2.0 PROCESS AND STANDARDS ALTERNATIVES

This chapter presents alternative formats and procedures for developing rebuilding plans and implementing measures to rebuild overfished stocks. The following section presents four sets of options, organized around relevant issues. This allows the Council to structure a preferred alternative by combining options identified for each of the four issue categories.

This amendment also makes minor technical additions, corrections, and changes to the FMP. These changes are categorically excluded from analysis as described in Section 6.03.a.3(b)(2) of NAO 216-6. They are summarized in Section 2.2 and documented in the amendatory language found in Appendix A, along with those substantive changes to the FMP approved under the authority of the Magnuson-Stevens Act. A separate memo to file has been prepared by NMFS Northwest Region (NWR) providing the rationale for categorically excluding these changes to the FMP.

2.1 Issues and Options

Options (alternatives) covering four issues related to the development and adoption of rebuilding plans are considered in this chapter:

Issue 1: The form and required elements of rebuilding plans
Issue 2: The process for periodically reviewing rebuilding plans.
Issue 3: Defining events or standards that would trigger revision of a rebuilding plan.
Issue 4: The status of rebuilding measures for species subsequently listed under the Endangered Species Act.

2.1.1 Issue 1- The Form and Required Elements of Rebuilding Plans

The Magnuson-Stevens Act requires that councils or the Secretary take action to end overfishing and rebuild any stock that is overfished or approaching an overfished condition. The standard convention for actions taken to rebuild a stock has been termed the "rebuilding plan." Options under this issue encompass the Magnuson-Stevens Act mandate that rebuilding requirements take the form of an FMP amendment or regulation and the status quo where the rebuilding period was specified solely in policy documents. Three aspects of this issue may be distinguished. First, what rebuilding plan elements and supporting rationale should be incorporated into the FMP and/or regulations? Second, in which venue—the FMP or regulations—should specified rebuilding plan elements or other information appear? Third, if the limits and targets comprising the rebuilding framework can be numerically specified, should these values be included in the FMP or regulations?

From the Magnuson-Stevens Act and National Standard Guidelines (50 CFR 600, Subpart D) it appears that the only specifically identified element of a rebuilding plan that must be set in the FMP or regulation is the rebuilding time (MSA 304(e)(4)(A)).[4/] However, when a stock has been overfished, the FMP must be amended or regulations implemented to "end overfishing and to rebuild affected stocks" (MSA Section 304(e)(3)(b)).[5/] Under the FMP as currently written, actions required to "end overfishing and rebuild the affected stock" are

4/ While only the target rebuilding time must be part of an FMP or regulatory amendment, there are two constraints placed on Council actions to rebuild overfished species. First, remedial actions must fairly and equitably allocate restrictions and recovery benefits among sectors (MSA 304(e)(4)(B)). This appears to be a more specific application of National Standard 6 and not a new requirement to which councils or the Secretary must respond. Second, for fisheries governed under international agreements, the rebuilding action should reflect traditional participation by fishermen of the U.S. relative to those of other countries (MSA 304(e)(4)(C)). None of the West Coast groundfish species are currently governed under international agreements. The groundfish species most likely to be the subject of a future international agreement is Pacific whiting. Halibut and salmon fisheries do come under international agreements and could be affected by the need to substantially restrict groundfish mortality.

5/ CFR 50 Section 600.310 (e)(4)(ii) states that "in cases where overfishing is occurring Council action must be sufficient to end overfishing."

implemented by regulations under the annual management process, derived from the rules for specifying and managing for the OY. As specified in the National Standard Guidelines (50 CFR 600.310 (f)(1)), "in the case of an overfished fishery, [OY is constrained to an amount of harvest mortality] that provides for rebuilding to a level consistent with producing MSY in such fishery." The FMP also specifies that OYs will be constrained by rebuilding needs and fishery management regulations established to meet OY. These provisions therefore appear to meet the standards of Section 304(e)(3): that rebuilding measures be described in FMPs or regulations. However, under Amendment 12 to the groundfish FMP, the Council has set its rebuilding time targets during the annual specification process; these targets are not specified in the FMP or regulations. Thus, the Council omitted from its FMP and regulations the elements required to be part of a rebuilding action. In addition, NMFS has published ancillary guidance describing a number of other parameters not identified in the Magnuson-Stevens Act that should be included in rebuilding plans (Restrepo *et al.* 1998).

The language in the Magnuson-Stevens Act states that rebuilding measures (and specifically, the "time period for ending overfishing and rebuilding the fishery") may be adopted as an FMP, FMP amendment, or regulation. The options described below do not consider developing a new FMP for overfished species. According to these options, rebuilding measures would be described in the existing groundfish FMP, in regulations, or some combination of these two documents. As a general proposition, the FMP describes procedures for managing the fishery and serves as a code obligating the Council and fishery managers to follow these procedures and manage according to specified goals and objectives. Regulations are broader in application, serving as laws governing the behavior of the general public, or in this case that segment of the public using certain fishery resources. The options outlined below also contemplate using regulations to promulgate a relatively narrow subset of a rebuilding strategy: the numerical values for the harvest control rule and target year.

Tables 2.1 and 2.2 illustrate the range of possible elements that may be considered part of a rebuilding plan. The options presented below outline which of these elements would be incorporated in the FMP, regulations, or some combination of these two documents. The term "elements" includes narrowly defined parameters and management measures that would be used to achieve rebuilding targets. These parameters are derived from National Standard Guidelines and the rebuilding analysis methodology (detailed in Section 3.1.2.2); they provide a general framework for determining how overfished stocks may be rebuilt and numerical values can be determined for these parameters. Which of these parameters to incorporate into the FMP and/or regulations, and how to specify them, has been a subject of considerable deliberation in developing this FMP amendment. As discussed in Section 3.1.2.2, the numerical values associated with these parameters are almost certain to change as new stock assessments increase our understanding of the status of overfished stocks. If these values are numerically specified in the FMP/regulations, the FMP may have to be amended frequently in order to update these documents each time new values are calculated. This argues for a "flexible" approach that would limit the number of numerically-specified parameters; instead, parameters are defined by a formula or algorithm relating the parameter to some other measure. Conversely, there is concern that if these parameters are not specified, there will be no fixed guideposts for managers, who might otherwise emphasize the short-term benefits of higher harvests over the long-term goal of rebuilding overfished stocks. This concern favors a "fixed" approach where the value of these parameters would be specified in the FMP/regulations. By the same token, management measures could be described generally or specifically. Tables 2.1 and 2.2 give examples of how these elements might be described under a flexible strategy versus a fixed strategy. Table 2.1 also provides definitions for the terms used to describe rebuilding plan parameters discussed in the options below.

Based on these considerations, the following four options have been identified:

Option 1a **There is no framework for specifying the form of rebuilding plans (status quo).** The FMP as amended by Amendment 12 directs the Council to prepare and adopt rebuilding plans as policy guidance documents as described in FMP Section 5.3.6 (Stock Rebuilding Requirements). However, the Court set aside the relevant parts of Amendment 12 and remanded it (see Section 1.3.3 of this document) without proposing specific changes to FMP language. For the purposes of describing the status quo, the remand can be interpreted to mean that all references in the FMP to rebuilding plans only implemented as part of the annual management process are struck out. Therefore, although the FMP describes the contents of rebuilding plans, it does not describe their form, and there is no framework for rebuilding plan adoption. Currently, management measures described in Section 6.2 of the FMP—including automatic actions,

notices, abbreviated rulemaking actions, and full rulemaking actions—are used to implement interim rebuilding plans. Thus, each rebuilding plan would need to comply with the Magnuson-Stevens Act, but without any additional description of the process in the FMP.

Option 1b **Numerically specify P_{MAX}, T_{MIN}, T_{MAX}, and T_{TARGET}, describe the harvest control rule, and outline the methods used to calculate B_{MSY} in the FMP.** Current guidelines in the FMP with respect to rebuilding plan goals and objectives and the contents of rebuilding plans (Sections 5.3.6.1 and 5.3.6.2 of the FMP[6/]) would be retained as a guide to formulating rebuilding plans. In order to comply with the court order, references to rebuilding plans as policies or principles implemented through annual management would be stricken. Section 5.3.6.2 of the FMP would be amended to state that for each overfished species the numeric value of P_{MAX} (as either a decimal fraction or percent), and T_{MIN}, T_{MAX}, and T_{TARGET} (as dates) would be specified in the FMP. (These values could be incorporated in tabular format.) This section would also state that the FMP would describe the harvest control rule (e.g., as a rate, constant catch, or some combination thereof) and the methods used to calculate B_{MSY} (including relevant formulas). The numerical value associated with the harvest control rule and for B_{MSY} would not necessarily have to be specified. Rebuilding plan adoption would entail amending the FMP to include these specified values in the FMP. If the harvest control rule for a given overfished species was specified in the FMP, and a new stock assessment showed the specified harvest rate would result in the stock reaching the target biomass later than the specified T_{TARGET}, then the recomputed harvest rate satisfying T_{TARGET} would apply until the FMP could be amended to correct specified parameter values.

Option 1c **Numerically specify T_{TARGET} and the harvest control rule in federal groundfish regulations.** The FMP would be amended to state that for each overfished species the target rebuilding year (T_{TARGET}) would be specified (as a date) and the harvest control rule described (e.g., as a rate, constant catch or some combination thereof) and an appropriate numerical value specified in federal groundfish regulations. FMP language also would be revised to better describe the contents of rebuilding plans, the adoption process, and, as above, to strike any language at variance with the court order. If, after a new stock assessment computations reveal the specified harvest control rule would result in the stock reaching its target biomass later than the specified T_{TARGET}, the harvest control rule would be re-specified in federal groundfish regulations through full (notice and comment) rulemaking. The FMP would also describe the following circumstances under which the target year could be changed, (1) after a new stock assessment, re-computed parameters result in a T_{TARGET} greater than T_{MAX}; (2) due to a change in parameters resulting from a new stock assessment, the corresponding OY for the overfished species would result in substantial negative socioeconomic impacts. This second circumstance would have to be supported by commensurate analysis. (These circumstances are exemplary; the Council could change the target year for other reasons, if justifiable through commensurate analysis.) If the Council recommended such a change in the target year, these changes would also be made through full (notice and comment) rulemaking. All other rebuilding plan elements, and updates to rebuilding plans, would be published in the Stock Assessment Fishery Evaluation (SAFE) document.

Option 1d **(<u>Council preferred</u>). Numerically specify T_{TARGET} and the harvest control rule in federal groundfish regulations. In addition, describe the methodology for computing rebuilding parameters and the numerical values for these parameters at the time of rebuilding plan adoption in the FMP.** This Option is similar to Option 1c, except that additional information describing the status of the stock would be included in the FMP. This would include estimates at the time the rebuilding plan was adopted of: unfished biomass (B_0) and target biomass (B_{MSY}), the year the stock would be rebuilt in the absence of fishing (T_{MIN}), the year the stock would be rebuilt if the maximum time period permissible under National Standard Guidelines were applied

6/ As mentioned in Section 2.2 and shown in Appendix A, these section numbers would change in the amended FMP.

(T_{MAX}) and the probability of the stock rebuilding by this date (P_{MAX}), and the year in which the stock would be rebuilt based on the application of stock rebuilding measures (T_{TARGET}). These estimated values serve as management benchmarks. The FMP would not be amended if, as is likely to happen, the values for these parameters change after new stock assessments. This point cannot be over-emphasized because changing these values in the FMP would require frequent amendments. Instead, updated values would be published in the SAFE document. The FMP would also include a description of how these parameters are computed. If the computational method differs for a particular species, then these differences would be described in the FMP. Like Option 1c, both the target rebuilding year (T_{TARGET}) and the harvest control rule would be specified in federal groundfish regulations. As discussed above, full (notice and comment) rulemaking would be used to change the harvest control rule specification in federal groundfish regulations if a new stock assessment reveals the current value would result in the stock reaching its target biomass later than the specified T_{TARGET}. Similarly, the FMP would also describe two circumstances under which the target year could be changed, (1) after a new stock assessment, re-computed parameters result in a T_{TARGET} greater than T_{MAX}; (2) due to a change in parameters resulting from a new stock assessment, the corresponding OY for the overfished species would result in substantial negative socioeconomic impacts. This second circumstance would have to be supported by commensurate analysis. (These circumstances are exemplary; the Council could change the target year for other reasons, if justifiable through commensurate analysis.) If the Council recommended such a change in the target year, these changes would also be made through notice and comment rulemaking.

Currently, rebuilding actions are implemented through the annual process of specifying management measures, as described in Section 6.2.1 of the FMP. Options 1b-1d identify different ways that substantiative elements could be incorporated into the FMP, regulations, or both, in order to obligate the Council and NMFS to manage towards identified targets.

When thinking about the various rebuilding parameters describing how a stock will be rebuilt, it is important to recognize that some of the terms introduced and described above represent policy decisions at the national level, and the Council ***does not have a choice*** in setting their values. The dates for T_{MIN} and T_{MAX} are determined based on guidelines established at the national level. Mean generation time is a biological characteristic that cannot be chosen by policymakers. Thus, the Council cannot choose these values and then use them as a basis for management. Defined in national guidelines, T_{MIN} is a consequence of the productivity of the fish stock and is calculated by fishery biologists based on information they get from a particular stock. Similarly, T_{MAX}, which is calculated from T_{MIN}, does not represent a Council choice.

Fundamentally, when developing a management strategy the Council is able to choose a harvest control rule (which may be expressed as a fishing mortality rate or by some other means), and the corresponding annual level of fishing. This ***does*** represent a Council choice because managers have the means to limit the amount of fish that are caught. However, when rebuilding overfished species, it is possible to think about how to set these fishing limits in different ways. The Council could base their management strategy on either the value of T_{TARGET}, the probability of reaching target biomass in the maximum permissible period (P_{MAX}), or the fishing mortality rate, keeping in mind these three values cannot be chosen independently of one another. In other words, the Council may choose one of these values and derive the other two from it, but they cannot choose the values for two of these terms independently of the third. T_{TARGET} must be the management target, given its name and the fact the Magnuson-Stevens Act states that a time period must be identified. However, it should be apparent the Council could base their choice of T_{TARGET} on P_{MAX} or the harvest rate since all three of these terms are related to each other. If the Council based their decision on P_{MAX}, for example, the corresponding target year and harvest rate could be easily determined through the rebuilding analysis. However, once T_{TARGET} is derived, the stock would have to be managed to that target by adjusting the harvest control rule (or fishing mortality rate) to achieve that target, although the possibility of changing the target year remains open either by FMP amendment (Option 3b) or regulatory amendment (Option 3c and 3d).

Within the management framework, the target year (T_{TARGET}) is the year by which the stock would be rebuilt to its target biomass. In other words, if a stock were to rebuild in any year earlier than the one identified as the target in the FMP or regulations, the specification would still be satisfied. Such a circumstance could come into play if a subsequent rebuilding analysis identifies an earlier target year because stock productivity has

changed (perhaps due to changed environmental conditions). In this case, the Council would not be obligated to re-specify the target year and could continue applying the harvest control rule identified in the FMP and/or regulations. Nor would the Council be obligated to increase the current fishing mortality rate (based on the harvest control rule) so that rebuilding is delayed to the originally-computed target year. On the other hand, there would be no absolute prohibition on adjusting the harvest control rule to increase the fishing mortality rate (and thus OYs) to achieve rebuilding in any later year up to and including the previously computed target year. This is a policy decision; there may be benefits to accepting more rapid rebuilding along with more stable OYs in some instances, while substantial benefits to communities may justify such an increase in other cases. The procedural requirements that are part of Options 1b-1d (an FMP amendment or regulatory amendment) entail evaluation and sufficient justification for any change, based on the Magnuson-Stevens Act and NEPA.

Some possibilities were eliminated from detailed consideration when developing the options outlined above. First, while targets and limits would be described and/or specified under these options, none of the options would require the specific management measures used to achieve these targets be described in the FMP or regulations. Rebuilding plans (and the FMP) could contain general discussion of the types of management measures that will be used, based on a revised enumeration of rebuilding plan contents in Section 4.5.3.2 of the revised FMP (see Appendix A). Although not required, rebuilding plans could identify specific management measures, other than those usually implemented through annual/biennial management, that would be incorporated into the FMP and would be applied in addition to existing management measures identified in the FMP and/or established through the annual/biennial management cycle. Implementing rebuilding-specific management measures generically for all overfished species would, in general, be less adaptive, since stocks will respond to changes in both the management regime and environmental conditions. The groundfish FMP already authorizes a comprehensive framework that allows periodic adjustment of a broad range of management measures in response to stock conditions. This framework can also address stock rebuilding needs by constraining total fishing mortality within limits (i.e., OYs) derived from rebuilding analyses and based on the targets established in rebuilding plans.

A second class of options eliminated from detailed study were those that would adopt flexible specifications of rebuilding parameters. Depending on how they were formulated, flexible specifications would not sufficiently obligate managers to rebuild according to a fixed target. There would thus be a greater risk of changes in targets based on fishery conditions in the short term. The key rebuilding parameters could be numerically specified while other parameters are described in terms of formulas. However, as noted above, since there are essentially two parameters that represent policy choices—T_{TARGET} and the harvest control rule (or fishing mortality rate)—providing the formulas for computing other parameters does little to establish a management framework. (Note that P_{MAX} is also a policy choice. However, this parameter is essentially another way of describing T_{TARGET}. See Section 3.1.2.2 for a discussion.) Options 1c and 1d (the Council-preferred option) incorporate flexibility through a procedural framework. The target, T_{TARGET}, and the means to operationalize it, the harvest control rule, are specified. A procedural mechanism is established to change these parameters, through notice and comment rulemaking, introducing flexibility. However, such changes would have to be found justifiable based on the range of criteria found in the Magnuson-Stevens Act and NEPA.

A third possibility not considered was to identify a generic target that would apply to all overfished stocks. The range for an allowable target year (which must fall between T_{MIN} and T_{MAX}) will vary among stocks based on the underlying biology. A rebuilding probability (P_{MAX}) could be specified for all stocks, from which the specific target year is derived. This approach was not considered because of the variable effect that imposition of a given rebuilding target will have on fisheries targeting mixed stocks. Fishing mortality on less productive stocks needs to be constrained more than on more productive stocks. If both are caught in a single fishery it may be that only one acts as the “binding constraint” on fishing effort. In other words, management measures are tailored to the more constrained stock, and as a result, fishers are not capable of reaching the OY for the less-constrained stock. In seeking a balance between rapid stock rebuilding and the needs of fishing communities (see MSA §304(4)(A)(i)), policymakers need to determine targets on a case-by-case basis. For example, the target for a constraining stock might be relaxed slightly to allow harvesters more opportunity to achieve the OYs for healthy stocks. At the same time, targets for more productive co-occurring overfished stocks can be more restrictive since fishing mortality is restricted by the constraining stock. Over the long-term, as the constraining stock rebuilds, the more restrictive target for the other overfished stock may

come into play, depending on how quickly the second stock rebuilds in comparison to the constraining stock. Because nine Pacific groundfish stocks are currently declared overfished, these case-by-case considerations of targets are critical.

Although the management process may not change very much if rebuilding plan elements become part of the FMP or regulations (since the Council already adheres to interim rebuilding plans when developing annual management measures), public perceptions about the process could be influenced. If more elements are specified in the FMP or regulations, members of the public that are skeptical the Council will adhere to policies intended to rebuild stocks may be reassured. In addition, any changes to the rebuilding strategy, would be accompanied by a more extensive process with greater opportunity for public comment.

The administrative cost associated with a more involved process to incorporate rebuilding plan elements and subsequently update them can be measured as the direct value of the time and various expenses associated with the management process. Where administrative resources are limited, the costs can also be evaluated in terms of the lost opportunity for addressing other policy problems in the fishery. For example, the time and resources needed to amend a rebuilding plan may detract from managers' ability to improve capacity controls in the fishery. In this example the opportunity costs of the administrative action may be viewed as the difference in net benefits between the status quo capacity controls and the improved capacity controls that are delayed because of the need to modify a rebuilding plan.

TABLE 2-1. Parameters that describe the projected growth of the overfished stock towards its rebuilt state. The fixed and flexible specifications are exemplary and do not apply to any actual rebuilding plan or overfished stock.

Parameter	Description	Example of a Fixed Specification	Example of a Flexible Specification
B_0	Unfished stock biomass.	1,000 mt	The product of SPR in an unfished state and the average recruitment during the early years of the fishery.
B_{MSY}	Target stock biomass.	500 mt	40% of B_0 (or $B_{40\%}$)
T_{TARGET}	The target year by which the stock will be rebuilt.	50 years (or 2049)	The median rebuilding year for a specified probability.
T_{MIN}	The time needed to rebuild the stock in the absence of fishing, with a 50% probability.	41 years (or 2040)	The time the stock would be rebuilt in the absence of fishing with at least a 50% probability.
T_{MAX}	The maximum allowable rebuilding time under National Standard guidelines. If T_{MIN} is less than ten years, then T_{MAX} equals ten years. If T_{MIN} is equal to or greater than ten years than T_{MAX} equals T_{MIN} plus one mean generation time.[7/]	58 years (or 2057)	The time needed to rebuild the stock with at least a 50% probability.
Mean Generation Time	A measure of the time needed for a female to replace herself with an equivalently productive female.	17 years	Include explicit formula.
P_{MAX}	The estimated probability of reaching T_{MAX}, may not be less than 50%.	52%	P_{MAX} must remain >50%.
Rebuilding Harvest Control Rule	The harvest control rule that will be followed to rebuild a stock in for a given P_{MAX} and T_{TARGET} years. A harvest control rule associates a given stock size (or stock size proxy) with a given level of fishing mortality and a given level of potential harvest.	E = 0.27	A constant harvest rate sufficient to rebuild by T_{TARGET} with probability P_{TARGET}

7/ This formula is derived from Magnuson-Stevens Act language, which states that stocks will be rebuilt within ten years "except in cases where the biology of the stock of fish, other environmental conditions, or management measures under an international agreement in which the United States participates dictate otherwise" (Sec 304(e)(4)(a)(ii)).

TABLE 2-2. Management measures that could be detailed in rebuilding plans mentioned in the FMP, MSA, and/or identified through scoping. The fixed and flexible specifications are exemplary and do not apply to any actual rebuilding plan or overfished stock.

Element	Description	Example of a Fixed Specification	Example of a Flexible Specification
Allocation	MSA §304(E)(4)(b)); Allocations or allocation priorities for overfished species where specific allocations or allocation priorities have not already been specified under the procedures of the FMP or in the FMP. NOTE: Under other Options 1a-1d specific allocations are specified under existing FMP provisions or the allocation framework and implemented in conjunction with the annual process for setting OY.	"A specified percentage of the OY will be allocated to limited entry trawl."	"Limited entry trawl fisheries will be given preference for available OY"
Bycatch	**Include consideration** of the • the **adequacy of information** on bycatch and bycatch mortality. Measures needed to acquire the bycatch information necessary to adequately implement the harvest control rule may be considered as part of the rebuilding plan or in a separate plan pr regulatory amendment. Adopt risk averse harvest levels sufficient to account for uncertainty about bycatch. • the need for management measures to **minimize bycatch** and minimize the mortality of unavoidable bycatch as part of the rebuilding plans. Measures needed to minimize bycatch or the mortality of unavoidable bycatch may be considered as part of the rebuilding plan or in a separate plan or regulatory amendment.	"Finfish excluders must be used by the shrimp trawl fleet."	"Bycatch will be minimized through future gear modifications."
Habitat	Include specific habitat protection measures.	A specified portion of EFH for an overfished species is closed to fishing.	"Measures to minimize impacts to overfished species' habitat will be evaluated."
Closed Areas	Include consideration of the contribution areas closed to groundfish fishing might make to rebuilding the stock (closed areas could range in extent to restricting all fishing, i.e. no-take marine reserves). Include such measures in the plan as appropriate.	A marine reserve will be created in an identified area.	"Marine reserves will be evaluated as part of a species' rebuilding strategy."

2.1.2 Issue 2- The Process For Periodically Reviewing Rebuilding Plans

Although the Magnuson-Stevens Act requires the Secretary review rebuilding plans at least every two years (§304(e)(7)), an equivalent obligation is not assigned to the councils. Nonetheless, periodic Council review is advisable because changing environmental conditions and unanticipated events make it unlikely that overfished stocks will rebuild precisely to the trajectory that is forecast at the outset of the rebuilding period. Periodic reviews allow the Council to decide if rebuilding measures need to be modified, which would likely entail an FMP or regulatory amendment, or both, depending on the options chosen above. Issue 3 is closely related to the periodic review process because options for the standards triggering a revision are outlined.

Option 2a **The Council reviews rebuilding plans at least every two years (status quo).** Currently, the FMP states "Rebuilding plans will be reviewed periodically, at least every two years, and the Council may propose revisions to existing plans at any time...." For the purposes of the status quo this is interpreted as Council review. Although not explicitly stated in the FMP, for this analysis it is assumed that rebuilding plans are reviewed with respect to goals 1-5 defined in Section 5.3.6.1 of the current FMP. (Section 4.5.3.1 under the revisions proposed in Appendix A.) These goals are:

(1) Achieve the population size and structure that will support the maximum sustainable yield within the specified time period.
(2) Minimize, to the extent practicable, the social and economic impacts associated with rebuilding, including adverse impacts on fishing communities.
(3) Fairly and equitably distribute both the conservation burdens (overfishing restrictions) and recovery benefits among commercial, recreational and charter fishing sectors.
(4) Protect the quantity and quality of habitat necessary to support the stock at healthy levels in the future.
(5) Promote widespread public awareness, understanding and support for the rebuilding program.

Option 2b **(Council-preferred). The Council reviews rebuilding plan goals 2-5 every two years, but goal 1 only with new stock assessments.** As with option 2a, rebuilding plans are reviewed at least every two years to determine the success of the management measures in meeting rebuilding plan goals 2-5 defined in Section 5.3.6.1 of the FMP. New stock assessment data will be used to determine the success of the management measures in meeting the rebuilding plan goal 1. The Council may propose revisions to existing plans at any time, although in general this will occur only during the annual/biennial management process. Any revisions to the rebuilding plan must also be approved by NMFS.

Option 2c **The Council reviews rebuilding plan goals 2-5 every two years; goal 1 is reviewed after stock assessments conducted according to a schedule described in the rebuilding plan.** This is the same as Option 2b except that a schedule for stock assessments is specified in the rebuilding plan and driven by the stock dynamics. For example, more frequent reviews and assessments could be conducted for more productive stocks. The schedule is also structured so that stock assessments and rebuilding plan reviews occur more often as T_{TARGET} draws closer.

Option 2d **The Council reviews rebuilding plan goals 2-5 every two years; goal 1 is reviewed after stock assessments conducted according to a pre-specified schedule described in the FMP.** This is the same as the preceding option except the FMP would specify the following assessment schedule for all overfished stocks: every four years when T_{MAX} is 20 years or more away and then every two years until the stock is rebuilt.

Option 2e **The Council will defer review to the Secretary.** The Council may propose revisions to existing plans at any time, but these must be approved by NMFS. Each year the Council will compare actual harvest mortality to the harvest mortality goals identified in the rebuilding plan. They will also evaluate progress in rebuilding the stock biomass to the MSY level after each new stock assessment. This would be described in annual SAFE documents and the ongoing social and economic impacts of harvest policies necessary to rebuild overfished species would be evaluated

in aggregate as part of annual specification of harvest regulations, which is supported by a NEPA analysis. The SAFE document should assist the Secretary in conducting Magnuson-Stevens Act-mandated two-year reviews (§304(e)(7)). A draft of any Secretarial review will be provided to the Council so they can make comments before it is finalized.

For options 2b, 2c, 2d, and 2e the Council's annual SAFE document will provide (1) the most recent information available on the best estimate of total fishing mortality for comparison to target fishing mortality levels described in the rebuilding plan; (2) the most recent assessment of stock size compared to the expected stock size for the rebuilding trajectory; (3) information on allocation and the social and economic status of the fishery. As noted, this information, and the record of Council actions to protect habitat and promote public awareness of rebuilding programs, would also support the Magnuson-Stevens Act-mandated Secretarial review. If should be emphasized that any option mandating Council review does not preclude Secretarial review, which is mandated in the Magnuson-Stevens Act.

New assessments can result in better estimates of biological parameters or fisheries descriptors. Once incorporated into a new rebuilding analysis, this can result in a dramatic change in rebuilding parameters such as the estimated probability that a stock can rebuild in the time specified, in comparison to previous analyses. For example, as a result of the most recent canary rockfish assessment (Methot and Piner 2002) scientists concluded the stock was less productive (in terms of expected recruitment) than previously thought because of a new estimate of the steepness of the spawner-recruit curve. This in turn increased the estimated value for T_{MIN}, and thus other rebuilding parameters. In addition, a new estimate of selectivity (the size or age classes typically removed by fishing) for a given fishery or the removals allocated to different fisheries with different selectivity patterns can change the estimated rebuilding time even though total catch remains the same. Again citing the most recent canary rockfish assessment, if the estimated proportion of total catch taken by recreational fisheries increases, the target rebuilding year will be delayed because of the generally smaller size that recreational fishers take in comparison to commercial fisheries. (Fishery removals are usually expressed in weight units, such as metric tons. Population productivity, however, is partly a function of the number of individual fish that are, or have the potential to become, spawners. Since more smaller fish will make up a given unit of weight, more actual or potential spawners would be removed if the fishery captures smaller fish than if larger fish were caught.)

Long-term stock assessment schedules would be established under Option 2c and 2d. This approach would be difficult to implement because NMFS cannot commit resources to such a specific schedule over the long term.

The choice between these options will mainly affect administrative burden, and to a certain degree, the distribution of that burden among agencies. Under Options 2a through 2d, the Council would formally review rebuilding measures at least every two years; these reviews would provide much of the information needed by the Secretary for his Magnuson-Stevens Act-mandated biennial review. Although the Council would not conduct a formal review under Option 2e, the analyses and information resulting from the harvest specification process would allow the Council and the Secretary to evaluate rebuilding progress and performance. More frequent review would increase administrative burden; and if such reviews required more extensive revision of the FMP or regulations (depending on the options chosen under Issue 1), this too would result in a heavier workload.

2.1.3 Issue 3- Amending Rebuilding Plans and Adequacy of Progress

Issue 2 contemplates periodic reevaluation of rebuilding measures. It is expected the rebuilding plans would be revised (and necessary FMP or regulatory amendments made) when these periodic reviews reveal a significant discrepancy between current stock status (most likely expressed as the probability of achieving rebuilding within the target time period) and that projected in the original rebuilding plan or in earlier reviews. In most cases the harvest strategy can be adjusted during the annual specification process (or at any other time if necessary) so that rebuilding targets can be met, although this could also require an FMP or regulatory amendment (based on the option chosen under Issue 1). However, there may be times when new information results in a change to some other crucial parameter (B_0 for example), affecting a whole range of other parameters. In these cases the rebuilding plan would be revised, and the FMP and/or regulations amended

to change those elements incorporated therein. The options outlined below detail various standards that could be used to decide if such revisions and amendments are necessary.

Option 3a **No standards to evaluate rebuilding progress (status quo).** Currently, the FMP does not describe a standard to evaluate the adequacy of rebuilding measures and determine if rebuilding parameters or management measures need to be changed.

Option 3b **A standard based on a minimum P_{MAX} value.** If the probability of achieving T_{MAX} falls below 50% (the required minimum value), then progress will be considered inadequate and the harvest control rule must be adjusted to increase the probability of rebuilding within the maximum time to at least 50%. Other needed changes to rebuilding measures would also be considered. Depending on what options are chosen under Issues 1 and 2, FMP and/or regulatory amendments may be required.

Option 3c **A standard based on the specified P_{MAX} value.** This option is identical to option 3b except the probability of achieving T_{MAX} established in each species-specific rebuilding plan (as modified during previous reviews) is used as the standard. If the measured value is below this value then the procedures identified under option 3b would be implemented.

Option 3d **Rebuilding plans will be revised whenever new information from stock assessments or rebuilding analyses reveals a significant change in rebuilding parameters.** The Council, in consultation with the Scientific and Statistical Committee (SSC) and Groundfish Management Team (GMT), will determine on a case-by-case basis whether there has been a "significant" change in a parameter.

Option 3e **(Council-preferred) A specific standard for determining when progress has been adequate is established for each plan.** No generic standard is identified in the FMP for all overfished species. Instead, the FMP would require that each rebuilding plan identify such a standard from a list of possibilities based on the options outlined above.

Options 3b and 3c bracket a range of other possible policies; for example, a required rebuilding plan revision could be triggered by some other probability value, such as one halfway between the specified value (P_{MAX}) and the minimum value (50%). Generally, a standard that allows the probability to deviate significantly from the specified value would risk triggering a sudden, substantial change in the harvest policy with attendant disruptive effects on fisheries. For example, if a specified P_{MAX} of 80% declines over several years to a value below 50%, the required harvest policy change at that point would result in a sudden large reduction in that year's OY, with attendant effects on the fishery. On the other hand, this strategy, by giving relatively wide latitude for changes in P_{MAX}, would lessen the frequency of required revisions to the rebuilding plan (and attendant FMP and regulatory amendments), reducing administrative burden.

Options 3d and 3e would allow relatively more flexibility by giving the Council some control over when and whether to revise rebuilding plans. Option 3e emphasizes a procedural approach that relies on judgements made as part of the Council process. Like the choice of other more flexible components of a rebuilding process and standards framework, there is some risk the public will not trust these judgements. Option 3e maintains flexibility by allowing standards to better match the characteristics of a particular overfished stock.

These review standards are also related to Issue 1, since those options outline the procedural requirements in terms of elements incorporated into the FMP and/or regulations, for changing a rebuilding plan. Option 1b specifies a range of parameters in the FMP. The FMP would need to be amended based on the standard chosen under this issue. Under Option 3b and 3c, for example, the FMP would be amended if the rebuilding probability (P_{MAX}) fell below the relevant threshold. Options 1c and 1d imply more ongoing adjustment in management to achieve identified targets. Unless the target year is changed, it is almost certain that the harvest control rule would have to be changed after new stock assessments so that the stock will still rebuild by the identified target year. Since the target year and rebuilding probability are highly correlated (because both result from the same probability distribution), the standards identified in Options 3b and 3c, based on the rebuilding probability, may not come into play. If the stock is managed based on the target year by adjusting

the harvest control rule, then the rebuilding probability is also likely to stay close to the value originally specified in the rebuilding plan. Under Option 3d it is likely that the SSC and GMT would develop standards to determine what constitutes a "significant" change. These standards could, for example, further specify the circumstance under which the target year would be changed under Options 1c and 1d (the Council-preferred option). The application of any such standards must be based on the best available science, as required by National Standard 2 in the Magnuson-Stevens Act.

Generally, the choices reflected in these options represent tradeoffs between the rebuilding objectives, the social and economic needs of fishing communities, and benefits of the fishery to the nation. In developing rebuilding plans the Council chooses a harvest policy (harvest control rule) that accords with a given rebuilding time and probability. A determination that the rebuilding plan can be allowed to fall behind schedule so long as the probability of rebuilding in T_{MAX} is more than 50%, implies that administrative opportunity costs are sufficiently high and the short-term benefits to the community are likely to be sufficiently important that harvest levels specified in the control rule should be maintained as long as the minimum rebuilding standard is being met. (But as noted above, this approach could result in sudden large and disruptive changes in harvest policy.) In contrast, selection of a more rigid standard would entail frequent rebuilding plan revisions and FMP or regulatory amendments, implying the administrative opportunity costs of frequent revision and amendment are low enough and potential lost opportunity from not re-evaluating the rebuilding program (in terms of future returns to the fishery for example) are so high that rebuilding measures should be re-evaluated whenever stock increases fall behind schedule.

2.1.4 Issue 4- ESA Listed Species

Option 4a **No special provisions (status quo).** There are no special provisions for rebuilding plans for species listed under the Endangered Species Act.

Option 4b **(Council-preferred). ESA jeopardy standards or recovery plans take precedence if they establish a higher standard.** A jeopardy standard or recovery plan for an overfished stock listed under the ESA will supercede the rebuilding plan only if that standard is more restrictive than what would be required for that species under the Magnuson-Stevens Act. If the species were de-listed, but still not considered recovered under the Magnuson-Stevens Act and the original rebuilding plan, then that plan would again determine harvest policy and other management measures until the stock is fully rebuilt. After de-listing, the rebuilding plan may need to be revised to take into account the changed status of and new information about the overfished stock.

Under Option 4a (status quo), if a groundfish stock is listed, the Council might have to develop another plan amendment to address the listing and jeopardy standard or recovery plan. Before such an amendment was approved there could also be some uncertainty about how these species should be managed in the event of a listing. Option 4b anticipates the possibility that a groundfish species could be listed under the ESA and establishes a contingency for dealing with such an event. This option is similar to a provision in the Salmon FMP under which escapement goals for a particular stock are automatically replaced by the jeopardy standard or recovery plan when a stock is listed, except that measures under the Magnuson-Stevens Act would take precedence if they establish a higher standard than the ESA. Option 4b would reduce future administrative costs by obviating the aforementioned plan amendment and by clarifying procedures and processes in the event of a listing. This would facilitate quicker reaction by the Council to any requirements of any such jeopardy standard or recovery plan.

2.1.5 Summary of the Impacts of the Options

The environmental impacts of the options are evaluated in Chapter 4. The proposed action is procedural and, therefore, does not directly affect the natural environment. The direct impacts affect the management regime are evaluated in terms of administrative capacity, adaptive management, public participation, and rebuilding strategy. These direct impacts are summarized in Table 2-3.

TABLE 2-3. Summary of the direct impacts of the options on the management regime. (Page 1 of 1)

Options	Administrative Capacity	Adaptive Management	Public Participation	Rebuilding Strategy Considerations
Option 1a	Lowest impact.	Most flexibility of options.	Opportunities for public comment on strategic changes limited to Council process, and EIS if prepared.	Strategy not clearly defined. Targets relatively easy to change.
Option 1b	Greatest impact.	Least adaptive, unless FMP not amended to update specified parameters.	Opportunity for public comment during FMP amendment process	T_{TARGET} likely management target. Could be changed as part of FMP amendment updating parameter values, if sufficient analysis to support.
Option 1c	Moderate impact because adjustment of strategy part of biennial specifications process.	Very adaptive; harvest rate adjusted to rebuild by target year; opportunity to adjust target, if supported by analysis	Opportunity for public comment through notice and comment rulemaking, in addition to Council process, and EIS if prepared.	Manage to T_{TARGET} but could keep F constant in certain circumstances.
Option 1d	Same as Option 1c	Same as Option 1c	Same as Option 1c. Information in FMP allows public to gauge rebuilding success.	Same as Option 1c. Information in FMP allows tracking of changes in strategy.
Option 2a	Cursory review possible if no major issues.	Easier to respond to changing conditions.	Reviews by advisory bodies, Council subject to public comment.	N/A
Option 2b	Review linked to goals, could require more scrutiny than status quo.	Most adaptive because stock status review tied to need assessment.	Public scrutiny reduced because stock status review less frequent than 2 years.	N/A
Option 2c	Same as Option 2b	Less adaptive than status quo and Option 2b.	Same as Option 2b.	N/A
Option 2d	Less burden if status quo assessments more frequent than 2/4 years.	Least adaptive option.	Least opportunity for public review, except Option 2e	N/A
Option 2e	Least burden on Council, but shifted to NMFS.	Neutral effect.	Least opportunity for public review	N/A

TABLE 2-3. Summary of the direct impacts of the options on the management regime. (Page 1 of 2)

Options	Administrative Capacity	Adaptive Management	Public Participation	Rebuilding Strategy Considerations
Option 3a	Lack of standards could increase burden if process more controversial.	Lack of benchmarks not adaptive.	Process less transparent without standards.	No decision framework for adjusting targets.
Option 3b	Could increase burden if difficult to implement, controversial.	Less flexibility than Option 3d; benchmark "floor" provides flexibility, but could result in abrupt change in OYs.	Benchmark allows public to evaluate rebuilding progress.	Benchmark only relevant in limited circumstances.
Option 3c	More frequent, but smaller adjustments in harvest rate results in burden less or equal to Option 3b.	More adaptive than Option 3b because adjustments more frequent.	Same as Option 3b	Benchmark reached more frequently than Option 3b, but limited use under constant T_{TARGET} strategy.
Option 3d	Likely to increase GMT and SSC workload in comparison to Options 3b and 3c.	More flexible than Options 3c and 3d, adaptiveness depends on development of benchmarks.	If GMT, SSC deliberations not transparent could cause mistrust.	Easier to develop standards consistent with rebuilding strategy.
Option 3e	Adds to work in developing rebuilding plans, but could reduce need for changes later on if generic standards do not match specific stock circumstances.	Most adaptive if pre-specified benchmarks more appropriate than "ad hoc" benchmarks developed under Option 3d	Same as Option 3b, 3c.	Includes all considerations outlined for other Issue 3 options.
Option 4a	Potential future workload greater than Option 4b.	See below.	Opportunity to comment on adoption of ESA provisions in Amendment 16-1.	N/A
Option 4b	Potential future workload less than Option 4a.	Little effect since ESA mandates apply no matter what FMP states.	Opportunity to comment on future amendment to incorporate ESA considerations.	N/A

2.2 Summary of Minor Technical Additions, Corrections and Changes to the FMP

As noted at the beginning of this chapter, various changes will be made to the FMP as part of this amendment that are not substantiative in the sense of affecting fishery management policies, procedures or measures. They are, therefore, categorically excluded from analysis based on the criteria established in Section 6.03.a.3(b)(2) of NAO 216-6, and 40 CFR 1500.4(p), 1508.4 and other sections of CEQ regulations. As noted above, NMFS has prepared a memo to file providing a rationale for this categorical exclusion. These proposed changes are summarized here and documented in Appendix A, which contains the amendatory language.

Goal 1 and Objective 3, related to overfishing and rebuilding are amended to better-reflect the intent of the Magnuson-Stevens Act.

The species list in Section 3.1. of the FMP, species managed by this FMP, is not consistent with the groundfish species list in the annual specification and management measures (FR 67 10490; March 7, 2002) or the list at 50 CFR 660.302. Misspellings are corrected and the following rockfish are specifically identified: chameleon (*Sebastes phillipsi*), dwarf-red (*Sebastes rufianus*), freckled rockfish (*Sebastes lentiginosus*), halfbanded (*Sebastes semicinctus*), pinkrose (*Sebastes simulator*), pygmy (*Sebastes wilsoni*), swordspine (*Sebastes ensifer*), widow (*Sebastes entomelas*), yelloweye (*Sebastes ruberrimus*) yellowmouth (*Sebastes reedi*), and yellowtail (*Sebastes flavidus*).

The terms “maximum fishing mortality threshold” (MFMT) and “minimum stock size threshold” (MSST) are used in the National Standard Guidelines and are intended for use as benchmarks to decide if a stock or stock complex is being overfished or is in an overfished state. The terms used to describe these same thresholds in the FMP are different from those used in the National Standard Guidelines (i.e., MFMT is the same as the F_{MSY} control rule described in the FMP and MSST is the same as the overfished/rebuilding threshold described in the FMP.) To address consistency in terminology, the equivalent terms are defined in Sections 4.1 and 4.4 of the FMP.

The National Standard Guidelines suggest the annual SAFE document contain a description of each stock or stock complex (50 CFR 600.315 (e)(3)). Because the MFMT and MSST are important benchmarks used to determine if overfishing has occurred or if a stock or stock complex is in an overfished state, Section 5.2 of the FMP, will state the SAFE document list the MFMT and MSST for stocks or stock complexes to be listed in SAFE documents. In addition, the last paragraph of Section 5.2 regarding the SAFE document availability and completion schedule is out of date and does not reflect the SAFE document schedule for 2002 and beyond. This language is changed to reflect the current schedule.

Sections 4.2, 4.3.1, and 4.5.1 of the FMP list, summarize and/or reference the F_{MSY} proxies adopted in 1998. The 1998 values are used throughout these sections as examples in the describing F_{MSY} proxies. In spring 2000, the Council’s SSC sponsored a workshop to review the Council’s groundfish exploitation rate policy. For 2001 and beyond, the Council adopted the SSC’s new recommendations for harvest policies of: $F_{40\%}$ for flatfish and whiting, $F_{50\%}$ for rockfish (including thornyheads) and $F_{45\%}$ for other groundfish such as sablefish and lingcod (66 FR 2338, January 11, 2001). The 1998 F_{MSY} proxy values used as examples in the FMP are updated to reflect the Council's current policy.

References to an at-sea observer program in Sections 4.3.1.3, 4.4.2, and 4.6 indicate that no observer program exists from which data are available to upgrade stock assessments and evaluate overfishing. This text is outdated and is updated to reflect the implementation of an at-sea observer program in 2001. Section 6.5.1.2 does not indicate the groundfish observer program is mandatory. The sentence “The Regional Administrator may implement an observer program through a Council-approved federal regulatory framework” is changed to “The Regional Administrator will implement...” to indicate the current observer program is mandatory.

Chapter 4 (Section 4.6 as amended, see Appendix A) discusses Council use of the mixed stock exception for setting OYs. This discussion is revised to make it consistent with the criteria described in the National Standard Guidelines (40 CFR 600.310(d)) for invoking the mixed stock exception.

Although Chapter 5 is entitled "Specification and Apportionment of Harvest Levels," and describes the annual management process, it includes numerous references to the development of rebuilding plans, which will not be on an annual cycle. Additionally, discussion of some topics is spread through numerous sections. Currently, Chapter 4 is a one-page chapter in which optimum yield is discussed in general terms while the considerations and constraints that go into establishing OYs are specified in Chapter 5. A reorganization of Chapters 4 and 5 will (1) place in Chapter 4 all considerations and constraints that go into establishing OYs, including the process and standards for establishing rebuilding plans; (2) place all provisions related to the annual/biennial management process in Chapter 5; and (3) reorganize the sections to construct a more concise document.

The Council may either (1) not approve these changes to the FMP, which would maintain the status quo, or (2) approve any or all of these changes:

(a) Revise the list of species managed under the FMP.
(b) Address differences in the use of the terms MFMT and the minimum stock size threshold (MSST) and the National Standards Guidelines.
(c) Change SAFE document Section 5.2 to include a description of the MFMT and MSST.
(d) Update last paragraph of Section 5.2 regarding the SAFE document availability and completion schedule.
(e) Update Sections 4.2, 4.3.1, and 4.5.1 of the FMP to include the Council adopted the SSC's new recommendations for harvest policies of: $F_{40\%}$ for flatfish and whiting, $F_{50\%}$ for rockfish (including thornyheads) and $F_{45\%}$ for other groundfish such as sablefish and lingcod.
(f) Update the references to an at-sea observer program in Sections 4.3.1.3 , 4.4.2, 4.6, and 6.5.1.2; and
(g) Reorganize Chapters 4 and 5 to produce a more concise document.