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### MEMORANDUM

TO: Jeff Regnart, Director  
Division of Commercial Fisheries

DATE: September 20, 2015

Thomas Brookover, Director  
Division of Sport Fish

THRU: Tracy Lingnau, Regional Supervisor *TL*  
Division of Commercial Fisheries, Region II

SUBJECT: Bristol Bay  
Escapement Goal  
Memo

Thomas Vania, Regional Supervisor *TV*  
Division of Sport Fish, Region II

FROM: Jack Erickson, Regional Research Coordinator *JWE*  
Division of Commercial Fisheries, Region II

Timothy McKinley, Regional Research Coordinator *TKM*  
Division of Sport Fish, Region II

The purpose of this memo is to report our progress reviewing and recommending escapement goals for the Bristol Bay Management Area (BBMA). The *Policy for Statewide Salmon Escapement Goals* (5 AAC 39.223) recognizes the establishment of salmon escapement goals as a joint responsibility of the Alaska Department of Fish and Game (department) and the Alaska Board of Fisheries (board) and describes the concepts, criteria, and procedures for establishing and modifying salmon escapement goals. Under the policy, the board recognizes and describes the department's responsibility for establishing and modifying biological escapement goals (BEG), sustainable escapement goals (SEG), and sustained escapement thresholds (SET).

In January 2015, an interdivisional salmon escapement goal committee, including staff from the Divisions of Commercial Fisheries and Sport Fish, initially met to discuss salmon escapement goals in the BBMA. Escapement goals for this area have been set and evaluated at regular intervals since statehood and many of these stocks have long-term historical databases. The review was based on the *Policy for the Management of Sustainable Salmon Fisheries* (5 AAC 39.222) and the *Policy for Statewide Salmon Escapement Goals* (5 AAC 39.223). Two important terms are:

5 AAC 39.222 (f)(3) "*Biological Escapement Goal (BEG): the escapement that provides the greatest potential for maximum sustained yield (MSY);*" and

## Bristol Bay Escapement Goal Memo

5 AAC 39.222 (f)(36) “*Sustainable Escapement Goal (SEG)*: a level of escapement, indicated by an index or an escapement estimate, that is known to provide for sustained yield over a 5 to 10 year period, used in situations where a BEG cannot be estimated or managed for.”

The committee determined the appropriate goal type (BEG or SEG) for each salmon stock with an existing goal and reviewed other monitored stocks without an existing goal. Using available data, we determined the most appropriate methods to develop each escapement goal. Due to the comprehensive previous analyses in Cross et al. (1997), Fair (2000), Fair et al. (2004), Baker et al. (2006 and 2009), and Fair et al. (2012), this review committee only considered reanalyzing goals with recent (2012–2014) escapements that might result in a substantially different escapement goal from the last review, or those that should be eliminated or newly established. The committee updated the escapement goal analyses for Alagnak sockeye salmon and Nushagak chum salmon. The committee concluded that updating the analysis for any other stock would not likely result in a substantially different goal.

Since the December 2012 Bristol Bay board meeting in Naknek, the department participated in a series of meetings with a committee of users, processors, and members of the Bristol Bay Science and Research Institute. This committee was charged by the board to prepare recommendations relating to the development of optimal escapement goals for Bristol Bay sockeye salmon. As part of this effort, the committee reviewed a draft escapement analysis report (Cunningham et al. 2015) and presentations prepared by scientists from the School of Fisheries and Aquatic Sciences at the University of Washington and LGL Alaska Research Associates, Inc. that evaluated escapement goals for Bristol Bay sockeye salmon taking into account biological and economic factors. Based on the biological and economic analysis, and the escapement goal analysis conducted by the department in 2012 (Fair et al. 2012), the department recommended adoption of the lower bounds of existing escapement goals (SEGs) and the upper bounds of the escapement goals following recommendations from Fair et al. (2012). The department informed the board and public about adoption of new SEGs for a number of sockeye stocks during the Statewide Miscellaneous Shellfish board meeting in March of 2015 (Table 1). The department implemented the new SEGs during the 2015 fishing season.

Currently 15 escapement goals are evaluated in BBMA (Table 2). The committee recommends, to the directors of the divisions of Sport Fish and Commercial Fisheries, that the lower-bound SEG of 320,000 (based on tower counts) for Alagnak River sockeye salmon be changed to a lower-bound SEG of 125,000 that is based on single annual aerial surveys. The department has not operated a counting tower on the Alagnak River since 2011 and now conducts a post-season aerial survey to assess escapement. The committee also recommends the king salmon escapement goals for Alagnak and Naknek rivers be discontinued because: (1) the department has been unable to secure funding to conduct these surveys in 5 of the last 6 years; (2) the survey observer for many of the previous years has retired and the current survey observer efficiency is unknown and likely different; and, (3) securing funding in the future for these surveys is unlikely.

In summary, other than the sockeye escapement goals addressed at the March 2015 board meeting, this comprehensive review of the 15 existing salmon escapement goals in BBMA resulted in one recommended modification to an existing sockeye salmon goal and two recommended discontinuations of king salmon goals that have not been surveyed consistently in recent years. Oral and written reports (Erickson et al. *In prep.*) concerning BBMA escapement goals and

## Bristol Bay Escapement Goal Memo

stocks will be presented to the board in December 2015. These reports will list current escapement goals for BBMA, detailed descriptions of the methods used to develop the goals, and annual escapements through 2015.

## Bristol Bay Escapement Goal Memo

Table 1. – Previous and recommended Bristol Bay sockeye salmon escapement goals presented and adopted at the March 2015 Statewide Alaska Board of Fisheries (in thousands).

River	Previous SEG	SEG adopted by the department in 2015
Egegik	800 – 1,400	800 – 2,000
Igushik	150 – 300	150 – 400
Kvichak	2,000 – 10,000	2,000 – 10,000
Naknek	800 – 1,400	800 – 2,000
Nushagak	370 – 840	370 – 900
Ugashik	500 – 1,200	500 – 1,400
Wood	700 – 1,500	700 – 1,800

## Bristol Bay Escapement Goal Memo

Table 2. – Summary of escapement goals and recommendations for salmon stocks in Bristol Bay Management Area.

System	Escapement Goal	Enumeration Method	Goal Type	Initial Year	Recommendation
<b>KING SALMON</b>					
Nushagak River	55,000 – 120,000	sonar	SEG	2013	no change
Naknek River	5,000	single aerial survey	lower-bound SEG	2007	discontinue
Alagnak River	2,700	single aerial survey	lower-bound SEG	2007	discontinue
<b>CHUM SALMON</b>					
Nushagak River	200,000	sonar	lower-bound SEG	2013	no change
<b>COHO SALMON</b>					
Nushagak River	60,000 – 120,000	sonar	SEG	2013	no change
<b>PINK SALMON</b>					
Nushagak River (even years only)	165,000	sonar	lower-bound SEG	2013	no change
<b>SOCKEYE SALMON</b>					
Kvichak River	2,000,000 – 10,000,000	tower count	SEG	2010	no change
Alagnak River	320,000	tower count	lower-bound SEG	2007	lower-bound SEG of 125,000 based on aerial surveys
Naknek River	800,000 – 2,000,000	tower count	SEG	2015	no change
Egegik River	800,000 – 2,000,000	tower count	SEG	2015	no change
Ugashik River	500,000 – 1,400,000	tower count	SEG	2015	no change
Wood River	700,000 – 1,800,000	tower count	SEG	2015	no change
Igushik River	150,000 – 400,000	tower count	SEG	2015	no change
Nushagak River	370,000 – 900,000	sonar	SEG	2015	no change
	260,000 – 760,000	sonar	OEG	2012	
Togiak River	120,000 – 270,000	tower count	SEG	2007	no change

## Bristol Bay Escapement Goal Memo

### *Literature Cited*

- Baker, T.T., L.F. Fair, R.A. Clark, and J.J. Hasbrouck. 2006. Review of salmon escapement goals in Bristol Bay, Alaska, 2006. Alaska Department of Fish and Game, Fishery Manuscript No. 06-05, Anchorage.
- Baker, T.T., L.F. Fair, F.W. West, G.B. Buck, X. Zhang, S. Fleishman, and J. Erickson. 2009. Review of salmon escapement goals in Bristol Bay, Alaska, 2009. Alaska Department of Fish and Game, Fishery Manuscript No. 09-05, Anchorage.
- Cross, B.A., D.C. Gray, and D.L. Crawford. 1997. Report to the Alaska Board of Fisheries on spawning escapement goal evaluations for Bristol Bay salmon. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 2A97-30, Anchorage.
- Cunningham, C.J., J.Wang, R.Hilborn, and M.R. Link. 2015. Analysis of escapement goals for Bristol Bay sockeye salmon taking into account biological and economic factors – Final Draft Report. School of Fisheries and Aquatic Sciences, University of Washington, Seattle.
- Fair, L.F. 2000. Report to the Alaska Board of Fisheries on spawning escapement goal evaluations for Bristol Bay salmon. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 2A00-38, Anchorage.
- Fair, L.F., C.E. Brazil, X. Zhang, R.A. Clark, and J.W. Erickson. 2012. Review of salmon escapement goals in Bristol Bay, Alaska, 2012. Alaska Department of Fish and Game, Fishery Manuscript Series No. 12-04, Anchorage.
- Fair, L.F., B.G. Bue, R.A. Clark, and J.J. Hasbrouck. 2004. Spawning escapement goal review of Bristol Bay salmon stocks. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 2A04-17, Anchorage.