

# **PEGNL Environmental Guideline**

## **FOREWORD**

### **FORMULATION OF THIS ENVIRONMENTAL GUIDELINE**

This guideline was developed by the Environmental Committee of Professional Engineers and Geoscientists of Newfoundland (PEGNL). The development process included a review of the Environmental Guidelines developed by the Association of Professional Engineers and Geologists and Geophysics of Alberta, whose contribution is hereby acknowledged. The expectation is that the guideline will evolve over time, not only because standards for environmental practice are changing, but because legislation and public expectations are also changing.

The intent of the guideline is to educate, provide guidance, and to encourage members and permit-holders to be pro-active in the protection and stewardship of the environment.

PEGNL's vision is to be the focal organization which is the recognized leader of the engineering and geoscience professions involved in the application of science and technology for the benefit of society within Newfoundland & Labrador.

### **WHAT PEGNL MEMBERS DO**

PEGNL members have a wide diversity of occupations and responsibilities. Many are involved in different types of economic development, which should occur in a cost effective and environmentally responsible manner. PEGNL members explore natural resources and design cost-effective ways of developing them. They also work to develop projects and public infrastructure, to keep existing facilities operating effectively and to improve those that need it. Responsible environmental management is an inherent part of performing those duties.

### **HOW PEGNL MEMBERS WORK**

PEGNL members work as employees, employers, and consultants. They frequently work as a team where they are involved with other specialists. An individual member may or may not have control of, or be solely responsible, for a particular project. As part of that project team, a PEGNL member should strive to influence the work in an environmentally responsible direction.

PEGNL members are expected to exercise due diligence in the execution of their work. That expectation includes practicing in accordance with the PEGNL Code of Ethics, provincial and federal law, restricting practice to areas of personal expertise and practicing in accordance with established standards.

## MANAGEMENT OF PEGNL MEMBERS

PEGNL members are those individuals who have fulfilled the requirements (both academic and experience) in order to become a professional engineer or geoscientist. In Newfoundland and Labrador, organizations that offer professional services by PEGNL members are required to have a PEGNL Permit to Practice. The Permit to Practice establishes working conditions that are conducive to professional practice. The Permit to Practice is not a vehicle for managing business aspects of the company.

Direct management of PEGNL professionals may or may not involve other PEGNL members. Where management involves non-PEGNL professionals, and especially when the work team involves non-PEGNL members, the PEGNL member will seek to influence the direction of the work. PEGNL members will expect to be supported in environmentally responsible decisions by management and team members as they too have a societal responsibility for wise stewardship of the environment.

---

## TABLE OF CONTENTS

[PREAMBLE](#)

[GUIDELINE SUMMARY](#)

[GUIDELINE #1 Understanding of Environmental Issues](#)

[GUIDELINE #2 Employment of Specialists](#)

[GUIDELINE #3 Professional Judgment](#)

[GUIDELINE #4 Environmental Planning & Management](#)

[GUIDELINE #5 Environmental Costs](#)

[GUIDELINE #6 Waste Minimization](#)

[GUIDELINE #7 Cooperation with Public Authorities](#)

[GUIDELINE #8 Compliance with Legislation](#)

[GUIDELINE #9 Sharing Knowledge with Others](#)

[GLOSSARY OF DEFINITIONS](#)

## PREAMBLE

This PEGNL Guideline on Environmental Practice has been prepared to enhance and expand on the general principle of environmental consideration as stated in the PEGNL Code of Ethics. The formulation of this guideline recognizes the prominent role of PEGNL, whose members are not only concerned with development projects and their maintenance, but also with a wide variety of environmental management responsibilities.

Environmental degradation is recognized as a risk to public welfare, and in response members of society are being urged to protect, preserve and enhance the quality of the environment. The long-term objectives are to sustain the viability of our ecosystems, and to ensure that the well being of future generations is not compromised by our activities today.

Members recognize that stewardship of the environment is a responsibility of all citizens, and the public expects and has a rightful role in setting goals for environmental management, even though public expectations are evolving and vary widely.

PEGNL recognizes the need for continuing development for the benefit of society. A balanced rather than extreme approach will be most likely to create development that will meet the needs of society. Integrating fundamental environmental sustainability with economic considerations will require members to be innovative and creative in their planning and design. In its broader context, this will require that members take a more holistic view of their role in shaping the future, by not only being innovative, but by showing to others how these innovations advance the interests of:

- public safety, health and welfare
- the environment
- risk minimization and management
- social and cultural values.

Although the term “members” is used throughout the text, this guideline is directed to individual professionals and to permit holders. Permit-holders are required to apply member expertise to key decisions. Members are encouraged to avail themselves of opportunities to participate in the decision-making process.

Environmental work is often best accomplished by a multi-disciplinary team. Due diligence requires that all reasonable steps are taken to ensure that the team comprises the necessary expertise and that this expertise is appropriately applied.

A substantial body of legislation setting out environmental requirements has existed for some time, and much of this can be found in the Canadian Environmental Protection Act and the Newfoundland Environmental Protection and Enhancement Act. Environmental regulations and standards are evolving. In some aspects regulations from various

jurisdictions overlap in a complex and sometimes contradictory manner. To cope with these complexities, PEGNL members will have to take extra measures to be regularly informed on local, provincial and national trends in environmental regulations. As well, it will be useful for members to maintain awareness of emerging international protocols and agreements, even though these may not have legal status in Canada or Newfoundland & Labrador.

The philosophy of this guideline is to encourage environmental plans that anticipate and prevent, rather than react and mitigate. In that spirit it would be prudent for members to strive to inform, advise and counsel the employer, client or owner as to the implications of possible changes in standards and expectations.

This guideline is intended to be universally applied regardless of the scale of undertaking.

Certain projects will require a full environmental impact assessment; other projects will simply require thought and planning to minimize environmental disruption, even if that disruption appears to be very minor.

---

---

## **GUIDELINE SUMMARY**

Professional Engineers and Geoscientists are committed to environmental protection and safeguarding the well being of the public.

Professional Engineers and Geoscientists;

1. Shall develop and maintain a reasonable level of understanding of environmental issues related to their field of expertise.
2. Shall use appropriate expertise of specialists in areas where the member's knowledge alone is not adequate to address environmental issues.
3. Shall apply professional and responsible judgment in their environmental considerations.
4. Shall ensure that environmental planning and management is integrated into all their activities, which are likely to have adverse environmental impact.
5. Shall include the costs of environmental protection and/or remediation among the essential factors used for evaluating the life-cycle economic viability of projects for which they are responsible.
6. Shall recognize the value of waste minimization, and endeavor to implement the elimination and/or reduction of waste at the production source.
7. Shall cooperate with public authorities in an open manner, and strive to respond to environmental concerns in a timely fashion.

8. Shall comply with legislation, and when the benefits to society justify the costs, encourage additional environmental protection.
9. Are encouraged to work actively with others to improve environmental understanding and practices.

## **GUIDELINE #1**

**Professional Engineers and Geoscientists shall develop and maintain a reasonable level of understanding of environmental issues related to their field of expertise.**

## **ELABORATION**

- a) They shall recognize the general extent to which their professional activities can affect the environment.
- b) They shall stay generally informed of the major environmental issues facing society so that they may broadly judge the potential interaction of their professional activities with those issues.
- c) They must not rely on being unaware of environmental problems to justify activities leading to significant impairment of the environment.

## **ANALYSIS**

Sustaining the viability of our environment is broad responsibility of all citizens. Likewise, our society must seek to reconcile these environmental needs with our need for responsible development. Members should take an active cooperative role to assist society to meet these challenges. This could apply even though the individual professional activities of some members may primarily involve expertise that is apparently unrelated to environmental matters. Members are responsible for maintaining their knowledge in many other areas having a bearing on the quality and impact of their work. As society has developed an increased awareness of the degree to which development activities can affect the environment, so the members involved in designing and implementing developments must maintain a reasonable level of understanding of those environmental concerns, and the possible significant impacts of their professional activities on the environment.

The foregoing responsibility does not imply that every individual member can or should be an environmental specialist. As with any other specialization, there will be degrees of environmental expertise that will be appropriate for specific circumstances. The general obligation is to possess sufficient knowledge of relevant environmental issues to be able to competently judge the degree of need for specialist assistance. Given the normal technical responsibilities of members, society may expect them to anticipate and understand environmental problems.

Societal concern for environmental protection is also being reflected in new environmental legislation that can place responsibility for environmental impairment on any individual. In such cases, a defense for the individual may have to rely upon demonstrating due diligence, the premise that the individual took all reasonable measures to prevent the offence. The basis for judging these measures for a member should be determined by comparison with good current practice among peers and by compliance with the requirements of any legislation, approval or order relating to the project in which the member is involved. If the accused individual was in a position where he or she should have been aware of environmental problems, or of the process and protocols by which environmental problems were to be detected, being unaware or taking no steps to ensure that the process and protocols were effective would not assist a due diligence defense. Furthermore, in recent Canadian environmental legislation, an individual can be deemed to be a party to an offence if the individual acquiesced in the commission of the offence.

## **GUIDELINE #2**

**Professional Engineers and Geoscientists shall use appropriate expertise of specialists in areas where the member's knowledge alone is not adequate to address environmental issues.**

### **ELABORATION**

- a) They shall recognize that environmental issues are interdisciplinary in nature requiring the expertise of a range of disciplines.
- b) They shall undertake only that aspect of environmental work that they are competent to perform by virtue of training and experience.
- c) They shall seek out and use environmental specialists to provide expert advice on complex environmental issues.

### **ANALYSIS**

As the practice of environmental science requires the integration of diverse disciplines and philosophies, many projects will require a team of appropriate specialists to address complex environmental issues. As the PEGNL Code of Ethics states, members shall undertake only work that they are competent to perform by virtue of education, training and experience. Integrated decision-making by knowledgeable specialists is required in environmental issues.

---

---

## **GUIDELINE #3**

**Professional Engineers and geoscientists shall apply professional and responsible judgment in their environmental considerations.**

### **ELABORATION**

- a) They should strive to ensure that the environmental assessment process begins at the earliest planning stages of an initiative and provides the basis for project life-cycle environmental management.
- b) They should develop a structured set of criteria which reflect standards relating to sustainability or carrying capacity and in accordance with scientific research and experience, with respect to projects or initiatives which they are planning and designing.
- c) They should recognize the value of multi-disciplinary involvement and public consultation and participation in the decision making process for projects having environmental impact.
- d) They should strive to identify and promote cost-efficient solutions and approaches in integrating environmental and economic considerations, which reflect the concepts of sustainable development and conservation.
- e) They should recognize the importance of social and economic values in the environmental assessment process and potential need for local, neighborhood, traditional and cultural criteria.

## **ANALYSIS**

Members should bring the same structured problem solving approach to the environmental review process as they do in engineering design, where known criteria, standards and procedures are applied in the planning, design development and life-cycle assessment process.

The recognition of specialist responsibility in this area is paramount. The member must be vigilant in selecting a process or assembling a team to apply sufficient and appropriate knowledge to the proposed development.

Of similar concern is the need for members to recognize societal values applicable to the social and economic impacts of developments. Local and neighborhood concerns, quality of life, specific impact concerns (e.g. visual, sound, odor), along with traditional and cultural values, have all gained acceptance as applicable and definable criteria that many jurisdictions are now interpreting and applying.

Finally, there is a need to take initiative in the application of cost benefit and other analysis tools, and the evaluation of alternative designs for integrating the viability of projects with the concepts of sustainable development. Members are encouraged to bring expertise and a comprehensive approach to problem solving, in terms of optimizing the returns to society at large.

## **Guideline #4**

**Professional Engineers and Geoscientists shall ensure that environmental planning and management is integrated into all their activities which are likely to have adverse environmental impact.**

### **ELABORATION**

- a) They shall seek adverse impact prevention as the preferred option, followed by mitigation.
- b) They shall acknowledge that projects undertaken by members are likely to have some impact on the environment.
- c) They shall identify the possible environmental impacts of all substantial aspects of a project (e.g. design, construction, operation and decommissioning), using the “cradle to grave” approach.
- d) They are encouraged, in assessing project alternatives, to seek opportunities not only to protect, but to enhance the environment.
- e) They should integrate considerations of environmental impact into the planning stages of a project to ensure that they are addressed cost-effectively, by proposing preventative measures during project planning, rather than reactive measures after project implementation.
- f) They may be able to cost-effectively manage and minimize environmental risks by using organized procedures for the identification of hazards.

### **ANALYSIS**

Members must recognize that societal expectations and demands for environmental protection are such that if environmental impact prevention and mitigation is not inherent in the initial project development, it will likely be required subsequently, probably at much higher cost and after public debate.

Almost every aspect of a project can have either direct or indirect environmental impacts, both positive and negative. Project siting, design, construction, operations, maintenance, decommissioning and reclamation all have environmental consequences which must be considered early in project evaluation. To effectively address such environmental issues requires a systematic evaluation procedure. Developing effective prevention or mitigation strategies requires integrated project planning. Members are encouraged to see that such evaluation procedures are in place and are followed so that effective environmental protection strategies are an integral part of their activities. The professional, as well as the project proponent, has a responsibility to consider environmental impact prevention and mitigation as a part of doing business.

Many projects also present an opportunity to consider and design alternatives that may actually enhance the environment by having a positive impact. An example of such an opportunity would be during the planning of a bridge near a fish stream, where the natural stream could be improved for fish habitat by using selected excavated material such as

large boulders to enhance hydraulic conditions, rather than simply discarding waste materials at landfills or quarries.

Consideration of the full scope of environmental costs at the earliest possible stage of project development will often provide considerable cost savings, as compared with retrofitting or remedial actions. Consequently, the interests of the project proponent, as well as those of society, can best be served by recognition of the environmental impacts of a project during the planning stages. Likewise, the risks posed by hazardous circumstances associated with a project may often be most cost-effectively remedied by early recognition of such circumstances, through the use of formalized hazard identification protocols.

---

---

## **Guideline #5**

**Professional Engineers and Geoscientists shall include the costs of environmental protection and/or remediation among the essential factors used for evaluating the life-cycle economic viability of projects for which they are responsible.**

### **ELABORATION**

- a) They shall acknowledge the reliance placed by ultimate decision-makers upon their role in determining technical feasibility and providing the technical basis for evaluating economic viability of projects.
- b) They shall recognize that economic viability is always critical to the judgment of the ultimate decision-makers concerned with the fate of any project.
- c) They shall consider that environmental protection is an integral part of project development.
- d) They shall recognize that if environmental protection or remediation costs are ignored or unreasonably transferred to others, projects that damage the environment may appear more economically viable if the full environmental costs were included in the evaluation.

### **ANALYSIS**

Members usually must provide the technical detail that will form the basis for costing developments, even if the overall decisions about proceeding with a development are the responsibility of others. Project costing must now routinely consider the full, lifecycle costs, from project conception to final decommissioning. If the technical detail for the project life cycle fails to consider the full scope of environmental costs, then project decision-makers may reach an invalid decision about the true economic viability of a project. These environmental costs may include: prevention, mitigation or compensation for adverse effects, operational and long term monitoring, inspection and maintenance and decommissioning and reclamation costs. Although it was once common to externalize some environmental costs be assigned to project proponents. Consequently, members need to advise responsible parties of these obligations.

## Guideline #6

**Professional Engineers and Geoscientists shall recognize the value of waste minimization, and endeavor to implement the eliminization and/or reduction of waste at the production source.**

- a) They should consider waste elimination as a key factor when selecting processes and design options. Waste includes gaseous, liquid, and solid materials.
- b) They should identify the sources, types and quantities of wastes at the facility under their care or charge, and where feasible, make the necessary changes to eliminate or reduce the generation of waste.
- c) They should minimize the quantity of waste through techniques such as recovery, recycling, reduction and reuse when waste generation cannot be eliminated.
- d) They shall comply with all relevant legislation, approvals and orders relating to the treatment, storage and disposal of hazardous wastes. In addition, even where not required by legislation, approvals or orders, they should arrange to destroy or treat hazardous wastes to render them non-hazardous. If this is not possible, hazardous wastes shall be contained in a secure manner, and monitored as long as necessary to ensure that the environmental danger is minimized.

## ANALYSIS

Waste management has, in the past, often focused on safe waste disposal. A change in this focus is required. Members must understand the need to avoid or minimize the production of waste materials and to understand the regulation, technology and impact of waste materials on the public, and on the biophysical environment.

Sound engineering, application of modern technology, and innovative design approaches are required to eliminate or reduce waste generation at source. When the generation of waste cannot be eliminated, it must be managed as part of the whole process and rendered harmless. In some cases, it is not possible to detoxify wastes, particularly some radioactive wastes. These wastes must be contained, stored securely and monitored to ensure that no leakage is occurring. Storage sites must be accurately documented and mapped. In the event of problems developing at sites under their care, members shall cooperate with public authorities to clean up these sites.

Eliminating and reducing waste is cost effective, in most cases. Proper waste management alleviates the problems of high treatment and disposal costs, transportation and disposal restrictions, loss of product for sale, licensing difficulties, retrofitting requirements and long term liability. In addition, some wastes are valuable as feedstock's, thereby creating business opportunities.

## **GUIDELINE #7**

**Professional Engineers and Geoscientists shall cooperate with public authorities in an open manner, and strive to respond to environmental concerns in a timely fashion.**

### **ELABORATION**

- a) They shall immediately advise their employer and/or client of any concern they may have about potentially harmful environmental impacts discovered in the course of any assignments they are involved in.
- b) They shall not divulge any information of a confidential nature to public authorities unless required by relevant legislation, approvals or orders to do so, and then only to the extent required by such legislation, approvals or orders or pursuant to the Code of Ethics. Where any confidential information is disclosed to public authorities, the members shall ensure that their employers and clients are advised of such disclosure as soon as practicable.
- c) They shall not intentionally avoid disclosure of, or misrepresent, information concerning environmental impacts to regulatory authorities.
- d) They shall make public regulatory authorities aware of all environmental impacts of any assignment they are involved in, through the normal regulatory review and approval process.
- e) They shall ensure that appropriate action or notification of proper authorities occurs in any instance where they believe that public safety or the environment is endangered, or where required by relevant legislation, approvals or orders.

### **ANALYSIS**

Professionals must understand their role and obligations with respect to the role of the regulatory authorities relative to protection of the environment. In dealing with employers, clients and public regulatory authorities, professionals shall not intentionally withhold information they have about environmental impacts of any assignment they may be working on. All information of a confidential nature shall be handled in a manner such that the confidentiality can be maintained to the maximum degree possible, while at the same time making the regulatory authorities or review agencies aware of the impact. Refer to legislated reporting requirements and to the Code of Ethics.

In disclosing information about environmental impacts, professionals should communicate the information through normal channels and lines of responsibility. Where, in the opinion of the professional, the withholding of confidential information poses a potential threat to the environment, he or she should make reasonable effort to contact responsible parties before disclosure of the information to the proper regulatory authority. However, professionals must recognize their individual responsibilities for reporting requirements and the Code of Ethics.

Members are encouraged to seek a second professional or specialist opinion as to the technical validity of their conclusions whenever possible, when there appears to be a difference of opinion with the other responsible parties regarding environmental impacts.

When members become aware of public concerns relative to an assignment they may be involved in, the nature of the concern should be investigated in a timely manner. Once they have determined the validity of the concern they should promptly communicate the information through the normal lines of responsibility.

---

---

## **GUIDELINE #8**

**Professional Engineers and Geoscientists shall comply with legislation, and when the benefits to society justify the costs, encourage additional environmental protection.**

### **ELABORATION**

- a) They shall develop and maintain current knowledge and understanding of legislation, legislation's, approvals, codes and guidelines; their purposes and limitations, and shall ensure that these requirements are applied both on a procedural and substantive basis.
- b) They should ensure that proper documentation of adherence to environmental procedures, protocols and regulations be maintained, and that relevant information be provided to regulatory agencies in a timely fashion.
- c) They shall regard for both the reality and the trend of environmental legislation to assign personal responsibility for both action and omission. They shall reflect this reality in their professional duties accordingly as it relates to themselves, their employer, colleagues and clients.
- d) They are encouraged to take into account evidence of cumulative, persistent and synergistic effects, where these may not be fully considered in standards or regulations.

### **ANALYSIS**

Professionals are responsible for knowledge and awareness of environmental laws and regulations, either directly or through the retention of appropriate expertise.

Due diligence is required in the conduct of professional duties to ensure that everything reasonable is done to comply with environmental requirements. This implies an understanding of environmental policy and appropriate behavior, including the obligation to establish and maintain clear lines of management responsibility, and the maintenance of technical excellence. Environmental audits are one effective means for accomplishing these objectives.

Members should know and understand that current legislation may hold them personally responsible or liable for offenses, omissions, or acquiescence. Due diligence is a moving standard which will be more clearly defined by the Courts with the passage of time. In this regard, professionals have an obligation to their colleagues, employers, client and regulatory authorities, for a well-documented and comprehensive approach to problem solving where environmental concerns are involved.

---

---

## GUIDELINE #9

**Professional Engineers and Geoscientists are encouraged to work actively with others to improve environmental understanding and practices.**

### ELABORATION

- a) They shall recognize the potential of their activities and membership to influence society.
- b) They shall recognize the value of early involvement and action versus reaction.
- c) They are encouraged to share their expertise and educate other members, governments and the public on environmental issues.
- d) They are encouraged to interact with other disciplines to bring theoretical and technological research into applied science.

The practice of engineering, geology, and geophysics continuously improves due to technological advances, innovation and design changes. Parallel to this, environmental consequences need to be addressed. This is central to the concept of sustainable development. Thus continuous attention also needs to be given to environmental understanding and practices.

Members are encouraged to be actively involved with environmental issues. They should go beyond merely facilitating improvements. By being actively involved, they may anticipate and prevent, rather than react and mitigate.

Members are uniquely poised between the two extremes of absolute preservation and unfettered development. Education is crucial: firstly, for members so that they will say “no” when “no” needs to be said; secondly, to be participants of bodies constituted to formulate environmental laws and their enforcement; and thirdly, for the public so that they see members as true stewards who have viable, knowledge-based solutions.

Members deal with environmental issues. Research is one means to improve designs, procedures and technologies. The solution to complex long-term problems requires the participation on industry, governments and academia. Members are encouraged to interact with others to translate from theoretical research into applied practice.

---

---

## GLOSSARY OF DEFINITIONS

### **Acquiescence:**

means to accept or comply passively, without question or objection.

### **adverse impact:**

means an impact that impairs the quality of the environment such that:

- existing ecosystems are substantially degraded or their ability to sustain themselves is substantially impaired.
- Human health or safety or property is compromised or impaired
- Future development possibilities are lost
- Access to, and enjoyment of, the environment is diminished or lost.

### **conservation:**

means the planned management of a natural resource to prevent harmful exploitation, destruction or neglect, with the object of preserving or maintaining the viability of the resource for future generations.

### **cost-benefit analysis:**

means an economic analysis method that seeks to express the costs of an activity, in comparison to the benefits, using common units, to aid decision-making. The analysis would normally include capital, operating maintenance, decommissioning, social and environmental costs.

### **cradle to grave:**

means the entire cycle of a chemical, product, development or activity that must be considered when estimating its true cost/benefit.

### **cumulative effects:**

means individual impacts that are incremental and additive such that they must be considered collectively and over time, in order for a true measure of the impact and associated environmental costs of an activity to be assessed.

### **due diligence:**

means the attention and care legally expected of a party to prevent or avoid a particular negative occurrence. The steps or precautions that are likely to be judged reasonable will vary from circumstances, but, generally, the greater the likelihood and/or consequences of

a negative occurrence, the greater the care is expected. An important element of due diligence is being able to document that reasonable care has been exercised.

**ecosystem:**

means the interactive system involving all of the organisms in a specified area, their interactions with each other, energy and material flows and the components of air, land and water.

**environment:**

means the components of the earth and includes:

- i) air, land and water
- ii) all layers of the atmosphere
- iii) all organic and inorganic matter and living organisms, and
- iv) the interacting natural systems that include components referred in subclasses (I) and (iii)

**environmental audit:**

means a systematic, documented, objective review of the manner in which environmental aspects of a program, project, facility or corporation are being managed.

**environmental impairment:**

means damage, harm or loss to **the** environment.

**environmental specialist:**

means an individual qualified with training, knowledge and experience in a field or discipline of science dealing with the environment.

**hazardous waste:**

a category of wastes requiring special handling, treatment or disposal as specified in currently applicable regulations.

**life-cycle environmental management:**

means assessing the environmental impacts of a development, product, or activity from its inception, implementation and operation through to termination or decommissioning, and eliminating or minimizing the adverse impacts through good management.

**life-cycle economics:**

means the economics of an activity assessed in the context of life-cycle environmental management.

**members:**

PEGNL members, both individuals and permit-holders.

**mitigation:**

means measures or actions taken to reduce the adverse impacts of developments, products or activities on the environment.

**persistent effect:**

means that a compound or substance is resistant to degradation processes, and has the potential to accumulate in the environment and exert long term environmental impacts.

**quality of life:**

means factors related to the state of health and well-being of an individual or a community.

**remediation:**

means the process of correcting or counteracting an adverse circumstance or event to create more favorable conditions.

**societal values:**

means the attitudes, beliefs, perceptions and expectations generally held in common in a society at a particular time.

**socioeconomic impact:**

means the impact of a development, product or activity on the economy and social structure of affected communities. Socio-economic impacts may include issues such as: employment, housing and social needs, medical services, recreational facilities, transportation and municipal infrastructure and financial benefits, to local residents and businesses.

**sustainable development:**

means development that meets the needs of the present without compromising the ability of future generations to meet their own needs, through the application of integrated planning and the combination of environmental and economic decision-making processes.

**synergistic effect:**

means the total effect caused by the combined action of two or more discrete agents that is greater than the sum of the effects of each agent taken independently.

**visual impacts:**

means additions to or alterations of the existing landscape and horizons that are visible to, and create reaction, among the public.

**waste:**

means a material or substance that is unwanted by its generator, and without proper management represents a risk to the environment.