NET ENVIRONMENTAL BENEFIT ANALYSIS

(NEBA)

March 16, 2017
Ginny.King@arcadis.com
Jeffery.Smith@arcadis.com
What is NEBA

Net Environmental Benefit Analysis (NEBA) is the process created by the United States Environmental Protection Agency (EPA) to determine the least environmentally impacting remedial or response action to address contamination of a site, with the goal of achieving regulatory closure.

The “cure” can be worse than “the disease”
The NEBA is a decision-making tool that compares and contrasts options. NEBA considers the “trade-offs” of each action, prioritizing the outcomes through risk ranking.

The “cure” can be worse than “the disease”
NEBA **cont.**

NEBA can be used for the following:

1) Identifying a remedy that will protect human health while generating the least impact to the environment through implementation

2) Supporting planning for emergency response

3) Selecting the least injurious final action during an emergency response

4) Incorporating ecological services into project planning activities such as green infrastructure vs gray, etc.

**The "cure" can be worse than “the disease”**
NEBA

NEBA for a contaminated site typically involves comparison of several management alternatives, the costs and the potential to create greater environmental impact, such as:

1) Leaving the contamination in place;

2) Physically, chemically or biologically remediating the site through traditional means;

3) Improving ecological value through on site and/or offsite restoration alternatives that do not directly focus on removal of chemical contamination as regulatory end points;

4) A combination of those alternatives.

The “cure” can be worse than “the disease”
NEBA

The Conceptual Site Model (CSM) for the site allows for a holistic integration of site attributes and the present ecosystem services, with the risk analysis (es) and the management options identified for the site to determine the best option.

The “cure” can be worse than “the disease”
NEBA

NEBA includes the consideration of ecological services presently being provided by the ecosystems of the site, in spite of the presence of contamination.

The “cure” can be worse than “the disease”
NEBA

Ranking of options begins by listing and considering the various net environmental “gains”. Gains are equal to environmental services or other ecological properties.

The “cure” can be worse than “the disease”
NEBA

Comparing and contrasting the management alternatives includes the following analysis:

1) Identification of the risks being imposed by the level of contamination on site;

2) Identification and quantification of the ecological services that are being provided under current site conditions;

3) Identification of the alternatives and the potential impacts to ecological services as a result of implementation

The ”cure” can be worse than “the disease”
NEBA

Habitat Equivalency Analysis (HEA) is the methodology that supports the quantification of ecological services being provided at the site as well as the quantification of impacts that could result from implementation of a management alternative.

Habitat Equivalency Analysis (HEA) Model Used to Scale Ecological Services

- **Services** provided by Restoration ("the credit")
- **Services** lost due to resource injury ("the debit")

- Commissioned by EPA
- Refined by NOAA and DOI
- Used on 85-90% of NRDAs with Federal Trustees

The “cure” could be worse than “the disease”
NEBA Case Examples

Mid-Atlantic State Client, CERCLA issue.

NEBA was implemented to screen various remedial options. The NEBA results were used to convince the State and EPA of a less intrusive remedial action for VOCs in groundwater.

The company realized substantial cost savings through implementing the remedial alternative, that additionally maximized the environmental benefits.

The “cure” can be worse than “the disease”
NEBA

Oil spill in an industrial area with the significant impact being bird mortality. Replacement of habitat was chosen rather than unnecessary investment in restoring the impacted area of the spill.

The “cure” can be worse than “the disease”
NEBA Case Example

East Coast River Sediments Case:

The remedial process was being conducted to address contaminated sediments in a riverine system. Dredging was being advocated as the remedial solution. It was determined through an NEBA that dredging would generate significant additional environmental impact to the surface water by re-distributing contamination in the water column. A reasonable and less intrusive remedial alternative was identified that would achieve the same risk reduction but generate no additional environmental impacts as a result of implementation. There was significant costs savings with the choice of an alternative remedial action.

The “cure” can be worse than “the disease”
SUMMARY

NEBA is the analytical methodology that supports identification of the most appropriate remedial or response action to manage risks, and protect against unnecessary environmental impacts where feasible and permissible;

NEBA can support the minimization of environmental impacts and manage unnecessary cost expenditures;

NEBA also provides regulators with justification in approving a less than traditional remedial or response action that clearly makes the most sense, including leaving contamination in place;

NEBA can support resolving issues with non-technical but influential stakeholders.

NEBA can be used to achieve sustainability goals, demonstrate environmental stewardship and preserve the social license to operate.

Questions? Ginny King (303) 478-9925
Imagine the result