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ENVIRONMENTAL LAW CLINIC AT STANFORD UNIVERSITY

July 26, 2004

Certified Mail, Return Receipt Requested

Michael O. Leavitt
Administrator
Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

Re: Sixty-Day Notice of Intent to Sue for Violations of the Endangered Species Act
Section 7 Regarding the EPA's Failure to Consult with NMFS on the Effects of
Certain Pesticides on Pacific Salmonids

Dear Administrator Leavitt:

On behalf of Northwest Coalition for Alternatives to Pesticides, Washington Toxics Coalition, Pacific Coast Federation of Fishermen's Associations, and Institute for Fisheries Resources, we ask that you take action to remedy ongoing violations of the Endangered Species Act ("ESA") by the U.S. Environmental Protection Agency ("EPA"). EPA is violating Section 7 of the ESA by failing to consult with the National Marine Fisheries Service ("NMFS") on certain pesticides and active ingredients registered by EPA under the Federal Insecticide, Fungicide and Rodenticide Act ("FIFRA") based on effects determinations that are arbitrary and capricious and do not rely on the best available science or relevant evidence. In these legally flawed effects determinations, EPA has erroneously concluded that many pesticide active ingredients either have "no effect" or are "not likely to adversely affect" listed Pacific salmonids. As a result of these erroneous effects determinations, EPA has failed to initiate formal consultation with NMFS on these pesticide active ingredients either across the board, or with respect to certain salmon and steelhead evolutionarily significant units ("ESUs"). This letter constitutes notice required by Section 11(g) of the ESA, 16 U.S.C. § 1504(g), should legal action be necessary to enjoin and remedy these violations of the ESA.¹

¹ This sixty-day notice addresses the flaws in EPA's effects determinations for the following pesticide active ingredients that have been completed as of the date of this letter: acephate, alachlor, atrazine, azinphos-methyl, bensulide, bentazon, captan, carbaryl, chlorothalonil, chlorpyrifos, diazinon, dicamba, dichlobenil, disulfoton, diuron, ethoprop, fenamiphos, fenbutatin-oxide, iprodione, linuron, methidathion, methamidophos, methomyl, methyl parathion, metolachlor, molinate, naled, norflurazon, oryzalin, paraquat dichloride, pebulate, phorate, phosmet, prometryn, propargite, simazine, terbacil, thiobencarb, thiodicarb, triclopyr

I. ESA SECTION 7 CONSULTATION

As the United States Supreme Court has stated, “One would be hard pressed to find a statutory provision whose terms were any plainer than those in § 7 of the Endangered Species Act.” Tennessee Valley Authority v. Hill, 437 U.S. 153, 173 (1978). Those terms set forth both substantive and procedural requirements with which federal agencies must comply. Substantively, federal agencies must “insure that any action authorized, funded, or carried out ... is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [critical habitat] of such species” 16 U.S.C. § 1536(a)(2). Not satisfied that federal agencies possessed the requisite expertise to satisfy this substantive requirement on their own, Congress added a strict procedural requirement – that the determination of whether any federal action would be likely to cause jeopardy would be made “in consultation with and with the assistance of [the Services].” Id. This mandatory consultation is the key to Section 7; in fact, Congress titled Section 7 “Interagency Cooperation.”

Section 7 embodies another safeguard to guard against substantive jeopardy. It requires that federal agencies – action and expert wildlife agencies alike – use the best available scientific information in meeting their Section 7 obligations. The expert wildlife agencies are generally the repositories of the best scientific evidence given their role in listing threatened and endangered species, in conducting Section 7 consultations, in issuing incidental take permits and statements, and in developing recovery plans. Their participation in Section 7 consultations injects their unique, comprehensive scientific knowledge into Section 7 determinations.

The ESA mandates such consultations to ensure that an agency action “is not likely to jeopardize the continued existence of any” listed species. 16 U.S.C. § 1536(a)(2). The joint consultation regulations require such consultations whenever an action “may affect” a listed species. See 50 C.F.R. § 402.14.

The end product of formal consultation is a biological opinion in which NMFS determines whether the action will cause jeopardy to the species or adversely modify designated critical habitat. 16 U.S.C. § 1536(b). A biological opinion typically includes an incidental take statement authorizing the take of an endangered or threatened species incidental to a federal agency action, subject to binding terms and conditions and recommended mitigation measures. 16 U.S.C. § 1536(b)(4). An action undertaken in compliance with an incidental take statement is insulated from liability under the ESA’s take prohibition. Id. § 1536(o)(2).

II. INFORMAL CONSULTATION OFF-RAMP

In the joint consultation regulations, NMFS and the Fish and Wildlife Service have established a preliminary review that can be used to sidestep formal consultation in some situations. For all actions that “may affect” a listed species, the action agency must determine whether the action is “likely to adversely affect” or “not likely to adversely affect” the listed species. 50 C.F.R. § 402.14(a)-(b). An action that is “likely to adversely affect” a listed species or its critical habitat must undergo formal consultation that culminates with the Service’s issuance of a biological opinion that complies with the ESA and regulatory requirements. *Id.* §§ 402.02, 402.14(a).

Under the joint regulations, a “not likely to adversely affect” determination can lead instead to an informal consultation, which consists of all discussions and communications between the agencies and ends with NMFS’ written concurrence in that determination. *Id.* § 402.13. A written concurrence does not include an incidental take statement. As a result, neither the federal agency nor any private licensee or the like is insulated from take liability should the action result in the take of a listed species. If NMFS does not concur, the action is deemed “likely to adversely affect” and the agencies must conduct a formal consultation. *Id.* §§ 402.02, 402.14(a). Utilization of informal consultation is optional in those instances where it is available.

The third option is that the action agency will determine that an action will have “no effect” on the listed species or its critical habitat. Such a determination by the action agency is final, requiring no concurrence from the expert fish and wildlife agency.

III. NMFS’ ESTABLISHED CRITERIA FOR MAKING EFFECTS DETERMINATIONS FOR ACTIONS IMPACTING LISTED SALMONIDS

NMFS has issued guidelines for making standardized ESA effects determinations to provide “a consistent, logical line of reasoning to determine when and where adverse effects occur and why they occur.” NMFS, Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale, at 2 (Aug. 1996).

Under NMFS’ direction, a “no effect” or “not likely to adversely affect” determination is inappropriate where the action will degrade aquatic habitat for listed salmonids. A “no effect” determination “is only appropriate ‘if the proposed action will literally have no effect whatsoever on the species and/or critical habitat.’” *Id.* at 6. “No effect” determinations are rare where listed species are present in or downstream of the watershed where the action occurs. *Id.* at 8. “May affect, not likely to adversely affect” is defined to encompass “discountable,” “negligible,” or “insignificant” effects:

Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur.

Id. at 6 (quoting NMFS/FWS, Draft ESA Consultation Handbook (1994)).

By comparison, “may affect, likely to adversely affect” determinations are appropriate “when there is more than a negligible potential to have adverse effects on the species or critical habitat.” Id. at 6. Such a conclusion is reached “if any adverse effect to listed species or critical habitat may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions.” Id. (quoting Draft Consultation Handbook); accord Final Endangered Species Consultation Handbook at 3-13 (Mar. 1998). Impacts of a cumulative nature must be taken into account in making such determinations. Making ESA Determinations of Effect, at 7. Moreover, “[i]t is not possible for NMFS or USFWS to concur in a ‘not likely to adversely affect’ determination if the proposed action will cause take of individual listed fish.” Id. NMFS provided an example of a watershed with degraded baseline conditions and an action that “will further degrade any of these pathways.” Id. at 8 (emphasis added). If any listed salmonids or critical habitat are in or downstream from the watershed, and the project has “the potential to hinder attainment of relevant properly functioning indicators” or there is “more than a negligible probability of take,” a likely to adversely affect determination is required. Id. at 15.

IV. WASHINGTON TOXICS COALITION V. EPA

In January 2001, the Washington Toxics Coalition, Northwest Coalition for Alternatives to Pesticides, Pacific Coast Federation of Fishermen’s Associations, and Institute for Fisheries Resources filed a lawsuit seeking to compel EPA to consult on the impacts of certain pesticides on listed salmon and steelhead. Washington Toxics Coalition v. EPA, No. C01-132C (W.D. Wash.). The environmental and commercial fishing group plaintiffs provided specific evidence of harm from 55 pesticides based on evidence that these pesticides are getting into salmon supporting waters at levels that cause harm to salmon or their habitat.² First, the U.S. Geological Survey had found concentrations of 14 pesticides in salmon supporting waters at levels that are associated with negative impacts on fish or other aquatic life. Second, EPA had concluded that estimated environmental concentrations of these pesticides from its authorized uses would exceed its levels of concern for salmon, their food supply, or their habitat.

On July 2, 2002, a U.S. District Court in Seattle ordered EPA to begin the process of ensuring that use of 55 pesticides will not harm salmon in the Pacific Northwest. The Court found that “it is undisputed that EPA has not initiated, let alone completed, consultation with respect to the relevant 55 pesticide active ingredients” and that “EPA’s own reports document

² The Court order listed lindane twice, but EPA is making separate effects determinations for two formulations of triclopyr, leaving the total number of effects determinations at 55.

the potentially-significant risks posed by registered pesticides to threatened and endangered salmonids and their habitat.” According to the Court:

NMFS listed the Sacramento winter run chinook in 1989. During the 1990s, NMFS listed as threatened or endangered approximately 25 additional salmonids. Despite competent scientific evidence addressing the effects of pesticides on salmonids and their habitat, EPA has failed to initiate section 7(a)(2) consultation with respect to its pesticide registrations. . . . Such consultation is mandatory and not subject to unbridled agency discretion. The Court declares, as a matter of law, that EPA has violated section 7(a)(2) of the ESA with respect to its ongoing approval of 55 pesticide active ingredients and registration of pesticides containing those active ingredients.

The Court ordered EPA to initiate consultations on 55 pesticides according to a schedule that runs through December 1, 2004.

Because the initiation of consultation with NMFS merely starts the Section 7 process and on-the-ground protections may take years, the plaintiffs asked the court to impose interim measures to protect salmon from these pesticides during the consultation process. By order issued on January 22, 2004, the Court imposed 20-yard ground and 100-yard aerial buffers along salmon supporting waters. These buffers are drawn from the low end of the buffers prescribed in the Fish and Wildlife Service biological opinions for aquatic species and in the county bulletins EPA has developed in partial implementation of those biological opinions. The Court found that pesticide-application buffer zones are “a common, simple, and effective strategy to avoid jeopardy to threatened and endangered salmonids.” Order, August 8, 2003, at 16. The Court also found that 20-yard buffer zones for ground use and 100-yard buffers for aerial applications will “substantially contribute to the prevention of jeopardy.” *Id.* at 18. The Court imposed the 20-yard no-use and 100-yard no aerial spray buffers for the pesticides at issue, unless they had received a “no effect” or “not likely to adversely affect” determination. The Court also exempted certain uses, such as spot treatments and mosquito abatement spraying by public entities.

In addition, the Court imposed additional restrictions on the use of seven pesticides frequently detected in urban salmon streams by the U.S. Geological Survey. The plaintiffs sought these restrictions because impervious surfaces in urban areas limit the breakdown of pesticides that would ordinarily occur in natural landscapes and increase run-off, which is usually channeled directly into streams through storm drains and pipes. To provide additional safeguards in urban areas, the court required public notification of hazards associated with urban use of certain pesticides.

The Court’s injunction requires urban point of sale notifications on products containing any of seven pesticides as follows:

SALMON HAZARD

This product contains pesticides that may harm salmon or steelhead. Use of this product in urban areas can pollute salmon streams.

The warning signs must be posted in urban areas near salmon supporting waters that have 50,000 or more residents.

V. THE EFFECTS DETERMINATIONS FOR PESTICIDES IMPACTING SALMONIDS

EPA has been making effects determinations according to the schedule imposed by the Court in Washington Toxics Coalition v. EPA, and those effects determinations are the subject of this notice. The effects determinations suffer from systemic flaws that pervade EPA's ecological risk assessments and specific flaws in the particular determinations.

This notice describes the flaws in EPA's effects determinations. It is also fully supported by a NMFS draft nonconcurrency letter. As stated above, a "not likely to adversely affect" determination is not final until NMFS concurs in it. If NMFS does not concur, EPA must engage in formal consultation on the pesticide use. To date, NMFS has not completed any consultations, formal or informal, on the pesticides at issue in Washington Toxics Coalition. However, in April 2004, NMFS released a draft nonconcurrency letter, which the undersigned obtained under the Washington Public Records Act, which disagrees with the numerous "not likely to adversely affect" determinations that EPA has made thus far. The letter states that the pesticide uses "may have greater than discountable or insignificant effects on listed species" and "determined that the proposed action is 'likely to adversely affect' the 26 ESUs and thus, requires formal consultation." Nonconcurrency Letter at 1. More specifically, NMFS concludes that EPA's risk assessments do not constitute the best available science because: (1) they are not based on the available peer reviewed scientific literature; (2) they focus on active ingredients to the exclusion of inert ingredients, additives, and the full range of uses of the products; (3) they are devoid of critical information about the locations and needs of the listed salmon species; (4) they lack information about critical exposures, such as those from residential uses and cumulative exposures; and (5) they fail to incorporate evidence of probable sublethal effects. Id. at 2-3. Without this information, NMFS states that it cannot evaluate the pesticides' impacts on listed salmon and can have no assurance that the pesticide uses will not cause serious risks and adverse effects. Id. at 3-4. This notice incorporates the nonconcurrency letter, which is attached, by reference.

A. Systemic Flaws in EPA's Ecological Risk Assessments.

EPA's effects determinations are drawn from EPA's ecological risk assessments made in the course of authorizing pesticide use under FIFRA. Under FIFRA, EPA registers pesticides under a risk-benefit standard. EPA may authorize a pesticide use only if EPA finds the use will not cause "unreasonable adverse effects on the environment." FIFRA, § 3(c)(5). FIFRA defines this standard to include "any unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits of the use of the pesticide." FIFRA § 2(bb). Under this standard, when EPA finds that a pesticide use will harm an endangered species, it asks whether that harm is outweighed by the economic and other benefits provided by the pesticide use.

Ever since 1972, EPA has been re-registering pesticides to bring existing registrations into compliance with environmental standards imposed initially in FIFRA in 1972 and strengthened in subsequent FIFRA amendments and the enactment of other statutes, such as the ESA. The FIFRA registration process has been plagued by three decades of delays. The FIFRA re-registration and cancellation processes are slow and cumbersome when it comes to stopping harmful pesticide uses. First, EPA generally will not act until the scientific data sets are complete and pass muster under elaborate standards. As stated above, any gaps delay action, even where such action may be justified based on what is known. Second, re-registrations and cancellations entail lengthy processes that often take years, in contrast to the ESA consultation process which spans only a few months. Third, EPA has never integrated ESA compliance into its re-registration process and decisions, postponing ESA compliance to Section 7 consultations that it rarely initiated. Fourth, the FIFRA assessments are based largely on laboratory studies and modeling. EPA has rarely integrated peer review science that does not accord with its data sets or monitoring data that show residues of pesticides under authorized uses.

In contrast, the ESA imposes obligations on federal agencies to insure that their actions will not jeopardize species' survival or adversely modify critical habitat. It places the burden of proof on the action, rather than the species. Agencies must use the best available science, which means they must act based on what the science shows today, rather than postpone taking action while new studies are conducted. The ESA's precautionary approach would never tolerate the lengthy delays in protecting species from toxic pesticides due to data gaps. Nor would it tolerate ignoring monitoring data, species' location data, or impacts of pesticide use in urban areas for which EPA lacks established modeling.

B. NMFS and FWS Critiques of EPA's Risk Assessments

While NMFS has never completed a consultation on a pesticide registration's impacts on listed salmon, it has critiqued EPA's risk assessments and found them to provide an inadequate basis for an ESA consultation. These concerns are expressed in NMFS' April 2004 draft nonconcurrency letter in which NMFS disagrees with EPA's effects determinations and calls for

formal consultation on all pesticide uses that have received “not likely to adversely affect” determinations. NMFS has elaborated on its concerns in ESA consultations on use of certain pesticides in noxious weed spraying programs on public lands, and the Fish and Wildlife Service has echoed these concerns in its review of particular EPA pesticide risk assessments.

In 2002 and 2003, NMFS has issued biological opinions on pesticide uses on public forestlands. For example, a December 2002 biological opinion found that use of an insecticide on BLM lands is likely to adversely affect listed salmon but will not cause jeopardy because the pesticide will be applied 500 feet upstream of coho salmon habitat, 200-foot minimum no-spray buffers will be imposed around surface waters, and other safeguards, including monitoring, will be in place. Not only does NMFS rely heavily on buffers to prevent harm to salmon, but it also disparages EPA’s approach of viewing toxicity almost entirely through the lens of lethal effects. The biological opinion explains:

Conventional toxicity studies . . . may underestimate neurobehavioral thresholds for fish. Rainbow trout behavior changed at chlordane (organochlorine insecticide) concentrations below U.S. Environmental Protection Agency’s (EPA) not-to-be-exceeded concentration, illustrating the inadequacy of using current EPA application guidelines for avoidance of sublethal effects.

Sublethal effects in fish have been documented at recommended rates of application . . . the sublethal effects of pyrethroids on fish in general include abnormal swimming, a reduced startle response, loss of equilibrium, body tremors, altered metabolic processes, growth, and depressed olfactory function. These effects may impair an exposed fish’s abilities to acquire prey, avoid predators, and achieve reproductive success.

ESA § 7 Consultation Biological Opinion re: Travis Tyrrell Seed Orchard at 11, 14 (Dec. 18, 2002) (citations & Latin names omitted) (http://www.nwr.noaa.gov/1publcat/bo/2002/200201273_travis_tyrrell_12-18-2002.pdf); see also id. at 16-17 (assessing effects of inert ingredients). NMFS found that scientific studies demonstrated sublethal effects at concentration levels one or two orders of magnitude less than the lethal doses for the insecticide at issue. Id. at 13-16.

Another biological opinion assessing the Salmon-Challis National Forests’ 2002 noxious weed control program raises concerns about both ecosystem (indirect) and sublethal effects of pesticides:

First, there is little data that documents the effects of the proposed herbicide products on aquatic ecosystems and the specific invertebrate prey of listed salmonids. Second, the scientific studies that have been conducted on fish are largely limited to measures of acute mortality, i.e., the concentrations at which

short-term exposures to a pesticide will kill fish outright (LC₅₀). In many cases, acute mortality data may not be appropriate for estimating whether a pesticide will have adverse, non-lethal effects on the essential behavior patterns of salmonids (e.g., feeding, spawning, or migration) Sub-lethal effects of chemicals and pesticides do play a significant role in reducing the fitness of natural salmonid populations.

Most direct effects of herbicides on listed salmon and steelhead are likely to be from sublethal effects, rather than outright mortality from herbicide exposure.

The lethality endpoint has little predictive value for assessing whether real world pesticide exposure will cause sublethal neurological and behavioral disorders in wild salmon.

Although lethal effects are not expected to occur under most circumstances, listed fish are likely to be exposed to herbicide concentrations where sublethal effects could occur. Potential sublethal effects, such as those leading to a shortened lifespan, reduced reproductive output, other types of “ecological death” or other deleterious biological outcomes [are] a threat to listed species from the proposed action.

ESA § 7 Consultation Biological Opinion re: Effects of Herbicide Treatment of Noxious Weeds on Lands Administered by the Salmon-Challis National Forest at 30, 33, 34-35 (Sept. 16, 2002) (citations omitted) (http://www.nwr.noaa.gov/1publcat/bo/2002/2002_herbicide_200200390_09-16-2002.pdf). The biological opinion finds that the herbicide use is not likely to cause jeopardy to listed salmon due to no-spray buffers and other best management practices to minimize impacts on salmon streams.

In June 2002, FWS submitted comments on EPA’s risk assessment for atrazine. FWS Comments (June 27, 2002). FWS agreed with EPA’s rejection of an industry risk assessment because it ignored important data and failed to assess plant reproduction. FWS also agreed that the risk assessment had to account for pesticides becoming mixed in the environment. *Id.* at 2 (“Risk assessments that fail to address this issue [pesticide mixing] are likely to underestimate the true potential for ecological impacts, and as such, this represents a critical data gap that EPA needs to address.”). FWS identified other important data gaps, including EPA’s failure to address sublethal effects, inert pesticide ingredients, bioaccumulation in the food chain and transfer via the food web to fish, and alteration of aquatic community structure. *Id.* at 3, 5. With regard to sublethal effects, FWS stated:

Toxicity studies included by EPA in its final risk calculations for pesticide registrations often are limited to measures of acute mortality, or the pesticide concentrations at which short-term exposure will result in significant mortality in

the test organism population. Due to this narrow focus, the ability of a pesticide to elicit a wide range of important sublethal effects often are not known. Furthermore, the Service believes that setting protective levels for pesticides in the environment based on their ability to prevent increased acute lethality is an inadequate level of protection.

Id. at 3.

With respect to inert ingredients and adjuvants, FWS stated:

EPA focuses on risks associated with the active ingredient of a pesticide formulation. However, pesticide formulations can include a wide range of other ingredients, including so-called “inert” ingredients and various adjuvants designed to increase the effectiveness of the active ingredient. The toxicological effects of these other ingredients are not always known, and since EPA only requires that toxicity testing be conducted on the active ingredient, the toxicity of mixtures of the active ingredient, inerts, and adjuvants is also unknown. These data gaps can result in significant uncertainty when predicting the risks posed by a pesticide.

Id.

FWS recommended restrictions including a 200-foot buffer around water bodies due to atrazine’s mobility and persistence, as well as monitoring for migration of the pesticide into non-target areas. Id. at 7. However, FWS cautioned that “the Service does not believe that the measures listed below will eliminate all risks associated with the use of this pesticide, nor do we believe that EPA has been fully successful in characterizing these risks.” Id. Ultimately, FWS concluded: “due to an inability to fully characterize and assess the ecological risks posed by atrazine, it does not appear that EPA will be able to fulfill its legal responsibilities under section 7(a)(2) of the Endangered Species Act” Id. at 7.

In July 2000, FWS had submitted comments on EPA’s risk assessment for diazinon. FWS Comments (July 20, 2000). FWS concurred with EPA’s concerns about diazinon contamination of surface water and toxicity to fish and other aquatic life, especially in light of its widespread use and susceptibility to runoff. Id. at 1-2. FWS also identified sublethal effects from diazinon use as well as data gaps in toxicity and ecological effects information. Id. at 2, 4. FWS recited diazinon’s consultation history, which produced a 1989 jeopardy biological opinion for 80 species, yet EPA had yet to fully implement the reasonable and prudent alternatives and nondiscretionary reasonable and prudent measures prescribed in that opinion. FWS strongly recommended full implementation of these measures to avoid violating §§ 7 and 9 of the ESA. Id. at 2.

In May 2002, FWS prepared a summary of its review of EPA's pesticide registration analysis procedures and identified several weaknesses. Summary of EPA's National Pesticide Registration Program (May 14, 2002). These weaknesses included focusing primarily on lethal effects and failing to account for sublethal effects, failing to assess inert ingredients and adjuvants, and failing to examine synergistic, additive or antagonistic effects of pesticide mixtures. *Id.* at 1-2. The summary concluded: "While EPA attempts to address a few of the above deficiencies in their registration process through the use of 'safety factors,' a preliminary review of their application of this process indicates that it is inadequate to accurately assess effects to listed species." *Id.* at 2.³

When presented with this evidence, the district court made the following findings in deciding that interim buffer protections are warranted:

NMFS and FWS believe EPA's myopic focus on lethality provides an "inadequate level of protections" under ESA Section 7(a)(2) because "[m]ost direct effects . . . on listed salmon and steelhead are likely to be from sublethal effects" and "[t]he lethality endpoint has little predictive value for assessing whether real world pesticide exposure will cause sublethal neurological and behavioral disorders in wild salmon."

Washington Toxics Coalition v. EPA, August 8, 2003 Order at 14-16.

In recent effects determinations on pesticide impacts on salmonids, EPA has acknowledged that its assessment of such lethal effects of pesticides on salmon relies on outdated science and fails to integrate recent peer reviewed scientific articles documenting life-impairing sublethal effects at a fraction of the lethal dose. Based on a 1979 review of the scientific literature as of that time, EPA has assumed that sublethal effects will not occur at concentrations below one-sixth of the lethal dose (termed the 6x hypothesis). More recent peer-reviewed studies on sublethal effects contradict the 6x hypothesis, and EPA now believes "the 6x hypothesis needs to be re-evaluated." *See, e.g.*, Oryzalin Effects Determination at 10; Methomyl Effects Determination at 10; Carbaryl Effects Determination at 10; Metolachlor Effects Determination at 10-11.

³ In connection with the recent proposed counterpart regulations, EPA and the Services have acknowledged problems with EPA's risk assessment process, but have indicated that they believe improvement is possible. The EPA effects determinations have been made under the risk assessment process in place prior to the hoped-for improvements. Moreover, the hoped-for improvements are not prescribed in binding regulations. They need to be subjected to the thorough scrutiny of the ESA consultation process to ensure that they embody the best available science and the full range of effects that need to be assessed in a consultation.

NMFS' draft nonconcurrency letter reiterates the misgivings previously expressed by the expert fish and wildlife agencies. They reveal an inadequate scientific record and assessment of the pesticides' full effects to conduct a credible ESA consultation. These inadequacies are further borne out in the specific components of the effects determinations.

C. Particular Flaws in EPA's Effects Determinations on Pesticide Impacts on Salmonids

EPA's recent effects determinations for pesticides' impacts on listed salmon in the Pacific Northwest and California highlight additional assumptions made by EPA and inadequacies in EPA's methods and analysis that minimize the effects of pesticides on salmonids. These effects determinations also make "no effect" and "not likely to adversely affect" determinations based on current (and often spotty and even faulty) usage data that may not reflect future trends and on EPA's belief (or hope) that users will voluntarily employ mitigation strategies that are not required by EPA's registration and label.

1. *EPA's Lack of Comprehensive Usage Information for Uses Other Than Agricultural and Commercial Urban Uses in California.*

While California has mandatory use reporting for agricultural pesticide use, it has no such reporting for urban uses. Washington and Oregon have no mandatory use reporting systems in place for agricultural or urban usage.

Where comprehensive use data are unavailable, EPA relies on outdated, inconsistent sources of information and assumptions. At time, it makes informal queries of some user groups. At other times, it relies on current acreage in certain crops, even if the regional use may increase under the EPA authorized uses set forth in the EPA registration and labels. EPA has deemed 100 acres to be "significant use" in some cases, while it has treated 1,000 or 10,000 acres as "significant use" in others.

EPA's effects determination for linuron exemplifies the pitfalls in EPA's blanket exclusion of pesticides from formal consultation based on current usage rates, particularly since the usage rates are so often based on EPA's rough guesses. For example, EPA assumes that the use of linuron on wheat in the Pacific Northwest is insignificant, but EPA simultaneously admits that:

[I]f linuron is applied to wheat in the future, at already registered application rates, the large number of acres planted with winter wheat in Oregon, Idaho, and Washington could result in very much larger exposure of the [threatened and endangered] species to pesticide and significantly increased risk. The most likely areas at increased risk would be in the Upper and Middle Columbia and Snake River ESU's.

Linuron Effects Determination, March 18, 2004, at 22. However, many of these ESUs have received “no effect” determinations and are thus currently exempt from consultation with NMFS without any requirement that consultation be initiated if usage increases. See id. at 62-63. If linuron applications to wheat accelerate, as is possible under EPA’s current approved label for this pesticide, the resultant harmful effects to listed salmon will remain unanalyzed and unmitigated, in violation of the ESA.

EPA admits that it lacks use information on 71% of the national use of naled, an organophosphate used primarily to treat mosquitoes. Naled Effects Determination, April 1, 2004, at 15, 21. Lacking scientific data, EPA instead refers to “anecdotal evidence” suggesting that naled is used as a mosquito control agent primarily outside of the Pacific Northwest. However, EPA also estimates that naled products are applied for mosquito control to 5,000-60,000 acres throughout in Washington, Oregon, and Idaho, and that naled is sometimes applied over water. Id. at 21. Despite this evidence demonstrating possible exposure of listed Pacific salmonids from mosquito control use, EPA’s effects determination discounts and never analyzes naled applications for mosquito control in the Pacific Northwest.

2. *EPA’s Lack of Scientific Methods to Assess Exposures from Urban Usage.*

The usage data gaps for urban use are even more pervasive than the gaps in agricultural use data. California’s mandatory use reporting is limited to agriculture use and the other states have no mandatory use reporting in place. County usage data is generally limited to agricultural uses as well. Although EPA lacks county-level usage data for homeowner and most noncrop uses, it often has knowledge of extensive urban usage. In such situations, it presumes that urban uses lead to exposures and risks to salmonids, but it does not analyze or account for these exposures and risks in its effects determinations.

For example, captan is a fungicide “widely available” for residential use by homeowners, including on azaleas, begonias, camellias, carnations, chrysanthemum, gladiolas, ornamental grasses, roses, and greenhouse soil and benches. Captan Effects Determination, Dec. 1, 2003, at 14. EPA acknowledges that “captan products for residential use may constitute some stream impact,” and that the use of captan in urban areas presents unique problems because of the potential for its rapid runoff over pavement and into large collective storm drain systems. Id. at 25. EPA nonetheless discounts these urban uses in such areas as Los Angeles County and Seattle, and made “not likely to adversely affect” determinations for several ESUs in urban areas. Id.

EPA repeats this analytical flaw in its analysis of disulfoton’s effects on the Central Valley steelhead and spring-run chinook salmon ESUs. EPA acknowledges that “[r]esidential use in large urban areas, including the San Francisco-Oakland basin, and the uncertainties associated with homeowner use prevent accurate quantification [of disulfoton use within this

ESU].” Disulfoton Effects Determination, Dec. 1, 2003, at 63; *id.* at 12, 39 (rationalizing that disulfoton is “not likely to adversely affect” the California Central Valley steelhead ESU because “[l]ittle or no urban usage is reported” in California’s agricultural use reporting system for major sites in San Francisco and Alameda Counties). Without any reasoned analysis, EPA discounts residential urban uses of disulfoton and concludes that its use is “not likely to adversely affect” these ESUs. *Id.*

EPA likewise failed to integrate evidence of extensive urban use into its effects determination for carbaryl. Carbaryl is a carbamate pesticide that EPA has registered for insects and arthropods on over 100 crop and noncrop use sites, including residential home and garden uses. Carbaryl Effects Determination, March 31, 2003, at 1. In its Carbaryl Effects Determination, EPA concludes that carbaryl is “not likely to adversely affect” the Puget Sound chinook salmon ESU, despite acknowledging that unknown amounts of homeowner use within the densely urban Puget Sound region “also could contribute” to carbaryl’s regional load. Rather than attempt to quantify this amount, or to account for it, EPA simply discounts this use. *Id.* at 83.

EPA makes similar errors in its effects determination for acephate, an organophosphate insecticide with many EPA-registered residential, urban, and golf course uses. *See* Acephate Effects Determination, Feb. 9, 2004, at 1, 6, 21. Shockingly, EPA assumes that non-agricultural uses of acephate “may contribute to the exposure and risks” of listed salmon and steelhead ESUs, but because of a lack of data, completely discounts these urban and non-crop uses. EPA found that acephate would have “no effect” on all 26 Pacific salmon and steelhead ESUs. As a result, EPA has excluded acephate entirely from any consultation with NMFS.

Not only does EPA lack urban usage data, but it also lacks any credible models or scientific methods for assessing urban runoff and exposure patterns. In many of its recent effects determinations, EPA acknowledges that it has no methods for assessing species’ exposure to pesticides from urban uses. *See, e.g.*, Carbaryl Effects Determination at 6; Bensulide Effects Determination at 5-6; Prometryn Effects Determination at 6-7. When EPA has tried to adapt its agricultural runoff model to the urban setting, it has candidly disclosed:

At this point, I am out of anything resembling data. Fenbutatin-Oxide Effects Determination at 21.

It is exceedingly important to note that there is no quantitative scientifically valid support for this modified scenario. Chlorpyrifos Effects Determination at 8; *see also* Bensulide Effects Determination at 6.

3. *EPA's Unsupported Assumptions in the Face of its Lack of Pertinent Biological Information.*

EPA admits its lack of biological expertise regarding salmon habitat needs and salmon life cycle. Such information is uniquely in the hands of NMFS which acquires and uses such information in listing decisions, ESA consultations, and recovery planning. Despite its lack of up-to-date information on the species' status, EPA makes assumptions in its effects determinations about salmon biology and risks notwithstanding its lack of supporting data or expertise.

For example, bensulide is a pre-emergent herbicide used in agriculture on fruit and vegetable crops. It is also used on home lawns and golf course greens and tees in western states. EPA's Bensulide Effects Determination highlights the agency's lack of biological expertise and knowledge of the critical life stages of salmon. EPA concluded that bensulide was "not likely to adversely affect" the Sacramento River winter-run chinook salmon ESU, based on its unverified assumption that young chinook stay in the Sacramento River. Bensulide Effects Determination, November 29, 2002, at 1. If, however, these juvenile salmon reach the tributary streams in Sacramento County, where their exposure to bensulide would be much higher, EPA acknowledges that the effects from bensulide would be significant. It lacks the biological information to fill in the blanks, yet has made a "not likely to adversely affect" determination based on its spotty knowledge of salmon needs and locations. *Id.* at 56.

EPA's effects determination for trifluralin is similarly based on spotty knowledge about the biology of Sacramento River winter-run chinook salmon. Trifluralin Effects Determination, April 1, 2004, at 43-44. EPA concludes that the "significant" application of trifluralin within this ESU "may affect, but is unlikely to adversely affect" this ESU, based on its unsupported and possibly incorrect assumptions about the time of year when salmon are present in the river and its lack of data regarding the timing of trifluralin applications.

EPA similarly relies on unverified assumptions regarding salmonid biology and hydrology in its effects determination for methyl parathion. For the Lower Columbia River steelhead ESU, EPA states: "It is not clear if the young and growing steelhead in the tributaries would use the nearby mainstem of the Columbia prior to downstream migration." Methyl Parathion Effects Determination, April 1, 2004, at 37. The location of the steelhead during their most vulnerable life stages is of obvious significance yet EPA discounts this usage and concludes that methyl parathion is "not likely to adversely affect" this ESU.

4. *EPA's Lack of Sound Methods to Assess Effects of Cumulative Uses and Exposures and Dilution.*

EPA states that there is "fairly extensive" use of chlorpyrifos, an organo-phosphate insecticide, along the salmon's migratory river corridors in Washington and perhaps Oregon.

Chlorpyrifos Effects Determination, March 31, 2003, at 127. EPA asserts that: “But by the time the young sockeye, the most sensitive life stage in all likelihood (if it is like other salmonids that have been tested), reaches this area, there will be significant dilution to preclude likely effects even if there are treated fields next to the Snake River.” *Id.* EPA reaches this conclusion even though it lacks methods to measure dilution and it never aggregates cumulative uses of the pesticides from multiple sources. EPA’s “not likely to adversely affect” determination for this ESU excludes it from formal consultation with NMFS. It makes similar unsupported assumptions about dilution in other effects determinations as well. *See, e.g.,* Acephate Effects Determination at 50; Trifluralin Effects Determination at 47, 48.

5. *EPA’s Reliance on Voluntary Measures Without Studies Showing Compliance with Such Measures or Conditions Making the Effects Determination Contingent on Compliance.*

In numerous effects determinations, EPA has made “no effect” or “not likely to adversely affect” determinations based on the existence of California bulletins that prescribe buffers to protect threatened and endangered aquatic species. However, the California bulletins are currently voluntary and will remain voluntary until some indefinite future time when EPA has adopted an endangered species program making them mandatory. The buffers for aquatic species are generally 40 yards for ground applications and 200 yards for aerial applications. Neither the California regulators nor independent scientists have assessed the extent to which the California bulletins have been implemented on the ground.

EPA’s effects determination for propargite is illustrative. For example, for six salmon and steelhead ESUs in California, EPA concluded that propargite use is “not likely to adversely affect” salmon and steelhead, based solely on the California bulletins’ voluntary label restrictions, even though EPA authorizes use of this pesticide without the buffers and the other constraints recommended in the California bulletins. Propargite Effects Determination, July 23, 2002, at 77. Lacking a reasonable foundation, EPA’s “not likely to adversely affect” conclusion nonetheless assumes propargite is actually used in California in strict compliance with the voluntary bulletins and accordingly minimizes the harm to listed salmonids. Neither EPA’s registration nor its effects determination is contingent upon usage in accordance with the California bulletins.

6. *EPA’s Disregard of USGS Detection Data.*

EPA does not conduct regular monitoring to discern the extent to which pesticide use is contaminating surface water. Nor does EPA require registrants to conduct such monitoring. However, in recent years, the U.S. Geological Survey has conducted surface monitoring in basins throughout the country to obtain a snapshot picture of watershed conditions. Several of the USGS monitoring basins are in salmon watersheds. The USGS monitoring documents actual detections of pesticides in salmon waters and even detections above standards established by

governmental and scientific bodies for aquatic life. Yet EPA has generally ignored or given little weight to such detections.

For example, EPA's Carbaryl Effects Determination never took into account actual USGS detections of carbaryl in salmon streams in Puget Sound. USGS detected carbaryl in Puget Sound salmon waters above levels established to protect aquatic life. USGS, Water Quality in the Puget Sound Basin, Washington and British Columbia, 1996-1998 (2000); USGS, Pesticides in Selected Small Streams in the Puget Sound Basin, 1987-1995 (1997). Inexplicably, EPA reached a "not likely to adversely affect" determination for Puget Sound chinook without addressing this evidence of both use and alarming residues in Puget Sound salmon watersheds.

EPA's effects determination for dicamba concluded that it would have no effect on all 26 listed ESUs in the Pacific Northwest and California, without evaluating any usage data, or considering the frequent detections of dicamba in salmon watersheds. USGS detected dicamba frequently (in more than 20% of the samples) in salmon streams sampled in Puget Sound. EPA's effects determination completely disregards the USGS detections and also fails to evaluate the urban uses of the pesticide for landscaping, turf, and ornamental plants, which exacerbate its presence in urban, salmon-bearing streams.

EPA found that atrazine, the most widely used pesticide nationwide, would have "no effect" on all 26 salmonid ESUs. Atrazine Effects Determination, July 27, 2003. EPA's atrazine effects determination appears to rely on modeling from the registrant's unpublished study and ignores USGS detections of atrazine in the Pacific Northwest. In fact, USGS detected atrazine frequently in salmon watersheds in four of its surveys with detection rates exceeding 80% in three of its studies. In the Willamette River Basin, USGS detected atrazine at levels above established aquatic life criteria in two separate surveys. EPA's effects determination also relies on an artificially high number for adverse ecological effects from atrazine, which runs counter to EPA's earlier determinations that lower levels of atrazine exposure caused adverse ecological effects, see EPA's Reregistration Eligibility Science Chapter for Atrazine, at 77-78, and it fails to address relevant scientific studies on atrazine's endocrine disruption effects, even though U.S. Fish and Wildlife Service specifically highlighted this literature in its June 27, 2002 comments on EPA's re-registration decision for atrazine.

CONCLUSION

In sum, EPA's conclusions in its effects determinations that authorized pesticide uses will either not affect, or are not likely to adversely affect listed Pacific salmon are invalid because they fail to rely on the best available science, fail to consider relevant factors, and are arbitrary and capricious. The ESA consultation process is not a shell game where the action agency can conceal the action's impacts from the expert agencies. Instead, it is designed to operate as a check on an agency committed to pursuing its primary mission efficiently and expeditiously. The Washington Toxics Coalition litigation has uncovered EPA's pervasive violations of the

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ESA with respect to listed salmon. NMFS' preliminary reviews of EPA's risk assessments (and EPA's assessments themselves) have uncovered weaknesses in EPA's scientific basis and methods for ensuring that use of the pesticides will not jeopardize salmon survival. It is critical that the ESA consultations be based on the best available science since only then can EPA and NMFS comply with the ESA and guard against jeopardy and harm to salmon. EPA should redo its effects determinations now incorporating the best science and the pesticides' full effects. That is the only way that EPA can discharge its ESA consultation duties. If the consultations proceed on the basis of flawed science and truncated analysis, they will need to be redone, which will only further delay putting needed protections in place on the ground.

EPA may not proceed with activities, including the ongoing registration of pesticide uses, that may affect listed salmon until it has completed a legally valid consultation that properly addresses all of the pertinent impacts. EPA has illegally circumvented the consultation process with NMFS based on its erroneous effects determinations. If EPA does not correct these violations of the ESA within 60 days, we will seriously consider bringing legal action to stop and remedy these violations.

Sincerely,



Patti Goldman
Amy Williams-Derry
Earthjustice
705 Second Avenue, Suite 203
Seattle, WA 98104
(206) 343-7340
(206) 343-1526 [FAX]

*Attorneys for Northwest Coalition for Alternatives
to Pesticides, Washington Toxics Coalition, Pacific
Coast Federation of Fishermen's Associations, and
Institute for Fisheries Resources*

cc: Donald L. Evans
Secretary of Commerce
U.S. Department of Commerce
1401 Constitution Avenue, N.W.
Washington, D.C. 20230

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William T. Hogarth, Ph.D.
Assistant Administrator for Fisheries
National Marine Fisheries Service
1315 East West Highway, SSMC3
Silver Spring, MD 20910

DRAFT

Arthur-Jean Williams, Chief
Field and External Affairs Division
Office of Prevention, Pesticides and Toxics Substances
U.S. Environmental Protection Agency
Washington, D.C. 20462

April , 2004

Re: Endangered Species Act Section 7 Informal Consultation for 28 Pesticide Registrations*

Dear Ms. Williams:

This correspondence is in response to the U.S. Environmental Protection Agency's (EPA) requests for informal consultation under the Endangered Species Act (ESA) of the registration or re-registration of 28 pesticides under the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 136a, FIFRA). The National Marine Fisheries Service (NOAA Fisheries) has reviewed the draft biological evaluations (BE) and requests for concurrence with the determinations of "may affect, not likely to adversely affect" for chinook salmon (*Oncorhynchus tshawytscha*) (Upper Columbia, Snake River spring/summer run, Snake River fall run, Upper Willamette, Lower Columbia, Puget Sound, California Coastal, Central Valley spring run, Sacramento River winter run); coho salmon (*O. kitch*) (Southern Oregon/Northern California, Central California); chum salmon (*O. keta*) (Hood Canal summer run, Columbia River); sockeye salmon (*O. nerka*) (Ozett Lake, Snake River); steelhead (*O. mykiss*) (Snake River basin, Upper Columbia River, Middle Columbia River, Lower Columbia River, Upper Willamette River, Northern California, Central California coast, South-central California coast, Southern California, Central Valley California) for the above referenced 28 pesticide registrations.

The majority of initiation packages contain a similar suite of information. That information usually includes documents which assess the risks to threatened and endangered salmonids and their habitat, interim or final registration decision documents, memoranda specifically addressing EPA's summaries of environmental fate and effects of the pesticides, national and regional pesticide use information, and some pesticide labels. The degree of detail that each package provides varies relative to the date of package (submittals began in July 2002), as well as quantity of information available about the particular pesticide.

After review of the submitted information, NOAA Fisheries does not concur with EPA's effects determinations. NOAA Fisheries believes the proposed action, which includes registration of the active ingredient, formulated products, degradation products such as metabolites and degradates, and mixtures (formulated products and tank mixes), may have greater than discountable or insignificant effects on listed species. NOAA Fisheries has determined that the proposed action

is “likely to adversely affect” the 26 ESUs and thus, requires formal consultation. Our comments are provided in accordance with section 7(a)(2) of the ESA, and its implementing regulations, 50 C.F.R. Part 402.

Information and/or Analysis Gaps

Lack of best commercial and scientific data available. Consultation regulations state that “The Federal agency requesting formal consultation shall provide the Service with the best scientific and commercial data available or which can be obtained during the consultation for an adequate review of the effects that an action may have upon listed species or critical habitat” (50 C.F.R. 402.14(d)). In the context of pesticide effects, NOAA Fisheries believes that the best available science includes the primary, peer-reviewed scientific literature. It also includes the “grey literature” such as agency technical reports and data submitted to the EPA by pesticide producers during the registration process.

For a risk determination in the context of the ESA, NOAA Fisheries believes that the RED does not by itself constitute the best available scientific and commercial data. An initiation package/ biological assessment must consider the peer-reviewed scientific literature and other relevant sources of technical information. While this requirement, as written, pertains to formal consultations, NOAA Fisheries has conducted data searches for two of the 28 pesticides under informal consultation and obtained between 700-800 peer-reviewed citations which were not included in the initiation packages. Those findings cause us concern that EPA’s effects analyses may not be conducted using the “best scientific and commercial data available”, and that the ecological risk assessment may be biased toward concluding that a pesticide does not pose an ecological risk to listed resources, when in fact, it does (a “Type II error”).

Insufficient description of the action proposed for consultation. NOAA Fisheries is required, during section 7 consultation, to clearly identify the action upon which we will consult. For example, we will need to determine if these consultations will encompass the effects of re-registering products containing the active ingredients only (as compared with the various formulations that contain the active ingredient, as well as degradates, mixtures, surfactants, adjuvants, inert (other) ingredients, and tank mixes), the uses of those products, or some combination of the two. In addition, NOAA Fisheries needs to understand whether use of the pesticides under other FIFRA section (e.g., 18 and/or 24(c)) should be analyzed in this consultation. Lacking clarity about the action can either over- or under-estimate the identified effects.

Lack of salmonid spatial and temporal status and environmental baseline relative to pesticide uses. In order for NOAA Fisheries to assess the risks of the pesticide registration action on the listed species, analysis of temporal and spatial structure and abundance is necessary. The risk analyses begin with the species, populations, life stages, and habitat that would be exposed, combined with information on their probable responses upon exposure. As part of this step, we examine the information available on each species’ status, both spatially and temporally, the

impact of activities that we include in the environmental baseline for the consultation, and cumulative effects. To support any inferences that might be necessary about these various effects on listed species, we use demographic models to estimate the probable consequences on the species' likelihood of surviving and recovering in the wild (estimated using measures such as probability of persistence over 20, 50, or 100 years based on population growth rate (λ) or median time to extinction derived from cumulative distribution functions).

Lack of exposure from all potential compounds and uses at spatial and temporal scales. Most of the initiation packages speak to a method to assess potential exposure from residential uses of many of the pesticides. However, those uses are not taken into consideration in the final risk analyses. The analyses should evaluate all available evidence of fate, transport, and persistence to determine the likelihood of listed species or critical habitat ("listed resources") being exposed to various environmental concentrations of the active ingredients, degradates, or metabolites (or the broader components of the formulated products), which includes estimating the intensity, duration, and frequency of exposure for all potential uses. These analyses will assume that the potential direct effects of the re-registration of each pesticide on listed resources will be a function of the intensity (measured in terms of estimated environmental concentrations), duration, and frequency of the exposure (although we recognize that some biologically significant effects are likely to result from low levels of exposure). Our exposure analyses will also try to estimate (a) the species, populations, and life stages that would be exposed to the direct and indirect effects of active ingredient, formulated product, tank mixes, if appropriate, degradates, or metabolites; (b) the conditions of that exposure (in space and over time); (c) the portions of critical habitat that would be exposed, including any constituent elements; and (d) the conditions of that exposure.

Lack of incorporation of direct sublethal effects beyond growth and reproduction. NOAA Fisheries must evaluate the available evidence to identify the probable acute or chronic responses from probable exposure, which would include death or injury; trophic effects; and behavioral responses that would have longer-term, chronic effects on the viability of populations of listed species. For example, this step of our analyses will try to develop and examine "stressor-response" relationships (relationships between various acute and chronic endpoints and estimated environmental concentrations of compounds) to characterize the likelihood of responses by listed resources and their ecosystems from exposure to the active ingredient, degradates, or metabolites (or the broader components of the formulated products). The lack of information on chronic sublethal effects, or effects posed by degradates, mixtures, surfactants, adjuvants and inert (other) ingredients, can very quickly lead to the conclusions of false negatives (concluding that an effect does not pose an ecological risk to listed resources when, in fact, it does) or Type II errors. Type II errors for listed resources are very significant in a section 7 analysis as NOAA Fisheries must assure that these errors are minimized.

Without the analyses of the above-identified issues, NOAA Fisheries can not be certain that the registration of the 28 pesticides do not pose risks to and adversely affect listed fish or the ecosystems upon which they depend. Formal ESA section 7 consultation will afford the

opportunity to address these issues, as well as evaluate levels of incidental take that may be appropriate for authorization. As EPA is aware, section 7(a)(2) of the ESA requires that each Federal agency shall insure that any action authorized, funded, or carried out by such action agency is not likely to jeopardize the continued existence of any endangered or threatened species (or result in the destruction of adverse modification of critical habitat, where designated). Given these concerns, NOAA Fisheries recommends that EPA not make irreversible or irretrievable commitments of resources which would have the effect of foreclosing the formulation or implementation of any reasonable and prudent alternatives that would avoid violating section 7(a)(2). If EPA determines that the requirements of 7(d) are satisfied then NOAA Fisheries requests written confirmation of the actions that will proceed during consultation.

NOAA Fisheries will be meeting with EPA on April 29, 2004 to discuss other components of these consultations. Perhaps at that time we can discuss these issues and identify a compatible approach to their resolution. We look forward to working with you on these consultations in a cooperative and transparent manner. Please contact Rachel Friedman (360-753-4063, rachel.friedman@noaa.gov), of my staff, to set up the proposed meeting.

Sincerely,

Steve W. Landino
Washington State Director

cc: Bridget Moran, Washington Department of Agriculture

*Trifluralin, Methyl Parathion, Methidathion, Methamidophos, Linuron, Naled, Molinate, Propargite, Metolachlor, Fenbutatin Oxide, Diazinon, Bensulide, Imazapyr, Sulfometuron-methyl, Thiobencarb, Carbaryl, Chlorpyrifos, Oryzalin, Acrolein, Diuron, Phorate, Bromacil/Lithium Bromide, Phosmet, Fenamifos, Ethoprop, Disulfoton, Chlorothalonil, Captan