aesthetic character of the townsite
- energy consumption, emissions and waste generation.

Field Townsite, Yoho National Park

Yoho National Park has developed a draft framework for the town of Field that identifies key environmental components and environmental aspect impacting them. These include local water quality and aquatic habitat issues, wildlife habitat and movement in and around the community, management of non-native vegetation, energy use and management of contaminated sites. The draft framework identifies the key sources of environmental stress, indicators to be monitored, and targets to ensure NNNEI. The park assesses the impact of environmental aspects on the environmental components on a scale of “Low, Medium, High”.

Lake Louise Townsite, Banff National Park

The Lake Louise NNNEI framework includes the following environmental areas of concern for monitoring and action: Aquatics (water quality, wastewater), wildlife (wildlife movement and habitat use, wildlife interaction with people), groundwater and soils (groundwater consumption and conservation, hazardous materials and contaminated sites), environmental management (energy use, solid waste, air quality, noise, light) vegetation (non-native plant species, native vegetation abundance and species diversity).

The Chateau Lake Louise, a significant component of the Lake Louise Community, completed a monitoring framework as a condition for the development of a new Meeting Facility. There are several environmental issues identified in the Chateau framework that are relevant to the community of Lake Louise, so implementation of that framework will provide information for input to the community monitoring program. The Chateau’s framework will be considered a key component of the community’s framework.

Waterton Townsite, Waterton Lake National Park

Waterton has not been developed a framework to date, however, the park monitors several indicators in order to assess the health on a number of environmental components. These include: water quality tested against the Canadian Water Quality Guidelines, sewage treatment effluents test against Alberta Environment and Environment Canada standards, and new development assessed according to the Mountain Parks Development Review Process. The park, as part of its Environmental Management Systems monitors and takes action to assess and mitigate the environmental impact of a number of its operations and infrastructure including:

petroleum storage tanks, hazardous material management, contaminated sites, air emissions, vehicle fleet management, energy conservation, solid waste, wastewater and stormwater, and water Consumption.

Jasper Townsite, Jasper National Park

Jasper townsite has been in a period of administrative transition in the past three years, becoming a self-governed municipality, and the development of a NNNEI framework has not been actively pursued. Similar to Waterton, Jasper National Park monitors several environmental aspects of the NNNEI, such as sewage effluents, solid waste, energy consumption, and landscape development.

NATIONAL REPORTING ON THE TOWNSITES' NNNEI FRAMEWORKS

Although the development of the NNNEI frameworks is varied among the townsites, there are common environmental aspects that all townsites monitor, or could begin to monitor and report on in an affordable manner. Some of these aspects, such as solid waste that is transported outside of the park, may arguably relate more to environmental stewardship than to NNNEI since they do not have a direct impact on the park ecosystem. The table below provides an overview of the environmental aspects that could form the basis for national reporting on the NNNEI frameworks.

TOWNSITE	ENVIRONMENTAL ASPECTS FOR NATIONAL MONITORING				
	Sewage Effluents	Landscape Development Native/exotic Vegetation	Contaminated Sites Impact on Soil and Ground Water	Solid Waste	Energy Consumption
Waskesiu	T	T	T	T	T
Field	T	T	T		T
Waterton	T	T	T	T	T
Banff	T	T	T	T	T
Lake Louise	T	T	T	T	T
Jasper	T	T	T	T	T
Wasagaming	T	T	T	T	T

All townsites monitor sewage effluents for nutrients such as phosphorous and nitrogen. Some townsites follow the federal guidelines for waste water treatment, while others exceed them. The Agency could report, as a common indicator, on the level of compliance with the federal waste water guidelines.

The impact of landscape development on native vegetation and the extent of exotic species is an environmental aspect that all townsite have identified in their NNNEI or community planning. Townsites could use a common protocol to report on restoration of native vegetation, and reduction of the extent of exotic species. Depending on the availability of data, other related aspects such as pesticide use, tree removal, and trampling effects along hiking and biking trails could be reported.

Contaminated sites and their impact on soil and ground water are monitored as part of the Agency's Environmental Management System. NNNEI frameworks could report on the management of contaminated sites that are located within the townsites.

Solid waste is another aspect that could be reported on in terms of waste reduction and percentage of waste recycled for reuse. All townsites either monitor solid waste or plan to monitor it.

Finally, energy consumption is identified by most townsites as an aspect for NNNEI monitoring. The Agency collects data on its own operations energy use and production of green house gases. The same could be reported for the townsites.

CONCLUSION AND RECOMMENDATIONS

As reported above, the townsites' NNNEI frameworks are at different stages of development and implementation. This has been a function of the parks' ability to focus resources and expertise on defining and applying the NNNEI approach within their townsite. Town of Banff which has made the most progress in applying the NNNEI concept, has spent considerable resources on this initiative and made it a high priority.

On a broader level, a more coordinated and collaborative approach among the townsites would facilitate the development and operationalization of the NNNEI frameworks. To this end, the mountain parks are working on a common strategy for implementing the NNNEI frameworks. The strategy is to be finalized by September 2004. Waskesiu and Wasagaming are not currently part of this strategy. It is recommended that:

- 1) The Agency create a single strategy, including specified resources and a timeframe, for developing and implementing the NNNEI frameworks at all of the townsites it manages, by November 2004.
- 2) Develop elements of 3NEI framework for the Jasper Townsite be a priority since it is one of the larger sites and has not started work in this area.

Townsites differ in ways they impact the environment and what aspects they want to and can manage. For example, one townsite may focus on management of contaminated sites and removal of exotic plant species, while another would focus on wildlife movement and corridors.

As outlined above, within this diversity there are some common elements that can serve as the basis to begin national reporting. To facilitate this, it is recommended that:

- 3) A core of readily identifiable, easily obtained, indicators of environmental impact and stewardship be identified for all townsites for use in national reporting by April 30, 2004.

Reporting on the environmental impacts of townsites inevitably leads to focusing on some of the same kinds of indicators and data as is used to measure and report on the overall health of the park ecosystem. In order to avoid duplication of effort it is recommended that:

- 4) The selection of measures and protocols for 3NEI Frameworks be coordinated with the bio-regional approach to monitoring of ecological integrity now under development for overall ecosystem monitoring.

ANNEX 1 STATUS OF THE TOWNSITES' NNNEI FRAMEWORKS

Town of Banff

The Town of Banff has been implementing the elements of the NNNEI framework since 1999. The Town's Director of Environmental Services is responsible for the development and implementation of the NNNEI framework with dedicated resources for this purpose. Parks Canada also provided \$70K in seed money to help the Town launch this initiative so that lessons learned and the model could be share with other townsites towards their NNNEI efforts.

The Town's approach to identifying and measuring NNNEI consisted of:

- identifying all Town of Banff Aspects that could impact the environment
- identifying biophysical elements that could be impacted by Town aspects
- creating a matrix to evaluate the level of interaction between each aspect and biophysical component
- documenting the reasons for this level of interaction
- identifying areas of management concern relative to these interactions
- choosing appropriate operational and ecological indicators that could identify levels of interaction, address management concern and track changes over time
- ranking operational and ecological indicators in order of importance.

The Banff municipality used a matrix to assess the environmental impact of human use and development aspects on a number of environmental components. These aspects consisted of: town residents and visitors, electrical energy use, energy use and air emissions from oil and gas heating systems, vehicle traffic impacts, water use, waste water, construction and operation of municipal, commercial and residential infrastructure and facilities, town footprint, solid waste and storage and handling of fuels, chemicals and hazardous material. The environmental components in the matrix included: air quality, surface water, ground water, aquatic resources, soils and terrain, vegetation, wildlife resource use, noise, light, visual and odour. The net negative impact of the factors was categorized on a scale of "Low, Medium, High, and Unknown".

The Town undertook a baseline audit to conduct gap analysis for ecological and operational indicators, and to develop a monitoring program for ecological indicators. As a result of the audit, the Town reviewed existing information, identified major issues and relevant indicators, ranked the indicators on their level of importance, and developed programs to monitor the most important indicators. The baseline indicators were in two categories:

- Operational indicators: traffic volumes, fireplace use, wastewater treatment plant effluent discharge, stormwater watersheds, town footprint, trail condition and use

- Ecological indicators: air quality, water quality of the Bow River, aquatic resources of Whiskey Creek, wildlife movement, vegetation communities.

The Town uses its “State of Our Environment” to report on the environmental conditions and actions taken to manage environmental issues. The first “State of Our Environment Report, 2002” reported on the set of environmental indicators used in the baseline audit in three areas of “State of Our Air, State of Our Water and State of Our Resources” in 2000-2001, the first or the baseline year. The Town plans to monitor and report on additional indicators in the future.

Wasagaming Townsite, Riding Mountain National Park

Riding Mountain National Park has committed to developing and implementing a NNNEI framework for the townsite of Wasagaming. The Wasagaming Community Plan states that “a monitoring framework will be established within one year, similar to the Banff Townsite model, to track environmental impacts of the community.” The Plan also expresses as an objective “to manage development and community operations in Wasagaming in a manner that results in no net negative environmental impacts”.

The Park’s NNNEI proposal states that the framework will be developed in collaboration with specialist assistance from the Calgary Service Centre to:

- identify the environmental issues
- identify existing data
- identify data that might be captured in other initiatives such as Environmental Management, and Systems
- prioritize the issues to see what is achievable with existing resources.

The framework will identify mitigating actions and targets and monitoring requirements.

Wasagaming’s NNNEI framework is not in place yet. The park staff have indicated that the preparation and implementation of the framework will be subject to availability of resources for this purpose. The park’s NNNEI plan identifies resource requirements for the development and implementation phase of this project as well as the resources needed for the long term monitoring and reporting of NNNEI. The park is planning to learn and benefit from the Banff NNNEI model and its implementation.

While the Wasagaming NNNEI is not in place yet, the park has been monitoring a number of indicators both in terms of human use and development as well as ecosystem components. The parks chose to review the impact of its own operations and infrastructure on the park environment before assessing the impact of the townsite residents.

The park monitors water quality using the Canadian Water Quality Guidelines, sewage effluents using provincial standards, stormwater run-off, impact of hard landscaping and tree removal, contamination of groundwater and soil from contaminated sites, townsite garbage measured by

kg / per person, per day, and energy consumption.

The park also has identified other potential issues for monitoring, however, there is no sufficient scientific data to support the significance or validity of those issues.

Waskesiu, Prince Albert National Park

Prince Albert National Park has developed a draft NNNEI framework that highlights six priority environmental impact issues facing the Waskesiu townsite. These are:

- impacts on water quality within the Waskesiu Townsite and adjacent Waskesiu Lake
- impacts to ground and surface water quality and primary productivity from the discharge of sewage effluent
- impact to groundwater, soils and to human and wildlife receptors from known contaminated sites and hazardous materials storage (primarily fuel storage sites)
- loss of native vegetation as a result of historical and proposed landscape conversion
- impacts to aspects of the aesthetic character of the townsite
- energy consumption, emissions and waste generation.

The framework also describes, under each issue, a number of sub-issues/factors and background to the issue, mitigating actions, environmental quality indicators and targets. Given the resource requirements for implementing the framework, the park has identified two key priorities for 2003-04:

- 1) Development and implementation of a Waskesiu Lake water quality monitoring program, and
- 2) Development of the Waskesiu Community Vegetation Strategy

The park has indicated that without additional funding, the NNNEI framework can not be fully implemented. The park intends to finalize the framework and put it through a peer review process. The park is also considering the following options to achieve some of the elements of the framework:

- working with town council to look at funding options to implement the framework
- prioritizing the identified NNNEI issues to determine which things can be achieved with existing resources
- consulting with public on the framework
- establishing mitigative measures for known impacts rather than focussing on monitoring
- incorporating existing and future monitoring from other initiatives i.e. EI, EMS, and Vegetation study
- using historical data to develop the baseline and indicators
- partnering with a university or community college to do some of the monitoring
- achieving some additional monitoring on a piece meal basis with existing resources.

Field Townsite, Yoho National Park

Field Community Plan includes a commitment to development and implementation of environmental monitoring frameworks to ensure adherence to the NNNEI principle. Yoho National Park has developed a draft framework for the town of Field that identifies key environmental components and environmental aspect impacting them. These include local water quality and aquatic habitat issues, wildlife habitat and movement in and around the community, management of non-native vegetation, energy use and management of contaminated sites. The draft framework identifies the key sources of environmental stress, indicators to be monitored, and targets to ensure NNNEI. The park assesses the impact of environmental aspects on the environmental components on a scale of "Low, Medium, High".

Field's draft framework is currently being updated to ensure consistency and coordination with the Lake Louise community framework and, and with other monitoring initiatives and broader scale "state of the park" monitoring.

Although lack of funding is expected to prevent full implementation of the community frameworks in the near future, monitoring of some key aspects has been underway for several years as part of ongoing research and monitoring initiatives. These aspects include monitoring of wildlife corridors adjacent to the community, monitoring of wastewater quality and associated ecological impacts, collection of baseline data on vegetation non-native to the community and disturbed vegetated areas.

The park is in the process of revising the implementation of the framework in order to focus on a primary core set of indicators, pending additional funding for full implementation of the frameworks if monitoring of key aspects under existing programs will continue.

Lake Louise Townsite, Banff National Park

The NNNEI framework for the town of Lake Louise has been developed fulfilling the commitment in the Community Plan to development and implementation of environmental monitoring frameworks to ensure adherence to the NNNEI principle.

The Lake Louise framework includes the following environmental areas of concern for monitoring and action: Aquatics (water quality, wastewater), wildlife (wildlife movement and habitat use, wildlife interaction with people), groundwater and soils (groundwater consumption and conservation, hazardous materials and contaminated sites), environmental management (energy use, solid waste, air quality, noise, light) vegetation (non-native plant species, native vegetation abundance and species diversity).

The Chateau Lake Louise has completed a monitoring framework as a condition for the development of a new Meeting Facility. The Chateau is a significant component of the Lake Louise Community. There are several environmental issues identified in the Chateau framework

that are relevant to the community of Lake Louise, so implementation of that framework will provide information for input to the community monitoring program. The Chateau's framework will be considered a key component of the community's framework.

As in the case of Field's framework, lack of funding is expected to slow down the implementation of the Lake Louise framework, however funding provided by the Chateau and the Lake Louise Ski Resort has helped in the development and implementation of the town's framework. Monitoring of the key aspects that has been underway for several years as part of ongoing research and monitoring initiatives include monitoring of wastewater quality and associated ecological impacts in the Bow and Kicking Horse Rivers, and monitoring of wildlife corridors adjacent to the communities. Baseline information collection is underway for the Chateau's framework. It is expected that the continued funding from the Chateau will help in future implementation of the town's NNNEI framework.

Waterton Townsite, Waterton Lake National Park

The NNNEI guiding principle is stated the Waterton Community Plan to ensure that the town does not undermine the ecological health of the park. Although the park is committed to developing a NNNEI framework, one has not been developed to date, and there are no plans to do so in the near future due to lack of resources.

The park however monitors several indicators in to assess the health on a number of environmental components. These include: water quality tested against the Canadian Water Quality Guidelines, sewage treatment effluents test against Alberta Environment and Environment Canada standards, and new development assessed according to the Mountain Parks Development Review Process.

Furthermore, the park, as part of its Environmental Management Systems monitors and takes action to assess and mitigate the environmental impact of a number of its operations and infrastructure including: petroleum storage tanks, hazardous material management, contaminated sites, air emissions, vehicle fleet management, energy conservation, solid waste, wastewater and stormwater, and water Consumption.

Jasper Townsite, Jasper National Park

Jasper Community Land Use Plan adopts NNNEI as one its guiding principles, and the park has stated its commitment to developing a NNNEI framework. However, the townsite has been in a period of administrative transition in the past three years, becoming a self-governed municipality, and the development of a NNNEI framework has not been actively pursued. The park plans to initiate work on this project, using the NNNEI experience of and work done at the other park communities. The park and the municipality have agreed to jointly fund staffing of an environmental stewardship coordinator part of whose responsibility will be to develop a NNNEI framework for the Jasper.

Similar to Waterton, Jasper National Park monitors several environmental aspects of the NNNEI, such as sewage effluents, solid waste, energy consumption, and landscape development.