

# DRAFT

## IMPACT ASSESSMENT METHODOLOGY

### Introduction

The following information describes general principals and specific aspects of the impact assessment methodology that will be used for the analysis of the implementation of Exxon Valdez Oil Spill Restoration Plan. The Restoration Plan includes five alternative implementation procedures. Each of the alternatives will be encompassed by the impact assessment methodology described below.

The methodology presented here recognizes the dynamic nature of the Restoration Plan, and the generic definition of the options to be included in the Restoration Plan alternatives. Consequently, for each of the resources and services being evaluated, certain assumptions regarding the actual implementation of options will be necessary. These assumptions will provide a basis for the impact assessment methodology, and will be stated for each resource and service included in the analyses.

The economic impact analysis will be conducted differently than the impacts to physical, biological, and cultural resources. The following discussion does not apply to the economic impact assessment. For the economic impact assessment of Restoration Plan implementation, the IMPLAN economic impact assessment model will be used. A description of IMPLAN is presented in Section [redacted] of the EIS. Results of IMPLAN analyses will be presented for each alternative in the Restoration Plan. As with the impact assessment methodology for other resources, any relevant assumptions that are required to frame the economic impact analysis using IMPLAN will be stated.

### Types of Impacts

When performing the impact analysis of the proposed action (implementing the Restoration Plan), the analysts will employ a methodology that will account for the various impacts that affect the biological, physical, and sociocultural environment. Impacts will be classified in five ways; direct, indirect, short-term, long-term, and cumulative. These types of impacts are interdependent, in other words, there can be long-term direct impacts, short-term cumulative impacts, etc. For each resource or service being evaluated, analysts will identify what type of impact is being referred to in the analysis so that the reviewer/decision maker is able to make sound, reasoned decisions for the short-term as well as for the long-term.

Direct impacts are those that are the immediate result, or the initial reaction to the action being evaluated. An example would be the loss of habitat caused by a construction project. Indirect impacts are those that are the reaction to the direct impacts, or the second-tier impacts. In other words, indirect impacts are the consequence of direct impacts, and are not in themselves a direct response to the action. In the example of loss of habitat from a construction project, the indirect impacts may be a reduction in wildlife populations that relied on the habitat for food or shelter. In this case, the construction did not kill or harm the animals themselves during the construction operation, but following construction they were not able to find food and shelter and were consequently displaced to other areas or perhaps killed by predators that normally they could have hidden from in the habitat that was lost. Indirect impacts are often difficult to identify because they may or may not occur, making their definition very speculative. Quantifying indirect impacts is usually not possible or warranted. Additionally, there is often little distinction between

indirect impacts, particularly in the long-term, and cumulative impacts. Cumulative impacts are a summation of the impacts related to the action being evaluated and concurrent actions being taken that are similar or are in close proximity to the action. Cumulative impacts often do not manifest themselves until well after the action has been taken. As a result, cumulative impacts, similarly to indirect impacts, can be very speculative and hard to define. However, cumulative impacts are the source of much controversy and litigation, and the analysts will make every effort to account for cumulative impacts in the environmental impact analyses.

Short-term impacts are those that occur for a relatively short time and then abate or attenuate to levels that are not of concern. If the time frame is an important variable that should be considered by the decision maker, it will be stated. An example of a short-term impact would be erosion from a construction site. Erosion may cease entirely after construction is completed, or be reduced to minimal levels by appropriate mitigation so only temporary (short-term) impacts during construction occur. On the other hand, the effects of sedimentation related to the short duration of erosion may have long-term impacts on various resource areas, especially if the intensity or magnitude of the short-term erosion was high. Long-term impacts are those whose duration or manifestation occurs for a relatively long time or manifests itself at some future time. As with short-term impacts, the long-term time frame will be specified if it may influence the decisions being made. To ensure that the full impact of the action being considered is identified, the full complement of impact types will be considered in the environmental impact analysis.

### **Evaluation Factors**

As a basis for the analysts determination of impacts, and as a prelude to presenting conclusions regarding the significance of those impacts, the analysts will use certain predetermined factors to arrive at impact determinations. When performing the analysis of impacts on various resources, the action being analyzed will be viewed in terms of these factors. For all resource areas being evaluated for impacts, the same factors are applied. In this way the analyst can systematically approach the analysis, and document the process used to reach their determinations and conclusions.

For determining the affects of proposed actions on the natural environment, there are four factors that will be used. They are as follows:

1. **Magnitude**
2. **Geographic Extent**
3. **Duration and Frequency**
4. **Likelihood**

The **magnitude** of an impact reflects relative size or amount of an impact. The **geographic extent** of an impact considers how widespread the impact might be. The **duration and frequency** of an impact refers to whether the impact is a one-time event, intermittent, or chronic. The **likelihood** of an impact is simply whether it is reasonable to expect that it is likely to occur. Where a quantitative evaluation is possible, specific quantitative criteria for the magnitude, geographic extent, duration and frequency, and likelihood of the impacts will be explicitly defined.

The magnitude of an impact is an intensity factor that is also a reflection/summation of the other three factors. It is for this reason that the magnitude of an impact will be analyzed and given particular attention in the assessment of impacts. If the magnitude of an impact is large, the other factors become less important in determining whether the impact is significant. Additionally, if the magnitude is not large

or high, there may not be any significance to the impacts occurrence regardless of how wide spread it is, or how often it occurs. Consequently, in the methodology for determining significance of impacts, the magnitude of the impact will be afforded more weight than the other factors. In most cases, only where it can be shown that there is a high or large magnitude would the analysis indicate that there is a significant impact.

As a result of its elevated importance in the determination of significance, the criteria used to determine magnitude of impact will be identified for those effects that have the greatest impact on the environment, or the greatest impact on the decisions to be made by the decision maker. The most important element of the entire impact assessment methodology is the criteria used to determine the magnitude of impacts. The criteria may be either qualitative or quantitative depending on the availability and relevance of existing data. For each resource area or service of concern (e.g., sockeye salmon, sea otters, marbled murrelets, commercial fishing, etc.) the definition of impact magnitude will differ, and will be described in terms of the unit of measure being applied. Based on the definition of impact magnitude, and using the other impact evaluation factors as support, a determination of the significance of the impacts will be presented.

### Evaluation Process

The process to be followed by the EIS team analysts before employing the impact evaluation methodology described previously, will be unique to the resource or service being evaluated. In general, however, the development and presentation of minimum levels of evidence and analysis that satisfy the NEPA requirement for a "hard look" at the actions being proposed, will follow the same basic steps. The basic premise of the approach is to provide the decision maker with sufficient information to make informed decisions, while ascribing to the "rule of reason" implicit in the NEPA process.

The first step in the process involves the basic literature review that builds on the information reviewed to prepare the baseline conditions described in the Affected Environment section of the EIS. Because of the generic nature of the programmatic EIS, the use of existing data is essential, no new research efforts or analytical tools such as population dynamics modeling is necessary or warranted given the nature of the decisions to be made regarding the Restoration Plan.

After obtaining the necessary understanding of the resources (species) and services included in Restoration Plan alternatives, the most important aspect of the evaluation process is to define, to the degree possible, what is included in the options being proposed for implementation in the various alternatives. In order to do this, all information available describing the options must be reviewed. This would include all option write-ups that currently exist, such as option short forms, project proposals, "Opportunities for Habitat Protection/Acquisition", Restoration Framework documents, etc. Each analyst will keep a listing of all sources reviewed to identify information concerning options that affect the resource or service being evaluated. Clearly, the specificity of the option descriptions will be the limiting factor in the identification of impacts. All assumptions that must be made to account for the scope or nature of the option will be identified (stated) by the analyst, along with the rationale for the assumption (e.g., without the assumption some key element of option implementation could not be accounted for).

→ Review issues, and identify how the options address any of the issues raised.  
Based on the assumptions made concerning the specifics of the options proposed for implementation, the analyst will restate what is included in the option that specifically affects the resource being evaluated. This process of option evaluation will be performed for each option that has been identified (by RPWG) as affecting the resource or service being evaluated by the analyst. The analyst will evaluate the impact of each of the options individually using the impact evaluation methodology and terminology described above, and then consider the options collectively (all options identified for the particular alternative in

question that affect the resource or service being evaluated) to determine the magnitude and significance of the impact to the resource or service. The analysts will compare the conclusions of their analysis with the RPWG determination of option effectiveness to identify any inconsistencies in the conclusions of the two independent processes (i.e., RPWG's determination of option effectiveness versus the EIS analyst's determination of the magnitude and significance of impacts). Any inconsistencies will be addressed on a case-by-case basis by the EIS team experts for the particular resource area in question.

Consistent with the concept noted previously concerning minimum levels of evidence and analysis, each analyst will identify (reference) outside (not generated for the Restoration Plan development process) sources of information to corroborate conclusions of impact as appropriate ("as appropriate" because of the intuitive nature of certain generic conclusions of impact that are likely to be presented). The purpose of the use of outside sources for supporting conclusions is to remove, as much as possible, the use of professional judgement among the analytical staff in the determination of impact magnitude and significance. However, because much of the assessment process is speculative, owing to the generic nature of the options being presented for analysis, and the use of experts (i.e., experts assisting the Trustee Council ~~or RPWG~~) to evaluate the effectiveness of proposed options, it is expected that the qualitative EIS assessment process will involve some professional judgement by EIS team analysts, supported by the conclusions of the Trustee Council's ~~or RPWG~~ scientific experts.

For resources and services such as subtidal resources, air, water, sediment or designated wilderness areas for which no restoration options were identified, the evaluation process will have to be left "open ended", and statements regarding the future submission of proposals affecting these resources will have to include reference to additional environmental analyses (e.g., Environmental Assessments or Environmental Impact Statements). In addition to those resources for which no restoration options were proposed, it may be necessary to suggest additional environmental evaluation for resource or services affected by proposed and possible future options that specifically target an area, species population, or user group, and may have significant impacts. Also, consistent with 40 CFR 1502.22 ("incomplete or unavailable information"), where data deficiencies exist that may be critical to the evaluation of adverse environmental impacts, this will be stated and the need for additional environmental analysis noted. The intent of this approach is to ensure that future options that the Trustee Council may want to consider for funding are not precluded from consideration under the Restoration Plan because they were not considered in the EIS.

OSPIC

Oil Spill Symposium

Did Presenters submitted their papers  
prior to the Symposium.

Spies? Who does he work for  
Never been on the Walcott contract.

Dennis Heineman

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Oil Symposium Abstract

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