Environmental Aspects and Impacts Identification and Assessment Process	
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1.0 Introduction

This guidance document describes the development procedure for identifying environmental aspects and impacts associated with CCD's activities, products and services and determining which of those aspects and impacts is significant (and therefore requires further consideration). An environmental aspect is defined in ISO 14001 as an element of an organization's activities, products or services that can interact with the environment. An environmental impact is defined as any change to the environment, whether adverse or beneficial, which wholly or partially results from the organization's environmental aspects.

Appendix A provides additional background guidance regarding the aspects identification and prioritization process. The appendix also documents the process used to develop the initial listing of aspects and significant aspects.

The current list of significant environmental aspects can be found in *CCD-201.01 Significant Environmental Aspects*. Past assessments of the CCD environmental aspects can be found in the *CCD-201-R* records. The first release of a record is identified by "R001," and consecutive reports thereafter are numbered sequentially by increasing the three digit number following the "R" by one unit (e.g., *CCD-201-R001* records the first assessment of CCD environmental aspects and impacts, *CCD-201-R002* records the second, which supersedes the first, and so on).

Aspect Control Diagrams (ACDs or "Bow-ties") can be developed at the discretion of the EMS Program Manager for any significant environmental aspect at CCD. The process for developing ACDs from the list of significant aspects and a catalog of all current ACDs can be found in *CCD-202 Risk Control Framework*.

2.0 Process

The following process should be followed when assessing CCD's environmental aspects and impacts. The list of environmental aspects should ideally be reviewed on an annual basis and at least every two years.

1. Assemble assessment team: Bring together a representative group of CCD staff for a half-day meeting.

2. Review past assessments: Review the environmental aspects (both significant and non-significant) as found in the preceding *CCD-201-R* reports.

3. Brainstorm additions and changes: Review any changes to CCD's activities, products and services since the last environmental aspects assessment was performed. Specifically consider any new tenants and their associated activities. Review Appendix section A.2 for guidance on identifying aspects. Record any new aspects.

4. If any new aspects are identified, assess its significance: Using the process described in Appendix section A.3, assess the significance of the environmental aspect(s) in light of the CCD significance criteria. Record the results of the assessment.

5. If discussion leads to substantial changes in the existing list of significant aspects, reassess entire list of aspects: Using the process described in Appendix section A.3, assess the significance of the environmental aspect(s) in light of the CCD significance criteria. Record the results of the assessment.

6. Prioritize future reviews of Aspect Control Diagrams for significant environmental aspects: Set a schedule for reviewing the controls CCD maintains for its significant aspects as described in *CCD-202 Risk Control Framework*. Prioritize the schedule based upon the consensus opinion of the assessment team.

In addition to the formal aspect and impact review process described above, environmental aspects and impacts are continuously evaluated through the environmental guideline reviews, budget-planning process, and in response to any proposed changes in activities, processes, or procedures for conducting work at CCD. CCD-301-3.02 (Environmental Guideline – Planning and Design) also describes the process for identifying potential environmental concerns with respect to changes in activities, facilities, products, and/or services. In this way the list of significant aspects at CCD is kept continually up-to-date.

Appendix A: Background on Environmental Aspect & Impact Process

An example of an activity with environmental aspects is the operation of a boiler to generate heat for a facility. One environmental aspect of this activity is the emission of gases from the boiler (other aspects could include use of non-renewable resources and water effluents). One of the potential environmental impacts associated with this aspect is contribution to global warming as a result of emissions of greenhouse gases. Another impact associated with the same aspect could be contribution to acid rain formation as a result of sulfur emissions. Thus, a given activity could have multiple aspects, and each aspect could have multiple impacts.

The determination of aspects and impacts significance is not as well defined by ISO 14001 and 14004 as the terms themselves. It is suggested that evaluation of significance can consider the scale of the impact, the severity of the impact, its probability of occurrence, and the duration of the impact, as well as business factors such as the economic and operational consequences of altering the impact, potential legal liability, and impact on the public image of the company. However, a company has a great deal of flexibility in how it determines which aspects and impacts it deems significant.

The analysis of aspects and impacts is one of the most important components of an environmental management system (EMS). First, the process itself can be enlightening in that it requires a comprehensive analysis of activities, processes and products from an environmental perspective, and this can identify areas of environmental impact that had not been previously realized. This process is also enlightening in that it changes the focus of environmental thinking from a regulatory perspective (which is typically the primary area of focus of existing environmental functions) to an objective perspective where impacts are considered in light of their probability and severity instead of their regulatory significance.

The other reason that the aspects and impacts analysis is such an important component of an EMS is that much of the content of an EMS flows from this analysis. For those aspects and impacts that are deemed significant, objectives and targets can be established with regards to their management, environmental programs are established to obtain those objectives and targets, and measurement systems are maintained to determine if the objectives and targets are being met. Thus, the requirements for establishing programs, objectives and targets and measurement systems all flow from the determination of those aspects and impacts that are deemed to be significant.

There are three tasks within the aspects and impacts analysis:

1. Determination of boundaries for analysis (or re-visiting the boundaries, if this has already been done).
2. Identification of aspects and impacts of activities and services within the boundary.
3. Determination of significance of the identified aspects and impacts.

Task 1- Defining Environmental Management System (EMS) Boundaries

An important consideration for the process of identifying environmental aspects and impacts is how far to extend the boundaries of the environmental management system (EMS). Prior to the development of the aspects and impacts analysis, boundaries may have already been established for the EMS. However, since the aspects and impacts analysis will likely be the first point at which the implications of the setting of boundaries will be tested, the boundaries for the EMS will likely need to be re-visited at this point.

Traditionally, environmental management efforts of facilities have been focused on the activities, products, and services that occur within the physical boundaries of the facility. Facilities have historically focused on controlling the environmental aspects associated with their core operations (e.g., field operations, equipment maintenance) to fulfill legal requirements and control releases to air, water, or land. In order to maximize the benefit derived from the EMS being developed, an organization should consider boundaries that go beyond its core operations and consider all of the activities, products, or services, which it can control and over which it can be expected to influence, such as activities performed by its suppliers or tenants (in the case of protecting ultimate accountability). This requires the organization to determine which activities, products and services within the value chain of its operation it can reasonably control or have an influence over. Once this is determined, the organization can then define which activities, products, or services within the value chain will be included in the boundaries of the EMS.

This is not to say that an organization should attempt to be comprehensive in establishing the boundaries of its EMS. An organization should look to its goals and objectives with regards to the EMS and use them as a guide regarding what to include within the boundaries of the EMS. It may be necessary to start with a more focused EMS, and increase the number of activities, services and products within the boundaries over time. This is a perfectly acceptable approach, but the fact that boundary expansion is anticipated should be explicitly reflected in the documentation of the EMS.

The typical starting point for boundary setting for an EMS is the physical boundary of the facility. In expanding beyond the physical boundaries of a facility, the activities and products performed and provided by contractors and suppliers are typically the next items that would be included. Expansion beyond that point could include product use and raw material acquisition.

Using the physical boundaries of the facility under consideration as the starting point, the following questions can be used to help guide the decisions about boundary setting:

- Do contractors or suppliers perform certain activities within the physical boundaries of the facility, and, if so, do you want to include these within the EMS?
- Are there certain functions that are within the physical boundary of the facility but which are unrelated to any of the other activities or processes at the facility, and thus might be excluded from the EMS?
- Does staff from the facility perform certain functions outside of the physical boundaries of the facility, and should these activities be included in the EMS?

- Is there a high degree of interaction with suppliers regarding the nature of the material they provide, and, as a result, should certain activities provided by suppliers be included in the EMS
- Can the goals established in the environmental policy be achieved within the boundaries of the EMS, or do other activities, products or services need to be included in the EMS in order to achieve those goals?

Once the EMS boundary is established, it should be revisited on a periodic basis as part of an ongoing re-assessment of significant aspects and impacts. If it is found that a significant impact has not been addressed because the aspect causing this impact was initially considered outside the boundary of the EMS, then the boundary should be expanded to include that aspect. Boundary setting and aspect/impact assessment are interactive processes. Additionally, if ISO 14001 certification is being considered, then establishing an initial process to evaluate significant aspects and impacts of products across the entire value chain should be included in the EMS. A more widespread usage of the NEPA Program would be a starting point for this process.

Task 2 – Identifying Activities, Aspects, and Impacts of Services within EMS Boundaries

Once the EMS boundaries have been established, the next step is to define all the aspects and impacts of its activities and services that fall within the established boundary lines. When defining environmental impacts, ISO 14001 provides guidance that the following broad categories should be considered:

- Emission to air.
- Release to water.
- Contamination of land.
- Generation of waste.
- Use of raw materials and natural resources.
- Impact on communities, including noise.
- Compliance with other local environmental issues.

Only those aspects related to activities or services that occur within the boundaries set for the EMS and over which the facility can be expected to have some control should be included in the EMS. The list of all of the environmental aspects associated with CCD operations is maintained in the record of the Aspects and Impacts Assessment. This list will help to demonstrate the process by which the facility's environmental objectives are established. As activities, products, or services are added or removed from the facility, the list of aspects should be revised.

The aspect in question is discussed by the group in terms of the reasonably possible impacts that could occur under normal, abnormal, and emergency operating conditions. In the case of an existing aspect that has changed, the group should evaluate the effect of increased volumes or handling procedures on any previous evaluations of the aspect, and adjust the ranking accordingly. The impact categories of air, water, land, energy and materials, natural resources and "other" should also be evaluated to determine where the impact can occur.

Significance at CCD is determined across several risk/benefit categories: Reputational/PR and Social Impact Risk/Benefit, Environmental Risk/Benefit, Regulatory/Legal/Other and Financial Risk/Opportunity, as well as considering the probability of an impact event occurring within CCD operations.

Table 1 shows the criteria within each risk category. An agreed upon Impact Risk Level score is then given for each category and entered into Table 4. The maximum score out of the four risk categories will be used and recorded in the "Max" column of Table 4.

Table 1: Scoring Matrix and Evaluation Tool for Impact Risk/Benefit Level

Score	Reputational/PR and Social Impact Risk/Benefit	Environmental Risk/Benefit	Regulatory/Legal/Other Risk	Financial Risk/Opportunity
1	No Impact	Little to No Impact	Not a Likely Compliance Issue	< $1K
2	Local Impact	Low Impact/ Fast Recovery	Likely Compliance Advisory / Non-Reporting	< $10K
3	State/Regional Impact	High Impact/Low Recovery	Likely NOV / Financial Penalty / 3rd Party Lawsuit	< $100K
4	National Impact	Imminent Threat to Human Health and/or Environment	Likely Criminal Liability	> $100K

Table 2 shows the criteria for determining probability. This will be determined for each aspect and recorded.

Table 2: Scoring Matrix and Evaluation Tool for Impact Probability

Score	Probability
1	Never Seen in CCD
2	To other cities/counties but not CCD
3	Happened at CCD before (within 5 years)
4	Happens at CCD regularly (at least once per year)

The Maximum Impact Risk/Benefit score and the Probability score are then multiplied and recorded. The scores are then compared to a risk matrix, as presented in Table 3. CCD uses a cutoff of one-half the maximum risk score of 16 to determine significance. Thus, all aspects with absolute risk scores over 8 are considered to be "significant." Additionally, if an aspect is

regulated it is automatically deemed significant, regardless of score. This information is then used in determining if documented operational controls are necessary; and if so, the Control Setting Process is outlined in the document *CCD-202 Risk Control Framework*.

Table 3: Risk Matrix

Maximum Risk	Probability			
	1	2	3	4
1	1	2	3	4
2	2	4	6	8
3	3	6	9	12
4	4	8	12	16

An example of this is as follows:

Social	Environmental	Legal	Financial Risk
2	1	3	2

Probability
3

Absolute Risk = 3 x 3 = 9