Final Environmental Assessment/ Regulatory Impact Review/ Final Regulatory Flexibility Analysis: Groundfish Retention Standard Program for the non-AFA Trawl Catcher Processing Sector

Under Amendment 79 to the Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area

Prepared for the North Pacific Fishery Management Council
National Marine Fisheries Service
and for Secretarial Action

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Abbreviations and Acronyms

ABC	Allowable biological catch
ADF&G	Alaska Department of Fish and Game
AFA	American Fisheries Act
BSAI	Bering Sea and Aleutian Islands
CEA	Cumulative Effects Analysis
CEQ	Council on Environmental Quality
CEY	Constant exploitation yield
CFR	Code of Federal Regulations
CG	Central Gulf of Alaska
CP	Catcher processor
CPUE	Catch per unit of effort
CRP	Comprehensive Rationalization Program
CV	Catcher vessel
DAP	US Domestic processors
EA	Environmental Assessment
EA/RIR/IRFA	Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis
EEZ	Exclusive economic zone
EFH	Essential fish habitat
EG	Eastern Gulf of Alaska
EIS	Environmental impact statement
EO	Executive Order
ESA	Endangered Species Act
FMP	Fishery management plan
FONSI	Finding of no significant impact
FR	Federal Register
FRFA	Final regulatory flexibility analysis
GOA	Gulf of Alaska
GRS	Groundfish retention standard
IBQ	Individual bycatch quotas
ICA	Incidental catch allowance
IFQ	Individual fishing quota
IRFA	Initial regulatory flexibility analysis
IR/IU	Improved retention and improved utilization
JVP	Foreign processors utilizing US fishing vessels
LLP	License Limitation Program
LOA	Length overall
MMPA	Marine Mammal Protection Act
MRA	Maximum retainable allowance
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MT	Metric tons

NEPA	National Environmental Policy Act
NOAA Fisheries	Formerly National Marine Fisheries Service (NMFS)
NOAA	National Oceanic and Atmospheric Administration
NOAA GC	National Oceanic and Atmospheric Administration General Counsel
NPFMC or Council	North Pacific Fishery Management Council
OFL	Overfishing levels
PRR	Product recovery rate
PSC	Prohibited species catch
PSEIS	Alaska Groundfish Fisheries Final Programmatic Supplemental Environmental Impact Statement
RFA	Regulatory Flexibility Act
RIR	Regulatory Impact Review
SAFE	Stock Assessment and Fishery Evaluation
SBA	U.S. Small Business Administration
TAC	Total allowable catch
TALFF	Foreign fishing vessels
USFWS	U.S. Fish and Wildlife Service
WG	Western Gulf of Alaska
Sectors/Vessels/Facilities	
APAI-SP	Alaska Peninsula- Aleutian Islands shore plant
BSP-SP	Bering Sea pollock shore plant
FT-CP	Fillet trawl catcher processor
HT-CP	Head and gut trawl catcher processor
ST-CP	Surimi trawl catcher processor
TCV BSP ≥125	Bering Sea pollock trawl catcher vessels ≥ 125 feet in length
TCV BSP 60-124	Bering Sea pollock trawl catcher vessels 60 to 124 feet in length
TCV Div. AFA	Diversified AFA-eligible trawl catcher vessels
L-CP	Longline catcher processor
P-CP	Pot catcher processor
Regions	
APAI	Alaska Peninsula and Aleutian Islands Region. Includes the Aleutians East Borough and the Aleutians West Census Area.
WAIW	Washington Inland Waters Region. All counties bordering Puget Sound and the Strait of Juan de Fuca, including Clallum, Island, Jefferson, King, Kitsap, Mason, Pierce, San Juan, Skagit, Snohomish, Thurston, and Whatcom

Executive Summary

This document is an Environmental Assessment/Regulatory Impact Review/Final Regulatory Flexibility Analysis (EA/RIR/FRFA) for a final rule authorized by Amendment 79 to the Bering Sea / Aleutian Islands (BSAI) Groundfish Fishery Management Plan (FMP). The action implements a groundfish retention standards (GRS) for head and gut trawl catcher processors operating in the BSAI that are not listed American Fisheries Act (AFA) catcher/processors at 50 CFR 679.4(l)(2)(I). These unlisted catcher processing vessels are referred to as (HT-CPs) in this analysis. Only HT-CP vessels 125 ft. and greater harvesting groundfish in the BSAI are regulated by this action. In 2004, there were 16 active HT-CP 125 ft. and greater, LOA. The administrative record of the Council discussion concerning Amendment 79 states that "Fishery management is about achieving conservation objectives, achieving social and economic objectives, and meeting the letter of the law and the intent and spirit of the law...Our intention, and our purpose and our need here, is to address the multiple requirements of the Magnuson-Stevens Act to balance conservation goals and reduce bycatch, and still maintain the opportunity to go out and meet other considerations such as having an economic fishery" (NPFMC, 2003b).

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) authorizes the Council and Secretary of Commerce to reduce discards for conservation and management purposes. Prior to Congress passing the Sustainable Fisheries Act (the SFA) in 1996, the Council and Secretary adopted significant bycatch and discard reduction management actions. One of these actions was a ban on pollock roe stripping which was implemented in 1991. Another action was Amendment 49 to the BSAI Groundfish FMP (IR/IU), which was implemented on January 3, 1998. That action required all vessels fishing for groundfish in the BSAI management area to retain all pollock and Pacific cod beginning January 3, 1998 and retain all rock sole and yellowfin sole beginning January 1, 2003. From the industry's perspective, the roe stripping ban and Amendment 49 were found to be costly. Nevertheless, the roe stripping ban and Amendment 49 were approved based on the authority of the MSA to limit wasteful practices. The final rule for Amendment 49 asserts, with respect to forgone revenue to the pollock fishery, that "this cost would be offset by the benefits of increased protection of the ecosystem and the future productivity of the pollock stocks."

In 2001, the Council determined that the head and gut trawl catcher processor sector would not be able to fully meet IR/IU flatfish retention requirements under Amendment 49, so they explored the option of relaxing the 100 percent retention requirement for rock sole and yellowfin sole through self- reported retention rates. However, this option was considered to be difficult to enforce without independent reporting and verification of retention rates. In October 2002, the NPFMC recommended approval of Amendment 75 to the BSAI Groundfish FMP, delaying implementation of IR/IU flatfish regulations for the BSAI until June 1, 2004. At the same time, the Council initiated four trailing amendments with the expectation that these amendments could augment or replace IR/IU regulations for flatfish prior to the end of the delay period. However, Amendment 75 was only partially approved by the Secretary. The delay of IR/IU flatfish implementation in the BSAI was approved, but the ending date (June 1, 2004) for the delay was not approved. The practical effect of partially approving Amendment 75 was that it delayed indefinitely the flatfish IR/IU program. While the GRS was an alternative being considered by the Council during their final action on Amendment 75, the Council proposed further analysis of Amendment 79 and the GRS, after it became aware of the the partial approval of Amendment 75.

The purpose of the GRS is to create a retention standard for groundfish in the BSAI that would minimize discards, while maintaining a viable multi-species trawl fishery. In developing GRS alternatives, the Council adopted the following problem statement:

> The Council's primary concern is to maintain a healthy marine ecosystem to ensure the long-term conservation and abundance of the groundfish and crab resources.

> Recognizing the importance of both the mandate of the Magnuson-Stevens Fishery Conservation and Management Act to reduce bycatch (discards)to the extent practicable, the US public's perception that discards in the BSAI are excessive, the economic importance of these groundfish fisheries, and the dependence of the participants on these fisheries, the Council is committed to reducing bycatch, minimizing waste, and improving utilization of fish resources to the extent practicable in order to provide the maximum benefit to present generations of fishermen, associated fishing industry sectors, communities, and the nation as a whole. Finally, the Council acknowledges the fact that any solution to the problem of reducing discards must take into account the ability of NOAA Fisheries to monitor discards and adequately enforce any regulations that are promulgated.

To meet Council and Magnuson-Stevens Act goals of reducing bycatch, minimizing waste, and improving utilization of fish resources to the extent practicable, the Council initiated Amendment 79 in October 2002 to establish a minimum groundfish retention standard. A proposed rule was published on June 16, 2005 accompanied by an EA/RIR/IRFA that examined three new alternatives for a GRS. The FMP amendment for Amendment 79, was aproved by the secretary on August 31, 2005. Alternatives developed in this final EA/RIR/FRFA for the GRS are the status quo/no action (Alternative 1), a less restrictive GRS of 70 percent for HT-CP vessels ≥ 125' LOA (Alternative 2), a more restrictive GRS of 85 percent for January through May and 90 percent during the remainder of the year for all catcher processors ≥ 125' LOA (Alternative 3), and a program that gradually increases the GRS over a four year period from 65 percent in 2007 to 85 percent in 2010 for HT-CP trawl catcher processors ≥ 125' LOA (Alternative 4). In June 2005, the Council recommended to adjust the starting date of the GRS to 2007, increasing the rate annually to 85% in 2010.

The analysis for this action shows that the HT-CP sector has had the lowest retention rate in the BSAI among all sectors dating back to at least 1995. For example, the HT-CP sector in 1995 had an overall retention rate of 59 percent. Six years later, the retention rate for the HT-CP sector improved to 75 percent, but was still well below the other sectors operating in the BSAI. With the exception of the longline catcher processor sector (L-CP), which had a retention rate that ranged between 84 to 86 percent during the 1995 to 2001 period, all other sectors in the BSAI had retention rates greater than 90 percent. Between 2003 and March 2005, the average groundfish retention rate for the HT-CP sector was at 70 percent. In the first three months of 2005 it has increased to 78 percent. For HT-CP vessels ≥ 125' LOA, the groundfish retention percentage was at 73%.

Monitoring requirements for each vessel managed under the GRS would include flow scales and observer stations and observation of every haul. Improvements to management precision may occur with these additional observer, observer station, and flow scale requirements. It is anticipated that having flow scales on vessels subject to the GRS would provide managers with more precise haul specific estimates (or verifiable measures) of total weight.

In recognition of the relative balance between benefits of reducing discards and compliance costs, the Council selected Alternative 4 over Alternatives 1, 2, and 3. Alternative 4 is a focused alternative that responds specifically to the problem with discards of flatfish by the HT-CP sector. In contrast, the improved retention rates under Alternative 2 would be realized through reductions in regulatory pollock discards. Alternative 3 would impose the substantial compliance costs of observers and scales on all catcher processors ≥ 125' LOA operating in the BSAI even though discard reductions would be limited to the HT-CP and L-CP sectors.

The Council recommended to the Secretary that the GRS start at 65 percent in 2005 and increase annually to 85 percent in 2008. In June 2005, the Council commented that the the GRS should be implemented at 65 percent in 2007. This was because the Council did not intend to implement the GRS on a date certain basis, and due to their concern that there would be inadequate time for members of this fleet to purchase and install the required monitoring equipment before the opening of the BSAI groundfish fisheries. This phase in period allows time for those vessels with lower retention rates to adjust their operations in order to accommodate the higher retention rates. Under the preferred alternative only HT-CPs ≥ 125' LOA would be required to comply with the GRS—which would be determined and enforced at the end of the year. In 2002, the overall groundfish retention rate of HT-CP vessels ≥ 125 ft. was 71 percent. Provided these catch and retention rates are maintained, the 2007 GRS rate of 65 percent proposed by the Council would have only a minimal effect on the fleet—only three vessels would need to improve their retention rates. Between 2002 and the first half of 2007 the overall groundfish retention rate for HT-CP vessels ≥ 125 ft. increased to 72 percent, resulting in 7 vessels that would be required to increase retention rates to meet the 2008 GRS proposed by the Council. However, given the fleet average of 71 percent, nearly all of the regulated vessels would need to improve their retention rate to meet the 2010 GRS of 85 percent. Table 1 shows the additional tons that would have to be retained to meet the phased-in standards—by 2010 nearly 20,000 additional tons would be retained.

Table 1. Vessel Based Impacts of GRS Percentages in the GRS Preferred Alternative

Year	2007	2008	2009	2010
GRS Percentage	65	75	80	85
Number of HT-CP ≥ 125' LOA Below GRS in 2002	3	5	8	13
Additional Retained Tons Needed to Meet GRS (1,000 mt)	0.9	6.0	10.5	19.5

Source: Sector Profile Database Developed by Northern Economics from Blend Data supplied by NOAA Fisheries-AFSC.

In 2004, there were 16 active HT-CP ≥ 125' LOA. NOAA Fisheries estimates that 7 of these 16 vessels would have to install approved marine flow scales and observer stations. Approved marine flow scales are estimated to cost approximately $50,000. Equipment to outfit an observer station, including a motion-compensated platform scale to verify the accuracy of the total catch weight flow scale, would cost between $6,000 and $12,000. Installation costs are more difficult to estimate. Installation costs for the scales and observer stations could range between $20,000 to over $100,000. The requirement that every haul be observed will most likely necessitate the deployment of one additional observer aboard each of the 16 vessels.[1] It is estimated that the annual cost of an additional NOAA Fisheries-certified observer would be approximately $82,000 per vessel.

While the costs of the GRS program to HT-CP ≥ 125' LOA will be higher than those associated with the status quo, the Council designed the GRS to minimize costs by enforcing higher retention rates only on the portion of this sector, with the lowest retention rates. The Council, in June 2003, stated that the proposed action would reduce costs to the fishing industry relative to the proposed action under Amendment 49, which was approved by the Secretary in 1997. Amendment 49 would have required all vessels fishing for groundfish in the BSAI management area to retain all rock sole and yellowfin sole beginning January 1, 2003. "The costs [under Amendment 79] are far less than what were originally... considered [under Amendment 49], and we've tried to adjust the program to minimize those costs" (Chairman David Benton, NPFMC, June 2003).
The preferred alternative includes features to mitigate costs of the GRS to the HT-CP sector. For example, HT-CP vessels less than 125 feet LOA are exempted from the GRS. These vessels have "specific and

[1] A vessel could choose not to carry two observers, but it would have to file a fishing plan with NOAA Fisheries that shows it will fish in a way that will allow the single observer to sample 100 percent of the hauls. Typically such a plan requires that the vessel fish only 12 hour per day.

particular operational concerns" associated with the enforcement and monitoring requirements (NPFMC 2003b). Primary among these concerns are the additional costs to accommodate the processing space necessary for a flow scale and an observer station on board these smaller vessels. Exempting these under 125 ft. vessels is also intended to reflect the small contribution to catch and discards these smaller vessels make, compared with greater than or equal to 125' HT-CP vessels. The Council also chose to phase in the GRS program which allows the affected vessels to adjust to the program requirement.

There is little quantitative information available on how fishery harvesting and discard practices in the BSAI groundfish fisheries may impact subsistence, non-consumptive or non-use resource values. Only very limited data exist on the use of BSAI groundfish by native cultures in this region. There is no subsistence take of any of the groundfish species that are included in the definition of BSAI groundfish used in regulation.

There is no source of data on the preferences of citizens of the U.S. who have little or no involvement in the harvesting, use, or consumption of these fish species, to change BSAI discard practices. The costs and controversial status of some of the tools for collection of data on these non-consumptive and non-use preferences are significant. Nonetheless, the existence of preferences in the form of "non-consumptive" values are recognized both in economic literature and by NOAA Fisheries as relevant economic components in the determination of net national benefits for a fishery action.

The amount of North Pacific Groundfish discards has been identified by some environmental organizations both in Alaska and in other locations as a concern. NOAA Fisheries has no empirical data suggesting that many people would assign substantial non-consumptive or non-use values to these fish if they were left undisturbed in the ocean. The value of the discarded fish as a protein resource that could be used by hunger relief organizations also appears to be very limited.

There is no literature or data available demonstrating that these species, in the amounts being removed from the North Pacific, have a significant indirect value to the productivity of other species (e.g., providing prey for other living marine resources that do have use or non-use value). However, environmental interests note that the lack of data on these difficult to measure ecosystem effects does not justify the assumption of zero environmental impacts.

The range of anecdotal information and perspectives on the magnitude of discards from this sector is substantial, and difficult to analyze. As an example, some environmental interests point out that in recent years, discarded groundfish from the 24 to 26 vessels in the HT-CP sector exceed the entire domestic groundfish catch of a number of U.S. coastal states. Other interests point out that these discarded catches are small (on the order of a fraction of one percent) in comparison to the total groundfish catches in the North Pacific, and even less significant in comparison to the annual estimated biomass of groundfish in the North Pacific.

As a result of the different ways that these removals may be perceived, the resource values associated with the non-consumptive, or non-use attributes of discards of these fish, in the amounts currently occurring in the groundfish fisheries are best described as indeterminate, though the increasing level of interest in fishery bycatch reduction and discards, nationally and regionally, suggest that the reduction of discards has some level of non-market or non-consumptive benefits for some unknown number of people.

Recognizing the potential costs of the GRS action on the HT-CP sector, the Council has expressed that reducing discards by the HT-CP fleet will contribute to a positive benefit for the Nation. The Council has stated that it is committed to reducing discards, minimizing waste, and improving utilization of fish resources to the fullest extent practicable in order to provide the maximum benefit to present and future generations of fishermen, associated fishing industry sectors, communities, consumers, and the nation as a whole.

1.0 Introduction

This document is an Environmental Assessment/Regulatory Impact Review/Final Regulatory Flexibility Analysis (EA/RIR/FRFA) for the final rule implementing Amendment 79 to the Bering Sea / Aleutian Islands (BSAI) Groundfish Fishery Management Plan (FMP). The action proposes to implement groundfish retention standards (GRS) for HT-CP vessels harvesting groundfish in the BSAI. The preferred alternative will phase in GRS for all fisheries in the BSAI beginning in 2007, however the regulation enforcing the amendment will be imposed only on catcher processors (CPs) that are not qualified to fish for pollock under the American Fisheries Act. In 2007, the GRS will require that at least 65 percent of all groundfish harvested be retained. In subsequent years, the rate will increase to 75 percent in 2008, 80 percent in 2009, and, finally, 85 percent in 2010.

An environmental assessment (EA) is required by the National Environmental Policy Act of 1969 (NEPA) to determine whether the action considered will result in a significant impact on the human environment. If the action is determined not to be significant based on an analysis of relevant considerations, the EA and resulting finding of no significant impact (FONSI) would be the final environmental documents required by NEPA. If the EA determines that the proposed action is a major or significant action, then an environmental impact statement (EIS) must be prepared.

NEPA requires that an EA discuss 1) the need for the proposed action; 2) the proposed action and alternatives; 3) the probable environmental impacts of the proposed action and alternatives; and 4) the agencies and persons consulted during preparation of the EA. A description of the purpose and need for the proposed action as well as a description of alternatives which may address the problem are included in **Section 1.0** of this document. **Section 2.0** contains a description of the affected human environment, and **Section 3.0** contains information on the impacts of the alternatives on that environment, specifically addressing potential impacts on endangered species and marine mammals and cumulative effects.

Executive Order 12866 (E.O. 12866) requires preparation of a Regulatory Impact Review (RIR) to assess the costs and benefits of available regulatory alternatives, in order to determine whether a proposed regulatory action is "significant" as defined by the order. **Section 4.0** contains a systematic description and analysis of the economic and social impacts of each of the alternatives.

Section 5.0 addresses the requirements of other applicable laws, including the MSA, Marine Mammal Protection Act, and Regulatory Flexibility Act (RFA), which includes the Final Regulatory Flexibility Analysis (FRFA) in Section 5.3. The RFA requires analysis of adverse impacts on small entities which would be directly regulated by the proposed action. The major goals of the RFA are to: 1) increase agency awareness and understanding of the impact of their regulations on small businesses, 2) require that agencies communicate and explain their findings to the public, and 3) encourage agencies to use flexibility and to provide regulatory relief to small entities. The preparation of a FRFA emphasizes predicting significant adverse impacts on small entities as a group, distinct from other entities, and on the consideration of alternatives that may minimize the impacts, while still achieving the stated objective of the action.

The references cited in this document are listed in **Section 6.0** a list of the preparers is provided in **Section 7.0**, and a list of government Agencies and personnel contacted is provided in **Section 8.0**. This document also contains two appendices:

- Appendix 1: Costs of Marine Scales for At-Sea Weighing of Catch
- Appendix 2: Summary of Issues Regarding Volumetric Estimates of Total Catch Weight in Multi-Species Fisheries
- Appendix 3: Product Recovery Rate Variability and GRS Enforcement Issues

1.1 Purpose of and Need for the Action

The purpose of the GRS is to create a standard for retention of groundfish for the BSAI groundfish fishery. The standard, which under the preferred alternative would be phased in through 2010, addresses the Council's solution to the problem of excessive groundfish discards in the BSAI. The GRS specifically addresses the MSA national standards to reduce discards to the extent practicable. Between 2000 and 2004, TACs for a number flatfish target species in the HT-CP sector have been fully utilized or even exceeded, highlighting the increasing scarcity of many discarded groundfish species. Approaching or exceeding a TAC may indicate that open access competition for available harvest is increasing. Discarding of species by some vessels that could be utilized by other vessels in the HT-CP sectors or other sectors is potentially inefficient and wasteful.

1.1.1 The Problem Statement

The following statement defines the problem the Council is addressing with the proposed and preferred alternatives.[2]

> The Council's primary concern is to maintain a healthy marine ecosystem to ensure the long-term conservation and abundance of the groundfish and crab resources. Recognizing the importance of both the mandate of the Magnuson-Stevens Fishery Conservation and Management Act to reduce bycatch (discards) to the extent practicable, the perception expressed by some members of the public that discards in the BSAI are excessive, the economic importance of these groundfish fisheries, and the dependence of the participants on these groundfish fisheries, the Council is committed to reducing bycatch, minimizing waste, and improving utilization of fish resources to the extent practicable in order to provide the maximum benefit to present generations of fishermen, associated fishing industry sectors, communities, and the nation as a whole. Finally, the Council acknowledges the fact that any solution to the problem of reducing discards must take into account the ability of NOAA Fisheries to monitor discards and adequately enforce any regulations that are promulgated.

1.1.2 Regulatory Background

One of the first actions by the Council to reduce bycatch and discards was a ban on pollock roe stripping which was implemented in 1991 (BSAI Amendment 14). During the Council process of reviewing this management action, the Council requested a legal opinion concerning the authority of banning roe stripping in time for its December 1989 Council meeting. Subsequently, a memorandum from the NOAA Office of General Counsel was written and submitted on December 1, 1989 that outlines the Council's authority to prohibit roe stripping and increase retention and utilization of pollock. The following summary is excerpted from the December 1, 1989 memorandum:

1. *There is authority under the Magnuson Fishery Conservation and Management Act to limit wasteful practices. Controlling wasteful practices is as legitimate a purpose as conserving a stock of fish or allocating fishing privileges. Requiring fuller utilization of a fishery resource should be justified as a means of achieving optimum yield.*

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[2]This problem statement was developed by analysts and is based on discussion of the Council during the development and approval of the alternatives and the proposed action.

2. *There are a multitude of conservation and management measures, directed at harvesting activities, available to eliminate or restrict practices such as roe stripping. These include seasons, quotas, gear requirements, discard restrictions, and catch limits.*
3. *There is also authority under the Act to limit wasteful practices by requiring at-sea processors to retain harvested fish rather than discarding them. At-sea processing is "fishing" subject to regulation under the Act.*
4. *There is authority – though not as clear-cut – to limit wasteful practices by requiring at-sea processors to utilize fish flesh for food products and fish meal. There have been no instances thus far of directly mandating what a processor does with legally possessed fish for purposes of full utilization.*
5. *There is no authority to limit wasteful practices by regulating on-shore processors, because on-shore processors can be regulated only indirectly as an incidence of managing "fishing."*

Later, in 1996, Congress passed the Sustainable Fisheries Act, which amended the Magnuson-Stevens Fisheries Conservation and Management Act and added three new national standards. One of the standards, National Standard 9, provides:

> *Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.*

The genesis of National Standard 9 is a national and international movement to reduce bycatch and discards. In general, unacceptable amounts of bycatch and discards are viewed as a waste of the ocean's resources given that many fish stocks are fully or over utilized. Congress felt that the continued current level of bycatch and discards of the Nation's ocean resources was unacceptable and must be reduced to an acceptable level. However, Congress, in drafting Sustainable Fisheries Act and National Standard 9, recognized that total elimination of discards and bycatch is an unrealistic goal because some minor levels of discards and bycatch are unavoidable consequents of rational decisions by the fishing industry. Congress took this into account when drafting language for National Standard 9. The House's version required minimization of bycatch "to the maximum extent practicable..." The House language implicitly acknowledges that bycatch may be unavoidable, but requires the Council to continue to look for innovative ways to reduce bycatch and discards in the Nation's fisheries.

Section 108 of the Sustainable Fisheries Act also states that all FMPs will "establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery, and include conservation and management measures that, to the extent practicable and in the following priority– (A) minimize bycatch; and (B) minimize the mortality of bycatch which cannot be avoided."

In addition, Section 313 of the Magnuson-Stevens Fishery Conservation and Management Act shows a willingness by Congress to levy fines on the industry for egregious bycatch issues. The Council may approve "a system of fines in a fishery to provide incentives to reduce bycatch and bycatch rates." The Council may also "provide allocations of regulatory discards to individual fishing vessels as an incentive to reduce per vessel bycatch and bycatch rates in a fishery."

Further insight on the purpose and procedures for implementing National Standard 9 are presented in 50 CFR, §600.350. The following sections are excerpted from §600.350:

> *General. This national standard requires Councils to consider the bycatch effects of existing and planned conservation and management measures. Bycatch can, in two ways, impede efforts to protect marine ecosystems and achieve sustainable fisheries and the full benefits they can provide to the Nation. First, bycatch can increase substantially the uncertainty concerning total*

fishing-related mortality, which makes it more difficult to assess the status of stocks, to set the appropriate OY and define overfishing levels, and to ensure that OYs are attained and overfishing levels are not exceeded. Second, bycatch may also preclude other more productive uses of fishery resources.

In addition, the regulation presents the priority of National Standard 9:

Minimizing bycatch and bycatch mortality. The priority under this standard is first to avoid catching bycatch species where practicable. Fish that are bycatch and cannot be avoided must, to the extent practicable, be returned to the sea alive. Any proposed conservation and management measure that does not give priority to avoiding the capture of bycatch species must be supported by appropriate analysis.

This same regulation also provides a list of criteria that Councils must consider in addressing net benefits to the Nation from bycatch reduction actions. These benefits should include negative impacts on affected stocks, incomes accruing to participants in directed fisheries in both the short and long term, incomes accruing to participants in fisheries that target the bycatch species, environmental consequences, non-market values of bycatch species, and impacts on other marine organisms.

In order to evaluate the conservation and management measures associated with bycatch reduction relative to National Standard 9 and other national standards, §600.350 provides the following criteria for consideration:

1. *Promote development of a database on bycatch and bycatch mortality in the fishery to the extent practicable.*
2. *For each management measure, assess the effects on the amount and type of bycatch and bycatch mortality in the fishery.*
3. *Select measures that, to the extent practicable, will minimize bycatch and bycatch mortality.*
4. *Monitor selected management measures.*

National Standard 5 also has some bearing in bycatch management actions. National Standard 5 provides:

Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

The standard does not restrict all management actions to the most efficient utilization of the fisheries resources, but rather the standard requires that efficiency be considered in determining utilization when practicable. As noted in 50 CFR §600.330, restrictive measures that lower the level of efficient utilization are permissible when they "contribute to the attainment of other social or biological objectives." In this particular case, a reduction of bycatch and discards can be pursued with efficiency as a consideration.

1.1.3 Council Action on Bycatch

In Alaska, a number of improvements in bycatch reduction have been implemented since the passage of the Sustainable Fisheries Act. A number of these improvements are cited by the National Marine Fisheries Service in the document, Implementing the Sustainable Fisheries Act, which was published in June 2003. In the document, it states that since 1992, the NPFMC has over time continued to move toward improving the precision of total catch measurements by replacing many of the volumetric measurements with scale weights. In the Community Development Quota and pollock cooperative fisheries, each vessel is required

to carry two observers. The document states that nearly 75 percent of all groundfish harvested today in the BSAI and GOA are weighed on certified scales overseen by NMFS certified fishery observers.

The NPFMC has also employed a number of different regulatory procedures for reducing bycatch and discards. A few of these procedures include bycatch limits for prohibited species, maximum retainable allowance, gear restrictions, season delays or time/area closures, a vessel incentive program, mandatory retention and increased utilization of pollock and Pacific cod, and voluntary industry initiatives.

In addition, several amendments addressing bycatch (not including IR/IU actions which are noted in the next section), since passage of the Sustainable Fisheries Act have been approved and implemented, including:

- Amendment 37, which implemented a trawl closure area in the Bristol Bay red king crab savings area, modified red king crab prohibited species cap limits and established trawl closure areas in nearshore Bristol Bay.
- Amendment 40, which established prohibited species caps for snow crab in trawl fisheries and a bycatch limitation zone
- Amendment 46, which modified allocation of Pacific cod by gear type and set trawl and hook-and-line gear halibut PSC mortality caps.
- Amendment 50, which allowed for donation of incidentally caught halibut to food banks.
- Amendment 59, which prohibits fishing in an area containing important fish habitat.
- Amendment 60, which prohibits non-pelagic trawl gear in Cook Inlet.

1.1.4 Council Action on IR/IU

The GRS is the latest in a series of actions dating back to 1988, that specifically address the issue of discards and utilization of groundfish. The remainder of this section summarizes these actions.

In 1988, the Council discussed a proposal that would have limited the ability of processors to utilize only the valuable roe of pollock during spawning season in winter and early spring. In 1989 and 1990, the roe stripping issue was revisited by the NPFMC and in 1991 a ban on roe stripping was implemented. The ban on roe stripping was to ensure that other products like fillets and surimi are produced from harvested pollock, thereby reducing discards. From an industry perspective, the ban on roe stripping was found to be costly. Nevertheless, the Council and the Secretary approved the ban based on its authority to limit wasteful practices under the MSA. The final rule asserts, with respect to forgone revenue to the pollock fishery, that "this cost would be offset by the benefits of increased protection of the ecosystem and the future productivity of pollock stocks."

In December 1994, during the process of addressing their comprehensive rationalization program (CRP), the NPFMC debated issues of bycatch and economic loss from discards in target fisheries and unanimously adopted a motion to develop a set of regulatory options for implementing an improved retention/improved utilization (IR/IU) program for BSAI groundfish fisheries. The NPFMC identified the BSAI rock sole and mid-water pollock fisheries as two subject fisheries for initial evaluation and proposed that commercial groundfish trawl fisheries be required to reduce discards by retaining species which have historically been bycatch.

At its December 1995 meeting, the NPFMC adopted a draft IR/IU problem statement for public review. That statement reads as follows:

> *In managing the fisheries under its jurisdiction, the North Pacific Fishery Management Council is committed to: (1) assuring the long-term health and productivity of fish stocks and other*

living marine resources of the North Pacific and Bering Sea ecosystem; and (2) reducing bycatch, minimizing waste, and improving utilization of fish resources in order to provide the maximum benefit to present generations of fishermen, associated fishing industry sectors, communities, consumers, and the nation as a whole.

The Council's overriding concern is to maintain the health of the marine ecosystem to ensure the long-term conservation and abundance of the groundfish and crab resources. As a response to this concern, a program to promote improved utilization and effective control/reduction of bycatch and discards in the fisheries off Alaska should address the following problems:

1. *Bycatch and discard loss of groundfish, crab, herring, salmon, and other non-target species.*
2. *Economic loss and waste associated with the discard mortality of target species harvested but not retained for economic reasons.*
3. *Inability to provide for a long-term, stable fisheries-based economy due to loss of fishery resources through wasteful fishing practices.*
4. *The need to promote improved retention and utilization of fish resources by reducing waste of target groundfish species to achieve long-term sustainable economic benefits to the nation.*

In May 1997, NOAA Fisheries completed an Environmental Assessment, Regulatory Impact Review and Initial Regulatory Flexibility Analysis (EA/RIR/IRFA) of the improved retention and utilization options identified by the NPFMC as Amendment 49 to the BSAI Groundfish FMP. At its September 1996 meeting the NPFMC adopted Amendment 49. Once again, the Council and the Secretary approved a management action that would increase the cost to the industry by reducing discards for the primary purpose of maintaining the health of the marine ecosystem to ensure the long-term conservation and abundance of the groundfish resource on the authority of the Magnuson-Stevens Fishery Conservation and Management Act. On January 3, 1998, Amendment 49 to the BSAI Groundfish FMP was implemented (62 FR 63880). The final rule requires all vessels fishing for groundfish in the BSAI management area to retain all pollock and Pacific cod beginning January 3, 1998 and retain all rock sole and yellowfin sole beginning January 1, 2003. In addition, the final rule establishes a 15 percent minimum processing standard with no limit on product form beginning January 3, 1998 for pollock and Pacific cod and establishes a 15 percent minimum processing standard with no limit on product form beginning January 1, 2003 for rock sole and yellowfin sole.

The potential negative impacts of IR/IU rules for flatfish on some sectors of the groundfish fisheries of the BSAI and GOA created the possibility that some entities currently participating in these fisheries might be compelled to discontinue their participation due to the economic burden the rules could place on their operations. The likelihood that the head and gut trawl catcher processors sector (HT-CP) would not be able to fully meet IR/IU flatfish rules became increasingly clear in 2000 during Council and industry deliberation on AFA processing sideboards. These sideboards would have protected non-AFA processors from AFA processors increasing their share of non-pollock fisheries. It was argued that, rather than limit AFA processors, it would be more practicable to provide relief from flatfish IR/IU to the HT-CPs.

In June and October 2001, the Council determined that pursuing AFA processing limits was infeasible, but the options to level the playing field for non-AFA processors by providing some form of relief from the impending implementation of IR/IU for flatfish remained on the table. Specifically, the Council address the concept of relaxing the requirement that 100 percent of IR/IU flatfish be retained. This option, while it could possibly have made IR/IU less onerous to the HT-CP fleet, was deemed not enforceable. At its June 2002 meeting the NPFMC developed a problem statement specifically to address the pending implementation of IR/IU regulations for the flatfish fisheries. This statement read as follows:

100 percent retention of rock sole and yellowfin sole (as currently scheduled) results in severe economic losses to certain participants in the fishery, while less than 100 percent retention of only these species is not enforceable.

In October 2002, the NPFMC approved Amendment 75 to the BSAI Groundfish FMP, delaying implementation of IR/IU flatfish regulations for the BSAI until June 1, 2004. The NPFMC also initiated four trailing amendments with the expectation that these amendments could augment or replace IR/IU regulations for flatfish prior to the end of the delay period. Amendment 80 (as modified at the April 2003 Council meeting) establishes sector allocations in the BSAI and facilitates the formation of a fishery cooperative for non-AFA trawl catcher processors. Amendment B creates flatfish bycatch (discard) limits for the flatfish fisheries. This final rule establishes a minimum groundfish retention standard (GRS). The Council also recommended Amendment D (renamed Amendment 72) which exempts GOA shallow water flatfish fisheries from flatfish retention if they maintain less than a 5 percent IR/IU flatfish bycatch rate from IR/IU flatfish regulations.

Amendment 75 was only partially approved by the Secretary—the delay of IR/IU flatfish implementation in the BSAI was approved, but the ending date (June 1, 2004) for the delay was not approved. The practical effect of partially approving Amendment 75 was that the proposed FMP text was modified by removing reference to rock sole and yellowfin sole as IR/IU species, thereby delaying indefinitely the flatfish IR/IU flatfish program.

With the indefinite delay of the BSAI IR/IU flatfish program, Amendment 76 no longer had any practical application in the BSAI. Amendment B was rejected by the Council as infeasible following discussions between industry representatives and fishery managers. However, the NPFMC continued to pursue possible implementation of Amendments 79. At the June 2003 meeting the Council took final action on Amendment 79, approving a phased-in GRS for the non-AFA catcher processor sector in the BSAI, to begin in 2005.

Also at its June 2003 meeting, as part of its action on Amendment 79, the NPFMC also approved a revision of the maximum retainable allowance (MRA) for pollock. The Council recognized that the MRA change was simpler to implement than the full GRS action and requested NOAA Fisheries to expedite the proposed pollock MRA action. A separate EA/RIR/FRFA for this regulatory change was included with the final rule and published on June 14, 2004 amending 679.20 and 679.27. The objective of the MRA change is to reduce regulatory discards of pollock in the directed fisheries for non-pollock groundfish species without increasing the overall amount of pollock that has been historically caught as incidental catch in these fisheries. The MRA portion of the preferred GRS alternative has been assessed in a separate EA/RIR/FRFA, and is included as part of the status quo the GRS in this analysis. In June 2005, the Council proposed to further delay this action and implement the GRS at 65 percent in 2007. This was because the Council did not intend to implement the GRS on a date certain basis, and due to their concern that there would be inadequate time for members of this fleet to purchase and install the required monitoring equipment before the opening of the BSAI groundfish fisheries. This phase in period allows time for those vessels with lower retention rates to adjust their operations in order to accommodate the higher retention rates.

1.2 Description of the Alternatives

The following alternatives are examined in this analysis:

Alternative 1: Status Quo/No Action
Current regulations regarding retention and discards and regulations that require 100 percent retention of pollock and Pacific cod would remain in effect. The MRA for pollock is currently in regulation and requires that when directed fishing on a groundfish species is closed, that species may only be retained up to the

MRA. The MRA is enforced at the point of an offload and is included under the status quo/no action alternative.

For Alternatives 2 thru 4, these alternatives would add a minimum Groundfish Retention Standard (GRS) for all groundfish fisheries (excluding pollock target fisheries) to the Goals and Objectives section of the BSAI Groundfish FMP. In addition, a regulation establishing a GRS would be promulgated and enforced on certain vessels and sectors in the groundfish fleet. The GRS regulation would not change the 100 percent retention standard already set for pollock and Pacific cod under existing IR/IU regulations. In addition to establishing a GRS, the regulation would require that processors create products that yield at least 15 percent from each fish harvested. In June 2005, the Council recommended to the Secretary that the GRS in Alternative 4 be implemented in 2007 at a starting rate of 65 percent.

Alternative 2: Less Restrictive GRS

This alternative establishes a GRS of 70 percent. The standard applies to non-AFA trawl catcher processors (HT-CPs), 125 ft and greater LOA, as a fleet. Compliance with the GRS is determined at the end of the fishing year. The pollock MRA percentage is increased to 35 percent for all non-AFA trawl catcher processors, including vessels less than 125 ft, and compliance with pollock MRAs continues as defined in regulation, and is monitored and enforced on each vessel at the end of each offload. NOAA Fisheries-approved scales, a certified observer sampling station, and observer coverage of every haul are used to measure and verify total catch. Retained catch is calculated using NOAA Fisheries standard PRRs.

Alternative 3: More Restrictive GRS

This alternative establishes a GRS of 85 percent for January through May. The GRS increases to 90 percent during the remainder of the year. The GRS applies to all catcher processors that are 125 ft and greater LOA as individual vessels. Catcher processors less than 125 ft. are exempt if their weekly production is less than 600 mt. The current pollock MRA percentage is maintained with enforcement at the point of offload. Compliance with the GRS is monitored and enforced at the end of each week for each area and gear fished. NOAA Fisheries-approved scales, a certified observer sampling station, and observer coverage of every haul are used to measure and verify total catch. Retained catch is calculated using existing NOAA Fisheries standard PRRs. In addition, the Council at its June 2003 meeting identified the following preferred alternative:

Alternative 4: Phase-In of a GRS (Preferred Alternative)

The preferred alternative establishes a year-round GRS of 65 percent in 2007; 75 percent in 2008; 80 percent in 2009; and 85 percent in 2010. The Council previously recommended that the GRS be initiated 2005, but amended its recommendation in June 2005 to implement the GRS in 2007. Each year, the GRS will be calculated as the round-weight equivalent of retained groundfish as a percent to total groundfish weight. The FMP Amendment for Amendment 79 was approved by the Secretary on August 31, 2005, and established the authority for improving general groundfish retention. The GRS regulations however, apply to trawl catcher processors operating in the BSAI that are not listed American Fisheries Act (AFA) catcher/processors at 50 CFR 679.4(l)(2)(I). Unlisted AFA catcher processing vessels and other non-AFA trawl catcher processors, are referred to as (HT-CPs) in this analysis. Each HT-CP that is 125 ft and greater LOA, will be subject to the enforcement of the GRS on an individual vessel basis. The GRS will be measured at the end of each year. All regulated vessels must comply with a number of monitoring requirements, including the use NOAA Fisheries-approved scales to determine total catch, observer coverage of every haul to verification that all fish are being weighed, and a prohibition on the mixing of hauls prior to sampling. Retained catch is calculated using NOAA

Fisheries standard product recovery rates (PRRs). For each product/ species combination, retained tonnage is equal to product tonnage divided by the PRR.

As part of its preferred alternative on the GRS, the NPFMC approved and NMFS (in a separate rule) has implemented a change in the MRA enforcement period it has recommended to the Secretary—from instantaneous enforcement to an offload to offload enforcement period. The MRA was published as a final rule on June 14, 2004 amending 679.20 and 679.27

A regulation establishing a GRS consists of several components, for which a number of options and suboptions are possible. These components and their respective options and suboptions are as follows:

Component 1 Establishes the GRS percentage.

Option 1.1 65 percent of all groundfish caught in non-pollock fisheries must be retained.
Option 1.2 70 percent of all groundfish caught in non-pollock fisheries must be retained.
Option 1.3 75 percent of all groundfish caught in non-pollock fisheries must be retained.
Option 1.4 80 percent of all groundfish caught in non-pollock fisheries must be retained.
Option 1.5 85 percent of all groundfish caught in non-pollock fisheries must be retained.
Option 1.6 90 percent of all groundfish caught in non-pollock fisheries must be retained.

Component 2 Specifies the vessels required to comply with the GRS.

Option 2.1 Catcher processors

Option 2.2 Catcher processors that are 125 ft and greater LOA.

Option 2.3 Trawl catcher processors, including AFA-eligible trawl catcher processors participating in non-pollock target fisheries.

Option 2.4 Trawl catcher processors that are 125 ft and greater LOA, including AFA-eligible trawl catcher processors participating in non-pollock target fisheries.

Option 2.5 Trawl catcher processors that are not AFA-eligible.

Option 2.6 Trawl catcher processors that are not AFA-eligible with exemptions for vessels less than 125 ft LOA that meet specified production limits. The following suboptions set the maximum production levels for exempt (< 125') non-AFA trawl catcher processors:

Suboption 2.6.1 Total catch in any week shall not exceed 600 mt.

Suboption 2.6.2 Total catch in any week shall not exceed 700 mt.

Suboption 2.6.3 Total catch for the year shall not exceed 13,000 mt.

Suboption 2.6.4 Total catch for the year shall not exceed 17,000 mt.

Component 3 Sets the period over which the retention rate is calculated.

Option 3.1 At the end of each week for each area and gear fished.

Option 3.2 At the end of each week over all areas and gears fished.

Option 3.3 At the end of each fishing trip as defined by the offloading of fish.

Option 3.4 At the end of each month.

Option 3.5 At the end of each quarter.

Option 3.6 At the end of each fishing season.

Option 3.7 At the end of each year.

Component 4 Defines the seasonality of the GRS.

Option 4.1 A year-round standard.

Option 4.2 A different standard for the "A" Season (January-May) and "B" Season (June-December).

Component 5 Determines at which level of aggregation the GRS is applied.

Option 5.1 The GRS applies to vessel pools or the fleet as a whole.

Option 5.2 The GRS applies to each vessel.

Component 6 Considers revision of the maximum retainable bycatch allowance (MRA) for pollock.

Option 6.1 Use the current MRA whereby a predetermined percentage of the pollock TAC is set aside as the incidental catch allowance (ICA). Up until the point the ICA has been caught, all pollock must be retained up to the MRA – currently set at 20 percent. After the ICA has been caught, pollock cannot be retained by vessels that are not AFA-eligible. Note that the MRA defines when a vessel is directed fishing for a given species. According to NOAA Fisheries, a vessel is engaged in directed fishing for a species if the amount of that species retained on board the vessel as a percentage of the amount of groundfish of species open for directed fishing retained on board the vessel, exceeds the MRA for the species in question.

Suboption 6.1.1 NOAA Fisheries manages ICA for pollock as it does currently (i.e. 6.1), but MRA rates are adjusted to insure that the historical bycatch requirements of pollock in the non-pollock fisheries are not exceeded. MRA rate adjustments can be made by NOAA Fisheries annually to discourage increased bycatch (incidental catch) of pollock should pollock harvest amounts indicate that this is occurring.[3] The MRA rate could be adjusted between 0 - 49%, subject to the stipulation that non-AFA vessels not engage in directed fishing for pollock at any point in a trip. The intent of this approach is to allow increased retention of pollock without increasing the relative bycatch requirements of the non-pollock fisheries.

Suboption 6.1.2 In addition to the above suboption, the Council considers changing the way MRA compliance is accounted for in fishing trips. Currently, it is enforced at any point in the trip. Other options considered, were the enforcement of MRA compliance on other time periods. The intent of this approach is to allow increased retention of pollock without increasing the relative bycatch requirements of the non-pollock fisheries. Other periods to be analyzed would include trips as defined by NOAA Fisheries, weekly reporting periods, or trips as defined as the period of time between port calls. This suboption resulted in the Councils adoption of an MRA that was published as a Final Rule in June 2004.

Component 7 Determines how total catch is measured under GRS regulations (GRS is defined as the percentage of total groundfish catch retained).

Option 7.1 The current blend data estimation system is used to estimate total catch (This option has been determined to be infeasible from an enforcement perspective).

Option 7.2 All vessels regulated under this action are required to use NOAA Fisheries-approved scales to determine total catch and maintain observer coverage of every haul for verification that all fish were being weighed.

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[3]Originally this option also included the possibility of in-season adjustments to the MRA, but this was deemed infeasible by NOAA Fisheries because of the time and complexities of developing and implementing in-seaon rulemaking.

Option 7.3 All vessels regulated under this action are required to use NOAA Fisheries-approved scales to determine total catch and either maintain observer coverage of every haul for verification that all fish are being weighed or use an alternative scale-use verification plan approved by NOAA Fisheries.

Option 7.4 All vessels regulated under this action that are 125 ft and greater LOA are required to use NOAA Fisheries-approved scales to determine total catch and either maintain observer coverage of every haul for verification that all fish were being weighed or use an alternative scale-use verification plan approved by NOAA Fisheries. All vessels less than 125 feet are required to carry observers 100 percent of the time but are not be required to have approved scales (This option has been determined to be infeasible from an enforcement perspective).

Option 7.5 All vessels regulated under this action are required to maintain 100 percent observer coverage but are not required to have approved scales (This option has been determined to be infeasible from an enforcement perspective).

Component 8 Determines how retained catch is measured.

Option 8.1 Retained catch is calculated using NOAA Fisheries standard product recovery rates (PRRs). For each product/ species combination, retained tonnage is equal to product tonnage divided by the PRR.

Option 8.2 Retained catch is calculated using an alternative retained catch measurement plan approved by NOAA Fisheries.

Option 8.3 Retained catch is calculated using a new set of minimum acceptable PRRs specifically developed for implementation of the GRS.

1.3 Consistency with the Problem Statement

The alternatives considered are consistent with the problem statement. The minimum groundfish retention standard would create the following incentives, all of which are consistent with the Council's objective to reduce discards in the groundfish fisheries:

1. Increased selectivity in fishing practices - Vessel operators would have a strong incentive to avoid catching unwanted groundfish species because they would be held accountable for retaining a percentage of their total groundfish catch.
2. Increased utilization of target and non-target species - A groundfish retention standard would encourage vessel operators to find uses for all groundfish species that are currently discarded.
3. Increased productivity and recovery rates - If the minimum retention standard is enforced using NOAA Fisheries standard product recovery rates (PRRs), then vessel operators would have an incentive to refine production techniques in an attempt to achieve higher recovery rates than the published standard. Vessels that achieve higher actual PRRs would have higher apparent retention rates than vessels with lower actual PRRs.

1.4 Rational for Preferred Alternative

This section documents the NPFMC's intent and justification for their preferred action. The language in this section is paraphrased and excerpted from transcripts of the NPFMC's deliberations on the GRS at their June 2003 meeting and deliberations on IR/IU at their September 1996 meeting.

As discussed in section 1.14, the the Council's interest in reducing groundfish discards and increasing retention and utilization of groundfish derives from the Magnuson-Stevens Act national standards, The

Council has considered the costs and benefits of requiring improved retention of flatfish and other species in the HT-CP sector for some time (NPFMC 2003b). In 1996, the Council adopted an IR/IU program (Amendment 49) for yellowfin sole and rock sole with a delayed starting date of 2003, which the Secretary approved. That program was to impose 100 percent retention requirements for yellowfin sole and rock sole on all trawl vessels throughout the Bering Sea and Aleutian Islands. The delayed starting was assumed to provide sufficient time for the industry to develop new product forms and develop new markets (NPFMC 1996). Responding to industry concerns that the pending start date for retention of these species would be costly, in 2002, the Council reexamined the tools available to the HT-CP sector for adjusting to retention of these species, prior to the flatfish IR/IU regulations commencing in 2003. As a result of that examination the Council again proposed to delay implementation of flatfish IR/IU until June 2004 to allow additional time for the affected fleet to adjust to these requirements. That proposed delay resulted in a partial approval of Amendment 75 in 2003, and is discussed further in section 4.1.4. At the same time, the Council initiated additional amendments to examine alternative approaches to flatfish IR/IU including Alternative 4 of Amendment 79.

The rationale expressed in the administrative record of the Council discussion concerning Amendment 79 stated that "Fishery management is about achieving conservation objectives, achieving social and economic objectives, and meeting the letter of the law and the intent and sprit of the law...Our intention, and our purpose and our need here, is to address the multiple requirements of the Magnuson Act to balance conservation goals and reduce bycatch, and still maintain the opportunity to go out and meet other considerations such as having an economic fishery" (NPFMC 2003b). The Council selected Alternative 4 as the preferred alternative because of the need to balance the goal of reducing groundfish discards in the BSAI, while at the same time taking into account the cost that a discard reduction program would have on the fishing industry. Alternative 4 responds specifically to the problem of groundfish discards by focusing on the HT-CP sector rather than all catcher processors sectors operating in the BSAI. Alternative 4 also minimizes to the extent practicable impacts on the affected portion of the HT-CP fleet by phasing in the GRS change over a four year period [and delaying the implementation of the GRS to allow for physical changes to the processing plants, deck, and living accommodations to adjust to requirements for additional observers, monitoring equipment, and space.] In contrast, Alternative 2 does little to improve non-pollock groundfish retention rates for the HT-CP sector. Alternative 2 would increase the pollock MRA to 35 percent and also change the enforcement period from an instantaneous compliance requirement to compliance at the end of each off load. Combined with the GRS program the effect of these MRA changes would be improvements in the retention rates by way of lower regulatory pollock discards rather than lower flatfish discards. Additionally, the increased pollock retention has the potential to indirectly impact those vessels targeting pollock, if the HT-CP sector requires an increased ICA to meet the MRA requirements. Alternative 3 would establish higher retention rates for all catcher processors 125 feet and greater operating in the BSAI. The effect of Alternative 3 would be to impose substantially higher compliance costs on this sector due to the requirement that each vessel have onboard NOAA Fisheries-approved scales and a certified observer sampling station in addition to having observer coverage of every haul to measure and verify total catch. However, the effect of Alternative 3 on improved retention would only impact the HT-CP and L-CP sectors. In their deliberations on Amendment 79, the Council expressed that this particular action (i.e. the preferred alternative) balances conservation through reductions in discards (National Standard 9) and minimizes costs when practicable (National Standard 7) by enforcing higher retention rates only on the specific section of the fleet with the largest problem. The Council expressed that alternative 4 for Amendment 79 would reduce costs to the fishing industry relative to the regulations implemented under Amendment 49. "The costs are far less than what were originally... considered, and we've tried to adjust the program to minimize those costs." As a result, the Council crafted the GRS program to minimize costs as much as possible by targeting higher retention standards on the HT-CP sector. At the same time, the preferred alternative also mitigates the cost of the program on the industry and sector it most directly impacts. For example, the preferred alternative mitigates the adverse impacts of the program by excluding HT-CP vessels less than 125 feet LOA.

These vessels have "specific and particular operational concerns" associated with the enforcement and monitoring requirements (NPFMC 2003b). It also gradually phases in the GRS program over time which allows the affected vessels to adjust to the program requirements. This allows the portion of the industry most impacted by the standards the opportunity to continue targeting rock sole and yellowfin sole, while working to reduce discards in these fisheries. The modification of current MRA enforcement interval from instantaneous to offload-to-offload were approved by the Secretary in June 2004. These MRA adjustments have the potential of improving retention of pollock, but at this time there are not a sufficient number of years with the MRA action in place to determine if it has achieved that objective. In June 2005 the Council commented on the proposed rule for the GRS, noting that implementing the GRS at 75 percent in 2006 may not allow sufficient time for HT-CP vessels to install equipment and modify processing areas to comply with monitoring requirements. This EA/RIR/FRFA incorporates that comment into the preferred alternative.

2.0 Affected Environment

This section describes the affected human environment, including the natural and physical environment (Section 2.1) and the relevant economic and social conditions (Section 2.2). The impacts of the action and alternatives are the subject of Section 3.0.

This section draws on information in the Alaska Groundfish Fisheries Final Programmatic Supplemental Environmental Impact Statement (PSEIS) (NMFS 2004). All proposed alternatives in this analysis are consistent with the PSEIS. The PSEIS contains detailed descriptions of features of the physical environment; threatened and endangered species; target groundfish species, prohibited species, other species, forage species, and non-specified species; essential fish habitat (EFH); seabirds ; marine mammals; socioeconomic environment; and the ecosystem. The PSEIS is available for public review on the Internet at http://www.fakr.noaa.gov/. Detailed information on the economic and social status of the groundfish fisheries can also be found in *Sector and Regional Profiles of the North Pacific Groundfish Fisheries – 2001* (Northern Economics, Inc. and EDAW, Inc. 2002). This document can be reviewed on the NPFMC's web site at http://www.fakr.noaa.gov/npfmc.

Detailed information on the impact of the groundfish fisheries on Steller sea lions is contained in the November 2004 PSEIS on Steller sea lion protection measures (NMFS 2001). This document includes the biological opinion on the effects of the pollock, Pacific cod and Atka mackerel fisheries on Steller sea lions and other ESA listed species (Appendix A).

Groundfish total allowable catches (TACs) and catch in 2002, along with final 2003 specifications of overfishing levels (OFLs), acceptable biological catches (ABCs), and TACs for the BSAI, are discussed in the EA/FRFA for the 2003 TAC specifications for Alaska groundfish fisheries (NMFS 2003b). For detailed life history, ecology, and fishery management information regarding groundfish stocks in the BSAI, see Section 3.5.1 of the PSEIS. Additionally, the status of each target species category, biomass estimates and acceptable biological catch specifications are presented both in summary and in detail in the annual BSAI stock assessment and fishery evaluation (SAFE) reports.

2.1 Natural and Physical Environment

In this section the condition of components of the natural and physical environment are briefly summarized with particular reference to the effects of groundfish discards. In general, the annual BSAI stock assessment treats all commercial fishing morality as removals from the stock, whether fish are discarded or retained (Anne Hollowed, NOAA Fisheries Alaska Fisheries Science Center, August 2003). Similarly, the level of discards relative to natural sources of detritus and the absence of evidence that would relate changes in scavenger populations to discard trends suggest that the BSAI groundfish fisheries have insignificant ecosystem impacts through energy removal and redirection (NMFS 2003a).

2.1.1 Status of Groundfish Stocks in the BSAI

Complete descriptions of all groundfish stocks harvested in the BSAI are presented in Section 3.5.1 of the PSEIS (NMFS 2004a). Additional information on the condition of these stocks is presented in the EA/FRFA for the 2005 TAC specifications for Alaska groundfish fisheries (NMFS 2004b). This report indicates that none of the groundfish stocks in the BSAI are depleted or currently overfished.

Bycatch does not affect the condition of groundfish stocks more than any other removal (retained catch). As indicated in the PSEIS, management of these stocks does not allow the fishing mortality rate to exceed the overfishing level.

2.1.2 Status of Prohibited Species

Prohibited species in the groundfish fisheries include Pacific salmon (chinook, coho, sockeye, chum and pink), steelhead trout, Pacific halibut, Pacific herring and Alaska king, Tanner and snow crab. Detailed information on the status of prohibited species is presented in Section 3.5.2 of the PSEIS (NMFS 2004a). A recent review of the status of crab stocks may also be found in the *2004 Stock Assessment and Fishery Evaluation Report for the King and Tanner Crab Fisheries of the Bering Sea/Aleutian Islands Regions* (NMFS 2004c). The effects of the groundfish fisheries in the BSAI on prohibited species are primarily managed by conservation measures developed and recommended by the NPFMC over the entire history of the FMPs for the BSAI and implemented by federal regulation. These measures include prohibited species catch (PSC) limits on a year round and seasonal basis, year round and seasonal area closures, gear restrictions and an incentive plan to reduce the incidental catch of prohibited species by individual fishing vessels.

Effects of prohibited species bycatch in the BSAI groundfish fisheries were evaluated in the PSEIS (NMFS 2004). Current harvest practices have insignificant impacts on halibut and herring. However, the PSEIS noted that some prohibited species are currently in a depressed (BSAI chinook) or overfished condition (*C. bairdi* crab, *C. opilio* crab, BSAI red king crab and BSAI blue king crab). The status of these shellfish species are also identified in Final Environmental Impact Statement for the Bering Sea Aleutian Islands King and Tanner Crab Fisheries (NMFS 2004d). Although the fishing mortality of depressed or overfished non-target species is minor, the additional mortality resulting from groundfish fisheries, such as those in the HT-CP sector may not be beneficial to these stocks. When cumulative effects are considered, conditionally significant adverse impacts due to fishing mortality are expected for depressed and overfished species. Conditionally significant adverse impacts are also expected for crab species due to change in biomass.

2.1.3 Status of Forage Fish Species

The species referred to as forage fish species are limited to those species included in BSAI groundfish FMP Amendment 36. Management concerns with regard to forage fish, as well as current and planned research to address these concerns, are discussed in Section 3.5.4 of the PSEIS (NMFS 2004a). Because fishery independent surveys for forage fish have not been implemented, biomass estimates remain uncertain. However, preliminary estimates for ecosystem models suggest that standing stocks of forage fish are stable. Current harvest practices in the groundfish fisheries result in insignificant forage fish mortality because the level of catch is very small. No comparative baseline exists to determine prey availability, habitat suitability and spatial temporal catch distribution impacts.

2.1.4 Status of Benthic Habitat and Essential Fish Habitat

All the marine waters and benthic substrates in the management areas comprise the habitat of groundfish. In addition, the adjacent marine waters seaward of the EEZ, adjacent State waters, shoreline, freshwater inflows and atmosphere above the waters constitute habitat for prey species, other life stages and species that move in and out of, or interact with, groundfish species. Distinctive aspects of the habitat include water depth, substrate composition, substrate infauna, light penetration, water chemistry (salinity, temperature, nutrients, sediment load, color, etc.), currents, tidal action, phytoplankton and zooplankton production, associated species, natural disturbance regimes and the seasonal variability of each aspect. Substrate types include bedrock, cobbles, sand, shale, mud, silt and various combinations of organic material and

invertebrates that may be termed biological substrate. Biological substrates present in management areas include corals, tunicates, mussel beds and tubeworms. Biological substrate has the aspect of ecological state (from pioneer to climax) in addition to the organic and inorganic components. Ecological state is related to natural and anthropogenic disturbance regimes. The BSAI groundfish FMP contains a description of habitat preferences of the target species, and projects are underway to systematically present biological requirements for each known life history stage. A detailed analysis of interactions between groundfish fisheries and benthic habitat and EFH is provided in Section 3.6 of the PSEIS (NMFS 2004) and the EA/FRFA for the 2005 TAC specifications for Alaska groundfish fisheries (NMFS 2004). The PSEIS identifies that conditionally significant adverse cumulative effects may occur from groundfish fisheries under the preferred alternative due to mortality of Bering Sea benthic organisms. The additional external impacts described in the PSEIS preferred alternative are described as adding to the lingering past mortality impacts and contribute to impacts that are already evident.

As the HT-CP sector operates trawl gear in benthic habitat areas, it is possible that these operations contribute to this mortality. It is not possible to determine the extent of this fisheries contribution to changes in benthic habitat areas, or mortality, or how Alternative 2, 3, and 4 may impact benthic habitat areas, compared with Alternative 1 (status quo).

According to the Final Environmental Impact Statement for Essential Fish Habitat (EFH EIS) Identification, Volume I and II, [NMFS 2005], fishing closures proposed in the preferred alternative 3, are recommended for the BSAI areas that are not currently fished by HT-CP vessels. The EIS concludes that the effects of current fisheries on EFH are minimal because the analysis finds no indication that continued fishing activities at the current rate and intensity would alter the capacity of EFH to support healthy populations of managed species over the long term. The analysis also concludes that no Council-managed fishing activities have more than minimal and temporary adverse effects on EFH, which is the regulatory standard requiring action to minimize adverse effects under the Magnuson-Stevens Act, but the preferred alternative of closing certain areas of high coral abundance could be taken as a precautionary measure to provide additional habitat protection. The EFH groundfish closures are not anticipated to impact this action, because the closed areas under EFH are not frequently transited, or fished by these groundfish catcher/processing vessels.

2.1.5 Ecosystem Considerations

Ecosystem considerations for the BSAI groundfish fisheries are explained in detail in Appendix C of the EA/FRFA for the 2005 TAC specifications for Alaska groundfish fisheries (NMFS 2004b). This document provides updated information on biodiversity, essential fish habitats, sustainable yields, trophic interactions, and human considerations. This information is intended to be used in making ecosystem-based management decisions such as establishing ABC and TAC levels. Additional information on the condition of the BSAI marine ecosystems is found in Section 3.10 of the PSEIS (NMFS 2004a).

Total commercial fishing removals in the BSAI are a small proportion of the total system energy budget and are small relative to internal sources of inter-annual variability in production. Energy flow paths do not seem to be redirected by discards and offal. Before improved retention requirements for Pacific cod and pollock were in place it was estimated that the total offal and discard production was one percent of the estimated unused detritus going to the ocean bottom. No data exists on the distribution and potential accumulation of discards on the ocean bottom of the North Pacific. In near-shore locations the EPA regulates point sources of discharges from seafood processing plants. Unused fish products must be ground and distributed according to conditions of permits for National Pollution Discharge Elimination Standards, but no discharge standards are applied to CPs operating outside of coastal waters. Unlike point sources of fish discharges from shoreside plants, it is probable that whole discarded groundfish may be distributed over a substantial area of the ocean floor. If the distribution of groundfish discards relative to natural sources of organic

material can be assumed to be similar, and considering the amounts of the HT-CP discards relative to natural sources, there is no available data to suggest that resulting changes in scavenger populations or benthic community impacts could result in ecosystem impacts through energy removal and redirection from these sources (NMFS 2004).

2.1.6 Status of Marine Mammals

Marine mammals not listed under the ESA that may be present in the BSAI include cetaceans [minke whale (*Balaenoptera acutorostrata*), killer whale (*Orcinus orca*), Dall's porpoise (*Phocoenoides dalli*), harbor porpoise (*Phocoena phocoena*), Pacific white-sided dolphin (*Lagenorhynchus obliquidens*) and the beaked whales (e.g., *Berardius bairdii* and *Mesoplodon* spp.)] and pinnipeds [northern fur seals (*Callorhinus ursinus*) and Pacific harbor seals (*Phoca vitulina*)] and the sea otter (*Enhydra lutris*).

Direct and indirect interactions between marine mammals and groundfish harvest occur due to overlap in the size and species of groundfish harvested in the fisheries that are also important marine mammal prey and due to temporal and spatial overlap in marine mammal foraging and commercial fishing activities. A detailed analysis of interactions between groundfish fisheries and marine mammals is provided in Section 3.8 of the PSEIS (NMFS 2004), Steller sea lion protection measures PSEIS (NMFS 2001) and the EA/FRFA for the 2005 TAC specifications for Alaska groundfish fisheries (NMFS 2003b). The PSEIS (NMFS 2004) indicated that discards in the BSAI groundfish fisheries are not an important source of food availability for marine mammals.

2.1.7 Status of Endangered or Threatened Species

Species currently listed as endangered or threatened under the ESA that may be present in the BSAI and GOA are presented in Table 1. The group includes great whales, pinnipeds, Pacific salmon and steelhead and seabirds. Of the species listed under the ESA and present in the action area, some may be negatively affected by groundfish commercial fishing. NOAA Fisheries is the expert agency for ESA listed marine mammals and anadromous fish species. The USFWS is the expert agency for ESA listed seabirds. The fisheries as a whole must be in compliance with the ESA.

Table 1. ESA Listed Species in the BSAI and GOA

Common Name	Scientific Name	ESA Status
Northern Right Whale	*Balaena glacialis*	Endangered
Bowhead Whale [1]	*Balaena mysticetus*	Endangered
Sei Whale	*Balaenoptera borealis*	Endangered
Blue Whale	*Balaenoptera musculus*	Endangered
Fin Whale	*Balaenoptera physalus*	Endangered
Humpback Whale	*Megaptera novaeangliae*	Endangered
Sperm Whale	*Physeter macrocephalus*	Endangered
Snake River Sockeye Salmon	*Onchorynchus nerka*	Endangered
Short-tailed Albatross	*Phoebaotria albatrus*	Endangered
Steller Sea Lion	*Eumetopias jubatus*	Endangered and Threatened [2]
Snake River Fall Chinook Salmon	*Onchorynchus tshawytscha*	Threatened
Snake River Spring/Summer Chinook Salmon	*Onchorynchus tshawytscha*	Threatened
Puget Sound Chinook Salmon	*Onchorynchus tshawytscha*	Threatened
Lower Columbia River Chinook Salmon	*Onchorynchus tshawytscha*	Threatened
Upper Willamette River Chinook Salmon	*Onchorynchus tshawytscha*	Threatened
Upper Columbia River Spring Chinook Salmon	*Onchorynchus tshawytscha*	Endangered
Upper Columbia River Steelhead	*Onchorynchus mykiss*	Endangered

Common Name	Scientific Name	ESA Status
Snake River Basin Steelhead	*Onchorynchus mykiss*	Threatened
Lower Columbia River Steelhead	*Onchorynchus mykiss*	Threatened
Upper Willamette River Steelhead	*Onchorynchus mykiss*	Threatened
Middle Columbia River Steelhead	*Onchorynchus mykiss*	Threatened
Spectacled Eider	*Somateria fishcheri*	Threatened
Steller Eider	*Polysticta stelleri*	Threatened

[1] The bowhead whale is present in the Bering Sea area only.
[2] Steller sea lion are listed as endangered west of Cape Suckling and threatened east of Cape Suckling.

Section 7 consultations with respect to the actions of the Federal groundfish fisheries have been completed for all the species listed above, either individually or in groups. On November 30, 2000 an FMP-level biological opinion was issued pursuant to Section 7 of the ESA on all NOAA Fisheries-listed species present in the fishery management areas for the entire groundfish fisheries. On October 19, 2001, NOAA Fisheries released a biological opinion that concluded that the FMP's approach to protection measures would not be likely to jeopardize the Steller sea lion or its habitat. For additional information on steller sea lions readers are advised to see the Steller Seal Lion EIS. Additonal information on all endangered or threatened species in the BSAI can be found in the PSEIS (NMFS, 2004).

Section 7 consultations with respect to the actions of the Federal groundfish fisheries have been one for all the species listed above, either individually or in groups. On November 30, 2000, an FMP-level biological opinion was issued pursuant to Section 7 of the ESA on all NOAA Fisheries-listed species present in the fishery management areas for the entire groundfish fisheries. That FMP level biological opinion concluded that the FMPs are likely to adversely modify only the critical habitat of the Steller sea lion. On October 19, 2001, NOAA Fisheries released a biological opinion for Steller sea lions that concluded that the FMP's approach to protection measures would not be likely to jeopardize the Steller sea lion or its critical habitat. For additional information on steller sea lions readers are advised to see the Steller Sea Lion EIS. Additional information on all endangered or threatened species in the BSAI can be found in the PSEIS (NMFS, 2004).

2.1.8 Status of Seabirds

The impacts of groundfish fisheries on seabirds are difficult to predict due to the lack of information on many aspects of seabird ecology. A summary of known information, both general and species-specific, can be found in the PSEIS, (Section 3.7). An analysis of the programmatic level preferred alternative for management of BSAI groundfish fisheries is in Section 4.9.7 (NMFS 2004b).

In 1999, the U.S. Fish and Wildlife Service (USFWS) issued a biological opinion on the BSAI hook-and-line groundfish fishery and the BSAI trawl groundfish fishery for the endangered short-tailed albatross, pursuant to Section 7 of the ESA. The conclusion of the biological opinion continued a no jeopardy determination and the incidental take statement expressing the requirement to immediately reinitiate consultations if incidental takes exceed four short-tailed albatross over a two year period. Consultations on the short-tailed albatross were not re-initiated for the year 2000 TAC specifications because the 1999 biological opinion extended through the end of calendar year 2000. In September 2000, NOAA Fisheries requested re-initiation of consultation for all listed species under the jurisdiction of the USFWS, including the short-tailed albatross, spectacled eider and Steller's eider for the GOA FMP and 2001-2004 TAC specifications. Based upon a review of the fishery action, NOAA Fisheries concluded that GOA groundfish fisheries are not likely to adversely affect either the spectacled eider or the Steller's eider or destroy or adversely modify the critical habitat that has been proposed for each of these species.

ESA listed seabirds are under the jurisdiction of the USFWS, which has completed an FMP level (USFWS 2003a) BiOp for the groundfish fisheries and a project level BiOp (USFWS 2003b) for the setting of annual

harvest specifications. The annual harvest specification are inclusive of all catch and bycatch alternatives included under the GRS, and concluded that these harvest levels are unlikely to cause the jeopardy of extinction or adverse modification of destruction of critical habitat for ESA listed birds.

Effects of discards in the BSAI groundfish fisheries on both listed and non-listed species of seabirds were evaluated in the PSEIS (NMFS 2004). A possible effect of discarding practices on seabirds would be to enhance food availability to bird populations that use scavenging as a source of energy. Increased food availability might increase survival or reproduction of scavenger populations that might be detrimental to other seabird species that have competitive interactions with scavenger populations. The groundfish fisheries were not expected to have population level effects on any seabird species. Although some piscivorus bird species, such as glaucous-winged gulls, might be gaining food subsidies from discards, there does not appear to be a population-level effect as a result of this subsidy.

2.2 Economic and Social Conditions

This section discusses existing economic and social conditions of affected portions of the BSAI. Included in this description is information on the number of catcher processors participating in each BSAI fishery by sector from 1995 to 2004, information on wholesale value, total catch and retention rates by fishery, and fleet distributions by retention rate during the 2001 fishing year for each fishery.

2.2.1 Description of Data and Processing

The data used for this analysis are from NOAA Fisheries blend data. Blend data are a combination of Weekly Production Reports from catcher processors and motherships and NOAA Fisheries observer data. Observers on processor vessels report groundfish species composition, total catch, and estimates of retention and discards on a weekly basis for each separate reporting area and gear type. Total catch may be estimated using cod-end or bin volumetrics, scales or conversion from production data. Species composition of the catch is obtained by sampling the catch. The total catch is apportioned by species based on that sampling. The blend process combines data from the industry production reports and observer reports to make a comprehensive accounting of groundfish catch. Observer data are the only data source deemed reliable by NOAA Fisheries for the calculation of discards, and since observer coverage on catcher vessels is limited, discard estimates are calculated for catcher vessels as a fleet and assigned to the processors that take catcher vessel deliveries. Consequently, no discard estimates are available for individual catcher vessels.

In order to provide a comprehensive description of the groundfish fishery with regard to retention rates, information is presented for all processors. BSAI groundfish fishery participants were divided into the following sectors:

Surimi and Fillet Trawl Catcher Processors (ST/FT-CPs): These vessels primarily produce surimi and fillet products from the pollock fishery. These processors are typically the largest in the catcher processor category.

Head and Gut Trawl Catcher Processors (HT-CPs): These vessels typically concentrate on head and gut products or kirimi. Generally, the head and gut fleet tend to focus primarily on flatfish, Pacific cod, and Atka mackerel. Unlike the surimi and fillet fleet, the head and gut fleet tends to be the smallest of the trawl catcher processors. Most of the vessels in this class can only accommodate sufficient crew and machinery to produce headed and gutted product. Various Coast Guard regulations associated with food production may also constrain the ability of this vessel class to produce other product forms. Heading and gutting of fish leaves the skin on the fish and is not included in some Coast Guard regulations for other fish processing methods that produce more intensely processed product forms. Most vessels in the HT-CP class are not load line-

certified a designation that requires certain standards for food production on a vessel. The U.S. load line regulations are found in 46 CFR Subchapter E, "Load Lines" (parts 41 thru 47). These regulations were originally derived from the Coastwise Load Line Act and the International Voyage Load Line Act, and also incorporate the requirements of the International Convention on Load Lines (ICLL). The statutory basis for the regulations comes from chapter 51 of Title 46 of the U.S. Code (46 USC chapter 51). Without load line certification, a processing vessel cannot produce fillets. Currently there are no head and gut vessels with fish meal plants, and a number of practical obstacles, as well as Coast Guard and NOAA Fisheries regulations on vessel upgrades effectively prevent head and gut vessels from making fish meal.

Longline Catcher Processors (L-CPs): These vessels use longline gear rather than trawl or pot gear. Also known as freezer longliners, their primary target fishery is Pacific cod and they are generally limited to heading and gutting their catch.

Pot Catcher Processors (P-CPs): These vessels typically focus on the crab fisheries, but increasingly are participating in the Pacific cod fisheries. They generally use pot gear, but may also use longline gear. They produce headed and gutted or whole groundfish products, including "bait" for sale or their own use in the crab fisheries.

BSAI Shore-based Processors, Motherships and Floating Inshore Processors (SP-MS-FLT): This category is included as a proxy for catcher vessels. Although observer's report groundfish species composition, total catch, and estimates of retention and discard on a weekly basis, the level of coverage is limited since only 30 percent of catcher vessels have observers. BSAI shore-based processors include the four major shore-based BSAI pollock processors in Dutch Harbor/Unalaska and Akutan and two inshore floating pollock processors–Arctic Enterprise and Northern Victor. Shore plants in the Aleutians East Borough and in the Aleutians West Census area are also included. For the purposes of this analysis, all other floating inshore plants and motherships operating in the EEZ are also included in this category.

A complete discussion of the groundfish fleet classifications can be found in *Sector and Regional Profiles of the North Pacific Groundfish Fisheries–2001* (Northern Economics, Inc. and EDAW, Inc. 2002.

2.2.2 Participation by Processing Sector

Table 2 shows participation in BSAI fisheries by the four catcher processor sectors described above from 1995 to 2004. Counts of catcher vessels delivering BSAI groundfish are included rather than counts of processors since any GRS would be enforced at the point of harvest.

With the exception of pot catcher processors, the number of participants has declined in each of the sectors over the ten year period. For the surimi and fillet catcher processor fleet, the number of participants has declined from 33 in 1995 to 17 in 2002. Among the individual target fisheries in the surimi and fillet catcher processor fleet, pollock has consistently attracted the most participation. In 1995, there were 63 permits fished in the pollock fishery. Shortly after the American Fisheries Act (AFA) was implemented, the number of permits fished declined to 30 for the pollock fishery. Other fisheries that had consistent participation were yellowfin sole and Pacific cod, although these fisheries also saw declines in the number of permits fished. Among the head and gut catcher processors, there has only been a slight decline in participation in some target fisheries. Overall, 32 head and gut catcher processors participated in 1995, while only 23 participated in 2004. The fisheries with the largest number of participants were yellowfin sole, rock sole, flathead sole, and Pacific cod with each generally having 20 or more participants in any given year from 1995 to 2001. The longline catcher processor fleet remained relatively stable over the 1995 to 2001 period. The lowest participation was in 1999 when only 38 longline catcher processors targeted groundfish. Participation has been strongest in the Pacific cod fishery. The highest level was in 1995 and 2001 when 42 vessels targeted

Pacific cod. Turbot also experienced high levels of participation, although participation has declined in recent years. The sablefish fishery attracted a modest number of longline catcher processors during the ten year period.

Among pot catcher processors, only the Pacific cod fishery has attracted a consistently substantial number of participants. Between 1995 to 2004, there have been between 3 to 9 participants in this fishery.

The number of catcher vessels participating in the BSAI fisheries varied from 1995-2001 with a high of 318 in 1995 and a low of 236 in 1998. In 2001, there were 305 active catcher vessels. A more detailed description of catcher vessel activity in the BSAI can be found in Northern Economics, Inc. and EDAW, Inc. (2002.

Table 2. Participation in Major BSAI Fisheries in 1995-2004, by Target Fishery and Processor Sector

Target Fishery & Sector	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
	Number of Vessels									
Surimi & Fillet Trawl Catcher Processors										
Pollock	33	32	29	28	16	14	15	16	16	16
All Fisheries	33	32	29	28	16	15	16	17	17	17
Head & Gut Trawl Catcher Processors										
Atka Mackerel	14	12	8	12	16	13	13	11	14	19
Pacific Cod	24	26	26	21	21	22	17	21	18	19
Other Flatfish	29	21	18	20	24	23	20	18	16	23
Rockfish	14	13	10	7	12	7	7	10	11	10
Rock Sole	29	26	25	18	22	23	20	21	21	22
Yellowfin Sole	27	24	24	20	23	23	22	21	21	22
All Fisheries	32	32	28	23	23	24	22	22	22	23
Pot Catcher Processors										
Pacific Cod	6	9	7	5	9	9	7	5	3	3
All Fisheries	6	9	7	5	9	9	7	5	3	4
Longline Catcher Processors										
Pacific Cod	42	38	38	36	36	38	42	40	39	39
Sablefish	15	18	12	10	17	18	10	14	8	6
All Fisheries	45	43	42	42	38	40	45	42	40	40
All Catcher Processors	116	112	106	98	86	87	90	86	86	84
All Catcher Vessels	318	289	270	236	265	325	305	305	305	274

Sources: Processor counts are from NOAA Fisheries blend data and catcher vessel counts are from ADF&G fish-tickets. Both blend and fish-ticket data were synthesized by Northern Economics, Inc. Data for 2002 to 2004 provided by NOAA Fisheries, Inseason Management 2005.

2.2.2.1 Vessel Owner's Residence

The registered owners of vessels in the ST-CP, FT-CP and HT-CP sectors all list addresses in the Washington Inland Waters Region (WAIW). Furthermore all but one P-CP is not owned by a resident of the WAIW region. The L-CP class is the most diverse of all the processor classes in terms of ownership. In 2001, 28 percent of owners resided in Alaska or regions other than WAIW and the Oregon Coast Region. Within Alaska, ownership is distributed across all four regions (Alaska Peninsula and Aleutian Islands, Southcentral Alaska, Kodiak, and Southeast Alaska), with 16 of the 23 vessels owned by residents of Southcentral or Southeast Alaska.

2.2.2.2 Current Ownership and Management Patterns in the HT-CP Sector

Because the focus of the NPFMC's interest in reducing discards falls primarily on the HT-CP sector, this section provides additional information regarding the ownership of vessels in that sector. In recent years, 22-26 vessels have been considered part of the HT-CP sector. According to the industry associations, Groundfish Forum and At-Sea Processors Association, ownership or management of the fleet is concentrated in 11 companies, as shown in Table 3.

Table 3. Ownership/Management of the HT-CP Sector, 2005

Owner/Manager	Vessel Name	Groundfish Forum Status
Arctic Sole Seafoods	*F/T Alaskan Rose (Tremont)*	Member
Seattle, WA	*F/T Arctic Rose (Sunk 2001)*	
Cascade Fishing, Inc.	*F/T Seafisher*	Member
Seattle, WA		
	F/V Alaska Juris	Member
Fishing Company of Alaska	*F/V Alaska Voyager*	Member
Seattle, WA	*F/V Alaska Victory*	Member
	F/V Alaska Warrior	Member
	F/V Alaska Ranger	Member
	F/V Alaska Spirit	Member
Fishermen's Finest	*F/V American #1*	non-Member
Seattle, WA	*F/V US Intrepid*	non-Member
F.J. O'Hara & Sons	*F/T Defender*	Member
Seattle, WA	*F/T Enterprise*	Member
Golden Fleece, Inc.	*F/V Golden Fleece*	Member
South Bend, WA		
Iquique U.S., L.L.C.	*F/T Arica*	Member
Seattle, WA	*F/T Cape Horn*	Member
	F/T Rebecca Irene	Member
	F/T Unimak Enterprise	Member
Jubilee Fisheries	*F/T Vaerdahl*	Member
Seattle, WA		
Kodiak Fish Company	*F/T Alliance*	non-Member
Bellingham, WA	*F/T Legacy*	non-Member
Trident Seafoods	*F/T Bering Enterprise* (not active since 1997)	non-Member
Seattle, WA	*F/T Harvester Enterprise* (not active since 1997)	non-Member
U.S. Seafoods	*F/T Ocean Peace*	Member
Seattle, WA	*F/T Seafreeze Alaska*	non-Member
	F/T Ocean Alaska (Beagle)	non-Member

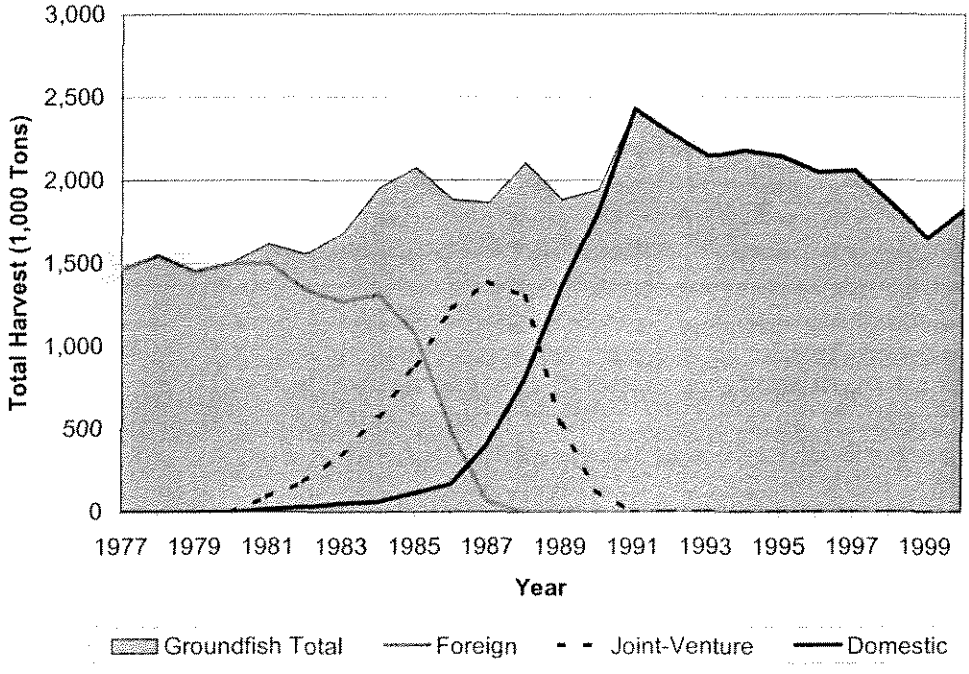
Source: Groundfish Forum and At-Sea Processors Association, 2005

2.2.2.3 A Brief History of the HT-CP Sector

This section contains a brief history of the HT-CP sectors and provides the reader with a better understanding of some of the historical factors that have contributed to the HT-CP's current status. The section begins in 1976 with the establishment of the EEZ and the Americanization of the fisheries off Alaska. It discusses the beginnings of the HT-CP sector and documents the important regulatory actions over the last 25 years that shaped their current status.

Perhaps the most important event for all US fisheries was the establishment of the EEZ, and the Council management system in 1976. In Alaska, the North Pacific Fishery Management Council was well established by 1978, and in that year approved an allocation system for groundfish that gave preferential allocation first to US domestic processors (DAP), second to foreign processors utilizing US fishing vessels (JVP) and lastly to fish harvested by foreign fishing vessels (TALFF) [NPFMC, 1996]. In 1980, the US Congress passed the American Fisheries Promotion Act which included the "fish and chips policy" formalizing the "Americanization" of the fisheries in the US EEZ. As part of the Americanization effort, loan program and other subsidies were established to encourage the development of US flagged fishing and processing vessels. As seen in Figure 1, the Americanization of the Alaska fisheries went from almost total foreign participation, to a preriod of growth and dominance of JVP operations to a similar surge in DAP. The last foreign fishery took place in 1989, and the last JVP fishery took place in 1990.

Figure 1. Americanization of the Alaska Groundfish Fishery, 1977-1999



Source: Economic Status of the Groundfish Fisheries off Alaska, 1991 and 1995, R.K. Kinoshita, et al, April 1997; and NMFS Blend Data, June 2001.

Because the DAP in the North Pacific was largely under-utilized in the early years, the fishery resource was taken on a first-come first-serve basis. Whoever wished to participate could fish until the quota was taken. This allocation system evolved into a race-for-fish allocation system. Whoever had the biggest and fastest vessel got most of the fish. While the negative consequences of the race-for-fish have been substantially documented, it continues to be the principal means of allocation for vessels in the HT-CP sector.

Coinciding with policy of Americanization of US fisheries, the Western Alaska King Crab fisheries experienced huge growth in catch and the number of vessels. The crab fisheries peaked in 1980 and subsequently collapsed the following year. The number of vessels in the Bristol Bay Red King crab fishery increased from 51 in 1970 to 236 in 1979 and 1980 [ADF&G 1999]. Many of these new vessels in the crab fishery were converted from vessels used to transport pipe and oil well supplies to the booming north-slope oil fields. In 1981, the crab fisheries collapsed throughout Western Alaska, leaving these newly converted crab vessels with little to do. The growing groundfish fishery with its open access and race-for-fish allocation system, was a ready option, and many of these crab vessels were converted to either participate as catcher vessels in joint venture operations with foreign processing vessels or to longline or trawl catcher processors.

The first US-flagged trawl catcher processors were head and gut factory trawlers, and entered the fishery in 1980. [Paul MacGregor 2003, Mary Furuness 2003] These boats focused their effort primarily on Pacific cod, rockfish, sablefish and flatfish. Pollock, while ubiquitous, were not generally targeted because of their relatively low value.

A key development in the history of the factory trawler was the introduction in 1983 and rapid acceptance of high-speed at-sea filleting machinery, such as the Baader 182 and other similar machinery by Toyo [Wulff 2003]. These machines made at-sea processing of pollock into fillets and subsequent processing into surimi financially feasible (Wulff 2003). Vessels that were large-enough and met Coast Guard stability and loadline requirements to install this machinery, were able to tap into the huge pollock resource in the Bering Sea. Other trawl CPs, typically smaller vessels without loadline certifications, were limited to head and gut processing.

The 1987 Anti-reflagging Act also contributed to the growth of the US flagged trawl CP fleet [MacGregor 2003]. The act prohibited vessels that were not originally constructed in the US from being re-flagged as a US vessel. There was, however, a three-year window in which vessels that were already under conversion/construction were allowed to enter [IAI 1994].

The coincidental timing of the introduction of the Baader and the conversions provisions in the Anti-Reflagging Act led to a dramatic increase in the number of U.S. flagged trawl CPs operating in the Alaskan EEZ. In 1986, NMFS reported 12 active U.S. trawl CPs operating in the Alaskan EEZ. However, the number of U.S. trawl CPs doubled in 1987 [IAI, 1994), and by 1990, there were a total of 72 U.S. flagged trawl CPs operating in the Alaskan EEZ [NPFMC 1995]. Although the exact number of HT-CPs was not explicitly tracked at the time, estimates developed in 1995 for the Groundfish and Crab Licence Limitation program [NPFMC, 1995] indicated that there were a total of 23 HT-CPs in 1988—12 of which fished only with trawl gear and 11 of which reported fishing with both trawl and non-trawl gears. The same source indicated that in 1990, a total of 33 vessels were HT-CPs, 17 of which had reported only using trawl gear.

During the same period of maturation (in mid-late 1980's), restrictions on the domestic groundfish fishery began to increase, due primarily to problems with incidental catches of non-target species. In 1983, Amendment 3 to the BSAI FMP established prohibited species catch policy for domestic fisheries, and defined prohibited species to include crab, halibut, herring, and salmon [NPFMC 1996]. In 1986, Amendment 14 to the GOA FMP established the allocation of sablefish in the GOA to the trawlers. In the Eastern Gulf, 5 percent of the sablefish was allocated to trawlers for bycatch purposes only, while in the Western and Central Gulf, 20 percent of the sablefish was allocated to trawlers for directed fishing. In 1987, the Council established bycatch limitation zones for prohibited species and established limits on the amounts of PSC that could be taken (BSAI Amendments 11-12). The most far-reaching of these actions was the

halibut PSC limit which, when met, closes fisheries from additional activity for the season. Other PSC limits were not as onerous, triggering area closures rather than closing entire fisheries.

By 1989, pollock roe stripping became a major issue, when trawl CPs moved down from the BSAI to the GOA in the spring of 1989 and harvested nearly 53 percent of the domestic apportionment of GOA pollock in a matter of weeks [NPFMC 1991]. The pollock fishery in the GOA was closed much earlier then had been expected and shore-side processors and harvesters, based primarily in Kodiak, cried foul. Roe stripping is the practice of targeting roe bearing pollock before and during the spawning season and extracting the extremely valuable roe while discarding the remaining carcasses and males. By this time pollock roe production had become a key component of the entire Trawl CP sector. For the HT-CP vessels, processing pollock roe was the only profitable way to utilize pollock—headed and gutted pollock without roe was virtually unmarketable. In 1990, the Council approved a ban on roe stripping, which had the effect of eliminating pollock as a viable species for the HT-CP sector.

In 1990, the battle over roe stripping devolved into an allocation issue between inshore and offshore pollock processors. However, once the roe stripping regulations were approved, the HT-CP fleet was somewhat relegated to the background. Inshore-offshore allocations of pollock in the BSAI were approved by the Council in 1992. In the GOA, the Council added Pacific cod to the allocation and reserved 90 percent of the pollock and 80 percent of the Pacific cod to inshore operations. In doing so the Council defined inshore to include most small (<125 feet) catcher processors as part of the inshore sector as long as they stay within an 18 MT per day limit of total catch. The allocations and size limits in the GOA effectively put the GOA Pacific cod fishery off limits for all but the smallest HT-CPs.

During the early and mid 1990's, the Council process was primarily focused on allocation and rationalization issues. While these issues indirectly affected the HT-CPs, other sectors were affected in much more significant ways. However, an add-on to the License Limitation Program in 1995 closed the Eastern Gulf of Alaska (EG) to trawling. While trawling catches in the EG were not large compared to non-trawl catches in the EG or to trawl catches in other areas, the HT-CP fleet were the primary participants–trawling for high value rockfish species. The closure further limited the opportunities for the HT-CP sector. As a result of these restrictions, flatfish became the primary target species for the HT-CP sector.

Increasing dependence on flatfish species has been accompanied by additional constraints for this sector. Because these species are bottom-dwellers, flatfish fisheries are prone to high incidental catches of prohibited species such as halibut and crab. In addition, while HT-CP sector participants report that market prices for some flatfish fisheries have increased in the last few years, other species appear to have limited markets—particularly with regard to size and product quality. These market limitations generate retention costs and conversely, the incentive to discard lower valued species.

In the early 1990's, there was a marked increase in public awareness and dislike with the problems of incidental catch, prohibited species catch, and discards of both target species and of incidental catch species. In response to the growing perception of unnecessary waste in the fisheries, the Council in 1994, initiated analysis to improve utilization and retention, and to provide better incentives to reduce incidental catches of non-target species. The growing awareness and controversy led to a formulation of a national policy to reduce bycatch, which was included in the reauthorization of the Magnuson Stevens Act in 1996.

The waste reduction initiatives resulted in the Council's 1996 approval of IR/IU for the BSAI (Amendment 49). A similar program was approved for the GOA in 1997 (Amendment 49). The IR/IU measures for pollock and Pacific cod were implemented in 1998 for both the GOA and BSAI. They were initially directed primarily at the surimi and fillet trawl CPs, which over time installed fish-meal plants and otherwise changed their fishing and processing methods to catch fewer unusable fish and to more fully utilize those fish harvested. For the HT-CPs, which are generally too small to be outfitted with fish-meal plants, the IR/IU regulations were more difficult to meet. However, one outcome of the measure has been the development of a more consistent market for headed and gutted pollock in Asia—these fish are partially thawed and further processed before entering global consumer.

In approving the IR/IU Amendment, the Council also approved IR/IU for flatfish, but recognized that the HT-CP sector would be unable to meet the IR/IU standard in the near term, and advised NOAA Fisheries to delay implementation of the flatfish portions of the regulations until 2003. The delay was intended to give the HT-CP fleet time to alter their fishing methods and gear to avoid unwanted catch and to develop markets for catches of flatfish that are unavoidable and that would otherwise be discarded.

Since 1997, the HT-CP sector has improved their fishery in terms of retention and utilization. Retention by the HT-CP sector has been aided in recent years by unusually large flatfish sizes and a global decline in whitefish supply. In addition, the HT-CP sector has made significant internal efforts, beginning with the formation of Groundfish Forum–an association of HT-CP sector owners. During the period following passage of IR/IU, the HT-CP fleet led by Groundfish Forum has taken steps to reduce their unwanted catch. Since 1997, for example, 100 percent of the vessels in the sector have participated in SeaState, an industry sponsored organization that tracks fishing areas of participants and provides reports of areas of high rates of incidental catches. The sector has also engaged in several experimental fisheries to test new and different gear configurations in order to reduce bycatch. The sector has also tested methods to reduce halibut mortality and broaden markets for fish that had previously gone unprocessed.

This level of cooperation can be considered quite remarkable given that vessels in HT-CP sector operate in an intensely competitive environment in which the actions of one vessel or one company can have significant negative effects on all of the other vessels and companies in the sector. Because of this highly competitive environment, operators are forced to fish as hard and fast as possible before another company's activities or the activities of the fleet as a whole force a fishery closure.

The primary factor contributing to this environment is the common property nature of the fishery resource itself. At the beginning of the year, NOAA Fisheries set the TACs for each groundfish species as well as limits for prohibited species (PSC limits). When the season begins on January 20, each vessel must race to catch as much fish as possible before the season ends when the TAC or a PSC limit is reached. If an individual vessel or company slows its activity to avoid catches of unwanted fish or areas of high concentrations of PSCs, they will very likely suffer a loss of revenue, particularly if other vessels or companies do not fish conservatively.

While the race-for-fish problem is endemic throughout the North Pacific, for the HT-CPs sector it is only one of many factors that contribute to the aggressive fishing practices of the sector. Other contributing factors are listed below:

- The diversity of products produced by the HT-CP sector is relatively large and for some products, the number of wholesale buyers in the market is quite limited.
- The demand for many of these products is relatively small, and prices for certain products are very sensitive to fluctuations in quantity. [NPFMC, 2001]
- There are relatively few fishing vessels participating in the sector (22 in 2002, 23 in 2003 and 2004) and even fewer companies—a total of 10 companies owning or operating the 23 vessels, 16 of which are concentrated in 4 companies.
- The larger companies may have the ability to influence markets and affect season closures.

Other sectors have also been plagued by the common property nature of the fisheries in the North Pacific. This was particularly true of the pollock industry. However, the pollock fishery was rationalized with the approval of the American Fisheries Act in 1998 by the US Congress. The AFA created exclusive pollock allocations to AFA eligible vessels and allowed the formation of cooperatives in both offshore and inshore sectors. Non-AFA vessels that took pollock as incidental catch were prohibited from targeting pollock, and now operate year-round under MRAs for pollock—retained pollock may not exceed 20 percent of other retained groundfish between consecutive offloads.

As a result of AFA, the pollock industry has seen marked improvements in profitability, as well as improvements in retention and reductions in incidental catches since 1999 [NPFMC, 2001]. Improvements in retention and reductions in incidental catches have occurred because with the elimination of the race-for-fish, participants are able to slow their operations, and are not adverse to moving to new areas if fishing yields too many non-target fish or too many small or unuseable pollock.

The AFA has also resulted in an additional burden on the HT-CP sector. Because of the combination of AFA and IR/IU regulations, the HT-CPs find themselves in a continual struggle to comply with the conflicting pollock regulations. The sector must keep all pollock they catch because of IR/IU, unless their pollock catch exceeds 20 percent of total retained non-pollock groundfish, at which point they must discard pollock, as long as they don't discard so much as to fall below the 20 percent standard.

Writers of the AFA anticipated that rationalizing the pollock industry could have spillover effects on other sectors, including the HT-CP sector. Therefore, the AFA mandated harvest sideboards, which limit the catch of non-pollock groundfish by AFA vessels to their historical levels. The AFA also called for measures to protect other processors from spillover effects, and suggested that processing limits (sideboards) on non-pollock species be applied to AFA processors. In 1999, the NPFMC initiated the analysis of processing sideboards. Of particular relevance was the concern of the HT-CP sector that a rationalized offshore pollock fishery, combined with the impending implementation of flatfish IR/IU, would lead to significant increases in non-pollock catches by AFA-CPs.

By 2002, the AFA processing sideboard issue evolved to an assessment of potential alternatives to IR/IU for flatfish—the HT-CP sector was reasonably satisfied that restrictions on harvest of AFA-CPs would keep them out of the head and gut fisheries, but they also realized that IR/IU flatfish requirements could significantly increase the costs of the sector. In April 2002 public testimony provided by HT-CP to the Council described that some vessels in that sector would be forced to exit flatfish and other fisheries if a requirement to retain flatfish species were imposed. These exit decisions were reported to be due to their inability, with existing technology to consistently haul target species, with low proportions of non-target catch, and adapt to the limited space available on some vessels to hold and process mixed species hauls. The inability for most HT-CP vessels to make fish meal out of the fish they catch made it more difficult for this sector to adjust to full retention than for the surimi and fillet trawl catcher processors. There were no HT-CP vessels with fish meal plants, and a number of practical obstacles as well as Coast Guard and NOAA Fisheries regulations on vessel upgrades effectively prevented these vessels from making fish meal. However,

a positive outcome of the measure has been the development of a more consistent market for headed and gutted pollock in Asia—these fish are partially thawed and further processed before entering global markets. The increase in price of Pacific cod products due to reduced Atlantic cod harvests from the Barents Sea and an improving Asian economy have also resulted in higher gross product values for the HT-CP sector. While headed and gutted Pacific cod harvests by Japanese and Korean vessels from Russian waters have increased competition in the marketplace, the expansion of buyers of head and gutted product in China, Europe and the U.S. has given the HT-CP fleet the ability to switch markets as prices across markets change.

While retention and utilization of flatfish by all sectors, including the HT-CPs improved between 1995 (See Figure 1), and 2000 the HT-CP fleet recognized that it still did not have the capability (e.g., markets and gears) to remain viable participants once IR/IU was implemented in 2003. The industry proposed that alternatives to full retention of flatfish be examined, and the Council added options to the ongoing analysis of processing limits under the American Fisheries Act.

In October 2002, the NPFMC voted to delay the 2003 implementation of IR/IU regulations for flatfish in the BSAI, in order to pursue alternative means of reducing discards of flatfish and other groundfish. That action, Amendment 75 to the BSAI FMP, would have delayed implementation of IR/IU flatfish regulations until June 2004. Amendment 75 was only partially approved by the Secretary of Commerce. The approved part was the delay of imposing IR/IU requirements on catches of IR/IU flatfish in the BSAI. The part of Amendment 75 not approved was the date of June 1, 2004, on which this delay would have ended. The practical effect of this action was that the proposed FMP text was modified by removing reference to rock sole and yellowfin sole as IR/IU species, thereby delaying indefinitely the flatfish IR/IU program.

Based on the experience of the AFA-CPs, the HT-CP sector has also expressed the general conclusion that their best hope of reducing discards and incidental catch is in the elimination of the race-for-fish. The sector has tried to negotiate a voluntary cooperative within the existing fishery regulations, albeit unsuccessfully. For a voluntary cooperative to be successful in providing secure fishing privileges, under existing regulations, it is necessary for every participant in the sector to participate in the coop. The HT-CP sector has been unable to gain 100 percent agreement.

In summary, the HT-CPs were among the first US flagged fishing vessels to enter the groundfish fisheries of the North Pacific. Because of their relatively small size, HT-CPs have been unable to upgrade their processing lines beyond heading and gutting, and in general are restricted from installing meal plants. Because of their limited processing abilities, early HT-CPs focused on high-value groundfish such as sablefish and rockfish in the GOA and Aleutian Islands. They also participated in the higher volume flatfish and Pacific cod fisheries in the BSAI, but they were unable to find a consistent market for headed and gutted pollock unless it was at the peak of the roe season. Pollock were generally not targeted except at the the peak of the roe season because of their comparatively low value as headed and gutted product. In the mid- to late-1980s increased restrictions were applied to the domestic groundfish fisheries, due primarily to problems with incidental catches of non-target species. In 1983, the BSAI FMP established a prohibited species catch policy for domestic fisheries and defined prohibited species to include crab, halibut, herring, crab, and salmon. Beginning with Amendment 14 in the GOA in 1986, which prohibited directed fishing with trawls for sablefish, followed by the roe stripping ban in 1991, inshore-offshore in 1992, and the LLP in 1995, the HT-CP sector has been excluded from of some of their more profitable fisheries into the lower value flatfish fisheries, which, because the targets are on the bottom of the ocean, are prone to high incidental catches of prohibited species such as halibut and crab. In addition, flatfish fisheries have limited markets—particularly with regards to size and quality of the product. These limited markets for non-target species, mixed distribution of species, lack of selective gear, space constraints on this class of vessel, combined with MRAs that, prior to 2004, were enforced at anytime during a fishing trip, and the common-property caused race-for-

fish, create the conditions that led to the highest rates of economic and regulatory groundfish discards of any sector in the BSAI.

2.2.3 Fishery Wholesale Value of Processors in the BSAI

The remaining subsections of Chapter 2 step back from the detailed focus on the HT-CPs, to a more general description of processing in the BSAI groundfish fishery. Table 4 shows wholesale value from catcher processors by sector, including the HT-CPs and the combined shore-based/ floater/mothership category by selected BSAI fishery.

For the surimi and fillet catcher processor fleet, the most significant contributor to wholesale value has historically been the pollock fishery. In 2001, the combined wholesale value of pollock was $407 million out of a total wholesale value for all groundfish of $410 million, a 95 percent contribution.

Relative to wholesale value, the HT-CP sector is more diversified across the fisheries than other sectors. Two primary fisheries have historically contributed relatively equal shares of the wholesale value for the HT-CP fleet. Atka mackerel at $47 million and yellowfin sole at $32 million were two of the largest contributors to total wholesale value in 2001, each contributing 35 percent and 24 percent, respectively to the wholesale value. Other fisheries that have historically contributed a smaller share of the total wholesale value for the head and gut fleet are rock sole, Pacific cod, flathead sole, and other flatfish.

For the longline catcher processor fleet, the largest contributor for wholesale value has been Pacific cod. In 1995, the wholesale value for Pacific cod was $68 million, which was 89 percent of the total sector wholesale value. In 2001, the contribution from Pacific cod was 96 percent of the total wholesale value.

Total wholesale value for the pot catcher processor fleet was nearly all from the Pacific cod fishery. In 1995, the wholesale value from Pacific cod was approximately $3 million and $5 million in 2001.

Pollock has historically been the largest contributor of total wholesale value for the BSAI shoreplants, floaters, and motherships. In 1995, the pollock fishery contributed 84 percent of the total wholesale value for the BSAI shoreplants, floaters, and motherships, while in 2001, the contribution from pollock was 92 percent. In that year the combined wholesale value of the pollock fishery was $504 million. Other fisheries which contributed consistently over the seven year period were Pacific cod and sablefish.

2.2.4 Total Catch and Retention by Fishery in the BSAI

Table 5 summarizes the total catch in major BSAI target fisheries by sector from 1995-2004. The table demonstrates that the HT-CP sector is the most diversified in terms of the number of species harvested of all the sectors.

Table 4. Wholesale Product Value in Major BSAI Fisheries in 1995-2001, by Target Fishery and Processor Sector

	1995	1996	1997	1998	1999	2000	2001	2002	2003
	Wholesale Product Value ($Millions)								
Surimi & Fillet Trawl Catcher Processors									
Pollock	435.4	348.6	343.2	312.2	334.5	395.2	407.1	450.3	482.9
All Fisheries	474.5	377.4	377.8	333.3	346.4	402.0	410.3	455.1	490.2
Head & Gut Trawl Catcher Processors									
Atka Mackerel	43.7	71.3	35.6	21.3	25.7	23.6	46.6	25.7	24.5
Pacific Cod	10.3	8.2	9.5	7.5	20.4	21.1	17.3	24.7	28.9
Other Flatfish	14.3	14.5	10.3	18.8	19.3	23.4	15.2	10.9	7.6
Rockfish	11.7	12.2	8.2	4.0	7.2	4.5	4.0	6.8	8.1
Rock Sole	29.1	27.7	25.7	15.4	16.5	21.3	17.2	22.1	18.6
Yellowfin Sole	36.9	34.1	55.0	35.8	25.4	31.8	31.7	45.8	49.2
All Fisheries	149.4	170.8	145.4	104.6	115.4	126.7	133.4	137.9	137.1
Pot Catcher Processors									
Pacific Cod	2.9	6.5	3.2	3.3	4.3	3.6	4.7	2.3	1.9
All Fisheries	2.9	6.5	3.2	3.3	4.3	3.6	4.7	2.4	1.9
Longline Catcher Processors									
Pacific Cod	67.8	71.3	72.8	89.5	108.1	116.8	112.0	102.8	133.6
Sablefish	3.5	2.8	2.4	0.6	2.0	2.4	2.2	1.9	2.2
All Fisheries	75.7	80.6	82.6	98.9	117.1	127.6	116.7	107.9	139.5
All Shore Plants, Floaters, and Motherships									
Pollock	360.1	304.6	294.6	257.1	329.0	418.8	503.7	534.0	570.0
Pacific Cod	51.0	60.9	54.7	39.3	56.0	74.2	39.3	37.2	41.7
All Fisheries	147.8	372.7	363.0	299.5	388.5	498.0	548.3	576.5	615.9
All Sectors and Fisheries									
All Fisheries	429.3	1,008.0	972.0	839.6	971.6	1,157.9	1,213.4	1,287.8	1,391.3

Source: NPFMC Sector Profiles Database, 2001; and 2002-2003 data AFSC Terry Hiatt 2005

Table 5. Total Catch in Major BSAI Target Fisheries in 1995-2004, by Target Fishery and Processor Sector

Target Fishery & Sector	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
	Total Catch (1,000 mt)									
Surimi & Fillet Trawl Catcher Processors										
Pollock	748	659	612	607	416	491	612	650	527	525
All Fisheries	856	761	719	670	445	507	619	653	533	529
Head & Gut Trawl Catcher Processors										
Atka Mackerel	79	109	59	57	63	56	71	52	57	59
Pacific Cod	25	16	26	16	31	30	24	39	43	64
Other Flatfish	32	34	24	44	39	46	34	26	23	35
Rockfish	13	19	12	9	15	10	10	12	13	10
Rock Sole	51	42	57	24	28	46	29	42	37	47
Yellowfin Sole	96	102	172	116	90	105	95	114	99	87
All Fisheries	303	327	354	271	268	294	265	287	273	303
Pot Catcher Processors										
Pacific Cod	5	8	5	3	4	3	4	2	2	3
All Fisheries	5	8	5	3	4	3	4	2	2	3
Longline Catcher Processors										
Pacific Cod	117	110	146	120	105	117	132	126	118	120
Sablefish	2	1	1	0	1	2	1	1	1	0
All Fisheries	122	115	152	128	113	126	136	130	121	122
All Shore Plants, Floaters, and Motherships										
Pollock	536	528	482	495	539	615	750	802	790	776
Pacific Cod	78	99	94	51	56	66	36	61	68	61
Sablefish	4	2	2	1	1	1	1	2	2	1
All Fisheries	644	637	602	548	598	684	788	865	861	838
All Sectors and Fisheries										
All Fisheries	**1,930**	**1,849**	**1,831**	**1,621**	**1,427**	**1,614**	**1,813**	**1,937**	**1,794**	**1,796**

Source: NPFMC Sector Profiles Database, 2004

Table 6 summarizes retention rates for catcher processors by sector and a combined BSAI shorebased plants/floaters/motherships category as a proxy for catcher vessels in selected BSAI fisheries from 1995 to 2004. In general, the most obvious trend is the improvement of retention rates.

For surimi and fillet catcher processors, retention rates for pollock (midwater) have remained relatively high, ranging from a low of 95 percent in 1995 to a high of 99 percent in 2001. In the bottom pollock fishery, retention rates fluctuated between a low of 85 percent in 1997 to a high of 97 percent in 1999. The yellowfin sole and Pacific cod fisheries reported retention rates below 70 percent in 1995, but the rates have increased to around 99 percent in the last few years.

Among the HT-CP fleet, retention rates have also shown improvement (See Figure 1), but still lag behind the rest of the processing sectors. In 1995, the HT-CP sector had a retention rate of 59 percent for all fisheries combined. The only other processor sector with a combined retention rate below 90 percent in 1995 was the L-CP sector at 84 percent. Six years later, the retention rate for the HT-CP improved to 75 percent, but was still lower than the next lowest rate 85 percent for the L-CP sector. Looking at individual fisheries, the yellowfin sole fishery retention rates improved from a low of 53 percent in 1995 to a high of 73 percent in 2001. Other fisheries, like the rock sole, flathead sole, Pacific cod, and other flatfish fisheries, had retention rates below 50 percent in 1995. With the exception of the other flatfish fishery, retention rates have climbed to above 65 percent by 2001. Retention rates for the Atka mackerel and rockfish fisheries also improved over the seven year period. The Atka mackerel fishery drifted upward from a low of 76 percent to a high of 86 percent in 2000, while the retention rate for the rockfish fishery increased from a low of 80 percent in 1996 to a high of 95 percent in 2000.

Retention rates for the longline catcher processors have not shown similar increases. Retention rates in the Pacific cod fishery have remained fairly constant, fluctuating between 84 and 88 percent. However, the turbot and sablefish fisheries have fluctuated more widely. For the P-CPs, retention rates for Pacific cod increased from a low of 84 percent in 1998 to a high of 99 percent in 2004.

Retention rates for BSAI shore plants, floaters, and motherships also increased over the 1995 to 2004 period. Like the other fleets, retention rates for fisheries other than pollock were much lower in 1995 and 1996, but many of these fisheries have improved over the years.

Table 6. Retention Rates in Major BSAI Fisheries in 1995-2004, by Target Fishery and Processor Sector

Target Fishery & Sector	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
	Percent of Groundfish Retained									
Surimi & Fillet Trawl Catcher Processors										
Pollock	93.5	95.4	94.8	98.4	98.9	98.2	99.5	99.5	99.7	99.5
All Non-pollock Fisheries	68.8	72.3	70.3	82.8	90.3	91.9	93.9	83.4	90.8	99.7
All Fisheries	90.4	92.3	91.2	96.9	98.3	98.0	99.5	99.4	99.6	99.4
Head & Gut Trawl Catcher Processors										
Atka Mackerel	76.0	78.4	84.3	85.1	82.6	86.2	83.7	75.4	72.0	77.6
Pacific Cod	47.7	44.8	44.5	57.1	57.5	63.8	67.6	69.5	61.3	55.0
Other Flatfish	47.8	43.4	49.7	55.9	54.4	63.1	64.5	66.2	68.9	61.4
Rockfish	81.8	80.3	87.9	91.1	91.6	94.6	87.1	90.1	93.4	89.6
Rock Sole	46.2	45.3	46.6	60.6	53.0	52.9	68.6	58.0	63.7	60.5
Yellowfin Sole	52.8	54.4	65.0	70.5	63.8	68.4	72.2	69.5	71.0	73.0
All Fisheries	58.8	61.6	63.6	70.4	66.8	69.2	74.0	69.6	69.6	67.4
Pot Catcher Processors										
Pacific Cod	96.5	95.9	98.5	97.1	96.0	95.9	97.2	96.9	97.7	98.7
All Fisheries	96.5	95.8	98.5	97.1	96.0	95.9	97.2	96.9	97.7	98.7
Longline Catcher Processors										
Pacific Cod	84.8	85.8	85.2	84.3	88.2	85.2	85.8	87.1	88.1	85.9
Sablefish	54.8	53.5	52.6	72.6	39.0	42.1	91.5	65.4	74.8	91.3
All Fisheries	84.1	85.4	84.9	84.3	86.0	83.9	85.8	86.9	87.8	85.8
All Shore Plants, Floaters, and Motherships										
Pollock	97.6	98.1	98.2	99.7	99.1	99.5	99.7	99.8	99.8	99.7
Pacific Cod	66.5	69.2	63.6	85.1	74.1	85.4	89.6	84.9	86.4	87.3
Sablefish	22.1	36.8	35.1	55.3	58.4	57.5	71.1	62.4	57.3	92.9
All Non-pollock Fisheries	68.5	70.6	69.2	83.8	74.3	85.1	88.8	84.0	85.3	87.3
All Fisheries	92.7	93.4	92.4	98.2	96.7	98.0	99.2	98.6	98.6	98.8
All Sectors and Fisheries										
All Fisheries	85.8	86.8	85.7	91.9	90.7	91.7	94.5	93.8	93.8	92.8

Source: NPFMC Sector Profiles Database, 2004

Table 7 shows discards by species rather than by target fishery for the years 1999-2004. Table 8 shows the same discard data as percentage of total catch. The HT-CP sector discard of rock sole fluctuated between 1999 and 2004 from 8.6 thousand metric tons in 1999 to 23.6 thousand and 18.9 thousand metric tons in 2004. In the flatfish fisheries discards from the HT-CP sector have fluctuated but not improved during this period varying from and 11.2 thousand metric tons in 1999, 7.7 thousand metric tons in 2001, and 11.5 thousand metric tons in 2004. Other flatfish and groundfish species discards varied through this period without evident trends.

The ST/FT-CP sectors discards of Atka mackerel remained relatively stable from between 0.4 thousand metric tons to nearly zero. Yellowfin sole discards varied, but show a decline from 1999 to 2004 0.2 thousand metric tons to 0.08 thousand metric tons respectively. The P-CP sector saw little change in discard amounts while the L-CP sector saw yellowfin sole discards increase in each of the three years. In total, discards declined between 1999 and 2004. Tables 9 and 10 show retained catch, i.e., the inverse of discarded catch. Tables 9 and 10 can be used to calculate retention rates for subsets of species and sectors. Due to rounding errors associated with using the percent retained and discarded, calculated retention percentages should be considered estimates. For example, the amount of retained yellowfin sole can be determined as a percentage of all flatfish caught. The calculated percentages for various sectors are as follows:

- In 2002, in the HT-CP sector, yellowfin sole accounted for 16.66 percent of total catch while flatfish accounted for 44.41 percent of total catch. Thus, the sector's retained yellowfin sole was 37 percent of total flatfish catch.
- In 2001, in the ST-CP and FT-CP sectors, yellowfin sole accounted for 0.34 percent of total catch while flatfish accounted for 0.62 percent of total catch. Thus, the sector's retained yellowfin sole was just over 50 percent of total flatfish catch.
- In 2001, in the L-CP sector, yellowfin sole accounted for 0.01 percent of total catch while flatfish accounted for 1.84 percent of total catch. Thus, the sector's retained yellowfin sole was less than 1 percent of total flatfish catch.
- In 2001, in the shore plant, floater, and mothership sectors, yellowfin sole accounted for 0.01 percent of total catch while flatfish accounted for 0.20 percent of total catch. Thus, the sector's retained yellowfin sole was less than five percent of total flatfish catch.
- In 2001, in the P-CP sector, yellowfin sole was such a small percentage of catch that the tables could not be used to calculate retention percentages.

Similar calculations can be made to determine the non-pollock, non-Pacific cod retention rate for each sector:

- In 2001, in the P-CP sector retained, non-pollock, non-Pacific cod accounted for 1.7 percent of total catch while discards in the same category accounted for 4.9 percent of total catch. Thus, the sector had an estimated non-pollock, non-Pacific cod retention rate of 25 percent. Although this retention rate is quite low, the sector caught an extraordinarily small amount of these species.
- In 2002, in the HT-CP sector retained, non-pollock, non-pacific cod fish accounted for 58.4 percent of total catch while discards in the same category accounted for 20.3 percent of total catch. Thus, the sector had an estimated non-pollock, non-pacific cod retention rate of more than 74 percent. This retention rate is higher than the sector's average when considering retained catch of all groundfish species.
- In 2001,in the L-CP sector, retained non-pollock, non-pacific cod fish accounted for 4.2 percent of total catch while discards in the same category accounted for 12.24 percent of total catch. Thus, the sector had an estimated non-pollock, non-pacific cod retention rate of 25 percent.

Table 7. Discarded Catch in BSAI Fisheries in 1999-2004, by Species and Processor Sector

Species & Sector	1999	2000	2001	2002	2003	2004
	Discarded Catch (1,000 mt)					
Head and Gut Trawl Catcher Processors						
Atka Mackerel	4.70	2.60	4.31	7.4	11.73	10.67
Arrowtooth Flounder	6.80	5.50	6.68	5.5	6.54	11.38
Flathead Sole	2.70	3.30	2.13	2.6	2.68	3.52
Other Flatfish	12.50	12.77	8.86	14.2	10.79	9.88
Other Groundfish	7.30	8.80	8.54	9.7	5.90	6.20
Pacific Cod	1.30	0.70	0.79	1.1	0.72	0.45
Pollock	14.95	14.60	14.45	15.9	13.24	19.36
Rockfish	6.80	5.50	7.59	5.1	6.69	6.00
Rock Sole	20.00	23.56	8.60	15.3	13.83	18.91
Turbot/Sablefish	0.40	0.28	0.49	0.3	0.21	0.30
Yellowfin Sole	11.22	12.72	7.65	10.2	10.49	11.45
Surimi and Fillet Trawl Catcher Processors						
Atka Mackerel	0.60	0.00	0.00	0.00	0.18	0.01
Other Flatfish	1.50	1.65	0.77	0.75	0.42	0.71
Other Groundfish	0.78	4.20	1.04	0.84	0.29	0.63
Pacific Cod	0.40	0.10	0.08	0.02	0.01	0.03
Pollock	2.76	1.34	0.32	0.19	0.19	0.14
Rockfish	0.10	0.10	0.37	0.24	0.30	0.05
Rock Sole	0.90	1.80	0.62	0.76	0.35	0.77
Turbot/Sablefish	0.00	0.00	0.03	0.01	0.01	0.00
Yellowfin Sole	0.87	0.74	0.10	0.31	0.12	0.38
Pot Catcher Processors						
Atka Mackerel	0.00	0.00	0.00	0.00	0.00	0.00
Other Flatfish	0.00	0.00	0.10	0.00	0.00	0.00
Other Groundfish	0.10	0.10	0.04	0.02	0.02	0.01
Pacific Cod	0.00	0.00	0.02	0.02	0.00	0.00
Pollock	0.00	0.00	0.01	0.00	0.00	0.00
Rockfish	0.00	0.00	0.00	0.00	0.00	0.00
Rock Sole	0.00	0.00	0.00	0.00	0.00	0.00
Turbot/Sablefish	0.00	0.00	0.00	0.00	0.00	0.00
Yellowfin Sole	0.00	0.10	0.01	0.02	0.02	0.03
Longline Catcher Processors						
Atka Mackerel	0.07	0.15	0.14	0.04	0.01	0.04
Other Flatfish	1.50	2.10	1.78	1.49	1.35	1.86
Other Groundfish	11.40	13.23	13.34	11.40	9.84	12.55
Pacific Cod	1.43	2.70	1.76	2.14	1.81	1.62
Pollock	0.60	1.00	0.99	0.85	0.79	0.58
Rockfish	0.24	0.35	0.40	0.18	0.15	0.18
Rock Sole	0.06	0.03	0.03	0.04	0.04	0.03
Turbot/Sablefish	0.34	0.41	0.18	0.30	0.25	0.08
Yellowfin Sole	0.18	0.28	0.63	0.61	0.56	0.46
All Shore Plants, Floaters, and Motherships						
Atka Mackerel	0.10	0.01	0.07	0.12	1.56	0.75
Other Flatfish	1.43	1.59	1.01	1.86	2.14	2.57
Other Groundfish	3.46	1.74	1.83	2.11	2.28	1.52
Pacific Cod	0.41	0.49	0.26	0.87	0.58	0.35
Pollock	11.20	5.49	1.97	4.37	2.76	3.17
Rockfish	0.06	0.15	0.18	0.35	0.35	0.16
Rock Sole	4.62	1.91	0.78	1.85	1.87	1.61
Turbot/Sablefish	0.10	0.22	0.36	0.28	0.72	0.08
Yellowfin Sole	0.20	0.30	0.26	0.24	0.22	0.15

Source: NPFMC Sector Profiles and Catch Accounting Database, 1999-2004

Table 8. Discarded Catch as Percent of Total Catch in BSAI Fisheries in 1999-2004, by Species and Processor Sector

Species & Sector	1999	2000	2001	2002	2003	2004
	Discarded Catch as Percent of Total Groundfish Catch					
Head and Gut Trawel Catcher Processors						
Atka Mackerel	1.78	0.89	1.60	2.60	4.32	3.55
Arrowtooth Flounder	2.53	1.88	2.47	1.96	2.38	3.77
Flathead Sole	1.04	1.13	0.79	0.93	0.99	1.17
Other Flatfish	4.67	4.35	3.28	4.63	3.98	3.29
Other Groundfish	2.75	3.00	3.16	3.43	2.16	2.05
Pacific Cod	0.50	0.22	0.29	0.42	0.26	0.14
Pollock	5.57	4.97	5.35	5.58	4.83	6.42
Rockfish	2.52	1.87	2.81	1.79	2.45	1.98
Rock Sole	7.48	8.02	3.18	5.37	5.08	6.29
Turbot/Sablefish	0.16	0.10	0.18	0.11	0.07	0.10
Yellowfin Sole	4.19	4.33	2.83	3.57	3.87	3.80
Surimi and Fillet Trawl Catcher Processors						
Atka Mackerel	0.00	0.00	0.00	0.00	0.04	0.01
Other Flatfish	0.34	0.32	0.13	0.13	0.10	0.15
Other Groundfish	0.17	0.85	0.17	0.14	0.07	0.13
Pacific Cod	0.09	0.02	0.01	0.01	0.00	0.01
Pollock	0.62	0.27	0.05	0.09	0.07	0.05
Rockfish	0.02	0.03	0.06	0.04	0.07	0.01
Rock Sole	0.20	0.36	0.10	0.14	0.08	0.16
Turbot/Sablefish	0.00	0.01	0.00	0.00	0.00	0.00
Yellowfin Sole	0.20	0.15	0.02	0.05	0.02	0.08
Pot Catcher Processors						
Atka Mackerel	0.00	0.00	0.03	0.04	0.10	0.00
Other Flatfish	0.00	0.00	0.01	0.00	0.00	0.01
Other Groundfish	0.02	0.16	1.30	1.13	0.97	0.29
Pacific Cod	0.10	0.16	0.80	1.01	0.00	0.02
Pollock	0.00	0.02	0.17	0.05	0.00	0.00
Rockfish	0.00	0.00	0.01	0.00	0.00	0.00
Rock Sole	0.00	0.03	0.01	0.00	0.01	0.01
Turbot/Sablefish	0.00	0.00	0.02	0.00	0.00	0.00
Yellowfin Sole	0.00	1.97	0.46	0.82	1.21	1.01
Longline Catcher Processors						
Atka Mackerel	0.06	0.12	0.10	0.03	0.01	0.03
Other Flatfish	1.36	1.69	1.31	1.15	1.11	1.52
Other Groundfish	10.10	10.52	9.86	8.79	8.11	10.27
Pacific Cod	1.27	2.16	1.30	1.65	1.49	1.33
Pollock	0.50	0.80	0.73	0.66	0.65	0.48
Rockfish	0.21	0.27	0.29	0.14	0.12	0.15
Rock Sole	0.05	0.03	0.02	0.03	0.03	0.02
Turbot/Sablefish	0.33	0.33	0.13	0.23	0.21	0.07
Yellowfin Sole	0.16	0.22	0.46	0.47	0.46	0.37
All Shore Plants, Floaters, and Motherships						
Atka Mackerel	0.02	0.00	0.01	0.01	0.18	0.09
Other Flatfish	0.24	0.23	0.13	0.21	0.25	0.31
Other Groundfish	0.29	0.51	0.23	0.24	0.26	0.18
Pacific Cod	0.07	0.07	0.03	0.10	0.07	0.04
Pollock	1.87	0.80	0.25	0.51	0.32	0.38
Rockfish	0.01	0.02	0.02	0.04	0.04	0.02
Rock Sole	0.77	0.28	0.10	0.21	0.22	0.19
Turbot/Sablefish	0.02	0.03	0.05	0.03	0.08	0.01
Yellowfin Sole	0.04	0.04	0.03	0.03	0.03	0.02

Source: NPFMC Sector Profiles Database, 1999-2004

Table 9. Retained Catch in BSAI Fisheries in 1999-2004, by Species and Processor Sector

Species & Sector	1999	2000	2001	2002	2003	2004
	Retained Catch (1,000 mt)					
Head and Gut Trawl Catcher Processors						
Atka Mackerel	50.58	44.43	56.88	37.54	40.34	43.77
Arrowtooth Flounder	2.41	4.62	4.89	3.50	3.31	3.35
Flathead Sole	13.04	13.73	13.07	10.26	8.89	10.68
Other Flatfish	0.95	2.17	0.67	0.82	0.98	1.39
Other Groundfish	0.10	0.68	1.02	1.16	1.75	1.45
Pacific Cod	24.44	28.13	24.89	32.01	29.24	37.55
Pollock	14.00	16.91	17.19	17.51	13.59	17.04
Rockfish	12.36	10.03	8.61	10.44	11.42	9.50
Rock Sole	14.92	20.44	18.08	22.77	19.23	25.04
Turbot/Sablefish	1.62	1.90	1.97	0.97	0.81	0.61
Yellowfin Sole	44.70	60.24	52.70	61.15	58.84	51.76
Surimi and Fillet Trawl Catcher Processors						
Atka Mackerel	0.57	0.00	0.00	0.00	0.03	0.00
Other Flatfish	1.24	0.89	1.13	1.10	0.86	0.74
Other Groundfish	0.31	0.20	0.23	0.61	0.32	0.25
Pacific Cod	12.69	5.44	4.00	3.94	3.83	3.31
Pollock	410.81	481.43	603.79	642.87	522.52	519.49
Rockfish	0.15	0.00	0.10	0.04	0.32	0.15
Rock Sole	0.45	1.47	0.74	0.70	0.34	0.85
Turbot/Sablefish	0.00	0.01	0.02	0.02	0.01	0.01
Yellowfin Sole	10.88	7.91	2.11	2.43	4.42	4.52
Pot Catcher Processors						
Atka Mackerel	0.00	0.00	0.00	0.00	0.00	0.00
Other Flatfish	0.00	0.00	0.00	0.00	0.00	0.00
Other Groundfish	0.00	0.00	0.00	0.00	0.01	0.00
Pacific Cod	3.40	2.77	3.00	2.05	1.55	3.23
Pollock	0.00	0.00	0.00	0.01	0.01	0.00
Rockfish	0.00	0.00	0.00	0.00	0.00	0.00
Rock Sole	0.00	0.00	0.00	0.00	0.00	0.00
Turbot/Sablefish	0.00	0.00	0.00	0.00	0.00	0.00
Yellowfin Sole	0.00	0.00	0.00	0.00	0.00	0.00
Longline Catcher Processors						
Atka Mackerel	0.00	0.00	0.13	0.00	0.01	0.00
Other Flatfish	0.14	0.11	0.13	0.21	0.48	0.26
Other Groundfish	1.20	2.00	1.98	3.44	5.45	3.57
Pacific Cod	88.21	94.24	105.74	100.58	91.93	94.11
Pollock	3.35	3.83	4.99	5.64	6.34	4.76
Rockfish	0.16	0.21	0.18	0.12	0.16	0.14
Rock Sole	0.00	0.00	0.00	0.00	0.00	0.00
Turbot/Sablefish	4.13	5.05	2.91	2.54	2.18	1.76
Yellowfin Sole	0.00	0.00	0.02	0.01	0.01	0.14
All Shore Plants, Floaters, and Motherships						
Atka Mackerel	0.06	0.00	0.02	0.18	0.43	0.74
Other Flatfish	1.01	1.66	0.73	0.74	0.92	0.76
Other Groundfish	0.30	0.21	0.93	0.54	0.63	0.96
Pacific Cod	41.60	56.42	35.00	54.46	65.35	55.70
Pollock	533.16	609.37	744.58	795.32	783.57	767.68
Rockfish	0.08	0.08	0.21	0.33	0.23	0.37
Rock Sole	0.07	0.42	0.63	0.32	0.49	0.55
Turbot/Sablefish	0.55	0.84	1.30	1.46	1.15	1.13
Yellowfin Sole	1.23	1.80	0.09	0.03	0.11	0.15

Source: NPFMC Sector Profiles Database, 1999-2004

Table 10. Retained Catch as Percent of Total Catch in BSAI Fisheries in 1999-2004, by Species and Processor Sector

Species & Sector	1999	2000	2001	2002	2003	2004
	Retained Catch as Percent of Total Groundfish Catch					
Head and Gut Trawl Catcher Processors						
Atka Mackerel	18.85	15.12	21.06	13.19	14.90	14.60
Arrowtooth Flounder	0.89	1.57	1.81	1.23	1.22	1.12
Flathead Sole	4.86	4.67	4.84	3.60	3.28	3.56
Other Flatfish	0.35	0.74	0.25	0.29	0.36	0.46
Other Groundfish	0.04	0.23	0.38	0.41	0.65	0.48
Pacific Cod	9.11	9.58	9.22	11.25	10.80	12.52
Pollock	5.24	5.76	6.36	6.15	5.02	5.68
Rockfish	4.61	3.42	3.19	3.67	4.22	3.17
Rock Sole	5.56	6.96	6.69	8.00	7.10	8.35
Turbot/Sablefish	0.61	0.65	0.73	0.34	0.30	0.20
Yellowfin Sole	16.66	20.51	19.51	21.48	21.73	17.27
Surimi and Fillet Trawl Catcher Processors						
Atka Mackerel	0.10	0.00	0.00	0.00	0.01	0.01
Other Flatfish	0.28	0.18	0.18	0.17	0.16	0.16
Other Groundfish	0.07	0.04	0.04	0.09	0.06	0.06
Pacific Cod	2.85	1.11	0.69	0.60	0.72	0.72
Pollock	92.42	99.00	98.06	98.06	97.67	97.67
Rockfish	0.03	0.00	0.02	0.01	0.06	0.03
Rock Sole	0.10	0.29	0.12	0.11	0.06	0.16
Turbot/Sablefish	0.00	0.00	0.00	0.00	0.00	0.00
Yellowfin Sole	2.45	1.58	0.34	0.37	0.83	0.85
Pot Catcher Processors						
Atka Mackerel	0.00	0.00	0.00	0.00	0.00	0.00
Other Flatfish	0.00	0.00	0.00	0.00	0.00	0.01
Other Groundfish	0.47	0.12	0.08	0.16	0.33	0.03
Pacific Cod	95.42	95.30	96.93	96.53	96.91	98.44
Pollock	0.07	0.42	0.07	0.25	0.47	0.10
Rockfish	0.00	0.00	0.00	0.00	0.00	0.00
Rock Sole	0.00	0.00	0.00	0.00	0.00	0.00
Turbot/Sablefish	0.07	0.20	0.12	0.00	0.00	0.07
Yellowfin Sole	0.00	0.00	0.00	0.00	0.00	0.00
Longline Catcher Processors						
Atka Mackerel	0.00	0.00	0.10	0.00	0.01	0.00
Other Flatfish	0.12	0.09	0.09	0.17	0.40	0.21
Other Groundfish	1.59	1.06	1.46	2.66	4.49	2.92
Pacific Cod	78.05	74.93	78.14	77.62	75.75	77.06
Pollock	3.04	3.04	3.69	4.35	5.22	3.90
Rockfish	0.14	0.17	0.14	0.09	0.13	0.11
Rock Sole	0.00	0.00	0.00	0.00	0.00	0.00
Turbot/Sablefish	3.66	4.02	2.15	1.96	1.80	1.44
Yellowfin Sole	0.00	0.01	0.01	0.01	0.01	0.11
All Shore Plants, Floaters, and Motherships						
Atka Mackerel	0.01	0.00	0.00	0.02	0.05	0.09
Other Flatfish	0.17	0.24	0.09	0.09	0.11	0.09
Other Groundfish	0.05	0.03	0.12	0.06	0.07	0.11
Pacific Cod	6.96	8.24	4.53	6.29	7.55	6.64
Pollock	89.17	89.03	94.13	91.90	90.55	91.56
Rockfish	0.01	0.01	0.03	0.04	0.03	0.04
Rock Sole	0.01	0.06	0.08	0.04	0.06	0.07
Turbot/Sablefish	0.09	0.12	0.16	0.17	0.13	0.14
Yellowfin Sole	0.21	0.26	0.01	0.00	0.01	0.02

Source: NPFMC Sector Profiles Database, 1999-2004

3.0 Environmental Impacts of the Alternatives

3.1 Natural and Physical Environment

3.1.1 Groundfish Stocks in the BSAI

The alternatives considered are not expected to have any significant effects on groundfish stocks in the Bering Sea. These stocks include Pacific cod, rock sole, yellowfin sole, flathead sole, Alaska plaice and other flatfish species. If Alternative 3 were considered (where the GRS would be 90 percent for some portion of a year), it is possible that activity in the trawl multi-species fisheries will be curtailed and harvests of the stocks mentioned above will be reduced. However, as discussed in Section 3.2, any harvest reductions would be limited to the flatfish fisheries–harvests of Pacific cod are not likely to be affected for two reasons:

1. It is possible to target Pacific cod using trawl gear with relatively low incidental catches of other groundfish species. This has been demonstrated by AFA-eligible trawl catcher processors that target Pacific cod at different times and locations than are typical in the trawl multi-species fisheries.

2. If trawl catcher processors are unable to harvest the amount of Pacific cod in their apportionment, the remainder is "rolled-over" and made available to other harvesting sectors. All such rollovers that have occurred in the past have been harvested by longline catcher processors.

If harvest reductions were to occur in flatfish fisheries, it is unlikely that there will be any resulting stock effect. Currently, all flatfish stocks in the BSAI are harvested at levels well below established acceptable biological catches (ABCs) and overfishing limits (OFLs). By definition, catches below ABC are not expected to affect stock levels.

While a reduction in the proportion of discards to total catch is projected for Alternatives 2, 3, and 4, (especially flatfish) there is no indication that the stocks will be affected. Discard quantities constitute less than one percent of the yellowfin sole survey biomass, less than two percent of the rock sole survey biomass and less than 0.1 percent of the shallow-water flatfish survey biomass. Eliminating these discard amounts would have no measurable effect on the health of the flatfish resources. Moreover, the species TACs would remain the same under all of the alternatives considered. To the extent that these TACs are sustainable, extraction of the TACs will have the same stock effects regardless of whether the fish harvested are retained or discarded. If a portion of those fish discarded survives, then discarding results in fewer fish being removed from the biomass. There is no conclusive information regarding how many, if any, discarded groundfish survive.

3.1.2 Effects on Prohibited Species

Overall harvests of prohibited species is not anticipated to exceed status quo harvest under any of the alternatives, there is no expected change in the health of prohibited species stocks in any of the alternatives. NMFS has no data to indicate the likelihood of changes in fishing behavior from Alternatives 2-4 that may increase or decrease the probability of catching species that are currently depressed (BSAI chinook) or in an overfished condition (C. bairdi crab, C. opilio crab, BSAI red king crab and BSAI blue king crab). In addition, because Alternatives 2, 4, 3, and 5 require scales and 200 percent observers, reporting of PSC will likely improve.

3.1.3 Effects on Forage Fish Species

Because overall harvests of forage fish species will not be affected, none of the alternatives considered are expected to have any adverse effects on forage fish species.

3.1.4 Effects on Marine Benthic Habitat and Essential Fish Habitat

As a number of BSAI fishing sectors operate fishing gear in benthic habitat areas, it is possible that these operations contribute to changes in benthic populations. It is not possible with the information available to determine if any of the potential Alternatives examined would impact benthic habitat areas, compared with the status quo.

None of the alternatives would be expected to adversely affect marine benthic habitat or EFH in any manner or to any extent not already addressed in previous NEPA analyses and the EIS for EFH (NMFS 2005). The alternatives would not change the species TACs or the gear type and general location of the fisheries in which groundfish are caught. If the distribution of groundfish discards relative to natural sources of organic material can be assumed to be similar, and considering the amounts of the HT-CP discards relative to natural sources, there is no available data to suggest that any of the GRS alternatives would change scavenger populations or benthic community distribution and abundance (NMFS 2004).

3.1.5 Ecosystem Considerations

High rates of discards can have potential ecosystem effects. Discarding of groundfish may affect scavenger and predator populations by increasing the available food supply. In addition, discards will contribute to the total energy flow and, though they may be small when compared to the total flow, their effect is cumulative with other forms of energy flow such as offal production from processing and naturally occurring detritus. However, the level of groundfish discards relative to natural sources of detritus and the absence of evidence that would relate changes in scavenger populations to discard trends suggest that groundfish discards have insignificant ecosystem impacts through energy removal and redirection.

To the extent that groundfish discards are concentrated in one area they could create localized ecosystem effects. The potential for such effects may require consideration of local energy flows rather than region-wide flows. Such localized ecosystem effects are currently not well understood.

3.1.6 Effects on Marine Mammals

Under the Marine Mammal Protection Act, NOAA Fisheries Service classifies each U.S. commercial fishery (state and Federal) in one of three categories based on the level of incidental serious injury and mortality of marine mammals that occurs in the fishery. Each fishery is classified through a two-tiered analysis which assesses the potential impact of fisheries on each marine mammal stock by comparing serious injury and mortality levels to stock PBRs.

Species listed under the Endangered Species Act present in the management areas of concern, under the present action, were listed in the previous section. Some of the marine mammals not listed under the ESA that may be present in the BSAI and GOA management areas include cetaceans, [minke whale (Balaenoptera acutorostrata), killer whale (Orcinus orca), Dall's porpoise (Phocoenoides dalli), harbor porpoise (Phocoena phocoena), Pacific white-sided dolphin (Lagenorhynchus obliquidens), and the beaked whales (e.g., Berardius bairdii and Mesoplodon spp.)], as well as pinnipeds [Pacific harbor seal (Phoca vitulina), northern fur seal (Callorhinus ursinus), Pacific walrus (Odobenus rosmarus), spotted seal *(Phoca largha), bearded

seal (Erignathus barbatus), ringed seal (Phoca hispida) and ribbon seal (Phoca fasciata)], and the sea otter (Enhydra lutris).

Take of the above listed marine mammals in trawl fisheries has been monitored through observer programs. The subject fishery (Bering Sea/Aleutian Islands groundfish trawl) is classified as Category III. Very few marine mammals have been recorded as taken incidentally or injured in these fisheries. However, Steller sea lion, northern fur seal, harbor seal, spotted seal, bearded seal, ribbon seal, ringed seal, northern elephant seal, Dall's porpoise, harbor porpoise, Pacific white-sided dolphin, killer whale, sea otter, walrus, and humpback whales were recorded as taken incidentally or injured in the Bering Sea and Aleutian Islands groundfish trawl fisheries (Federal Register, Vol. 67, No. 12, 2002).

Because overall harvests levels of groundfish will not be affected, the number of marine mammal interactions is not anticipated to vary from the preferred action alternative for marine mammals described in the Alaska Groundfish Fisheries Programmatic PSEIS (NMFS, 2004a). As described in the PSEIS, the preferred alternative, reported insignificant effects on marine mammals due to direct take or marine debris. Conditionally significant adverse impacts were reported on three primary pinniped species (Steller sea lions, northern fur seals, and harbor seals) due to harvest of prey species. Conditionally significant adverse impacts on the primary pinniped species were identified due to spatial and temporal concentration on fishery. Finally, no significant impacts on marine mammals due to disturbance were identified. Since the alternatives under consideration for the GRS would not change the TAC, allocation, timing, or harvest methods for any of the fisheries, it is expected there would be no adverse impacts on endangered or threatened species of marine mammals.

3.1.7 Effects on Endangered or Threatened Species

None of the alternatives would be expected to adversely affect endangered or threatened species in any manner or to any extent not already addressed in previous consultations conducted under Section 7 of the ESA. None of the alternatives would change the TACs for groundfish, the gear types used in the fisheries in which groundfish are discarded or the spatial or temporal distribution of these fisheries. Therefore, none of the alternatives are expected to have a significant impact on endangered or threatened species.

3.1.8 Effects on Seabirds

Because the GRS is intended to increase retention of groundfish, it possible that it is expected to have the effect of reducing discards of groundfish. Although some piscivorus bird species, such as glaucous-winged gulls, might be gaining food subsidies from the discards associated with this fleet under the status quo, there does not appear to be a population-level effect as a result of this subsidy. There is no data available to identify if a reduction in discards from this fleet could change the abundance of food sources for either listed or unlisted seabirds.

3.2 Economic and Social Impacts

This section contains a summary of the projected social and economic impacts of the Alternatives under consideration. Section 4.5.2 of the Regulatory Impact Review (RIR) provides a detailed description of the economic and social effects of this action and alternatives. However, the core of that discussion is contained below.

3.2.1 Alternative 1: Maintain the Status Quo

Under the status quo, there would be no additional regulatory change in the way that groundfish retention and discards are managed, with the exception of the recent regulations to enforce the MRA from offload to offload.[4] In 2002 the HT-CP sector discarded approximately 86,000 tons or 30 percent of their total catch of groundfish and in 2003 the sector discarded approximately 85,000 tons, or approximately 31% of total groundfish catch. This corresponds to 69% of total catch retained (See Table 11). In 2004 average groundfish discards for these fisheries continued to be approximately 30 percent of their total catch of groundfish. The effect of these current regulations on retention and discarding of groundfish, are uncertain, as many other economic factors may influence the behavior of this fleet. The status quo does not anticipate substantial changes in the aggregate retention rate for groundfish species for the HT-CP sector. However, the retention of certain species may increase or decrease based on a number of economic, resource abundance or fishery management factors. For example, changes in relative prices of a groundfish target or non-target species could alter the economic incentives to retain some species in comparison with other species. Little verifiable data exists on the economic effects and other distributional impacts of discarding practices. Given the range of environmental issues that citizens are exposed to, it is unlikely that a large portion of U.S. households are aware of the magnitude of groundfish discards in the North Pacific or the incremental effects on those discards from this action. However, some environmental interests demonstrate awareness of BSAI groundfish discards and generate public testimony recommending reduction in discards in the HT-CP fishery, suggesting that some citizens may ascribe a positive value to reducing groundfish discards in this fishery.

3.2.2 Alternatives 2, 3, and 4: Establish a Minimum Groundfish Retention Standard

Alternatives 2, 3, and 4 establish a GRS for certain vessels and sectors in the groundfish fleet. For purposes of this analysis, two bookend alternatives were developed by varying the values of possible components of a GRS measure. These bookends represent a more restrictive and less restrictive measure, however, the bookends are not intended to be the only options under consideration—any of the various options under each of the components could have been included in a preferred alternative. In point of fact, the Council identified a preferred alternative at its June 2003 meeting by selecting among the various options within each component. The analysis describing the effects of these individual components and options can be found in Section 4.6. The remainder of this section consists of three parts:

Section 3.2.2.1 summarizes projected effects on groundfish retention of Alternatives 2, 3, 4
Section 3.2.2.2 presents the NPFMC rationale and justification for the preferred alternative
Section 3.2.2.3 contains a summary and summary table of costs/benefits and other impacts of the Alternatives including the status quo.

3.2.2.1 Effects on Retention of Action Alternatives

Less Restrictive GRS–Alternative 2

The less restrictive GRS would be enforced only on HT-CPs vessels ≥ 125' LOA and would require groundfish retention to be at least 70 percent of groundfish catch over the entire year. In addition, this alternative would increase the MRA for pollock to 35 percent for all HT-CPs. Table 11 shows actual

[4]The NPFMC's action in June 2003 included a recommendation to NOAA Fisheries to expedite a regulatory amendment to change the interval over which the pollock MRA is enforced–from a continuous or instantaneous enforcement interval to offload-offload enforcement. That action was approved by the Secretary of Commerce in June 2004. A separate EA/RIR/FRFA has been completed for the MRA enforcement period change. The MRA change is included as part of the status quo for this action.

retention in 1999-2002 and what might have occurred if Alternative 2 had been in place during that period. This projection makes several assumptions, including that fishing locations and fishing behavior would not change in a manner that could change the catchability or distribution of groundfish species available for harvest. Given those assumptions, all of the additional retention in this alternative is projected to come from the increase of the pollock MRA to 35 percent rather than as a result of the GRS. By allowing the retention of pollock that had been regulatory discards, the HT-CPs vessels ≥ 125' LOA as a whole would have exceeded the 70 percent retention standard in each year. In addition, because the change in the pollock MRA applies to both large and small (<125') vessels, total retention of the HT-CP fleet is estimated to increase by an average of 5.0 percent over the period shown.

Table 11. Estimated Effects on Retention in the HT-CP Sector if Alternative 2 had been Effective in 1999-2002, by Size Class

		Actual Retention			Additional Retention Sources under Alt. 2			
Year	Vessel Length	Retained (MT)	Total (MT)	Retention Percentage	From MRA (MT)	From GRS (MT)	All Sources (mt)	Rentention Rate (percent)
1999	≥125'	168,511	247,407	68	10,877	0	10,877	73
	< 125'	10,657	20,851	51	544	0	544	54
	All Vessels	**179,168**	**268,258**	**67**	**11,420**	**0**	**11,420**	**71**
2000	≥125"	191,277	269,922	71	13,859	0	13,859	76
	< 125'	10,020	23,747	51	333	0	333	52
	All Vessels	**203,297**	**293,670**	**69**	**14,191**	**0**	**14,191**	**74**
2001	≥125'	188,285	249,907	75	13,447	0	13,447	81
	< 125'	11,668	20,150	58	520	0	520	60
	All Vessels	**199,953**	**270,457**	**74**	**13,967**	**0**	**13,967**	**79**
2002	≥125'	180,745	255,379	71	14,881	0	14,881	77
	< 125'	17,534	29,431	60	969	0	969	63
	All Vessels	**198,279**	**284,810**	**70**	**15,850**	**0**	**15,850**	**75**

Source: Based on NOAA Fisheries blend data. Estimates include the best available and representative data available for this analysis.

More Restrictive GRS–Alternative 3

If this alternative GRS were selected, (Alternative 3) it would be imposed on all BSAI Catcher Processing vessels ≥ 125' LOA engaged in non-pollock fishing. During the early part of the year (January-May) the GRS would be 85 percent, and would increase to 90 percent during the remainder of the year. Compliance with the GRS would be monitored and enforced on a weekly basis. Table 12 presents the catch and retention in non-pollock fisheries of the catcher processors that would be regulated under Alternative 3. The table also shows the number of vessels in each sector that would have been affected and the number of weeks they participated in non-pollock fisheries.

Table 12. Retained and Total Catch in Non-Pollock Fisheries of Catcher Processors Greater than or Equal to 125 ft. in Length, by Processor Sector, 2001

Sector	Vessel Count	Vessel Area/Weeks	Retained (MT)	Total Catch (MT)	Retention Rate (Percent)
ST/FT-CP ≥125'	6	29	6,856	7,389	92.8
HT-CP ≥125'	16	842	179,958	235,307	76.2
P-CP ≥125'	5	47	2,813	2,898	97.1
L-CP ≥125'	24	1,066	80,791	94,651	85.4
All CPs ≥125'	**50**	**1,984**	**270,417**	**340,244**	**79.5**

Source: NPFMC Sector Profiles Database, 2001. *Year 2001 represents a similar retention activity in this fleet to years 2002 to 2003.*

As shown in Table 13, the measures in Alternative 3 would lead to significant improvements in retention rates in both the HT-CP and L-CP sectors. If Alternative 3 had been implemented in 2001, the HT-CP sector would have been required to retain an additional 30.5 thousand mt and the L-CP sector would have been required to retain an additional 5.5 thousand mt. These amounts represent, respectively, a 13.3 and 5.8 percentage point increase in total retention rates in comparison to the status quo. The SF/FT-CP and P-CP sectors would have been minimally affected. These sectors would have seen a 173 mt and 25 mt increase in retention, respectively.

Table 13. Estimated Effects on Retention if Alternative 3 had been Implemented in 2001, by Processor Sector and GRS Enforcement Period

Sector	Enforcement Periods (Number)	Vessels with Retention Rates Below GRS (Number)	Times Vessels had Retention Rates Below GRS (Number)	Additional Retained Catch Needed to Meet GRS (MT)	Increase in Retention Rate (Pct. Points)
Week/Area Enforcement					
ST/FT-CP	29	2	11	173	2.3
HT-CP	842	15	603	30,477	13.3
P-CP	47	4	9	25	0.9
L-CP	1,066	23	617	5,554	5.8
All CPs	1,984	44	1,240	36,229	10.8

Source: NPFMC Sector Profiles Database, 2001. Year 2001 represents a similar retention activity in this fleet to years 2002 to 2003.

Phase-In of a GRS (Preferred Alternative, Alternative 4)

The preferred alternative (labeled Alternative 4) would phase in the GRS over a four year period beginning in 2007, starting at 65 percent and increasing to 85 percent. Under the preferred alternative only HT-CP vessels ≥ 125' LOA would be required to comply with the GRS—which would be determined and enforced at the end of the year. Table 14 shows the expected effects of Alternative 4 on the HT-CP sector in terms of retained harvest required to meet the GRS, the equivalent product weight, and additional product weight as a portion of total sector production. The analysis estimates that in 2007, only two vessels will need to increase their groundfish retention rates to meet the GRS for that year. The vessels will be required to retain an additional 1,800 mt of groundfish, equivalent to 1,100 mt of products. This amount is roughly equal to one tenth of one percent of the groundfish products generated by the HT-CP sector between 1999 and 2002. By 2010, when the GRS has risen to 85 percent and all HT-CP vessels have to improve retention to meet the standard, the amount of groundfish retained by the sector will increase by approximately 53,000 mt, equivalent to 34,300 mt of products.

Overall, the retention rate of the affected boats will be required to rise by roughly 5 percentage points between 2007 and 2010 while the retention rate of the entire HT-CP fleet is predicted to rise roughly eleven points during the same period. The overall retention rate of the entire fleet is predicted to be roughly 80.6 percent in 2010. This rate is lower than the GRS of 85 percent because boats less than 125 ft. LOA are not affected by the preferred alternative.

Table 14. Estimated Effects of Alternative 4 on Retention in the HT-CP Sector

	2005	2006	2007	2008	2009	2010
GRS (Percentage)	--	--	65	75	80	85
Additional Retained Catch (MT)	0	0	1,799	17,722	33,539	52,913
Additional Retained Product (MT)	0	0	1,146	11,287	21,361	34,337
New Discards as a Percent of Product Weight (DPP)	0.00	0.00	0.17	1.72	3.26	5.24
Vessels Required to Retain Additional Groundfish	0	0	0.7	6.5	12.3	19.8
Retention Rate of Affected Boats	72.1	72.1	72.5	76.3	80.1	85.0
Retention Rate of HT-CP Fleet	69.9	69.9	70.2	73.4	76.6	80.6

Note: 2005 and 2006 retention rate is based on the 2002 retention rate. Source: Estimated by Northern Economics based on Data supplied by NOAA Fisheries in 2003. Year 2002 represents a similar retention activity in this fleet to years 2001 and 2003.

The quantitative assessment projects the impacts on the HT-CP sector of the establishment of the preferred GRS alternative on groundfish retention rates including the effects of the MRA enforcement interval change. The more qualitative assessment presents an overview of cumulative effects, including a discussion of the impacts on the HT-CP sector of the establishment of the GRS in combination with the implementation of Amendment 80 (Sector Allocations and Formation of a Cooperative in the HT-CP Sector).

Effect of Maximum Retainable Allowance regulations on the Alternatives

The MRA for a groundfish species closed to directed fishing is calculated as a percentage of retained amounts of that species relative to the amount of other groundfish species that are open to directed fishing on a vessel. Current regulations under the status quo prohibit the retention of a species closed to directed fishing in amounts that exceed the MRA percentage, and excess catch must be discarded. For most species, including pollock, a standard default of 20 percent is established to serve as a general management tool to slow the harvest rate of a species, yet avoid significant discard amounts of these species to the extent they are taken as incidental catch in other open groundfish fisheries. Under current regulations, it is unlawful for a vessel to exceed the MRA between consecutive offload periods.

IR/IU regulations for the directed pollock fishery require 100 percent retention of pollock. For vessels that are not allowed to participate in directed fisheries for pollock the IR/IU regulation requires that vessels retain all pollock (with minor exceptions for damaged or contaminated fish) up to the 20 percent MRA, but because they cannot be engaged in directed fishing for pollock, they may not retain any more than 20 percent. Prior to the implementation of an expanded enforcement period for the MRA, these competing requirements placed some operations in a potentially high-risk situation, given both requirements were "instantaneously" enforceable. So long as the retained amount of pollock were "below" the 20 percent threshold, no pollock could be discarded (under IR/IU), yet the vessel may not, at any point between two consecutive offloads, exceed the MRA limit. This created a balancing act, in terms of constant catch accounting, which imposed an additional compliance burden on the operator. The primary effect of the June 2004 MRA enforcement period was to give vessels the opportunity to more effectively manage the competing requirements of IR/IU and MRA, while retaining more of their pollock if at any given point during the trip they have more pollock on board than the 20 percent allowed by the MRA.

Anticipated Effects

The current MRA enforcement period for pollock is expected to give HT-CPs the ability reduce their regulatory discards of pollock. Based on anecdotal evidence from industry sources—there is no empirical data on processing and selling costs—retaining additional pollock appears to be a least cost alternative for retention improvement. Pollock can be expected to generate more revenue than processing sculpins or sub-standard rock sole or yellowfin sole, for example. This is not to say however, that retaining additional pollock

will in fact improve net revenues—the relative benefits of retaining pollock and possibly displacing more valuable product are not known. The effect of altering the instantaneous enforcement period for the pollock MRA to the present enforcement of the MRA on an offload by offload basis is uncertain. The main factors that could determine the size and distribution of economic impact on the HT-CP sector are (1) the value of pollock relative to the value of groundfish normally caught by the sector, (2) the amount of pressure vessels operators are experiencing to reduce discards [e.g., from the Council in the form of a GRS, or from other concerned groups], and (3) strategic behavior of individual vessels.

If pollock has a ***lower*** relative value than the targeted species, and vessels operate without regard to pressure to reduce discards, the change in the enforcement interval is unlikely to have any significant economic effect—vessels will continue to discard pollock at current levels, while remaining within the retention requirements of IR/IU regulations. If , on the other hand, vessels choose to reduce discards of pollock to alleviate increasing pressure from the Council and the public at large[5], they could experience negative economic consequences. Assuming vessel catch is constrained by hold space, the amount of product from higher-valued species that would be displaced by the increased retention of pollock, under this scenario, may be substantial.

If pollock has a ***higher*** relative value than other species in the catch, as it does during the pollock roe season, the impact on the HT-CP sector from the 2004 implementation of the enforcement accounting interval could be positive. In some years pollock catches appear to be higher during the first part of the trip compared to latter parts of the trip. Under the current regulations, vessels are likely to be forced to discard valuable pollock during the early part of the trip until they have harvested and retained sufficient amounts of non-pollock target species to build up a "ballast" of retained product against which they can count retained pollock. Then later in the trip they can "top-off" if they wish. Thus under the current regulations vessels may be forced to "catch pollock" twice if they wish to retain the maximum amount of pollock allowed. With the current regulation, again assuming pollock is a desired species, vessels will have the option to keep pollock caught in the early part of the trip, even if they have not yet caught and retained sufficient non-pollock species to comply with the MRA. Because they are able to keep all pollock as it comes on board, a need to "top-off" later in the trip becomes unlikely. Thus the current action may reduce overall pollock catches by the HT-CPs.

In the first 6 months that the new MRA accounting period was implemented in 2004, however, both the catch of pollock, with respect to the yellowfin sole target and retained catch declined in comparison with 2003. In the first 5 months of 2005 under the new MRA accounting period, the catch of pollock with respect to the yellowfin sole target declined in comparison with both 2003 and 2004, but the rate of retention pollock retained in the yellowfin sole target increased from 61 percent and 58 percent in 2003 and 2004, to 69 percent in 2005. It is not possible to evaluate the reasons for these catch and retention amount changes with a single year of data. Reasons for a decline in the amount of pollock caught in the yellowfin sole target may be partially attributable to increases yellowfin market prices reported by some industry representatives. However, without observations on product prices, production and industry cost that do not currently exist for these fisheries, this potential should be regarded as speculative.

For alternatives 1 and 2 the offload based enforcement interval for the pollock MRA is expected to have a minimal effect on participants in the directed fishery for BSAI pollock. Participants in the directed fishery would be affected only if a change in the enforcement interval resulted in a larger additional amount of

[5]This, of course, may not be what a profit maximizing firm would voluntarily do, unless the pressure to reduce discards was so great that it was perceived to threatened the firm's ability to continue to operate. In this case, the social and political cost of continuing to discard pollock at historical rates may exceed the operational and economic benefits of doing so, and the profit maximizing firm would voluntarily undertake measures to reduce bycatch and increase retention of incidental catches of pollock.

pollock caught and retained by the HT-CP sector and an increase in this sector's ICA for pollock. It has been suggested by some industry representatives that non-AFA vessels "top off" their catches with pollock at the end of a trip in order to catch more pollock up to the MRA amount. However, owners of non-AFA vessels maintain that they generally prefer not to catch pollock because it has a per unit value lower than their target species. Analysis of NOAA Fisheries blend data does not indicate a pattern of topping off by HT-CP vessels. Under Alternative 3 and 4 it is more likely that the offload based enforcement interval for the pollock MRA would lower the total amount of pollock caught because participants will be required to significantly reduce groundfish retention. Year 2004 data suggest a modest increase in groundfish retention, however pollock catch and retention data from data from 2004 and 2005 do not include a sufficient number of observations to conclude that the new MRA enforcement interval has been the cause of these changes in pollock catch and retention.

Under Alternatives 3 and 4, the GRS is likely to provide an incentive for each vessel to increase their pollock retention (as the least cost option to improve retention). The estimates in Table 15 make several assumptions, including that fishing locations and fishing behavior would not change in a manner that could change the catchability of groundfish species available for harvest. This data is based on fishery data in year 2002. Given those assumptions, Table 15 shows two different scenarios for all vessels in the HT-CP sector—the first scenario shows all HT-CPs with the MRA enforcement interval change but without the GRS, while the second scenario shows all HT-CPs with the GRS and the MRA changes combined. The third set of numbers shows the difference between the two scenarios. Included in the table are the expected increases in retained catch and product weight, and the increase in retained product weight as a percentage of total sector production. Also shown are the number of boats affected by the GRS, the combined retention rate of the fleet as a whole, and the combined retention rate of vessels affected by the GRS. Overall, the table shows that during the first two years of the GRS, increased retention from the current MRA regulations may result in affected entities being able to meet the GRS without retaining non-pollock species. Only after the third year of the GRS (projected to be 2009) do retention rates increase due to the GRS. By the sixth year there is a 11.6% improvement in groundfish retention for HT-CPs ≥125', approximately 10% of which could be attributed to the GRS.

This analysis assumes that monitoring and enforcement of the GRS would begin in 2007 and the affected HT-CPs will be required to increase observer coverage and comply to with certified scale requirements. The NPFMC elected to phase in the GRS over a four year period in order to allow ample time for the affected vessels to adjust to the program requirements and to spread the cost of the program out over a longer period (see Section 3.2.1.2.2).

Table 15. Projected Effects of Alternative 4 (Preferred Alternative), based on 2002 data, with and without Changes in the Pollock MRA Enforcement Interval

	2005	2006	2007	2008	2009	2010
Scenario 1: With Change in MRA Enforcement Interval but no GRS						
Additional Retained Catch (GRS Boats)	0	5,382	5,382	5,382	5,382	5,382
Additional Retained Product (GRS Boats)	0	3,428	3,428	3,428	3,428	3,428
Increase as a Percent of Total Product	0.00%	2.2%	2.2%	2.2%	2.2%	2.2%
Number of GRS Affected Boats	0	0	0	0	0	0
Retention Rate of GRS Affected Boats	72.1	73.5	73.5	73.5	73.5	73.5
Retention Rate of HT-CP Fleet	69.9	71.5	71.5	71.5	71.5	71.5
Scenario 2: With Change in MRA Enforcement Interval and a GRS						
Additional Retained Catch (GRS Boats)	0	5,876	6,619	18,531	31,929	50,137
Additional Retained Product (GRS Boats)	0	3,743	4,216	12,489	21,695	34,682
Increase as a Percent of Total Product	0.0%	2.2%	2.4%	7.2%	12.5%	20.0%
Number of GRS Affected Boats	0	0	2	12	15	16
Retention Rate of GRS Affected Boats	72.1	73.5	73.7	76.8	80.2	85.1
Retention Rate of HT-CP Fleet	69.9	71.5	71.7	74.3	77.1	81.3
Difference Between With and Without the GRS in Future Scenarios						
Additional Retained Catch (GRS Boats)	0	394	1,237	14,227	28,682	49,073
Additional Retained Product (GRS Boats)	0	315	788	9,061	18,267	31,254
Increase as a Percent of Total Product	0.0%	0.0%	0.2%	4.9%	10.3%	17.8%
Number of GRS Affected Boats	0	0	2	12	15	16
Retention Rate of GRS Affected Boats	0.0	0.2	0.2	3.3	6.7	11.6
Retention Rate of HT-CP Fleet	0.0	0.0	0.2	2.8	5.6	9.8

Source: Developed by Northern Economics based on Blend Data provided by NOAA Fisheries-AFSC, 2002. Based upon implementing the GRS at 65 percent in 2007, 75 percent in 2008 and 85 percent in 2009.

3.2.2.3 Summary of Costs, Benefits and Other Impacts of Alternatives and the Preferred Alternative

Table 16 summarizes the alternatives and some anticipated effects. The table describes not only the details of the alternatives, but their expected effect on the groundfish retention rate, industry costs, and industry revenues, as well as distributive effects, community impacts, impacts on minority and low income populations, and monitoring and enforcement.

If Alternative 2 had been in place during the 1999 to 2002 period, the projected retention rate would have ranged between 71 to 79 percent across the entire HT-CP sector (assuming that all vessels currently above the GRS stay above that standard). The gain in retention is realized from lower regulatory discard rates for pollock caused by the change in the MRA (also assumed to have been in place). Seven sector vessels would be required to invest in flow scales while all sixteen vessels greater than 125 ft. LOA would be required to carry an extra observer at a per vessel cost of roughly $82,000 per year (see Section 4.5.2). The alternative is not expected to have a substantial negative effect on vessel gross revenues. Community, low-income and minority impacts are expected to be the same as Alternative 1.

If Alternative 3 had been implemented in 2001, the projected retention rate of all CPs vessels greater than or equal to 125' combined would have been 90 percent. Retention would likely have improved slightly in the L-CP and P-CP sectors, while the retention rate for the HT-CP sector would have improved 13 percent. Seven HT-CP sector vessels would have been required to invest in flow scales purchase and installation at an approximate cost of $75,000 to $300,000 per vessel, while all sixteen vessels greater than or equal to 125 ft. LOA would have been required to carry an extra observer at a cost of roughly $82,000 per year per vessel. In addition, five P-CP vessels and 24 L-CP vessels would have incurred the costs of installing scales (approximately $25,000 per vessel) and adding an additional observers (approximately $20,000 and $80,000 per vessel per year respectively). Additional costs would have been incurred by vessels holding additional amounts of fish of lesser market value. Since this alternative would have the highest initial GRS percent of

all the alternatives considered, and it would impact sectors in addition to the HT-CP sector, it would impose the highest industry costs of any alternative. Community, low-income and minority impacts are expected to be the same as Alternative 1. It is not possible to identify non-market effects (either non-consumptive, option, or non-use) of this option in comparison with the status quo. If citizens of the U.S. were willing to pay for marginal reductions in discards at the magnitude presented in the three action alternatives, this alternative has the largest potential to produce a positive change in welfare associated with non-consumptive use or non-use of groundfish. There is no data available to determine if there are improvements in welfare of U.S. citizens from changes in BSAI discards, and only descriptive and anecdotal information as well as public testimony presented by some environmental interest groups that BSAI groundfish discard reductions in the HT-CP sector could result in a positive effect the environment, or improvement in the welfare of persons that do not consume fish products made from these fisheries.

Alternative 4, the preferred alternative would lead to a projected retention rate of 80.6 percent across the entire HT-CP sector and 85 percent across affected vessels. The gain in retention is the result of lower discards of non-pollock groundfish. Seven sector vessels would be required to invest in flow scales at an approximate cost of $75,000 to $300,000 per vessel, while all sixteen vessels greater than 125 ft. LOA would be required to carry an extra observer at a cost of roughly $82,000 per year per vessel. Under this alternative, the vessels may incur the costs and lost revenues associated with holding/processing, transporting, and transferring fish that are of relative low value. Community, low-income and minority impacts are expected to be the same as Alternative 1. The effects associated with discard reductions to persons who do not directly consume groundfish are likely to be comparable with the qualitative effects described in Alternative 3.

All alternatives have comparatively similar monitoring and enforcement issues. In order to effectively monitor GRS compliance and therefore enforce a GRS, regulated vessels must have certified flow scales and a certified observer sampling station and every haul must be observed. The increase in observer coverage and its associated increase in the amount of data collected is expected to raise overall annual costs of the observer program.

3.2.2.4 Other Effects of Alternatives and the Preferred Alternative

The amount of North Pacific Groundfish discards has been identified by some environmental organizations both in Alaska and in other locations as a concern. NOAA Fisheries has no empirical data suggesting that many people would assign substantial non-consumptive or non-use values to these fish if they were left undisturbed in the ocean. The value of the discarded fish as a protein resource that could be used by hunger relief organizations also appears to be very limited.

There is no literature or data available demonstrating that these species, in the amounts being removed from the North Pacific, have a significant indirect value to the productivity of other species (e.g., providing prey for other living marine resources that do have use or non-use value). However, environmental interests note that the lack of data on these difficult to measure ecosystem effects, does not justify the assumption of zero environmental impacts. Discarding groundfish from trawl operations in the BSAI have been associated with large congregations of predacious and scavenging sea birds, evident during the hauling of a cod end. No studies exist in the BSAI of whether changes in discards alter seabird populations. In the North Sea, concerns are expressed that reduction of historic rates of discards could cause short run predatory scavening birds to compete with other seabirds (Furness, 1999).

Evidence for Societal Preferences in Fishery Waste Laws of Alaska

As previously noted, little if any economic literature exists on non-market valuation of waste and discharge of fishery bycatch. Competent analysis of potential non-market effects of bycatch and discarding in the groundfish fisheries of the BSAI would be both a costly undertaking and technically difficult to carry out.

These technical challenges and difficulty in monetizing potential changes to public perception on groundfish discards does not imply that society places an insignificant value on discard practices in the BSAI. For example, the existence of public policies to reduce fishery discards are evidenced by longstanding State of Alaska law restricting the wanton waste of fish for several finfish species, including groundfish[6]. The State of Alaska is noted for some of the most restrictive laws on the wanton waste of fish and wildlife in the U.S. Prior to and during the public comment period for Amendment 79 (attachment in McKie Campbell letter to Sue Salveson, August 1, 2005), Alaska Department of Fish and Game related it's long standing basis for societal preferences in Alaska that have led to stringent fishery waste discard laws in that state.

> "The State of Alaska has enacted regulations (at Sec. 16.10.165 - Alaska Fish & Game laws and regulations) to prevent a person from recklessly wasting or causing to be wasted groundfish taken in a commercial fishery."
>
> "Furthermore, in native cultures, discard and waste of natural resources is considered an anathema. (Http://www.uaa.alaska.edu/philosophy/envethics/current_issues/articles/subsust.html, Nov: 10, 2003). It is also an affront to those Alaskans unable to participate in many of these fisheries to hear reports of thousands of tons of their coastal resource being wasted. While the State has provided exceptions to wanton waste, it has done so only in dire circumstances where hundreds of fishermen (not just a few) will be hurt. Alaska considers it "practicable" to have some costs imposed to avoid dumping protein -- the state has done this with herring and salmon."

State of Alaska wanton waste laws have been in effect for decades, and have been subjected to a lengthy public review process in the Alaska State Legislature and Board of Fish. The stability of this law, costs imposed by these laws to some fishing sectors, and relatively low transaction costs for changing these policies, provide evidence that some levels of fishery discards in State or potentially nearby waters effect individual preferences of some residents in this region.

The range of perspectives from the public offered during testimony on IR/IU and during the public comment on the proposed rule for the GRS on the importance of discards from this sector is substantial. Often, the information provided by members of the public to support a particular perspective on the importance of the discards from the HT-CP sector is anecdotal, difficult to verify or analyze. As an example of the range of comments, some environmental interests point out that in recent years, discarded groundfish from the 24 to 26 vessels in the HT-CP sector of the BSAI exceed the entire domestic groundfish catch of a number of U.S. coastal states. Other directly potentially regulated fishing interests point out that these discarded catches are small (on the order of a fraction of one percent) in comparison to the total groundfish catches in the North Pacific, and even less significant in comparison to the annual estimated biomass of groundfish in the North Pacific.

While previous actions to reduce discarding of fish stripped of roe was implemented by NMFS in 199, the ban on roe stripping was to ensure that other products, like fillets and surimi, are produced from pollock catches, thereby reducing discards. While this action was costly to the regulated fishing sectors, the Council and Secretary ultimately determined that "this cost would be offset by the benefits of increased protection of the ecosystem and the future productivity of pollock stocks." Congress subsequently agreed that roe stripping was a wasteful and inappropriate action, and prohibited it in the MSA.

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[6] Herring - AS Sec. 16.10.172 (§ 1 ch 9 SLA 1977; am § 26 ch 132 SLA 1984)
Salmon - AS Sec. 16.05.831 (§ 3 ch 99 SLA 1975; am § 18 ch 132 SLA 1984)
Pollock and groundfish - AS Sec. 16.10.164 and 16.10.165 (§ 2 ch 116 SLA 1990; am §§ 1 - 3 ch 19 SLA 1998)
The Board of Fisheries also passed a measure enacted in 5 AAC 28.075 regarding utilization of pollock and Pacific cod taken in a commercial fishery (Effective 12/31/97; Register 144; am 8/27/98, Register 147).

As a result of the different ways that these removals may be perceived, the resource values associated with the non-consumptive, or non-use attributes of discards in these fish, for amounts currently occurring in the groundfish fisheries are best described as indeterminate, though the increasing level of interest in fishery bycatch reduction and discards nationally and regionally, and statutory prohibitions against fish dumping and and underutilized discharge of fish in public waters, suggest that further reduction of discards has some level of market, or non-market or non-consumptive benefit to a segment of the population.

Considering the potential costs of some GRS approaches, and difficulty in formally enumerating non-use and non-market effects of discards, the Council has expressed that reducing discards will likely contribute to a positive benefit for the Nation. The Council has stated that it is committed to reducing discards, minimizing waste, and improving utilization of fish resources to the fullest extent practicable in order to provide the maximum benefit to present and future generations of fishermen, associated fishing industry sectors, communities, consumers, and the nation as a whole.

Table 16. Summary of Costs, Distributional Effects, Community Impacts and Impacts on Groundfish Retention

Alternatives	**Alternative 1: No action/Status quo**	**Alternatives 2, 3, & 4: Establish a minimum groundfish retention standard (GRS) in the BSAI These alternatives are characterized by a series of 8 components that comprise a wide array of potential alternatives. Two "representative bookend" alternatives (Alternatives 2 and 3) and a phased-in GRS (Alternative 4 - preferred alternative) are analyzed.**		
		Alternative 2: Less restrictive GRS	**Alternative 3: More restrictive GRS**	**Alternative 4: Phased-In GRS (Preferred Alternative)**
Description	*Current regulations* regarding retention and discards and regulations that require 100 percent retention of pollock and Pacific cod would remain in effect. At the time of the Council final action regulations regarding the MRA for pollock were to be instantaneously enforceable (i.e., at any time during a fishing trip). They were subsequently changed to be enforced at the time of offload. The status quo for this analysis includes the current regulations on enforcement of the MRA at offload.	Establishes a GRS of 70 percent and applies it to HT-CP sector ≥ 125' as a fleet. Retention rate is determined *at the end of the fishing* year. Pollock MRA is increased to 35 percent for all non-AFA trawl catcher processors and compliance is determined on each vessel at end of each offload. Approved scales, a certified observer sampling station, and observer coverage of every haul are used to measure and verify total catch. Approved scales, a certified observer sampling station, and observer coverage of every haul are used to measure and verify total catch. Retained catch is calculated using standard PRRs.	Establishes a GRS of 85 percent for January through May and 90 percent during remainder *of the year.* GRS applies to all catcher processors ≥125' as individual vessels. Catcher *processors < 125' are* exempt if weekly production < 600 mt. The pollock MRA is enforced at at the point of offload. Retention rate is determined at end of each week for each area and gear fished. Approved scales, a certified observer sampling station, and observer coverage of every haul are used to measure and verify total catch. Retained catch is calculated using standard PRRs.	The preferred alternative establishes a year-round GRS of 65 percent in 2007; 75 percent in 2008; 80 percent in 2009; and 85 percent in 2010. Note that the starting date in this final *rule is 2007. The GRS* applies to all HT-CP vessels≥ 125' as individual vessel. Catcher processors < 125' are exempt. Compliance with the GRS is monitored and enforced at the end of year for each vessel. Approved scales, a certified observer sampling station, and observer coverage of every haul are used to measure and verify total catch. PSC is not included in the calculations for GRS *compliance. Retained* catch is calculated using standard PRRs.

Alternatives	Alternative 1: No action/Status quo	Alternatives 2, 3, & 4: Establish a minimum groundfish retention standard (GRS) in the BSAI These alternatives are characterized by a series of 8 components that comprise a wide array of potential alternatives. Two "representative bookend" alternatives (Alternatives 2 and 3) and a phased-in GRS (Alternative 4 - preferred alternative) are analyzed.		
		Alternative 2: Less restrictive GRS	**Alternative 3: More restrictive GRS**	**Alternative 4: Phased-In GRS (Preferred Alternative)**
Groundfish Retention	Groundfish retention rates increased during the period from 1991 to 2001. In 2001, the retention rate of the HT-CP sector was 75 percent. From 2002 though 2004, retention rates averaged 70 percent. In the future, this rate could continue rising, stay the same, or decrease.	Overall groundfish retention rate of the HT-CP sector is projected to range from 71 to 79 percent. Retention increases are likely to result from the increased pollock retention due to the change in the pollock MRA rather than as a result of the GRS.	Overall groundfish retention rate of the HT-CP sector is estimated to increase to 90 percent if the alternative had been implemented in 2001. Retention is also expected to improve for L-CPs and P-CPs. Improvements in retention rates under this alternative are anticipated to be the result of lower non-pollock discards.	Overall groundfish retention rate of the HT-CP sector is projected to be 80.6 percent in 2010. Improvements in retention rates under this alternative are anticipated to result from lower non-pollock discard.
Effects on Industry Costs	Under current regulations, vessels ≥125' have single observer coverage at a cost of about $82,000 per year. Vessels < 125' have 30% of their catch observed, and are estimated to have annual observer costs of $30,000.	Under this alternative, 7 HT-CPs ≥125' would incur the cost of acquiring, installing, maintaining, and operating approved scales and observer stations. At an average purchase cost of $50,000 per scale, each affected vessel would incur a one-time cost ranging from approximately $76,000 to $300,000, including installation. In addition, approximately 16 HT-CPs ≥125' would have to double their observer coverage at an approximate cost of $355 per additional deployment day or about $82,000 per year.	This alternative has effects on HT-CP costs similar to those for Alternative 2. In addition, 5 P-CPs and 24 L-CPs ≥125' (based on 2001 participation) would incur costs of installing scales and observer stations. Because hopper scales would be allowed, purchase/installation costs are estimated to be $25,000 per vessel. Based on 2001 participation, L-CPs and P-CPs additional observer costs $80,000 and $20,000 respectively would be expected. ST-CPs affected by the action already carry certified scales and 2 observers.	This alternative has effects on costs similar to those for Alternative 2.
Effects on Industry Revenues	The status quo is not predicted to have any affect on industry gross revenues.	Affected vessels may incur the costs and lost revenues associated with holding/processing, transporting, and transferring fish that are of relatively low value or "unmarketable." Changes in total revenue from this alternative are not anticipated to vary significantly from the no action alternative.	Affected vessels may incur the costs and lost revenues associated with holding/processing, transporting, and transferring fish that are of relatively low value or "unmarketable." Effects on individual operations may vary. It is possible that these changes in revenue and other factors could cause some vessels to exit this fishery.	In the first year of the GRS (projected to be 2007), effects on revenue are not expected to be different than for affected HT-CPs in the recent years. In the second and subsequent years of the GRS, revenue is anticipated to decline (all other factors remaining equal) due to required increases in retention. Effects on individual operations may vary.

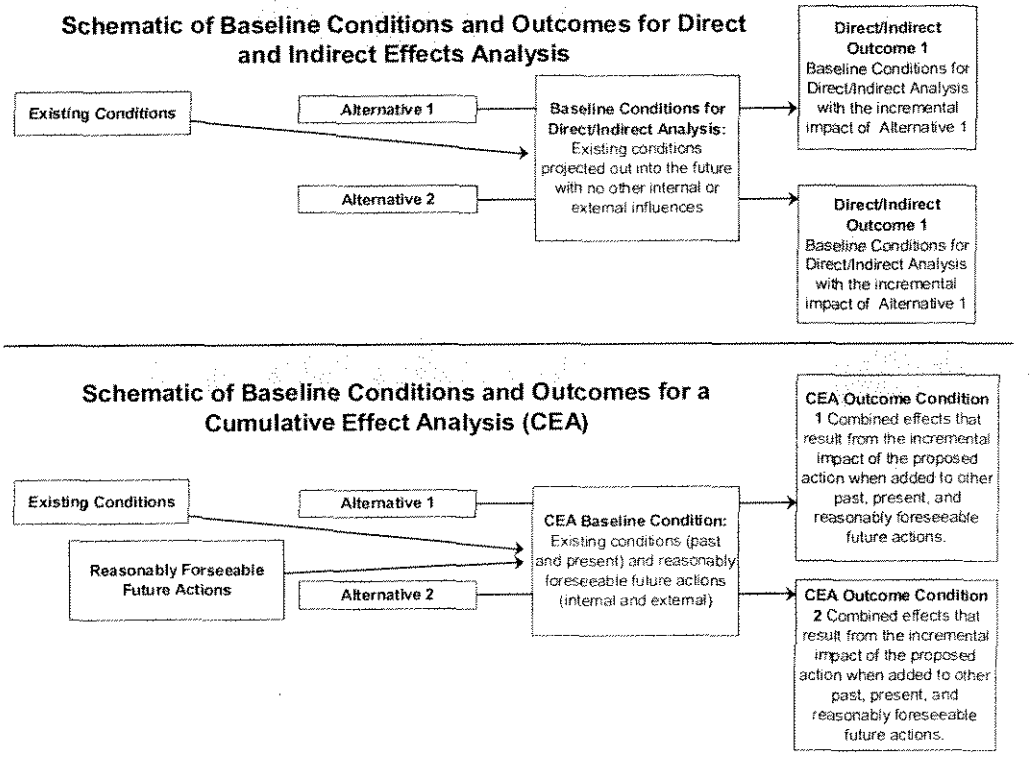
Alternatives	*Alternative 1:* No action/Status quo	*Alternatives 2, 3, & 4:* Establish a minimum groundfish retention standard (GRS) in the BSAI These alternatives are characterized by a series of 8 components that comprise a wide array of potential alternatives. Two "representative bookend" alternatives (Alternatives 2 and 3) and a phased-in GRS (Alternative 4 - preferred alternative) are analyzed.		
		Alternative 2: Less restrictive GRS	**Alternative 3: More restrictive GRS**	**Alternative 4: Phased-In GRS (Preferred Alternative)**
Distributive Effects	This alternative is not expected to increase costs and is not expected to have any distributive effects.	HT-CPs < 125' would be exempt from the GRS regulations and could *potentially gain market* share from vessels that have to increase retention. HT-CPs ≥ 125' that do not currently have scales or observer stations would have to purchase and install them. All HT-CPs ≥125' would incur higher observer costs. Some HT-CPs ≥125' will incur higher costs than other vessels in this size category to accommodate monitoring requirements in a plant.	CPs < 125 feet could realize revenue increases because they would not be forced to keep low value product—their share of high value product could increase. In addition, pot CP vessels could be forced from the BSAI fishery because of the added observer and scale costs. All HT-CPs ≥125' would incur higher observer costs. Some HT-CPs ≥125' will incur higher costs than other vessels in this size category to accommodate monitoring requirements and subsequent modification s in the processing portions of a plant.	This alternative has distributive effects similar to those for Alternative 2, but are likely to be more pronounced, particularly in the 2nd and subsequent years of the GRS.
Community Impacts	Almost all affected vessels are based in Washington State. Because of the size of the economy in this region, communities are resistant to the small variation caused by purchases and personal income from this fleet.	Changes in expected community impacts from this fleet are unlikely to be vary or be measurably different from Alternative 1.	Any changes in expected community impacts are unlikely to differ from the impacts Alternative 1. P-CP vessels consistently retain over these amounts, and are not anticipated to change operations. *L-CP would* adapt operations to increase retention by only a few percentage *points, not sufficiently* large to induce economic changes in small or large communities.	Any changes in expected community impacts in this fleet are unlikely to result in changes to impacts are vary from Alternative 1. Because of the size of the economy in this region, *communities are* resistant to the small variation caused by purchases and personal income from this fleet
Impacts on minority and low income *populations*	Any impacts are expected to be small.	Impacts on minority or low income populations are the same as those for Alternative 1.	Impacts on minority or low income populations are the same as those for Alternative 1	Impacts on minority or low income populations are the same as those for Alternative 1.

Alternatives	Alternative 1: No action/Status quo	Alternatives 2, 3, & 4: Establish a minimum groundfish retention standard (GRS) in the BSAI These alternatives are characterized by a series of 8 components that comprise a wide array of potential alternatives. Two "representative bookend" alternatives (Alternatives 2 and 3) and a phased-in GRS (Alternative 4 - preferred alternative) are analyzed.		
		Alternative 2: Less restrictive GRS	**Alternative 3: More restrictive GRS**	**Alternative 4: Phased-In GRS (Preferred Alternative)**
Change in non-use and non-consumptive resource value	Indeterminate due to lack of market data on consumer attitudes regarding discards and current utilization. Potential exists that some U.S. citizens would be willing to pay for reduced discarding of groundfish in North Pacific.	Indeterminate in comparison with status quo, due to lack of market data on consumer attitudes regarding discards and current utilization. The change in discarding from this alternative is indeterminate, and is unlikely to be perceived as different than the status quo.	Quantitatively indeterminate in comparison with status quo, due to lack of market data on consumer attitudes regarding discards and current utilization. Retained catch of groundfish in the North Pacific is likely to increase compared with the status quo. It is possible that some number of U.S. citizens (who do not directly use or consume these resources) may be willing to pay a non-zero amount for this magnitude of improved retention.	Quantitatively indeterminate in comparison with status quo, due to lack of market data on consumer attitudes regarding discards and current utilization. Retained catch of groundfish in the North Pacific is likely to increase compared with the status quo. It is possible that some number of U.S. citizens (who do not directly use or consume these resources) may be willing to pay a non-zero amount for this magnitude of improved retention.
Monitoring and enforcement issues	This alternative would perpetuate the status quo for existing monitoring and enforcement procedures without adding or reducing costs or responsibilities to management agencies.	In order to enforce a GRS, regulated vessels must have certified scales and a certified observer sampling station and every haul must be observed. The increase in observer coverage and associated increase in the amount of data collected is expected to raise overall annual costs of the observer program. Standard PRRs may not account for variations between processors and between fish sizes, so vessels in similar situations, in terms of actual retention rates may be treated dissimilarly.	Enforcement and monitoring costs are expected to be similar to Alternative 2, but because the number of regulated vessels increases to over 60 (rather than 16), total enforcement and monitoring costs are expected to be significantly higher.	Enforcement and monitoring costs are expected to be the same as in alternative 2

3.3 Cumulative Effects Analysis

Analysis of the potential cumulative effects of a proposed action and its alternatives is a requirement of NEPA. Cumulative effects are those combined effects on the quality of the human environment that result from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions, regardless of what Federal or non-Federal agency or person undertakes such other actions (40 CFR 1508.7, 1508.25(a), and 1508.25(c)). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. The concept behind cumulative effects analysis is to capture the total effects of many actions over time that would be missed by evaluating each action individually. At the same time, the CEQ guidelines recognize that it is not practical to analyze the cumulative effects of an action on the universe but to focus on those effects that are truly meaningful. To avoid the piecemeal assessment of environmental impacts, cumulative effects were included in the 1978 CEQ regulations, which led to the development of the CEQ cumulative effects handbook (CEQ 1997) and Federal agency guidelines based on that handbook (e.g., EPA 1999). A schematic comparison of the direct/indirect effects analysis in the previous section and the cumulative effects analysis in this section is shown below.

Figure 2. Comparison of Direct/Indirect Analysis and Cumulative Effects Analysis



The PSEIS (NMFS 2004) assesses the potential direct and indirect effects of groundfish FMP policy alternatives in combination with other factors that affect physical, biological, economic, and socioeconomic resource components of the BSAI and GOA environment.

Beyond the cumulative impacts analysis documented in the PSEIS, no additional past, present, or reasonably foreseeable cumulative impacts on the natural and physical environment have been identified. No cumulatively significant impacts on the natural and physical environment are anticipated with any of the

alternatives. The alternatives considered would not change the TACs for groundfish, the gear types used in the fisheries in which groundfish are discarded or the spatial or temporal distribution of these fisheries.

While there are no expected cumulative impacts on the natural and physical environment, there may be an economic effect as a result of the proposed action in combination with other actions. The HT-CP fleet has experienced several regulatory changes in the past several years. Moreover, a number of reasonably foreseeable future actions are expected to directly affect the economic and/or socioeconomic condition of the HT-CP sector.

3.3.2 Reasonably Foreseeable Future Actions

As indicated in Figure, a Cumulative Effects Analysis (CEA) should examine reasonably foreseeable future events that are relevant to the proposed action, and should look at the **incremental effect** the proposed action might have if those reasonably foreseeable events occur. To measure the incremental effect, the existing conditions on which the direct and indirect effects were measured (in Section 3.2) must be adapted to reflect the effects of the future actions—the future baseline condition. Once the future baseline condition is projected, the CEA projects how the proposed action will affect that future condition.

The determination or estimation of future impacts to the resources of concern is essential to a cumulative impact analysis. However, the focus must be on reasonably foreseeable actions, those that are likely to occur or probable, rather than those that are merely possible. Furthermore, the reasonably foreseeable future events that are discussed should be directly relevant to the fishery and the proposed action. This section identifies actions that are sufficiently likely to occur (as opposed to "highly speculative" actions). The discussion is based on authorized documents issued by the NPFMC and on analyses prepared for the NPFMC by Northern Economics, Inc. One reasonably foreseeable action discussed in this section is the approval and implementation of the sector allocations and the formation of an HT-CP trawl CP cooperative under proposed Amendment 80. Amendment 80 analysis is underway and the NPFMC in its rationale and justification for the GRS indicated their intent to approve sector allocations and to allow the formation of a cooperative in the HT-CP sector (NPFMC, 2003b).

3.3.2.1 Amendment 80—Sector Allocations and Formation of a Cooperative in the HT-CP Sector

Amendment 80 would authorize NOAA Fisheries to allocate groundfish and/or PSC limits to specific sectors and would establish the requirements for cooperative formation within the HT-CP sector. Because this amendment has not yet been approved by the Council, it cannot be accurately and thoroughly described. However, the proposed action is expected to involve a two-step allocation. During the first step, an allocation of the total allowable catches (TACs) for specified groundfish and PSC limits would be made to HT-CP sector. HT-CP sector vessels may then choose to join a sector or stay out of the cooperative system and fish in an a regulated "open access" fishery.

Anticipated Effects

The potential effects of this action on the HT-CP fleet remain uncertain because there are a number of elements and options presently under consideration that could vary the effectiveness of any sector allocation or cooperative(s) that may form. However, this action may assist in the mitigation of costs for some current restrictions on the HT-CP sector. Additionally costs associated with the preferred Alternative 4 may be reduced by the formation of a sector allocation or cooperative, and these tools could also influence or possibly reduce discarding of some species beyond the standards in Alternative 4. Current regulations to reduce bycatch can have a significant adverse economic impact on the HT-CP and other sectors. For

example, a number of fisheries currently close seasonally because they exceed seasonal PSC limits. The result is substantial foregone harvests and revenues from target groundfish species. Furthermore, should a GRS be implemented, vessels may incur the costs and lost revenues associated with holding/processing, transporting, and transferring fish that are of relatively low value or even "unmarketable."

These costs resulting from PSC limits and a GRS can be reduced or avoided altogether if vessels undertake action to be more selective in what they catch. However, the brief, hurried season that occurs under the race for fish hinders fishermen's efforts to reduce the catch of prohibited species or unwanted groundfish. Because vessels are competing with each other for shares of the total allowable catch (TAC), an individual vessel may be penalized for undertaking actions to reduce bycatch, such as searching for cleaner fishing grounds, by receiving a lower share of the TAC.

The experience of cooperatives in the BSAI pollock fishery (NMFS 2002b; Wilen and Richardson 2003), North Pacific scallop fishery (Brawn and Scheirer 2003) and Pacific whiting fishery off the coasts of Oregon and Washington (Sylvia and Munro 2003) suggests that the formation of a cooperative among eligible non-AFA trawl catcher processors could create the following incentives to reduce discards in the groundfish fisheries:

- When the race for fish is eliminated by the formation of a cooperative, fishermen are able to fish more cleanly (i.e., minimize their bycatch), as they can fish in a less hurried fashion and avoid or discontinue fishing in areas where the catch of unwanted species is high without losing any competitive advantage. Elimination of the race for fish may also motivate fishers to reduce incidental catches by altering characteristics of the harvest gear, towing depth and speed.

- A cooperative may also facilitate collective efforts by industry to reduce discards. For example, a cooperative may restrict member companies, say with low retention rates, from participating in the harvest of target species in areas of high discards as an incentive to promote cleaner fishing practices. In addition, the infrastructure of a cooperative facilitates the exchange of fishing information (e.g., the location on bycatch "hotspots") among fishermen, which can lead to reductions in discards.

- A cooperative may lead to the allocation of "individual bycatch quotas" (IBQs) within the cooperative, which set discard limits for individual boats. By "internalizing" all the benefits of bycatch reduction, IBQs give each captain the maximum incentive to "fish cleanly" (National Research Council 1999). IBQs could be created for cooperative members by using contracts and relying on civil law to enforce contract terms, including penalties for excessive bycatch rates.

Additional benefits of establishing a cooperative include allowing fishing effort to be matched to processing capacity. The race for fish encourages maximizing harvesting capacity and, at times, processing operations cannot keep pace. A cooperative potentially allows for increased yields in processing operations, not only by allowing for more labor intensive activities that increase yields for primary products, but by also providing time to produce secondary products, such as fish meal, from inedible portions of the fish. Furthermore, with smaller haul sizes, more careful handling and processing and the ability to search out fish of optimal size, fishermen are able to improve product quality and optimally adjust product mix to market conditions. Fewer vessels may also be used by a sector to harvest the available catch resulting in higher returns to capital.

3.3.3 Summary of Cumulative Effects

This section provides both a quantitative and qualitative assessment of cumulative effects of the alternative actions considered.

Qualitative Assessment of Cumulative Effects

To further aid evaluation and comparison of the potential for and significance of cumulative effects of the GRS and alternatives considered, a narrative description of effects on various resources was prepared in a tabular form (Table 17). The direct and indirect effects of past, present and reasonably foreseeable future actions are integrated to determine whether there is a cumulative effect and, if so, its significance. The far right hand column summarizes the cumulative effects.

Because the action and alternatives considered are not expected to alter total catch, they are not expected to have significant impacts on the natural or physical environment. Further, there are no data to suggest past effects or reasonably foreseeable future effects on the natural or physical environment over and above impacts evaluated in recent environmental reviews [NMFS 2004c and NMFS 2005] prepared for the groundfish fisheries. Therefore, no cumulative effects on the natural or physical environment are expected. With respect to impacts on economic and/or socioeconomic conditions, the analysis of past actions affecting the the catcher processor sectors showed that, since the mid-1980s, adjustments in the regulatory regime have changed the economic conditions of the groundfish fisheries in which these vessels participate. An increasingly restrictive regulatory environment and escalating compliance costs resulted in economical stress for some HT-CP owners. The increased restrictions were also a primary reason that flatfish became the primary target species for the HT-CP sector. Because these species are bottom-dwellers, flatfish fisheries are prone to high incidental catches of prohibited species such as halibut and crab. In addition, flatfish fisheries have limited markets—particularly with regard to size and product quality. These characteristics of the flatfish fisheries, in combination with instantaneously enforced MRAs and the "race for fish" regime under which HT-CPs operate, have led to a relatively high level of economic and regulatory discards in the HT-CP sector.

For other sectors, changes in the regulatory regime appear to have had less of an impact on them with regard to economic and/or socioeconomic conditions. Some of the largest changes in the regulatory environment have been from the implementation of LLP and the AFA. The LLP limited access to the commercial groundfish fisheries in the BSAI and GOA and commercial crab fisheries in the BSAI, except for demersal shelf rockfish east of 140° W. longitude and sablefish managed under the IFQ program. The AFA granted exclusive rights to target pollock in the BSAI to a limited number of vessels and allowed these vessels to form cooperatives, which resulted in improvements in efficiency (and likely profitability) for those able to participate in the fishery and improvements in overall retention and reductions in incidental catch.

In recent years, the HT-CP fleet has faced increasing pressure to reduce its discard rate. As discussed above, a change in the enforcement interval of the pollock MRA has the potential to increase retention rates for all HT-CPs, while the GRS would be focused on larger vessels. While data are insufficient to verify these projections, the MRA by itself projected to have only a small impact on retention rates, while together, the MRA change and the GRS are expected to reduce discards significantly in comparison with the status quo. The GRS however, also imposes significant costs on the industry with increased observer and scale costs. The value of increasing groundfish retention rates to persons who do not either directly consume or use these resources is indeterminate, but the potential exists for reductions in groundfish discards to have a non-zero and positive value to some of these persons who are also citizens of the U.S.

If Amendment 80 and the GRS are both approved and implemented, it is possible that the added costs vessels would incur under a GRS would be offset, at least in part, by the benefits of participating in a cooperative. For example, a GRS may result in costs and lost revenues as a result of holding/processing, transporting, and transferring fish that are of relatively low value or even "unmarketable." These costs can be reduced or avoided altogether under a cooperative structure, as vessels can be more selective in what they catch without losing any competitive advantage. However, there is no guarantee that this amendment will be implemented.

Table 17. Cumulative Effects Summary

	Environment	Alternative 1 - No Action/Status Quo	Alternative 2 - Establish a minimum groundfish retention standard (GRS) of 70 percent in the BSAI for HT-CP ≥125'.	Alternative 3 - Establish a minimum groundfish retention standard (GRS) of 85% for January - May and 90% during remainder of the year in the BSAI for all catcher processors ≥ 125'.	Alternative 4 (Preferred Alternative) - Phase in a GRS program starting in 2007 at 65%, 75% in 2008, 80% in 2009, and 85% in 2010 in the BSAI for HT-CP ≥ 125'.
Past Actions	Natural or physical environment	No impacts over and above impacts evaluated in recent environmental reviews prepared for the groundfish fisheries.			
	Socioeconomic conditions	Since the mid-1980s, adjustments in the regulatory regime have changed the economic conditions of the groundfish fisheries in which all vessels participate. An increasingly restrictive regulatory environment and escalating compliance costs resulted in economical stress for some HT-CP vessel owners. HT-CPs were precluded by regulatory actions from participating in the pollock fishery, and pollock roe stripping was banned. Area closures and PSC limits constrained activities in bottom trawl fisheries. Threat of IR/IU led to improved markets for headed and gutted product. Other sectors appear to have been impacted less by changes in regulatory regime. Although, two of most significant changes have been the LLP and AFA.			
	Socioeconomic conditions	The overall economic impact of changing the enforcement interval is uncertain. The main factors affecting the economic impacts on the HT-CP sector are the value of pollock relative to the value of groundfish they target	Changing the MRA enforcement interval has the potential to increase retention rates when merged with the GRS.	Same as Alternative 1	Changing the MRA enforcement interval has the potential to increase retention rates when merged with the GRS.
Present Actions	Natural or physical environment	No impacts over and above impacts evaluated in recent environmental reviews prepared for the groundfish fisheries.			
	Socioeconomic conditions	Discards in the HT-CP sector have decreased, but the race for groundfish and PSC limits have limited economic efficiency (and likely profitability) in the sector.			
Actions Considered	Natural or physical environment	No impacts over and above impacts evaluated in recent environmental reviews prepared for the groundfish fisheries.			

	Socioeconomic conditions	The retention rate in the HT-CP sector is not likely to improve significantly. The race for groundfish and PSC limits will continue to limit profitability in the sector. The formation of a cooperative is expected to provide additional benefits for the HT-CP sector, and potentially increase utilization of groundfish.	Overall groundfish retention rate of the HT-CP is projected to increase to between 71 and 79 percent. Overall discards would be reduced. Seven affected HT-CP vessels would incur the cost of acquiring, installing, maintaining, and operating approved scales. In addition, 16 vessels would have to double their observer coverage or reduce their fishing time. The formation of a cooperative is expected to mitigate costs of the GRS	Overall groundfish retention rate of the HT-CP sector is projected to increase to 95 percent. Retention is expected to improve for L-CPs and P-CPs. This alternative has effects on HT-CP costs similar to those for Alternative 2. In addition, 5 P-CPs and 24 L-CPs ≥ 125' would incur costs of installing scales and observer stations. The formation of a cooperative is expected to mitigate the costs incurred by HT-CPs as a result of the GRS.	Overall groundfish retention rate of the HT-CP sector is projected to be 80.6 percent in 2010 as a result of the GRS. Overall discards would be reduced. Eight affected HT-CP vessels would incur the cost of acquiring, installing, maintaining, and operating approved scales. In addition, 16 vessels would have to double their observer coverage or reduce their fishing time. The formation of a cooperative is expected to mitigate the costs incurred by HT-CPs as a result of the GRS
Future Actions	Natural or physical environment	No impacts over and above impacts evaluated in recent environmental reviews prepared for the groundfish fisheries.			
Cumulative Effects	Natural or physical environment	No impacts over and above impacts evaluated in the draft programmatic supplemental environmental impact statement prepared for the groundfish fisheries.			
	Socioeconomic conditions	The formation of a cooperative could increase the retention rate in the HT-CP sector by eliminating the race for fish, although the level of increase in uncertain.	If Amendment 80 and the GRSare both approved and implemented at the same time, the added costs of scales and observers may be at least partially offset by the benefits of participating in a cooperative. Changing the MRA enforcement interval has the potential to increase retention rates, thereby reducing the economic impacts of the GRS.		

3.4 Conclusions

The direct, indirect and cumulative impacts of the GRS are assessed in Sections 3.1-3.3 of this EA. The significance of these impacts were determined through consideration of the context and the intensity of the action as required by NEPA and 50 CFR Section 1508.27.

Context: The setting of the GRS is the groundfish fisheries of the BSAI. Any effects of the GRS are limited to this area. The effects on society within this area are on individuals directly and indirectly participating in the groundfish fisheries.

Intensity: Listings of considerations to determine intensity of the impacts are in 50 CFR § 1508.27 (b) and in the NOAA Administrative Order 216-6, Section 6. Each consideration is addressed below in the order it appears in the regulations.

1. Impacts may be both beneficial and adverse -- a significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.

No significant impacts are expected on groundfish, stocks, prohibited species, forage fish species, marine benthic habitat and essential fish habitat, ecosystems, marine mammals, endangered or threatened species, or seabirds, as discussed throughout Section 3.0.

Over the past several years groundfish retention rates have increased substantially. In 2001, the retention rate of the HT-CP sector was 75 percent. Under the status quo/no action alternative, this rate could continue rising, stay the same or decrease to previous levels. Alternative 2 is estimated to result in an overall groundfish retention rate ranging between 71 and 79 percent for the HT-CP sector, mostly from lower regulatory discards of pollock caused by changes in the MRA. Alternative 3 is estimated to result in an overall groundfish retention rate of 95 percent for the HT-CP sector, and the retention rates for the L-CP and P-CP sectors are also expected to improve. Under Alternative 4 (preferred alternative), the overall groundfish retention rate of the HT-CP sector is projected to be 80.6 percent by 2010.

Alternatives 2, 3 and 4, are expected to result in higher costs for the fishing industry, in particular for the affected vessels in the HT-CP sector, relative to the status quo/no action alternative. HT-CPs ≥ 125' may incur the costs and lost revenues associated with holding/processing, transporting, and transferring fish that are of relatively low value or "unmarketable." Moreover, under Alternative 3, seven HT-CPs ≥ 125' would incur the cost of acquiring, installing, maintaining, and operating NOAA Fisheries-approved scales and observer stations. At an average purchase cost of $50,000 per scale, each affected vessel would incur a one-time cost of approximately $75,000, including installation. In addition, approximately 16 HT-CPs ≥ 125' would have to double their observer coverage at an approximate cost of $355 per additional deployment day or about $82,000 per year per vessel. Alternative 3 has effects on HT-CP sector costs similar to those for Alternative 2. In addition, pot and longline CPs ≥ 125' would incur the costs of installing scales and observer stations and increasing observer coverage. Because hopper scales rather than flow scales would be allowed, purchase and installation costs are estimated to be $25,000 per vessel. Alternative 4 (preferred alternative) has effects on industry costs similar to those for Alternative 2 for enforcement and monitoring, and in 2008 and subsequent years is expected to affect costs and revenues associated with holding/processing, transporting, and transferring fish that are of relatively low value or even "unmarketable".

2. Degree to which public health or safety is affected.

The implementation of any fishery regulations associated with this action could (as with any fishery regulation) produce changes in the incentives for members of the BSAI fisheries to alter personal and

business decisions about health and safety. Fisheries in general are noted nationally as business activities that have among the highest rates of occupational loss of life and injury. It is unlikely that any of the alternatives examined in this analysis would change the safety at sea for persons working in this industry.

One public comment to the proposed rule identified a potential safety concern associated with the prohibition on mixing of hauls. A prohibition on mixing of hauls is necessary to maintain a sampling program that expands each haul with a specific sample. This is primarily an enforcement concern. After consulting with staff of the USCG Vessel Safety Division, NMFS concludes that the prohibition on haul mixing will not decrease vessel safety compared with the status quo. NMFS recognizes that fishing is a dangerous activity, particularly in the North Pacific, and believes that persons engaged in this business are aware of these risks. The proposed GRS program does not require persons to undertake dangerous actions beyond those they voluntarily undertake when they choose to fish in the North Pacific. Vessel masters and crew make choices on how best to accommodate safety concerns during fishing activity, including considerations about vessel stability.

The proposed prohibition on mixing of hauls could be accommodated in a number of ways that would not result in new vessel stability risks. For example, vessels could slow fishing effort and the frequency at which gear is deployed to better time haul back activities to minimize the amount of time that a codend is on deck. Or, rather than staging a codend on deck where it could be poised for immediate dumping when the previous haul is completely processed, it is a common practice in the HT-CP fishery to "shortwire" a codend, where it is closely towed behind the vessel. Hauling of the codend up onto the deck takes little more than several minutes. As soon as the bin is emptied, the vessel operator could haul the shortwired codend on deck and immediately dump its contents into the bin. Thus, little or no legitimate need exists to stage a codend on deck, and the timing of when to haul the codend on deck and begin the dumping of the codend into the tank is within the control of the vessel operator. The industry practice of shortwiring a codend at the stern provides an opportunity to insure a very minimal delay in fish being delivered to the processing deck without having to leave a codend on deck.

Vessel operators also could increase throughput in a factory to complete processing activities of a prior haul before a codend is brought on deck. Vessel specific layout also could be modified to increase the size or number of fish bins to avoid mixing of hauls.

The GRS program does not impede the use of any of these strategies. Although some of them may be costly to some vessels, these changes could be incorporated into other required factory modifications. The analysis prepared for this action describes costs associated with these changes.

NMFS also encourages vessel owners to adhere to USCG requirements that the master of a vessel be the responsible party to ensure the stability and safety of his or her vessel. In addition, many commercial fishing vessel owners are required by the USCG to retain on board a copy of the vessel's Trim and Stability Booklet (T&S Booklet) prepared by a certified naval architect (46 CFR 170 Subpart D – Stability Instructions for Operating Personnel). Most if not all of the 16 HT-CP sector vessels that would be regulated under the GRS program have a T & S Booklet (personal communication 9-13-05 Eric Blumhagen – Jensen Maritime). The USCG advises that T&S Booklets be written in clear terms and made available to all members of the crew. Each vessel must restrict loading of catch according to tables and analysis in the T & S booklet that consider many variables, including fuel, other ballast, and gear. The USCG is authorized to review these booklets when boarding a vessel at sea, but more frequently will review the T&S Booklet in port prior to departing for the fishing grounds. Carrying a load of fish on deck in amounts that exceed the recommendations in a vessel's T&S Booklet may adversely impact vessel stability and create a safety hazard.

The incentive for both crew and observers to work in safe conditions is likely to contribute to vessel operator compliance with safe loading procedures and, if available, recommendations of the T & S Booklet. While stability risk assessment involves potentially complex engineering models, the act of loading the contents of multiple codends of fish on the deck of a vessel is highly observable to persons working on a vessel, and easier to monitor than many activities that may involve safety risks. Crew members have an interest in safety and an incentive to understand loading procedures that may impact vessel stability. NMFS certified observers are neither trained nor or expected to assess or monitor vessel stability. However, at anytime crew or observers may formally record practices, question a skipper, or contact the USCG regarding any safety issue posing a risk to the conduct of their activities on a vessel, including issues associated with the stability of a vessel. Furthermore, any increase in observed illegal or unadvised risk taking behavior on the part of this fleet could be translated into higher insurance premiums, including employee liability and capital loss insurance. Thus, the threat of higher costs imposed by insurance markets for violating loading and stability recommendations may buffer any propensity of an operator in the HT-CP sector to attempt unsafe, and/or illegal loading practices in these fishing operations.

Given the above considerations, NMFS does not believe that the GRS Program for the HT-CP sector will result in additional safety concerns resulting from the catch monitoring requirements established for this program.

3. Unique characteristics of the geographic area.

The GRS would be implemented in the geographic areas of the Bering Sea and Aleutian Islands, from 3 nm to 200 nm offshore. The land adjacent to these areas contain cultural resources and ecologically critical areas. No impacts on land areas are anticipated from this action because the GRS is a strictly marine fishery program. The marine waters where the fisheries occur contain ecologically critical area. There is also no empirical evidence that reducing discards in these fisheries in alternatives 2 through 4 would effect the unique characteristics of these areas. It is possible that some operations could exit the non-AFA trawl C/P fishery altogether, which might reduce the amount of trawling on bottom habitat, but it is also possible that bottom trawling may shift to other BSAI locations.

4. Degree to which effects on the human environment are likely to be highly controversial.

The effect of this rule or other alternatives examined in this analysis on the human environment is not controversial given the small change in groundfish removals or discards compared with the status quo. While some alternatives for implementing a GRS ould result in a reduction in discards there is no data or studies that suggest the magnitude of those reductions (less than 1% of annual groundfish harvest) are likely to adversely affect the natural and physical environment. Public comment raises the possibility that lack of data does not eliminate the possibility, that an alternative could change groundfish retention in a manner that may impact the environment.

Nationally, bycatch reduction programs have been the subject of some controversy because of the lack of economic data on how groundfish removals and other fishing practices associated with these fisheries are perceived by persons that are not directly involved in the production and consumption of BSAI groundfish. Public comment received on the proposed rule for Amendment 79 generated a significant number of public comments dealing with (1) the potential costs of regulations to the HT-CP sector, (2) safety issues, (3) and the positive environmental value of the bycatch reduction measures in the proposed rule.

5. Degree to which effects are highly uncertain or involve unique or unknown risks.

There are no known risks to the human environment associated with the GRS alternatives examined in this analysis. There is no data or studies that suggest the magnitude of those reductions (less than 1% of annual groundfish harvest) are likely to adversely affect the natural and physical environment. Bycatch and groundfish discards associated with the status quo, are a source of scientific uncertainty regarding how much of an impact these removals have on the environment.

6. Degree to which the action establishes a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

This action does not in itself establish a precedent for future actions or represent a decision in principle about a future consideration. The trend in the groundfish fisheries off Alaska has been toward reducing bycatch, and this action is in direct relation to this purpose.

7. Individually insignificant but cumulatively significant impacts.

The cumulative effects analysis is summarized in Table 17. Cumulatively significant impacts on the natural and physical environment are not anticipated with the GRS because no impacts on the natural and physical environment have been identified. The alternatives considered would not change the TACs for groundfish, the gear types used in the fisheries in which groundfish are discarded or the spatial or temporal distribution of these fisheries.

8. Degree to which the action adversely affects entities listed in or eligible for listing in the National Register of Historic Places, or may cause loss or destruction of significant scientific, cultural, or historic resources.

This action will have no effect on districts, sites, highways, structures, or objects listed or eligible for listing in the National Register of Historic Places, nor cause loss or destruction of significant scientific, cultural, or historical resources. This consideration is not applicable to this action.

9. Degree to which endangered or threatened species, or their critical habitat as defined under the Endangered Species Act of 1973, are adversely affected.

Fishing activities proposed in these alternatives are not anticipated to affect endangered and threatened species or critical habitat in any manner not considered in prior consultations on this fishery. This action would decrease the amount of groundfish discarded by non-AFA trawl catcher processors greater than or equal to 125 feet LOA in the BSAI. Changes to fishing activities that would occur as a result of this action would have the effect of reducing bycatch. Fishing would continue to occur in the BSAI, Steller sea lion protection measures would remain in place, and overall total allowable catch would not change as a result of this action.

10. Whether a violation of Federal, state, or local law for environmental protection is threatened.

This action poses no known violation of Federal, State, or local laws or requirements for the protection of the environment.

4.0 Regulatory Impact Review

This RIR is required under Presidential Executive Order (E.O.) 12866 (58 *FR* 51735; October 4, 1993). The requirements for all regulatory actions specified in E.O. 12866 are summarized in the following statement from the order:

> In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory alternatives, including the alternative of not regulating. Costs and benefits shall be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but nonetheless essential to consider. Further, in choosing among alternative regulatory approaches agencies should select those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach.

E.O. 12866 requires that the Office of Management and Budget review proposed regulatory programs that are considered to be "significant." A "significant regulatory action" is one that is likely to:

1. Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, local or tribal governments or communities;

2. Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

3. Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

4. Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order.

4.1 Purpose and Need for Action

The purpose of the GRS is to create a standard for retention of groundfish for the BSAI groundfish fishery. The standard, which under the preferred alternative would be phased in through 2010, codifies the Council's solution to the problem of excessive discards of groundfish in the BSAI. The GRS specifically addresses the mandate in the MSA to reduce discards to the extent practicable. Between 2000 and 2004, TACs for a number flatfish target species in the HT-CP sector have been fully utilized or even exceeded, highlighting the increasing scarcity of many of the heavily discarded groundfish species. Approaching or exceeding a TAC may indicate that open access competition for available harvest is increasing. Discarding of species by some vessels that could be utilized by other vessels in the HT-CP sectors or other sectors is potentially inefficient and wasteful.

4.1.1 The Problem Statement

The following statement defines the problem the Council is addressing with the proposed alternatives.[7]

> Discards in the BSAI in the groundfish fisheries, in particular the multi-species fisheries as prosecuted by the head and gut trawl catcher processor sector, continue at unacceptable levels. The Council recognizes the importance of both the mandate of the MSA to reduce bycatch (discards) to the extent practicable and the perception by the US public that discards in the BSAI are at unacceptable levels. The Council also recognizes the economic importance groundfish fisheries and the dependence on these fisheries of their participants. Finally, the Council acknowledges the fact that any solution to the problem must take into account the ability of NOAA Fisheries to monitor discards and adequately enforce any regulations that are promulgated. The problem therefore is to develop a management regime whereby discards in groundfish fisheries—in particular, the multi-species trawl fishery—are reduced significantly, while allowing participants to operate profitably, and at the same time ensure that discards are monitored and that regulations can be enforced.

4.1.2 Regulatory Background

One of the first actions by the Council to reduce bycatch and discards was a ban on pollock roe stripping which was implemented in 1991 (BSAI Amendment 14). During the Council process of reviewing this management action, the Council requested a legal opinion concerning the authority of banning roe stripping in time for its December 1989 Council meeting. Subsequently, a memorandum from the NOAA Office of General Counsel was written and submitted on December 1, 1989 that outlines the Council's authority to prohibit roe stripping and increase retention and utilization of pollock. The following summary is excerpted from the December 1, 1989 memorandum:

1. *There is authority under the Magnuson Fishery Conservation and Management Act to limit wasteful practices. Controlling wasteful practices is as legitimate a purpose as conserving a stock of fish or allocating fishing privileges. Requiring fuller utilization of a fishery resource should be justified as a means of achieving optimum yield.*

2. *There are a multitude of conservation and management measures, directed at harvesting activities, available to eliminate or restrict practices such as roe stripping. These include seasons, quotas, gear requirements, discard restrictions, and catch limits.*

3. *There is also authority under the Act to limit wasteful practices by requiring at-sea processors to retain harvested fish rather than discarding them. At-sea processing is "fishing" subject to regulation under the Act.*

4. *There is authority – though not as clear-cut–to limit wasteful practices by requiring at-sea processors to utilize fish flesh for food products and fish meal. There have been no instances thus of directly mandating what a processor does with legally possessed fish for purposes of full utilization.*

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[7]This problem statement was developed by analysts and is based on discussion of the Council during the development and approval of the alternatives.

5. *There is no authority to limit wasteful practices by regulating on-shore processors, because on-shore processors can be regulated only indirectly as an incidence of managing "fishing."*

In 1996, Congress passed the Sustainable Fisheries Act, which amended the Magnuson-Stevens Fisheries Conservation and Management Act and added three new national standards. One of the standards, National Standard 9, provides:

> *Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.*

The genesis of National Standard 9 is a national and international movement to reduce bycatch and discards. In general, unacceptable amounts of bycatch and discards are viewed as a waste of the ocean's resources given that many of fish stocks are fully or over utilized. Congress felt that the continued current level of bycatch and discards of the Nation's ocean resources was unacceptable and must be reduced to acceptable level. However, Congress, in drafting Sustainable Fisheries Act and National Standard 9, recognized that total elimination of discards and bycatch is an unrealistic goal because some minor levels of discards and bycatch are unavoidable consequents of rational decisions by the fishing industry. Congress took this into account when drafting language for National Standard 9.The House's version required minimization of bycatch "to the maximum extent practicable..." The House language implicitly acknowledges that bycatch may be unavoidable, but requires the Council to continue to look for innovative ways to reduce bycatch and discards in the Nation's fisheries.

Section 108 of the Sustainable Fisheries Act also states that all FMPs will "establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery, and include conservation and management measures that, to the extent practicable and in the following priority– (A) minimize bycatch; and (B) minimize the mortality of bycatch which cannot be avoided."

In addition, Section 313 of the Magnuson-Stevens Fishery Conservation and Management Act shows a willingness by Congress to levy fines on the industry for egregious bycatch issues. The Council may approve "a system of fines in a fishery to provide incentives to reduce bycatch and bycatch rates." The Council may also "provide allocations of regulatory discards to individual fishing vessels as an incentive to reduce per vessel bycatch and bycatch rates in a fishery."

Further insight into the purpose and procedures for implementing National Standard 9 are presented in 50 CFR, §600.350. The following sections are excerpted from §650.350:

> *General. This national standard requires Councils to consider the bycatch effects of existing and planned conservation and management measures. Bycatch can, in two ways, impede efforts to protect marine ecosystems and achieve sustainable fisheries and the full benefits they can provide to the Nation. First, bycatch can increase substantially the uncertainty concerning total fishing-related mortality, which makes it more difficult to assess the status of stocks, to set the appropriate OY and define overfishing levels, and to ensure that OYs are attained and overfishing levels are not exceeded. Second, bycatch may also preclude other more productive uses of fishery resources.*

In addition, the regulation presents the priority of National Standard 9:

> *Minimizing bycatch and bycatch mortality. The priority under this standard is first to avoid catching bycatch species where practicable. Fish that are bycatch and cannot be avoided must,*

to the extent practicable, be returned to the sea alive. Any proposed conservation and management measure that does not give priority to avoiding the capture of bycatch species must be supported by appropriate analysis.

This same regulation also provides a list of criteria that Councils must consider in addressing net benefits to the Nation from bycatch reduction actions. These benefits should include negative impacts on affected stocks, incomes accruing to participants in directed fisheries in both the short and long term, incomes accruing to participants in fisheries that target the bycatch species, environmental consequences, non-market values of bycatch species, and impacts on other marine organisms.

In order to evaluate the conservation and management measures associated with bycatch reduction relative to National Standard 9 and other national standards, §650.350 provides the following criteria for consideration:

1. *Promote development of a database on bycatch and bycatch mortality in the fishery to the extent practicable.*

2. *For each management measure, assess the effects on the amount and type of bycatch and bycatch mortality in the fishery.*

3. *Select measures that, to the extent practicable, will minimize bycatch and bycatch mortality.*

4. *Monitor selected management measures.*

National Standard 5 also has some bearing in bycatch management actions. National Standard 5 provides:

Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

The standard does not restrict all management actions to the most efficient utilization of the fisheries resources, but rather the standard requires that efficiency be considered in determining utilization when practicable. As noted in §600.330, restrictive measures that lower the level of efficient utilization are permissible when they "contribute to the attainment of other social or biological objectives." In this particular case, a reduction of bycatch and discards can be pursued with efficiency as a consideration.

4.1.3 Council Action on Bycatch

In Alaska, a number of improvements in bycatch reduction have been implemented since the passage of the Sustainable Fisheries Act. A number of these improvements are cited by the National Marine Fisheries Service in the document, Implementing the Sustainable Fisheries Act, which was published in June 2003. In the document, it states that since 1992, the NPFMC has over time continued to move toward improving the precision of total catch measurements by replacing many of the volumetric measurements with scale weights. In the Community Development Quota and pollock cooperative fisheries, each vessel is required to carry two observers. The document states that nearly 75 percent of all groundfish harvested today in the BSAI and GOA are weighed on certified scales overseen by NMFS certified fishery observers.

The NPFMC has also employed a number of different regulatory procedures for reducing bycatch and discards. A few of these procedures include bycatch limits for prohibited species, maximum retainable allowance, gear restrictions, season delays or time/area closures, a vessel incentive program, mandatory retention and increase utilization of pollock and Pacific cod, and voluntary industry initiatives.

In addition, several amendments addressing bycatch (not including IR/IU actions which are noted in the next section), since passage of the Sustainable Fisheries Act have been approved and implemented, including:

- Amendment 37, which implemented trawl closure area in the Bristol Bay Red King Crab Savings area, modified red king crab prohibited species cap limits and established trawl closure areas in nearshore Bristol Bay.
- Amendment 40, which established prohibited species caps for snow crab in trawl fisheries and a bycatch limitation zone
- Amendment 46, which modified allocation of Pacific cod by gear type and set trawl and hook-and-line gear halibut PSC mortality caps.
- Amendment 50, which allowed for donation of incidentally caught halibut to food banks.
- Amendment 59, which prohibits fishing in an area containing important fish habitat.
- Amendment 60, which prohibits non-pelagic trawl gear in Cook Inlet.

4.1.4 Council Action on IR/IU

The GRS is the latest in a series of actions dating back to 1988, that specifically address the issue of discards and utilization of groundfish. The remainder of this section summarizes these actions.

In 1988, the Council discussed a proposal that would have limited the ability of processors to utilize only the valuable roe of pollock during spawning season in winter and early spring. In 1989 and 1990, the roe stripping issue was revisited by the NPFMC and in 1991 a ban on roe stripping was implemented. The ban on roe stripping was to ensure that other products, like fillets and surimi, are produced from pollock catches, thereby reducing discards. From an industry perspective, the ban on roe stripping was found to be costly. Nevertheless, the Council and the Secretary approved the ban based on authority to limit wasteful practices under the MSA. The NOAA rule asserts, with respect to forgone revenue to the pollock fishery, that "this cost would be offset by the benefits of increased protection of the ecosystem and the future productivity of pollock stocks."

In December 1994, during the process of addressing their comprehensive rationalization program (CRP), the NPFMC debated issues of bycatch and economic loss from discards in target fisheries and unanimously adopted a motion to develop a set of regulatory options for implementing an improved retention/improved utilization (IR/IU) program for BSAI groundfish fisheries. The NPFMC identified the BSAI rock sole and mid-water pollock fisheries as two subject fisheries for initial evaluation and proposed that commercial groundfish trawl fisheries be required to reduce discards by retaining species which have historically been discarded bycatch.

At its December 1995 meeting, the NPFMC adopted a draft IR/IU problem statement for public review. That statement reads as follows:

In managing the fisheries under its jurisdiction, the North Pacific Fishery Management Council is committed to: (1) assuring the long-term health and productivity of fish stocks and other living marine resources of the North Pacific and Bering Sea ecosystem; and (2) reducing bycatch, minimizing waste, and improving utilization of fish resources in order to provide the maximum benefit to present generations of fishermen, associated fishing industry sectors, communities, consumers, and the nation as a whole.

The Council's overriding concern is to maintain the health of the marine ecosystem to ensure the long-term conservation and abundance of the groundfish and crab resources. As a response to this concern, a program to promote improved utilization and effective control/reduction of bycatch and discards in the fisheries off Alaska should address the following problems:

1. *Bycatch and discard loss of groundfish, crab, herring, salmon, and other non-target species.*
2. *Economic loss and waste associated with the discard mortality of target species harvested but not retained for economic reasons.*
3. *Inability to provide for a long-term, stable fisheries-based economy due to loss of fishery resources through wasteful fishing practices.*
4. *The need to promote improved retention and utilization of fish resources by reducing waste of target groundfish species to achieve long-term sustainable economic benefits to the nation.*

In May 1997, NOAA Fisheries completed an Environmental Assessment, Regulatory Impact Review and Initial Regulatory Flexibility Analysis (EA/RIR/IRFA) of the improved retention and utilization options identified by the NPFMC as Amendment 49 to the BSAI Groundfish FMP. At its September 1996 meeting the NPFMC adopted Amendment 49. Once again, the Council and the Secretary approved a management action that would increase the cost to the industry by reducing discards for the primary purpose of maintaining the health of the marine ecosystem to ensure the long-term conservation and abundance of the groundfish resource on the authority of the Magnuson-Stevens Fishery Conservation and Management Act.

On January 3, 1998, Amendment 49 to the BSAI Groundfish FMP was implemented (62 FR 63880). The final rule requires all vessels fishing for groundfish in the BSAI management area to retain all pollock and Pacific cod beginning January 3, 1998 and retain all rock sole and yellowfin sole beginning January 1, 2003. In addition, the final rule establishes a 15 percent minimum processing standard with no limit on product form beginning January 3, 1998 for pollock and Pacific cod and establishes a 15 percent minimum processing standard with no limit on product form beginning January 1, 2003 for rock sole and yellowfin sole.

The potential negative impacts of IR/IU rules for flatfish on some sectors of the groundfish fisheries of the BSAI and GOA created the possibility that some entities currently participating in these fisheries might be compelled to discontinue their participation due to the economic burden the rules could place on their operations. The likelihood that the head and gut trawl catcher processors sector (HT-CP) would not be able to fully meet IR/IU flatfish rules became increasingly clear in 2000 during Council and industry deliberation on AFA processing sideboards. These sideboards would have protected non-AFA processors from AFA processors increasing their share of non-pollock fisheries. It was argued that, rather than limit AFA processors, it would be more practicable to provide relief from flatfish IR/IU to the HT-CPs.

In June and October 2001, the Council determined that pursuing AFA processing limits was infeasible, but the options to level the playing field for non-AFA processors by providing some form of relief from the impending implementation of IR/IU for flatfish remained on the table. Specifically, the Council address the concept of relaxing the requirement that 100 percent of IR/IU flatfish be retained. This option, while it could possibly have made IR/IU less onerous to the HT-CP fleet, was deemed not enforceable. At its June 2002 meeting the NPFMC developed a problem statement specifically to address the pending implementation of IR/IU regulations for the flatfish fisheries. This statement read as follows:

> *100 percent retention of rock sole and yellowfin sole (as currently scheduled) results in severe economic losses to certain participants in the fishery, while less than 100 percent retention of only these species is not enforceable.*

In October 2002, the NPFMC took final action on Amendment 75 to the BSAI Groundfish FMP, recommending that the Secretary delay implementation of IR/IU flatfish regulations for the BSAI until June 1, 2004. The NPFMC also initiated four trailing amendments with the expectation that these amendments could augment or replace IR/IU regulations for flatfish prior to the end of the delay period. Amendment 80 (as modified at the April 2003 Council meeting) establishes sector allocations in the BSAI and facilitates the formation of a fishery cooperative for non-AFA trawl catcher processors. Amendment B creates flatfish bycatch (discard) limits for the flatfish fisheries. Amendment 79 (the GRS) establishes a minimum GRS. Amendment 72/76 exempts fisheries with less than a 5 percent IR/IU flatfish bycatch rate from IR/IU flatfish regulations.

Amendment 75 was only partially approved by the Secretary—the delay of IR/IU flatfish implementation in the BSAI was approved, but the ending date (June 1, 2004) for the delay was not approved. The practical effect of partially approving Amendment 75 was that the proposed FMP text was modified by removing reference to rock sole and yellowfin sole as IR/IU species, thereby delaying indefinitely the flatfish IR/IU flatfish program. In the absense of the partial approval, Amendment 75 would have required the HT-CP sector to retain 100% of yellowfish sole and rock sole, negatively effecting the HT-CP sector by decreasing gross revenues and/or increasing operating costs (NPFMC 2003c). Gross revenues would be decreased in this sector, by displacing more valuable fish in the hold of HT-CP vessels. In some vessels, the increase in retention would have required costly conversion of processing lines, and may have reduced the quality of target species harvested. A costly increase in the number of trips and/or hauls per trip may have been required to catch target species, in a sector where there is currently a race for fish. Smaller HT-CP vessels would be placed at a significant competitive disadvantage to larger vessels and would likely be forced to exit or decrease their participation in fisheries with high levels of IRIU flatfish discards because of the vessels' very limited product hold capacity.

With the indefinite delay of the BSAI IR/IU flatfish program, Amendment 76 no longer had any practical application in the BSAI. Amendment B was rejected by the Council as infeasible following discussions between industry representatives and fishery managers. However, the NPFMC continued to pursue possible implementation of Amendments 79 and 80. At the June 2003 meeting the Council took final action on Amendment 79, approving a phased-in GRS for the non-AFA catcher processor sector in the BSAI, to begin in 2005. Further refinement of Amendment 80 occurred at the December 2003 Council meeting, with a target implementation of 2006.

Also at its June 2003 meeting, as part of its action on Amendment 79, the NPFMC also approved a revision of the maximum retainable allowance (MRA) for pollock. The Council recognized that the MRA change was simpler to implement than the full GRS action and requested NOAA Fisheries to expedite the pollock MRA action. A separate EA/RIR/IRFA for this regulatory change was prepared by NOAA

Fisheries (Northern Economics, 2003b). The objective of the MRA change is to reduce regulatory discards of pollock in the directed fisheries for non-pollock groundfish species without increasing the overall amount of pollock that has been historically caught as incidental catch in these fisheries. The MRA portion of the preferred GRS alternative is included in the status quo for this EA/RIR/FRFA

4.2 Description of the Fishery

The groundfish fisheries of the Bering Sea were summarized briefly in Section 2.2 and repeated here to provide reviewers a more complete context for the action. Because of groundfish bycatch is the particular issue of concern, relevant information presented in Section 2.2 is augmented with trends in discard and retention rates over the last several years by processing sector.

In order to provide a comprehensive description of the groundfish fishery with regards to retention rates, information is presented for all processors. BSAI groundfish fishery participants were divided into the following sectors:

Surimi and Fillet Trawl Catcher Processors (ST/FT-CPs): These vessels primarily produce surimi and fillet products from the pollock fishery. These processors are typically the largest in the catcher processor category.

Head and Gut Trawl Catcher Processors (HT-CPs): These vessels typically concentrate on head and gut products or kirimi. Generally, the head and gut fleet tend to focus primarily on flatfish, Pacific cod, and Atka mackerel. Unlike the surimi and fillet fleet, the head and gut fleet tends to be the smallest of the trawl catcher processors. Most of the vessels in this class can only accommodate sufficient crew and machinery to produce headed and gutted product. Various regulations associated with food production may also constrain the ability of this vessel class to produce other product forms. Heading and gutting of fish leaves the skin on the fish and is not covered by regulations for other fish processing methods that produce different product forms. Most vessels in the HT-CP class are not load line-certified-a designation that requires certain standards for food production on a vessel. A load line certification includes certain requirements to increase the stability of vessels. The U.S. load line regulations are found in 46 CFR Subchapter E, "Load Lines" (parts 41 thru 47). These regulations were originally derived from the Coastwise Load Line Act and the International Voyage Load Line Act, and also incorporate the requirements of the International Convention on Load Lines (ICLL). The statutory basis for the regulations comes from chapter 51 of Title 46 of the U.S. Code (46 USC chapter 51).Without loadline certification, a processing vessel cannot produce fillets. In addition, there are currently no head and gut vessels with fish meal plants, and a number of practical obstacles, as well as Coast Guard and NOAA Fisheries regulations on vessel upgrades effectively prevent head and gut vessels from making fish meal.

Longline Catcher Processors (L-CPs): These vessels use longline gear rather than trawl or pot gear. Also known as freezer longliners, their primary fishery is the Pacific cod and are generally limited to heading and gutting their fishery products.

Pot Catcher Processors (P-CPs): These vessels typically focus on the crab fisheries, but increasingly are participating in the Pacific cod fisheries. They generally use pot gear, but may also use longline gear. They produce whole or headed and gutted groundfish products.

BSAI Shore-based Processors, Motherships and Floating Inshore Processors (SP-MS-FLT): This category is included as a proxy for catcher vessels. Although observer reports report groundfish species composition, total catch, and estimates of retention and discard on a weekly basis, the level of coverage is limited for vessels under 125'. BSAI shore-based processors include the four major shore-based BSAI

pollock processors in Dutch Harbor/Unalaska and Akutan and two inshore floating pollock processors–Arctic Enterprise and Northern Victor. Shore plants in the Aleutians East Borough and in the Aleutians West Census area are also included. For the purposes of this analysis, all other floating inshore plants and motherships operating in the EEZ are also included in this category.

A complete discussion of the groundfish fleet classifications can be found in *Sector and Regional profiles of the North Pacific Groundfish Fisheries–2001* (Northern Economics, Inc. and EDAW, Inc. 2002).

4.2.1 Participation by Processing Sector

Table 18 shows participation in BSAI fisheries by the four catcher processor sectors described above from 1995 to 2004. Counts of catcher vessels delivering BSAI groundfish are included rather than counts of processors since any GRS would be enforced at the point of harvest.

With the exception of pot catcher processors, the number of participants has declined in each of the sectors over the seven year period. For the surimi and fillet catcher processor fleet, the number of participants has declined from 33 in 1995 to 16 in 2004. Among the individual target fisheries in the surimi and fillet catcher processor fleet, pollock has consistently attracted the most participation. The reduction in participation in this fishery, may, in very large part, be traced to implementation of AFA. Under its provisions, several catcher processors were removed (i.e., bought out) of the fishery, while the remaining fleet was allowed to organize into a cooperative. Under that cooperative, it was found that fewer vessels were required to efficiently prosecute the fishery. Other fisheries that had consistent participation were yellowfin sole and Pacific cod, although these fisheries also saw declines in the number of permits fished.

Among the head and gut CPs, there has only been a slight decline in participation in some target fisheries. Overall, 32 head and gut CPs participated in 1995, while only 24 participated in 2001. The fisheries with the largest number of participants were yellowfin sole, rock sole, flathead sole, and Pacific cod with each generally having 20 or more participants in any given year from 1995 to 2004.
The longline CP fleet remained relatively stable from 1995 to 2004. The lowest participation was in 1999 when only 38 longline CPs targeted groundfish. Participation has been strongest in the Pacific cod fishery. The highest level was in 1995 and 2001 when 42 vessels targeted Pacific cod. Turbot also experienced high levels of participation, although participation has declined in recent years. The sablefish fishery attracted a modest number of longline catcher processors during the seven year period. Among pot CPs, only the Pacific cod fishery has attracted a consistently substantial number of participants. Between 1995 and 2004, there have been between 3 to 9 participants in this fishery.

The number of CVs participating in the BSAI fisheries varied from 1995-2001 with a high of 318 in 1995 and a low of 236 in 1998. In 2004, there were 274 active CVs. A more detailed description of catcher vessel activity in the BSAI can be found in Northern Economics, Inc. and EDAW, Inc. (2002).

Table 18. Participation by BSAI Target Fishery and Processor Sector, 1995-2004

Target Fishery & Sector	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
	Number of Vessels									
Surimi & Fillet Trawl Catcher Processors										
Pollock	33	32	29	28	16	14	15	16	16	16
All Fisheries	33	32	29	28	16	15	15	16	16	16
Head & Gut Trawl Catcher Processors										
Atka Mackerel	14	12	8	12	16	13	13	11	14	19
Pacific Cod	24	26	26	21	21	22	17	21	19	20
Other Flatfish	29	21	18	20	24	23	20	18	16	23
Rockfish	14	13	10	7	12	7	7	10	11	10
Rock Sole	29	26	25	18	22	23	20	21	21	22
Yellowfin Sole	27	24	24	20	23	23	22	21	21	23
All Fisheries	32	28	28	23	24	23	22	22	23	24
Pot Catcher Processors										
Pacific Cod	6	9	7	5	9	9	7	5	3	3
All Fisheries	6	9	7	5	9	9	7	5	3	4
Longline Catcher Processors										
Pacific Cod	42	38	38	36	36	38	42	40	39	39
Sablefish	15	18	12	10	17	18	10	14	8	6
All Fisheries	45	43	42	42	38	40	45	42	40	40
All Catcher Processors	116	112	106	98	86	87	87	86	82	82
All Catcher Vessels	318	289	270	236	265	298	276	305	285	274

Sources: Processor counts are from NOAA Fisheries blend data and catcher vessel counts are from ADF&G fish-tickets. Both blend and fish-ticket data were synthesized by Northern Economics, Inc.

4.2.1.1 Participant's Communities of Residence

The registered owners of vessels in the ST-CP, FT-CP and HT-CP sectors all list addresses in the Washington Inland Waters Region (WAIW). Furthermore, all but one P-CP are owned by residents of the WAIW region. The L-CP class is the most diverse of all the processor classes in terms of ownership. In 2001, 28 percent of owners resided in Alaska or regions other than WAIW and the Oregon Coast Region. Within Alaska, ownership is distributed across four regions, Southeast, Southcentral, Alaska Peninsula and Aleutian Islands, and Kodiak Island, with 16 of the 23 vessels owned by residents of Southcentral or Southeast Alaska.

4.2.1.2 Current Ownership and Management Patterns in the HT-CP Sector

Because the focus of the NPFMC's interest in reducing discards falls primarily on the HT-CP sector, this section provides additional information regarding the ownership of vessels in that sector. In recent years, 22-26 vessels have been considered part of the HT-CP sector. According to the industry associations, Groundfish Forum and At-Sea Processors Association, ownership or management of the fleet is concentrated in 11 companies, as shown in Table 19.

Table 19. Ownership/Management of the HT-CP Sector, 2003
Ownership/Management of the HT-CP Sector, 2003

Owner/Manager	Vessel Name	Groundfish Forum Status
Arctic Sole Seafoods	*F/T Alaska Rose (Tremont)*	Member
Seattle, WA	*F/T Arctic Rose (Sunk 2001)*	
Cascade Fishing, Inc.	*F/T Seafisher*	Member
Seattle, WA		
	F/V Alaska Juris	Member
Fishing Company of Alaska	*F/V Alaska Voyager*	Member
Seattle, WA	*F/V Alaska Victory*	Member
	F/V Alaska Warrior	Member
	F/V Alaska Ranger	Member
	F/V Alaska Spirit	Member
Fishermen's Finest	*F/V American #1*	non-Member
Seattle, WA	*F/V US Intrepid*	non-Member
F.J. O'Hara & Sons	*F/T Defender*	Member
Seattle, WA	*F/T Enterprise*	Member
Golden Fleece, Inc.	*F/V Golden Fleece*	Member
South Bend, WA		
Iquique U.S., L.L.C.	*F/T Arica*	Member
Seattle, WA	*F/T Cape Horn*	Member
	F/T Rebecca Irene	Member
	F/T Unimak Enterprise	Member
Jubilee Fisheries	*F/T Vaerdahl*	Member
Seattle, WA		
Kodiak Fish Company	*F/T Alliance*	non-Member
Bellingham, WA	*F/T Legacy*	non-Member
Trident Seafoods	*F/T Bering Enterprise* (not active since 1997)	non-Member
Seattle, WA	*F/T Harvester Enterprise* (not active since 1997)	non-Member
U.S. Seafoods	*F/T Ocean Peace*	Member
Seattle, WA	*F/T Seafreeze Alaska*	non-Member
	F/T Ocean Alaska (Beagle)	non-Member

Source: Groundfish Forum and At-Sea Processors Association, 2005

4.2.2 Product Value, Catch and Retention Associated with BSAI Processors

The remaining subsections of Chapter 4 step back from the detailed focus on the HT-CPs, to a more general description of processing in the BSAI Groundfish fishery. Table 20 shows wholesale value from catcher processors by sector, including the HT-CPs and the combined shore-based/ floater/mothership category by selected BSAI fishery.

For the surimi and fillet catcher processor fleet, the most significant contributor to wholesale value has historically been the pollock fishery. In 2001, the combined first wholesale value of pollock was $407 million out of a total for all groundfish of $410 million, a 95 percent contribution. In 2003 the first wholesale value of pollock increased to $482.9 million out of a total of 490.2 million.

Relative to first wholesale value, the HT-CP sector is more diversified across the fisheries than other sectors. Two primary fisheries have historically contributed relatively equal shares of the first wholesale value for the HT-CP fleet. Atka mackerel at $47 million and yellowfin sole at $32 million were two of the largest contributors to in 2001, each contributing 35 percent and 24 percent, respectively to first wholesale value. Other fisheries which have historically contributed a smaller share of the total wholesale value for the head and gut fleet are rock sole, Pacific cod, flathead sole, and other flatfish. In 2003 the HT-CP sector had groundfish wholesale revenues of $137 million.

For the longline catcher processor fleet, the largest contributor to first wholesale value has been Pacific cod. In 2003, the first wholesale value for Pacific cod was $133 million, which was 98 percent of the total sector first wholesale value. Total first wholesale value for the pot catcher processor fleet has remained relatively sable from 1995 to 2003 at approximately $5 million annually.

Pollock has historically been the largest contributor of total first wholesale value for the BSAI shoreplants, floaters, and motherships. In 1995, the pollock fishery contributed 84 percent of first wholesale value for the BSAI shoreplants, floaters, and motherships, while in 2003, the contribution from pollock was 93 percent. In that year the combined first wholesale value of the pollock fishery was $616 million. Other fisheries which contributed consistently to total BSAI shoreplant revenues were Pacific cod and sablefish.

Table 20. Wholesale Product Value in Major BSAI Fisheries in 1995-2003, by Target Fishery and Processor Sector

Target Fishery & Sector	1995	1996	1997	1998	1999	2000	2001	2002	2003
	Wholesale Product Value ($Millions)								
Surimi & Fillet Trawl Catcher Processors									
Pollock	435.4	348.6	343.2	312.2	334.5	395.2	407.1	450.3	482.9
All Fisheries	474.5	377.4	377.8	333.3	346.4	402.0	410.3	455.1	490.2
Head & Gut Trawl Catcher Processors									
Atka Mackerel	43.7	71.3	35.6	21.3	25.7	23.6	46.6	25.7	24.5
Pacific Cod	10.3	8.2	9.5	7.5	20.4	21.1	17.3	24.7	28.9
Other Flatfish	14.3	14.5	10.3	18.8	19.3	23.4	15.2	10.9	7.6
Rockfish	11.7	12.2	8.2	4.0	7.2	4.5	4.0	6.8	8.1
Rock Sole	29.1	27.7	25.7	15.4	16.5	21.3	17.2	22.1	18.6
Yellowfin Sole	36.9	34.1	55.0	35.8	25.4	31.8	31.7	45.8	49.2
All Fisheries	149.4	170.8	145.4	104.6	115.4	126.7	133.4	137.9	137.1
Pot Catcher Processors									
Pacific Cod	2.9	6.5	3.2	3.3	4.3	3.6	4.7	2.3	1.9
All Fisheries	2.9	6.5	3.2	3.3	4.3	3.6	4.7	2.4	1.9
Longline Catcher Processors									
Pacific Cod	67.8	71.3	72.8	89.5	108.1	116.8	112.0	102.8	133.6
Sablefish	3.5	2.8	2.4	0.6	2.0	2.4	2.2	1.9	2.2
All Fisheries	75.7	80.6	82.6	98.9	117.1	127.6	116.7	107.9	139.5
All Shore Plants, Floaters, and Motherships									
Pollock	360.1	304.6	294.6	257.1	329.0	418.8	503.7	534.0	570.0
Pacific Cod	51.0	60.9	54.7	39.3	56.0	74.2	39.3	37.2	41.7
All Fisheries	147.8	372.7	363.0	299.5	388.5	498.0	548.3	576.5	615.9
All Sectors and Fisheries									
All Fisheries	429.3	1,008.0	972.0	839.6	971.6	1,157.9	1,213.4	1,287.8	1,391.3

Source: NPFMC Sector Profiles Database, 2001; and 2002-2003 data AFSC Terry Hiatt 2005

Table 21 summarizes total catches in major BSAI target fisheries by sector from 1995-2004. The table demonstrates that the HT-CP sector is the most diversified of all the sectors.

Table 21. Total Catch by BSAI Target Fishery and Processor Sector, 1995-2004

Target Fishery & Sector	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
	Total Catch (1,000 mt)									
Surimi & Fillet Trawl Catcher Processors										
Pollock	748	659	612	607	416	491	610	650	527	525
All Fisheries	856	761	719	670	445	507	613	653	533	529
Head & Gut Trawl Catcher Processors										
Atka Mackerel	79	109	59	57	63	56	71	52	57	59
Pacific Cod	25	16	26	16	31	30	27	39	43	64
Other Flatfish	32	34	24	44	39	46	35	26	23	35
Rockfish	13	19	12	9	15	10	10	12	13	10
Rock Sole	51	42	57	24	28	46	30	42	37	47
Yellowfin Sole	96	102	172	116	90	105	97	114	99	87
All Fisheries	303	327	354	271	268	294	272	287	273	303
Pot Catcher Processors										
Pacific Cod	5	8	5	3	4	3	3	2	2	3
All Fisheries	5	8	5	3	4	3	3	2	2	3
Longline Catcher Processors										
Pacific Cod	117	110	146	120	105	117	132	126	118	120
Sablefish	2	1	1	0	1	2	0	1	1	0
All Fisheries	122	115	152	128	113	126	135	130	121	122
All Shore Plants, Floaters, and Motherships										
Pollock	536	528	482	495	539	615	750	802	790	776
Pacific Cod	78	99	94	51	56	66	39	61	68	61
Sablefish	4	2	2	1	1	1	2	2	2	1
All Fisheries	644	637	602	548	598	684	791	865	861	838
All Sectors and Fisheries										
All Fisheries	1,930	1,849	1,831	1,621	1,427	1,614	1,815	1,937	1,794	1,796

Source: NPFMC Sector Profiles Database, 2004

Table 22 summarizes retention rates for catcher processors by sector and a combined BSAI shorebased plants/floaters/motherships category as a proxy for catcher vessels in selected BSAI fisheries from 1995 to 2004. In general, the most obvious trend is the improvement of retention rates.

For ST/FT-CP, retention rates for pollock (midwater) have remained relatively high, ranging from a low of 95 percent in 1995 to a high of greater than 99 percent in 2004. The non pollock fisheries reported retention rates below 70 percent in 1995, but the rates have increased to around 99 percent in the last few years. Among the HT-CP fleet, retention rates have also shown improvement (See Figure 3). In the yellowfin sole fishery, retention rates improved from a low of 53 percent in 1995 to a high of 73 percent in 2004. In other fisheries, like the rock sole, flathead sole, Pacific cod, and other flatfish, the retention rates were below 50 percent in 1995. With the exception of the other flatfish fishery, retention rates had increased to above 60 percent by 2004. Retention rates for the Atka mackerel and rockfish fisheries also improved over the seven year period. The Atka mackerel fishery drifted upward from a low of 76 percent to a high of 86 percent by 2000 and is at 78 percent in 2004. The retention rate for the rockfish fishery increased from a low of 80 percent in 1996 to a high of 89 percent in 2004.

Retention rates for the L-CP in the Pacific cod fishery have remained fairly constant, fluctuating between 84 and 88 percent. However, the turbot and sablefish fisheries have fluctuated more widely. For the P-CPs, retention rates for Pacific cod increased from a low of 94 percent in 2001 to a high of 99 percent in 2004. Retention rates for BSAI shore plants, floaters, and motherships also increased over the 1995 to 2004 period. Like the other fleets, retention rates for fisheries other than pollock were much lower in 1995 and 1996, but many of these fisheries have improved over the years.

Table 22 Retention Rates in Major BSAI Fisheries in 1995-2004, by Target Fishery and Processor Sector .

Target Fishery & Sector	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
	Percent of Groundfish Retained									
Surimi & Fillet Trawl Catcher Processors										
Pollock	93.5	95.4	94.8	98.4	98.9	98.2	99.2	99.5	99.7	99.5
All Non-pollock Fisheries	68.8	72.3	70.3	82.8	90.3	91.9	92.4	96.4	96.2	99.4
All Fisheries	90.4	92.3	91.2	96.9	98.3	98.0	99.1	99.5	99.7	99.5
Head & Gut Trawl Catcher Processors										
Atka Mackerel	76.0	78.4	84.3	85.1	82.6	86.2	83.7	75.4	72.0	77.6
Pacific Cod	47.7	44.8	44.5	57.1	57.5	63.8	69.7	69.5	62.3	55.7
Other Flatfish	47.8	43.4	49.7	55.9	54.4	63.1	67.2	66.2	68.9	61.4
Rockfish	81.8	80.3	87.9	91.1	91.6	94.6	87.2	90.1	93.4	89.6
Rock Sole	46.2	45.3	46.6	60.6	53.0	52.9	69.5	58.0	63.7	60.5
Yellowfin Sole	52.8	54.4	65.0	70.5	63.8	68.4	73.1	69.5	71.0	73.0
All Fisheries	58.8	61.6	63.6	70.4	66.8	69.2	75.1	69.6	69.7	67.6
Pot Catcher Processors										
Pacific Cod	96.5	95.9	98.5	97.1	96.0	95.9	93.7	96.9	97.7	98.7
All Fisheries	96.5	95.8	98.5	97.1	96.0	95.9	93.5	96.9	97.7	98.7
Longline Catcher Processors										
Pacific Cod	84.8	85.8	85.2	84.3	88.2	85.2	85.8	87.1	88.1	85.9
Sablefish	54.8	53.5	52.6	72.6	39.0	42.1	67.9	65.4	74.8	91.3
All Fisheries	84.1	85.4	84.9	84.3	86.0	83.9	85.4	86.9	87.8	85.8
All Shore Plants, Floaters, and Motherships										
Pollock	97.6	98.1	98.2	99.7	99.1	99.5	99.7	99.8	99.8	99.7
Pacific Cod	66.5	69.2	63.6	85.1	74.1	85.4	89.8	84.9	86.4	87.3
Sablefish	22.1	36.8	35.1	55.3	58.4	57.5	71.0	62.4	57.3	92.9
All Non-pollock Fisheries	68.5	70.6	69.2	83.8	74.3	85.1	89.1	84.0	85.3	87.3
All Fisheries	92.7	93.4	92.4	98.2	96.7	98.0	99.2	98.6	98.6	98.8
All Sectors and Fisheries										
All Fisheries	85.8	86.8	85.7	91.9	90.7	91.7	94.6	93.8	93.8	92.8

Source: NPFMC Sector Profiles Database, 2004

4.2.2.1 Additional Characteristics of the HT-CP Sector

As shown above, the HT-CP sector is the most diverse of the processing sectors in the BSAI and the only sector that consistently targets a significant amount of flatfish. However, as described in the EA/RIR/IRFA for Amendment 75 (Northern Economics, Inc. 2003), the flatfish market is characterized as having significant constraints. The rock sole market, for example, prefers females with roe over smaller males. Similarly, large yellowfin sole, flathead sole and Alaska place are preferred over small fish of the same species. There are few incentives to keep small fish because they fill limited hold space with product that is largely unmarketable. In the "race for fish" regime under which HT-CPs operate, if a vessel tries to minimize discards by reducing throughput and keeping and processing less valuable fish, its share of total catch may be reduced if others in the fleet do not follow suit. In addition, unlike larger catcher processors and shore-plants, HT-CP vessels are generally not legally allowed to process "ready-to-eat" products or fish-meal. Because of size constraints HT-CPs have fewer options for processing lower value products and, therefore, are typically more likely to discard less valuable fish.

Table 23 shows the processed product value of HT-CPs by BSAI target fisheries from 1995-2003. The Atka mackerel fishery has been the single largest fishery by value over the period shown. Typically only the largest of the HT-CP vessels participate in this high volume fishery. In general the HT-CPs participate in what is often referred to as the multi-species fisheries consisting of Pacific cod, rock sole, yellowfin sole and other flatfish including flathead sole. Targets in the multi-species fishery are difficult to pinpoint, because three or more species may be present in significant numbers. The multi-species fisheries as a group accounted for $82 million in 2001–61 percent of total product value. In 2000, when the Atka mackeral was curtailed

by closures in Steller sea lion critical habitat, the multi-species fishery accounted for 77 percent of total value. Over the period shown, the multi-species fishery has comprised over 64 percent of the first wholesale gross revenue generated by HT-CPs.

Table 23. First Wholesale Product Value of HT-CPs by BSAI Target Fishery, 1995-2003

Target Fishery	1995	1996	1997	1998	1999	2000	2001	2002	2003
	First Wholesale Product Value by Fishery ($Millions)								
Atka Mackerel	43.7	71.3	35.6	21.3	25.7	23.6	46.6	25.7	24.5
Pacific Cod	10.3	8.2	9.5	7.5	20.4	21.1	17.3	24.7	28.9
Other Flatfish	14.3	14.5	10.3	18.8	19.3	23.4	15.2	10.9	7.6
Rockfish	11.7	12.2	8.2	4.0	7.2	4.5	4.0	6.8	8.1
Rock Sole	29.1	27.7	25.7	15.4	16.5	21.3	17.2	22.1	18.6
Yellowfin Sole	36.9	34.1	55.0	35.8	25.4	31.8	31.7	45.8	49.2
All Fisheries	149.4	170.8	145.4	104.6	115.4	126.7	133.4	137.9	137.1

Source: NPFMC Sector Profiles Database, 2004

Table 24 shows discards of all species by the HT-CP sector, while Table 25 shows only rock sole and yellowfin sole discards. A comparison of the two tables shows that discards of rock sole, yellowfin sole and Pacific cod generally make up the largest proportion of overall discards by the sector.

Table 24. Discarded Catch as Percent of Total Catch in the HT-CP Sector in 1995-2004, by BSAI Target Fishery

Target Fishery	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
	Discarded Catch as Percent of Total Groundfish Catch									
Atka Mackerel	24.0	21.6	15.7	14.9	17.4	13.8	16.30	24.59	27.99	22.42
Pacific Cod	52.3	55.2	55.5	42.9	42.5	36.2	30.27	30.47	37.68	44.35
Other Flatfish	52.2	56.6	50.3	44.1	45.6	36.9	35.54	33.78	31.12	38.57
Rockfish	18.2	19.7	12.1	8.9	8.4	5.4	12.86	9.88	6.62	10.41
Rock Sole	53.8	54.7	53.4	39.4	47.0	47.1	31.40	41.99	36.29	39.46
Yellowfin Sole	47.2	45.6	35.0	29.5	36.2	31.6	27.80	30.52	29.00	27.03
All Fisheries	41.2	38.4	36.4	29.6	33.2	30.8	25.80	30.41	30.32	32.38

Source: NPFMC Sector Profiles Database, 2004

Table 25. Discarded Rock Sole and Yellowfin Sole as Percent of Total Catch in the HT-CP Sector in 1995-2004, by BSAI Target Fishery

Target Fishery	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
	Discarded Flatfish Catch as Percent of Total Groundfish Catch									
Atka Mackerel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2
Flathead Sole	10.6	13.8	10.6	14.9	11.6	7.4	3.6	6.8	4.2	5.1
Other Flatfish	19.8	14.0	7.8	13.0	4.4	4.8	0.3	0.5	0.0	0.2
Pacific Cod	11.8	9.5	13.2	9.7	12.4	15.9	9.7	9.8	8.2	10.1
Rock Sole	26.4	20.6	25.2	25.6	30.0	32.3	13.7	19.1	22.2	22.3
Yellowfin Sole	15.0	16.1	15.2	14.7	15.4	11.5	7.5	10.6	17.7	13.6
All Fisheries	13.7	10.4	13.5	12.1	11.7	12.3	5.6	8.9	8.9	10.0

Source: NPFMC Sector Profiles Database, 2004

The HT-CP fleet consists of a relatively wide variety of vessels that range from 103 ft to 295 ft in length. As would be expected, the smaller vessels are relatively less productive than the larger vessels. From 1995-2004, the smaller vessels generated approximately 12 percent of both catch and product value. However, the smaller vessels accounted for roughly 18 percent of the total discards in the sector. Vessels less than 125 ft discarded 48 percent of their catch over the seven year period, while vessels 125 ft or greater discarded 38 percent. Industry sources indicate that the smaller vessels are unable to retain as many fish as larger vessels because of limitations in hold size and processing space.

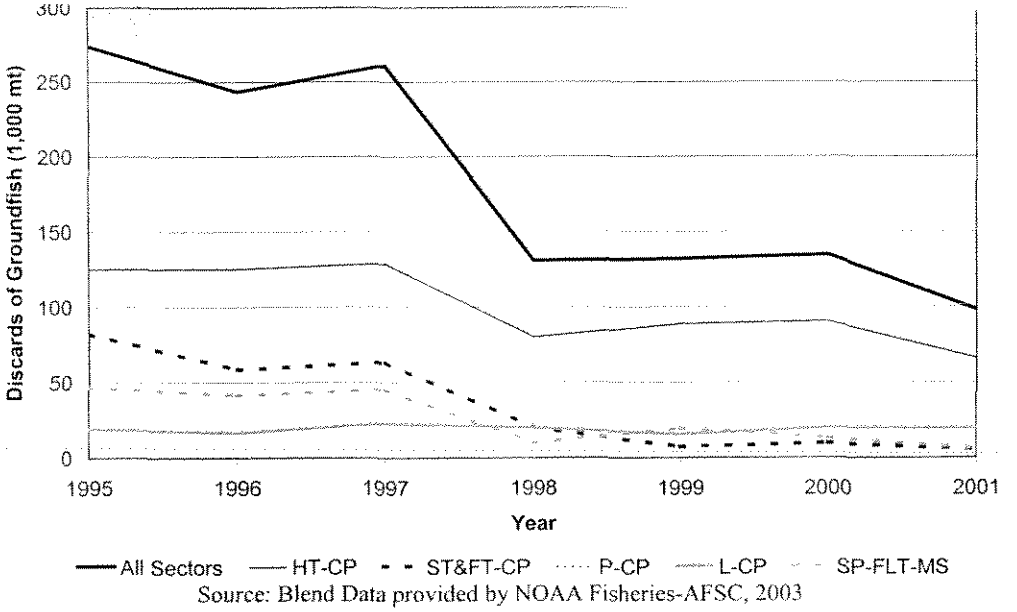
Table 26. Fishing Activity in the HT-CP Sector in 1995-2004, by Size Class

Length Class	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
					Number of Vessels					
< 125'	8	7	10	7	8	7	6	6	6	7
≥125'	24	21	18	16	16	16	16	16	17	17
					Product Value ($ Millions)					
< 125'	6.2	12.2	13.5	11.9	14.7	20.1	8.6	26.3	27.2	XXXX
≥125'	142.9	158.6	131.9	92.7	100.7	106.6	124.8	111.6	109.9	XXXX
					Product Value as a Percent of HT-CP Value					
< 125'	4.4	7.1	9.3	11.4	12.7	15.9	6.5	19.0	19.8	XXXX
≥125'	95.7	92.9	90.7	88.6	87.3	84.1	93.6	81.0	80.2	XXXX
					Total Groundfish Catch (1,000 mt)					
< 125'	19.2	34.5	50.6	37.4	34.3	42.7	20.9	44.1	40.8	50.2
≥125'	284	293	303	234	234	251	242.20	243	232.40	252.80
					Percent of HT-CP Total Groundfish Catch					
< 125'	6.3	10.5	14.3	13.8	12.8	14.5	8.0	15.4	14.9	16.6
≥125'	93.7	89.5	85.7	86.2	87.2	85.5	92.0	84.6	85.1	83.4
					Discards as a Percent of Total Groundfish Catch					
< 125'	60.7	55.1	52.0	46.9	41.2	41.0	39.9	40.1	42.1	46.1
≥125'	39.4	36.3	34.1	27.1	32.1	29.3	27.9	28.7	28.3	29.7
					Discards as a Percent of HT-CP Total Discards					
< 125'	12.1	13.5	18.4	20.4	17.8	17.2	13.8	20.2	20.7	23.6
≥125'	87.9	86.5	81.6	79.6	82.2	82.8	86.2	79.8	79.3	76.4

Source: NPFMC Sector Profiles Database, 2004, Terry Hiatt AFSC, 2005.
X- Denotes price data not available at the date of preparation

4.3 Trends in Discards in BSAI Fisheries

In general, discards in the BSAI groundfish fishery have declined significantly–down 64 percent since 1995. As shown in Figure 3, total discards of groundfish fell from 274,000 mt in 1995 to 98,000 mt in 2001. Indications are that further reductions in discards were attained in 2002 and 2003. The largest contributor of discards by volume is the HT-CP sector. Since 1995, this sector has accounted for 55 percent of all groundfish discards in the BSAI while contributing only 13 percent of the total first wholesale gross revenue over the same period (Table 26). In spite of the significant reduction in discards accomplished by the HT-CP sector–47 percent since 1995–the sector's proportion of discards has increased relative to other sectors. In 1995, the HT-CP sector accounted for 46 percent of the total BSAI discards, and in 2001 they accounted for 67 percent. Prior to the implementation of IR/IU rules for pollock and Pacific cod in 1998, discards by the ST&FT-CP and SP-FLT-MS sectors were relatively high, accounting for over 100,000 mt of discards each year from 1995-1997. With implementation of IR/IU, discards by these sectors (and by the HT-CP sector) fell dramatically. Currently, the combined discards by the ST&FT-CP and SP-FLT-MS sectors are less than 12,000 mt. Compared to trawl gear sectors (including the SP-FLT-MS sector), the two fixed gear catcher processor sectors have relatively low discards, and have not realized significant reductions in discards over the 7-year period. Discards by L-CPs have been relatively stable, around 19,000 mt, while P-CP discards have averaged 200 mt.

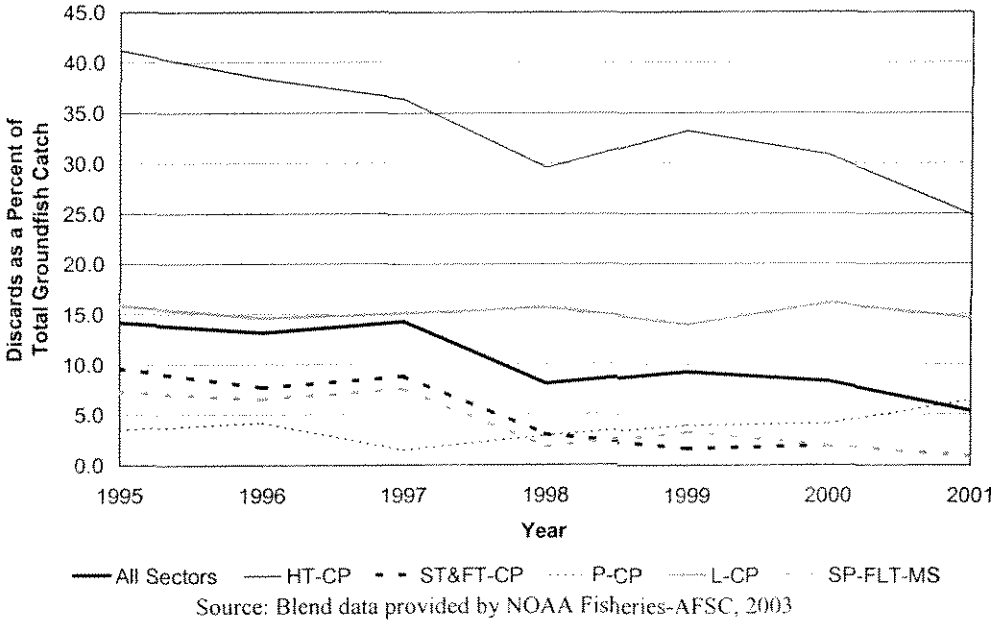


Source: Blend Data provided by NOAA Fisheries-AFSC, 2003

Figure 3. Discarded Catch in BSAI Fisheries in 1995-2002, by Processor Sector

Figure 4 shows discards as a percentage of groundfish catch by sector for 1995-2001. HT-CP discards have declined as a percent of total groundfish catch in the BSAI since 1995. The relative stability of discards by L-CPs is shown in this figure as well as the slight upward trend in discard percentages by P-CPs. All other processing sectors show a declining amount of discards relative to total catch. In 2001, approximately 10 percent of groundfish harvested in the BSAI was discarded.

Figure 4. Discards as Percent of Total Catch in BSAI Fisheries, by Processors, 1995-2001



Source: Blend data provided by NOAA Fisheries-AFSC, 2003

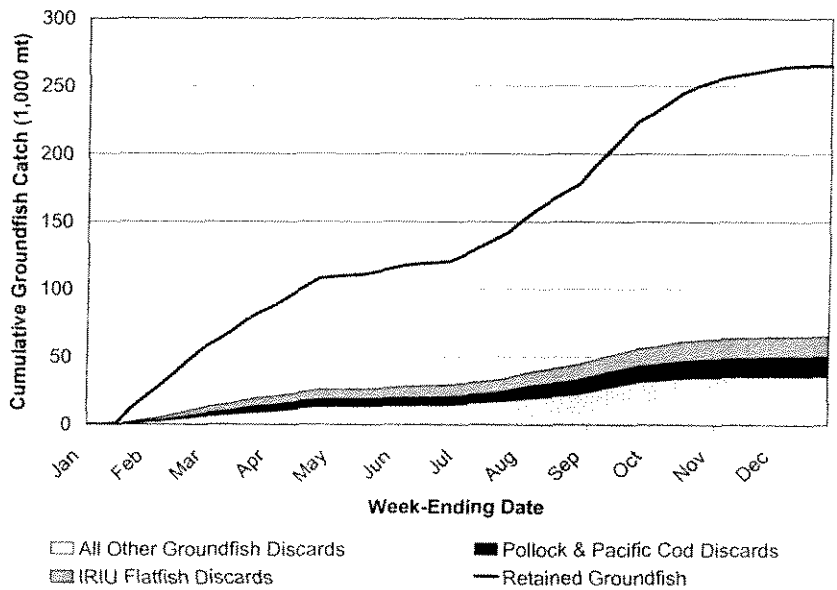
Figures 3 through 6 provide details of discards and retention in 2001 by the five processor sectors identified. The figures show cumulative discards and retained catches by week. All retained catch is shown as a single group, while discards are grouped into three categories: 1) flatfish; 2) pollock and Pacific cod; and 3) all other groundfish. By presenting discards by species groups it is possible to determine which component of discards is highest. By showing cumulative weekly discards and retained catches it is possible to show the seasonality of catches and whether there are periods of high discards—for example, after fishery closures due to attainment of TACs or PSC limits. The seasonality of total catch, discards and retention, are a function of many factors including abundance, change in quality of processed product during the season, demand for fish

products during a season, seasonal closures as well as management and allocation regulations. While some of these factors vary between season the upward sloping trends for cumulative increases in catches, retention and discards are unlikely to change between years. Thus, year 2001 is illustrative of the trends that are expected in more recent years from 2002 to 2004.

Figure 5 shows cumulative retained catch and discards in 2001 by the HT-CP sector. Catches increased steadily through mid-April, then slowed with the closure of the directed fisheries for rock sole, flathead sole, and other flatfish. Fishing slowed considerably in May and June, increased again in July, peaked in September and began slowing in October, with very little fishing after November.

The largest component of discards by HT-CPs is not flatfish (rock-sole and yellowfin sole) but rather all other species (including other flatfish, rockfish, sablefish, Atka mackerel, and other groundfish). Pollock and Pacific cod account for nearly as much of the discards as do flatfish. Pollock was the largest single component by species of discards by the HT-CP fleet in 2001. A large portion of the discards of pollock are regulatory discards and occur because of directed fishing definitions and the way the maximum retainable allowances of incidental catches are managed. Because the incidental catch of pollock is often more than 20 percent of their catch, these HT-CPs are forced by regulation to discard pollock if they wish to continue to fish for other species. Only one of the HT-CPs is allowed to participate in directed fishing for pollock under AFA. For other HT-CPs, retained pollock cannot exceed 20 percent of their retained catch of other non-pollock groundfish at any time during a fishing trip.

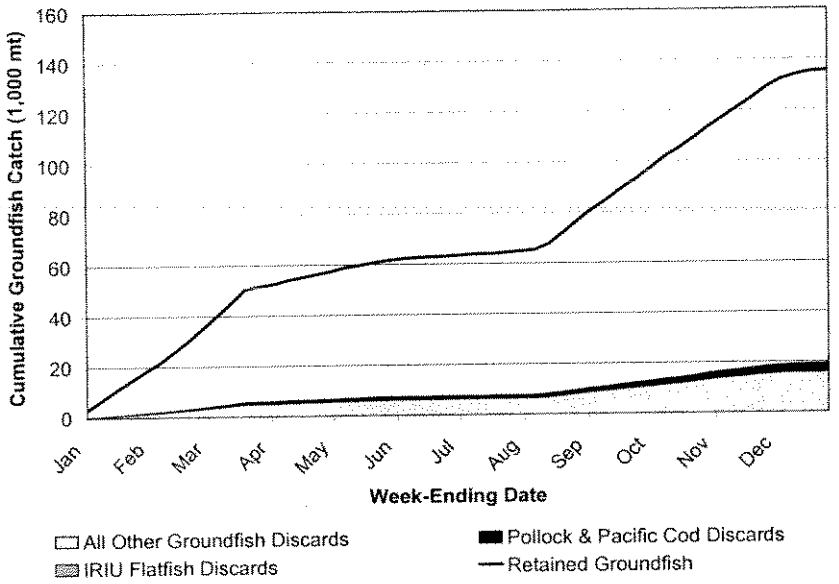
Figure 5. Cumulative Discarded and Retained Catch by HT-CPs in 2001, by Species Group



Source: Developed by Northern Economics using Blend Data provided by NOAA Fisheries-AFSC, 2001.

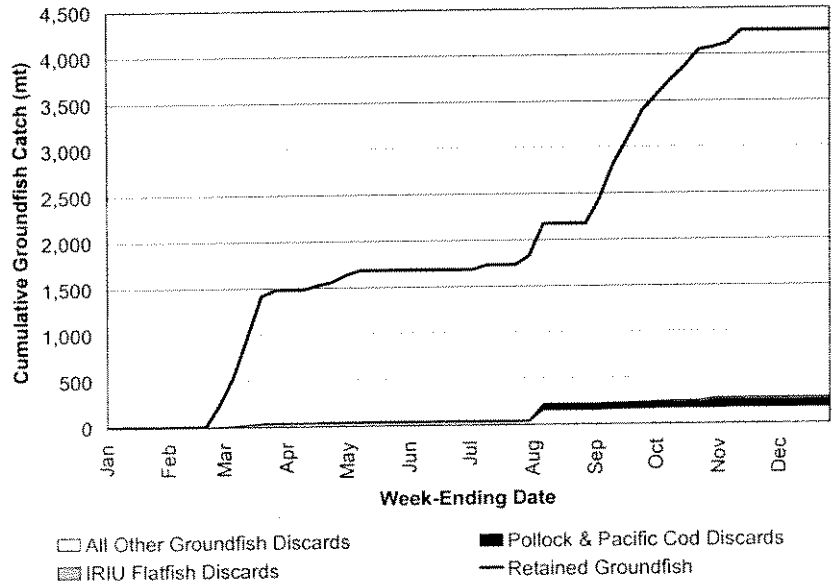
Figures 6 and 7 show retained catch of pot and longline catcher processors. Groundfish discards of both of these sectors are dominated by species other than pollock or flatfish. The fact that discards increase relative to retained catch in August is also apparent. Figures 8 and 9 show retained catch and discards in the BSAI for AFA-eligible catcher processors and shore plants, motherships and floaters (SP-MS-FLT). Because these two groups of processors focus their efforts primarily on pollock, discards are negligible.

Figure 6. Cumulative Discarded and Retained Catch by the L-CPs in 2001, by Species Group



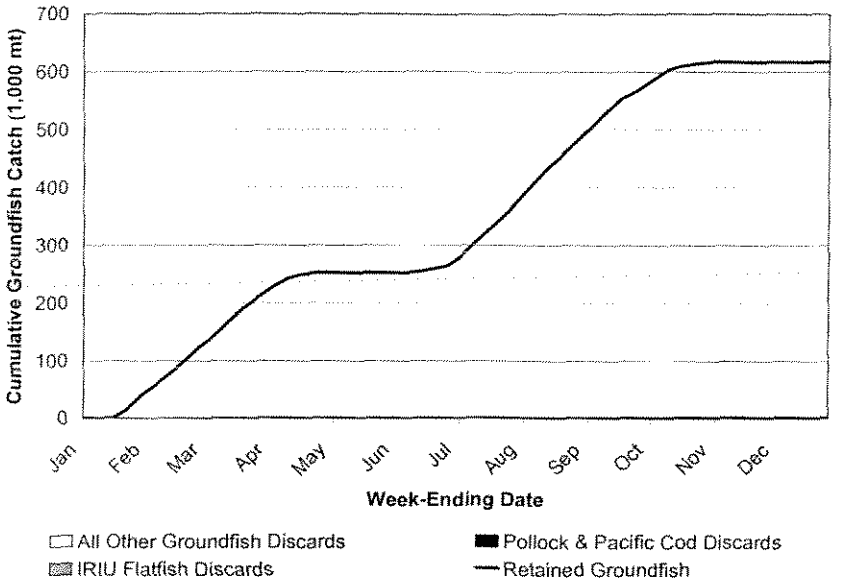
Source: Developed by Northern Economics using Blend Data provided by NOAA Fisheries-ASFC, 2001.

Figure 7. Cumulative Discarded and Retained Catch by P-CPs in 2001, by Species Group



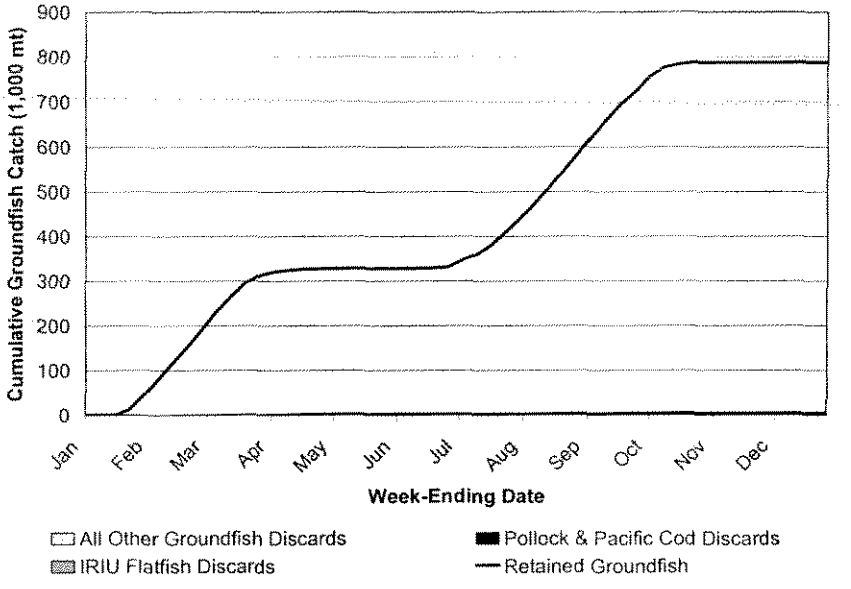
Source: Developed by Northern Economics using Blend Data provided by NOAA Fisheries-ASFC, 2001.

Figure 8. Cumulative Discarded and Retained Catch by ST/FT-CPs in 2001, by Species Group



Source: Developed by Northern Economics using Blend Data provided by NOAA Fisheries-ASFC, 2001.

Figure 9. Cumulative Discarded and Retained Catch in the SP-MS-FLT Sectors in 2001, by Species Group



Source: Developed by Northern Economics using Blend Data provided by NOAA Fisheries-ASFC, 2001.

4.3.1 Economic and Regulatory Discards in the HT-CP Sector

Because most HT-CPs are prohibited by AFA regulations from participating in the pollock fishery, they must discard all pollock caught that exceed the maximum retainable allowance (MRA). However, IR/IU regulations for pollock require vessels to keep all pollock up to the MRA, and, therefore, all discarded pollock are regulatory discards by definition. In 2002, the HT-CP fleet discarded over 15,800 mt of incidental pollock catches. In addition, HT-CPs must discard incidental catches of various other groundfish species when directed fishing for those species is prohibited—for example when a seasonal apportionment or TAC has been reached or if a PSC closure is in effect. During such closures, vessels may continue to operate in fisheries that remain open, but they may retain no more than the MRA's for closed species. Typically, the PSC apportionment for rock sole/flathead sole/other flatfish is attained in April or May. At that time, many of the vessels in the HT-CP fleet begin targeting Pacific cod, and a few may start fishing for yellowfin sole. Rock sole, flathead sole, and other flatfish are often caught incidentally to Pacific cod and yellowfin sole. The MRA for rock sole, flathead sole and other flatfish is 35 percent of the total retained amount of flatfish species that remain open for directed fishing and 20 percent of the retained total catch of Pacific cod or other groundfish for which direct fishing is open.

As shown in Table 27, closures of the rock sole, flathead sole, and other flatfish fisheries to directed fishing occurred regularly from 1999-2002. While some discards during these closures may be economic discards, no discards that occur during open periods are considered regulatory discards. Table 28 shows retained catch and discards of rock sole, flathead sole, and other flatfish during periods open and closed to directed fishing

from 1999-2002. Over the four year period, 22 percent of total discards of these species may have been regulatory discards.

Table 27. Rock Sole/Flathead Sole/Other Flatfish Fishery Closures in 1999-2002

Year	1999		2000		2001		2002	
Period	From	To	From	To	From	To	From	To
Closure #1	1-Jan	20-Jan	1-Jan	20-Jan	1-Jan	20-Jan	1-Jan	20-Jan
Closure #2	26-Feb	30-Mar	4-Mar	1-Apr	20-Mar	1-Apr	1-Mar	1-Apr
Closure #3	27-Apr	4-Jul	30-Apr	4-Jul	27-Apr	1-Jul	20-Apr	30-Jun
Closure #4	31-Aug	31-Dec	25-Aug	31-Dec	24-Aug	31-Dec	29-Jul	31-Dec

Source: NOAA Fisheries Trawl Closure Tables, 2003.

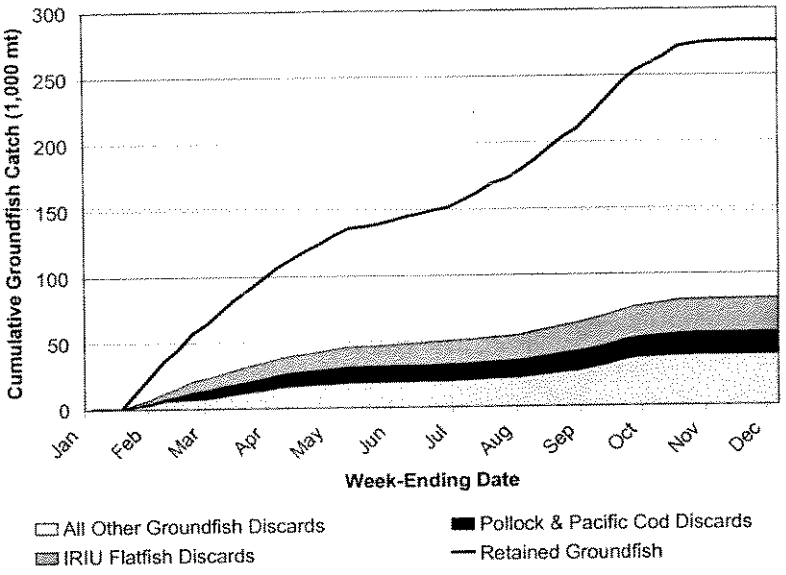
Table 28. Retention in Open and Closed Flatfish Fisheries in the HT-CP Sector in 1999-2002

Year	1999		2000		2001		2002		2003	
	Retained	Discarded	Retained	Discarded	Retained	Discarded	Retained	Discarded	Retained	Discarded
Status	Tons (1,000 mt)									
Open	19,534	23,095	25,420	30,165	12,496	26,737	13,168	23,213	17,048	8,382
Closed	16,018	6,074	14,378	6,551	7,217	5,728	18,072	11,333	12,031	9,500
Status	Percentage of Rock Sole, Flathead Sole, and Other Flatfish Tons (1,000 mt)									
Open	30.2	35.7	33.2	39.4	23.9	51.2	20.0	35.3	36.3	17.8
Closed	24.7	9.4	18.8	8.6	13.8	11.0	27.5	17.2	25.6	20.2

Source: NOAA Fisheries Trawl Closure Tables, 2003.

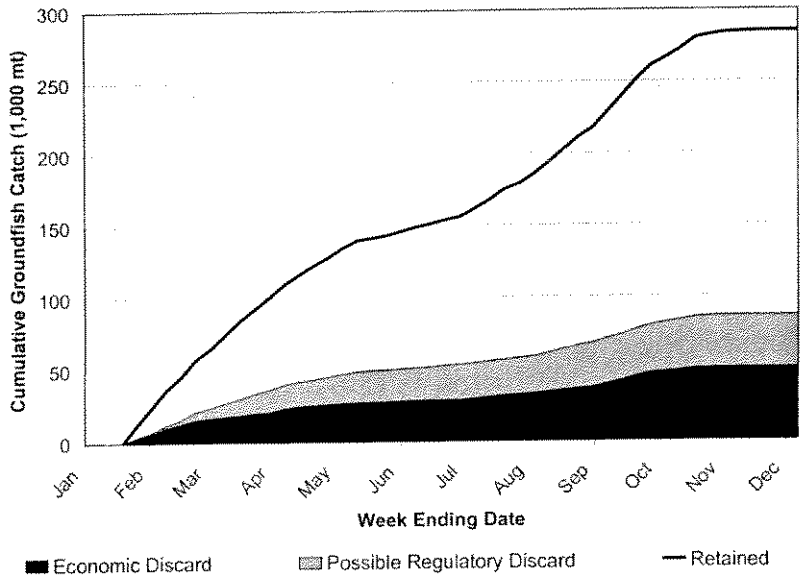
Other regulatory discards also contribute to total discards by the HT-CP sector. The sector is not allowed to conduct directed fishing for many high value species, including sablefish and turbot, and some rockfish. In addition, many discards of yellowfin sole are regulatory discards. In 2002, the HT-CPs fleet discarded over 15,800 mt of pollock, 20,000 mt of rock sole yellowfin sole, flathead sole and other flatfish as well as over 800 mt of sablefish and Greenland turbot during periods for which directed fishing for those species was closed. In short, approximately 36,000 mt (44 percent) of the 81,000 mt of groundfish discarded by the HT-CP fleet may be regulatory discards. Cumulative discards by species groups are shown in Figure 10, along with total retained catch. Figure 11 is similar to Figure 10 except that economic discards and possible regulatory discards are shown separately.

Figure 10. Cumulative Discarded and Retained Catch of HT-CPs in 2002, by Species Group



Source: Developed by Northern Economics using Blend Data provided by NOAA Fisheries-AFSC, 2002.

Figure 11. Cumulative Discarded and Retained Catch of HT-CPs in 2002, by Discard Type



Source: Developed by Northern Economics using Blend Data provided by NOAA Fisheries-AFSC, 2002.

While regulatory discards account for a considerable proportion of the HT-CP sector's discards, the regulations requiring these discards were implemented to meet a specific objective, i.e., to ensure that participants in trawl flatfish fisheries do not take more than their "fair" share of halibut, pollock, and sablefish, etc. Nevertheless, the Council is seeking ways to reduce both regulatory and economic discards.

4.4 Description of Alternatives

Alternative 1: Status Quo/No Action

Current regulations regarding retention and discards and regulations that require 100 percent retention of pollock and Pacific cod would remain in effect. The MRA for pollock would be enforced at offload.

Alternative 2: Establish a Minimum Groundfish Retention Standard (GRS)

This alternative would add a minimum Groundfish Retention Standard (GRS) for all groundfish fisheries (excluding pollock target fisheries) to the Goals and Objectives section of the BSAI Groundfish FMP. In addition, a regulation establishing a GRS would be promulgated and enforced on certain vessels and sectors in the groundfish fleet. The GRS regulation would not change the 100 percent retention standard already set for pollock and Pacific cod under existing IR/IU regulations. In addition to establishing a GRS, the regulation would require that processors create products that yield at least 15 percent from each fish harvested.

A regulation establishing a GRS consists of several components, for which a number of options and suboptions are possible. These components and their respective options and suboptions are as follows:

Component 1 Establishes the GRS percentage.

- Option 1.1 65 percent of all groundfish caught in non-pollock fisheries must be retained.
- Option 1.2 70 percent of all groundfish caught in non-pollock fisheries must be retained.
- Option 1.3 75 percent of all groundfish caught in non-pollock fisheries must be retained.
- Option 1.4 80 percent of all groundfish caught in non-pollock fisheries must be retained.
- Option 1.5 85 percent of all groundfish caught in non-pollock fisheries must be retained.
- Option 1.6 90 percent of all groundfish caught in non-pollock fisheries must be retained.

Component 2 Specifies the vessels required to comply with the GRS.

- Option 2.1 Catcher processors
- Option 2.2 Catcher processors that are 125 ft or greater LOA.
- Option 2.3 Trawl catcher processors, including AFA-eligible trawl catcher processors participating in non-pollock target fisheries.
- Option 2.4 Trawl catcher processors that are 125 ft or greater LOA, including AFA-eligible trawl catcher processors participating in non-pollock target fisheries.
- Option 2.5 Trawl catcher processors that are not AFA-eligible.
- Option 2.6 Trawl catcher processors that are not AFA-eligible with exemptions for vessels less than 125 ft LOA that meet specified production limits. The following suboptions set the maximum production levels for exempt (< 125') non-AFA trawl catcher processors:

  Suboption 2.6.1 Total catch in any week shall not exceed 600 mt.

  Suboption 2.6.2 Total catch in any week shall not exceed 700 mt.

  Suboption 2.6.3 Total catch for the year shall not exceed 13,000 mt.

  Suboption 2.6.4 Total catch for the year shall not exceed 17,000 mt.

Component 3 Sets the period over which the retention rate is calculated.

Option 3.1 At the end of each week for each area and gear fished.

Option 3.2 At the end of each week over all areas and gears fished.

Option 3.3 At the end of each fishing trip as defined by the offloading of fish.

Option 3.4 At the end of each month.

Option 3.5 At the end of each quarter.

Option 3.6 At the end of each fishing season.

Option 3.7 At the end of each year.

Component 4 Defines the seasonality of the GRS.

Option 4.1 A year-round standard.

Option 4.2 A different standard for the "A" Season (January-May) and "B" Season (June-December).

Component 5 Determines at which level of aggregation the GRS is applied.

Option 5.1 The GRS applies to vessel pools or the fleet as a whole.

Option 5.2 The GRS applies to each vessel.

Component 6 Considers revision of the maximum retainable bycatch allowance (MRA) for pollock.

Option 6.1 Use the current MRA whereby a predetermined percentage of the pollock TAC is set aside as the incidental catch allowance (ICA). Up until the point the ICA has been caught, all pollock must be retained up to the MRA – currently set at 20 percent. After the ICA has been caught, pollock cannot be retained by vessels that are not AFA-eligible. Note that the MRA defines when a vessel is directed fishing for a given species. According to NOAA Fisheries, a vessel is engaged in directed fishing for a species if the amount of that species retained on board the vessel as a percentage of the amount of groundfish of species open for directed fishing retained on board the vessel, exceeds the MRA for the species in question.

Suboption 6.1.1 NOAA Fisheries manages ICA for pollock as it does currently (i.e. 6.1), but MRA rates are adjusted to insure that the historical bycatch requirements of pollock in the non-pollock fisheries are not exceeded. MRA rate adjustments can be made by NOAA Fisheries either in-season or inter-annually to discourage increased bycatch (incidental catch) of pollock should pollock harvest amounts indicate that this is occurring. The MRA rate could be adjusted between 0 - 49%, subject to the stipulation that non-AFA vessels not engage in directed fishing for pollock at any point in a trip. The intent of this approach is to allow increased retention of pollock without increasing the relative bycatch requirements of the non-pollock fisheries.

Component 7 Determines how total catch is measured under GRS regulations (GRS is defined as the percentage of total groundfish catch retained).

Option 7.1 The current blend data estimation system is used to estimate total catch (This option has been determined to be infeasible from an enforcement perspective).

Option 7.2 All regulated vessels are required to use NOAA Fisheries-approved scales to determine total catch and maintain observer coverage of every haul for verification that all fish are being weighed.

Option 7.3 All regulated vessels are required to use NOAA Fisheries-approved scales to determine total catch and either maintain observer coverage of every haul for verification that all fish are being weighed or use an alternative scale-use verification plan approved by NOAA Fisheries.

Option 7.4 All regulated vessels that are 125 ft or greater LOA are required to use NOAA Fisheries-approved scales to determine total catch and either maintain observer coverage of every haul for verification that all fish are being weighed or use an alternative scale-use verification plan approved by NOAA Fisheries. All vessels less than 125 feet are required to carry observers 100 percent of the time but are not be required to have approved scales (This option has been determined to be infeasible from an enforcement perspective).

Option 7.5 All regulated vessels are required to maintain 100 percent observer coverage but are not required to have approved scales (This option has been determined to be infeasible from an enforcement perspective).

Component 8 Determines how retained catch is measured.

Option 8.1 Retained catch is calculated using NOAA Fisheries standard product recovery rates (PRRs). For each product/ species combination, retained tonnage is equal to product tonnage divided by the PRR.

Option 8.2 Retained catch is calculated using an alternative retained catch measurement plan approved by NOAA Fisheries.

Option 8.3 Retained catch is calculated using a new set of minimum acceptable PRRs specifically developed for implementation of the GRS.

For purposes of this analysis, two bookend alternatives were developed by varying the values of these components. The two alternatives provided a contextual backdrop for the variation caused by different combination of the components. These two alternatives are as follows:

Alternative 2: Less Restrictive GRS

This alternative establishes a GRS of 70 percent. The standard applies to non-AFA trawl catcher processors (HT-CPs) that are 125 ft or greater LOA as a fleet. Compliance with the GRS is determined at the end of the fishing year. The pollock MRA percentage is increased to 35 percent for all non-AFA trawl catcher processors, including vessels less than 125 ft, and compliance with pollock MRAs is monitored and enforced on each vessel at the end of each offload. NOAA Fisheries-approved scales, a certified observer sampling station, and observer coverage of every haul are used to measure and verify total catch. Retained catch is calculated using NOAA Fisheries standard PRRs.

Alternative 3: More Restrictive GRS

This alternative establishes a GRS of 85 percent for January through May, The GRS increases to 90 percent during the remainder of the year. The GRS applies to all catcher processors that are 125 ft or greater LOA as individual vessels. Catcher processors less than 125 ft. are exempt if their weekly production is less than 600 mt. The current pollock MRA percentage is maintained. NOAA Fisheries-approved scales, a certified observer sampling station, and observer coverage of every haul or all catch are used to measure and verify total catch. Retained catch is calculated using existing NOAA Fisheries standard PRRs. No alternative scale monitoring plans or retained catch measurement plans are considered.

In addition, the Council at its June 2003 meeting identified the following preferred alternative:

Alternative 4: Phase-In of a GRS (Preferred Alternative)

The preferred alternative, establishes a year-round GRS of 65 percent in 2007; 75 percent in 2008; 80 percent in 2009; and 85 percent in 2010. The GRS will be calculated as the round-weight equivalent of retained groundfish as a percent to total groundfish weight. The GRS will be established in the FMP, and will demonstrate the Council's goal that all vessels in the BSAI minimize discards. The GRS regulations however, will apply only to HT-CPs that are 125 ft or greater LOA, and the GRS will be enforced on individual vessel basis. The GRS will be measured at the end of each year. All regulated vessels are required to use NOAA Fisheries-approved scales to determine total catch and either maintain observer coverage of every haul for verification that all fish are being weighed or use an alternative scale-use verification plan approved by NOAA Fisheries. Retained catch is calculated using NOAA Fisheries standard product recovery rates (PRRs). For each product/species combination, retained tonnage is equal to product tonnage divided by the PRR.

As part of its preferred alternative on GRS, the NPFMC approved a change in the MRA enforcement interval—from instantaneous enforcement to an offload to offload enforcement period. The final rule for the MRA was published on June 14, 2004 amending 679.20 and 679.27.

4.5 Costs and Benefits of the Alternatives

NOAA Fisheries guidance for preparation of RIRs provides that, *"At a minimum, the RIR ... should include a good qualitative discussion of the economic effects of the selected alternatives. Quantification of the effects is desirable, but the analyst needs to weigh such quantification against the significance of the issue and available studies and resources"* (NMFS 2000).

Research results and data on many key topics pertaining to the GRS are limited. Almost no empirical data are available, for example, concerning the cost and operating structure of the sectors of the groundfish fishing industry that would be affected; the potential market for fish currently discarded; or the fleet behavioral response to alternative fishing opportunities. Indeed, because the GRS may require the industry to retain fish with which they have little historical experience in processing and marketing, it is probable that even the industry itself cannot fully anticipate the cost, revenue and operational impacts they may incur as they adjust to a groundfish retention standard. By necessity, therefore, much of this analysis is qualitative, although impacts have been quantified and monetized where possible.

There are two principal parts to the analysis presented here. The analysis presents potential costs and benefits attributable to or deriving from the alternative measures under consideration by the NPFMC. This part of the analysis is conducted from the point of view of all U.S. citizens (i.e., what is likely to be the "net benefit to the Nation"). The costs and the benefits of the alternatives are, however, not homogeneously distributed across that population. Many of the costs, in particular, are highly concentrated in certain sectors of the groundfish fishing industry that operate in the BSAI. Therefore, the analysis also reviews and evaluates, to the extent practicable, distributional issues and implications of the alternatives.

The cost/benefit analysis has been broken into four components that correspond to different categories of benefits and costs. These categories are as follows:

1. Changes in groundfish retention rate (Section 4.5.1)

2. Changes in revenues and operating costs of firms in the fisheries (Section 4.5.2)
3. Monitoring and enforcement issues (Section 4.5.4)
4. Additional Guidance for Determining Benefits and Costs, including qualitative discussion on potential value to U.S. citizens that do not directly consume of use groundfish resources.

In addition to the analysis contained this section, Section 4.6 shows the effects on retention and costs of individual options within the components that comprise the Alternatives.

4.5.1 NPFMC Rational for the Preferred Alternative

This section documents the NPFMC's intent and justification for taking their preferred action. The language in this section is paraphrased and excerpted from transcripts of the NPFMC's deliberations on the GRS at their June 2003 meeting and deliberations on IR/IU at their September 1996 meeting.
The Council has recognized the costs of the IR/IU program for some time (NPFMC 2003b). In 1996, the Council adopted an IR/IU program (Amendment 49) for yellowfin sole and rock sole with a delayed starting date of 2003, which the Secretary approved. The program was to impose 100 percent retention requirements of yellowfin sole and rock sole on all trawl vessels throughout the Bering Sea and Aleutian Islands. The delayed starting date was a recognition by the Council that the program was costly to the industry, and the delay was intended to allow ample time for the industry to develop new fishing techniques and technology to avoid or minimize unwanted fish, and to develop new product forms and markets (NPFMC 1996). However, prior to the flatfish IR/IU regulations commencing in 2003, the Council again proposed to delay implementation of flatfish IR/IU until June 2004 to allow additional time for the affected fleet to adjust to these requirements. That proposed delay resulted in a partial approval of Amendment 75 in 2003, and is discussed further in section 4.1.4. At the same time, the Council initiated additional amendments to examine alternative approaches to flatfish IR/IU and to develop a fishing cooperative to allow the affected sectors to better comply with IR/IU retention standards (Amendment 79 and Amendment 80).

The rationale expressed in the administrative record of the Council discussion concerning Amendment 79 stated that "Fishery management is about achieving conservation objectives, achieving social and economic objectives, and meeting the letter of the law and the intent and sprit of the law...Our intention, and our purpose and our need here, is to address the multiple requirements of the Magnuson Act to balance conservation goals and reduce bycatch, and still maintain the opportunity to go out and meet other considerations such as having an economic fishery" (NPFMC 2003b).

In their deliberations on Amendment 79, the Council expressed that this particular action (i.e. the preferred alternative) balances conservation through reductions in discards (National Standard 9) and minimizes costs when practicable (National Standard 7) by enforcing higher retention rates only on the specific section of the fleet with the largest problem. The Council cited reasons why the alternative would reduce costs to the fishing industry relative to proposed action under Amendment 49 including the exclusion of vessels under 125 feet LOA, and the inability of some vessels to retain all flatfish species. "The costs are far less than what were originally... considered, and we've tried to adjust the program to minimize those costs." As a result, the Council crafted the GRS program to minimize costs as much as possible by targeting higher retention standards on the HT-CP sector. At the same time, the preferred alternative also mitigates the cost of the program on the industry and sector it most directly impacts. For example, the preferred alternative mitigates the costs of the program by excluding HT-CP vessels less than 125 feet LOA. These vessels have "specific and particular operational concerns" associated with the enforcement and monitoring requirements (NPFMC 2003b). This action also gradually phases in the GRS program over time which allows the affected vessels to adjust to the program requirements. This allows

the portion of the industry most impacted by the standards the opportunity to continue targeting rock sole and yellowfin sole, while also reducing discards in these fisheries.

A component within earlier versions of the document was the option of changing the enforcement timing or level of the MRA. The Council moved the MRA analysis to a separate document because such a change required its own analysis. Separating the MRA analysis has the added benefit of allowing the potential benefit of changing the enforcement interval to offload-to-offload to proceed without being attached to Amendment 79. The June 2004 adoption of the MRA enforcement timing was intended to provide an immediate reduction in retention costs, and allow for increased retention rates if the GRS program is approved by the Secretary.

4.5.2 Groundfish Retention Rates

This section examines the alternatives with respect to the effect they are projected to have on groundfish retention rates. While the value of retention/discards improvements is not calculated, it is considered part of the cost/benefit analysis because of the emphasis placed on retention and bycatch reduction by the public and in the MSA and the National Standards. From this perspective, higher retention rates, or the reduction of discards are considered to be a public benefit much like pollution abatement or wetlands preservation. It is expected that if two alternatives have similar costs to the HT-CP sector, the option that is expected achieve the higher retention would be the more cost effective choice. Conversely if two alternatives are projected to result in similar reductions in discards, the alternative that can be realized with the lower cost would be considered the most cost effective choice.

4.5.2.1 Alternative 1: Status Quo/No Action

Over the past several years the groundfish retention rate of the HT-CP sector has increased substantially. In 2001, the sector's retention rate was 75 percent. Under status quo, this rate could continue rising, stay the same or decrease to previous levels. While it is difficult to predict how retention rates might change, there is reason to expect that retention rates will show little or no improvement. Much of the increase in the retention rate of the HT-CP sector can be attributed to the sector's adjustments to IR/IU rules for pollock and Pacific cod and to its anticipation of implementation of IR/IU flatfish regulations. Under the status quo, the gains associated with meeting retention requirements for pollock and Pacific cod would be maintained. However, with the indefinite delay of IR/IU rules for rock sole and yellowfin sole in the BSAI, there is no regulatory incentive for the HT-CP fleet to further improve its retention rate. However, non-regulatory incentives such as public pressure and the knowledge that the NPFMC will continue to work on IR/IU issues may lead to continued improvements in retention rates.

4.5.2.2 Alternatives 2, 3, and 4: Establish a Minimum Groundfish Retention Standard (GRS)

Alternatives 2, 3, and 4 establish a GRS for certain vessels and sectors in the groundfish fleet. For purposes of this analysis, two bookend alternatives were developed by varying the values of possible components of a GRS measure. These alternatives represent a "more restrictive" and "less restrictive" expression of the range of available management measures contained within the suite of elements and options under consideration in this action. In addition, the Council identified a preferred alternative at its June 2003 meeting. The expected change in the groundfish retention rate under each of these alternatives is described below.

4.5.2.2.1 Alternative 2 Less Restrictive GRS

Table 29 shows actual retention in 1999-2002 and what might have occurred if Alternative 2 had been in place during that period. All of the additional retention would have come from the increase of the pollock MRA to 35 percent rather than as a result of the GRS. By allowing the retention of much of what would have been regulatory discards, the HT-CPs ≥125' as a whole would have exceeded the 70 percent retention standard in each year. In addition, because the change in the pollock MRA applies to both large and small (<125') vessels, total retention of the HT-CP fleet increases by an average of 5.0 percent over the period shown.

Table 29. Estimated Effects on Retention in the HT-CP Sector if Alternative 2 had been Implemented in 1999-2002, by Size Class

		Actual Retention			Additional Retention Sources under Alt. 2			
Year	Vessel Length	Retained (MT)	Total (MT)	Retention Percentage	From MRA (MT)	From GRS (MT)	All Sources (mt)	Rentention Rate (percent)
1999	≥125"	168,511	247,407	68	10,877	0	10,877	73
	< 125"	10,657	20,851	51	544	0	544	54
	All Vessels	**179,168**	**268,258**	**67**	**11,420**	**0**	**11,420**	**71**
2000	≥125"	191,277	269,922	71	13,859	0	13,859	76
	< 125"	10,020	23,747	51	333	0	333	52
	All Vessels	**203,297**	**293,670**	**69**	**14,191**	**0**	**14,191**	**74**
2001	≥125"	188,285	249,907	75	13,447	0	13,447	81
	< 125"	11,668	20,150	58	520	0	520	60
	All Vessels	**199,953**	**270,457**	**74**	**13,967**	**0**	**13,967**	**79**
2002	≥125"	180,745	255,379	71	14,881	0	14,881	77
	< 125"	17,534	29,431	60	969	0	969	63
	All Vessels	**198,279**	**284,810**	**70**	**15,850**	**0**	**15,850**	**75**

Source: Based on NOAA Fisheries Blend Data, AFSC, 1999-2002.Estimates include the best available and representative data available for this analysis.

4.5.2.2.2 More Restrictive GRS–Alternative 3

Table 30 presents the catch and retention in 2001 in non-pollock fisheries of the catcher processors that would be regulated under Alternative 3.

Table 30. Retained and Total Catch in Non-Pollock Fisheries of Catcher Processors Greater than or Equal to 125 ft. in Length, by Processor Sector, 2001

Sector	Vessel Count	Vessel Weeks	Retained (MT)	Total Catch (MT)	Retention Rate (Percent)
ST/FT-CP ≥125'	6	18	6,856	7,389	92.8
HT-CP ≥125'	16	548	179,958	235,307	76.2
P-CP ≥125'	5	41	2,813	2,898	97.1
L-CP ≥125'	24	778	80,791	94,651	85.4
All CPs ≥125'	**50**	**1,351**	**270,417**	**340,244**	**79.5**

Source: NPFMC Sector Profiles Database, 2001. Percent retention is similar to other representative years from 2002-2004.

As shown in Table 31, the measures in Alternative 3 would lead to significant improvements in retention rates in both the HT-CP and L-CP sectors. If Alternative 3 had been implemented in 2001, the HT-CP

sector would have been required to retain an additional 30,500 mt and the L-CP sector would have been required to retain an additional 5,500 mt. These amounts represent a 13.3 and 5.8 percentage point increase in total retention rates in comparison to the status quo. The SF/FT-CP and P-CP sectors would have been minimally affected. These sectors would have seen a 173 mt and 25 mt increase in retention, respectively.

Table 31. Estimated Effects on Retention if Alternative 3 had been Implemented in 2001, by Processor Sector and GRS Enforcement Period

Sector	Enforcement Periods	Number of Vessels with Retention Rates Below GRS	Number of Times Vessels had Retention Rates Below GRS	Additional Catch Needed to be Retained to Meet GRS (MT)	Increase in Retention Rate (Pct. Points)
Week/Area Enforcement					
ST/FT-CP	29	2	11	173	2.3
HT-CP	842	15	603	30,477	13.3
P-CP	47	4	9	25	0.9
L-CP	1,066	23	617	5,554	5.8
All CPs	*1,984*	*44*	*1,240*	36,229	*10.8*

Source: NPFMC Sector Profiles Database, 2001 Retention percentages are similar to other representative years from 2002-2004.

4.5.2.2.3 Phase-In of A GRS (Preferred Alternative)

Table 32 shows the expected effects of Alternative 4 on the HT-CP sector in terms of retained harvest required to meet the GRS, the equivalent product weight, and additional product weight as a portion of total sector production.[8] Retained catch of groundfish is based upon using NOAA standard recovery rates and data on the species mix for any vessel with a retention rate below the GRS indicated for the years 2007 to 2010. The analysis estimates that in 2007, only two vessels will need to increase their groundfish retention rate to meet the GRS for that year. Each vessel will be required to retain an additional 1,800 mt of groundfish, equivalent to 1,100 mt of products. This amount is roughly equal to one tenth of one percent of the groundfish products generated by the HT-CP sector between 1999 and 2002. By 2010, when the GRS has risen to 85 percent and all HT-CP vessels have to improve retention to meet the standard, the amount of groundfish retained by the sector will increase by approximately 53,000 mt, equivalent to 34,300 mt of products, or 19.8 percent of baseline product weight.

Table 32. Estimated Effects of Alternative 4 on Retention in the HT-CP Sector

	2005	2006	2007	2008	2009	2010
GRS (Percentage)	--	--	65	75	80	85
Additional Retained Catch (MT)	0	0	1,799	17,722	33,539	52,913
Additional Retained Product (MT)	0	0	1,146	11,287	21,361	34,337
New Production as a Percent of Baseline	0.00	0.00	0.7	6.5	12.3	19.8
Vessels Required to Retain Additional Groundfish	0	0	2	12	14	16
Overall Fleetwide Retention Rate (percentage)	69.9	69.9	70.2	73.4	76.6	80.6

Note: 2005 and 2006 retention rate is based on data from 2002. Retention data is similar to 2001, 2003 and 2004 .
Source: Based on NOAA Fisheries Blend Data, AFSC, 2002.

4.5.3 Changes in Revenues and Operating Costs

There are no additional costs associated with Alternative 1 because the alternative would not change the groundfish retention requirements for any sector. Current regulations regarding retention and discards in the groundfish fisheries would remain in effect.

[8] At it June 2003, the NPFMC approved the enforcement change in the pollock MRA as part of their GRS action. Because a separate EA/RIR/FRFA was prepared for the MRA change, the retention results in the table reflect only the potential retention gains that would occur as a result of the GRS.

While Alternatives 2, 3, and 4 have the effect of reducing discards relative to the status quo, converting what had been discards to retained product is not expected to generate additional revenues for fishing companies, unless market prices increase for some groundfish species that are currently discarded by the HT-CP sector. In fact, it could result in lower revenues if the additional fish retained displace higher-value fish. The magnitude of the negative effect on gross revenues depends on 1) how much the additional fish retained would decrease the vessel hold space available for more valuable product; and 2) whether there will be any revenue earned from product derived from the additional groundfish retained. There is the potential that HT-CP vessels might incur extra operating costs associated with holding/processing, transporting, and transferring fish that are of relatively low value or even "unmarketable" at the higher levels of GRS program. However, changes in technology, fishing techniques, and markets could reduce, overtime, those potentially higher operational costs associated with the GRS program on the HT-CP fleet. If vessel catch is constrained by hold space during a trip, higher-valued species could potentially be displaced. If there is 100 percent retention and utilization of the additional fish (e.g., the fish are processed as round frozen product) operating costs associated with handling (e.g., sorting) and processing would be minimized. However, the displacement of more valuable fish would increase. If vessel hold space is limited, the "discards as a percent of product weight" (DPP) represents the amount of displacement that would occur, all else equal. These figures can be interpreted as the percentage of revenue tonnage displaced. For example, Table 33 shows that, if Alternative 2 had been in place in 1999-2002, the DPP for the HT-CP sector would have ranged from 11,400 tons in 1999 to 15,800 tons in 2001. The average across all four years would have been 13,800 tons. However, the retention increases under alternative 2 are likely to be generated as a result of the increased pollock retention from the change in the pollock MRA rather than as a result of the GRS. Because the additional pollock retained are fish that the catcher processors can process into marketable products, this alternative is not expected to have a significant negative effect on vessel gross revenues.

Table 33. Estimated Effects on Retention and Product in the HT-CP Sector if Alternative 2 had been Implemented in 1999-2002, by Size Class

		Additional Retention Sources			Additional Retention as Percent of Product Tons (DPP)		
Year	Vessel Length	From MRA (MT)	From GRS (MT)	All Sources (MT)	From MRA (DPP)	From GRS (DPP)	All Sources (DPP)
1999	≥125"	10,877	0	10,877	6.1	0.0	6.1
	< 125"	544	0	544	2.5	0.0	2.5
	All Vessels	**11,420**	**0**	**11,420**	**5.7**	**0.0**	**5.7**
2000	≥125"	13,859	0	13,859	7.6	0.0	7.6
	< 125"	333	0	333	1.2	0.0	1.2
	All Vessels	**14,191**	**0**	**14,191**	**6.6**	**0.0**	**6.6**
2001	≥125"	13,447	0	13,447	8.4	0.0	8.4
	< 125"	520	0	520	2.5	0.0	2.5
	All Vessels	**13,967**	**0**	**13,967**	**7.6**	**0.0**	**7.6**
2002	≥125"	14,881	0	14,881	8.0	0.0	8.0
	< 125"	969	0	969	3.2	0.0	3.2
	All Vessels	**15,850**	**0**	**15,850**	**7.3**	**0.0**	7.3

Source: Based on NOAA Fisheries Blend Data, AFSC, 1999-2002. Retention data is similar to 2001, 2003 and 2004 .

In order to accurately determine total catch weight, Alternatives 2, 3, and 4 require all vessels that would be regulated under these alternatives to use NOAA Fisheries-approved scales and every haul made by these vessels must be observed. In addition, each vessel will be required to have a NOAA Fisheries-certified observer sampling station, including a motion-compensated platform scale to verify the accuracy of the total catch weight flow scale.

In 2002, there were 22 active HT-CP vessels—a 23rd vessel, the Ocean Alaska, became active in the fall of 2003. Of these, 16 vessels are greater than or equal to 125 ft. in length. Under the GRS, each of these 16 catcher processor vessels would be required to provide an approved scale system that is capable of weighing catch before it is processed or discarded. As shown in Table 34, nine of these vessels currently have flow scales, although the scales on two of these vessels are not approved by NOAA Fisheries. Seven of the affected vessels do not have scales. In addition to scales, each of the affected vessels will be required to have a certified observer sampling station. The observer station must be large enough to allow the observer room to operate a certified platform scale. Furthermore, the observer station must be situated in the factory at a point after the fish have been weighed on the flow scale. Of the affected active vessels in 2002, five have certified observer sampling stations, four have observer stations but they are not currently certified, and seven do not have observer stations.

Table 34. Active HT-CPs with Vessel Length, Flow Scale and Observer Sampling Station Status

VESSEL NAME	Length	Flow Scale	Observer Station
GOLDEN FLEECE	104	No	No
ALLIANCE	107	No	No
ALASKAN ROSE	124	No	No
OCEAN ALASKA (Beagle) *	107	No	Not Certified
ENTERPRISE	120	No	Not Certified
DEFENDER	123	Not Approved	Not Certified
VAERDAL	124	Not Approved	Not Certified
REBECCA IRENE	140	No	No
CAPE HORN	158	No	No
ALASKA RANGER	203	No	No
ALASKA WARRIOR	215	No	No
ALASKA SPIRIT	221	No	No
ALASKA VICTORY	227	No	No
ALASKA JURIS	238	No	No
LEGACY	132	Not Approved	Not Certified
CONSTELLATION	150	Not Approved	Not Certified
UNIMAK	185	Yes	Not Certified
ARICA	186	Yes	Not Certified
AMERICAN NO I	160	Yes	Yes
U.S. INTREPID	185	Yes	Yes
OCEAN PEACE	219	Yes	Yes
SEAFISHER	230	Yes	Yes
SEAFREEZE ALASKA	295	Yes	Yes

Vessels not affected by GRS---Less than 125' LOA	6
Vessels affected by GRS---Over 125' LOA	16
Affected vessels with approved flow scale and certified observer station	5
Affected vessels with approved flow scale but uncertified observer station	2
Affected vessels with unapproved flow scale and uncertified observer station	2
Affected vessels with no flow scale and no observer station	7

* The *Ocean Alaska* formerly the *Beagle* was not active in 2002, but is scheduled to be active in 2004. Three other HT-CPs longer than 125' LOA are currently permitted to operate in the BSAI, but none of these have been active since 1999. The Ocean Peace is identified in AFA as an "unlisted" AFA vessel. For the purpose of Amendment 79 it is part of the HT-CP sector.
Source: Groundfish Forum, 2003

As indicated above, NOAA Fisheries estimates that seven of the vessels ≥125' LOA would have to install approved marine flow scales and observer stations. Approved marine flow scales are estimated to cost approximately $50,000. Equipment to outfit an observer station, including a motion-compensated platform scale to verify the accuracy of the total catch weight flow scale, would

cost between $6,000 and $12,000. Installation costs are much more difficult to estimate. Due to space constraints on many catcher processor vessels, the need to relocate sorting space and processing equipment, the possibility that more than one scale would be required on some vessels, and the wide range of configurations on individual vessels, the installation cost range for the scales and observer stations could be between $20,000 and $250,000 per vessel. Therefore, the total cost of purchasing and installing flow scales to weigh groundfish catch on catcher processor vessels may range between $76,000 and over $300,000 per vessel.

The requirement that every haul be observed will most likely necessitate the deployment of two observers aboard each vessel.[9] Current regulations require vessels 125 ft. or longer to carry one NOAA Fisheries-certified observer 100 percent of the time while fishing for groundfish. Therefore, observer coverage would have to be doubled in most cases.

It is estimated that the cost of an additional NOAA Fisheries-certified observer is about $355 per deployment day (not including food costs) for each vessel. Over the last 4 years the affected vessels averaged over 33 weeks fishing time per year. Therefore a conservative estimates of the cost of an additional observer would be approximately $82,000 per vessel per year. In addition to costs borne by the vessels, the increase in the number of observers and its associated increase in the amount of data collected is expected to raise overall annual costs of the North Pacific Groundfish Observer Program. This budgetary increase can be attributed to additional staffing and augmented spending for observer sampling equipment and data entry contracts. These additional costs to the observer program have not been estimated.

A variety of other costs are associated with a requirement for vessels to install marine scales, including the cost of reduced efficiency as a result of changes in procedures for harvesting, sorting, discarding, or processing groundfish. For example, sorting space may be reduced and processing equipment may have to be moved to accommodate the scale, possibly reducing the efficiency of the factory. These costs also will vary among the vessels, depending on factory configuration. Additional crew time may be required to monitor and record information from the scale and to test, maintain, and repair the scale. NOAA Fisheries estimates that the annual cost of maintenance for the scales currently installed on catcher processors has been approximately $1,500 to $2,000. Costs could increase if vessels increase their total fishing activity days because with the extra retention seasons could last longer. Finally, vessel operators may choose to purchase spare parts or a back-up scale depending on the amount of fishing time that could be lost if the scales break down.

Under Alternative 3, the HT-CP sector would incur the costs of installing scales and observer stations and increasing observer coverage as described above. For the ST/FT-CP vessels, the AFA already requires them to weigh all groundfish on a NOAA Fisheries-approved scale, to have an observer sampling station that includes a motion-compensated scale and to have two observers on board at all times while groundfish is being harvested, processed or received from another vessel. For the fixed gear catcher processors, it is estimated that five P-CPs and 24 L-CPs ≥125 ft. do not currently meet these requirements. According to NOAA Sustainable Fisheries (Kinsolving, personal communication, March 2003), the accuracy and precision of total catch estimates on longline catcher processors and pot catcher processors is not significantly better than on trawl catcher processors without scales. Therefore, catch verification measures would be required for fixed gear catcher processors as well as for trawl catcher processors. Because the flow of fish coming on board P-CPs and L-CPs is much smaller and more sporadic than on trawl vessels, the fixed gear catcher processors would be required to have certified motion compensated hopper scales rather than flow scales. They would also be required to have certified platform scales and observer stations. It is estimated that scale acquisition and installation costs would be about $30,000 per vessel. In addition, each catcher processor would have to carry at least one extra observer at a cost of $2,130 per week unless an alternative means of assuring compliance were developed. For the P-CP fleet (5 vessels), which averaged 8 weeks on the water in 2001, the additional annual average observer cost is estimated to be $100,000. Under the larger L-CP fleet (24 vessels), which averaged 32 weeks for the year on the water, the estimated additional annual fleet costs would be $1.9 million or $80,000 per vessel year.
Monitoring requirements for each vessel managed under the GRS would include flow scales, observer stations, and observation of every haul. Improvements to management precision may occur with these additional requirements. It is anticipated that having flow scales on the H&G trawl C/P fleet should provide managers with more precise haul specific estimates (or verifiable measures) of total weight.

In the rapidly paced open access groundfish fisheries, small errors in the timing of season closures for some directed species could result in significant over harvest or under-harvest. It is not possible to determine, with existing information, if reducing the error in these decisions would result in long run improvements in the utilization of groundfish fisheries, but it is unlikely that the additional data collected under Alternatives 2,3, and 4 would increase errors in the timing of seasonal openings and closings.

Presently, many vessels in the HT-CP fleet are required to employ only one observer. Generally, this results in less than 100 percent of the hauls being sampled. Under the GRS requirement for two observers, all hauls will be observed and sampled. NOAA Fisheries will no longer have to rely on secondary sources, such as the skipper's estimates or the total weekly production

[9] A vessel may be authorized by NOAA Fisheries to carry only one observer, but it would have to file a fishing plan with NOAA Fisheries that shows it will fish in a way that will allow the single observer to sample 100 percent of the hauls. Typically such a plan requires that the vessel fish only 12 hour per day.

figures, as the basis for calculating catch weight for the HT-CP vessels. In turn, this would decrease the number of hauls to which NOAA Fisheries would need to extrapolate broader (less precise) averages for this fleet, in the absence of haul specific data. However, since HT-CP vessels under 125' would not be required to have an additional observer, some extrapolation would still be needed for fleet averages.

For example, if a vessel operates on the fishing grounds for several weeks, and has less than 100 percent of its hauls observed, some of the bycatch estimates for that vessel are based on "rates" derived from other observed hauls, then applied to the estimated total catch. If NOAA Fisheries has haul specific information from observer sampling, that improved information on actual bycatch amounts would supplant the use of data based on an estimated rate from other observed hauls. The extension of coverage to two observers per vessel would allow for the sampling of every haul and could result in reducing risk associated with the timing of openings and closings for some groundfish fisheries (i.e., decrease the probability that stocks will be overfished or under-harvested).

The magnitude of management risk (particularly from the timing of season length) to non-target species could also be reduced by the additional sampling requirements for GRS observer coverage. The precision of in-season estimates of prohibited species removals in fisheries, where less than 100 percent of the hauls are sampled, is sometimes low. NOAA Fisheries' managers suggest that improved sampling on vessels with unobserved hauls would provide a better understanding of the precision and accuracy associated with removals of PSC and non-target species. Improved data may lead to more precise estimates of the residual stock, and more precision in the timing of optimum closure dates based on PSC interception rates.

It is possible that there may be additional value, accruing to fishery management and users of these groundfish fisheries, from data collected on the variation between hauls, where an increased number of samples are taken to monitor the GRS. There are two potential ways in which this additional information could be generated. One is through the collection of data that could be used to estimate sampling variability among observers. Thus, if there is a potential difference between observers, leading to error or increased bias in samples between one observer and another, these additional data may assist with evaluating these effects. If the differences are systematic, it won't be possible to "resolve" the error, because one would not know which observer is right and which is wrong; however, the data might be useful in evaluating sampling uncertainty attributable to the observer.

A second is through a better estimate of the natural variability between individual tows. Data may be collected that could be used to better characterize variability among hauls (i.e. haul-by-haul variation in, for example, catch composition). While in-season data on this variability may be useful in evaluating the groundfish monitoring program, overall, there is no apparent benefit of these in-season data to improved estimates of the GRS, as this standard is estimated on an annual basis. These data may not be available on an in-season basis in any case, because it will likely take rather a large number of observations to characterize these types of patterns of variability.

There are alternative approaches to researching these topics. Data collected as a result of this regulatory measure may not be optimal for analyzing these problems. It may be, for example, technically preferable to design specialized research studies to address these concerns. While such studies may be more efficient than relying upon mandatory increases in observer and flow scale requirements, they would be costly for NOAA Fisheries to finance. It is possible that data collected by observers deployed to support compliance monitoring requirements for this measure, while not ideal, would provide useful insights, nonetheless.

Finally, more frequent sampling of catch from these vessels may allow for increased biological information on non-target species. The value of increased biological data, however, is uncertain. More biological information in the haul sampling on these operations may or may not translate into "better" management decisions, or more valuable fisheries.

4.5.4 Regulations for Determining Benefits and Costs Under National Standard 9

Section 3.2 of the Environmental Assessment provides a qualitative assessment of some potential impacts of the alternatives on fishing harvests and discards associated with target fisheries and, non-use, and other distributional effects. A substantial part of this discussion is derived from applying the criteria that are developed in NOAA regulations on bycatch reduction resulting from the Sustainable Fisheries Act, at § 600.350 50 CFR. The criteria provided are to be considered by Councils in determining if proposed bycatch measures are practicable.

Councils are to:

> *"(3) Select measures that, to the extent practicable, will minimize bycatch and bycatch mortality. (i) A determination of whether a conservation and management measure minimizes*

bycatch or bycatch mortality to the extent practicable, consistent with other national standards and maximization of net benefits to the Nation, should consider the following factors:
(A) Population effects for the bycatch species.
(B) Ecological effects due to changes in the bycatch of that species (effects on other species in the ecosystem).
(C) Changes in the bycatch of other species of fish and the resulting population and ecosystem effects.
(D) Effects on marine mammals and birds.
(E) Changes in fishing, processing, disposal, and marketing costs.
(F) Changes in fishing practices and behavior of fishermen.
(G) Changes in research, administration, and enforcement costs and management effectiveness.
(H) Changes in the economic, social, or cultural value of fishing activities and nonconsumptive uses of fishery resources.
(I) Changes in the distribution of benefits and costs.
(J) Social effects."

With respect to *(A) Population effects for the bycatch species,(B) Ecological effects due to changes in the bycatch of that species (effects on other species in the ecosystem), and (C) Changes* in the bycatch of other species of fish and the resulting population and ecosystem effects, there are no known population level or ecological effects, or changes to bycatch of other species resulting from alternatives that would alter the removal and disposal of groundfish species at sea.

Regulations for implementing bycatch reduction programs resulting from National Standard 9 emphasize the potential for ecological and management uncertainty created by groundfish bycatch, in 50 CFR, Chapter VI, §600.350. The following sections are excerpted from §650.350:

General. This national standard requires Councils to consider the bycatch effects of existing and planned conservation and management measures. Bycatch can, in two ways, impede efforts to protect marine ecosystems and achieve sustainable fisheries and the full benefits they can provide to the Nation. First, bycatch can increase substantially the uncertainty concerning total fishing-related mortality, which makes it more difficult to assess the status of stocks, to set the appropriate OY and define overfishing levels, and to ensure that OYs are attained and overfishing levels are not exceeded. Second, bycatch may also preclude other more productive uses of fishery resources.

With respect to *(D) Effects on marine mammals and birds,* none of the alternatives would be expected to adversely affect seabirds or marine mammals in any manner or to any extent not already addressed in previous consultations conducted under Section 7 of the ESA.

With respect to *(E), Changes in fishing, processing, disposal, and marketing costs, and (F) Changes in fishing practices and behavior of fishermen,* the alternatives are anticipated to generate substantial changes to the vessels participating in these fisheries. The minimum groundfish retention standard is anticipated to create incentives that would change fishing behavior and costs relative to the processing and marketing of groundfish species. Fishing, processing, and marketing costs are anticipated to rise for Alternatives 2, 3 and 4 relative to the status quo (Alternative 1) due to the presently low commercial value of many of the discarded species, and forgone value of catch of more highly valued species. As a result, it is likely that head and gut trawl catcher processors would experience a decrease in gross revenues. It is possible, that the highest levels of GRS, and without relief from a specific HT-CP sector allocation and cooperatives, that some of these vessels could be compelled to exit the BSAI groundfish fisheries. If

HT-CP vessels exit fisheries in which higher levels of retention for non-targeted groundfish are required, a larger share of the TACs in these fisheries would be available to other participants in the HT-CP sector. However, it is uncertain to what extent these other participants could benefit by shifting their fishing effort. In addition, the HT-CP sector will have higher costs for acquisition of flow scales, and fixed and variable costs associated with observer stations, and increased observer coverage.

Alternative 2, 3 and 4 would have effects on some elements of criterion *(G), Changes in research, administration, and enforcement costs and management effectiveness*. The costs to the NOAA Observer Program support are likely to increase from this action, while NOAA Fisheries anticipates that there will be some improvements in the effectiveness of management due to improved information from the weighing of all hauls, and observer sampling. Enforcement costs are not anticipated to undergo significant changes under Alternatives 2, 3, and 4 compared with the status quo.

Among the more difficult bycatch program criteria to evaluate are *(H) Changes in the economic, social, or cultural value of fishing activities and non-consumptive uses of fishery resources, (I) Changes in the distribution of benefits and costs, and (J) Social effects.* There is little quantitative information available on how fishery harvesting and discard practices in the BSAI groundfish fisheries may impact non-consumptive or non-use resource values, in general, and there is no data on the preferences of citizens of the U.S. who may have an interest in changing BSAI discard practices. Nonetheless, these so called "non-consumptive" values are recognized both in economic literature and by NOAA Fisheries as relevant economic components in the determination of net national benefits for a fishery action.

Only very limited data exist on the use of BSAI groundfish by native cultures in this region. There is no subsistence take of any of the groundfish species that are included in the definition of BSAI groundfish used in regulation. The value of the discarded fish as a protein resource that could be used by hunger relief organizations also appears to be very limited. Furthermore, NOAA Fisheries has no empirical data suggesting that many people would assign substantial non-consumptive or non-use values to these fish if they were left undisturbed in the ocean.

The amount of North Pacific Groundfish discards, however, has been identified by environmental organizations both in Alaska and in other locations as being objectionable. There is no evidence available demonstrating that these species, in the amounts being removed, have a significant indirect value (e.g., providing prey for other living marine resources that do have use or non-use value). However, environmental interests suggest that lack of data on these difficult to measure ecosystem effects does not imply that the environmental impacts of these removals are nonexistent. As a result, the resource values associated with the non-consumptive, or non-use attributes of discards of these fish, in the amounts currently occurring in the groundfish fisheries are best described as indeterminate, though the increasing level of interest in fishery bycatch reduction and discards, nationally and regionally, suggest that the reduction of discards has some level of non-market or non-consumptive benefits for some unknown number of people.

4.5.5 Monitoring and Enforcement Issues

The following discussion of monitoring and enforcement issues related to implementation of a GRS is based on a memorandum (Hansen, 2003) from NOAA Fisheries Enforcement to the Council's Enforcement Committee.

4.5.5.1 Exclusion of PSC and "Non-Groundfish" in GRS Calculations

Under existing regulations, all PSC is required to be discarded in a timely manner. If PSC is to be excluded from GRS groundfish catch, these fish would need to be sorted prior to going over a scale, or their weight obtained from sorting and weighing separately after passing over the scale and deducted from the total, or their weight estimated by species composition basket sampling methods and deducted from the total.

Clearly, under any GRS system, there would also need to be additional sorting of items from the "total catch", such as rocks, corals, derelict gear and other debris, and other benthic invertebrates (which are not defined as "GRS groundfish"). Frequently in the flatfish fisheries, when vessels are fishing and processing in close proximity to each other, previously discarded fish heads and offal are "re-caught", and sometimes comprise a significant portion of the catch. These items would also need to be sorted from the catch prior to weighing or their percentage composition of the catch similarly computed and deducted from the total catch.

This sorting and weighing must occur with observer oversight to meet enforcement concerns. Ideally, these items would be sorted from the GRS groundfish catch prior to passing over a scale, which would relieve the need for their accurate re-weighing after passing over a flow scale, for the purposes of GRS compliance.

However, in practice, it is very unlikely HT-CP vessels would be able to efficiently sort these various items prior to weighing of the catch. For the reasons described above, the NMFS proposes scale, observer, and observer sample station requirements as part of the monitoring package for the preferred alternative. Each of these components and their justification are described below.

Catch Weighing
To adequately enforce the GRS alternatives 2, 3 and 4, vessels are required to install NMFS-approved flow scales. Flow scales have been used to verify catch amounts in AFA and CDQ fisheries, and have proved to be an effective tool for measuring total catch amounts. As described above, the amount of groundfish harvested would need to be determined for purposes of the GRS calculation. The most practical way to accomplish this would be to subtract the amount of groundfish from the total catch based on observer species composition sampling. Implementing a flow scale requirement would provide enforcement with the ability to subtract non-groundfish catch from total catch using this method. Current methods for calculating total catch are considered estimates, and, therefore, would be inadequate for purposes of enforcing the GRS.

Daily tests of the flow scale would be required. To conduct these tests, a motion compensated platform scale would be required in the observer sample station. This requirement would have the added benefit of improving overall data quality by providing a more accurate method of weighing observer species composition samples.

Catch weighing equipment would be subject to the following requirements:
- Scales must meet the performance and technical requirements specified in Appendix A to 50 CFR 679.
- Each scale must be inspected and approved annually by a NMFS-approved scale inspector.
- Each observer sampling station scale must be accurate within 0.5% when its use is required.
- The observer sampling station scale must be accompanied by accurate test weights sufficient to test the scale at 10, 25 and 50 kg.

• Each scale used to weigh total-catch must be tested daily by weighing at least 400 kg of fish or test material on the total catch weighing scale and then weighing it again on an approved observer sampling station scale.
• When tested, the total catch weighing scale and the observer sampling station scale must agree within 3 percent.

Observer Coverage
In the preferred alternative, the GRS would be enforced based on the amount of groundfish retained over the course of a fishing year. Because the GRS calculation would be based, in part, on observer species composition sampling, all hauls must be available to be sampled for species composition by a NMFS certified observer. Since, HT-CP vessels tend to fish 24 hours a day for long periods of time, this likely means that each vessel would be required to carry two observers.

Because of the difficulties of sampling on HT-CP vessels and the scrutiny that observer sampling could be subject to, NMFS and the industry need high quality data. Each vessel would be required to carry at least two Level 2 NMFS-certified observers, at least one of which must be certified as a Lead level 2 observer, for each day that the vessel is used to harvest or process groundfish in the BSAI. All NMFS certified observers must meet basic requirements for education and training. In order to be Level 2 certified, an observer must have successful prior experience as an observer and complete a Level 2 observer training course. A lead level 2 observer on a catcher/processor or mothership must have completed at least 2 cruises (contracts) and sampled at least 100 hauls on a catcher/processor or mothership; and a lead level 2 observers on a catcher vessel must have completed at least 2 cruises and sampled at least 50 hauls on a catcher vessel using trawl gear.

Observer Sampling Stations
Observer sampling stations are designed to provide an environment where an observer can safely and efficiently sample catch on a catcher/processor. They also allow the observer to monitor the flow of fish to ensure than all catch is properly accounted for. They are currently required for catcher/processors engaged in CDQ and AFA fishing. Under the preferred alternative, NMFS proposes to require them vessels subject to the GRS program. NMFS inspects and approves observer sampling stations annually. In order to be approved a sampling station must:

• Be located within 4 m of where the observer collects unsorted catch and reads the display on the scale used to weigh total catch.
• Be located where the observer can monitor the flow of fish between the bins and the scale used to weigh total catch.
• Have a working area of at least 4.5 square meters.
• Have a table for processing samples.
• Provide a NMFS-approved platform scale and test weights.
• Have adequate lighting and well drained floors.
• Provide running water.

4.5.5.2 Necessity to Use After-the-Fact "Database" Approach to Monitor Compliance with GRS

Given the necessity of having to rely upon observer sampling data to determine the denominator of the GRS equation, compliance monitoring by NOAA Fisheries Enforcement or USCG will be impossible to conduct in the field. Similar to the past VIP Program, to generate the total catch amounts, observer species composition sampling data would be required to be turned in subsequent to an observer's deployment, debriefed for accuracy, keypunched, then the necessary reports generated, to compute total catch of "GRS

groundfish", per applicable definitions. The delay in being able to make these calculations would likely be months. This delay would be exacerbated when an observer leaves a vessel in the middle of a voyage, and goes on to another vessel, taking the data with them, delaying debriefing of the data. If GRS compliance is desired to be monitored on an other than after-the-fact, spot-check basis, or in response to suspected violations (however that might occur), then there would be a need to generate reports of total catch, on a vessel by vessel basis, and compare that to retained catch data, which, currently, could only be derived from Weekly Production Reports or Product Transfer Reports. As a result, a sophisticated data entry and tracking program would be required to effectively be able to monitor GRS compliance and identify potential violators.

A possible solution might lie with the vessel receiving the embarked observer's species composition sampling forms, and, similar to the CDQ fishery, compiling this sampling data into a daily report totaling receipts of "GRS groundfish." These data could be recorded in a logbook and/or reported to the agency, and could be used for compliance monitoring, as it was "vessel reported." If these data were available aboard the vessel, and was able to be used on a real time basis by NOAA Fisheries Enforcement during a boarding (at offload), effective field compliance monitoring or investigation of suspected violations of a minimum GRS might be possible.

4.5.5.3 Individual Vessel vs. Multiple Vessel Compliance Basis

Under Alternative 2, the GRS would be applied to the fleet of HT-CPs ≥125 ft. as a whole. According to NOAA Fisheries Enforcement, enforcing GRS compliance on a multiple vessel or pool basis is not feasible unless the fleet/pool is deemed a "responsible entity." NOAA Fisheries Enforcement has indicated that it could not apply a GRS to a voluntary cooperative in which vessels are not legally bound to each other, which is not an option under this amendment. However, NOAA Fisheries Enforcement has stated that no field enforcement of a GRS would be possible if compliance were enforced on a cooperative basis. It would be necessary to develop software applications to monitor compliance by the applicable GRS enforcement period. Suspected violations of a GRS could then be referred to enforcement agencies for investigation.

4.5.5.4 "Reporting Period" for Compliance with a GRS

Given the number of calculations involved, and the complexity of the calculations, Enforcement is not prepared to conduct enforcement activities, other than spot checks, of individual vessels for compliance with any GRS in the field. The degree to which NOAA Fisheries Enforcement or USCG at-sea enforcement units could effectively determine compliance with a GRS would depend upon the period over which the GRS applied.

Retained catch is currently available via the Daily Cumulative Production Logbook (DCPL) and the resultant Weekly Production Report (WPR). This report, however, is limited in its use for GRS compliance for several reasons. First, the weekly reporting period covered by a WPR does not correspond to any other period aboard the vessel. Restated, today's production aboard a vessel may be from catch made this morning, the previous day, or two days prior, and may be from mixed hauls. It is very difficult at best, and frequently impossible, to try to relate daily cumulative production or amounts in the DCPL/WPR to specific hauls.

For enforceability, a "trip" basis would clearly be the most effective opportunity for field enforcement personnel to be able to determine compliance with a GRS. (In this case, "trip" is not meant to be the regulatory definition of a trip, but the period of fishing and processing between offloads of product.) At an offload, the vessel has had the opportunity (and regulatory requirement) to have the DCPL updated and

completed, thereby recording all of the fish most recently processed. The vast majority of groundfish catcher processor vessels conduct complete offloads of all groundfish at each offload. If a vessel did not offload all groundfish product at the previous offload, there is a requirement to report on the Product Transfer report for the previous offload the types and amounts of any product remaining aboard the vessel. Thus, at offload, there is a method to accurately determine which product by type and amounts is attributable to the most recent trip.

It is at the point of transfer of fish product at the end of a processing trip that the only opportunity exists to verify that the DCPL and WPRs accurately reflect the product aboard the vessel. This is the numerator of the GRS equation. It is also only at offload that NOAA Fisheries Enforcement is able to actually audit the reported amounts of product, to insure the vessel is actually accurately reporting product, and thus complying with a variety of record keeping/reporting, MRA and other regulatory requirements, including a minimum GRS.

4.6 Impacts of GRS Regulation Components

This section of the RIR examines each component of the GRS alternative and the options within each component independently. The purpose of this independent assessment is to provide the decision maker the ability to pick and choose options within the various components to develop a preferred alternative that was may not have specifically been addressed in the analysis. The preferred alternative was developed by the Council at it June 2003, using the effects projected in this section.

4.6.1 Component 1: Establish the GRS percentage

The effects of a given GRS depend on the retention rates among various vessels – the less fish vessels have historically retained (i.e., the higher the discards), the greater the effects. Table 35 shows the retention rates among various catcher processor sectors in different fisheries and the additional tons that would have been retained had a given standard been implemented in 2001. If, for example, a GRS of 70 percent had been implemented, 10 HT-CPs would have needed to improve their retention rate to comply with the standard if it were enforced on an annual basis, and only one of the ST/FT-CP vessels would have been affected. Approximately 6,000 mt of additional groundfish would have had to be retained, and the overall HT-CP retention rate would have increased from 75.1 percent to 77.4 percent.

If a GRS of 80 percent had been implemented in 2001, vessels in sectors other than the HT-CP sector would have been affected. The actual impacts would have depended on whether the GRS regulation was imposed on all catcher processors or just HT-CPs. If the GRS regulation was imposed on all catcher processors, 13 HT-CPs, 2 P-CPs, 6 L-CPs, and one ST/FT-CPs would have had to improve their groundfish retention rates, and an additional 17,000 mt would have had to be retained (15,600 mt by HT-CPs, less than 1 mt by P-CPs, 600 mt by L-CPs, and 80 mt by ST/FT-CPs). The overall HT-CP retention rate would, all else equal, have increase from 75.1 percent to 81.2 percent.

Table 35. Estimated Effects on Retention if Various Groundfish Retention Standards had been Implemented in 2001, by Processor Sector

	GRS Percentage					
	65	70	75	80	85	90
Sector	**Number of Vessels Below Retention Standard**					
ST/FT-CP	1	1	1	1	1	1
HT-CP	7	10	11	13	18	20
P-CP	0	0	0	2	2	2
L-CP	0	0	0	6	19	29
All CPs	8	11	12	22	40	52
	Additional Tons That Would Need to be Retained to Meet Standard					
ST/FT-CP	61	67	72	78	83	88
HT-CP	2,715	5,965	10,082	15,591	25,582	37,537
P-CP	0	0	0	1	46	91
L-CP	0	0	0	566	2,296	6,139
All CPs	2,777	6,032	10,154	16,236	28,006	43,855
	Retention Percentage if all Vessels Meet the Standard					
ST/FT-CP	93	93.3	93.4	93.4	93.5	93.6
HT-CP	76.1	77.4	79.0	81.2	85.2	90.0
P-CP	93.3	93.3	93.3	93.3	94.4	95.6
L-CP	85.5	85.5	85.5	86.0	87.4	90.7
All CPs	79.5	80.4	81.4	83.1	86.2	90.3

Source: NPFMC Sector Profiles Database, 2001 These estimates assume no change in fishing behavior would occur due to the increased retention requirements.

Table 36 shows how various retention standards would have affected HT-CP vessels by size class. Five of the seven HT-CPs < 125 ft. retained less than 65 percent of their groundfish catch in 2001, while only four of the 16 vessels >125 ft. retained less than 65 percent. If vessels < 125 ft. are exempt from a GRS, the effectiveness of the GRS would be diminished, but the economic viability of small HT-CPs is not adversely affected.

Table 36. Estimated Effects on Retention in the HT-CP Sector if Various Groundfish Retention Standards had been Implemented in 2001, by Size Class

	GRS Percentage					
	65	70	75	80	85	90
HT-CP	***Number of Vessels Below Retention Standard***					
< 125' LOA	5	5	5	5	5	6
≥125' LOA	4	6	6	9	14	16
	Additional Tons (1,000s) That Would Need to be Retained to Meet Standard					
< 125' LOA	1.7	2.1	3.2	4.0	5.3	6.9
≥125" LOA	1.3	4.1	7.5	12.5	21.5	32.6

Source: NPFMC Sector Profiles Database, *2001. These estimates assume no change in fishing* behavior would occur due to the increased retention requirements.

4.6.2 Component 2: Specify the vessels required to comply with the GRS

A significant issue raised by NOAA Fisheries is the enforceability of a GRS. The agency has determined that in order to enforce a GRS, regulated vessels must have certified motion compensated flow scales,

have a certified observer sampling station, and have every haul observed (typically, the last requirement means that all regulated vessels must carry at least two observers. This conclusion was reached because of the necessity to have catch data of high enough quality that they could be defended in a court case. The observer sampling protocol in multi-species fisheries calls for "basket sampling" in order to estimates species composition. Currently, NOAA Fisheries calculates an aggregate species composition for a given target fishery in a given area by combining observer reports from all observed vessels participating in the fishery over time.

NOAA Fisheries is confident that the sampling protocols are sufficient to estimate total catch for the fishery by species. However, sampling protocols are not likely to be robust enough to accurately estimate species composition and total catch during any given week on a given vessel or on a given trip. NOAA Fisheries believes that additional information is needed to determine the accuracy of volumetric catch measurements in the mixed species fisheries. The protocol for volumetric measurements in the pollock fishery is based on standards developed to ensure measurements of sufficient accuracy that they could withstand judicial challenge. Similar studies have not been conducted for the non-pollock fisheries, and questions exist whether accurate volumetric measurements can be attained for individual vessels in these fisheries given the mixed species nature of the catch. NOAA Fisheries indicates it may be possible to use alternative means, such as tamper-proof video cameras, to monitor compliance with retention requirements. However, the effectiveness of this new technology has not yet been adequately evaluated.

Details on the cost of flow scales necessary to implement a GRS are provided in Appendix 1.

Option 2.1: All Catcher Processors

Under this option, all catcher processors harvesting groundfish would have to comply with the requirements of a GRS regulation, including the scale, station, and observer requirements discussed above. For a detailed discussion on the impacts of these requirements on the catcher processors, see Section 4.5.2.

Option 2.2: Catcher processors that are 125 ft and greater LOA.

Table 37 shows the distribution of vessels, product value, catch and retention across size classes for HT-CPs, P-CPs, and L-CPs for 2001. Over the three classes, 20 vessels would be exempt from a GRS regulation because of their size. As with the previous option, unless the GRS is set at a value that exceeds 80 percent, the scale, station, and observer requirements will result in considerable costs for non-trawl catcher processors with very little improvement in retention. The costs and benefits of exempting small HT-CPs from a GRS regulation is discussed in detail in Section 4.5.2.

Table 37. Number of Vessels, Wholesale Value of Product, Catch and Retention in 2001, by Processor Sector and Size Class

Sector	Length Class	Vessels	Wholesale Value ($Millions)	Percent of Sector Value	Total Groundfish Catch (1,000 mt)	Percent of Sector Catch	Retention Percent
HT-CP	< 125'	6	8.6	6.5	20.9	8.0	58.9
	≥125'	16	124.8	93.5	240.5	92.0	72.1
P-CP	< 125'	2	1.5	22.5	1.3	22.0	86.7
	≥125'	7	5.0	77.5	4.5	78.0	97.8
L-CP	< 125'	14	27.0	21.1	24.9	18.3	89.1
	≥125'	31	101.1	78.9	111.4	81.7	85.3

Source: NPFMC Sector Profiles Database, 2001. Data for years 2002 and 2003 are similar.

Option 2.3: Trawl catcher processors, including AFA-listed trawl catcher processors participating in non-pollock target fisheries.

This option would impose a GRS regulation on all trawl catcher processors, including AFA-listed trawl catcher processors (i.e., ST&FT-CPs). For the ST&FT-CPs, a GRS would only apply to non-pollock target fisheries. Table 38 shows value, catch, and retention in pollock and non-pollock fisheries of AFA-listed trawl catcher processors. The table shows that even though this sector has some participation in non-pollock fisheries, their groundfish retention rates are high relative to other catcher processors. Unless the GRS is set at a level over 90 percent, it is likely that the GRS would have little benefit in reducing bycatch, while imposing an additional monitoring and enforcement burden on NOAA Fisheries.

Table 38. Wholesale Value of Product, Total Catch, Discards and Retention Rate in the AFA-listed Trawl Catcher Processor Sector in 1995-2004, by Target Fishery

Target Fishery	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
						Wholesale Product Value ($Millions)				
Pollock	435.4	348.6	343.2	312.2	334.5	395.2	407.1	450.1	482.6	XXX
Non-Pollock Fisheries	39.1	28.8	34.5	21.1	11.9	6.8	3.2	5.1	7.6	XXX
All Fisheries	474.5	377.4	377.8	333.3	346.4	402.0	410.3	455.2	490.2	XXX
						Total Groundfish Catch (1,000 mt)				
Pollock	748.0	659.0	612.3	607.1	416.0	491.5	611.8	650.5	527.5	524.7
Non-Pollock Fisheries	107.	102.4	106.6	62.6	28.5	15.9	7.4	2.7	5.1	4.6
All Fisheries	855.9	761.4	718.9	669.7	444.5	507.4	619.2	653.2	532.6	529.3
						Discarded Catch (1,000 mt)				
Pollock	48.9	30.4	31.8	9.6	4.6	8.7	5.0	3.0	1.7	2.7
All Non-Pollock Fisheries	33.6	28.4	31.7	10.8	2.8	1.3	.6	0.1	.2	.0
All Fisheries	82.5	58.8	63.5	20.4	7.4	10.0	5.6	3.1	1.9	2.7
						Retention Percent				
Pollock	93.5	95.4	94.8	98.4	98.9	98.2	99.2	99.5	99.7	99.5
All Non-Pollock Fisheries	68.8	72.3	70.3	82.8	90.3	91.9	92.4	96.4	96.2	99.4
All Fisheries	90.4	92.3	91.2	96.9	98.3	98.0	99.1	99.5	99.7	99.5

Source: NPFMC Sector Profiles Database, 2001. 2002 to 2004data NMFS Sustainable Fisheries & Alaska Fisheries Science Center

Option 2.4: Trawl catcher processors that are 125 ft and greater LOA, including AFA-eligible trawl catcher processors participating in non-pollock target fisheries.

The impacts of this option on AFA-eligible trawl catcher processors are identical to those for Option 2.3 because no AFA-eligible trawl catcher processors < 125' would be exempt. Impacts on trawl catcher processors that are not AFA-eligible are identical to those discussed for Option 2.6.

Option 2.5: Trawl catcher processors that are not AFA-eligible

This option would apply a GRS regulation only to HT-CP. Impacts on these vessels are discussed in Option 2.1.

Option 2.6: Trawl catcher processors that are not AFA-eligible, with an exemption for vessels less than 125 ft LOA that meet specified production limits

This option would exempt small HT-CPs from a GRS regulation. In 2001, 7 HT-CP vessels were < 125' and 15 were greater than 125'. In general, smaller vessels have higher discard rates than larger vessels – 6 of the 7 smaller vessels retained less than 65 percent of their groundfish catch in 2001, while the 7th vessel has a retention rate between 85 and 95 percent. Some of the larger vessels also have relatively low retention rates – 3 of the 15 vessels ≥ 125' would need to improve their retention rate in order to comply with a GRS of 65 percent. Two additional vessels would be affected if the standard is set at 70 or 75

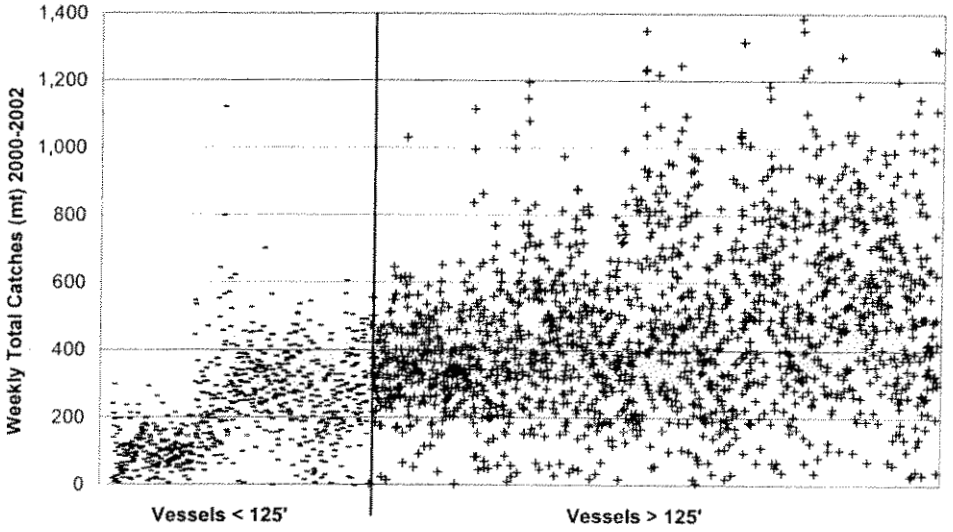
percent. A total of 8 of the 15 vessels ≥125' would have to improve their overall retention if the GRS is set at 80 percent.

There are four options for a criterion to exempt the HT-CP vessels from a GRS regulation. Two options are based on a maximum weekly catch and two options are based on a maximum annual catch:

1) Total catch in any week shall not exceed 600 mt
2) Total catch in any week shall not exceed 700 mt
3) Total catch for the year shall not exceed 13,000 mt
4) Total catch for the year shall not exceed 17,000 mt

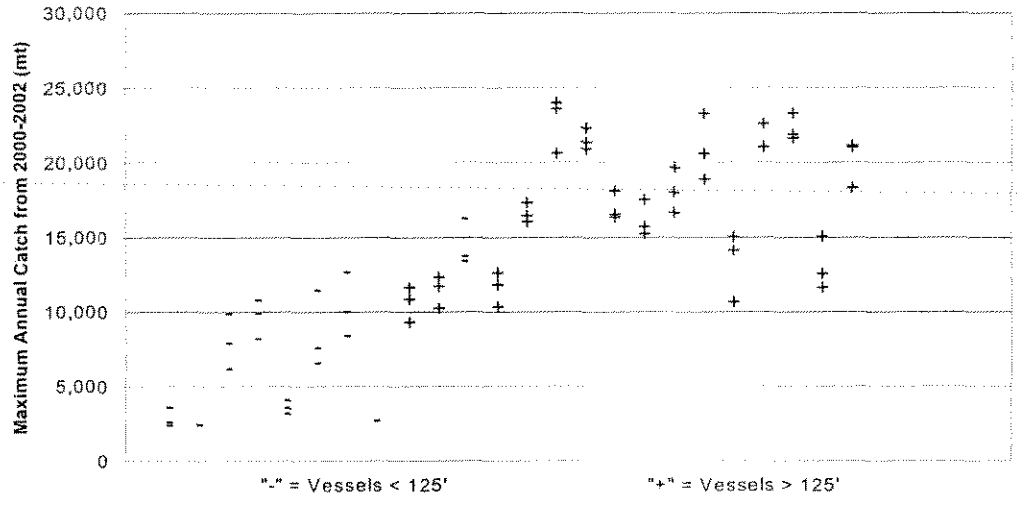
Figure 12 shows weekly catch totals for all HT-CP vessels for the years 2000-2002. Catches are sorted by vessel length and week-ending date. Weekly catches of vessels < 125' seldom exceed 600 mt and are less likely to exceed 700 mt. Similarly, the annual catch of small vessels occasionally exceeds 13,000 mt but is unlikely to exceed 17,000 mt.

Figure 12. Weekly Catch Totals in the HT-CP Sector from 2000-2002, by Size Class



Source: Based on NOAA Fisheries Blend Data, AFSC, 2000-2002.

Figure 13. Annual Catch Totals in the HT-CP Sector from 2000-2002, by Size Class



Source: Based on NOAA Fisheries Blend Data, AFSC, 2000-2002.

4.6.3 Component 3: Specify the period over which the retention rate is calculated

The period over which a vessel's or vessel pool's retention rate is calculated significantly affects the amount of groundfish that must be retained in order to meet a given GRS and the percent of vessels that must improve retention rates to meet the standard. Generally, the longer the calculation period the lower the percentage of vessels expected to have retention rates below a standard and the lower the amount of groundfish that must be retained to meet a standard. However, a shorter assessment period may keep participants in compliance more often than a longer assessment period. It is also important to recognize that the implications of being out of compliance by five percent during a weekly enforcement period are not the equivalent to being out of compliance by five percent during a yearly enforcement period.

Table 39 shows the percent of vessels in the HT-CP sector ≥ 125' which would have been out of compliance had a GRS been implemented in 1999-2002, while Table 40 shows the increase in the retention rates which would have been required of these vessels to be in compliance. For both tables, the GRS enforcement period over which the retention is calculated varies across the columns.

Table 39. Percent of HT-CP Vessels ≥125' that Would Have Been Out of Compliance if a GRS Had Been Implemented in 1999-2002, by GRS Percentage and Enforcement Period

Year	GRS (Percent)	Week/Area	Weekly	Monthly	Quarterly	A Season	B Season	Yearly
		Percent of vessels that at some point during the Year would have been out of compliance with the GRS						
1999	65.0	100.0	100.0	93.3	86.7	66.7	46.7	60.0
	70.0	100.0	100.0	100.0	93.3	73.3	46.7	73.3
	75.0	100.0	100.0	100.0	93.3	80.0	53.3	73.3
	80.0	100.0	100.0	100.0	93.3	100.0	53.3	86.7
	85.0	100.0	100.0	100.0	93.3	100.0	53.3	100.0
	90.0	100.0	100.0	100.0	100.0	100.0	80.0	100.0
2000	65.0	100.0	93.3	100.0	60.0	60.0	26.7	40.0
	70.0	100.0	100.0	100.0	73.3	60.0	53.3	60.0
	75.0	100.0	100.0	100.0	93.3	66.7	80.0	66.7
	80.0	100.0	100.0	100.0	93.3	80.0	80.0	80.0
	85.0	100.0	100.0	100.0	100.0	100.0	93.3	93.3
	90.0	100.0	100.0	100.0	100.0	100.0	93.3	100.0
2001	65.0	100.0	100.0	100.0	46.7	26.7	33.3	20.0
	70.0	100.0	100.0	100.0	53.3	40.0	40.0	40.0
	75.0	100.0	100.0	100.0	86.7	40.0	66.7	40.0
	80.0	100.0	100.0	100.0	93.3	53.3	93.3	60.0
	85.0	100.0	100.0	100.0	93.3	73.3	100.0	93.3
	90.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2002	65.0	100.0	100.0	86.7	53.3	40.0	13.3	20.0
	70.0	100.0	100.0	100.0	86.7	60.0	26.7	46.7
	75.0	100.0	100.0	100.0	93.3	80.0	53.3	66.7
	80.0	100.0	100.0	100.0	100.0	93.3	66.7	86.7
	85.0	100.0	100.0	100.0	100.0	100.0	80.0	100.0
	90.0	100.0	100.0	100.0	100.0	100.0	86.7	100.0

Source: NPFMC Sector Profiles Database, 2001. These estimates assume no change in fishing behavior would occur due to the increased retention requirements.

Table 40. Required Increases in the Retention Rate of HT-CP Vessels >125' if a GRS had been Implemented in 1999-2002, by GRS Percentage and Enforcement Period

Year	GRS (Percent)	Week/Area	Weekly	Monthly	Quarterly	A Season	B Season	Yearly
					Metric Tons			
1999	65.0	5.7	5.3	3.7	3.7	2.5	0.6	2.4
	70.0	7.4	7.1	5.3	5.6	3.9	0.8	4.5
	75.0	9.5	9.2	7.1	7.9	5.4	1.0	6.9
	80.0	11.9	11.7	9.3	10.4	7.2	1.3	9.7
	85.0	14.6	14.5	11.9	13.3	9.4	1.5	13.1
	90.0	17.6	17.5	14.8	16.9	11.5	1.8	16.9
2000	65.0	4.8	4.6	3.5	2.4	2.0	0.2	1.8
	70.0	6.3	6.1	5.0	3.9	3.0	0.3	3.4
	75.0	8.1	7.9	6.8	5.9	4.1	0.6	5.4
	80.0	10.2	10.0	8.9	8.3	5.5	1.0	7.8
	85.0	12.7	12.5	11.1	11.2	7.3	1.5	10.9
	90.0	15.4	15.3	13.7	14.6	9.3	2.0	14.6
2001	65.0	2.0	1.7	1.9	0.6	0.3	0.1	0.3
	70.0	3.1	2.8	3.0	1.4	0.7	0.3	1.1
	75.0	4.6	4.3	4.9	2.8	1.2	0.6	2.3
	80.0	6.6	6.3	7.1	4.7	1.9	1.2	3.9
	85.0	8.9	8.6	9.6	7.4	2.8	1.8	7.1
	90.0	11.7	11.5	12.6	10.9	4.1	2.5	10.8
2002	65.0	3.3	3.1	2.3	1.4	1.2	0.0	0.3
	70.0	4.6	4.4	3.4	2.5	2.1	0.1	1.4
	75.0	6.3	6.1	4.9	4.3	3.3	0.3	3.1
	80.0	8.4	8.2	7.0	6.7	4.9	0.7	5.9
	85.0	11.0	10.8	9.3	9.7	6.7	1.0	9.5
	90.0	13.8	13.7	12.0	13.2	8.6	1.6	13.1

Source: NPFMC Sector Profiles Database, 2001 These estimates assume no change in fishing behavior would occur due to the increased retention requirements.

NOAA Fisheries Enforcement has indicated that a weekly GRS enforcement period for each area and gear fished or for all areas and gears fished is not feasible. In calculating the retention rate it is important to have catch and production estimates that match. This matching is difficult, if not impossible, to verify under a weekly enforcement period because fish caught late in the week are often processed early the next week. Mismatched catch and production numbers would result in inaccurate estimates of groundfish retention rates. Data were unavailable to estimate the outcome if the retention rate is determined at offload. However, NOAA Fisheries Enforcement indicated that it preferred this option because an offload-to-offload enforcement period offers the best opportunity to match catch and production numbers.

4.6.4 Component 4: Defines the seasonality of the GRS

Groundfish retention rates may vary substantially over a fishing year. While the 2002 annual retention rate for vessels in the HT-CP sector is approximately 69.9 percent, Table 41 shows that the retention rate during the "A" season (January to May) is lower than in the "B" season (June to December). In addition, retention rates vary by vessel size. HT-CP vessels < 125' have a lower retention rate in both seasons than larger vessels – the "B" season retention rate of smaller vessels is roughly six percentage points less than the "A" season retention rate of larger vessels. Establishing different GRS levels for the "A" season and the "B" season would help ensure that vessels make a year-round effort to improve retention rates. For example, the effects would be similar for a GRS of 70 percent in the "A" season and a GRS of 75 percent in the "B" season.

Table 41. Retention Rates in the HT-CP Sector in 2002, by Season and Size Class

		Season	
Vessel Size	**Year**	**A Season**	**B Season**
HT-CP <125'	58.9	57.4	62.7
HT-CP >125'	72.1	68.2	75.3
All Vessels	69.9	66.5	73.3

Source: NPFMC Sector Profiles Database, 2001

4.6.5 Component 5: Determines at which level of aggregation the GRS is applied

Applying the GRS to a vessel pool presents enforcement problems unless the pool is deemed a "responsible entity." NOAA Fisheries Enforcement has indicated that it could not apply a GRS to a voluntary cooperative in which vessels are not legally bound to each other, should one be formed through a future action.

Applying a GRS to individual vessels would be relatively simple. In addition, individual vessel enforcement has the advantage of requiring each vessel that does not meet the GRS to improve its retention rate.

4.6.6 Component 6: Considers revision of the pollock maximum retainable bycatch allowance (MRA)

Option 6.1 Use the current MRA
Under current regulations, a percentage of the pollock TAC is set aside as the incidental catch allowance (ICA). Up until the point the ICA has been caught, all pollock must be retained up to the pollock MRA– currently set at 20 percent. After the ICA has been caught, pollock cannot be retained by non-AFA vessels.

The MRA defines when a vessel is directed fishing for a given species. According to NOAA Fisheries, a vessel is engaged in directed fishing for a species if the amount of that species retained on board the vessel as a percentage of the total amount of groundfish retained on board the vessel exceeds the MRA for the species.

The HT-CP fleet's catch of BSAI pollock is currently restricted by three regulatory factors: the annual incidental catch allowance (ICA) established by NOAA Fisheries, IR/IU restrictions which require 100 percent retention of pollock and Pacific cod, and the MRA restricting pollock retention to 20 percent of total catch. Although the MRA may be limiting the HT-CP fleet's pollock retention on a haul-by-haul basis, if catch accounting for enforcement purposes was based on a seasonal or yearly interval, the sector could retain more of the pollock it currently catches, without exceeding either the MRA, or ICA.[10] If this increase in pollock retention were to occur, it would have a substantial impact on the sector's overall groundfish retention rate, decreasing discards by 13 to 16 percent of the current rate.

This analysis calculated the amount of pollock caught as a percent of total sector catch using data from 1999-2004 and determined how much pollock the entire sector caught and discarded. Table 42 summarizes non-pollock groundfish and pollock catches in the HT-CP sector in the BSAI from 1999-2004. Overall, pollock accounted for just over 10 percent of the total groundfish catch during the period.

[10] This analysis assumes that all pollocks discards are caused by the MRA regulation. Thus, the numbers presented represent the upper limit of the potential effect of retaining more pollock on groundfish discard rates.

Roughly half of the pollock has been discarded over the 4-year period–pollock accounts for about 18 percent of all discards in the sector.

Table 42. Discarded & Retained Non-Pollock & Pollock Catch of HT-CPs, 1999-2004

	Non-Pollock Groundfish			Incidental Pollock			All Groundfish Species		
	Discard	Retained	Total	Discard	Retained	Total	Discard	Retained	Total
YEAR	Thousands of Metric Tons								
1999	74.1	165.1	239.3	15.0	14.0	29.0	89.1	179.2	268.3
2000	75.8	186.4	262.2	14.6	16.9	31.5	90.4	203.3	293.7
2001	55.9	185.0	240.8	14.4	17.2	31.7	70.1	200.0	270.1
2002	71.0	182.2	253.3	16.2	17.5	33.8	87.3	198.3	284.8
2003	69.6	176.6	246.1	13.2	13.7	27.0	82.8	190.3	273.1
2004	78.7	186.4	265.1	19.4	18.5	37.9	98.1	204.9	303.0
YEAR	*Percent of Total Groundfish Catch*								
1999	27.6	61.6	89.2	5.6	5.2	10.8	33.2	66.8	100.0
2000	25.8	63.5	89.3	5.0	5.8	10.7	30.8	69.2	100.0
2001	20.6	67.7	88.3	5.3	6.4	11.7	26.0	74.0	100.0
2002	24.7	63.5	88.2	5.7	6.1	11.8	30.4	69.6	100.0
2003	25.5	64.6	90.1	4.8	5.0	9.9	30.3	69.7	100.0
2004	26.0	61.5	87.5	6.4	6.1	12.5	32.4	67.6	100.0

Source: Sector Profile Database Developed by Northern Economics from blend data supplied by NOAA Fisheries-Alaska Fisheries Science Center.

Between 1999 and 2002, the amount of pollock caught in the non-AFA pollock fishery has been less than the ICA (Table 43). During this time, the non-AFA pollock fishery has used up to 92 percent of the ICA, leaving an average buffer of 3,200 mt. The pollock caught by the HT-CP sector accounted for an average of 77 percent of the catch applied towards the ICA between 1999 and 2002.

Table 43. Pollock ICA, Catches Attributed to the ICA and Slack in the ICA in 1999-2002

	Pollock ICA	HT-CP Pollock Catch	Total Non-AFA Pollock Catch	Slack in the ICA
Year	Thousands of Metric Tons			
1999	44.6	29.0	40.1	4.4
2000	45.3	31.5	42.0	3.3
2001	41.1	31.6	38.4	2.7
2002	45.2	33.5	42.6	2.5

Source: Furuness, Mary, NOAA Fisheries-Sustainable Fisheries Division, Personal Communication. August 2003.

While Table 44 demonstrated that considerable slack exists between the pollock ICA and actual incidental pollock catches by all sectors, Table 45 shows that there is also considerable slack between pollock catches by the HT-CP sector and the amount that could be taken under the 20 percent MRA limit. The HT-CP sector during the 1999 to 2004 period could have retained all of their pollock catch without exceeding the MRA based on an annual enforcement interval. Currently the HT-CP sector retains only about 60 percent of the amount allowed by the MRA.

Table 44. BSAI Pollock Catch and MRA Margins in the HT-CP Sector

Year	Retained Non-Pollock	Total Pollock Catch	Pollock as Percent of Retained Non-Groundfish	Theoretical Maximum MRA Percentage	Theoretical Maximum MRA Tonnage	Slack under Theoretical Maximum
1999	165.1	29.0	17.6	20.0	33.0	4.0
2000	186.4	31.5	16.9	20.0	37.3	5.8
2001	182.8	31.6	17.3	20.0	36.6	4.9
2002	180.6	33.5	18.6	20.0	36.1	2.6

Source: Sector Profile Database Developed by Northern Economics from blend data supplied by NOAA Fisheries-Alaska Fisheries Science Center.

In spite of the considerable slack in both the ICA and MRA, pollock discards by the HT-CP fleet are still substantial. Since 1999, pollock has accounted for 6 percent of total groundfish catch and 18 percent of all discards by the HT-CP sector. Table 45 shows groundfish catch and discards by the HT-CP sector between 1999 and 2002, and what the discard rates would have been if all pollock had been retained. In 1999, for example, the sector caught 229,000 tons of groundfish. It discarded 15,000 tons of pollock and 83,000 tons of other groundfish for a 33 percent discard rate. If the sector had kept all of its pollock discards, the overall groundfish discard rate would have declined to 27 percent, a roughly 16 percent drop. It is estimated that in 2004, retention of all pollock would have raised the sector retention rate by over 5 percentage points.

Table 45. Groundfish Retention Rate in the HT-CP Sector

Year	Groundfish Catch (1,000 MT)	Groundfish Discards (1,000 MT)	Pollock Discards (1,000 MT)	Groundfish Discards incl. Pollock (Percent)	Discards if all Pollock were Retained (Percent)
1999	299.0	98.0	15.2	32.8	27.3
2000	331.0	104.0	14.8	31.4	27.0
2001	300.0	80.0	14.5	26.7	21.8
2002	319.0	96.6	16.0	30.4	25.3
2003	272.0	70.3	14.4	25.8	20.5
2004	303.0	98.1	19.4	32.4	26.0

Source: Sector Profile Database Developed by Northern Economics from blend data supplied by NOAA Fisheries-Alaska Fisheries Science Center.

Suboption 6.1.1 Status Quo Plus

Under this option NOAA Fisheries manages the ICA for pollock as it does currently, but it adjusts MRA rates to insure that the historical bycatch requirements of pollock in the non-pollock fisheries are not exceeded. MRA rate adjustments could be made in-season or inter-annually to discourage increased incidental catches of pollock. MRA rate adjustments of between 0 and 49 percent could be made subject to the stipulation that non-AFA vessels are not engaged in directed fishing for pollock at any point in their trip (e.g. no topping-off). The intent of this option is to allow increased retention of pollock without increasing the relative bycatch requirements of the non-pollock fisheries.

Suboption 6.1.2 Status Quo Plus 2

The MRA enforcement period could also be changed. Currently, a vessel may not exceed the MRA at any time during a fishing trip. If the enforcement period was changed to a weekly, monthly, or yearly basis, boats could retain pollock they otherwise would be forced to discard without receiving any increase in their pollock allocation (i.e., ICA). As a result, increasing the enforcement interval coupled with an increase in the MRA, could increase the amount of pollock the sector would be allowed to keep and thus further reduce these discards, subject to the ICA.

While only changing the enforcement interval for the pollock MRA is likely to result in reduced discards of pollock, the overall economic impact of the change on vessels in the HT-CP sector is uncertain. The main factors that could determine the size and distribution of economic impact on the HT-CP sector are (1) the value of pollock relative to the value of groundfish normally caught by the sector, (2) the amount of pressure vessels operators are experiencing to reduce discards [e.g., from the Council in the form of a GRS, or from other concerned groups], and (3) strategic behavior of individual vessels.

If pollock has a ***lower*** relative value than the targeted species, and vessels operate without regard to pressure to reduce discards, the change in the enforcement interval is unlikely to have any significant economic effect—vessels will continue to discard pollock at current levels, while remaining within the retention requirements of IR/IU regulations. If , on the other hand, vessels choose to reduce discards of pollock to alleviate increasing pressure from the Council and the public at large[11], they could experience negative economic consequences. Assuming vessel catch is constrained by hold space, the amount of product from higher-valued species that would be displaced by the increased retention of pollock, under this scenario, may be substantial.

If pollock has a ***higher*** relative value than other species in the catch, as it does during the pollock roe season, the impact on the HT-CP sector from changing the enforcement accounting interval could be positive. Currently, pollock catches appear to be higher during the first part of the trip compared to latter parts of the trip. Under the current regulations, vessels are likely to be forced to discard valuable pollock during the early part of the trip until they have harvested and retained sufficient amounts of non-pollock target species to build up a "ballast" of retained product against they can count retained pollock. Then later in the trip they can "top-off" if they wish. Thus under the current regulations vessels may be forced to "catch pollock" twice if they wish to retain the maximum amount of pollock allowed. With the change in the regulation, again assuming pollock is a desired species, vessels will have the option to keep pollock caught in the early part of the trip, even if they have not yet caught and retained sufficient non-pollock species to comply with the MRA. Because they are able to keep all pollock as it come on board, there is unlikely to be a need to "top-off" later in the trip. Thus the GRS action may reduce overall pollock catches by the HT-CPs.

A change in the enforcement interval for the pollock MRA is expected to have a minimal effect on participants in the directed fishery for BSAI pollock. Participants in the directed fishery would be affected only if a change in the enforcement interval resulted in a larger additional amount of pollock caught and retained by the HT-CP fleet and an increase in the non-AFA vessels' ICA for pollock. It has been suggested by some industry representatives that non-AFA vessels "top off" their catches with pollock at the end of a trip in order to catch more pollock up to the MRA amount. However, owners of non-AFA vessels maintain that they generally prefer not to catch pollock because it has a per unit value lower than their target species. Analysis of NOAA Fisheries blend data does not indicate a pattern of topping off by HT-CP vessels. In general, it is more likely that a change in the enforcement interval for the pollock MRA would lower the total amount of pollock caught because overall waste is reduced.

Using 2001 data, it was estimated that shifting from the current instantaneous enforcement provision to an alternative MRA enforcement interval could result in a substantial increase in the retention rate of the HT-CP sector. The projected increases for the alternative enforcement periods considered are presented in Table 46. Changing the enforcement interval for the pollock MRA to an offload to offload basis could

[11] This, of course, may not be what a profit maximizing firm would voluntarily do, unless the pressure to reduce discards was so great that it was perceived to threatened the firm's ability to continue to operate. In this case, the social and political cost of continuing to discard pollock at historical rates may exceed the operational and economic benefits of doing so, and the profit maximizing firm would voluntarily undertake measures to reduce bycatch and increase retention of incidental catches of pollock.

result in an overall groundfish retention rate increase of 1.9 percent. It is important to note that this analysis assumes that vessels keep any additional pollock they are allowed to retain. In other words, this estimate represents a theoretical upper limit on the amount the groundfish retention rate could increase. The validity of the assumption that vessels would keep any additional pollock they are allowed to retain is uncertain and depends on price and strategic behavior (Northern Economics Inc., 2003b).

Table 46. Potential In crease in the Groundfish Retention Rate in the HT-CP Sector, by Pollock MRA Enforcement Period

Enforcement Period	Percentage Increase in Groundfish Retention Rate
Subalt. 2.1 Weekly	1.3
Subalt. 2.2 Offload-to-Offload	1.9
Subalt. 2.3 Monthly	2.1
Subalt. 2.4 "A" & "B" Season	3.2
Subalt, 2.5 Yearly	3.7

Source: Sector Profile Database Developed by Northern Economics from blend data supplied by NOAA Fisheries-Alaska Fisheries Science Center.

Industry sources have expressed an additional concern about a new enforcement period. Under an offload-to-offload enforcement period, a boat may inadvertently exceed the MRA if it is forced to make an unexpected return to port due to mechanical or other problems. Had the trip been a normal length the vessel could have avoided exceeding the MRA by catching and retaining sufficient quantities of other species later in the trip to lower the ratio of retained pollock to retained species open for directed fishing. The same problem could also occur if a fishery is shut down without a 1-2 day notice. In discussions with NOAA Enforcement on this issue, they have indicated that this issue will have to be addressed on a case by case basis.

4.6.7 Component 7: Determine how total catch is measured

Option 7.1 The current blend data estimation system would be used to estimate total catch (this option has been judged infeasible from an enforcement perspective because it would not be possible to verify total catch estimates).

Option 7.2 All regulated vessels would be required to use NOAA Fisheries-approved scales to determine total catch, maintain a certified observer sampling station, and observer coverage of every haul for verification that all fish were being weighed. *Note that from an enforcement perspective, this option meets all the requirements for measuring total catch accurately, but, from a technical perspective, this option is likely infeasible due to operational and physical constraints for vessels < 125 feet.*

Option 7.3 All regulated vessels would be required to use NOAA Fisheries-approved scales to determine total catch, maintain a certified observer sampling stations, and either observer coverage of every haul for verification that all fish were being weighed or use an alternative scale-use verification plan approved by NOAA Fisheries. *Note that from an enforcement perspective, this option meets all the requirements for measuring total catch accurately, but, from a technical perspective, this option is likely infeasible due to operational and physical constraints for vessels < 125 feet.*

Option 7.4 All regulated vessels ≥ 125 feet would be required to use NOAA Fisheries-approved scales to determine total catch, maintain a certified observer sampling station, and either observer coverage of every haul for verification that all fish were being weighed or use an alternative scale-use verification plan approved by NOAA Fisheries. All vessels < 125 feet would carry observers 100 percent of the time, but would not be required to have approved scales (this option has been judged infeasible from an

enforcement perspective because it would not be possible to verify total catch estimates for all vessels <125 without NOAA Fisheries-approved scales).

Option 7.5 All regulated vessels would carry observers 100 percent of the time, but would not be required to have NOAA Fisheries-approved scales (this option has been judged infeasible from an enforcement perspective because it would not be possible to verify total catch estimates without NOAA Fisheries-approved scales).

To determine the groundfish retention rate, it is necessary to have an accurate estimate of total catch weight. Current catch accounting techniques for the at-sea catcher processor fleet provide an estimate of the groundfish species proportion of the hauls through observer sampling. Appendix 2 provides 1) a brief description of previous work on the use of volumetric estimates in the pollock fishery; 2) experimental design considerations that would be required to further explore the use of this method in a mixed species fishery; and 3) issues that NOAA Fisheries has highlighted in considering volumetric bin measurement of trawl landings.

NOAA Fisheries has indicated that the error in a retention rate estimated from bin volumetrics would be too large for enforcement agents to successfully prosecute suspected violations of a groundfish retention standard. According to NOAA Fisheries, in order to accurately determine total catch all vessels must be required to use NOAA Fisheries-approved scales and every haul made by vessels must be observed. In addition, each vessel must have a NOAA Fisheries-certified observer sampling station, including a motion-compensated platform scale to verify the accuracy of the total catch weight flow scale. Flow scales have been installed on most of the BSAI pollock vessels. These scales have significant advantages over previous catch estimation techniques in that they can continue to record without the continuous attention of an observer. These scales also are designed for a relatively unstable platform and have a high level of accuracy and precision.

4.6.8 Component 8: Determines how total retained catch is measured

Product recovery rates (PRRs) are also important for calculating groundfish retention rates. Discussions with industry and PRR researchers indicate that PRRs vary between processors and between fish sizes. NOAA Fisheries standard PRRs do not account for these variations. Hence, enforcement based on NOAA Fisheries standard PRRs could lead to the prosecution of vessels or vessel pools whose PRRs differ substantially from the standards. A set of minimum acceptable PRRs, lower than the NOAA Fisheries standard PRRs, which account for variation in the rates could minimize this potential problem while still requiring vessels to meet a GRS.

The series of tables below (Tables 47, 48 and 49) show NOAA Fisheries standard PRRs, PRRs provided in Crapo et al. (1993) and PRRs presented in a 1999 study conducted by the Groundfish Forum under an exempted fishing permit for a variety of species in gutted, and headed & gutted product forms.[12] Crapo et al. and the Groundfish Forum study list average, maximum and minimum PRRs. To estimate PRRs for various species, Crapo et al. used a combination of laboratory sampling, surveys of processors, company reports and literature reviews. The averages listed for the non-laboratory analyzed species are the averages of the data sources the study identified.

[12] The EFP authorized the Groundfish Forum to conduct an experiment in the BSAI management area that would test the accuracy of at-sea observer basket sampling practices, the design and use of automated species composition sampling, and the effect of fish stratification in trawls on size composition sampling.

For the gutted product, the average PRRs provided by Crapo et al. are lower than the NOAA Fisheries standard PRRs for five of the eight species examined. For the remaining three species (thornyhead rockfish, Atka mackerel and sablefish) the average PRRs are equal. For all species, the minimum PRRs provided by Crapo et al. are less than the NOAA Fisheries standard PRRs.

For headed & gutted product, the average PRRs provided by Crapo et al. are higher than the western cut NOAA Fisheries standard PRRs in all cases, but are lower than the eastern cut NOAA Fisheries standard PRRs for six of eight species. For the other two species (Pacific cod and Atka mackerel), the average PRRs provided by Crapo et al. are higher.

The Groundfish Forum study provided PRRs that were equal to or lower than the western cut NOAA Fisheries standard PRRs in all cases. In fact, the Groundfish Forum study provided lower PRRs than any other source.

Table 47. NOAA Fisheries Standard PRRs for Selected Products and Species

Product Form		Species							
		Pacific Cod	Flathead Sole	Rock Sole	Yellowfin Sole	Thornyheads	Atka Mackerel	Pollock	Sablefish
Gutted		0.85	0.90	0.90	0.90	0.88	0.87	0.80	0.89
Headed & Gutted	East Cut	0.57	0.72	0.72	0.72	0.60	0.64	0.65	0.68
	West Cut	0.47	0.65	0.65	0.65	0.50	0.61	0.56	0.63

Source: NOAA Fisheries, 2003

Table 48. PRRs for Selected Products and Species Provided by Unofficial Sources

Product Form		Species							
		Pacific Cod	Flathead Sole	Rock Sole	Yellowfin Sole	Thornyheads	Atka Mackerel	Pollock	Sablefish
Gutted	Max.	0.90	0.94	0.92	0.94	0.91	0.93	0.86	0.94
	Avg.	0.81	0.86	0.87	0.86	0.88	0.87	0.79	0.89
	Min.	0.72	0.8	0.82	0.76	0.85	0.83	0.72	0.86
Headed & Gutted	Max.	0.75	0.79	0.78	0.83	0.57	0.74	0.72	0.69
	Avg.	0.63	0.67	0.67	0.69	0.53	0.68	0.62	0.65
	Min.	0.56	0.60	0.62	0.60	0.48	0.62	0.52	0.64
Headed & Gutted	Max.	0.51	0.64	N/A	0.62	N/A	N/A	0.56	N/A
	Avg.	0.48	0.61	N/A	0.59	N/A	N/A	0.51	N/A
	Min.	0.48	0.58	N/A	0.59	N/A	N/A	0.36	N/A

Source:Personal communication between Marcus Hartley, Northern Economics and Crapo, C., B. Paust and J. Babbitt, 1993. *Recoveries and Yields from Pacific Fish and Shellfish.* Alaska Sea Grant College Program, University of Alaska-Fairbanks, Fairbanks.

The analysis also examined differences in retention rates using NOAA Fisheries standard PRRs and a hypothetical minimum acceptable PRR created from the minimum value cited by NOAA Fisheries or Crapo et al.(the analysis used whichever value is lower). Table 49 shows the buffer created by using the PRRs provided by Crapo et al. as the minimum acceptable PRRs. Using these PRRs would have increased HT-CP sector retention rates by an average of 1.5 percentage points per year over the last four years, all else equal.

Table 49. Retention Rates in the HT-CP Sector Under Various PRR Measurement Regimes

Year	1999	2000	2001	2002	Average
NOAA Fisheries Standard PRRs	66.9	67.9	71.7	70.0	69.1
NOAA Fisheries/Crapo et al. Minimum PRRs	68.4	69.5	73.2	71.1	70.6

Source: Developed by Northern Economics based on Blend Data from NOAA Fisheries, AFSC, 1999-2002.

4.6.9 Net Benefit Implication

Cost data are currently not available for those sectors effected by this action. For this reason, a quantitative cost/benefit analysis of the alternatives could not be completed. However, it appears that the GRS has the potential to yield positive net benefits to the Nation, if adopted. Recognizing the potential costs of the GRS action on the HT-CP sector, the Council has clearly expressed its view that reducing discards by the HT-CP fleet will contribute to a positive benefit for the Nation. The Council has stated that it is committed to reducing discards, minimizing waste, and improving utilization of fish resources to the fullest extent practicable in order to provide the maximum benefit to present and future generations of fishermen, associated fishing industry sectors, communities, consumers, and the nation as a whole. The Council has a long history of bycatch reduction efforts that have imposed costs on the fishing industry, but have yielded benefits to the Nation. In the case of the GRS action, all HT-CP vessels over 125 ft. LOA will be required to improve their retention rate from their current rate of 68 percent (2004) to 85 percent in 2010. Given that the Nation places a high value on reducing fishery discards and waste, as evidenced by the mandate to reduce discards and increase utilization, contained in the Magnuson-Stevens Fishery Conservation and Management Act and the Sustainable Fisheries Act, the benefits, although not quantifiable, appear by all indications to exceed costs. While slight distributional impacts across fishing industry sectors are implied by the GRS, the overall net benefits to the Nation would not be expected to change to an identifiable degree.

4.6.10 E.O. 12866 Conclusion

E.O. 12866 requires that the Office of Management and Budget review proposed regulatory programs that are considered to be "significant." A "significant regulatory action" is one that is likely to:

1. Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, local or tribal governments or communities;
2. Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
3. Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
4. Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order.

Based on the analysis and the above referenced criteria, none of the alternatives appear to have the potential to constitute a "significant" action under the E.O. 12866, recognizing that there may be distributional impacts among the various participants affected by this proposed action.

5.0 Consistency with Other Applicable Laws

This section examines other laws applicable to fishery management actions and determines whether the proposed action is consistent with those laws.

5.1 Consistency with National Standards

Below are the ten National Standards contained in the Magnuson-Stevens Fishery Conservation and Management Act (Act) and a brief discussion of the consistency of the proposed action and alternatives with those National Standards, where applicable.

National Standard 1 - Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.

Under all of the actions considered, the Alaska groundfish fisheries will continued to be managed to achieve TACs without overfishing. Stocks of groundfish in target fisheries in the BSAI are not currently in danger of overfishing and are considered stable. Overall groundfish catch will not be affected by any of the actions considered.

In terms of achieving 'optimum yield' from the fishery, the Act defines "optimum" as the amount of fish which: a) will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems; b) is prescribed as such on the basis of the maximum sustainable yield from the fishery, as reduced by ny relevant economic, social, or ecological factor; and c) in the case of an overfished fishery, provides for rebuilding to a level consistent with producing the maximum sustainable yield in such fishery. Overall benefits to the Nation may be affected by these trade-offs, though our ability to quantify those effects is limited. The effects of the GRS and alternatives on the revenues and costs of various sectors of the groundfish fisheries are discussed in Section 4.0. While slight distributional impacts across fishing industry sectors are implied by the alternative actions, overall net benefits to the Nation would not be expected to change to an identifiable degree across the actions considered.

National Standard 2 - Conservation and management measures shall be based upon the best scientific information available.

Information in this analysis represents the most current and comprehensive set of information available. Some data that would have been useful in the analysis (such as operational costs) are unavailable.

National Standard 3 - To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.

All of the actions considered are consistent with this standard. The groundfish stocks in the BSAI will continued to be managed as single stocks.

National Standard 4 - Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be a) fair and equitable to all such fishermen;

b) reasonably calculated to promote conservation; and c) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

The actions considered would not allocate or assign fishing privileges to individual or groups of fishermen, nor would it discriminate among fishermen based on residency or any other equivalent criteria.

National Standard 5 - Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

The analysis of the effects of alternative actions presents information relative to the perspective of economic efficiency, but it does not point to a preferred alternative in terms of this standard, nor does it have economic allocation as its sole purpose.

National Standard 6 - Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

None of the actions considered would likely reduce the flexibility of fishery managers or fishermen to respond to variations among groundfish stocks.

National Standard 7 - *Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.*

None of the alternatives under consideration appear to duplicate existing regulations. The perferred alternative has been constructed to minimize costs on the industry, by providing several months for vessels to refit plants with monitoring equipment, a stair-stepped GRS to allow the HT-CP sector to gradually adjust to the burden of the retention standards, relaxation of the initial GRS percent as identified in the proposed rule, and the removal of vessels under 125 feet from the GRS requirement.

National Standard 7 encourages comparison of the benefits and costs of alternatives. In this respect, benefits of the GRS are likely to be equal to or greater than the costs. Between 2000 and 2004, TACs for a number flatfish target species in the HT-CP sector have been fully utilized or even exceeded, highlighting the increasing scarcity of many discarded groundfish species. Approaching or exceeding a TAC may indicate that open access competition for available harvest is increasing. The practice of discarding groundfish in the amounts observed in the BSAI by some vessels that could be utilized by other vessels is potentially inefficient and wasteful. To the extent that discards impose costs to other users of BSAI groundfish, this program seeks to reduce wasteful and costly practices.

In weighing the value to society of reducing groundfish discards, the amount of North Pacific groundfish discards has been identified by environmental organizations both in Alaska and in other locations as being objectionable. Some coastal state governments have enacted bycatch (discard) and/or other fish and wildlife waste reduction measures, including complete or partial banning of such actions as roe stripping and wanton waste. NMFS believes that public law of other jurisdictions to reduce waste, a record of public interest to reduce discards, under utilization of groundfish in the Nation's fisheries reveal preferences and positive values for the proposed GRS program.

National Standard 8 - Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks) take into account the importance of fishery resources to fishing communities in

order to a) provide for the sustained participation of such communities, and b) to the extent practicable, minimize adverse economic impacts on such communities.

Many of the coastal communities in Alaska and the Pacific Northwest participate in the Alaska groundfish fisheries in one way or another, whether it be as sites for shore-side processors or support businesses or as the harbor/home port of fishermen and at-sea processing workers. Major ports in Alaska that process groundfish catch from the BSAI include Dutch Harbor, Akutan, Sand Point, King Cove and Kodiak. Additionally, the Seattle area in Washington is home port to many catcher and catcher processor vessels operating in BSAI fisheries. Summary information on these coastal communities is provided in the 2004 PSEIS (NMFS 2004).

In terms of potential impacts resulting from the actions considered, the analysis reviewed data on 1) harvest levels by the affected vessels engaged in the BSAI fisheries; 2) revenues resulting from that harvest; and 3) the home port of the vessels. Most of this information is presented in Sections 3.0 and 4.0. None of the alternative actions are considered to have a significant individual or cumulative effect on the sustained participation of any fishing community in the groundfish fisheries.

National Standard 9 - Conservation and management measures shall, to the extent practicable, a) minimize bycatch; and b) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

Section 4 presents information on historical patterns of discards in the groundfish fisheries. The analysis assesses alternative actions to decrease discards and increase utilization in groundfish fisheries in the BSAI. Nonetheless, there is a trade-off between reducing bycatch and deriving economic value from viable directed fisheries on these fish stocks. The preferred alternative seeks to balance these conflicting concerns. NMFS has published National Standard 9 guidelines that are responsive to all provisions of National Standard 9 and other provisions of the Magnuson – Stevens act. These provisions are listed, each with a separate discussion in this document.

Congress, environmental interest groups and other government agencies have created laws and regulations to limit bycatch. A number of these interests commented on the proposed rule, attesting to the value that exists in reducing bycatch. Bycatch is defined in section 3 of the Magnuson-Stevens Act (16 U.S.C. 1802(2)) and used synonymously with the term "discards" in this final rule.

The net benefits from a bycatch (discard) reduction action may consider a broad spectrum of social effects. Criteria that are developed in NOAA regulations on National Standard 9 are at § 600.350 50 CFR. This criteria lists some of these social effects that Councils may consider in determining if proposed bycatch measures are practicable. They include: "(H) Changes in the economic, social, or cultural value of fishing activities and nonconsumptive uses of fishery resources. (I) Changes in the distribution of benefits and costs. (J) Social effects." In the case of the GRS, NMFS believes that the preponderance of benefits to society for reducing discards by over 50 thousand metric tons per year at a GRS of 85 percent, offset costs in a manner consistent with National Standard 9.

Technical challenges to monetizing societal perceptions of groundfish discards do not imply that society places an insignificant value on discard practices in the BSAI. For example, financial support from private donors to environmental groups that have advocated for the GRS program may be indirect evidence of societal willingness to pay for improving groundfish retention. Also, the existence of fisheries and game waste reduction, discard and utilization laws in a number of states is observable evidence that some members of the public perceive that a cost exists to the removal and discard of fish in commercial and recreational fisheries. The States of Washington, New Jersey, Alaska, Oregon,

Minnesota, South Dakota and Vermont regulate, to a differing extent, discards of fish and wildlife, roe stripping, or limited utilization of fish. State of Alaska law prohibits the discard of salmon, herring, and groundfish and is noted as one of the most restrictive fish and wildlife waste laws in the U.S. These waste laws impose a cost on fishermen to either avoid catching fish that are not efficient to sell or use, or to catch and deliver the whole fish to a buyer.

NMFS acknowledges that some vessels will be exposed to new costs under the GRS that could reduce profits for some fishing businesses in this sector. The potential exists that one or more vessels in the HT-CP sector, may choose to exit from this fishery, though no independently verifiable data are available from this sector to confirm if this is likely. National Standard 9 does not imply that the costs of complying with discard reduction programs must be offset by benefits to a sector, or that costs to individual vessels must be offset by benefits to each vessel. National Standard 9, does imply that the agency should display the best available data on bycatch benefits to the nation and bycatch costs. This analysis accomplishes that objective.

National Standard 10 - Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

All of the actions considered appear to be consistent with this standard. None of the alternatives would change safety requirements for fishing vessels.

5.2 Section 303(a)(9) - Fisheries Impact Statement

Section 303(a)(9) of the Magnuson-Stevens Act requires that any plan or amendment include a fishery impact statement which shall assess and describe the likely effects, if any, of the conservation and management measures on a) participants in the fisheries and fishing communities affected by the plan or amendment; and b) participants in the fisheries conducted in adjacent areas under the authority of another Council, after consultation with such Council and representatives of those participants taking into account potential impacts on the participants in the fisheries, as well as participants in adjacent fisheries.

The alternative actions considered in this analysis are described in Section 1.2 of this document. The impacts of these actions on participants in the fisheries and fishing communities are the topic of Sections 3.0 and 4.0.

5.2.1 Fishery Participants

The preferred alternative would phase in the GRS over a four year period beginning in 2007, starting at 65 percent and increasing to 85 percent in 2010. Under the preferred alternative only HT-CPs ≥125' would be required to comply with the GRS—which would be determined and enforced at the end of each year. In 2002, the overall groundfish retention rate of HT-CP vessels ≥125 ft. was 71 percent. Provided this retention rate is maintained, the 2007 GRS will represent only a minimal constraint for most of this fleet—only three vessels would need to improve their retention rates. Nearly all of the regulated vessels would need to improve their retention rate to meet the 2010 GRS of 85 percent, which is the rational for the phase-in provision. Table 50 also shows the additional tons that would have to be retained to meet the successive phased-in standards. Converting what had been discards to retained product could result in lower net revenues if the additional fish retained displaces fish of higher-value. To reflect this potential

cost, the last row of the table shows the percent of existing product of the affected vessels that would have to be displaced by what is presumed to be lower value product.[13]

Table 50. Vessel Based Impacts of GRS Percentages in the GRS Preferred Alternative

Year	2007	2008	2009	2010
GRS Percentage	65	75	80	85
Number of Vessels Below GRS in 2002	3	5	8	13
Additional Retained Tons Needed to Meet GRS in 2002 (1,000 mt)	0.9	6.0	10.5	19.5
Percent Displacement of Existing Product Tons (percent)	0.1	1.5	2.9	4.8

Source: Sector Profile Database Developed by Northern Economics from Blend Data supplied by NOAA Fisheries-AFSC.

Provided below is a summary of the monitoring and enforcement issues for the GRS. For a more detailed discussion on this topic, see Sections 4.5.2 and 4.6.2.

In 2002, there were 22 active HT-CP vessels—a 23rd vessel was reactivated in the fall of 2003. Of these, 16 vessels are greater than or equal to 125 ft. in length. Under the GRS, each of these 16 processor vessels would be required to provide an approved scale system that is capable of weighing catch before it is processed or discarded. NOAA Fisheries estimates that seven of the vessels ≥125' LOA would have to install approved marine flow scales and observer stations at an estimated total cost of purchasing and installing the scales between $76,000 and to over $300,000 per vessel. Under the GRS, every haul will have to be observed, which necessitates two observers aboard each vessel. Estimates of the cost of an additional observer are approximately $82,000 per vessel. There are also indirect costs of housing an additional observer, as well. These include feeding and housing. However, no meaningful estimate of these "cost" can be provided. Finally, there are a other costs associated with a requirement for vessels to install marine scales. These include the cost of reduced efficiency as a result of changes in procedures for harvesting, sorting, discarding, or processing groundfish and lost crew time required to monitor and record information from the scale and to test, maintain, and repair the scales.

5.2.2 Fishing Communities

As treated at length in Section 4.2 and under National Standard 8, major ports in Alaska that process groundfish catch from fisheries affected by the actions considered include Dutch Harbor, Akutan, Sand Point, King Cove and Kodiak. Additionally, the Seattle area in Washington and communities along the northern Oregon coast are home ports to the majority of catcher and catcher processor vessels operating in these fisheries. None of the actions considered are expected to have any significant individual or cumulative effects on the sustained participation of these communities in the groundfish fisheries. The groundfish fisheries would continue to benefit fishing communities as described in the PSEIS (NMFS 2004).

5.2.3 Participants in Fisheries of Adjacent Areas

Neither the GRS nor alternatives considered would significantly affect participants in the fisheries conducted in adjacent areas under the authority of another Council.

[13]The displaced product percentage calculation assumes that newly created products will have the same average recovery rate as the existing product mix of the fleet as a whole—63 percent.

5.3 Final Regulatory Flexibility Analysis (FRFA)

5.3.1 Introduction

This Final Regulatory Flexibility Analysis (FRFA) evaluates the impacts of the final rule implementing Amendment 79 to the Bering Sea / Aleutian Islands (BSAI) Groundfish Fishery Management Plan (FMP) on small entities. The action implements a groundfish retention standard (GRS) for head and gut trawl catcher processors operating in the BSAI that are not listed American Fisheries Act (AFA) catcher/processors at 50 CFR 679.4(l)(2)(I). These unlisted catcher processing vessels, are referred to as (HT-CPs) in this analysis. Only HT-CP vessels 125 ft. and greater harvesting groundfish in the BSAI are regulated by this action. In 2004, there were 16 active HT-CP 125 ft. and greater, LOA.

The proposed rule for the GRS was published in the Federal Register on June 16, 2005 (70 FR 35054). An Initial Regulatory Flexibility Analysis (IRFA) was prepared for the proposed rule, and described in the classifications sections of the preamble to the rule. The public comment period ended on August 1, 2005. NMFS received 19 letters of comment on the proposed rule including 38 discrete comments. Four of the comments received specifically addressed the IRFA. Eleven letters of comment were received from persons working for or associated with one or more vessels subject to these regulations. NMFS is unable to confirm whether any of these are small entities. Ten of those letters opposed the rule, and one was in favor of the rule. Associated entities opposing the rule cited the burden to catcher processing operations from monitoring and operational adjustments required for fishing under the rule, the costs associated with compliance to the rule, inconsistency of criteria for a small business entity as applied to catcher processors in the fishery, and comparatively small benefits to the sector, fishing industry and nation as the reason for opposing the action. The regulated entity supporting the rule cited the need for bycatch reduction in the fleet due to wasted catch of groundfish and minimal costs associated with the benefits of the regulation. Of the total number of 19 letters, 5 respondents were in favor of the action, and 13 were not in favor of the action and one expressed no approval/disapproval opinion. Some of the agencies in favor of the action included the Environmental Protection Agency and the State of Alaska.

5.3.2 The purpose of a FRFA

The Regulatory Flexibility Act (RFA), first enacted in 1980, was designed to place the burden on the government to review all regulations to ensure that, while accomplishing their intended purposes, they do not unduly inhibit the ability of small entities to compete. The RFA recognizes that the size of a business, unit of government, or nonprofit organization frequently has a bearing on its ability to comply with a Federal regulation. Major goals of the RFA are: (1) to increase agency awareness and understanding of the impact of their regulations on small business, (2) to require that agencies communicate and explain their findings to the public, and (3) to encourage agencies to use flexibility and to provide regulatory relief to small entities. The RFA emphasizes predicting impacts on small entities as a group distinct from other entities and on the consideration of alternatives that may minimize the impacts while still achieving the stated objective of the action.

On March 29, 1996, President Clinton signed the Small Business Regulatory Enforcement Fairness Act. Among other things, the new law amended the RFA to allow judicial review of an agency's compliance with the RFA. The 1996 amendments also updated the requirements for a final regulatory flexibility analysis, including a description of the steps an agency must take to minimize the significant economic impact on small entities. Finally, the 1996 amendments expanded the authority of the Chief Counsel for

Advocacy of the Small Business Administration (SBA) to file amicus briefs in court proceedings involving an agency's violation of the RFA.

In determining the scope, or 'universe', of the entities to be considered in a FRFA, NMFS generally includes only those entities that can reasonably be expected to be directly regulated by the proposed action. If the effects of the rule fall primarily on a distinct segment, or portion thereof, of the industry (e.g., user group, gear type, geographic area), that segment would be considered the universe for the purpose of this analysis. NMFS interprets the intent of the RFA to address negative economic impacts, not beneficial impacts, and thus such a focus exists in analyses that are designed to address RFA compliance.

Data on cost structure, affiliation, and operational procedures and strategies in the fishing sectors subject to the proposed regulatory action are insufficient, at present, to permit preparation of a "factual basis" upon which to certify that the preferred alternative does not have the potential to result in "significant adverse impacts on a substantial number of small entities" (as those terms are defined under RFA). Because, based on all available information, it is not possible to 'certify' this outcome, should the proposed action be adopted, a formal FRFA has been prepared and is included in this package for Secretarial review.

5.3.3 What is required in a FRFA?

Under 5 U.S.C., Section 604(a) of the RFA, each FRFA is required to contain:

(1) a succinct statement of the need for, and objectives of, the rule;

(2) a summary of the significant issues raised by the public comments in response to the initial regulatory flexibility analysis, a summary of the assessment of the agency of such issues, and a statement of any changes made in the proposed rule as a result of such comments;

(3) a description of and an estimate of the number of small entities to which the rule will apply or an explanation of why no such estimate is available;

(4) a description of the projected reporting, recordkeeping and other compliance requirements of the rule, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for preparation of the report or record; and

(5) a description of the steps the agency has taken to minimize the significant economic impact on small entities consistent with the stated objectives of applicable statutes, including a statement of the factual, policy, and legal reasons for selecting the alternative adopted in the final rule and why each one of the other significant alternatives to the rule considered by the agency which affect the impact on small entities was rejected.

Where are the requirements of the RFA addressed?	
Reasons for the action	Section 5.3.5
Objectives of action and legal basis	Section 5.3.6
Public comments	Section 5.3.7
Description of small entities	Section 5.3.8
Impacts on regulated small entities	Section 5.3.9
Description of reporting requirements	Section 5.3.10

5.3.4 What is a small entity?

The RFA recognizes and defines three kinds of small entities: 1) small businesses; 2) small non-profit organizations; and 3) and small government jurisdictions.

Small businesses: Section 601(3) of the RFA defines a "small business" as having the same meaning as a "small business concern," which is defined under Section 3 of the Small Business Act. A "small business" or "small business concern" includes any firm that is independently owned and operated and not dominate in its field of operation. The U.S. Small Business Administration (SBA) has further defined a "small business concern" as one "organized for profit, with a place of business located in the United States, and which operates primarily within the United States or which makes a significant contribution to the U.S. economy through payment of taxes or use of American products, materials or labor. A small business concern may be in the legal form of an individual proprietorship, partnership, limited liability company, corporation, joint venture, association, trust or cooperative, except that where the form is a joint venture there can be no more than 49 percent participation by foreign business entities in the joint venture."

The SBA has established size criteria for all major industry sectors in the U.S. including fish harvesting and fish processing businesses. A business involved in fish harvesting is a small business if it is independently owned and operated and not dominant in its field of operation (including its affiliates) and if it has combined annual receipts not in excess of $3.5 million for all its affiliated operations worldwide. A seafood processor is a small business if it is independently owned and operated, not dominant in its field of operation and employs 500 or fewer persons on a full-time, part-time, temporary or other basis at all its affiliated operations worldwide. A business involved in both the harvesting and processing of seafood products is a small business if it meets the $3.5 million criterion for fish harvesting operations. Finally, a wholesale business servicing the fishing industry is a small business if it employs 100 or fewer persons on a full-time, part-time, temporary, or other basis, at all its affiliated operations worldwide. The SBA has established "principles of affiliation" to determine whether a business concern is "independently owned and operated." In general, business concerns are affiliates of each other when one concern controls or has the power to control the other, or a third party controls or has the power to control both. The SBA considers factors such as ownership, management, previous relationships with or ties to another concern, and contractual relationships, in determining whether affiliation exists. Individuals or firms that have identical or substantially identical business or economic interests, such as family members, persons with common investments, or firms that are economically dependent through contractual or other relationships, are treated as one party, with such interests aggregated when measuring the size of the concern in question. The SBA counts the receipts or employees of the concern whose size is at issue and those of all its domestic and foreign affiliates, regardless of whether the affiliates are organized for profit, in determining the concern's size. However, business concerns owned and controlled by Indian Tribes, Alaska Regional or Village Corporations organized pursuant to the Alaska Native Claims Settlement Act (43 U.S.C. 1601), Native Hawaiian Organizations, or Community Development Corporations authorized by 42 U.S.C. 9805 are not considered affiliates of such entities, or with other concerns owned by these entities solely because of their common ownership.

Affiliation may be based on stock ownership when (1) A person is an affiliate of a concern if the person owns or controls, or has the power to control 50% or more of its voting stock, or a block of stock which affords control because it is large compared to other outstanding blocks of stock, or (2) If two or more persons each owns, controls or has the power to control less than 50% of the voting stock of a concern, with minority holdings that are equal or approximately equal in size, but the aggregate of these minority holdings is large as compared with any other stock holding, each such person is presumed to be an affiliate of the concern.

Affiliation may be based on common management or joint venture arrangements. Affiliation arises where one or more officers, directors or general partners control the board of directors and/or the management of another concern. Parties to a joint venture also may be affiliates. A contractor and subcontractor are treated as joint venturers if the ostensible subcontractor will perform primary and vital requirements of a contract or if the prime contractor is unusually reliant upon the ostensible subcontractor. All requirements of the contract are considered in reviewing such relationship, including contract management, technical responsibilities, and the percentage of subcontracted work.

Small organizations: The RFA defines "small organizations" as any nonprofit enterprise that is independently owned and operated and is not dominant in its field.

Small governmental jurisdictions: The RFA defines small governmental jurisdictions as governments of cities, counties, towns, townships, villages, school districts, or special districts with populations of fewer than 50,000.

5.3.5 Reason for Considering the Action

This rule is necessary to respond to the National Standard 9 initiative to reduce bycatch and discards in groundfish fisheries. In general, the amount of bycatch and discards in the HT-CP sector are substantially higher than other BSAI groundfish sectors and viewed as a waste of the ocean's resources given that many fish stocks are fully or over utilized. Congress requests that Councils reduce bycatch and discards of the Nation's ocean resources. The Council determined that the present levels of bycatch and discards in the HT-CP sector were unacceptable and must be reduced.

The Council's problem statement for the GRS requires an increase in the rate of retained groundfish caught by the HT-CP sector. This requirement is consistent with the Council's objective to reduce discards in the groundfish fisheries.

> The Council's primary concern is to maintain a healthy marine ecosystem to ensure the long-term conservation and abundance of the groundfish and crab resources. Recognizing the importance of both the mandate of the Magnuson-Stevens Fishery Conservation and Management Act to reduce bycatch (discards) to the extent practicable, the US public's perception that discards in the BSAI are excessive, the economic importance of these groundfish fisheries, and the dependence of the participants on these groundfish fisheries, the Council is committed to reducing bycatch, minimizing waste, and improving utilization of fish resources to the extent practicable in order to provide the maximum benefit to present generations of fishermen, associated fishing industry sectors, communities, and the nation as a whole. Finally, the Council acknowledges the fact that any solution to the problem of reducing discards must take into account the ability of NOAA Fisheries to monitor discards and adequately enforce any regulations that are promulgated.

5.3.6 Objectives of, and Legal basis for, the Rule

The objective of the rule is to reduce groundfish discards in the groundfish fisheries of the BSAI to the extent practicable, while still allowing a viable directed fishery for each sector. The objectives are further elucidated in the NPFMC's problem statement presented in Section 1.1.

The legal basis for the rule is the Magnuson-Stevens Act and the BSAI Groundfish FMP. In 1976, Congress passed into law what is currently known as the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). This law authorized the United States to manage its fishery resources in an area extending from 3 to 200 nautical miles off its coast (termed the Exclusive Economic

Zone). The management of these marine resources is vested in the Secretary of Commerce and in regional fishery management councils. In the Alaska region, the North Pacific Fishery Management Council is responsible for preparing management plans for marine fishery resources requiring conservation and management. NOAA Fisheries, an agency within the National Oceanic and Atmospheric Administration of the U.S. Department of Commerce, is charged with carrying out the federal mandates with regard to marine fish, once they are approved by the Secretary. NOAA Fisheries Alaska Regional Office and Alaska Fisheries Science Center review the management actions recommended by the Council.

In 1996, Congress passed the Sustainable Fisheries Act, which amended the Magnuson-Stevens Act and added three new national standards. One of the standards, National Standard 9, provides:

> *Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.*

To respond to these requirements NOAA developed regulations on bycatch reduction, at 50 CFR, 600.350. The criteria provided are to be considered by Councils in determining if proposed bycatch measures are practicable.

Councils are to:

> *"(3) Select measures that, to the extent practicable, will minimize bycatch and bycatch mortality. (i) A determination of whether a conservation and management measure minimizes bycatch or bycatch mortality to the extent practicable, consistent with other national standards and maximization of net benefits to the Nation, should consider the following factors:*
> *(A) Population effects for the bycatch species.*
> *(B) Ecological effects due to changes in the bycatch of that species (effects on other species in the ecosystem).*
> *(C) Changes in the bycatch of other species of fish and the resulting population and ecosystem effects.*
> *(D) Effects on marine mammals and birds.*
> *(E) Changes in fishing, processing, disposal, and marketing costs.*
> *(F) Changes in fishing practices and behavior of fishermen.*
> *(G) Changes in research, administration, and enforcement costs and management effectiveness.*
> *(H) Changes in the economic, social, or cultural value of fishing activities and nonconsumptive uses of fishery resources.*
> *(I) Changes in the distribution of benefits and costs.*
> *(J) Social effects."*

5.3.7 Public Comments

A proposed rule for the GRS program was published in the Federal Register on June 16, 2005 (70 FR 35054). The public comment period for the proposed rule ended on August 1, 2005. NMFS received 19 letters of comment responding to the proposed rule. Additional comments were provided on the Notice of Availability for FMP Amendment 79. A total of 38 discrete comments on the proposed rule were included in those combined public comments and responded to in the final rule for this action. The comments relevant to small entities are primarily related to the following five issues and are addressed in the final rule for the GRS.

- The Office of Advocacy for SBA was unable to locate a discussion of the monitoring and enforcement costs associated with the prohibition on mixing of hauls, limitation on the number of

hours per day an observer may sample catch, the installation of a NMFS approved scale, and specified single observer sampling location. Also, the Office of Advocacy for SBA requested that NMFS use North American Industry Classification System code 311711 for catcher processor which is known as "Seafood Product Preparation and Packaging." This classification includes establishments that are "floating factory ships." The size standard for businesses in that industry is 500 or fewer employees.

The IRFA prepared for the proposed rule contains a brief summary of the impacts of the proposed rule and alternatives and states that the specific economic impacts of the proposed rule and other alternatives on both large and small entities are addressed in section 4 of the EA/RIR/IRFA. Section 4 of the analysis includes information and analysis on a number of economic factors, including an examination of changes in revenues and operating costs under the proposed action and alternatives in section 4.5.2. Section 4.5.2 examines the estimated costs of installing flow scales and observer stations and the costs associated with additional observer coverage. Although not explicitly stated, the estimated costs of installation apply to those vessels that must reconfigure a previously installed flow scale or observer sampling station in order to accommodate the monitoring provisions of the GRS program. While the IRFA does not include a specific discussion of the costs associated with the prohibition on the mixing of hauls, the IRFA does provide an estimate of the overall costs of compliance with the monitoring provisions of the proposed rule, which specifically included the prohibition on the mixing of hauls. The estimates provided in the IRFA are based on the best available data.

The EA/RIR/IRFA prepared for the proposed rule notes in several locations that all hauls must be available for observer sampling and in Appendix 1 that each haul must be available for observer sampling. NMFS is aware that some vessels routinely mix hauls and may have costs associated with this prohibition that are different from costs experienced by those vessels that do not mix hauls. No independent data exist to determine the extent of these potential costs, but the primary effect of the haul mixing constraint could be reduced haul frequency.

Reference to an observer sampling station was made in numerous locations throughout the EA/RIR/IRFA for the proposed rule. The proposed rule clearly states the requirement for a single observer station and at no point in the EA/RIR/IRFA did NMFS suggest that multiple observer stations would be allowed. The effects and costs associated with requiring observer stations on these vessels are discussed in the analysis, and NMFS has used best available data to project potential costs associated with observer requirements and sampling stations. NMFS acknowledges that observer sampling station costs may differ between operations, but that the estimates provided constitute the best data available to the agency at this time to make these estimates.

NMFS agrees that the proposed limitation of an observer's sampling activities to no more than 9 hours per day is not explicitly discussed in the EA/RIR/IRFA. NMFS has reconsidered the effectiveness of constraining observers to a nine hour sampling day and has determined that this regulation would not provide sufficient improvement in observer working conditions and monitoring of the GRS to warrant its use. Thus, upon reconsideration, this measure has been modified in the final rule such that observers may be expected to sample up to, but not exceed, 12 hours per day. Non-AFA trawl C/Ps continue to be required to carry two observers to fish uninterrupted during each 24 hour period. The EA/RIR/IRFA provided information on the cost of NMFS approved scales in

section 4.5, noting that flow scale installation costs could range from $75,000 to $300,000 per vessel.

The Small Business Administration's Size Standards by Standard Industrial Classification Industry at 13 CFR 121.201 do not include a size standard for vessels that both harvest and process catch. In 1993, NMFS recognized the need for a determination as to whether the developing catcher processor fleet would be considered fish harvesters, and thereby governed by the annual receipts standard for catcher vessels, or fish processors, and thereby governed by the employee standard for seafood processors, for purposes of preparing analyses under the requirements of the Regulatory Flexibility Act. At that time, NMFS determined that it would apply the annual receipts standard to catcher/processors because a catcher/processor was *first and foremost a fish harvesting operation.* NMFS has consistently applied its determination that catcher/processors are to be considered fish harvesting operations for purposes of Regulatory Flexibility Act analyses since its 1993 determination and appropriately considered non-AFA trawl C/Ps as fish harvesters in the IRFA prepared for this action. Although NMFS currently is reviewing its small entity size classification for all catcher/processors in the U.S., NMFS will continue to use the annual receipts standard for catcher/processors until new guidance is adopted.

- The Small Business Administration Office of Advocacy requests that a new IRFA be submitted that includes a discussion of the impacts on small entities.

  NMFS has determined that a new IFRA for this action is not necessary. As noted in the previous response, NMFS applied the annual receipts standard to all catcher/processors directly regulated by the proposed rule. Under this standard, a business involved in both the harvesting and processing of seafood products is a small business if it has combined annual gross receipts for its fish harvesting operations that do not exceed $3.5 million. The IRFA states that although it is improbable that any of the non-AFA trawl C/Ps are small entities under this standard, NMFS concluded that it did not have the level of data necessary to make a statistically confident estimation. NMFS therefore considered the non-AFA trawl C/Ps to be small entities for purposes of this action and prepared an IRFA. NMFS has determined that the IRFA sufficiently discussed the impacts of the proposed rule on small entities, including all of the non-AFA trawl C/Ps directly regulated by this action.

- The time required to retool an HT-CP vessel to meet the GRS is limited if the rule is implemented at the beginning of 2006, and the proposed starting rate of 75 percent is costly and difficult for the sector to plan for, procure and install on a vessel by the start of the 2006 fishing season.

  NMFS agrees that the HT-CP sector will benefit from additional time to modify vessels to adapt to the GRS if it is implemented in year 2007 rather than 2006. NMFS also agrees that some vessels regulated by this action will find it easier to adjust to the GRS in the first year if it is implemented at 65 percent as opposed to 75 percent as specified in the proposed rule. The final rule for this action will implement the GRS in 2007 to provide ample time for the fishing operations in this sector to arrange to modify plants where needed to install flow scales, refit factories, or make other changes to vessels necessary to meet the requirements of this rule. In addition, starting the GRS at 65 percent in 2007 will further reduce the operational adjustments that these vessels will be required to make by staggering the GRS so that the 85 percent retention level is not applied until 2010 instead of 2008.

- Costs associated with prohibitions on the mixing of hauls, limitation to one flow scale and

conveyor line passing over a scale, hourly limit for individual observer sampling to 9 hours per day and sight line for observers to view fish conveyance systems would impose substantial construction costs and operating costs on vessels of this fleet.

The prohibition on mixing of hauls, limitations to one flow scale and conveyor line passing over a scale, and limitation on observer sampling time to 9 hours a day were all included in the proposed rule to promote compliance with the GRS and achieve the objective of proportionally increasing the retention of groundfish in this fishery. Each of these provisions are necessary to create an estimate of total and retained groundfish that is both enforceable, and provides an equitable standard for entities trying to meet the standard. Recent HT-CP sector enforcement experiences with halibut presorting demonstrate that several illegal practices exist for biasing observer samples in this fishery. NMFS is unable to implement an enforceable or equitably applied GRS without these provisions for reducing presorting. While the final rule would eliminate the restriction of observer sampling to nine hours ample opportunity for public notice and comment were provided for these regulatory clarification in accordance with the APA.

This comment asserted that the rule would prevent the use of multiple scales or multiple lines. NMFS disagrees, as the rule would only require that multiple scales not be used simultaneously and that all unsorted catch pass by a single location where the observer collects their samples. Both upstream and downstream from that location the vessel may bifurcate those lines in order to increase processing capacity or flexibility. This requirement would only produce a production-reducing constraint in the event that the speed with which fish could pass over the scale was a limiting factor. Given that NMFS approved flow scales are capable of weighing catch at rates of 60-80 tons per hour, NMFS does not believe that such a bottleneck would be created. NMFS also notes that all of the catcher/processors and motherships participating in the AFA pollock fishery are able to effectively pass fish across a single point in spite of the that factory throughput in these vessels is generally considerably greater than the throughput of any factory in the head and gut fleet. NMFS has however clarified language in 679.28 to reflect that vessels are not prohibited from having and fact using multiple flow scales, only prohibited from using more than one scale at a time.

- The costs associated with capital and operational changes are sufficient to prompt some regulated vessels to exit the sector.

  NMFS agrees that vessels, greater than or equal to 125 feet in the HT-CP sector will incur costs for flowscales and plant changes to comply with the GRS. The lack of any standardized industry data on variable costs, fixed costs, and earnings to evaluate the effects of the GRS proposed rule, eliminates any technically defensible estimate of how these operations will adjust to the GRS, or when they will enter and exit BSAI groundfish fisheries. Based on anecdotal information from the regulated sector, the EA/RIR/IRFA for the proposed rule notes that one or more vessels may exit the HT-CP sector if the vessel could be used more profitably elsewhere. However, many variables may factor into the entry and exit decisions of a fishing operation. For example: (1) prices of some non-pollock products produced by the HT-CP sector have increased in the last decade changing the relative value of decisions to retain and discard certain species in the mixed fishery catches; (2) a new vessel buyback program passed by Congress (Department of Commerce and Related Agencies Appropriations Act, 2005, Public Law 108-447) could encourage non-pollock groundfish catcher/processing vessels to remain active in this fleet until the details of the buyback program are known and bids for buyout are approved through a referendum; (3) the Council has been working on a plan to create one or more

HT-CP sector cooperatives that may increase the expected value of fishing history and returns to capital; and (4) prices of operational inputs such as fuel and labor also influence the profitability of vessels in this fleet. Each of these factors may alter economic incentives to remain active in or exit a fishery. Thus, NMFS is unable to conclude that any vessel will be forced into bankruptcy from this action.

- The magnitude of capital and operating costs do not conform to National Standard 7 and 9.

  NMFS disagrees that this final rule is inconsistent with National Standard 7 and/or National Standard 9. The amount of groundfish catch that is discarded annually by this sector would decrease by tens of thousands of metric tons under the GRS, reducing unnecessary waste of groundfish. In addition, the GRS would reduce waste of groundfish by providing an incentive to avoid catches with little commercial value. The public has an interest in reducing waste of living resources, particularly where no products are extracted, used or sold from these groundfish discards. National Standard 7 explicitly includes consideration of benefits and costs associated with public perceptions that often are not represented by formal markets. For example this consideration is not included in the observed prices of groundfish removed from the BSAI. The public interest in reducing the relatively high discard rates experienced within this sector is reflected in National standard 9 guidelines which convey specific national values and benefits for reduction of bycatch in the fisheries of the U.S. Congress, and other government agencies have created law and regulations to limit bycatch. A number of government agencies and some environmental interests have commented on this proposed rule attesting to the value that exists in implementing this bycatch reduction program. Bycatch is defined in Section. 3 of the Magnuson Stevens Fisheries Conservation and Management Act (MSA) 104-297 and used synonymously with the term "discards" in this final rule.

5.3.8 Number and Description of Affected Small Entities

The GRS program would apply only to non-AFA catcher/processors using trawl gear that are 125 ft (38.1m) LOA or greater. Each of the sixteen head-and-gut trawl catcher/processors listed in Table 51 with length greater than or equal to 125 ft, meet these criteria. Based on the best available data, it is improbable that any of these vessels are small entities. NMFS considers a small entity for a catcher/processors to be an operation having gross earnings of less than $3.5 million in a year. However, NMFS does not have the level of data and sufficient information on the corporate organization of these companies or data on the gross earnings from fishing operations of these companies to make a statistically confident estimation of the number of small entities affected by this proposed action. Therefore, an IRFA was prepared for the proposed rule, and a FRFA is provided here. A detailed description of the entities affected by the alternatives considered is provided in Sections 3.0 and 4.0 of this document.

Table 51. Active HT-CPs with Vessel Length, Flow Scale and Observer Sampling Station Status

VESSEL NAME	Length	Flow Scale	Observer Station
GOLDEN FLEECE	104	No	No
ALLIANCE	107	No	No
ALASKAN ROSE	124	No	No
OCEAN ALASKA (Beagle) *	107	No	Not Certified
ENTERPRISE	120	No	Not Certified
DEFENDER	123	Not Approved	Not Certified
VAERDAL	124	Not Approved	Not Certified
REBECCA IRENE	140	No	No
CAPE HORN	158	No	No
ALASKA RANGER	203	No	No
ALASKA WARRIOR	215	No	No
ALASKA SPIRIT	221	No	No
ALASKA VICTORY	227	No	No
ALASKA JURIS	238	No	No
LEGACY	132	Not Approved	Not Certified
CONSTELLATION	150	Not Approved	Not Certified
UNIMAK	185	Yes	Not Certified
ARICA	186	Yes	Not Certified
AMERICAN NO I	160	Yes	Yes
U.S. INTREPID	185	Yes	Yes
OCEAN PEACE	219	Yes	Yes
SEAFISHER	230	Yes	Yes
SEAFREEZE ALASKA	295	Yes	Yes
Vessels not affected by GRS---Less than 125' LOA			6
Vessels affected by GRS---Over 125' LOA			16

Affected vessels with approved flow scale and certified observer station	5
Affected vessels with approved flow scale but uncertified observer station	2
Affected vessels with unapproved flow scale and uncertified observer station	2
Affected vessels with no flow scale and no observer station	7

* The *Ocean Alaska* formerly the *Beagle* was not active in 2002, but is scheduled to be active in 2004. Three other HT-CPs longer than 125' LOA are currently permitted to operate in the BSAI, but none of these have been active since 1999. The Ocean Pease is identified in AFA as an "unlisted" AFA vessel. For the purpose of Amendment 79 it is part of the HT-CP sector. Source: Groundfish Forum, 2003, and BSAI Groundfish Buyback legislation..

Alternative 1 (No action/Status quo):

Alternative 1 would not change the way small entities are current affected by the present regulations. The RIR contains data and qualitative discussion on economic effects of the action on the HT-CP sector. The description of effects on the sector are inclusive of the information presented in the RIR on the profile of the industry and HT-CP sector, and also summarized in this section.

Alternatives 2, 3 and 4 (Establish a Minimum Groundfish Retention Standard):

Under Alternative 2 and Alternative 4, the GRS applies only to non-AFA trawl (HT-CP) catcher processors that are 125 ft. in length or greater. Sixteen head and gut trawl catcher processors meet these criteria. The RIR contains data and qualitative discussion on economic effects of the action on the HT-CP sector. The description of effects on the sector are inclusive of the information presented in the RIR profiling of the industry and HT-CP sector, and also summarized in this section. Under Alternative 3, the GRS applies to all catcher processors. However, catcher processors less than 125 ft. in length are exempt from the retention standard if their weekly production is less than 600 mt. Catch data show that weekly catches of vessels less than 125 ft. in length seldom exceed 600 mt. Assuming that all vessels smaller than 125 ft. would be exempt, the universe of regulated entities under Alternative 3 consists of 6 surimi/fillet trawl catch processors, 16 head and gut trawl catcher processors, 5 pot catcher processors and 24 longline catcher processors. The RIR contains data and qualitative discussion on economic effects of the action on the HT-CP sector. The description of effects on the sector are inclusive of the information presented in an RIR profiling the industry and HT-CP sector, and also summarized in this section.

NMFS data sources for considering the size of an entity are gross receipts from wholesale value of catches in Alaska. This information is the best available data, and is based on weekly production reports of landings and prices of processed product of HT-CP vessels in Alaska. Based upon this best available data, it is improbable that any of the vessels in the HT-CP sector are small entities. However it is not possible to say with complete confidence that no HT-CP fishing operation is 'small', for SBA purposes. NMFS does not have the level of data and information with which to make a statistically confident estimation. That is why an IRFA was prepared and a FRFA is included in this analysis.

Surimi/fillet trawl catcher processors are among the largest operations in the BSAI and clearly do not meet the definition of a small entity. However, three of the pot catcher processors and six of the longline catcher processors are believed to meet the criteria of small entities—however, the ownership characteristics of these vessels are not documented and it is unknown whether they meet all of the criteria

of small vessels as specified earlier. Thus Alternative 3 could directly regulate, and thereby affect up to nine vessels that may be small entities.

The preferred alternative 4 establishes a year-round GRS of 65 percent in 2007; 75 percent in 2008; 80 percent in 2009; and 85 percent in 2010. The Council previously recommended that the GRS be initiated in 2005, but amended its recommendation in June 2005 to implement the GRS in 2007. Each year, the GRS will be calculated as the round-weight equivalent of retained groundfish as a percent to total groundfish weight. The FMP Amendment for Amendment 79 was approved by the Secretary on August 31, 2005, and established the authority for improving general groundfish retention. The GRS regulations however, apply to trawl catcher processors operating in the BSAI that are not listed American Fisheries Act (AFA) catcher/processors at 50 CFR 679.4(l)(2)(I). Unlisted AFA catcher processing vessels and other non-AFA trawl catcher processors, are referred to as (HT-CPs) in this analysis. Each HT-CP that is 125 ft and greater LOA, will be subject to the enforcement of the GRS on an individual vessel basis. The GRS will be measured at the end of each year. All regulated vessels must comply with a number of monitoring requirements, including the use NOAA Fisheries-approved scales to determine total catch, observer coverage of every haul to verification that all fish are being weighed, and a prohibition on the mixing of hauls prior to sampling. Retained catch is calculated using NOAA Fisheries standard product recovery rates (PRRs). For each product/ species combination, retained tonnage is equal to product tonnage divided by the PRR.

5.3.9 Impacts on Regulated Small Entities

The specific economic impacts of the action and alternatives on both large and small entities in each sector of the groundfish fishery are addressed in detail in Section 4.0 of this document and are summarized here.

In general, the impacts of retaining the status quo (Alternative 1: No action/Status quo) will not have any affect on any regulated entities because it would not change the current management regulations or impose additional costs.

Alternatives 2, 3, and 4 would implement a groundfish retention standard (GRS). Data on gross earnings of these vessels are included in the RIR portion of this analysis in section 4.5.2 (Changes in Revenues and Operating Costs). Lack of data on the change in costs of the regulated vessels under alternatives 2 and 4 or their parent company and affiliates, and on changes in revenues of any given operation precludes more detailed analysis of the impacts on these entities. To provide projections of potential change in revenue and/or costs, analysts would need to know how each vessel would adjust fishing and processing operations to accommodate increased retention requirements. Choices among fishing targets, abundance of species, and distribution of species in mixed species catches, and many other variables would need to be known. Further data on opportunity costs of each operation, including alternative uses of fishing capacity, capital and costs of inputs by vessel size and type would be required to determine the change in cost for any operation or for the 16 vessel sector. This data is not available for this or for any groundfish sector operating in the North Pacific. Section 2 and 3 of this document list and provides a discussion of the types of operational and transitional adjustments that may occur as this fleet adjusts to the regulations.

Alternatives 2, 3 and 4, are expected to result in higher costs for the fishing industry, in particular for the affected vessels in the HT-CP sector, relative to the status quo/no action alternative. HT-CPs $\geq$ 125' may incur the costs and lost revenues associated with holding/processing, transporting, and transferring fish that are of relatively low value or "unmarketable." Moreover, under Alternative 3, seven HT-CPs $\geq$ 125' would incur the cost of acquiring, installing, maintaining, and operating NOAA Fisheries-approved scales and observer stations. At an average purchase cost of $50,000 per scale, each affected vessel would incur

a one-time cost of approximately $75,000, including installation. In addition, approximately 16 HT-CPs ≥ 125' would have to double their observer coverage at an approximate cost of $355 per additional deployment day or about $82,000 per year per vessel. Alternative 3 has effects on HT-CP sector costs similar to those for Alternative 2. In addition, pot and longline CPs ≥ 125' would incur the costs of installing scales and observer stations and increasing observer coverage. Because hopper scales rather than flow scales would be allowed, purchase and installation costs are estimated to be $25,000 per vessel. In 2001, P-CP vessels averaged 8 weeks per year on the water, while the L-CP fleet averaged 32 weeks. Therefore, annual average observer costs are estimated to increase by about $20,000 for each P-CP and $80,000 for each L-CP. Of the affected vessels under Alternative 3, six of the L-CPs and three of the P-CPs appear to meet the criteria defining small entities. Alternative 4 (preferred alternative) has effects on industry costs similar to those for Alternative 2 for enforcement and monitoring, and starting in 2008 is expected to affect costs and revenues associated with holding/processing, transporting, and transferring fish that are of relatively low value or even "unmarketable". See Section 4.5.3 for further details on the cost of monitoring and enforcement for each of the alternatives.

One public comment to the proposed rule identified a potential safety concern associated with the prohibition on mixing of hauls. A prohibition on mixing of hauls is necessary to maintain a sampling program that expands each haul with a specific sample. This prohibition is necessary for meeting the GRS objectives to improve retention of groundfish by monitoring each entity in a manner that encourages compliance across the sector. After consulting with staff of the USCG Vessel Safety Division, NMFS concludes that the prohibition on haul mixing will not decrease vessel safety compared with the status quo. NMFS recognizes that fishing is an inherently dangerous activity, particularly in the North Pacific, and believes that persons engaged in this business are aware of these risks. The proposed GRS program does not require persons to undertake dangerous actions beyond those they voluntarily undertake when they choose to fish in the North Pacific. Vessel masters and crew make choices on how best to accommodate safety concerns prior to and during fishing activity, including considerations about vessel stability. See section 3.4 in this analysis for additional discussion on safety implications for the GRS. Another requirement of the rule is to create an unobstructed line of sight for the Observer from the location that samples would be collected to the bin discharge point onto the conveyor belt. This provision is intended to minimize the biasing of observer samples by preventing removal of catch from a belt by anyone other than the observer. Changes to processing facilities may be required to accommodate these line of sight requirements. Most vessels in this sector modify processing plants every year or every other year to respond to changing market conditions. Some of these plant remodeling projects involve extensive replacement of processing equipment, or movement of plant bins, conveyors, freezing and work areas. Public comment on the proposed rule for the GRS from one member of the HT-CP sector regulated by this action notes that "some of the factory conversion costs associated with shipyard factory repairs and improvements will be included in a vessel's annual fixed costs associated with shipyard and factory repairs and improvements. Accounting for such costs will reduce the total costs associated with this program.." Thus, the costs for line of sight modifications may often be partially mitigated by the normal periodic investment in plant changes and upgrades that many of these vessels voluntarily undertake each year.

5.3.10 Recordkeeping and Reporting requirements

The proposed action would not change the overall reporting structure and recordkeeping requirements of the participants in the BSAI groundfish fisheries. Modifications to plants for accommodating and certifying scales required of HT-CP vessels regulated by this action, will result in reporting costs. Many of these costs are detailed in the preceding section 5.3.9, regarding impacts on regulated small entities, and included in the Draft support statement for the GRS proposed rule: Supporting Statement for Scale and Catch Weighing Requirements : June 2005 OMB Control No. 0648-0330.

All GRS regulated vessels are required to use NMFS-approved scales to determine the weight of total catch. In addition all vessels must obtain sufficient observer coverage to ensure each haul is observed for verification that all fish are weighed. Capital costs for scales on vessels that do not currently have them are estimated to be approximately $1.0 million. Approximately $0.5 million in annual observer costs are anticipated to support the monitoring program. Observer sampling stations are also required and capital costs for including these stations are anticipated to be approximately $70,000. Other reporting costs include scale tests and inspections, labor associated with producing scale outputs and recordkeeping for logging scale weights for total catch of each haul.

5.3.11 Relevant Federal Rules that may Duplicate, Overlap, or Conflict with the GRS

No duplication, overlap or conflict between this action and existing Federal rules has been identified.

5.3.12 Description of Significant Alternatives

The alternatives under consideration in this EA/RIR/FRFA are described in Section 1.2, and the reason for the action is presented in Section 1.1. The alternatives considered are summarized in Table 52.

Table 52. Summary of Alternatives Considered in this EA/RIR/FRFA

Alternatives	Alternative 1: No action/Status quo	Establish a minimum groundfish retention standard (GRS) in the BSAI These alternatives are characterized by a series of 8 components that comprise a wide array of potential alternatives. Two "representative bookend" alternatives (Alternatives 2 and 3) and a phased-in GRS (Alternative 4 - preferred alternative) are analyzed.		
		Alternative 2: Less restrictive GRS	Alternative 3: More restrictive GRS	Alternative 4: Phased-In GRS (Preferred Alternative)
Description	Current regulations regarding retention and discards and regulations that require 100 percent retention of pollock and Pacific cod would remain in effect. The MRA for pollock would continue to be enforced at any time during a fishing trip.	Establishes a GRS of 70 percent and applies it to non-AFA trawl catcher processors (HT-CPs) ≥125' as a fleet. Retention rate is determined at the end of the fishing year. Pollock MRA is increased to 35 percent for all non-AFA trawl catcher processors and compliance is determined on each vessel at the end of each offload. Approved scales, a certified observer sampling station, and observer coverage of every haul are used to measure and verify total catch. Retained catch is calculated using standard PRRs.	Establishes a GRS of 85 percent for January through May and 90 percent during remainder of the year. GRS applies to all catcher processors ≥125' as individual vessels. Catcher processors < 125' are exempt if weekly production < 600 mt. Current pollock MRA is maintained. Retention rate is determined at end of each week for each area and gear fished. Approved scales, a certified observer sampling station, and observer coverage of every haul are used to measure and verify total catch. Retained catch is calculated using standard PRRs.	The preferred alternative, establishes a year-round GRS of 65 percent in 2007; 75 percent in 2008; 80 percent in 2009; and 85 percent in 2010. The GRS applies to all HT-CPs ≥125' as individual vessel. Catcher processors < 125' are exempt. Compliance with the GRS is monitored and enforced at the end of year for each vessel. Approved scales, a certified observer sampling station, and observer coverage of every haul are used to measure and verify total catch. PSC is not included in the calculations for GRS compliance. Retained catch is calculated using existing NOAA Fisheries standard PRRs.

Alternative 2 minimizes potential adverse economic impacts on small entities by reducing the number of regulated entities impacted compared with Alternative 3. Under Alternative 2 and Alternative 4 the groundfish retention standard applies only to non-AFA trawl catcher processors (HT-CPs) that are 125 ft. in length or greater because this vessel length class accounts for most of the sectors discards. Under Alternative 3, the GRS applies to all catcher processors. However, catcher processors less than 125 ft. in length are exempt from the retention standard if their weekly production is less than 600 mt. Catch data show that weekly catches of vessels less than 125 ft. in length seldom exceed 600 mt.

5.3.13 Minimizing Impacts to Regulated Entities

The analysis for this action considered and rejected a number of options and alternatives that were each likely to have a greater negative impact on regulated entities than the preferred alternative. Alternative 3 would have imposed a GRS of 85 percent for January through May and 90 percent during remainder of the year. That GRS percent would have applied to all vessel sizes in the HT-CP sector, and for those greater than 125' Alternative 3 would be applied and enforced on an individual vessel basis. A greater number of HT-CP vessels would be required to increase retention of groundfish under this alternative. The preferred Alternative 4 also considered an option to apply the GRS to HT-CP vessels under 125 feet LOA. This component was rejected because it was determined to be costly for operations under 125 feet LOA, due to limited deck space and processing area. It was also rejected because HT-CP vessels under 125 feet LOA discard a small portion of total sector discards. Also after requesting public comment on a potential approach to minimizing the impacts of the GRS, the regulations for this rule (Alternative 4) provides additional relief to these entities, by both reducing and staggering the GRS from the proposed rule level of 75 to 65 percent and from the implementing year of 2006 to 2007. The GRS is staggered to further provide a gradual increase of the GRS up to 85 percent in 2010 as opposed to imposing it at 85% in the first year for alternative 3. Following public comment, the regulations regarding observer sampling times

were also relaxed to provide the affected entities with additional periods in a 12 hour work day to fish. The proposed rule restrained each observer to a sampling work schedule of nine hours in a 12 hour work day. The final rule allows observers to sample over the full 12 hour period, reducing the need for additional observers, or staging trawl operations only during the 9 hour observer sampling period.

5.4 Marine Mammal Protection Act (MMPA)

The MMPA of 1992 (16 U.S.C. 1361 et seq.), as amended through 1996, establishes a federal responsibility to conserve marine mammals with management responsibility for cetaceans (whales) and pinnipeds (seals) other than walrus vested with NOAA Fisheries. The U.S. Fish and Wildlife Service is responsible for all other marine mammals in Alaska including sea otters, walrus, and polar bear. Congress found that certain species and population stocks of marine mammals are or may be in danger of depletion due to human activities. Congress also declared that marine mammals are resources of great international significance and should be protected and encouraged to develop to the greatest extent feasible commensurate with sound policies of resource management.

Species listed under the Endangered Species Act present in the management area were listed in the previous section. Marine mammals not listed under the ESA that may be present in the BSAI management area include cetaceans, [minke whale (*Balaenoptera acutorostrata*), killer whale (*Orcinus orca*), Dall's porpoise *(Phocoenoides dalli*), harbor porpoise (*Phocoena phocoena*), Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), and the beaked whales (e.g., *Berardius bairdii* and *Mesoplodon* spp.)] as well as pinnipeds [Pacific harbor seal (*Phoca vitulina*), northern fur seal (*Callorhinus ursinus*), Pacific walrus (*Odobenus rosmarus*), spotted seal (*Phoca largha*), bearded seal (*Erignathus barbatus*), ringed sea (*Phoca hispida*) and ringed seal (*Phoca fasciata*)], and the sea otter (*Enhydra lutris*).

The primary management objective of the MMPA is to maintain the health and stability of the marine ecosystem, with a goal of obtaining an optimum sustainable population of marine mammals within the carrying capacity of the habitat. The MMPA is intended to work in concert with the provisions of the Endangered Species Act (Section 3.1.7). The Secretary is required to give full consideration to all factors regarding regulations applicable to the "take" of marine mammals, including the conservation, development, and utilization of fishery resources, and the economic and technological feasibility of implementing the regulations. If a fishery affects a marine mammal population, then the potential impacts of the fishery must be analyzed in the appropriate EA or EIS, and the Council or NOAA Fisheries may be requested to consider regulations to mitigate adverse impacts. The alternative actions considered are intended to reduce discards in groundfish fisheries in the BSAI and will not change TAC for any species in the BSAI. No adverse impacts on marine mammals are anticipated as a result of implementing the alternatives under consideration.

5.5 Coastal Zone Management Act

Implementation of any of the alternative actions considered will be conducted in a manner consistent, to the maximum extent practicable, with the Alaska Coastal Management Program within the meaning of Section 30(c)(1) of the Coastal Zone Management Act of 1972 and its implementing regulations.

5.6 Executive Order 12898

Executive Order 12898 focuses on environmental justice in relation to minority populations and low-income populations. The U.S Environmental Protection Agency (EPA) defines environmental justice as the "fair treatment for people of all races, cultures, and incomes, regarding the development of

environmental laws, regulations, and policies." This executive order was spurred by the growing need to address the impacts of environmental pollution on particular segments of society. The E.O. requires each Federal agency to achieve environmental justice by addressing "disproportionately high and adverse human health and environmental effects on minority and low-income populations." The EPA responded by developing an Environmental Justice Strategy that focuses the agency's efforts in addressing these concerns.

In order to determine whether environmental justice concerns exist, the demographics of the affected area should be examined to determine whether minority populations and low-income populations are present, and if so, a determination must be made as to whether implementation of the alternatives may cause disproportionately high and adverse human health or environmental effects on these populations. Environmental justice concerns typically embody pollution and other environmental health issues, but the EPA has stated that addressing environmental justice concerns is consistent with NEPA and thus all Federal agencies are required to identify and address these issues.

Many of the coastal communities in Alaska and the Pacific Northwest participate in the Alaska groundfish fisheries in one way or another, whether it be as sites for shore-side processors or support businesses or as the harbor/home port of fishermen and at-sea processing workers. Major ports in Alaska that process groundfish catch from the BSAI include Dutch Harbor, Akutan, Sand Point, King Cove and Kodiak. Additionally, the Seattle area in Washington is home port to many catcher and catcher processor vessels operating in these fisheries. A discussion of the relative importance of fisheries to these regions and communities and profiles of their populations are included in the 2004 PSEIS (NMFS 2004). Overall, the population structures of these regions vary considerably, but in the Aleutian and Kodiak regions there are predominant Alaska Native and other minority populations. Kodiak is about 13 percent Alaska Native. The predominant minority in the city and its surroundings is Asian and Pacific Islanders, followed by Alaska Natives and African-Americans. In King Cove and Sand Point, Alaska Natives make up about 48 percent and 44 percent of the populations, respectively, with Asian and Pacific Islanders the next largest minority population.

While Washington and Oregon's relationship to the Alaska groundfish fisheries is more involved than some regions of Alaska (in terms of absolute number of jobs), it could be argued that the fisheries are less important or vital than for the Alaskan communities considered. For example, the size of Seattle dilutes the overall impact of the Alaska groundfish fishery jobs, whereas in Alaskan communities such jobs represent a much greater proportion of the total employment in the community. Thus, while nearly all of the head and gut trawl catcher processors affected by the alternative actions considered are home ported in Seattle, any impacts on this community's minority or low-income populations due to changes in the operations of these vessels will be minimal.

None of the alternative actions considered appear to have any significant individual or cumulative environmental or human health effects. Thus, no minority population or low-income population (or any other distinct population) would be disproportionately affected in this regard.

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7.0 List of Agencies and Agency Personnel Contacted

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Appendix 1: Costs of Marine Scales for At-Sea Weighing of Catch

Enforcement concerns require that vessels subject to a GRS regulation use a NOAA Fisheries-approved scale to estimate total catch weight. The scale requirement for total catch weight measurements would necessitate the installation of a flow scale in a processor's sorting belt. It would also necessitate the purchase of a motion compensated platform scale. A platform scale is used for daily measurements of test weight material (fish) in order to verify the accuracy of the total catch weight flow scale. Other requirements for scale weight measurements of total catch include:

- Daily testing of the platform scale which necessitates having certified test weights aboard; and
- At least one observer on board at all times. The observer can provide an important compliance monitoring role by periodically testing the accuracy of the scale and monitoring use of the scale when they are on duty. Further, each haul should be observed to ensure that all catch is weighed. This would require two observers to be onboard unless a vessel is willing to reduce the number of hauls to a level that a single observer could monitor. Other means may exist to ensure that all catch is weighed, but these alternative means have not yet been fully assessed.

According to NOAA Fisheries (Alan Kinsolving, NOAA Fisheries, personal communication with Northern Economics, January 2003), the HT-CP fleet had the following characteristics at the end of 2002:
23 active HT-CP vessels
16 HT-CP vessels are ≥125' LOA
10 HT-CP vessels ≥125' currently have NOAA Fisheries-approved scales
6 HT-CP vessels ≥125' do not have approved scales
7 HT-CP vessels are < 125'
0 HT-CP vessels < 125' currently have approved scales
3 HT-CP vessels < 125' had approved scales installed but removed them

Because none of the vessels < 125' have scales and 63 percent of the vessels ≥125' have scales, the Council indicated that it would consider requiring approved scales on HT-CP vessels ≥125' and exempting vessels < 125' from the scale requirement.

Alternative requirements could be considered for vessels < 125' that would not significantly undermine the objective of a groundfish retention standard. For example, these vessels could be exempt from scale requirements if their production remains at a low level. Setting a maximum production limit also would allow NOAA Fisheries to project with some certainty the total volume of catch that is accounted for with scales and observers.

Cost of Purchase
At this time, two companies - Marel and Skanvaegt International - produce scales that have been approved by NOAA Fisheries for weighing total catch aboard AFA-eligible catcher processors and catcher processors participating in the CDQ fisheries. According to NOAA Fisheries (Alan Kinsolving, NOAA Fisheries, personal communication, January 2003), nearly all of the new scales installed on catcher processors over the last couple years have been manufactured by Marel.

The distributor of Marel marine scales in Seattle is Gunnar Electronics. A representative of Gunnar Electronics estimated the current price of the scale that has been installed on catcher processors to be approximately $50,000. This figure is consistent with the estimate reported by NOAA Fisheries. The representative noted that there is a connection charge of about $1,500, and a recommended spare parts

package costs an additional $7,500.

Cost of Installation

As noted previously by NOAA Fisheries, the installation cost is the highly variable. This cost depends largely on the configuration of the vessel. A representative of Fishing Company of Alaska estimated that it would cost about $25,000 per vessel to have a scale installed on the firm's boats. The configuration of two of FCA's vessels (former tuna seiners) may present problems that raise the per boat cost by $10,000. While it is important to note that FCA has not yet developed a formal cost estimate, these "best guesses" are in accord with the statement by NOAA Fisheries that installation costs will be around $30,000 in most cases.

To further investigate installation costs, a representative of Carnitech U.S., Inc. was contacted. This firm installed all of the Marel scales currently used by catcher processors. The representative affirmed that it is difficult to generalize about installation costs due to differences among boats. He noted that a relatively easy installation would cost about $5,000, whereas an installation requiring considerable reconfiguration of the vessel could cost upwards to $100,000. On average, costs have been in the range of $20,000 to $30,000. The representative further noted that vessel size is not necessarily an important factor in determining costs – the cost of installing scales on smaller vessels can be less than those for larger vessels, as less equipment may have to be moved.

Cost of Maintenance

The representative of Gunnar Electronics confirmed the observation by NOAA Fisheries that the estimated annual cost of maintenance for the scales currently installed on catcher processors has been approximately $1,500 to $2,000. He noted that costs could increase if vessels increase their level of fishing activity.

With respect to the question of whether maintenance costs depend on the type of fish weighed, the Gunnar Electronics representative indicated that maintenance may be higher when "bottom-feeders" (e.g., flatfish) are weighed, as sand and other substrate shed from the fish may foul certain parts of the scale. For example, the conveyor belt may have to be replaced more frequently when such fish are weighed. This statement is in accordance with information provided by NOAA Fisheries.

The Gunnar Electronics representative noted that few of the catcher processors that have purchased scales from his firm have lost fishing time because of a scale malfunction. NOAA Fisheries reported that there has been an average of one scale failure per year in the pollock fleet that resulted in lost fishing days. When a malfunction occurs Gunnar Electronics typically sends a representative to Dutch Harbor to undertake the repairs.

Appendix 2: Summary of Issues Regarding Volumetric Estimates of Total Catch Weight in Multi-Species Fisheries

Methods for applied use of bin volumetric measurement techniques are described in the North Pacific Groundfish Observer Manual. In addition, regulations for the use of certified bins for volumetric estimates of catch weight are at 50 CFR 679.28 (e).

Two bin volumetric studies have been carried out in the North Pacific. Dorn et al. (1999)[1] and Dorn et al. (1995)[2] attempted to (1) determine the accuracy of a flow scale and evaluate test procedures for monitoring flow scale performance in production fisheries, (2) evaluate the accuracy of volume-based methods of catch weight determination using observer cod end and bin volume measurements by comparing estimates obtained from these procedures with weight estimates obtained from a flow scale, (3) evaluate the use of ultrasonic bin sensors for determining fish volumes in holding bins, (4) obtain accurate density factors to use in volume-to-weight conversions for walleye pollock catches, and (5) evaluate current and alternative methods used by observers to determine density.

The findings of these two studies raise important issues regarding the use of bin volumetric methods for estimating haul weights in non-pollock fisheries.[3]

Variance on estimates of density factors

Perhaps the most significant source of uncertainty in transferring the findings of pollock-based studies of bin volumetric estimates of total catch is in establishing density factors for a mixed species application. Density is the relationship between the weight and volume of a material, and it is this weight/volume relationship that is used to convert observations of bin volumes to a weight of groundfish. Establishing density factors in a mixed species application is hampered by uncertainty and variability in internal void space of both the basket samples and the loaded bins of multiple species of different sizes and shapes. Little is known about how the highly heterogenous morphology of the numerous species of flatfish, cod, pelagic species, shellfish, and other miscellaneous species will stack, flow, and stratify in large and small bins, and how well the basket sampling process will reproduce useful information about how multi-species fish will compress in a much larger container. Some fin fish species have swim bladders, which add to the uncertainty of how the material will compress. Because the application of volumetric methods to flatfish trawl operations would involve smaller vessels, which generally have a less stable deck and less deck space than pollock catcher processors, it is anticipated that more samples will be required in field tests.

Given these sampling issues, it is possible that field tests will be unable to generate a density factor table that can be applied to a wide variety of operations. It may be likely that routine basket sampling will need to occur during the transfer of each haul to bins in order for bin volumetric methods to provide a sufficient

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[1] Dorn, M., S. Gaichas, S. Fitzgerald and S. Bibb, 1999. Measuring total catch at sea: use of a motion-compensated flow scale to evaluate observer volumetric methods. North American Journal of Fisheries Management 17: 9999-1016.

[2] Dorn, M., S. Fitzgerald, M. Guttormsen, and M Loefflad, 1995. An evaluation of North Pacific groundfish observer program methods of haul weight estimation. NOAA Technical Memorandum NMFS-AFSF-56.

[3] Certified motion compensated flow scales have largely supplanted the use of volumetric estimates of total catch in the BSAI pollock fishery.

level of precision and accuracy to be an acceptable option for the head and gut trawl fishery. Dorn et al. (1999:1014) note that their conclusions regarding pollock may not be transferrable to other species because the they investigated a single-species application with an experienced crew on large vessels. The primary purpose of their study was to estimate total weights rather than bycatch. The researchers also note that applications to other fisheries are dependent on the use of routine basket weight sampling.

Additional potential sources of error or bias in measurement of total and retained catch.
Aside from the sources of error in the use of basket sampling for determination of haul densities, there would be additional variability associated with 1) differences between observer and crew observations, 2) differences among vessels, 3) container size and shape, 4) the elapsed time within the bin for settling and stratification of fish, and 5) the dewatered state of fish in bins. Finally, there could be strategic or systematic bias in sampling if vessel employees, instead of trained observers, are taking samples.

Observer requirements/auditing of bin volumetric measurements of hauls
If retention standards are to represent any more than a voluntary guideline, observers will need make basket sampling and bin-volumetric measures over a 24 hour period or for the duration of daily hauls. Since a single observer cannot be available for this duration, NOAA Fisheries anticipates that this sampling method would necessitate the deployment of two full-time observers on each vessel. Flow scales may be operated without two observers, as continuous recording of weight observations, scale calibrations, and cumulative running total results in an effective audit of information. There are potential options for video monitoring of these operations, but these options have not yet been fully evaluated.

Establishing a target level of accuracy and precision
A key starting point for a quantitative assessment of a measurement technique is to define the target in terms of the parameters being estimated and the level of precision desired. While the goal under a GRS regulation is to estimate retained catch, there are a few questions that need to be addressed. Among them is the time interval over which the retention rate is calculated. It could be daily, offload-to-offload, seasonally, or annually. A second question is the level of accuracy and precision of the retention rate estimate required to enforce a retention standard. At this time, NOAA Fisheries Enforcement does not know the level of accuracy and precision required.

Accessibility issues
The use of bin volumetric methods has been raised as a potential alternative for vessels under 125'. Concerns regarding the use of flow scales on small vessels include the direct costs, space requirements, and constraints on crew and product movement on deck. However, on many smaller vessels on-deck bins are often located in cramped spaces with insufficient lighting, which can hinder efforts to obtain a representative sample of the surface height. The costs to industry of rectifying these problems may be comparable to the costs of installing flow scales.

Time horizons for additional assessments
According to Dorn, et..al. (1999), an extended period may be required to further assess the use of bin volumetric methods: "Another alternative is to construct density samplers (for bin volumetric measurements) and deploy them with observers in many different trawl fisheries. The data collected could allow NOAA Fisheries or another management agency to produce a table of densities to be used for volumetric catch estimates in any trawl fishery. However this could take several years or longer during which time observers will continue to use inaccurate basket density estimates to obtain catch weights." Before any further consideration of the use of bin volumetric methods to estimate total catch/bycatch in BSAI fisheries, NOAA Fisheries recommends that the Council consider a field research program that includes at least the following elements:

1. Determine the target level of accuracy required to meet Council retention standard goals through collaboration with enforcement personnel and fishery managers.
2. Expand fieldwork on bin-volumetrics and flow scale performance on vessels beyond pollock and whiting fisheries to:
    a. Determine sampling characteristics and variables that may effect densities of mixed species hauls in the field
    b. Determine a optimal density sampling container for mixed species applications
    c. Determine if a density table can be developed that accounts for species mix, composition and other factors or routine use of density sampling on a vessel to achieve sufficient precision and accuracy.
3. Conduct field work on bin volumetric-based haul weights with chartered vessels applying many of the same sampling approaches used in previous analyses, or,
4. Assess experimental design options for deploying density samplers to a sample of vessels throughout the target fleets to evaluate the feasibility of density sampling and number of platforms involved to generate samples and the duration and cost of the study.
5. Evaluate the logistics and costs of volumetric-based haul weight estimates through field tests.
6. Determine the enforcement implications of using bin volumetrics versus flow scales.

Enforcing a GRS on a vessel by vessel basis is complicated by the fact that accurate estimates of total catch are required, as are accurate estimates of the weight of fish used for products. For example, if the GRS is set at 85 percent but the accuracy of individual vessel estimates of retention is +/- 15 percent, only vessels that retain less than 70 percent will face a significant risk of enforcement action in the short-run. The following discussion examines the source of the lack of accuracy and why NOAA Fisheries is satisfied with its estimations of total annual catch amounts in spite of these errors.

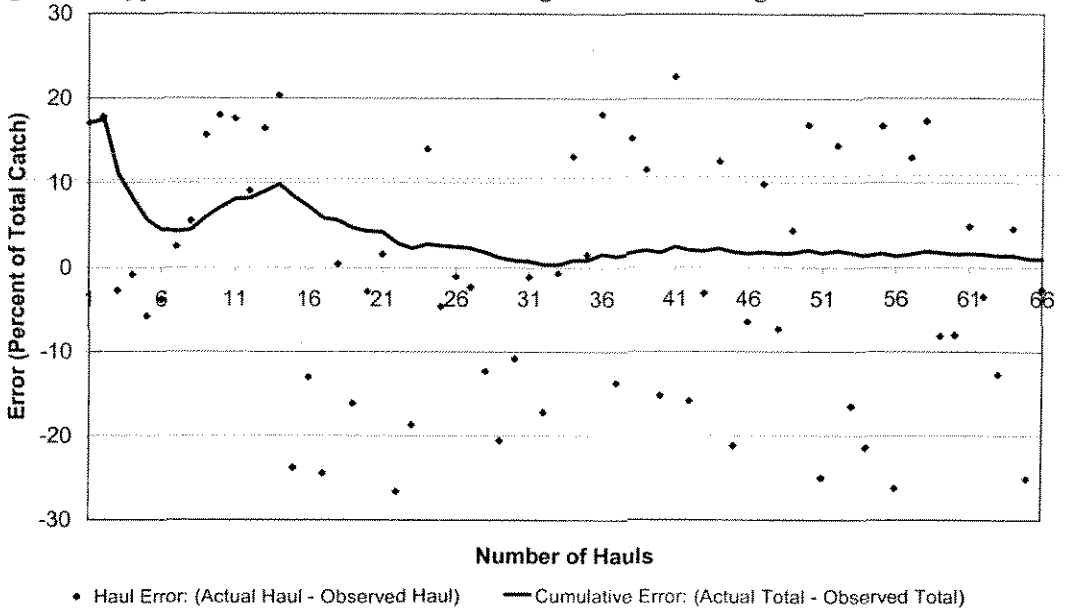
Currently, estimates of the total weight of catch are calculated with the use of observer estimates and estimates supplied by vessel operators. In most cases the estimates are based on calculation using the approximate volume of fish brought on board multiplied by a density factor. For example, the observer may estimate that a net (codend) of yellowfin sole brought on board has a volume of 20,000 m^3. By applying a standard density factor[4] for yellowfin sole of 0.889mt/m^3, the observer estimates the total catch in the net to be 17.78 mt. This estimate lacks the accuracy that could be attained if the fish were weighed on an approved scale. The lack of accuracy comes from both the estimate of volume and the density factor used. For example, suppose the true volume of the codend was 3 percent greater than what the observer recorded and the actual density of the fish in the net was 0.925 because of a larger than expected proportion of pollock (which are more dense than yellowfin sole). Using the true values, the actual weight of the catch is 19.06 mt, and the observer's estimate is in error by 7.0 percent. If the error is random, there is a high likelihood that offsetting errors will be made over subsequent hauls, and over time the estimate of total catch will be reasonably close to the true value.

NOAA Fisheries relies on the statistical axiom known as the "rule of large numbers" to be confident its estimates of total fleet-wide catches are accurate. In simple terms, the rule states that the greater the number of observations in a sample, the more accurate the estimate. However, the rule of large numbers does not apply to a single observer's estimates over a short period of time (e.g., one week), and the accuracy necessary to prosecute violations of a GRS does not exist.

[4] This density factor is hypothetical and should not be taken as the correct factor.

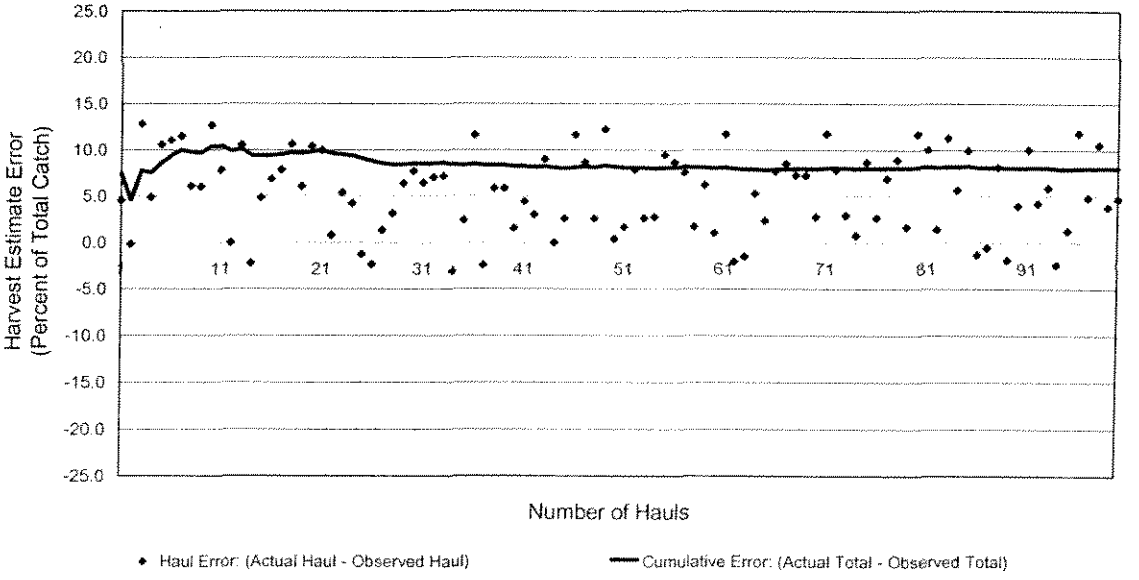
Figure 1 provides a hypothetical illustration of the "rule of large numbers." If the errors are random and enough hauls are sampled with unbiased estimates, the cumulative error will approach zero.

Figure 1. Hypothetical Scenario Demonstrating the "Rule of Large Numbers"



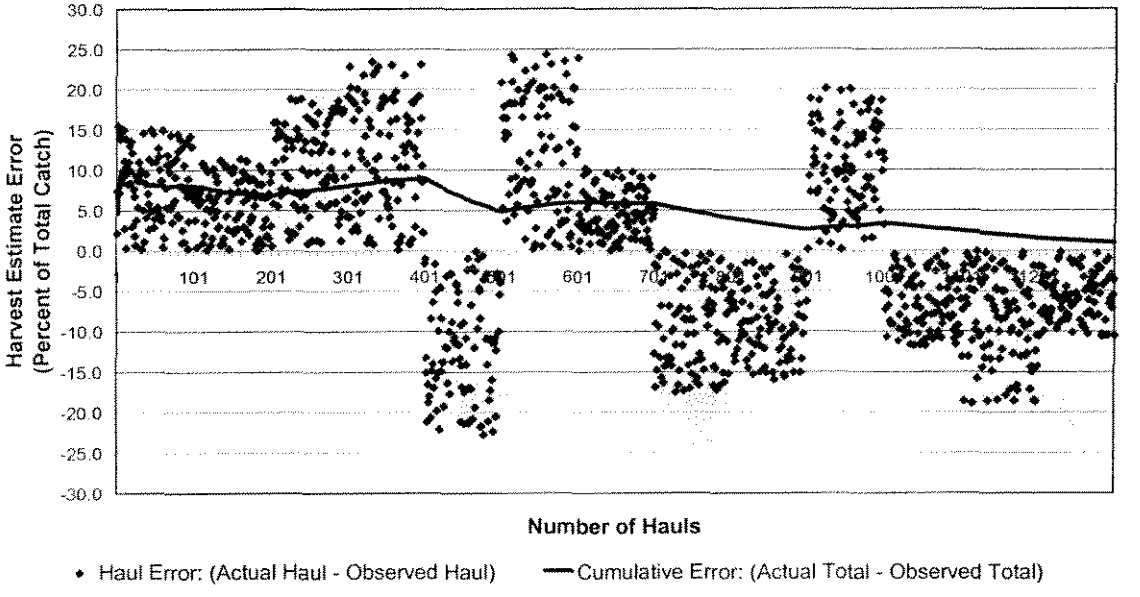
The hypothetical example above assumes that individual observers are not systematically biased in their estimate of the volume or the density of the individual hauls. If an observer is systematically biased, the "rule of large numbers" no longer holds, and catch estimates will be biased in the direction of the observer's biases. Figure 2 shows the outcome when an observer is positively biased (i.e., generally overestimates the catch level).

Figure 2. Hypothetical Scenario Demonstrating the Effect of Systematic Bias



The "rule of large numbers" can overcome the systematic bias of individual observers if: 1) observers are rotated amongst the fishing fleet, 2) the population of observers is not systematically biased, and 3) the measurement period (i.e., the number of observations) is of sufficient length. Figure 3 shows how these conditions overcome individual systemic bias. As with the hypothetical situation presented in Figure 2, it is assumed that error is randomly systematically biased in a generally positive or negative way. We further assume that each individual observer observes several hauls per day and stays on the boat for one multi-day trip. After each trip, the observer is replaced by another observer is who also randomly biased to over or under estimate catch volume. Every trip is of the same length. Figure 3 demonstrates that while individual observers are biased that the "rule of large numbers" dominates as long as the individual bias is uniformly random. Figure 3 also demonstrates the importance of having enough observers to overcome any small sample characteristics[5]. For example, if estimates of total weight were based on only the first 4 observers (hauls 1 through 400), then the overall catch estimates would be biased upward. It is only with a larger number of observers that cumulative error moves substantially towards zero.

Figure 3. *Hypothetical Scenario Demonstrating how the "Rule of Large Numbers" may Overcome* Systematic Bias



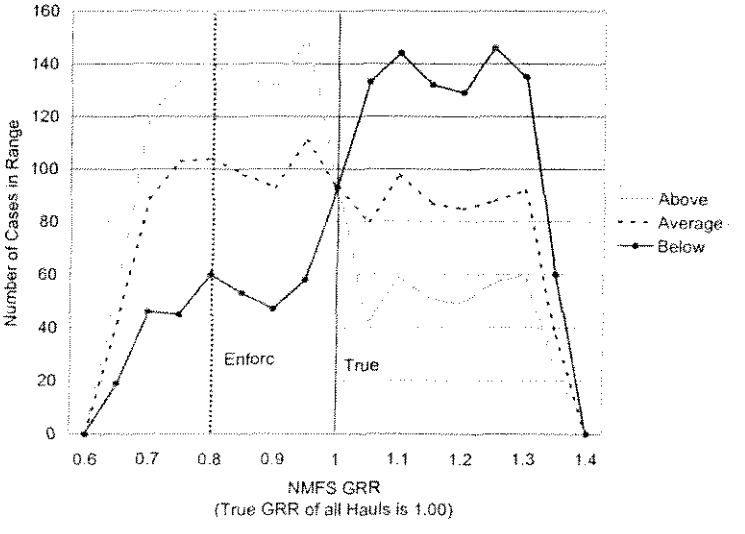
[5] If the population of observers is dominated by individuals who would tend to be biased in a given direction then the "rule of large numbers" does not hold.

Appendix 3: Product Recovery Rate Variability and GRS Enforcement Issues

Enforcing a GRS on individual vessels or vessel pools requires accurate estimates of total catch weight and the weight of fish used for products. Equally important are accurate estimates of the product recovery rates (PRR) for species and product combinations. The PRR represents that proportion of an organism that is used for product. Recovery rates are used for estimating the whole weight (i.e., round weight equivalent) of retained catch from the tonnage of product produced.

A wide range of recovery rates are used to describe the utilization of different species in a variety of products. Regulations establish standard product types and standard PRRs. The size of the fish, the area and the season of the year, the experience of the processing crew, and other factors may have a bearing on the recovery rate of a particular species and product type. It is assumed that a standard PRR is an average for a given species/product combination (e.g, pollock fillets). If this assumption is correct and the numbers are accurate, the "rule of large numbers" (Appendix 2) suggests that standard PRRs can provide a basis for calculating accurate retention rates that can be used for GRS compliance and enforcement. However, if the numbers are inaccurate or a vessel processes a large number of fish that have different PRRs (because of size differences or other factors), calculated retention rates may be erroneous. The result could be "false positive" GRS violations. Figure 1 provides a hypothetical example for a processor making kirimi from yellowfin sole. Kirimi producers cut one 3"-steak per fish, regardless of fish size. Consequently, kirimi producers have lower product recovery rates from larger fish and higher product recovery rates from smaller fish. The standard PRR assumes a 48 percent recovery rate from every fish. Thus, the standard PRR is going to overestimate the round weight of smaller fish and underestimate the round weight of larger fish. Since the retention rate is calculated by dividing the round weight equivalent of retained catch by total groundfish catch weight, use of the standard PRR will result in an overestimate of the retention of smaller fish.

Figure 1. Variance in GRR with Kirimi Production Using Different Fish Sizes



The hypothetical example assumes that every ground fish the processor catches is used. Thus, if an accurate PRR is used for every fish, the estimated retained round weight equivalent would equal the total

catch weight and the retention rate would be 100 percent.[5] It is also assumed that the actual PRR is known for each of the 1,300 groundfish hauls simulated. With these assumptions, the NOAA Fisheries standard PRR would overestimate the groundfish retention rate (GRR) for about half of the hauls and underestimate the retention rate for the other half. Figure 1 shows the estimated GRR for three haul series. The first series shows uniform variation in the size of the fish. The other two series show the estimated retention rate when a processor catches large numbers of smaller or larger fish. The dotted line indicates a GRS of 80 percent.

If the NOAA Fisheries standard PRR was the same as the actual PRR, there would be no violations of the GRS. If the actual PRR varies uniformly around the NOAA Fisheries standard PRR, some hauls would fall below the GRS even if their actual retention rate was 100 percent. These hauls are located in Figure 1 under the "Average" curve and to the left of the GRS. If the actual PRR is generally lower (or if the haul caught a larger average fish), the NOAA Fisheries standard PRR would underestimate the retention rate and a higher percentage of the hauls would fall below the GRS. This number is the area of the curve under the "Above" curve and to the left of the GRS. If the actual PRR is generally higher (or if the haul caught a smaller average fish), the NOAA Fisheries standard PRR would overestimate the retention rate. Some hauls might still falsely fall below the GRS, but the number would be far less than under the two previous scenarios.

If PRRs vary with fish size, populations changes over time can lead to changes in average PRRs. For example, Figure 2 illustrates how the distribution and size of the flathead sole population changed over the last 20 years. The average fish size and total population have increased since the early 1980's. Assume data from 1997-2001 were used to generate a PRR and the population structure shifted to something resembling the average for the 1987-1991 period. The revised PRR would be lower than the current standard PRR. This change would cause the round weight of catch to be underestimated and potentially lead to a false indication that the GRS had been violated.

Figure 2. Flathead Sole Population Distribution (Five Year Averages)

Table 1 further illustrates how using an average PRR could lead to a "false positive" GRS violation. For each species listed below, the analysis used the standard dressed/head-off PRR and PRR ranges to

[5] If the long-term average actual PRR equaled 0.48 and the processor kept and used every fish, the calculated retention rate using the NOAA Fisheries standard PRR would also be 100 percent.

generate a random uniform PRR distribution (1000 draws).[6] The table shows that, as the true groundfish retention rate (GRR) approaches the GRS, the natural variation in the PRR gives a false indication that the GRS has been violated. For example, if a processor catching Atka mackerel had a true GRR of 100 percent, we would expect no "false positive" violations of an 80 percent GRS (using the standard PRR). However, if a processor had a true GRR of 85 percent, 13.7 percent of hauls would indicate "false positive" violations the GRS. The rate of violations per species varies with the random draws and with the amount of variation in the standard PRRs. For example, yellowfin sole has the widest standard PRR variation among the target species listed, and violations begin appearing at the 90 percent level.

Table 1. Simulated False GRS Violations as a Percentage of Hauls **(GRS=80 Percent)**

True Groundfish Retention Rate	**100%**	**95%**	**90%**	**85%**	**80%**	**Average Retention**
HT-CP Sector Target	**False GRS Violations as a Percentage of Hauls**					**1999-2001**
Atka Mackerel	0.0	0.0	0.0	13.7	44.9	84.2
Pacific Cod	0.0	0.0	0.0	16.8	37.2	63.7
Rockfish	0.0	0.0	0.0	17.0	42.2	91.1
Rock Sole	0.0	0.0	0.0	10.3	41.7	58.5
Yellowfin Sole	0.0	0.0	8.0	21.5	38.5	68.4

Based on the average retention of each species from 1999-2001, producers focusing on rockfish would probably have the least problem with "false positive" GRS violations because their retention rate average of 91.1 percent is well above most potential standards. Table 0 shows that with a 90 percent GRR rockfish producers would experience no false violations on a hypothetical 80 percent GRS. However, rock sole producers might experience more difficulty with the same standard because they would have to significantly raise their retention rates (i.e., by 53 percent) to a 90 percent retention rate in order to avoid the potential of false violations. Yellowfin producers would have to raise their retention rates by nearly 40 percent (i.e., to a 95 percent retention level) in order to avoid the possibility of false violations with an 80 percent GRS.

Obviously, standard PRRs must be accurate if they are to be used in calculations for GRS compliance and enforcement. This analysis shows that, if actual PRRs vary widely for a given species and product combination, enforcement of a GRS becomes more problematic.

Management Options

If the Council decides to adopt a GRS, there are several management options that may help mitigate the problems discussed above. These options, which are not mutually exclusive, include:

- *Phase-In Enforcement of a GRS* - Under this option, enforcement of a GRS would be phased-in in order to allow enforcement agencies and processors time to adapt to the management measure. During the phase-in period processors that violated the GRS would receive warnings indicating by how much they violated the standard. Enforcement agencies could also review PRR variance and processor GRR variance during this period.
- *PRR Research* - Enforcement agencies could undertake a review of standard PRRs and PRR variation. Enforcement of the GRS would be delayed until this review had determined the level to which PRRs vary and explored the issues raised above.
- *Adaptation of Enforcement Standards* - Enforcement standards could be adapted so that only violations outside the 99 percent confidence interval were pursued. Violations within the 99 percent confidence interval would be followed-up by the issuance of a warning.

[6]This example uses the average PRRs and ranges from Crapo et al. "Recoveries and Yields from Pacific Fish and Shellfish." Marine Advisory Bulletin No. 37, 1998 .

This option requires knowledge of the variation in PRRs.

- *Establishment of a Minimum Acceptable PRR* - See the discussion in Section 4.4.2.4.8 of this document.

Finding of No Significant Impact for the Environmental Assessment (EA) prepared for the Final Rule to Implement a Groundfish Retention Standard (GRS)

National Marine Fisheries Service

National Oceanic and Atmospheric Administration Administrative Order 216-6 (NOA 216-6) (May 20, 1999) contains criteria for determining the significance of the impacts of a proposed action. In addition, the Council on Environmental Quality (CEQ) regulations at 40 C.F.R. 1508.27 state that the significance of an action should be analyzed both in terms of "context" and "intensity." Each criterion listed below is relevant in making a finding of no significant impact and has been considered individually, as well as in combination with the others. The significance of this action is analyzed based on the NAO 216-6 criteria and CEQ's context and intensity criteria.

1) Can the proposed action reasonably be expected to jeopardize the sustainability of any target species that may be affected by the action?

Response: The GRS is intended to address requirements under the Magnuson Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) by improving groundfish retention and utilization while maintaining economic viability in the groundfish fisheries. The preferred alternative would require all non-AFA trawl catcher processors equal to or greater than 125 feet length overall (non-AFA trawl catcher processors) to gradually increase groundfish retention in the Bering Sea and Aleutian Islands management area (BSAI).

Over the past several years groundfish retention rates of the non-AFA trawl catcher processor sector have increased substantially without increasing overall total catch. In 2001, the retention rate of this sector was 75 percent. Under the status quo/no action alternative, this rate could continue rising, stay the same or decrease to previous levels. Alternative 2 is estimated to result in an overall groundfish retention rate ranging between 71 and 79 percent for the HT-CP sector, mostly from lower regulatory discards of pollock caused by changes in the MRA. Alternative 3 is estimated to result in an overall groundfish retention rate of 95 percent for the HT-CP sector, and the retention rates for the L-CP and P-CP sectors are also expected to improve. Under Alternative 4 (preferred alternative), the overall groundfish retention rate of the HT-CP sector is projected to be 80.6 percent by 2010.

None of the groundfish species targeted by the HT-CP sector are overfished. The GRS is not anticipated to increase total catch of any species and Total Allowable Catch (TAC) is not expected to change as a result of this action. Under this action, the distribution of catch may change, so that some species that had been previously discarded may go unharvested. Additionally, HT-CP vessels would be subject to increased monitoring standards. These monitoring tools likely will decrease concerns about intentional biasing of observer samples and increase the amount of information available for management decisions. For these reasons, this action is not expected to jeopardize the sustainability of any target species.

2) Can the proposed action reasonably be expected to jeopardize the sustainability of any non-target species?

Response: As noted above, the GRS program is intended to improving groundfish retention and utilization while maintaining economic viability. Alternatives 2 through 4 would result in changed retention rates for groundfish that could result in beneficial or adverse effects to non-target species. While the specific approaches examined in this EA are intended to improve the rate of overall groundfish retention, it is uncertain whether these actions would be adverse or beneficial to the environment, considering uncertainty regarding how this complex ecosystem functions. It is possible that improvements in groundfish retention rates could change the distribution of predator or scavenger populations in pelagic or benthic environments, but it is also possible that reductions in discards could have unwanted environmental effects for some organisms.

Alternative 2 is estimated to result in an overall groundfish retention rate ranging between 71 and 79 percent for the non-AFA catcher processors, mostly from lower regulatory discards of pollock caused by changes in the maximum retainable amounts (MRA) regulations. Alternative 3 is estimated to result in an overall groundfish retention rate of 95 percent for the non-AFA catcher processor sector, and the retention rates for the longline and pot catcher processor sectors are also expected to improve. Under Alternative 4 (preferred alternative), the overall groundfish retention rate of the non-AFA catcher processor sector is projected to be 80.6 percent by 2008.

None of the groundfish species targeted by the HT-CP sector are overfished. The GRS is not anticipated to increase total catch of any species and Total Allowable Catch (TAC) is not expected to change as a result of this action. Under this action, the distribution of catch may change, so that some species that had been previously discarded may go unharvested. Additionally, HT-CP vessels would be subject to increased monitoring standards. These monitoring tools likely will decrease concerns about intentional biasing of observer samples and increase the amount of information available for management decisions. For these reasons, this action is not expected to jeopardize the sustainability of any non-target species.

3) Can the proposed action reasonably be expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat as defined under the Magnuson-Stevens Act and identified in FMPs?

Response: As noted above, the GRS program is intended to address requirements under the Magnuson Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) by improving groundfish retention and utilization while maintaining economic viability in the groundfish fisheries. The preferred alternative would require all non-AFA trawl catcher processors equal to or greater than 125 feet length overall (non-AFA trawl catcher processors) to gradually increase groundfish retention in the Bering Sea and Aleutian Islands management area (BSAI).

Fishing conducted under the GRS would occur in the EEZ off Alaska in areas identified as essential fish habitat for all groundfish species. Vessels could alter their fishing behavior to improve retention rates under the GRS. However, total catch is not expected to increase as a result of this action. For this reason, Amendment 79 is not reasonably expected to cause

substantial damage to the ocean and coastal habitats and/or essential fish habitat as defined under the Magnuson-Stevens Act and identified in FMPs.

4) Can the proposed action reasonably be expected to have a substantial adverse impact on public health and safety?

Response: The implementation of any fishery regulations associated with this action could (as with any fishery regulation) produce changes in the incentives for members of the BSAI fisheries to alter personal and firm decisions about health and safety. Fisheries in general are noted nationally as business activities that have among the highest rates of occupation health and safety.

One public comment to the proposed rule identified a potential safety concern associated with the prohibition on mixing of hauls. A prohibition on mixing of hauls is necessary to maintain a sampling program that expands each haul with a specific sample. This is primarily an enforcement concern. After consulting with staff of the United States Coast Guard (USCG) Vessel Safety Division, NMFS concludes that the prohibition on haul mixing will not decrease vessel safety compared with the status quo. NMFS recognizes that fishing is a dangerous activity, particularly in the North Pacific, and believes that persons engaged in this business are aware of these risks. The proposed GRS program does not require persons to undertake dangerous actions beyond those they voluntarily undertake when they choose to fish in the North Pacific. Vessel masters and crew make choices on how best to accommodate safety concerns during fishing activity, including considerations about vessel stability.

The proposed prohibition on mixing of hauls could be accommodated in a number of ways that would not result in new vessel stability risks. The GRS program does not impede the use of any of these strategies. Thus, little or no legitimate need exists to stage a codend on deck, and the timing of when to haul the codend on deck and begin the dumping of the codend into the tank is within the control of the vessel operator.

In addition, many commercial fishing vessel owners are required by the USCG to retain on board a copy of the vessel's Trim and Stability Booklet (T&S Booklet) prepared by a certified naval architect (46 CFR 170 Subpart D – Stability Instructions for Operating Personnel). Most if not all of the 16 HT-CP sector vessels that would be regulated under the GRS program have a T & S Booklet (personal communication 9-13-05 Eric Blumhagen – Jensen Maritime). The USCG advises that T&S Booklets be written in clear terms and made available to all members of the crew. Each vessel must restrict loading of catch according to tables and analysis in the T & S booklet that consider many variables, including fuel, other ballast, and gear. The USCG is authorized to review these booklets when boarding a vessel at sea, but more frequently will review the T&S Booklet in port prior to departing for the fishing grounds. Carrying a load of fish on deck in amounts that exceed the recommendations in a vessel's T&S Booklet may adversely impact vessel stability and create a safety hazard.

The incentive for both crew and observers to work in safe conditions is likely to contribute to vessel operator compliance with safe loading procedures and, if available, recommendations of the T & S Booklet. While stability risk assessment involves potentially complex engineering models, the act of loading the contents of multiple codends of fish on the deck of a vessel is highly observable to persons working on a vessel, and easier to monitor than many activities that may involve safety risks. Crew members have an interest in safety and an incentive to understand loading procedures that may impact vessel stability. NMFS certified observers are neither trained nor or expected to assess or monitor vessel stability. However, at anytime crew or observers may formally record practices, question a skipper, or contact the USCG regarding any safety issue posing a risk to the conduct of their activities on a vessel, including issues associated with the stability of a vessel. Furthermore, any increase in observed illegal or unadvised risk taking behavior on the part of this fleet could be translated into higher insurance premiums, including employee liability and capital loss insurance. Thus, the threat of higher costs imposed by insurance markets for violating loading and stability recommendations may buffer any propensity of an operator in the HT-CP sector to attempt unsafe, and/or illegal loading practices in these fishing operations.

For these reasons, it is unlikely that these regulations would change the safety at sea for persons working in this industry.

5) Can the proposed action reasonably be expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species?

Response: As noted above, the GRS program is intended to address requirements under the Magnuson Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) by improving groundfish retention and utilization while maintaining economic viability in the groundfish fisheries. The preferred alternative would require all non-AFA trawl catcher processors equal to or greater than 125 feet length overall (non-AFA trawl catcher processors) to gradually increase groundfish retention in the Bering Sea and Aleutian Islands management area (BSAI).

Fisheries would continue to be prosecuted under Steller sea lion protection measures and seabird avoidance device regulations. Although some piscivorus bird species might be gaining food subsidies from the discards associated with this fleet under the status quo, there does not appear to be a population-level effect as a result of this subsidy. There is no data available to identify if a reduction in discards from this fleet could change the abundance of food sources for seabirds listed under the Endangered Species Act. For these reasons, the GRS program is not reasonably expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species.

6) Can the proposed action be expected to have a substantial impact on biodiversity and/or ecosystem function within the affected area (e.g., benthic productivity, predator-prey relationships, etc.)?

Response: As noted above, the GRS program is intended to address requirements under the Magnuson Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) by improving groundfish retention and utilization while maintaining economic viability in the groundfish fisheries.

Alternative 2 is estimated to result in an overall groundfish retention rate ranging between 71 and 79 percent for the non-AFA catcher processors, mostly from lower regulatory discards of pollock caused by changes in the maximum retainable amounts (MRA) regulations. Alternative 3 is estimated to result in an overall groundfish retention rate of 95 percent for the non-AFA catcher processor sector, and the retention rates for the longline and pot catcher processor sectors are also expected to improve. Under Alternative 4 (preferred alternative), the overall groundfish retention rate of the non-AFA catcher processor sector is projected to be 80.6 percent by 2010. Fishing conducted under the GRS would occur in the EEZ off Alaska in areas identified as essential fish habitat for all groundfish species. Vessels could alter their fishing behavior to improve retention rates under the GRS. However, total catch is not expected to increase as a result of this action. For this reason, Amendment 79 is not reasonably expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat as defined under the Magnuson-Stevens Act and identified in FMPs.

7) Are significant social or economic impacts interrelated with natural or physical environmental effects?

Response: There are no social or economic impacts in the HT-CP sector or in any other fishery that are likely to alter the natural or physical environment as a result of this action. As noted above, the GRS program is intended to address requirements under the Magnuson Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) by improving groundfish retention and utilization while maintaining economic viability in the groundfish fisheries. However, Alternatives 2, 3 and 4, are expected to result in higher costs for the fishing industry, in particular for the affected vessels in the non-AFA trawl catcher processor sector, relative to the status quo/no action alternative. non-AFA trawl catcher processors equal to or greater than 125 feet may incur the costs and lost revenues associated with holding/processing, transporting, and transferring fish that are of relatively low value or "unmarketable." Moreover, under Alternative 3, seven non-AFA trawl catcher processors would incur the cost of acquiring, installing, maintaining, and operating NOAA Fisheries-approved scales and observer stations. At an average purchase cost of $50,000 per scale, each affected vessel would incur a one-time cost of approximately $75,000, including installation. In addition, approximately 16 non-AFA trawl catcher processors would have to double their observer coverage at an approximate cost of $355 per additional deployment day or about $82,000 per year per vessel. Alternative 3 has effects on sector costs similar to those for Alternative 2. In addition, pot and longline catcher processors equal to or greater than 125 feet would incur the costs of installing scales and observer stations and increasing observer coverage. Because hopper scales rather than flow scales would be allowed, purchase and installation costs are estimated to be $25,000 per vessel. Alternative 4 (preferred alternative) has effects on industry costs similar to those for Alternative 2 for enforcement and monitoring, and in

2009 and 2010 is expected to affect costs and revenues associated with holding/processing, transporting, and transferring fish that are of relatively low value or even "unmarketable".

8) Are the effects on the quality of the human environment likely to be highly controversial?

Response: The GRS program is intended to address requirements under the Magnuson Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) by improving groundfish retention and utilization while maintaining economic viability in the groundfish fisheries. It is possible that regulations developed could change groundfish retention in a manner that may impact the environment. Some potential approaches for implementing a GRS that are examined in the EA could result in a reduction in discards, but there is no data or studies that suggest the magnitude of those reductions (less than 1% of annual groundfish harvest) are likely to adversely affect the natural and physical environment. Nationally, bycatch reduction programs have been the subject of some controversy because of the lack of economic data on how groundfish removals and other fishing practices associated with these fisheries are perceived by persons that are not directly involved in the production and consumption of BSAI groundfish. Public comment received on the proposed rule for the GRS program generated a significant number of public comments dealing with (1) the potential costs of regulations to the non-AFA catcher processor sector, (2) safety issues, (3) and the positive environmental value of (or negative environmental value for) the bycatch reduction measures in the proposed rule.

9) Can the proposed action reasonably be expected to result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas?

Response: This action will have no effect on historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas. This consideration is not applicable to this action.

10) Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

Response: Some potential approaches for implementing a GRS examined in the EA could result in a reduction in discards, but there is no data or studies that suggest the magnitude of those reductions (less than 1% of annual groundfish harvest) are likely to adversely affect the natural and physical environment. Bycatch and groundfish discards associated with the status quo, are a source of scientific uncertainty regarding the impacts of these removals on the environment. Qualitative assessments of marginal increases/decreases in risk and uncertainty to the environment with respect to specific GRS are not possible at this time.

11) Is the proposed action related to other actions with individually insignificant, but cumulatively significant impacts?

Response: The cumulative effects analysis is provided in the EA. Cumulatively significant impacts on the natural and physical environment are not anticipated with the GRS because no impacts on the natural and physical environment have been identified. The alternatives considered would not change the TACs for groundfish, the gear types used in the fisheries in which groundfish are discarded or the spatial or temporal distribution of these fisheries.

12) Is the proposed action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources?

Response: This action will have no effect on districts, sites, highways, structures, or objects listed or eligible for listing in the National Register of Historic Places, nor cause loss or destruction of significant scientific, cultural, or historical resources. This consideration is not applicable to this action.

13) Can the proposed action reasonably be expected to result in the introduction or spread of non-indigenous species?

Response: Fishing conducted under the GRS would continue to occur in the EEZ off Alaska. Vessels could alter their fishing behavior to improve retention rates under the GRS. However, total catch is not expected to increase and as a result of this action. For this reason, Amendment 79 is not reasonably expected to result in introduction or spread of non-indigenous species. This action applies to vessels while fishing in the EEZ and does not have the potential to create or exacerbate the introduction or spread of non-indigenous species beyond current opportunities.

14) Is the proposed action likely to establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration?

Response: As noted above, the GRS program is intended to address requirements under the Magnuson Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) by improving groundfish retention and utilization while maintaining economic viability in the groundfish fisheries. The preferred alternative would require all non-AFA trawl catcher processors equal to or greater than 125 feet length overall (non-AFA trawl catcher processors) to gradually increase groundfish retention in the Bering Sea and Aleutian Islands management area (BSAI).

The trend in groundfish fisheries off Alaska has been toward reducing bycatch. The GRS program is one of several actions adopted by the North Pacific Fishery Management Council to improve retention and utilization in the groundfish fisheries. While the GRS program is an additional tool to address bycatch concerns, it does not establish a

precedent for future actions with significant effects or represents a decision in principle about a future consideration

15) Can the proposed action reasonably be expected to threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment?

Response: This action poses no known violation of Federal, State, or local laws or requirements for the protection of the environment. This action is consistent with State of Alaska law which encourages bycatch reduction. These laws prevent or provide disincentive for wasting or discarding commercially harvested fish species in State waters.

16) Can the proposed action reasonably be expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species?

Response: The cumulative effects analysis of the GRS program is provided in the EA. Substantial cumulatively adverse effects target and non-target species are not anticipated with the GRS because no impacts on the natural and physical environment have been identified. The alternatives considered would not change the TACs for groundfish, the gear types used in the fisheries in which groundfish are discarded, or the spatial or temporal distribution of these fisheries.

DETERMINATION

In view of the information presented in this document and the analysis contained in the supporting Environmental Assessment prepared for the GRS program, it is hereby determined that the GRS program will not significantly impact the quality of the human environment as described above and in the supporting Environmental Assessment. In addition, all beneficial and adverse impacts of the proposed action have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an Environmental Impact Statement for this action is not necessary.

Assistant Administrator for Fisheries, NOAA

3-13-06
Date

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
PROGRAM PLANNING AND INTEGRATION
Silver Spring, Maryland 20910

MAR 16 2006

To All Interested Government Agencies and Public Groups:

Under the National Environmental Policy Act, an environmental review has been performed on the following action.

TITLE: Environmental Assessment of Amendment 79 to the Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area (FMP)

LOCATION: Fisheries of the Exclusive Economic Zone off Alaska

SUMMARY: Amendment 79 adds an objective to the management objectives section of the FMP that provides explicit authority in the FMP to establish a groundfish retention standard (GRS) for BSAI groundfish fisheries where practicable. Amendment 79 is intended to provide the Council and NMFS with a specific type of management tool to reduce bycatch, minimize waste, and improve utilization of BSAI groundfish to the extent practicable and to respond to bycatch reduction goals described in National Standard 9.

RESPONSIBLE
OFFICIAL: James W. Balsiger
Administrator, Alaska Region
National Marine Fisheries Service, National Oceanic and Atmospheric Administration (NOAA)
P.O. Box 21668
Juneau, AK 99802-1668
(907) 586-7221

The environmental review process led us to conclude that this action will not have a significant impact on the environment. Therefore, an environmental impact statement was not prepared. A copy of the finding of no significant impact, including the environmental assessment, is enclosed for your information.

Please submit any written comments to the responsible official named above. Also, please send one copy of your comments to me at the NOAA Strategic Planning Office

(PPI/SP), Room 15603, 1315 East-West Highway, Silver Spring, MD 20910.

Sincerely,

Rodney F. Weiher, Ph.D.
NOAA NEPA Coordinator

Enclosure