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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

ENVIRONMENTAL APPEALS BOARD

In the Matter of:	)	PSD Appeal No. 05-06
WANAPA ENERGY CENTER,	)	**EPA REGION 10'S RESPONSE BRIEF**
PSD Permit No. R10PSD-OR-05-01	)	

I. INTRODUCTION

On August 8, 2005, the Director of the Office of Air, Waste and Toxics for the U.S. Environmental Protection Agency, Region 10 ("EPA") issued Prevention of Significant Deterioration ("PSD") Permit No. R10PSD-OR-05-01 ("Permit") to Diamond Wanapa I, L.P. ("Diamond") for the Wanapa Energy Center ("Proposed Project"). *See* EPA Exhibit ("EPA Ex.") F-1. Ken Thompson ("Petitioner") filed a Petition for Review ("Petition") of this Permit with the Environmental Appeals Board ("EAB") on September 9, 2005. For the reasons discussed below, the EAB should deny review of the Petition.

II. FACTUAL AND PROCEDURAL BACKGROUND

In January 2003, Diamond submitted to EPA an application to construct and operate the Proposed Project. *See* EPA Ex. A-13; EPA Ex. B-2 at p. 66. Diamond submitted a revised PSD

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permit application in August 2003. *See* EPA Ex. A-23; EPA Ex. B-2 at p. 8. The permit application was deemed complete on August 27, 2003. EPA Ex. A-24.

The Proposed Project is a greenfield combined cycle gas/steam turbine electric generating facility that will be located approximately three miles east of Umatilla, Oregon and five miles north of Hermiston, Oregon on land that is held in trust by the U.S. Government for the benefit of the Confederated Tribes of the Umatilla Indian Reservation. EPA Ex. B-2 at p. 5. The Proposed Project will incorporate two power blocks that will each consist of two F-technology combustion turbines, two heat recovery steam generators equipped with duct burners, and one steam turbine with associated plant equipment. *Id.* at p. 6. The Proposed Project would combust only natural gas. *Id.*

The PSD provisions of the Clean Air Act require any person planning the construction or major modification of a major emitting facility in an attainment or unclassifiable area to obtain a PSD permit. *See* 42 U.S.C. § 7475(a)(1).[1] A PSD permit cannot be issued unless the applicant demonstrates compliance with the PSD regulations in 40 C.F.R. § 52.21. *See* 42 U.S.C. § 7475; 40 C.F.R. § 52.21. To make such a demonstration, the applicant must perform an analysis of the air quality impacts of the proposed construction project and demonstrate that the new facility will not cause or contribute to an exceedance of any applicable NAAQS or air quality increment. *Id.* If a facility emits a" significant quantity" of a pollutant, the applicant must demonstrate that the facility will comply with emissions limitations that reflect application of the best available control technology ("BACT").[2] *See* 40 C.F.R. § 52.21(j).

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[1] An area is designated as being in attainment with a specific National Ambient Air Quality Standard ("NAAQS") if the pollutant concentration in the ambient air within the area meets the limits specified in the NAAQS. 42 U.S.C. § 7407(d)(1)(A). Unclassifiable areas are those areas that cannot be classified on the basis of available information as meeting NAAQS. *Id.*

[2] BACT is defined as "an emission limitation based on the maximum degree of reduction of each pollutant subject to regulation ... emitted from or which results from any major emitting facility ...." 42 U.S.C. § 7479(3); 40 C.F.R. § 52.21(b)(12).

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Typically, state or local permitting authorities implement the PSD program. *See* 40 C.F.R. § 52.21(a)(1). Although EPA has approved Oregon's PSD program, facilities located on tribal land must obtain PSD permits from EPA. Thus, EPA is the entity that issued the Permit to Diamond for the Proposed Project.

On November 21, 2004, EPA issued the draft PSD permit for public review and comment. EPA Ex. B-5. The public comment period was extended once at the request of the Umatilla County Board of Commissioners; thus, the public comment period ended on January 19, 2005. EPA Ex. B-8 and B-10. EPA held a hearing on the draft PSD permit on January 5, 2005. EPA Ex. C-21. After reviewing the comments made during the public comment period, on August 8, 2005, EPA issued the Permit and a Response to Comments document. EPA Ex. F-1 and F-2. Petitioner filed his Petition on September 9, 2005.

III. STANDARD OF REVIEW

Pursuant to 40 C.F.R. § 124.19(a), the EAB will not ordinarily review a permit decision "unless the decision is based on either a clearly erroneous finding of fact or conclusion of law, or involves an important matter of policy or exercise of discretion that warrants review." *In re Campo Landfill Project*, NSR Appeal No. 02-01, slip op. at 5 (EAB, Jan. 14, 2003); *see also In re Knauf Fiber Glass, GmbH*, 8 E.A.D. 121, 126 (EAB 1999); 40 C.F.R. § 124.19. The preamble to 40 C.F.R. § 124.19 states that the "power of review should be only sparingly exercised, [and] most permit conditions should be finally determined at the Regional level." 45 Fed. Reg. 33,290, 33,412 (May 19, 1980).

The petitioner has the burden to demonstrate that there is clear error or an important policy consideration that warrants that the permit condition should be reviewed. *See In re BP Cherry Point*, 12 E.A.D. --, slip op. at p.11-12 (EAB, June 21, 2005); *In re Three Mountain Power, LLC*, 10 E.A.D. 39, 47 (EAB 2001); *In re Steel Dynamics, Inc.*, 9 E.A.D. 740, 743 (EAB 2001). It is not enough that the petitioner merely repeat the objections that it made during the

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comment period. Instead, the petitioner must "both state the objections to the permit that are being raised for review and … explain why the permit decision maker's previous response to those decisions … is clearly erroneous or otherwise warrants review." *In re Kawaihae Cogeneration Project*, 7 E.A.D. 107, 114 (EAB 1997); *see also In re BP Cherry Point*, 12 E.A.D. --, slip op. at p.11-12 (EAB, June 21, 2005). Although the EAB will construe petitions filed by persons unrepresented by legal counsel broadly, the EAB expects such petitions "to provide sufficient specificity such that the [EAB] can ascertain what issue is being raised [and] expects the petition to articulate some supportable reason as to why the permitting authority erred or why review is otherwise warranted." *In re Knauf Fiber Glass, GmbH*, 8 E.A.D. at 127.

Furthermore, issues and arguments raised by a petitioner that are not raised during the public comment period will not be considered preserved for review without a demonstration that they were not reasonably ascertainable at the time. *See In re BP Cherry Point*, 12 E.A.D. --, slip op. at p.14-15 (EAB, June 21, 2005); *In re AES Puerto Rico, L.P.*, 8 E.A.D. 324, 335 (EAB 1999); *In re Masonite Corp.*, 5 E.A.D. 55, 585 (EAB 1994); *In re SEI Birchwood, Inc.*, 5 E.A.D. 25, 29 (EAB 1994); *see also* 40 C.F.R. §§ 124.13 and 124.19(a) ("Petitioners must demonstrate that any issues raised [on review] were raised during the public comment period … to the extent required by these requirements."). Issues must be raised during the public comment period to "ensure that the permit issuer has an opportunity to adjust its permit decision or to provide an explanation of why no adjustment is necessary." *In re AES Puerto Rico, L.P.*, 8 E.A.D. at 335; *see also In re BP Cherry Point*, 12 E.A.D. --, slip op. at 14-15 (EAB, June 21, 2005). If an issue was not properly preserved for review, the EAB will generally deny review of the issue. *Id.*

IV. ARGUMENT

Petitioner raises nine main issues on appeal: (1) EPA failed to address the human health and environmental effects to "majority and minority populations;" (2) EPA has unfairly and improperly treated emissions from non-road diesel engines differently than emissions from the

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Proposed Project; (3) EPA failed to conduct a cumulative impacts analysis; (4) EPA improperly used emission reductions in non-road diesel engines to offset emissions from the Proposed Project; (5) EPA erred in using meteorological data from Walla Walla and Spokane; (6) EPA should have treated the airshed around the Proposed Project the same as a Class I or Class II wilderness or scenic area; (7) EPA did not consider a Bonneville Power Administration ("BPA") map that shows air quality impacts from all power plants in the area around the Proposed Project; (8) EPA erred in establishing the Permit's volatile organic compound ("VOC") emissions limit; and, (9) EPA failed to include permit conditions for non-road diesel engines that will be used during construction of the Proposed Project. Petitioner has failed to demonstrate clear error in a finding of fact or conclusion of law and has failed to raise any important policy considerations. Moreover, some of the issues raised by Petitioner were not raised during the public comment period, and thus, were not preserved for review. Therefore, the EAB should dismiss the Petition.

A. EPA Did Address The Human Health and Environmental Effects To Both "Majority and Minority Populations" In Determining Whether To Issue The Permit.

Fact #1 in the Permit states that the Proposed Project:

> will be located in the vicinity of minority populations, and EPA is responsible for addressing environmental justice within these communities pursuant to Executive Order 12898. EPA is required to identify and address disproportionately high and adverse human health and environmental effects, if any, on minority populations due to this PSD permit approval.

EPA Ex. F-1 at Fact #1. Petitioner argues that Fact #1 provides evidence that EPA failed to address the human health and environmental effects of the Proposed Project to both "majority and minority populations." Petition at p. 1. Petitioner requests that the EAB require EPA to treat all individuals the same.

First, during the public comment period, neither Petitioner nor any other commenter argued that EPA gave preferential treatment to minority populations when it analyzed the human

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health and environmental effects of the Proposed Project. *See* EPA Ex. C-1 to C-21. Further, Petitioner failed to explain why this issue was not reasonably ascertainable during the public comment period. *See* Petition at p. 1. As such, this argument was not preserved for review.

Moreover, even if this issue were reviewable, Petitioner misconstrues the statements set forth in Fact #1. Executive Order 12898 was issued to address environmental justice concerns associated with federal agency actions. *See* EPA Ex. A-1. The Executive Order directs federal agencies, including EPA, to identify and address disproportionately high and adverse human health or environmental effects of regulatory programs, policies, and activities on minority populations and low-income populations. *Id.* at Section 1-101. As such, in issuing PSD permits, such as the current Permit, EPA is to consider environmental justice issues on a case-by-case basis. *See* EPA Ex. A-2 at p. 11.

In the Technical Support Document ("TSD"), EPA discussed how it addressed the environmental justice provision during the permitting process for the Proposed Project. Specifically, the TSD explained that the Proposed Project:

> is being constructed near high minority and low-income populations.... EPA conducted a series of meetings ... to educate the public with respect to [the Proposed Project] and EPA's review of the air quality impacts. No environmental justice issues were raised by the public. EPA seeks further input to determine if [the Proposed Project] will have a disproportionately high or adverse human health or environmental impact on minority or low-income populations in the area surrounding the facility.

EPA Ex. B-2 at p. 64-65. To show that EPA fulfilled its environmental justice obligation, EPA included Fact #1 in the Permit. *See* EPA Ex. F-1 at Fact #1.

Furthermore, during the permitting process, EPA analyzed the human health and environmental effects of the Proposed Project on the general public which includes both "minority and majority" populations. *See* EPA Ex. F-2 at p. 13-16. As discussed in the Response to Comments, the analysis concluded that the Proposed Project will not have an

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adverse impact upon public health. *Id.* Petitioner has misconstrued the statements in Fact #1 and has failed to show that Fact #1 is clearly erroneous or otherwise warrants review. Therefore, the EAB should deny review of this issue.

B. <u>EPA Cannot Treat Emissions From The Proposed Project The Same As Emissions From Non-Road Diesel Engines.</u>

Although it is difficult to determine Petitioner's precise argument, Petitioner appears to be saying that EPA failed to treat emissions from the Proposed Project the same as emissions from non-road diesel engines. *See* Petition at p. 3-7. Specifically, Petitioner states that "[a]s long as the [Proposed Project] is in an EPA air quality attainment area and the individual facility does not exceed … NAAQs, then [] EPA and applicants can conclude that there are no significant human, crop, or animal impacts." *Id.* at p. 3. Petitioner appears to be arguing that it is improper and unfair for EPA to make this determination when EPA has found that emissions from non-road diesel engines cause human health impacts. Essentially, Petitioner believes that EPA should treat stationary sources, such as the Proposed Project, the same as mobile sources, such as non-road diesel engines.

First, Petitioner made this identical argument during the public comment period. *See* EPA Ex. C-1 at p. 5-14. In *In re Kawaihae Cogeneration Project*, 7 E.A.D. 107 (EAB 1997), the EAB explained that it is not enough that the petitioner merely repeat the objections made during the public comment period. Instead, the Petitioner must "both state the objections to the permit … and … explain why the permit decision maker's previous response to those decisions … is clearly erroneous or otherwise warrants review." *Id.* at 114. Petitioner has merely repeated the objections he made during the public comment period without explaining why EPA's response was clearly erroneous or otherwise warrants review.

In fact, in the Response to Comments, EPA explained:

> The CAA [Clean Air Act] regulates stationary sources [such as the Proposed Project] and mobile sources [such as nonroad diesel engines] differently, and

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> EPA is required to follow the PSD permitting process for [the Proposed Project] under the CAA.

EPA Ex. F-2 at p. 26. Moreover, EPA included a lengthy discussion concerning the analysis of human health impacts undertaken during the permitting process. *Id.* at p. 13-16.

Furthermore, to the extent that Petitioner is challenging the NAAQS or the non-road diesel engine rule, this permit appeal is not the appropriate forum. *See In re Tondu Energy Company*, 9 E.A.D. 710, 715 (EAB 2001).

In sum, Petitioner has failed to show that EPA's permit decision was based on a clearly erroneous finding of fact or conclusion of law or otherwise warrants review. Therefore, the EAB should deny review of this issue.

C. EPA Failed To Conduct A Cumulative Impacts Analysis Before Issuing the Permit.

Petitioner appears to be arguing that the ambient air quality impact analysis failed to take into account all stationary and mobile sources and, therefore, that EPA had failed to conduct a complete cumulative impact analysis. *See* Petition at p. 2, 7-8.

First, Petitioner made this exact argument during the public comment period. *See* EPA Ex. C-1 at 5-6; *see also* EPA Ex. C-9 (comment submitted by the Oregon Wheat Growers League). Petitioner has merely repeated the objection he made during the public comment period without explaining why EPA's response was clearly erroneous or otherwise warrants review.

Moreover, EPA did conduct the required cumulative impacts analysis that took into consideration both stationary and mobile sources. The TSD contains a lengthy discussion that explains how the ambient air quality impact analysis was conducted, including a discussion of both stationary and mobile sources. *See* EPA Ex. B-2 at p. 39. In response to this comment, EPA explained:

> 40 C.F.R. § 52.21(m) states that an ambient air quality [impact] analysis [AAQIA] is required for each air pollutant emitted in excess of EPA's significant

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> emission rate thresholds.... In this case, an AAQIA is required for carbon monoxide (CO), nitrogen dioxide (NO_2), O_3 [ozone], PM_{10}, and sulfur dioxide (SO_2).... If it is determined that emissions from the new source will not have a significant impact, no further analysis is required....
>
> The AAQIA indicated that only NO_2 and PM_{10} exceeded their respective significant impact levels. See TSD at p. 43, Table 5-6. Therefore, a cumulative, or second part, full AAQIA was performed for these two air pollutants to determine compliance with NAAQS and Class II area air quality increments. Subsection 5.2.6 of the TSD provided a description of the nearby point source emissions inventory development. Mobile source emissions were determined to be insignificant and were assumed to be included in the measured background concentrations as well as fugitive dust emission and agricultural activities....
>
> In sum, EPA has adequately accounted for all sources contributing to air pollution in the AAQIA. Further, the AAQIA properly contained a cumulative impacts analysis as required under the CAA and implementing regulations....

EPA Ex. F-2 at p. 12-13. Petitioner has failed to explain how EPA's response or permitting decision was clearly erroneous or otherwise warrants review. Thus, the EAB should deny review of this issue.

D. EPA Has Not Used An "Emissions Offset" In Determining Whether To Issue The Permit.

Petitioner appears to contend that by restricting emissions from non-road diesel engines by promulgating the Non-Road Diesel Engine Rule, 69 Fed. Reg. 38958 (June 29, 2004), EPA created an "emissions offset" whereby the reduction in emissions from non-road diesel engines is used to allow greater emissions from electric generating facilities, such as the Proposed Project. *See* Petition at p. 9-11. At the heart of Petitioner's argument is the contention that EPA is unfairly imposing stricter regulations on non-road diesel engines than electric generating facilities.

As explained in the Response to Comments, the Clean Air Act regulates stationary sources and mobile sources differently. *See* EPA Ex. F-2 at p. 26. For stationary sources, such as the Proposed Project, EPA is required to follow the PSD permitting process. *Id.* EPA cannot change the way that stationary sources and mobile sources are treated under the Clean Air Act;

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only Congress has the ability to change these statutory requirements. Furthermore, to the extent that Petitioner is attempting to challenge the Non-Road Diesel Engine Rule, this permit appeal is not the proper forum for such a challenge. *See In re Tondu Energy Company*, 9 E.A.D. 710, 715 (EAB 2001).

Although Petitioner argues that EPA has used an "emissions offset" to permit the Proposed Project, Petitioner has not provided any evidence that there has been a reduction in non-road diesel engine emissions in the area around the Proposed Project. Further, even if there has been a decrease in emissions from non-road diesel engines, EPA did not take into account any emission decreases or credits. *See* EPA Ex. B-2 at p. 39 ("It should be noted that increment expansion (emission decreases) were not included in the analysis"); EPA Ex. F-2 at p. 13 ("It should be pointed out that concentrations predicted for the air quality increment analysis are conservative (bias towards over prediction) because allowable emission rates (rather than actual emissions increases from the baseline) were modeled and emission decreases or credits were not considered."). Therefore, even if an "emissions offset" was created as a result of the Non-Road Diesel Engine Rule, EPA did not use this "offset" to allow greater emissions from the Proposed Project.

In sum, Petitioner has failed to show how EPA's actions were clearly erroneous or otherwise warrant review; thus, the EAB should deny review of this issue.

E. <u>EPA Did Not Err In Using The Meteorological Data From Walla Walla And Spokane.</u>

Petitioner next argues that EPA erred in using the meteorological data from Walla Walla, Washington and Spokane, Washington because this data is not representative of weather condition in the area of the Proposed Project. *See* Petition at p. 11, 14.

In response to this same argument made during the public comment period, EPA provided a lengthy discussion concerning the use of the meteorological data from Walla Walla

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and Spokane. *See* EPA Ex. F-2 at p. 10-11. This long discussion concludes by stating that "based on its technical expertise and best professional judgment, EPA has determined that the meteorological data from ... Walla Walla and Spokane is adequately representative of the project location." *Id.* at p. 11. Petitioner has failed to explain why this discussion and conclusion in the Response to Comments are clearly erroneous or otherwise warrants review. Therefore, the EAB should deny review of this issue.

F. <u>EPA Has Properly Evaluated The Area As A Class II Area For Purposes of PSD Permitting.</u>

Petitioner contends that EPA should treat the impact area of the Proposed Project as if it were a Class I or II wilderness or scenic area. *See* Petition at p. 11. In Petitioner's view, EPA's failure to accord the area such treatment, allows Umatilla County's airshed to be used as an "air pollutant dumping airshed." *Id.*

Petitioner made this exact argument during the public comment period. *See* EPA Ex. C-1 at p. 15. In response to this comment, EPA explained:

> The area around [the Proposed Project], like most other areas within the United States, is classified as a Class II area. EPA has reviewed [the Proposed Project's] impacts upon the surrounding area consistent with PSD requirements for Class II areas.

EPA Ex. F-2 at p. 28-29. Instead of explaining why EPA's response or permitting decision are clearly erroneous or otherwise warrant review, Petitioner has merely reiterated the same argument he made during the public comment period.

Even if Petitioner had demonstrated that EPA's response or permitting decision were clearly erroneous or otherwise warrant review, this argument would fail. EPA does not have the authority to treat the area of the Proposed Project as a Class I area. Further, contrary to Petitioner's statement, the area of the Proposed Project is classified as a Class II area. 40 C.F.R. § 52.21(e) states:

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> (1) All of the following areas which were in existence on August 7, 1977 shall be Class I areas and may not be redesignated: (i) International parks, (ii) National wilderness areas which exceed 5,000 acres in size, (iii) National memorial parks which exceed 5,000 acres in size, and (iv) National parks which exceed 6,000 acres in size.
>
> (2) Areas which were redesignated as Class I under regulations promulgated before August 7, 1977, shall remain Class I, but may be redesignated as provided in this section.
>
> (3) Any other area, unless otherwise specified in the legislation creating such an area, is initially designated Class II.

40 C.F.R. § 52.21(e). The only designated Class I areas in Oregon are Mt. Hood Wilderness, Eagle Cap Wilderness, Hells Canyon Wilderness, Mt. Jefferson Wilderness, Mt. Washington Wilderness, Three Sisters Wilderness, Strawberry Mountain Wilderness, Diamond Peak Wilderness, Crater Lake National Park, Kalmiopsis Wilderness, Mountain Lake Wilderness, and Gearhart Mountain Wilderness. *See* 40 C.F.R. § 81.425. As such, Umatilla County is a Class II area for purposes of the PSD permitting process.

Petitioner has failed to provide any evidence or explanation as to why EPA's actions were clearly erroneous or otherwise warrant review. Therefore, the EAB should deny review of this issue.

G. <u>EPA Did Consider The BPA Map Cited By The Petitioner During The PSD Permitting Process.</u>

Petitioner contends that he discovered a BPA map that shows there will be significant cumulative air quality impacts in the area of the Proposed Project. According to Petitioner, EPA failed to consider this map during the PSD permitting process. *See* Petition at p. 11-12. Petitioner appears to argue that this map would have changed EPA's permitting decision.

First, Petitioner failed to raise this issue during the public comment period and has failed to explain why this argument was not reasonably ascertainable during the comment period. *See* EPA Ex. C-1. In fact, the BPA document that contains the map was part of the administrative

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record that was available for public review during the public comment period. EPA Ex. A-3. Thus, Petitioner failed to preserve this issue for review.

Moreover, even if Petitioner had preserved this issue for review, Petitioner has failed to explain how it would affect EPA's permitting decision and why that permitting decision was clearly erroneous or otherwise warrants review. BPA prepared the map as part of a study to determine downwind impacts of any proposed natural gas-fired power plant, including the Proposed Project. *See* EPA Ex. A-3. The BPA study looked at two scenarios: (1) a scenario where 45 natural gas-fired power plants would be constructed and operated and (2) a scenario where 28 natural gas-fired power plants would be constructed and operated simultaneously. *Id.* at p. 1. Only about half of the power plants have been permitted and many of these permits have expired. Further, the majority of the power plants have not even been constructed. As such, the BPA study overestimates current impacts from *existing* power plants and does not provide evidence that the cumulative impacts from the Proposed Project together with *existing* stationary sources would cause an exceedance of the NAAQS. Moreover, it should be noted that the BPA study concludes that NAAQS will not be exceeded, even if all the proposed natural gas-fired power plants were constructed and operated alongside the exiting plants. *Id.* at p. 4. Therefore, Petitioner has failed to provide evidence that shows why EPA's permitting decision was clearly erroneous or otherwise warrants review and the EAB should deny review of this issue.

H. <u>Petitioner Has Failed to Establish that the Volatile Organic Compound Emissions Limit in the Permit is Clearly Erroneous or Otherwise Warrants Review.</u>

Petitioner argues that the Proposed Project will not be able to operate with a volatile organic compound ("VOC") emissions limit of 99 tons per year ("tpy"). Specifically, Petitioner has included a calculation in his Petition that indicates that if the Proposed Project were to operate 365 days a year, then VOC emissions would equal approximately 345 tpy. *See* Petition at p. 12. According to Petitioner, "what competent business is going to spend $300 million on a

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carbon based [] power plant and only operate the facility for 28.6% of the year?" Petition at p. 13.

First, this argument was never raised during the public comment period by either the Petitioner or any other individual who participated in the public comment period. *See* EPA Ex. C-1 to C-21. Petitioner has failed to explain why this issue was not reasonably ascertainable during the public comment period. *See* Petition at p. 12-13. As such, this argument was not preserved for review.

Further, Finding #3 in the Permit states:

> Diamond has requested that EPA limit [the Proposed Project's] annual VOC emissions to less than 100 tpy, thereby exempting [the Proposed Project] from the requirement to conduct ambient O_3 monitoring. Without the requested limit, [the Proposed Project's] potential to emit VOC is 345 tpy assuming each CT and DB [combustion turbine and duct burner] is operated at maximum firing rate for each hour of the year.

EPA Ex. F-1 at Finding #3. Thus, EPA was aware that the Proposed Project had the potential to emit 345 tpy of VOC. Diamond, however, requested that EPA limit VOC emissions to less than 100 tpy. *Id.* Accordingly, EPA established a VOC limit of 99 tpy.[3] *Id.* at Condition 15.1.

The amount of time that the Proposed Project remains in operation per year is a business decision that will be made by Diamond, not a permitting decision made by EPA. If the Proposed Project exceeds this emission limit, then Diamond will be in violation of a condition of the Permit and may be subject to an enforcement action.

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[3] Although the Permit does not explicitly restrict the Proposed Project from operating 365 days per year, Condition 15.2 of the Permit requires the Proposed Project to demonstrate compliance with the VOC emissions limit by calculating emissions using the emissions factors set forth in Condition 15 3. Alternatively, the company could propose different emissions factors to EPA for approval after conducting specified stack testing pursuant to Condition 15.4. *See* EPA Ex. F-1 at Condition 15. Thus, using best professional judgment, EPA determined that a limit on the hours of operation was not required to be included in the Permit. It should be noted that the emissions factors along with Condition 15 were never commented on during the public comment period.

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In sum, Petitioner has failed to explain why EPA's decision to establish a VOC limit of 99 tpy was clearly erroneous or otherwise warrants review. Thus, the EAB should deny review of this issue.

I. EPA Cannot Include Conditions Limiting Emissions From Non-Road Diesel Engines In The PSD Permit For The Facility.

Petitioner contends that EPA should impose conditions in the Permit on non-road diesel engine vehicles used during construction of the Proposed Project. *See* Petition at p. 13, 15.

This argument was never raised during the public comment period by either the Petitioner or any other individual who participated in the public comment process. *See* EPA Ex. C-1 to C.21. Petitioner has failed to explain why this issue was not reasonably ascertainable during the public comment period. *See* Petition at p. 13, 15. As such, this argument was not preserved for review and the EAB should deny review of this issue.

Moreover, even if Petitioner had preserved this argument for review, Petitioner's argument fails. Under the PSD permitting program, any person planning the construction of any major emitting facility is required to apply for and receive a PSD permit before beginning construction. *See* 42 U.S.C. § 7475(a)(1). A "major emitting facility" is defined as "any of the following stationary sources...." 42 U.S.C. § 7479(1). The Clean Air Act defines "stationary source" as "any source of an air pollutant except those emissions resulting directly from ... a non-road engine or non-road vehicle." 42 U.S.C. § 7602(z). Thus, the Clean Air Act expressly excludes emissions from non-road engines and non-road vehicles from regulation within a PSD permit. *See In re: Cardinal FG Company*, PSD Appeal No. 04-04, slip op. at 24 (EAB March 22, 2005). As such, EPA could not impose conditions in the Permit on non-road diesel engine vehicles that will be used during construction of the Proposed Project.

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In addition, the Environmental Impact Statement ("EIS") prepared by the Bureau of Indian Affairs ("BIA") contained a lengthy discussion on emissions from construction equipment at the Proposed Project. The EIS states:

> Construction emissions include exhaust from diesel engines. The total emissions from this equipment is expected to be very small in comparison to the total vehicular traffic in the region. To reduce combustion emissions, idling of construction equipment would be minimized (shut off when not operating) and engine tune-ups would be required for any equipment that is maintained on site for more than 60 days.

EPA Ex. G-2 at 3.5-15. Thus, even though EPA does not have the authority to include conditions on non-road diesel engines in the Permit, contrary to Petitioner's belief, conditions have been placed on non-road diesel engines that will be used during construction of the Proposed Project.

In sum, Petitioner has failed to explain why EPA's permitting decision was clearly erroneous or otherwise warrants review. As such, the EAB should deny review of this issue.

V. CONCLUSION

Petitioner has failed to demonstrate that EPA committed clear error and has failed to raise any important policy considerations on any of the grounds raised in the Petition for Review. Moreover, some of the issues that Petitioner has raised were not preserved for review. Accordingly, for the foregoing reasons, EPA respectfully requests the EAB to deny the Petition for Review.

DATED: October 17, 2005

Respectfully submitted,

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EXHIBIT A-1
Executive Order 12898

February 11, 1994

EXECUTIVE ORDER

FEDERAL ACTIONS TO ADDRESS ENVIRONMENTAL JUSTICE IN MINORITY POPULATIONS AND LOW-INCOME POPULATIONS

By the authority vested in me as President by the Constitution and the laws of the United States of America, it is hereby ordered as follows:

Section 1-1. **IMPLEMENTATION.**

1-101. *Agency Responsibilities.* To the greatest extent practicable and permitted by law, and consistent with the principles set forth In the report on the National Performance Review, each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Marian islands.

1-102. *Creation of an Interagency Working Group on Environmental Justice* (a) Within 3 months of the date of this order, the Administrator of the Environmental Protection Agency ("Administrator") or the Administrator's designee shall convene an Interagency Federal Working Group on Environmental Justice ("Working- Group"). The Working Group shall comprise the heads of the following executive agencies and offices, or their designees: (a)Department of Defense; (b) Department of Health and Human Services; (c)Department of Housing and Urban Development; (d) Department of Labor; (e) Department of Agriculture; (f) Department of Transportation; (g) Department of Justice; (h) Department of the Interior; (i) Department of Commerce; (j) Department of Energy; (k) Environmental Protection Agency; (l) Office of Management and Budget; (m) Office of Science and Technology Policy; (n) Office of the Deputy Assistant to the President for Environmental Policy; (o) Office of the Assistant to the President for Domestic Policy; (p) National Economic Council; (q) Council of Economic Advisers; and (r) such other Government officials as the President may designate. The Working Group shall report to the President through the Deputy Assistant to the President for Environmental Policy and the Assistant to the President for Domestic Policy.

(b)The Working Group shall: (1) provide guidance to Federal agencies on criteria for identifying disproportionately high and adverse human health or environmental effects on minority populations and low-income populations;

(2)coordinate with, provide guidance to, and serve as a clearinghouse for, each Federal agency as it develops an environmental justice strategy as required by section 1-103 of this order, in order to ensure that the administration, interpretation and enforcement of programs, activities and policies are undertaken in a consistent manner;

(3) assist in coordinating research by, and stimulating cooperation among, the Environmental Protection Agency, the Department of Health and Human Services, the Department of Housing and Urban Development, and other agencies conducting research or other activities in accordance with section 3-3 of this order;

(4) assist in coordinating data collection, required by this order;

(5) examine existing data and studies on environmental justice;

(6) hold public meetings at required in section 5-502(d) of this order; and

(7) develop interagency model projects on environmental justice that evidence cooperation among Federal agencies.

1-103. *Development of Agency Strategies.* (a) Except as provided in section 6-605 of this order, each Federal agency shall develop an agency-wide environmental justice strategy, as set forth in subsections (b) - (e) of this section that identifies and addresses disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. The environmental justice strategy shall list programs, policies, planning and public participation processes, enforcement, and/or rulemakings related to human health or the environment that should be revised to, at a minimum: (1) promote enforcement of all health and environmental statutes in areas with minority populations and low-income populations: (2) ensure greater public participation; (3) improve research and data collection relating to the health of and environment of minority populations and low-income populations; and (4) identify differential patterns of consumption of natural resources among minority populations and low-income populations. In addition, the environmental justice strategy shall include, where appropriate, a timetable for undertaking identified revisions and consideration of economic and social implications of the revisions.

(b) Within 4 months of the date of this order, each Federal agency shall identify an internal administrative process for developing its environmental justice strategy, and shall inform the Working Group of the process.

(c) Within 6 months of the date of this order, each Federal agency shall provide the Working Group with an outline of its proposed environmental justice strategy.

(d) Within 10 months of the date of this order, each Federal agency shall provide the Working Group with its proposed environmental justice strategy.

(e) Within 12 months of the date of this order, each Federal agency shall finalize its environmental justice strategy and provide a copy and written description of its strategy to the Working Group. During the 12 month period from the date of this order, each Federal agency, as part of its environmental justice strategy, shell identify several specific projects that can be promptly undertaken to address particular concerns identified during the development of the proposed environmental justice strategy, and a schedule for implementing those projects.

(f) Within 24 months of the date of this order, each Federal agency shall report to the Working Group on its progress in implementing its agency-wide environmental justice strategy.

(g) Federal agencies shall provide additional periodic reports to the Working Group as requested by the Working Group.

1-104. *Reports to The President.* Within 14 months of the date of this order, the Working Group shall submit to the President, through the Office of the Deputy Assistant to the President for Environmental Policy and the Office of the Assistant to the President for Domestic Policy, a report that describes the implementation of this order, and includes the final environmental justice strategies described in section 1-103(e) of this order.

Sec. 2-2. **Federal Agency Responsibilities For Federal Programs.** Each Federal agency shall conduct its programs, policies, and activities that substantially affect human health or the environment, in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under, such, programs, policies, and activities, because of their race, Color, or national origin.

Sec. 3 -3. **Research, Data Collection, and Analysis**

3-301. *Human Health and Environmental Research and Analysis.* (a) Environmental human health research, whenever practicable and appropriate, shall include diverse segments of the population in epidemiological and clinical studies, including segments at high risk from environmental hazards, such as minority populations, low-income populations and workers who may be exposed to, substantial environmental hazards.

(b) Environmental human health analyses, whenever practicable and appropriate, shall identify multiple and cumulative exposures.

(c) Federal agencies shall provide minority populations and low-income populations the opportunity to comment on the development and design of research strategies undertaken pursuant to this order.

3-302. *Human Health and Environmental Data Collection and Analysis* To the extent permitted by existing law, including the Privacy Act, as amended (5 U.S.C. section 552a): (a) each federal agency, whenever practicable and appropriate, shall collect, maintain, and analyze information assessing and comparing environmental and human health risks borne by populations identified by race, national origin, or income. To the extent practical and appropriate, Federal agencies shall use this information to determine whether their programs, policies, and activities have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations;

(b) In connection with the development and implementation of agency strategies in section 1-103 of this order, each Federal agency, whenever practicable and appropriate, shall collect, maintain and analyze information on the race, national origin, income level, and other readily accessible and appropriate information for areas surrounding facilities or sites expected to have substantial environmental, human health, or economic effect on the surrounding populations, when such facilities or sites become the subject of a substantial Federal environmental administrative or judicial action. Such information shall be made available to the public unless prohibited by law; and

(c) Each Federal agency, whenever practicable and appropriate, shall collect, maintain, and analyze information on the race, national origin, income level, and other readily accessible and appropriate information for areas surrounding Federal facilities that are: (1) subject to the reporting requirements under the Emergency Planning and Community Right-to-Know Act, 42 U.S.C. section 11001-11050 as mandated in Executive Order No. 12856; and (2) expected to have a substantial environmental, human health, or economic effect on surrounding populations. Such information shall be made available to the public unless prohibited by law.

(d) In carrying out the responsibilities in this section, each Federal agency, whenever practicable and appropriate, shall share information and eliminate unnecessary duplication of efforts through the use of existing data systems and cooperative agreements among Federal agencies and with State, local, and tribal governments.

Sec. 4-4. **Subsistence Consumption Of Fish And Wildlife**.

4-401. *Consumption Patterns*. Inorder to assist in identifying the need for ensuring protection of populations with differential patterns of subsistence consumption of fish and wildlife, Federal agencies, whenever practicable and appropriate, shall collect, maintain, and analyze information on the consumption patterns of populations who principally rely on fish and/or wildlife for subsistence. Federal agencies shall communicate to the public the risks of those consumption patterns.

4-402. *Guidance*. Federal agencies, whenever practicable and appropriate, shall work in a coordinated manner to publish guidance reflecting the latest scientific information available concerning methods for evaluating the human health risks associated with the consumption of pollutant-bearing fish or wildlife. Agencies shall consider such guidance in developing their policies and rules.

Sec. 5-5. **Public Participation and Access to Information** (a) The public may submit recommendations to Federal agencies relating to the incorporation of environmental justice principles into Federal agency programs or policies. Each Federal agency shall convey such recommendations to the Working Group.

(b) Each Federal agency may, whenever practicable and appropriate, translate crucial public documents, notices, and hearings relating to human health or the environment for limited English speaking populations.

(c) Each Federal agency shall work to ensure that public documents, notices, and hearings relating to human health or the environment are concise, understandable, and readily accessible to the public.

(d) The Working Group shall hold public meetings, as appropriate, for the purpose of fact-finding, receiving public comments, and conducting inquiries concerning environmental justice. The Working Group shall prepare for public review a summary of the comments and recommendations discussed at the public meetings.

Sec. 6-6. **General Provisions.**

6-601. *Responsibility for Agency Implementation.* The head of each Federal agency shall be responsible for ensuring compliance with this order. Each Federal agency shall conduct internal reviews and take such other steps as may be necessary to monitor compliance with this order.

6-602. *Executive Order No. 12250.* This Executive order is intended to supplement but not supersede Executive Order No. 12250, which requires consistent and effective implementation of various laws prohibiting discriminatory practices in programs receiving Federal financial assistance. Nothing herein shall limit the effect or mandate of Executive Order No. 12250.

6-6O3. *Executive Order No. 12875.* This Executive order is not intended to limit the effect or mandate of Executive Order No. 12875.

6-604. *Scope.* For purposes of this order, Federal agency means any agency on the Working Group, and such other agencies as may be designated by the President, that conducts any Federal program or activity that substantially affects human health or the environment. Independent agencies are requested to comply with the provisions of this order.

6-605. *Petitions for Exemptions.* The head of a Federal agency may petition the President for an exemption from the requirements of this order on the grounds that all or some of the petitioning agency's programs or activities should not be subject to the requirements of this order.

6-606. *Native American Programs.* Each Federal agency responsibility set forth under this order shall apply equally to Native American programs. In addition the Department of the Interior, in coordination with the Working Group, and, after consultation with tribal leaders, shall coordinate steps to be taken pursuant to this order that address Federally- recognized Indian Tribes.

6-607. *Costs.* Unless otherwise provided by law, Federal agencies shall assume the financial costs of complying with this order.

6-608. *General.* Federal agencies shall implement this order consistent with, and to the extent permitted by, existing law.

6-609. *Judicial Review*. This order is intended only to improve the internal management of the executive branch and is not intended to, nor does it create any right, benefit, or trust responsibility, substantive or procedural, enforceable at law or equity by a party against the United States, its agencies, its officers, or any person. This order shall not be construed to create any right to judicial review involving the compliance or noncompliance of the United States, its agencies, its officers, or any other person with this order.

William J. Clinton

THE WHITE HOUSE,
February 11, 1994.

EXHIBIT A-2

EPA Memo re: EPA Statutory and Regulatory Authorities Under Which Environmental Justice Issues May Be Addressed in Permitting

Dec. 1, 2000

MEMORANDUM

SUBJECT: EPA Statutory and Regulatory Authorities Under Which Environmental Justice Issues May Be Addressed in Permitting

FROM: Gary S. Guzy *//signed//*
General Counsel
Office of General Counsel (2310A)

TO: Steven A. Herman
Assistant Administrator
Office of Enforcement and Compliance Assistance (2201A)

Robert Perciasepe
Assistant Administrator
Office of Air and Radiation (6101A)

Timothy Fields, Jr.
Assistant Administrator
Office of Solid Waste and Emergency Response (5101)

J. Charles Fox
Assistant Administrator
Office of Water (4101)

This memorandum analyzes a significant number of statutory and regulatory authorities under the Resource Conservation and Recovery Act, the Clean Water Act, the Safe Drinking Water Act, the Marine Protection, Research, and Sanctuaries Act, and the Clean Air Act that the Office of General Counsel believes are available to address environmental justice issues during permitting. The use of EPA's statutory authorities, as discussed herein, may in some cases involve new legal and policy interpretations that could require further Agency regulatory or interpretive action. Although the memorandum presents interpretations of EPA's statutory authority and regulations that we believe are legally permissible, it does not suggest that such actions would be uniformly practical or feasible given policy or resource considerations or that there are not important considerations of legal risk that would need to be evaluated. Nor do we assess the relative priority among these various avenues for addressing environmental justice concerns. We look forward to working with all your offices to explore these matters in greater detail.

I. Resource Conservation and Recovery Act (RCRA)

RCRA authorizes EPA to regulate the generation, transportation, treatment, storage, and disposal of hazardous wastes and the management and disposal of solid waste. EPA issues guidelines and recommendations to State solid waste permitting programs under RCRA sections 1008(a), 4002, or 4004 and may employ this vehicle to address environmental justice concerns. The primary area where environmental justice issues have surfaced, however, is in the permitting of hazardous waste treatment, storage, and disposal facilities (e.g., incinerators, fuel blenders, landfills). Pursuant to RCRA section 3005, EPA is authorized to grant permits to such facilities if they demonstrate compliance with EPA regulations.

Upon application by a State, EPA may authorize a State's hazardous waste program to operate in lieu of the Federal program, and to issue and enforce permits. The State's program must be equivalent to the Federal program to obtain and retain authorization. When EPA adopts more stringent RCRA regulations (including permit requirements), authorized States are required to revise their programs within one year after the change in the Federal program or within two years if the change will necessitate a State statutory amendment. 40 CFR § 271.21(e). EPA and most authorized States have so-called "permit shield" regulations, providing that, once a facility obtains a hazardous waste permit, it generally cannot be compelled to comply with additional requirements during the permit's term.

The scope of EPA's authority to address environmental justice issues in RCRA hazardous waste permits was directly addressed by the Environmental Appeals Board (EAB) in Chemical Waste Management, Inc., 6 E.A.D. 66, 1995 WL 395962 (1995) **<http://www.epa.gov/eab/disk11/cwmii.pdf>**The Board found "that when the Region has a basis to believe that operation of the facility may have a disproportionate impact on a minority or low-income segment of the affected community, the Region should, as a matter of policy, exercise its discretion to assure early and ongoing opportunities for public involvement in the permitting process." Id. at 73. It also found that RCRA allows the Agency to "tak[e] a more refined look at its health and environmental impacts assessment in light of allegations that operation of the facility would have a disproportionately adverse effect on the health or environment of low-income or minority populations." Id. at 74. Such a close evaluation could, in turn, justify permit conditions or denials based on disproportionately high and adverse human health or environmental effects, while "a broad analysis might mask the effects of the facility on a disparately affected minority or low-income segment of the community." Id. However, while acknowledging the relevance of disparities in health and environmental impacts, the Board also cautioned that "there is no legal basis for rejecting a RCRA permit application based solely upon alleged social or economic impacts upon the community." Id. at 73.

Consistent with this interpretation, there are several RCRA authorities under which EPA could address environmental justice issues in permitting:

A. **Hazardous Waste Treatment, Storage and Disposal**

1. RCRA section 3005(c)(3) provides that "[e]ach permit issued under this section shall contain such terms and conditions as the Administrator (or the State) determines necessary to protect human health and the environment." EPA has interpreted this provision to authorize denial of a permit to a facility if EPA determines that operation of the facility would pose an unacceptable risk to human health and the environment and that there are no additional permit terms or conditions that would address such risk. This "omnibus" authority may be applicable on a permit-by-permit basis where appropriate to address the following health concerns in connection with hazardous waste management facilities that may affect low-income communities or minority communities:

a. Cumulative risks due to exposure from pollution sources in addition to the applicant facility;

b. Unique exposure pathways and scenarios (e.g., subsistence fishers, farming communities); or

c. Sensitive populations (e.g., children with levels of lead in their blood, individuals with poor diets).

2. RCRA section 3013 provides that if the Administrator determines that "the presence of any hazardous waste at a facility or site at which hazardous waste is, or has been, stored, treated, or disposed of, or the release of any such waste from such facility or site may present a substantial hazard to human health or the environment," she may order a facility owner or operator to conduct reasonable monitoring, testing, analysis, and reporting to ascertain the nature and extent of such hazard. EPA may require a permittee or an applicant to submit information to establish permit conditions necessary to protect human health and the environment. 40 CFR § 270.10(k). In appropriate circumstances, EPA could use the authority under section 3013 or 40 CFR § 270.10(k) to compel a facility owner or operator to carry out necessary studies, so that, pursuant to the "omnibus" authority, EPA can establish permit terms or conditions necessary to protect human health and the environment.

3. RCRA provides EPA with authority to consider environmental justice issues in establishing priorities for facilities under RCRA section 3005(e), and for facilities engaged in cleaning up contaminated areas under the RCRA corrective action program, RCRA sections 3004(u), 3004(v), and 3008(h). For example, EPA could consider factors such as cumulative risk, unique exposure pathways, or sensitive populations in establishing permitting or clean-up priorities.

4. EPA adopted the "RCRA Expanded Public Participation" rule on December 11, 1995. <u>See</u> 60 Fed. Reg. 63417. RCRA authorizes EPA to explore further whether the RCRA

permit public participation process could better address environmental justice concerns by expanding public participation in the permitting process (including at hazardous waste management facilities to be located in or near low-income communities or minority communities).

5. In expanding the public participation procedures applicable to RCRA facilities, EPA also would have authority to expand the application of those procedures to the permitting of: (a) publicly owned treatment works, which are regulated under the Clean Water Act; (b) underground injection wells, which are regulated under the Safe Drinking Water Act; and (c) ocean disposal barges or vessels, which are regulated under the Marine Protection Research and Sanctuaries Act. These facilities are subject to RCRA's permit by rule regulations, 40 CFR § 270.60, and are deemed to have a RCRA permit if they meet certain conditions set out in the regulations. 40 CFR § 270.60.

6. EPA's review of State-issued permits provides additional opportunities for consideration of environmental justice concerns. Where the process for a State-issued permit does not adequately address sensitive population risks or other factors in violation of the authorized State program, under the regulations EPA could provide comments on these factors (in appropriate cases) during the comment period on the State's proposed permit on a facility-by-facility basis. 40 CFR § 271.19(a). Where the State itself is authorized for RCRA "omnibus" authority and does not address factors identified in EPA comments as necessary to protect human health and the environment, EPA may seek to enforce the authorized State program requirement. 40 CFR § 271.19(e) Alternatively, if the State is not authorized for "omnibus" authority, EPA may superimpose any necessary additional conditions under the "omnibus" authority in the federal portion of the permit. These conditions become part of the facility's RCRA permit and are enforceable by the United States under RCRA section 3008 and citizens through RCRA section 7002.

7. RCRA section 3019 provides EPA with authority to increase requirements for applicants for land disposal permits to provide exposure information and to request that the Agency for Toxic Substances and Disease Registry conduct health assessments at such land disposal facilities.

8. RCRA section 3004(o)(7) provides EPA with authority to issue location standards as necessary to protect human health and the environment. Using this authority, EPA could, for example, establish minimum buffer zones between hazardous waste management facilities and sensitive areas (e.g., schools, areas already with several hazardous waste management facilities, residential areas). Facilities seeking permits would need to comply with these requirements to receive a permit.

9. RCRA-permitted facilities are required under RCRA section 3004(a) to maintain "contingency plans for effective action to minimize unanticipated damage from any treatment, storage, or disposal of . . . hazardous waste." Under this authority, EPA could require facilities to prepare and/or modify their contingency plans to reflect the needs of

environmental justice communities that have limited resources to prepare and/or respond to emergency situations.

10. RCRA additionally provides EPA with authority to amend its regulations to incorporate some of the options described in 1 through 6 above so they become part of the more stringent federal program that authorized States must adopt.

II. Clean Water Act (CWA)

The CWA was adopted "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." To achieve this goal, Congress prohibited the discharge from a point source of any pollutant into a water of the United States unless that discharge complies with specific requirements of the Act. Compliance is achieved by obtaining and adhering to the terms of an NPDES permit issued by EPA or an authorized State pursuant to section 402, or a dredge and fill permit issued by the Army Corps of Engineers or an authorized State pursuant to section 404.

NPDES permits must contain: (1) technology-based limitations that reflect the pollution reduction achieved through particular equipment or process changes, without reference to the effect on the receiving water and (2) where necessary, more stringent limitations representing that level of control necessary to ensure that the receiving waters achieve water quality standards. Water quality standards consist of (1) designated uses of the water (e.g., public water supply, propagation of fish, or recreation); (2) criteria to protect those uses including criteria based on protecting human health and aquatic life; and (3) an antidegradation policy. EPA requires that States designate all waters for "fishable/swimmable" uses unless such uses are not attainable. EPA issues water quality criteria guidance to the States pursuant to CWA section 304(a).

Permits issued under CWA section 404 authorize the discharge of "dredged or fill material" to waters of the United States. The types of activities regulated under section 404 include filling of wetlands to create dry land for development, construction of berms or dams to create water impoundments, and discharges of material dredged from waterways to maintain or improve navigation. Section 404 permits issued by the Corps of Engineers must satisfy two sets of standards: the Corps' "public interest review" and the section 404(b)(1) guidelines promulgated by EPA. The public interest review is a balancing test that requires the Corps to consider a number of factors, including economics, fish and wildlife values, safety, food and fiber production and, public needs and welfare in general. 33 CFR § 320.4(a). The section 404(b)(1) guidelines provide that no permit shall issue if: (1) there are practicable, environmentally less damaging alternatives, (2) the discharge would violate water quality standards or jeopardize threatened or endangered species, (3) the discharge would cause significant degradation to the aquatic ecosystem, or (4) if all reasonable steps have not been taken to minimize adverse effects of the discharge. 40 CFR § 230.10.

There are several CWA authorities under which EPA could address environmental justice issues in permitting:

A. State Water Quality Standards

States are required to review their water quality standards every three years and to submit the results of their review to EPA. CWA section 303(c)(1). EPA Regional offices must approve or disapprove all new or revised State water quality standards pursuant to section 303(c)(3). EPA will approve State standards if they are scientifically defensible and protective of designated uses. 40 CFR § 131.11. If a State does not revise a disapproved standard, EPA is required to propose and promulgate a revised standard for the State. Section 303(c)(4)(A). The Administrator is also required to propose and promulgate a new or revised standard for a State whenever she determines that such a standard is necessary to meet the requirements of the Act and the State does not act to adopt an appropriate standard. CWA section 303(c)(4)(B).

1. State water quality standards currently are required to provide for the protection of "existing uses." 40 CFR § 131.12(a)(1). These are defined as uses actually attained in the water body on or after November 28, 1975. 40 CFR § 131.3(e). To the extent that minority or low-income populations are, or at any time since 1975 have been, using the waters for recreational or subsistence fishing, EPA could reinterpret the current regulations to require that such uses, if actually attained, must be maintained and protected. The CWA provides EPA with authority to require, through appropriate means, that high rates of fish consumption by these populations be considered an "existing use" to be protected by State water quality standards. Under the current regulations, existing uses cannot be removed.

2. EPA regulations provide that all waters must be designated for the protection and propagation of fish, shellfish, and wildlife and for recreation in and on the water ("fishable/swimmable") unless the State documents to EPA's satisfaction that such uses are not attainable. 40 CFR §§ 131.6(a), 131.10(j).

   EPA interprets "fishable" uses under section 101(a) of the CWA to include, at a minimum, designated uses providing for the protection of aquatic communities and human health related to consumption of fish and shellfish. In other words, EPA views "fishable" to mean that not only can fish and shellfish thrive in a waterbody, but when caught, can also be safely eaten by humans (stated in 10/24/00 "Dear Colleague" letter from Geoffrey H. Grubbs, Director Office of Science and Technology, and Robert H. Wayland, III, Director Office of Wetlands, Oceans and Watersheds). Therefore, EPA currently recommends that in setting criteria to protect "fishable" uses, that the State/Tribe adjust the fish consumption values used to develop criteria to protect the "fishable" use, including fish consumption by subsistence fishers (USEPA 2000, Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health, EPA-822-B-00-004, Chapter 2.1). For example, in deriving such criteria, states or tribes could select their fish consumption value based on site-specific information or a national default value for subsistence fishing (Chapter 4).

In the future, EPA could reinterpret it regulations to mean that any human health use must have a criterion that would protect consumption by subsistence fishers unless there is a showing that water is not used for subsistence fishing.

3. The CWA provides EPA with authority to recommend that State CWA section 303(c)(1) triennial reviews of water quality standards consider the extent to which State criteria provide for protection of human health where there exists subsistence fishing. EPA Regional offices may disapprove a criterion that does not provide protection to highly-exposed populations. The Administrator further has the discretionary authority to determine that such criteria are necessary to meet the requirements of the CWA and then must promptly propose and promulgate such criteria.

4. Consistent with CWA section 101(e), EPA could encourage States to improve public participation processes in the development of State water quality standards through greater outreach and by translating notices for limited English speaking populations consistent with Executive Order 12898 on environmental justice.

B. Issuance of NPDES Permits

1. Assuming EPA adopts the interpretation described in paragraph A.1., above, NPDES permits issued for discharge to waters where a high level of fish consumption is an "existing use" should contain limitations appropriate to protect that use. The CWA provides EPA authority to take this approach when it issues NPDES permits in States not authorized to run the NPDES program, and to object to or ultimately veto State-issued permits that are not based on these considerations. CWA section 402(d).

2. Consistent with CWA section 101(e), where EPA issues NPDES permits, environmental justice concerns can also be taken into account in setting permitting priorities and improving public participation in the permitting process (greater outreach to minority communities and low-income communities including translating notices for limited English speaking populations consistent with Executive Order 12898 on environmental justice).

3. CWA section 302 authorizes EPA to propose and adopt effluent limitations for one or more point sources if the applicable technology-based or water quality-based requirements will not assure protection of public health and other concerns. This determination requires findings of economic capability and a reasonable relationship between costs and benefits. The Agency has never used this authority, but could evaluate whether this authority could be used with respect to pollutants of concern to minorities or

low-income communities. Prior to adopting such limitations by regulation, EPA could use its authority under CWA section 402(a)(1) to incorporate such limitations in specific NPDES permits issued by EPA. The Clean Water Act does not appear to provide any general authority to impose conditions on or deny permits based on environmental justice considerations that are unconnected to water quality impacts or technology-based limitations.

4. Pursuant to CWA section 104 and other authorities, EPA may provide technical assistance to Indian Tribes, where appropriate, in the development of water quality standards and the issuance of NPDES permits.

C. CWA Section 404

1. The broadest potential authority to consider environmental justice concerns in the CWA section 404 program rests with the Corps of Engineers, which conducts a broad "public interest review" in determining whether to issue a section 404 permit. In evaluating the "probable impacts . . . of the proposed activity and its intended use on the public interest," the Corps is authorized to consider, among other things, aesthetics, general environmental concerns, safety, and the needs and welfare of the people. 33 CFR § 320.4(a). This public interest review could include environmental justice concerns.

2. EPA has discretionary oversight authority over the Corps' administration of the section 404 program (i.e., EPA comments on permit applications, can elevate Corps permit decisions to the Washington, D.C. level, and can "veto" Corps permit decisions under section 404(c) that would have an unacceptable adverse effect on "municipal water supplies, shellfish beds and fishery areas, wildlife, or recreational areas"). The CWA thus authorizes EPA to use these authorities to prevent degradation of these public resources that may have a disproportionately high and adverse health or environmental effect on a minority community or low-income community. Such effects can be addressed when they result directly from a discharge of dredged or fill material (e.g., the filling of a waterbody), or are the indirect result of the permitted activity (e.g., the fill will allow construction of an industrial facility that will cause water pollution due to runoff).

III. Safe Drinking Water Act (SDWA)

The SDWA includes two separate regulatory programs. The Public Water Supply program establishes requirements for the quality of drinking water supplied by public water systems. This program contains no federal permitting. The Underground Injection Control (UIC) program establishes controls on the underground injection of fluids to protect underground sources of drinking water.

Under the UIC program, the Administrator must establish requirements for State UIC programs that will prevent the endangerment of drinking water sources by underground injection.

EPA has promulgated a series of such requirements beginning in 1980. The SDWA also provides that States may apply to EPA for primary responsibility to administer the UIC program. EPA must establish a UIC permitting program in States that do not seek this responsibility or that fail to meet the minimum requirements established by EPA.

There are several SDWA authorities under which EPA could address environmental justice issues in UIC permitting:

A. EPA-issued Permits

Underground injection must be authorized by permit or rule. The SDWA provides that EPA can deny or establish permit limits where such injection may "endanger" public health. "Endangerment" is defined to include any injection that may result in the presence of a contaminant in a drinking water supply that "may...adversely affect the health of persons." 40 CFR § 144.52(b)(1). As a result, in those States where EPA issues permits and an injection activity poses a special health risk to minority or low-income populations, the SDWA provides EPA with authority to establish special permit requirements to address the endangerment or deny the permit if the endangerment cannot otherwise be eliminated. As in its Chemical Waste Management RCRA permit appeal decision discussed in Part I above, the EAB has addressed EPA's authority to expand public participation and to consider disproportionate impacts in the UIC permitting program. Envotech, 6 E.A.D. 260, 281, 1996 WL 66307 (1996) <http://www.epa.gov/eab/disk10/envotech.pdf>.

B. Pending regulatory action

The Office of Water is currently revising the regulations under this program governing "Class V" injection wells (i.e., shallow wells where nonhazardous waste is injected). In determining which wells to regulate and the standards for those where EPA determines regulations are necessary to prevent "endangerment," the SDWA provides EPA with authority to take into account environmental justice issues such as cumulative risk and sensitive populations.

C. Other regulatory actions

Likewise, the SDWA provides EPA with authority to address environmental justice issues related to potential endangerment of drinking water supplies by injection for all types of wells. For example, EPA could revise its regulatory requirements for siting Class 1 (hazardous waste) wells to address cumulative risk and other risk-related environmental justice issues.

IV. Marine Protection, Research, and Sanctuaries Act (MPRSA)

The MPRSA, commonly known as the Ocean Dumping Act, 33 USC § 1401 ff., establishes a permitting program that covers the dumping of material into ocean waters. The ocean disposal of a variety of materials, including sewage sludge, industrial waste, chemical and biological warfare agents, and high level radioactive waste, is expressly prohibited.

EPA issues permits for the dumping of all material other than dredged material. 33 U.S.C. § 1412(a). The Army Corps of Engineers issues permits for the dumping of dredged material, subject to EPA review and concurrence. 33 U.S.C. § 1413(a). (As a practical matter, EPA issues very few ocean dumping permits because the vast majority of material disposed of at sea is dredged material.) EPA also is charged with designating sites at which permitted disposal may take place; these sites are to be located wherever feasible beyond the edge of the Continental Shelf. 33 U.S.C. § 1412(c)(1).

When issuing MPRSA permits and designating ocean dumping sites, EPA is to determine whether the proposed dumping will "unreasonably degrade or endanger human health, welfare, amenities, or the marine environment, ecological systems, or economic potentialities." 33 USC § 1412(a), (c)(1). EPA also is to take into account "the effect of... dumping on human health and welfare, including economic, esthetic, and recreational values." 33 U.S.C. § 1412(a)(B), (c)(1). Thus, in permitting and site designation, EPA has ample authority to consider such factors as impacts on minority or low-income communities and on subsistence consumers of sea food that would result from the proposed dumping. In addition, the MPRSA provides specifically that EPA is to consider land-based alternatives to ocean dumping and the probable impact of requiring use of these alternatives "upon considerations affecting the public interest." 33 U.S.C. § 1412(a)(G). This authorizes EPA to take impacts on minority populations or low-income populations into account in evaluating alternative locations and methods of disposal of the material that is proposed to be dumped at sea.

V. Clean Air Act (CAA)

There are several CAA authorities under which EPA could address environmental justice issues in permitting:

A. New Source Review (NSR)

NSR is a preconstruction permitting program. If new construction or making a major modification will increase emissions by an amount large enough to trigger NSR requirements, then the source must obtain a permit before it can begin construction. The NSR provisions are set forth in sections 110(a)(2)(C), 165(a) (PSD permits), 172(c)(5) and 173 (NSR permits) of the Clean Air Act.

Under the Clean Air Act, states have primary responsibility for issuing permits, and they can customize their NSR programs within the limits of EPA regulations. EPA's role is to approve State programs, to review, comment on, and take any other necessary actions on draft permits, and to assure consistency with EPA's rules, the state's implementation plan, and the Clean Air Act. Citizens also play a role in the permitting decision, and must be afforded an opportunity to comment on each construction permit before it is issued.

The NSR permit program for major sources has two different components–one for areas where the air is dirty or unhealthy, and the other for areas where the air is cleaner. Under the Clean Air Act, geographic areas (e.g., counties or metropolitan statistical areas) are designated as "attainment" or "nonattainment" with the National Ambient Air Quality Standards (NAAQS)–the air quality standards which are set to protect human health and the environment. Permits for sources located in attainment (or unclassifiable) areas are called Prevention of Significant Deterioration (PSD) permits and those for sources located in nonattainment areas are called NSR permits.

A major difference in the two programs is that the control technology requirement is more stringent in nonattainment areas and is called the Lowest Achievable Emission Rate (LAER). On the other hand, in attainment or PSD areas, a source must apply Best Available Control Technology (BACT) and the statute allows the consideration of cost in weighing BACT options. Also, in keeping with the goal of progress toward attaining the national air quality standards, sources in nonattainment areas must always provide or purchase "offsets"–decreases in emissions which compensate for the increases from the new source or modification. In attainment areas, PSD sources typically do not need to obtain offsets. However, PSD does require an air quality modeling analysis of pollution that exceeds allowable levels; this impact must be mitigated. Sometimes, these mitigation measures can include offsets in PSD areas.

1. Under the Clean Air Act, section 173(a)(5) provides that a nonattainment NSR permit may be issued only if: "an analysis of alternative sites, sizes, production processes, and environmental control techniques for such proposed source demonstrates that benefits of the proposed source significantly outweigh the environmental and social costs imposed as a result of its location, construction, or modification." For example, this provision authorizes consideration of siting issues. Section 165(a)(2) provides that a PSD permit may be issued only after an opportunity for a public hearing at which the public can appear and provide comment on the proposed source, including "alternatives thereto" and "other appropriate considerations." This authority could allow EPA to take action to address the proper role of environmental justice considerations in PSD/NSR permitting.

2. In addition to these statutory provisions, EPA directly issues PSD/NSR permits in certain situations (e.g., in Indian country and Outer Continental Shelf areas) and, through the EAB, adjudicates appeals of PSD permits issued by States and local districts with delegated federal programs. In such permit and appeal decisions, it is possible to consider environmental justice issues on a case-by-case basis, without waiting to issue a generally applicable rule or guidance document. EPA already considers environmental

justice issues on a case-by-case basis in issuing PSD permits consistent with its legal authority.

3. The EPA Environmental Appeals Board (EAB) has addressed environmental justice issues in connection with PSD permit appeals on several occasions. The EAB first addressed environmental justice issues under the CAA in the original decision in Genessee Power (September 8, 1993). In that decision the EAB stated that the CAA did not allow for consideration of environmental justice and siting issues in air permitting decisions. In response, the Office of General Counsel filed a motion for clarification on behalf of the Office of Air and Radiation (OAR) and Region V. OGC pointed out, among other things, that the CAA requirement to consider alternatives to the proposed source, and the broad statutory definition of "best available control technology" (BACT), provided ample opportunity for consideration of environmental justice in PSD permitting. In an amended opinion and order issued on October 22, 1993, the EAB deleted the controversial language but did not decide whether it is permissible to address environmental justice concerns under the PSD program. 4 E.A.D. 832, 1993 WL 484880, <http://www.epa.gov/eab/disk4/genesee.pdf>. However, in subsequent decisions, Ecoeléctrica, 7 E.A.D. 56, 1997 WL 160751 (1997) <http://www.epa.gov/eab/disk11/ecoelect.pdf>, and Puerto Rico Electric Power Authority, 6 E.A.D. 253, 1995 WL 794466 (1995) <http://www.epa.gov/eab/disk9/prepa.pdf>, the EAB stated that notwithstanding the lack of formal rules or guidance on environmental justice, EPA could address environmental justice issues. In 1999 in Knauf Fiber Glass, 8 E.A.D. PSD Appeal Nos. 98-3 through 98-20, 1999 WL 64235 (Feb. 4, 1999) <http://www.epa.gov/eab/disk11/knauf.pdf>, the EAB remanded a PSD permit to the delegated permitting authority (the Shasta County Air Quality Management District) for failure to provide an environmental justice analysis in the administrative record in response to comments raising the issue.

4. In the 1990 CAA Amendments, Congress provided that the PSD provisions of the Act do not apply to hazardous air pollutants (HAPs), see CAA section 112(b)(6), so the role of hazardous air pollutant impacts as environmental justice issues in PSD permitting is not straightforward. Thus, BACT limits are not required to be set for HAPs in PSD permits. However, the Administrator ruled prior to the 1990 Amendments that in establishing BACT for criteria pollutants, alternative technologies for criteria pollutants could be analyzed based on their relative ability to control emissions of pollutants not directly regulated under PSD. EPA believes that the 1990 Amendments did not change this limited authority, and EPA believes it could be a basis for addressing environmental justice concerns. In addition, EPA may have authority to take into account – and to require States to do so in their PSD permitting – effects of HAPs that are also criteria pollutants, such as VOCs.

B. Title V

Title V of the CAA requires operating permits for stationary sources of air pollutants and prescribes public participation procedures for the issuance, significant modification, and renewal of Title V operating permits. Unlike PSD/NSR permitting, Title V generally does not impose substantive emission control requirements, but rather requires all applicable requirements to be included in the Title V operating permit. Other permitting programs may co-exist under the authority of the CAA, such as those in State implementation plans (SIPs) approved by EPA.

1. Because Title V does not directly impose substantive emission control requirements, it is not clear whether or how EPA could take environmental justice issues into account in Title V permitting – other than to allow public participation to serve as a motivating factor for applying closer scrutiny to a Title V permit's compliance with applicable CAA requirements. EPA believes, however, that in this indirect way, Title V can, by providing significant public participation opportunities, serve as a vehicle by which citizens can address environmental justice concerns that arise under other provisions of the CAA.

2. Under the 40 CFR Part 70/71 permitting process, EPA has exercised its CAA authority to require extensive opportunities for public participation in permitting actions. State permitting authorities also have the flexibility to provide additional public participation.

3. Other permitting processes under the CAA such as SIP permitting programs can include appropriate public participation measures, and these can be used to promote consideration of environmental justice issues. For example, EPA regulations require that "minor NSR programs" in SIPs provide an opportunity for public comment prior to issuance of a permit (40 CFR § 51.161(b)(2)). (Note, however, that many state programs do not at present meet this requirement.)

C. Solid Waste Incinerator Siting Requirements

The CAA provides specific authority to EPA to establish siting requirements for solid waste incinerators that could include consideration of environmental justice issues. CAA section 129(a)(3) provides that standards for new solid waste incinerators include "siting requirements that minimize, on a site specific basis, to the maximum extent practicable, potential risks to public health or the environment." These would be applicable requirements for Title V purposes. The new source performance standards (NSPS) for large municipal waste combustors (40 CFR part 60, subpart Eb) and hospital/medical/infectious waste incinerators (40 CFR part 60, subpart Ec) both currently contain such requirements. In the large municipal waste combustor NSPS, the specific requirement in section 129(a)(3) was incorporated and requirements for public notice, a public meeting and consideration of and response to public comments were added. However, to reduce the burden on the much smaller entities which typically own and operate hospital/medical/infectious waste incinerators, that NSPS only incorporates the specific section 129(a)(3) requirement. EPA is subject to a court ordered deadline for taking final action on NSPS for commercial/industrial waste incinerators, and has proposed to follow the approach to the siting analysis adopted in the hospital/medical/infectious waste NSPS in that rule.

D. 40 CFR Part 71 Tribal Air Rule

The Part 71 federal operating permit rule establishes EPA's Title V operating permits program in Indian country. Where sources are operating within Indian country, and Tribes do not seek authorization to implement Title V programs, the Part 71 rule clarifies that EPA will continue to implement federal operating permit programs. These Title V permit programs are limited to Title V and other applicable federal CAA requirements and are not comprehensive air pollution control programs. Thus, the opportunities for addressing environmental justice issues may be similar to those discussed in section B above.

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EXHIBIT A-3

Phase I Results for Bonneville Power Administration Regional Air Quality Modeling Study

Phase I Results
Regional Air Quality Modeling Study
Bonneville Power Administration

August 1, 2001

BPA has completed the first phase of a Regional Air Quality Modeling Study to examine potential air quality impacts from 45 natural gas-fired combustion turbines proposed for construction in BPA's service area. BPA has completed the first phase of the study on the 45 projects. Phase I examined two scenarios: a worst-case scenario in which all 45 plants were built and operated for a total of more than 24,000 megawatts (MW) and a second scenario in which 28 of the facilities, totaling a little over 11,000 MW operated simultaneously. However, it is highly unlikely that more than 6,000 to 8,000 MW will be built. Generally, the results were lower than expected. The study did not show any standards violations of criteria pollutants identified in the Clean Air Act. The only result that showed a possible need for concern was a potential decrease in visibility in many of the region's most sensitive areas.

Background. The West Coast has immediate supply needs for electricity, as well as a long-term need for electrical energy resources. Recent long-term planning estimates by the Pacific Northwest Electric Power and Conservation Planning Council show the region will need an additional 6,000 MW of electricity over the next 10 years. Other estimates run as high as 8,000 MW. This demand for electricity has led to a number of new generating resources being proposed to meet the regional energy need. More than 24,000 MWs of resources have been proposed. These proposals far exceed the need, which makes it difficult, if not impossible, to determine which resources will ultimately be constructed and operated.

BPA is being asked to integrate many of these resources into the Federal Columbia River Transmission System. Since the majority of these resources are combustion turbines, there is a regional concern over air quality. Thus, BPA initiated this Regional Air Quality Modeling Study to better understand, under worst-case conditions, the interaction of the site-specific effects. This information will help provide clarifying information for the cumulative environmental effects analysis conducted in BPA's Business Plan Environmental Impact Statement. BPA will commission its contractor to conduct a Phase II evaluation of each individual power plant's effects on visibility as it is considered and decided upon for integration by BPA.

Results from Phase I of the study are now available for review by interested parties. An overview of the modeling approach and presentation of the results follows.

Modeling Overview. The dispersion modeling techniques employed by the study are described in the *Modeling Protocol*.[1] Features of the model simulations include the following:

- The study looked at two scenarios; 1) air impact that would accrue if 28 of the projects were built and energized by 2004 and 2) air impacts that would occur if all 45 projects were built as planned and operated simultaneously.

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[1] Available at http://www.efw.bpa.gov/cgi-bin/PSA/NEPA/SUMMARIES/air2.

- Oxides of nitrogen (NOx), particulate matter (PM10) and sulfur dioxide (SO2) emissions from 45 proposed power projects with a combined capacity of more than 24,000 MW were considered in the analysis. The analysis assumed all plants, including the peaking plants, were operating at peak load with their primary fuel for the entire simulation period. Emissions from fuel oil firing were not modeled except for the Fredonia (Washington) facility, which is solely fired by oil. Peak load operating assumptions are likely to over-estimate impacts, while omission of fuel oil firing likely under-estimates impacts.

- Building downwash effects were not considered in the analysis and emissions were characterized using a single stack for each facility. Note the simulations only include emissions from the turbines or heat recovery steam generators, not from ancillary sources (such as auxiliary boilers, gas heaters, and standby generators) associated with each project.

- The CALPUFF (Version 5.4 Level 000602_6) dispersion model was applied in the simulations. CALPUFF is the EPA's preferred model for long-range transport assessments. CALPUFF treats plumes as a series of puffs that move and disperse according to local conditions that vary in time and space. CALPUFF incorporates algorithms for wet and dry deposition processes, aerosol chemistry, and is accompanied by post-processors designed to assess regional haze.

- Winds were based on the University of Washington's simulations of Pacific Northwest Weather with the MM5 model from April 1, 1998, to March 15, 1999. The MM5 data set used in the simulations has a horizontal mesh size of 12 kilometers km) and over 30 vertical levels. Only one year of MM5-quality regional meteorological data is currently available. Phase I results are based on weather conditions during this year. Actual impacts may vary from year to year as weather patterns shift.

- The 696-km by 672-km study area includes all of Washington and portions of Oregon, Idaho, and British Columbia. Meteorological, terrain, and land use data were provided to the model using a horizontal grid of 12 kilometers (km). The terrain data are based on an average for each grid cell, so the simulations do not resolve potential local impacts in complex terrain. Maximum concentrations may be under-estimated because the 12-km grid cannot accommodate plume collision with local terrain. (Note: In each facility's air discharge permit, localized effects are evaluated individually, but not cumulatively.)

- A 6-km sampling grid was used, with one receptor in each grid. A 12-km grid was used for terrain and meteorological data.

- The study evaluated impacts to 16 Class I/Scenic/Wilderness Areas (3 National Parks, the Spokane Indian Reservation, and 12 Wilderness Areas), the Columbia River Gorge National Scenic Area (CRGNSA), and the Mt. Baker Wilderness.

- The aerosol concentrations used to characterize background extinction coefficients in the study represent excellent visual conditions. Background visibility parameters are presented in Table 4 of the Protocol. These parameters represent visibility on the best 5% of the days in the Class I/Scenic/Wilderness Areas and the best 20% of days in the CRGNSA and the Spokane Indian Reservation. Background ozone and ammonia concentrations, nitrogen deposition, and sulfur deposition data were also based on generally conservative assumptions and are presented in the protocol.

- Background concentrations of PM10, SO2, and NOx were not included in Phase I modeling. The Protocol stated that MFG (the company conducting the study) would "...add the modeled predictions to the existing concentrations and compare the results against NAAQS and Class I significance criteria...." MFG did not include background in Phase I because preliminary results indicated that power plant emissions contributed only minimally to ambient concentrations.

- PM10 concentrations include both primary and secondary aerosols and the nitrogen deposition estimates include the ammonium ion.

Phase I Results. Model results for pollutant concentrations, total nitrogen deposition, total sulfur deposition, and changes to background extinction are summarized in the attached tables for each Class I/Scenic/Wilderness Areas, CRGNSA, and the Mt. Baker Wilderness. Contour plots are also attached displaying model predictions over the entire study domain. The summary tables and plots are provided for two source groups: all projects and projects with an energization date before January 2004. Key results of Phase I include the following:

- **Areas showing greatest impact.** The contour plots suggest that if all the proposed plants are built, the greatest air quality impacts will occur in the Puget Sound Lowlands from Centralia to Bellingham, in the Hermiston area, and in the eastern portions of the Lower Columbia River Basin.

- **Class II Significant Impact Levels not exceeded (two exceptions).** With the exception of 2 receptors, predicted concentrations from the proposed power plants are less than the Significant Impact Levels (SILs)[2] for all pollutants and averaging periods. The peak PM10 concentration occurred near the Wallula Gap. The predicted PM10 concentration at this location was 4.54 micrograms per cubic meter (ug/m3), due to the operation of all of the plants scheduled to be energized prior to 2004. The peak PM10 concentration of all the proposed plants at this location was 12.4 ug/m3 (the 24 hour PM10 SIL is 5 ug/m3). The SILs were also exceeded in one other location; the 24 hour PM10 SIL was exceeded at a receptor located near the Tacoma tide flats, where the model predicts a 24

[2] It has been EPA's longstanding policy under the New Source Review and PSD programs to allow the use of Significant Impact Levels (SILs) to assess whether a proposed new or modified stationary source causes or contributes to a violation of the NAAQS or PSD Class II increments (40 CFR 51.165 (b)(2)). Sources with pollutant concentrations under the SILs are considered insignificant, whether or not background or other increment consuming sources affect the applicable pollutant concentration and averaging period of concern. Note that the use of the term "significant" impact level in the PSD program does not imply a "significant adverse impact" in a SEPA or NEPA sense, nor does it imply exceedances of ambient standards.

hour PM10 concentration of 6.2 ug/m3. The SILs are thresholds used in the evaluation of individual, not multiple facility impacts to the NAAQS.[3] If the combined impacts are below the individual plant thresholds (the SILs), their collective impact to NAAQS should be considered minimal and an in-depth analysis of these plants' impacts to NAAQS unnecessary. However the fact that SILs are exceeded does not necessarily mean that significant adverse impacts will result.

- **National Ambient Air Quality Standards not exceeded.** This study has not examined local impacts from the power projects[4], but model results suggest that even if all the proposed power plants were energized, they are unlikely to exceed the National Ambient Air Quality Standards (NAAQS). The peak ambient concentration occurred at a receptor near the Wallula gap (which is a non-attainment area for particulate matter). Predicted ambient concentrations at this location were only 8% of the NAAQS (PM10 24 hour NAAQS is 150 ug/m3). According to Washington State Department of Ecology estimates, proposed power plant emissions are small compared to emissions from existing sources. For example, NOx emissions from all of the proposed power plants comprise only 3.3% of Washington's total NOx emissions and only 11% of Washington's particulate emissions.

- **Proposed Class I SILs exceeded at several locations.** If all the plants scheduled to be energized before 2004 are built, their emissions are predicted to exceed the proposed 24 hour PM10 Class I SIL (0.3 ug/m3) in the CRGNSA and in the Spokane Indian Reservation. When all proposed sources were included in the model, the proposed 24 hour PM10 Class I SIL was exceeded in 11 out of 18 Class I/Scenic/Wilderness Areas. These exceedances suggest that if all the proposed plants were built, EPA might need to evaluate the effect of these plants on Class I/Scenic/Wilderness Areas in combination with existing sources, to evaluate increment consumption. However, BPA anticipates only a small portion of these plants will likely be built[5]. (Note: exceeding a SIL indicates that further evaluation is necessary, but it does not necessarily indicate that significant impacts have occurred.)

- **Relatively little Increment consumed.** Predicted concentrations of PM10, NOx, and SO2 from the proposed power projects are small fractions of the applicable Class I increments. For example, the peak PM10 concentration was only 1.54 ug/m3 in the Columbia River Gorge National Scenic Area (not a Class I/Scenic/Wilderness Area) which is well below the 24 hour PM10 Class I increment of 8 ug/m3. Based on EPA's Prevention of Significant Deterioration criteria, this implies that the power plants alone do not cause a significant deterioration of air quality as characterized by PM10, NOx, and SO2 concentrations.

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[3] Because there is no other available benchmark for evaluating impacts to NAAQS, this study conservatively compares multiple plant impacts to individual plant SILs.

[4] The 12km grid used in this study is too large to capture plume impaction with local terrain. Localized plant effects are captured in each facility's air permit.

[5] Power Planning Council estimates that the region will need approximately 6,000 MW by 2010 to meet load growth and reliability standards. The proposed projects total over 24,000 MW in capacity.

- **Nitrogen and Sulfur deposition below levels of concern.** Annual nitrogen and sulfur deposition predicted for the Class I/Scenic/Wilderness Areas, the CRGNSA, and the Mt. Baker Wilderness are less than one percent of the background deposition rates provided by the Federal Land Managers for these areas.

- **Visibility impacted.** The study results suggest the proposed power projects could have the potential to degrade visibility in the Class I areas, as characterized by guidance criteria established by the Federal Land Managers[6]. The model predictions indicate emissions from the plants scheduled to be energized prior to 2004 would degrade visibility on very clear days by more than 5% at 14 out of 18 Class I/Scenic/Wilderness Areas and by more than 10% at 8 areas. If all the proposed plants are built, visibility on very clear days has the potential to be frequently degraded by more than 10% at 12 out of 18 Class I/Scenic/Wilderness Areas and in the surrounding Class II areas. The sensitive areas most affected by the first group of plants (energized before 2004) are Mt. Rainier, the Alpine Lakes Wilderness, and the Mt. Baker Wilderness Area. The inclusion of all proposed plants (pre- and post-January 2004) results in more than 10% change in visibility in 12 out of 18 of the northwest's Class I/Scenic/Wilderness Areas. The model shows the Mt. Baker Wilderness Area, Alpine Lakes Wilderness Area, CRGNSA, Mt. Rainier National Park, and the Olympic National Park would be most affected.

Phase II. Phase II will be implemented, as necessary, for power plants being considered for integration by BPA and evaluated through the NEPA process. Phase II will consist of a separate evaluation of each power plant's contribution to visibility impacts. This information will become part of the record and will be provided to the BPA decision-maker for use in making a decision on integration.

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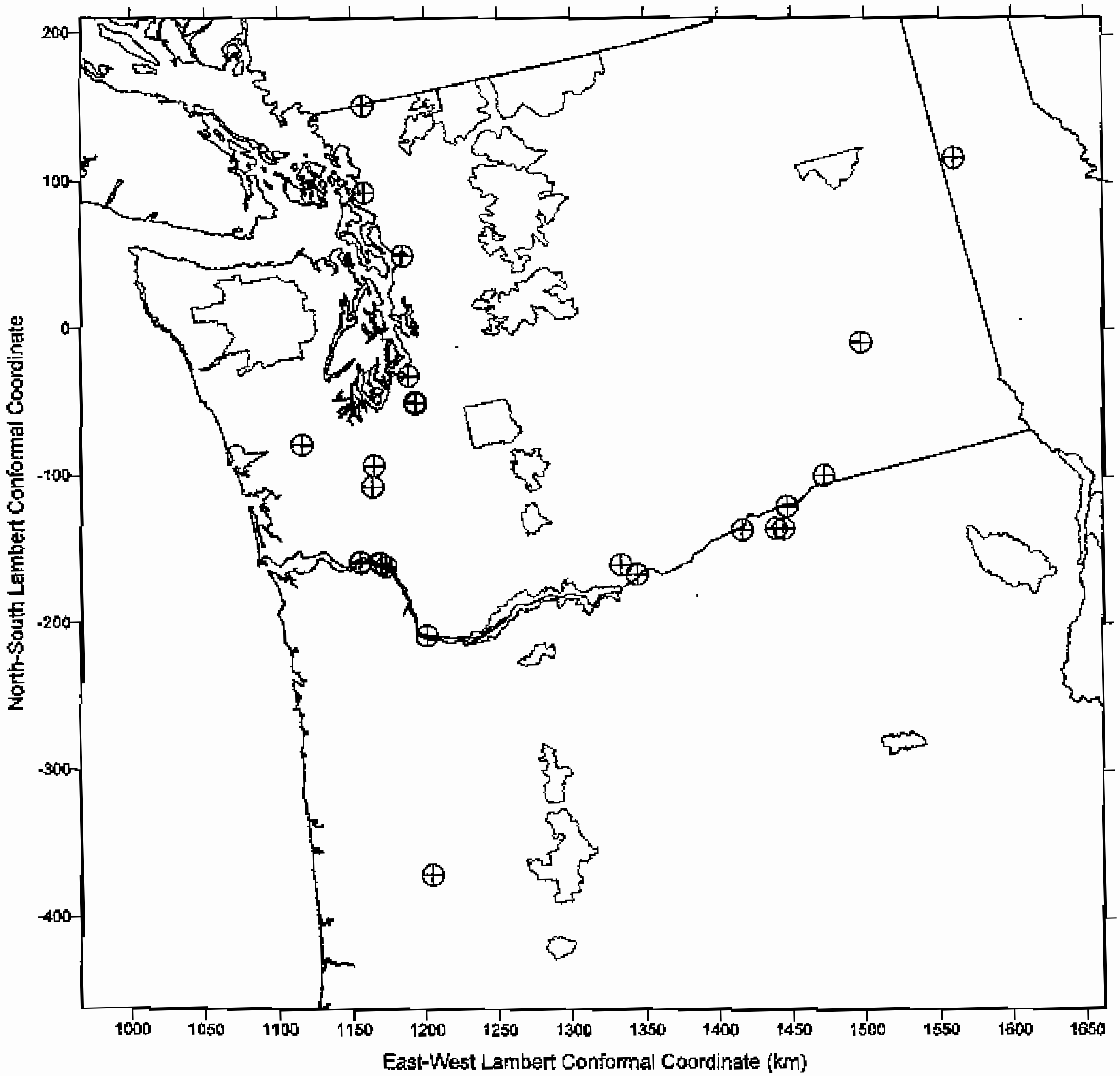
[6] "Federal Land Managers Air Quality Related Values Workgroup, Phase I Report, December, 2000".

Peak Emissions with Primary Fuel
Sources with Energization Dates Before January 2004

					Peak Emissions (lb/hr)		
Num	Project Name	Owner	(MW)	Date	SO2	NOx	PM10
1	TransAlta Centralia Generation LLC Big Hanaford Project	Transalta	248	Jun-01	6.6	21.1	16.2
2	Fredonia Facility	PSE	111	Jul-01	102.4	46.4	24.3
3	Rathdrum Power, LLC	Cogentrix	270	Aug-01	2.7	29.8	21.4
4	Vancouver a (Alcoa)	Calpine	100	Nov-01	0.7	16.0	5.0
5	Columbia Peaking Generation Project	Avista	200	Dec-01	2.8	13.6	11.2
6	Mcnary B	Calpine	200	Dec-01	1.3	32.0	10.0
7	Sumas Energy 2	NESCO	660	Jan-02	15.8	33.0	47.6
8	Goldendale (The Cliffs)	Summit	225	Feb-02	1.0	38.3	15.0
9	Columbia River Project	AES Columbia	220	May-02	7.3	25.3	17.2
10	Fredrickson	Calpine	350	May-02	1.5	17.1	18.0
11	Frederickson Power	West Coast	249	May-02	10.2	19.7	16.9
12	Coyote Springs 2	Avista	280	Jun-02	1.1	30.0	4.5
13	Port of Tacoma Generation Project Phase I Peaking Project	SW Power	175	Jun-02	2.6	61.0	18.0
14	Goldendale Energy Project	Calpine	248	Jul-02	1.0	14.9	11.8
15	Hermitston Power Project	Calpine	546	Sep-02	2.5	71.7	38.1
16	Everett Delta I	FPL	248	Sep-02	11.0	25.0	18.0
17	Everett Delta II	FPL	248	Sep-02	11.0	25.0	18.0
18	Pierce County Project	Duke	320	Jan-03	44.0	148.0	44.0
19	Satsop CT Project - Phase I	Duke	650	Jan-03	2.7	43.5	50.6
20	Mint Farm Generation Project I	Avista	248	Jul-03	2.7	25.0	18.8
21	Umatilla Tribal Generation Project	Confed.Tribes	1000	Jul-03	5.6	122.4	109.6
22	Longview Energy	Enron	290	Jul-03	1.4	25.0	19.9
23	Coburg Power	Frontier	600	Aug-03	1.5	54.7	15.8
24	Starbuck	NW Power Ent.	1200	Oct-03	17.7	106.4	82.8
25	Umatilla Generating Project	PG&E	620	Nov-03	9.8	40.4	48.0
26	Summit/Westward (Clatskanie)	Summit	520	Nov-03	8.0	54.0	48.0
27	Chehalis Generating Facility	Tractebel	520	Nov-03	20.8	40.9	31.6
28	Port Westward	PGE	650	Dec-03	12.7	43.8	26.8

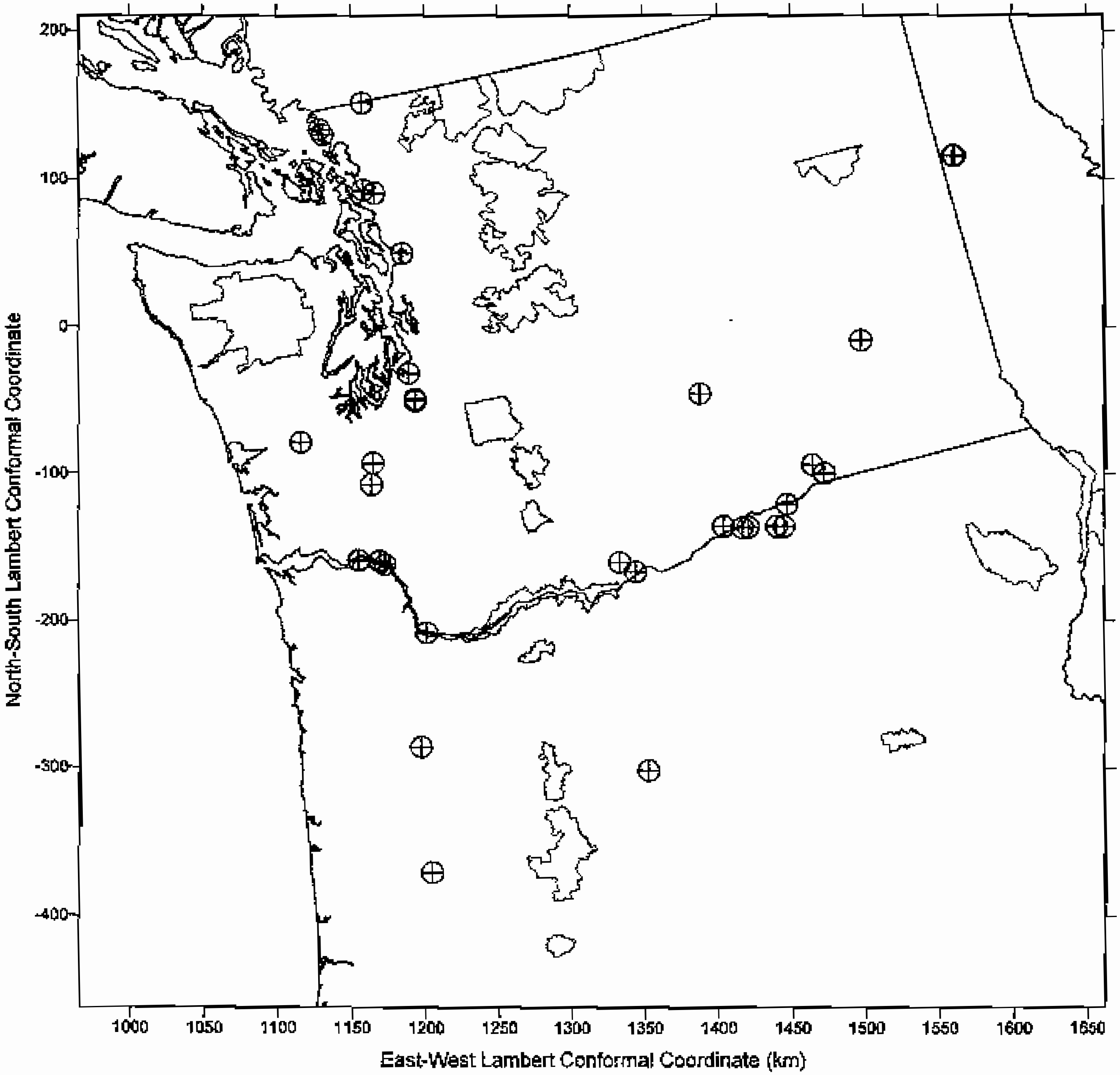
Source Locations for Sources with Energization Date Before 1/04



Peak Emissions with Primary Fuel
Sources with Energization Dates After December 2003

					Peak Emissions (lb/hr)		
Num	Project Name	Owner	(MW)	Date	SO2	NOx	PM10
1	Cherry Point	BP	750	Jan-04	3.0	45.1	35.7
2	Frederickson Power II	West Coast	249	Jan-04	10.2	13.6	15.6
3	Mcnary A	Calpine	600	Jun-04	3.0	34.2	36.0
4	Salem (Bethel PGE)	Calpine	600	Jun-04	3.0	34.2	36.0
5	Port of Tacoma Phase II (5 units)	SW Power	825	Jun-04	13.0	101.5	90.0
6	Grizzly Power	Cogentrix	980	Jul-04	52.8	114.4	105.6
7	Wallula Power Project	Newport Generation	1300	Jul-04	9.5	108.2	72.8
8	Mercer Ranch Generation Project	Cogentrix	800	Oct-04	42.7	92.4	85.3
9	Satsop CT Project - Phase II	Duke	650	Oct-04	2.7	43.5	50.6
10	Satsop CT Project - Phase III	Duke	650	Oct-04	2.7	43.5	50.6
11	Northern Idaho Power	Cogentrix	810	Dec-04	34.5	83.5	70.5
12	Morrow Generating Project	PG&E	620	Jan-05	9.8	40.4	48.0
13	Ferndale	Calpine	600	Jun-05	3.0	34.2	36.0
14	Mount Vernon	Calpine	600	Jun-05	3.0	34.2	36.0
15	Vancouver b (Alcoa)	Calpine	600	Jun-05	3.0	34.2	36.0
16	Mattawa (Grant Co)	Grant Co. LLC	1300	Jun-05	9.5	108.2	72.8
17	Kootenai Power (Rathdrum)	Kootenai Generation	1300	Jun-05	4.4	87.6	94.4

Source Locations for All Sources



Maximum Concentration Predictions (ug/m3) Includes Sources with Energization Dates Before Jan 2004						
	Annual Average			24-hour		3-hour
Area	NOx	PM10	SO2	PM10	SO2	SO2
Diamond Peak Wilderness	0.001	0.005	0.000	0.07	0.01	0.01
Three Sisters Wilderness	0.004	0.010	0.001	0.11	0.01	0.03
Mt. Jefferson Wildnemess	0.003	0.013	0.001	0.15	0.01	0.03
Strawberry Mtn. Wilderness	0.001	0.008	0.001	0.14	0.01	0.02
Mt. Hood Wilderness	0.009	0.027	0.003	0.28	0.02	0.05
CRGNSA	0.032	0.055	0.007	0.62	0.05	0.16
Eagle Cap Wilderness	0.004	0.014	0.001	0.12	0.01	0.03
Hells Canyon Wilderness	0.004	0.012	0.001	0.10	0.01	0.02
Mt. Adams Wilderness	0.007	0.020	0.003	0.19	0.03	0.05
Goat Rocks Wilderness	0.008	0.020	0.003	0.13	0.03	0.08
Mt. Rainier National Park	0.017	0.034	0.008	0.29	0.05	0.20
Olympic National Park	0.009	0.017	0.003	0.20	0.10	0.22
Alpine Lakes Wilderness	0.028	0.045	0.013	0.29	0.10	0.26
Glacier Peak Wilderness	0.014	0.026	0.011	0.17	0.13	0.61
North Cascades National Park	0.013	0.024	0.015	0.17	0.19	0.61
Pasayten Wilderness	0.006	0.011	0.005	0.06	0.08	0.21
Mt. Baker Wilderness	0.025	0.042	0.029	0.25	0.26	1.41
Spokane Indian Res.	0.010	0.025	0.003	0.46	0.04	0.11
EPA Proposed Class I SIL	0.100	0.200	0.100	0.30	0.20	1.00

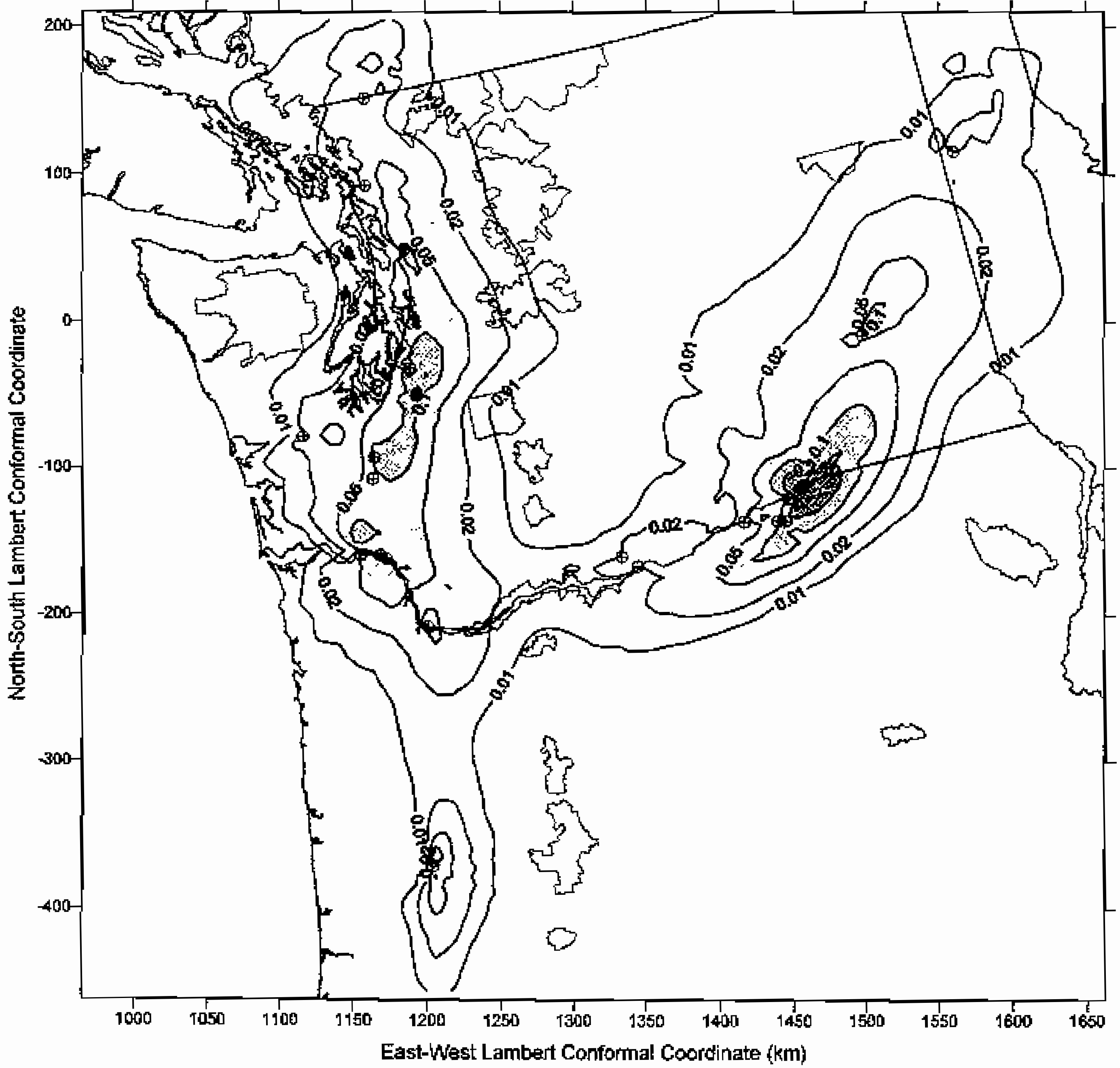
Note: PM10 includes sulfates and nitrates.

Maximum Concentration Predictions (ug/m3)
Includes All Sources

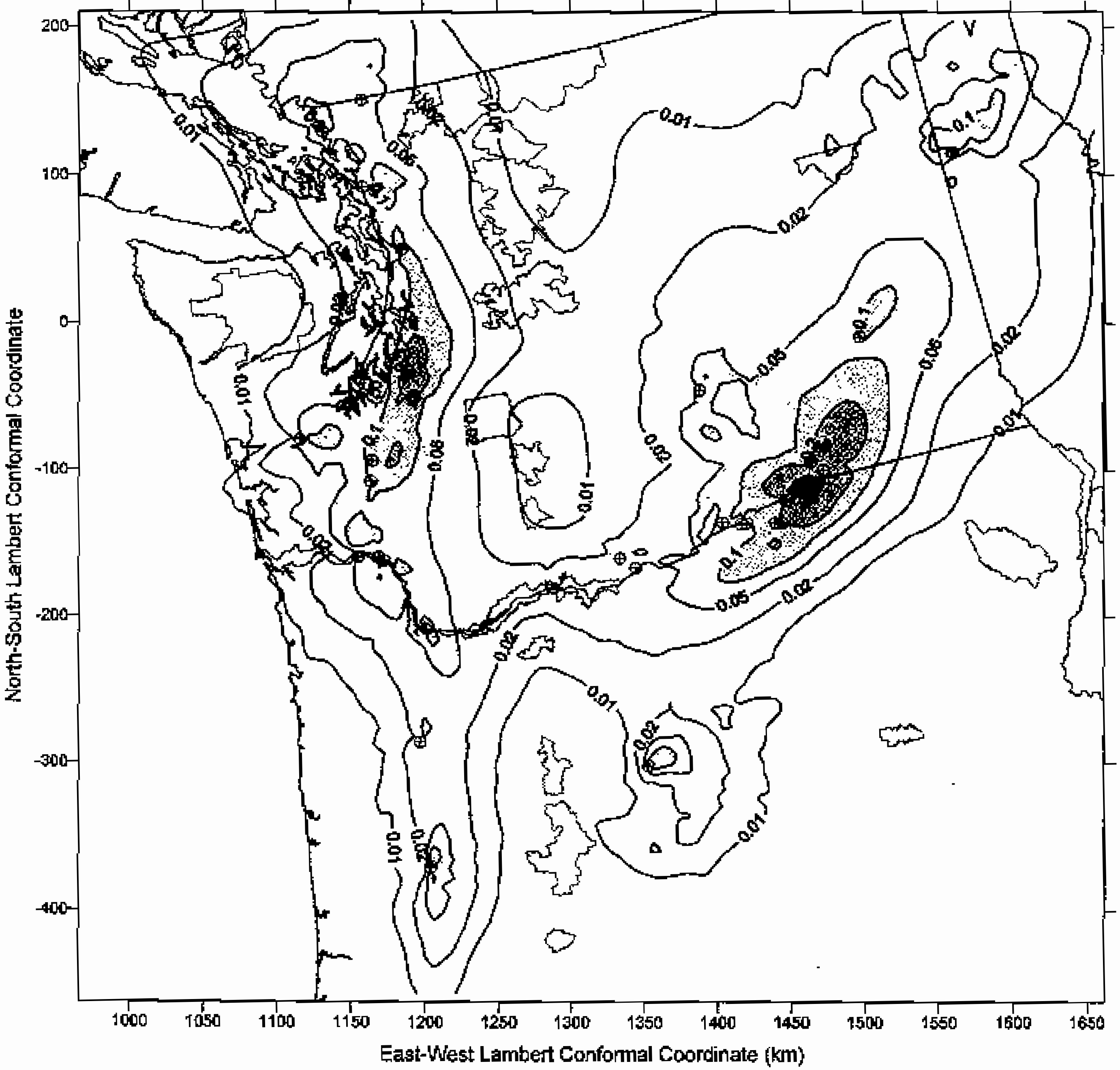
Area	Annual Average NOx	Annual Average PM10	Annual Average SO2	24-hour PM10	24-hour SO2	3-hour SO2
Diamond Peak Wilderness	0.003	0.014	0.002	0.15	0.02	0.06
Three Sisters Wilderness	0.007	0.025	0.004	0.31	0.08	0.21
Mt. Jefferson Wildnerness	0.007	0.031	0.004	0.37	0.08	0.25
Strawberry Mtn. Wilderness	0.003	0.019	0.002	0.18	0.02	0.12
Mt. Hood Wilderness	0.014	0.051	0.005	0.71	0.07	0.12
CRGNSA	0.047	0.094	0.010	1.54	0.18	0.33
Eagle Cap Wilderness	0.007	0.028	0.003	0.24	0.02	0.08
Hells Canyon Wilderness	0.006	0.022	0.002	0.18	0.01	0.04
Mt. Adams Wilderness	0.010	0.038	0.004	0.41	0.03	0.17
Goat Rocks Wilderness	0.010	0.034	0.004	0.24	0.03	0.11
Mt. Rainier National Park	0.022	0.055	0.010	0.52	0.08	0.35
Olympic National Park	0.019	0.035	0.003	0.43	0.10	0.23
Alpine Lakes Wilderness	0.040	0.077	0.016	0.49	0.11	0.31
Glacier Peak Wilderness	0.020	0.047	0.012	0.28	0.14	0.63
North Cascades National Park	0.022	0.043	0.018	0.32	0.19	0.63
Pasayten Wilderness	0.009	0.020	0.005	0.11	0.06	0.22
Mt. Baker Wilderness	0.041	0.075	0.031	0.38	0.27	1.42
Spokane Indian Res.	0.021	0.055	0.006	0.66	0.07	0.32
EPA Proposed Class I SIL	0.100	0.200	0.100	0.30	0.20	1.00

Note: PM10 includes sulfates and nitrates.

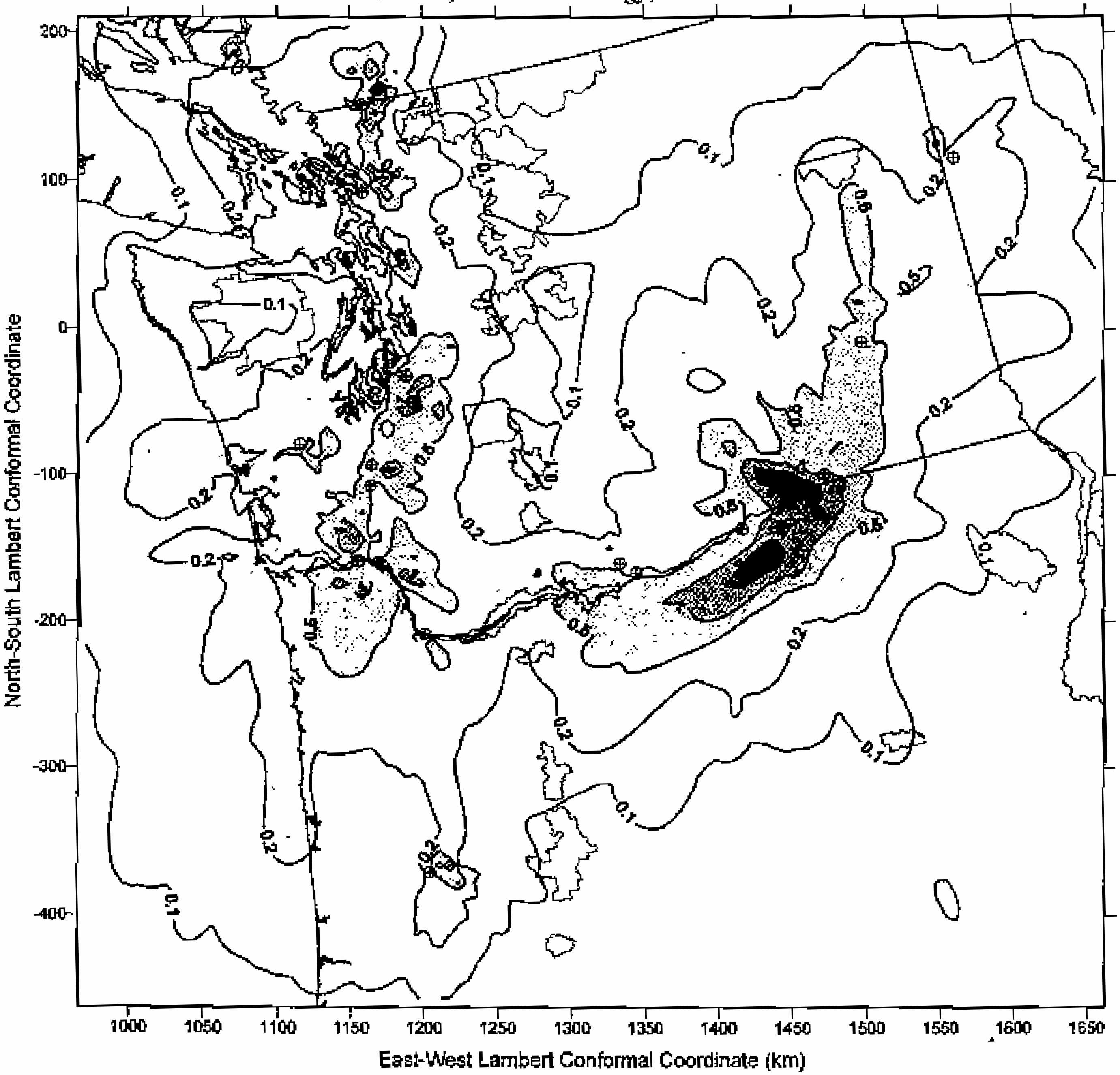
Annual NOx (ug/m3), Sources with Energization Date Before 1/04
December 1998 - March 15, 1999 Meteorology



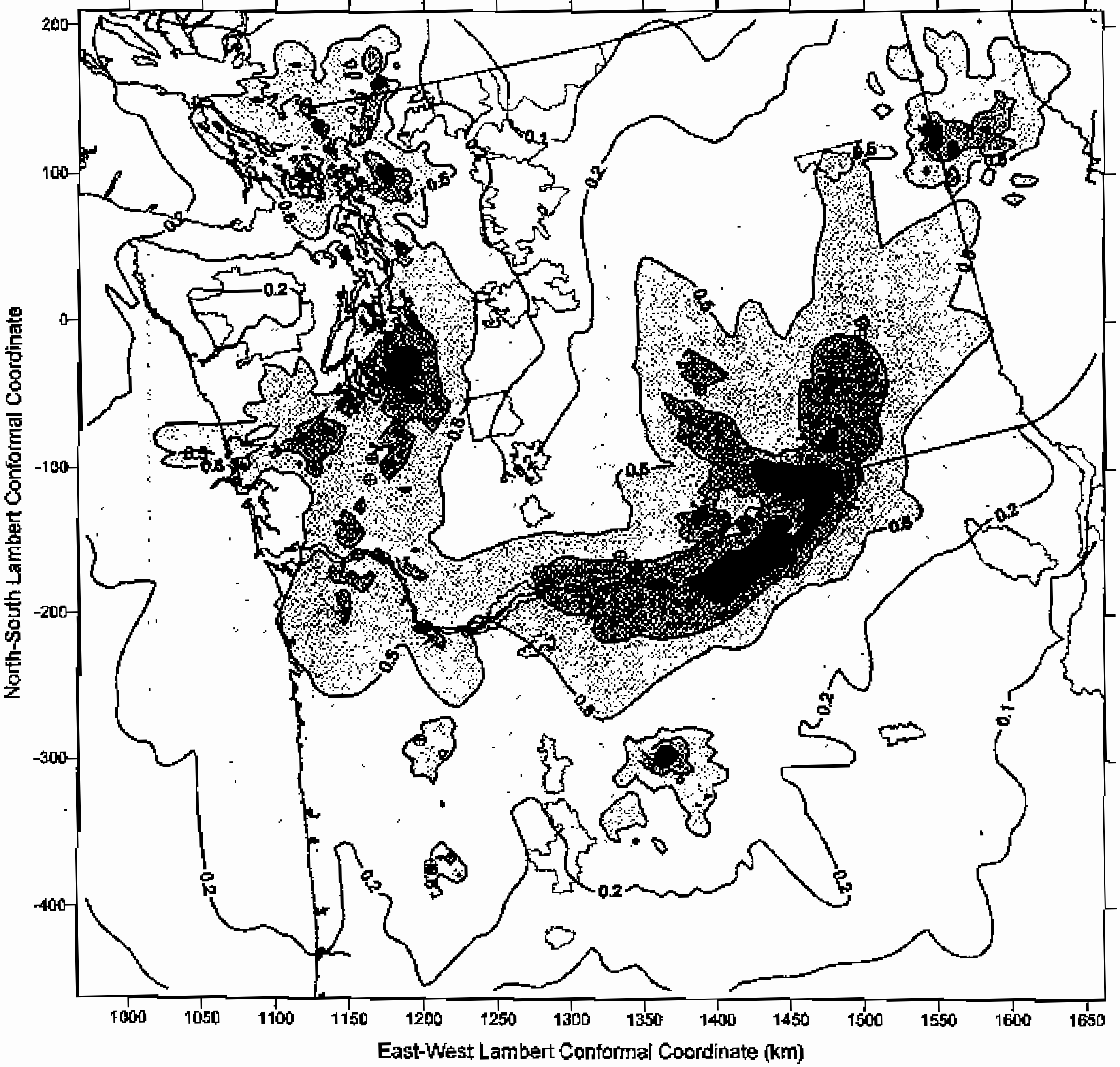
Annual NOx (ug/m3), All Sources
December 1998 - March 15, 1999 Meteorology



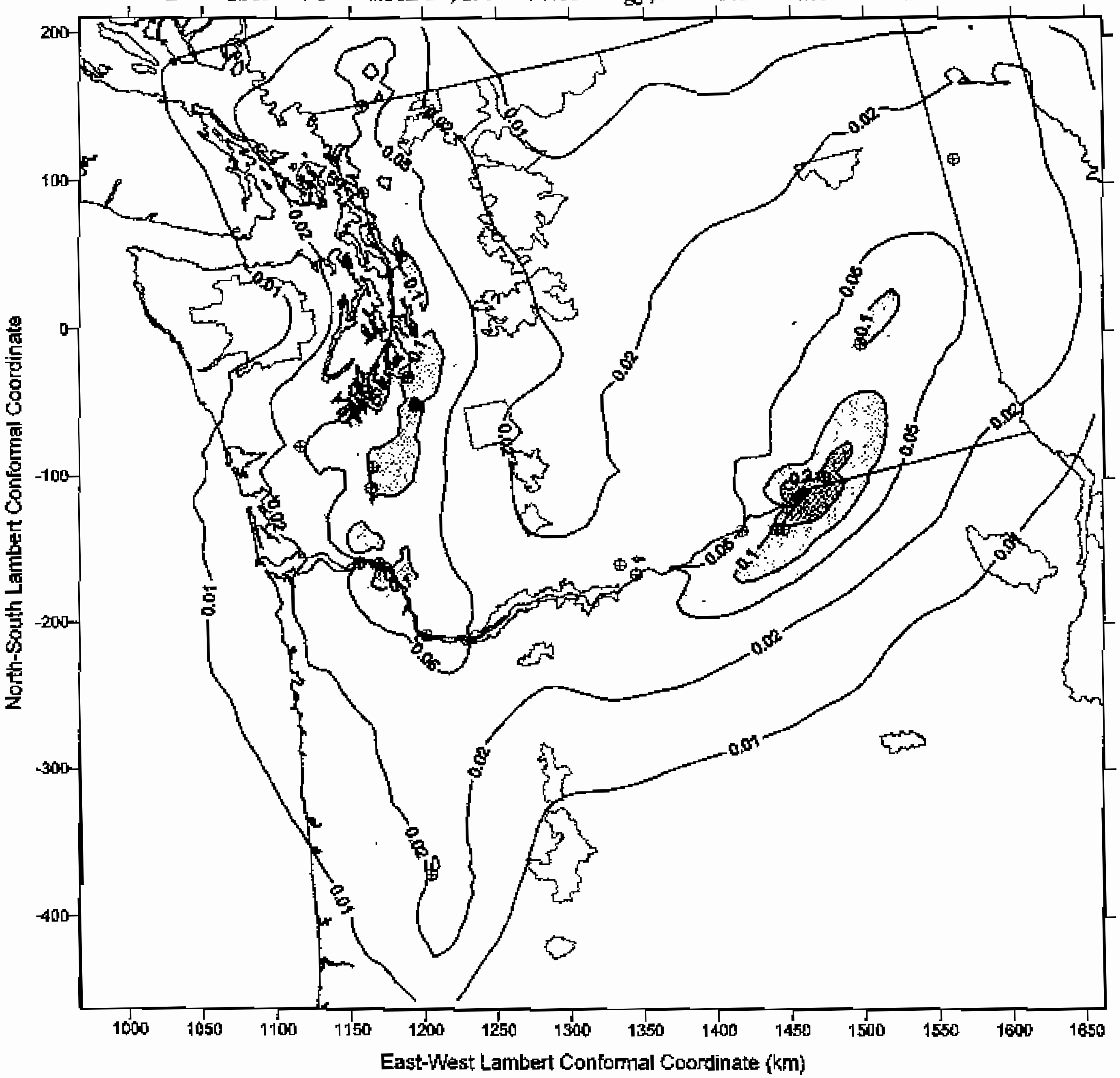
24-hr Max PM10 (ug/m3), Sources with Energization Date Before 1/04
December 1998 - March 15, 1999 Meteorology, Includes Sulfates and Nitrates



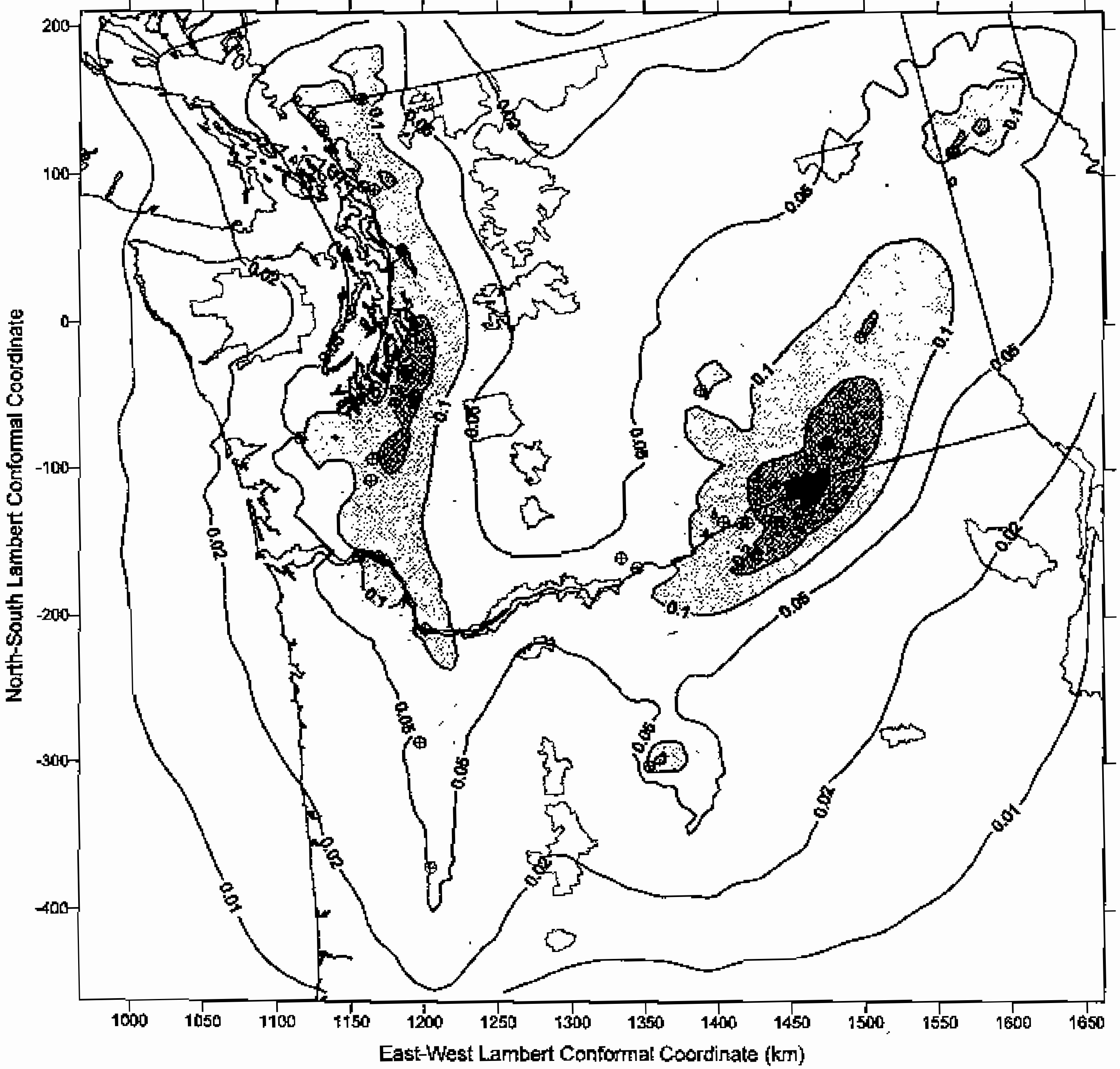
24-hr Max PM10 (ug/m3), All Sources
December 1998 - March 15, 1999 Meteorology, Includes Sulfates and Nitrates



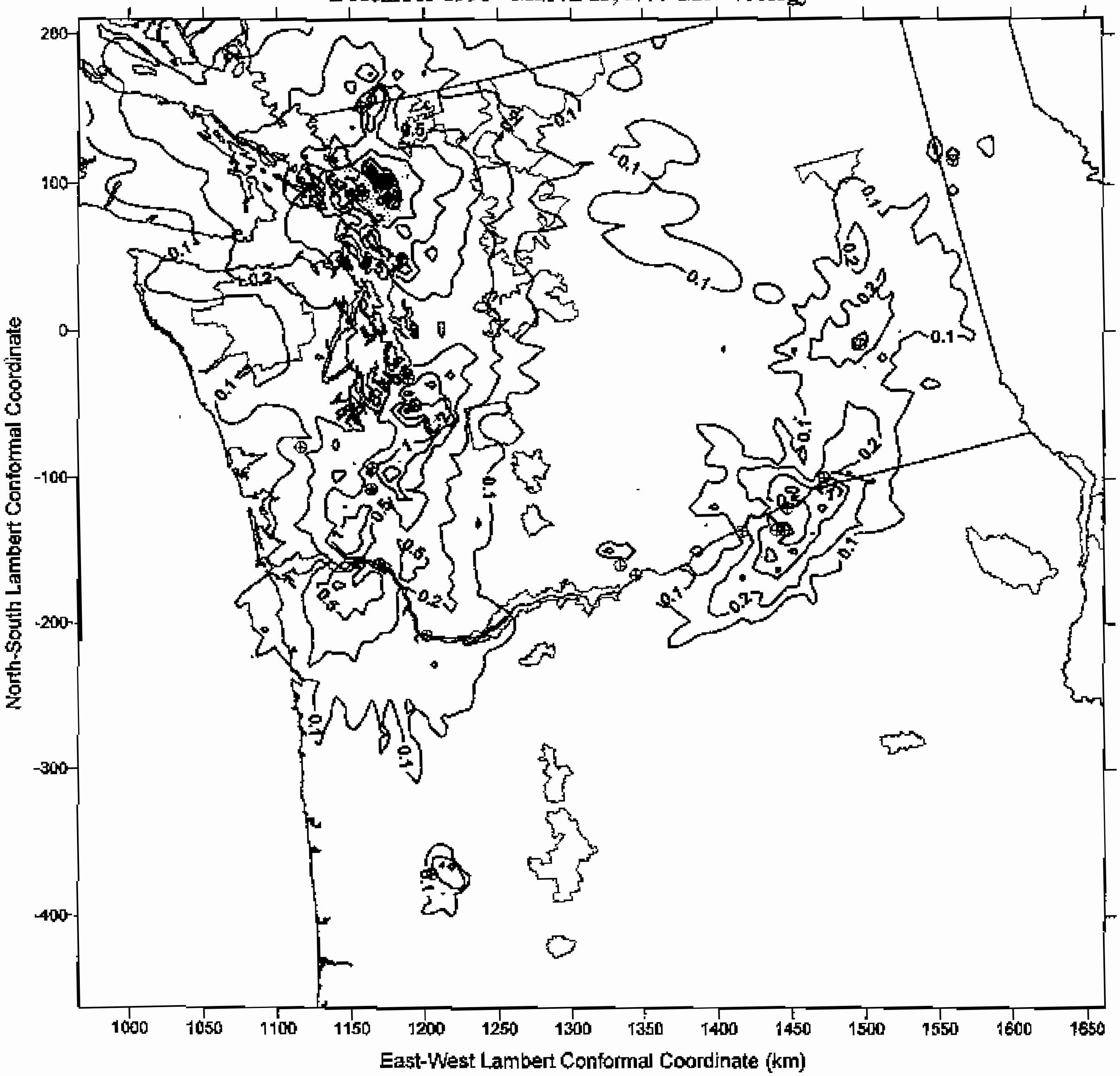
Annual PM10 (ug/m3), Sources with Energization Date Before 1/04
December 1998 - March 15, 1999 Meteorology, Includes Sulfates and Nitrates

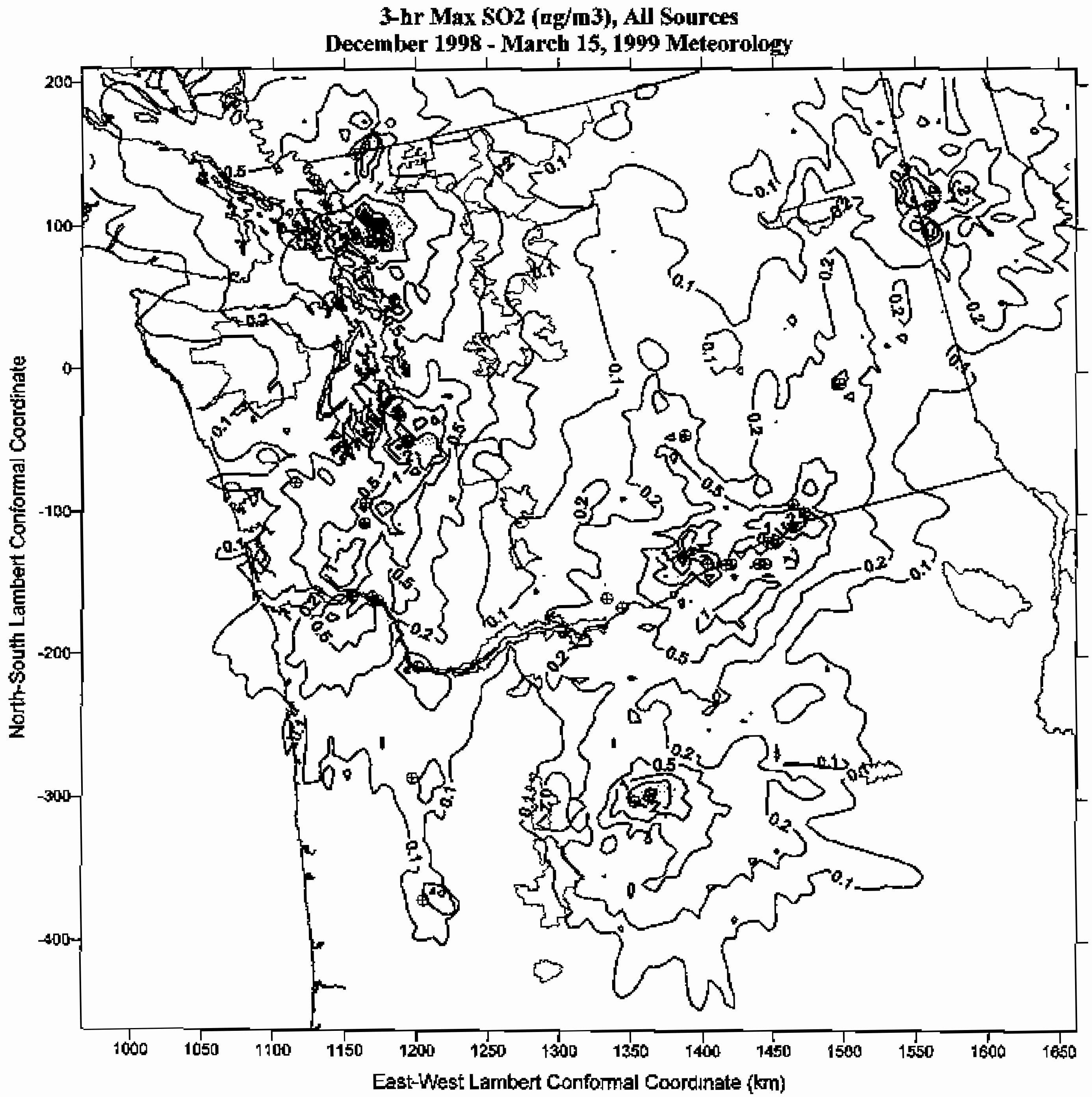


Annual PM10 (ug/m3), All Sources
December 1998 - March 15, 1999 Meteorology, Includes Sulfates and Nitrates

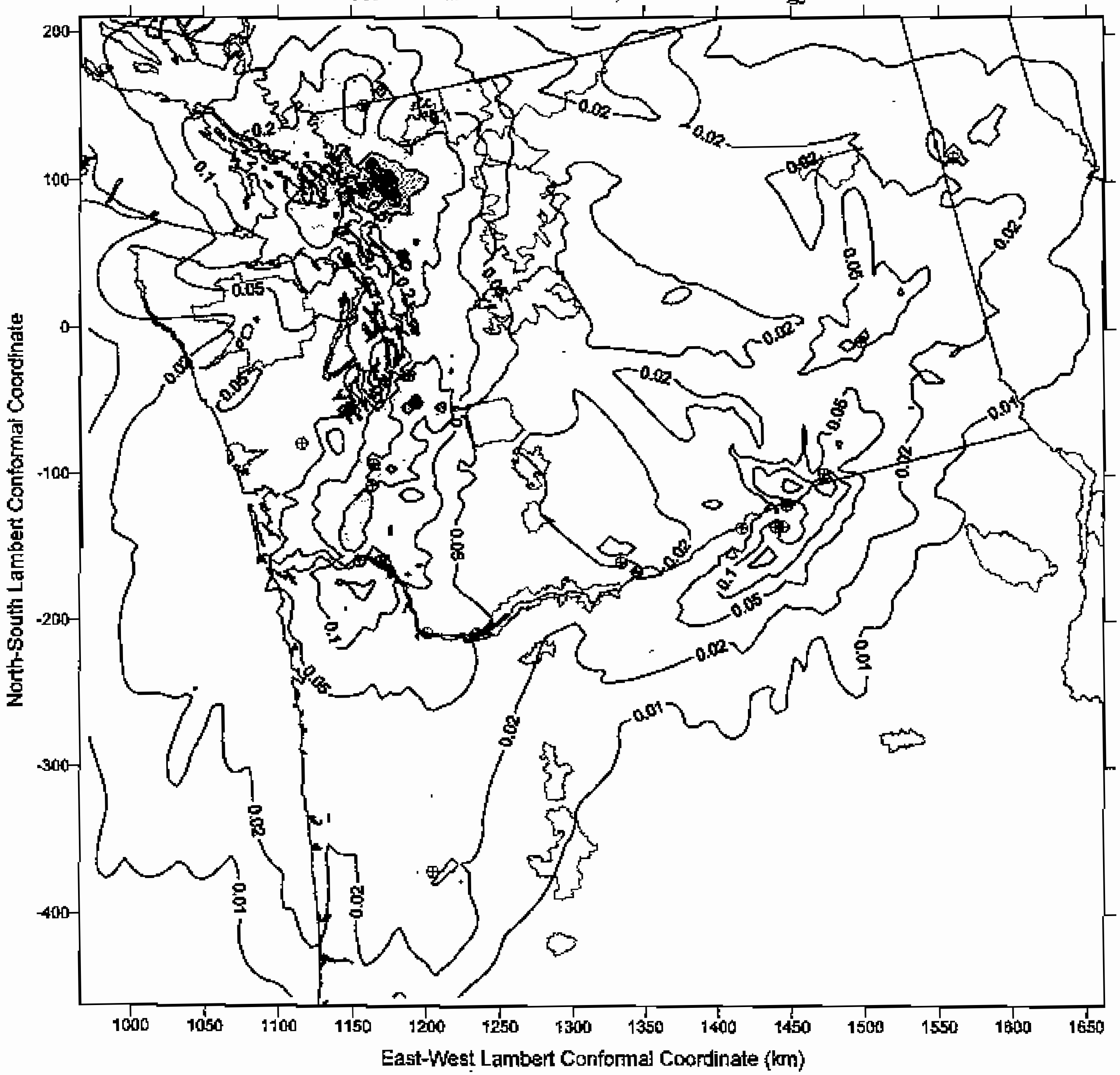


3-hr Max SO2 (ug/m3), Sources with Energization Date Before 1/04
December 1998 - March 15, 1999 Meteorology

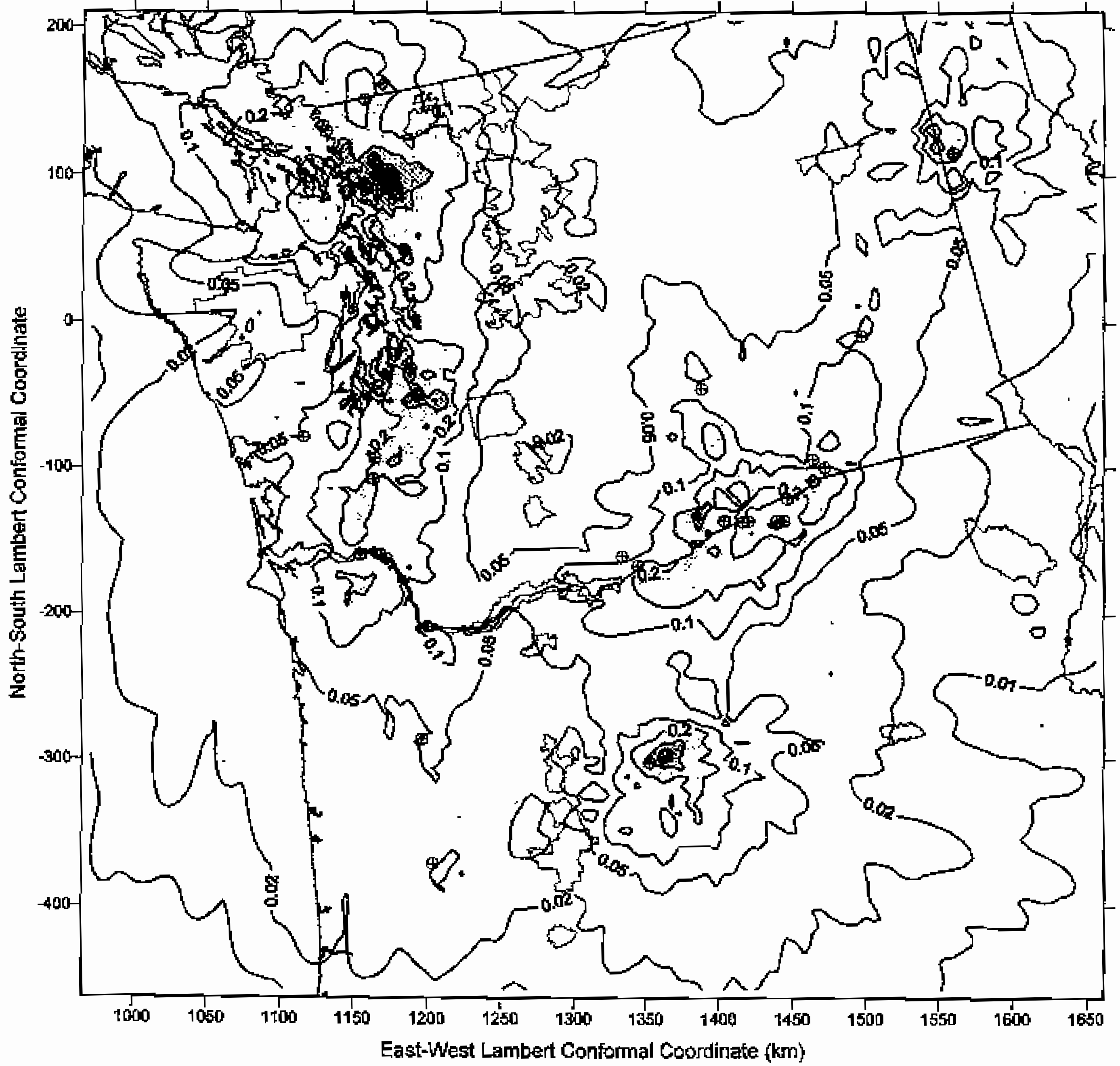



3-hr Max SO2 (ug/m3), All Sources
December 1998 - March 15, 1999 Meteorology
North-South Lambert Conformal Coordinate
East-West Lambert Conformal Coordinate (km)
200
100
0
-100
-200
-300
-400
1000
1050
1100
1150
1200
1250
1300
1350
1400
1450
1500
1550
1600
1650

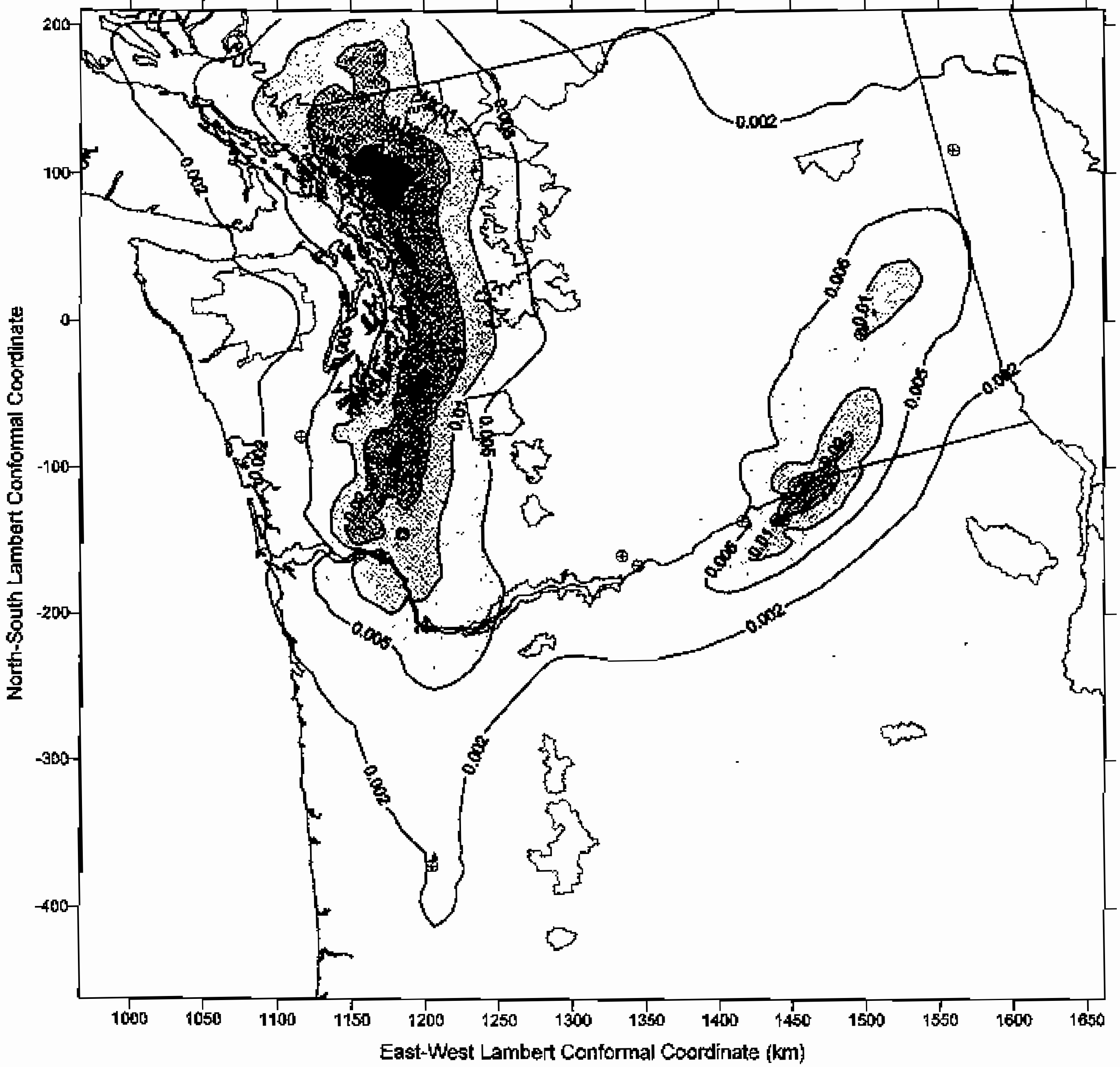
24-hr Max SO2 (ug/m3), Sources with Energization Date Before 1/04
December 1998 - March 15, 1999 Meteorology



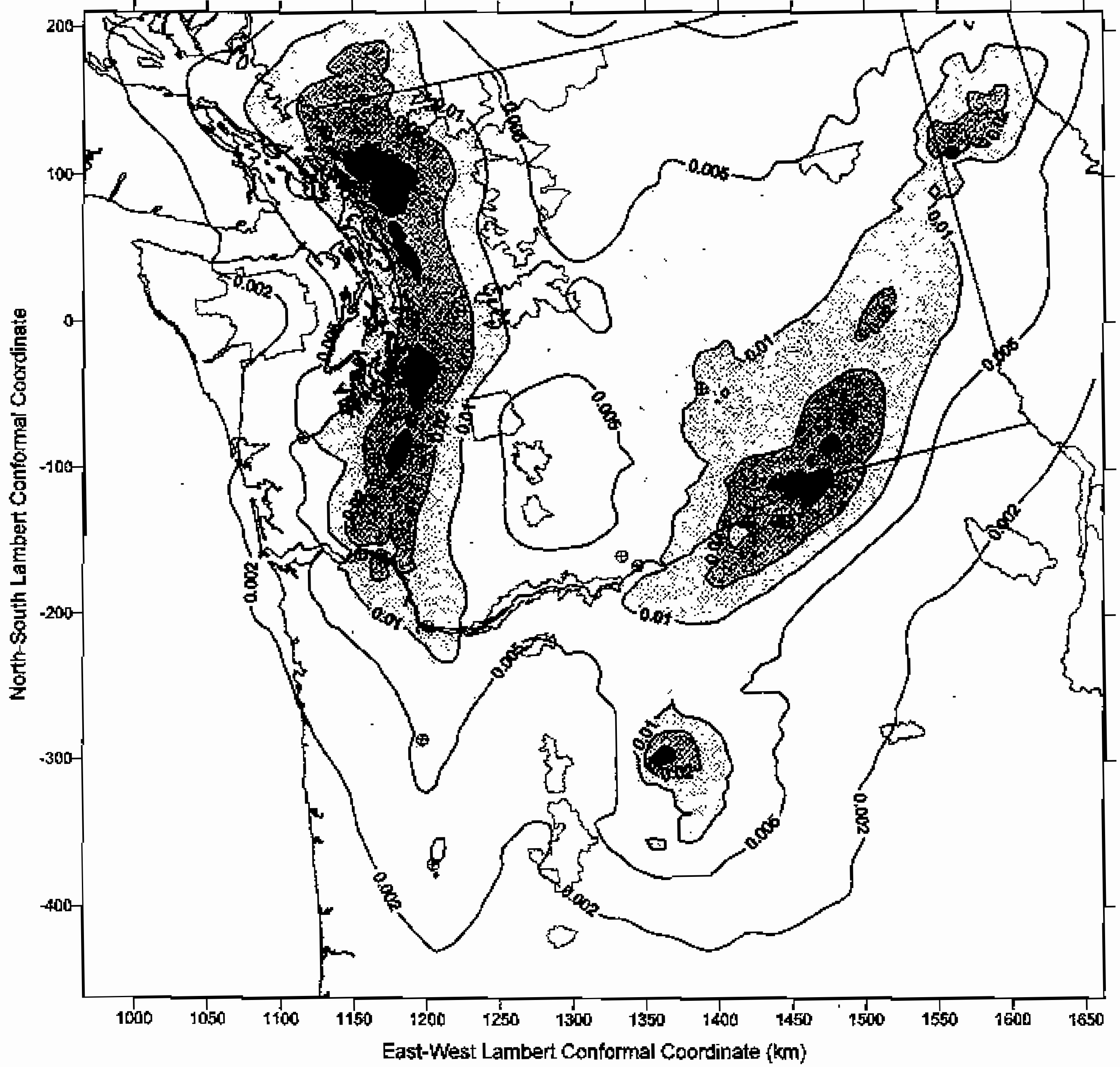
24-hr Max SO2 (ug/m3), All Sources
December 1998 - March 15, 1999 Meteorology



Annual SO2 (ug/m3), Sources with Energization Date Before 1/04
December 1998 - March 15, 1999 Meteorology



Annual SO2 (ug/m3), All Sources
December 1998 - March 15, 1999 Meteorology



Maximum Annual Deposition (Wet + Dry) Flux
Includes Sources with Energization Dates Before Jan 2004

Area	Annual Sulfur Deposition (kg/ha/yr)				Annual Nitrogen Deposition (kg/ha/yr)			
	Background	Sources	Total	Change (%)	Background	Sources	Total	Change (%)
Diamond Peak Wilderness	4.000	0.001	4.001	0.027%	2.200	0.003	2.203	0.126%
Three Sisters Wilderness	5.600	0.002	5.602	0.040%	3.600	0.007	3.607	0.185%
Mt. Jefferson Wildnerness	4.000	0.002	4.002	0.057%	1.800	0.006	1.806	0.345%
Strawberry Mtn. Wilderness	1.400	0.001	1.401	0.073%	1.200	0.002	1.202	0.192%
Mt. Hood Wilderness	8.600	0.003	8.603	0.039%	5.400	0.008	5.408	0.148%
CRGNSA	12.000	0.006	12.006	0.048%	10.000	0.013	10.013	0.133%
Eagle Cap Wilderness	1.600	0.002	1.602	0.108%	1.600	0.005	1.605	0.327%
Hells Canyon Wilderness	1.400	0.002	1.402	0.123%	1.200	0.005	1.205	0.448%
Mt. Adams Wilderness	10.800	0.004	10.804	0.036%	9.000	0.007	9.007	0.079%
Goat Rocks Wilderness	11.800	0.004	11.804	0.038%	9.000	0.007	9.007	0.077%
Mt. Rainier National Park	3.100	0.009	3.109	0.294%	2.400	0.012	2.412	0.511%
Olympic National Park	5.600	0.004	5.604	0.078%	2.000	0.008	2.008	0.396%
Alpine Lakes Wilderness	7.200	0.019	7.219	0.261%	5.200	0.024	5.224	0.452%
Glacier Peak Wilderness	8.000	0.017	8.017	0.216%	5.800	0.015	5.815	0.261%
North Cascades National Park	3.500	0.026	3.526	0.730%	5.200	0.017	5.217	0.329%
Pasayten Wilderness	7.200	0.009	7.209	0.126%	5.200	0.007	5.207	0.142%
Mt. Baker Wilderness	No Data	0.048			No Data	0.027		
Spokane Indian Res.	No Data	0.003			No Data	0.009		
USFS Criteria			3.000				5.000	

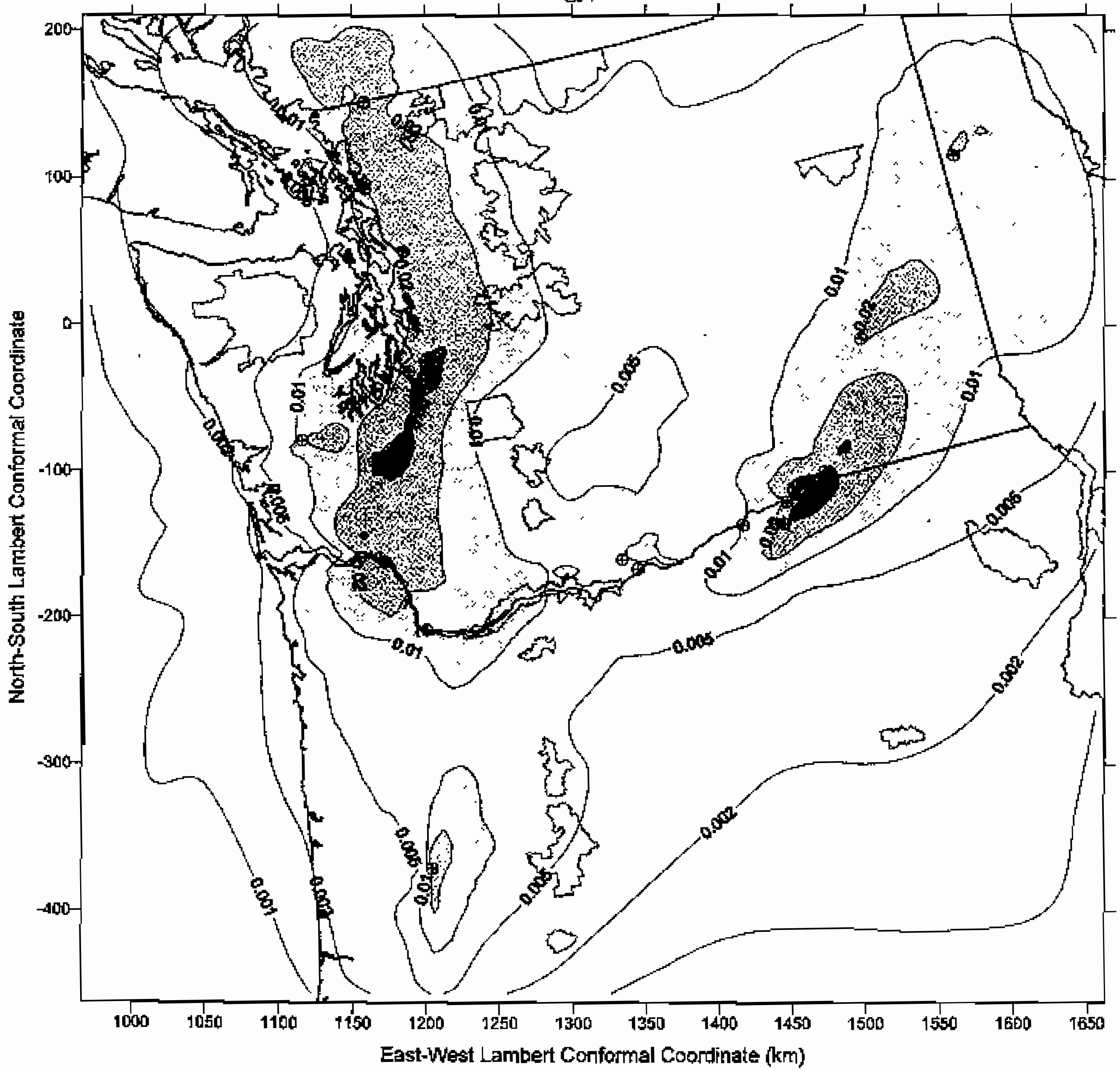
Note: Nitrogen deposition includes ammonium ion.

Maximum Annual Deposition (Wet + Dry) Flux
Includes All Sources

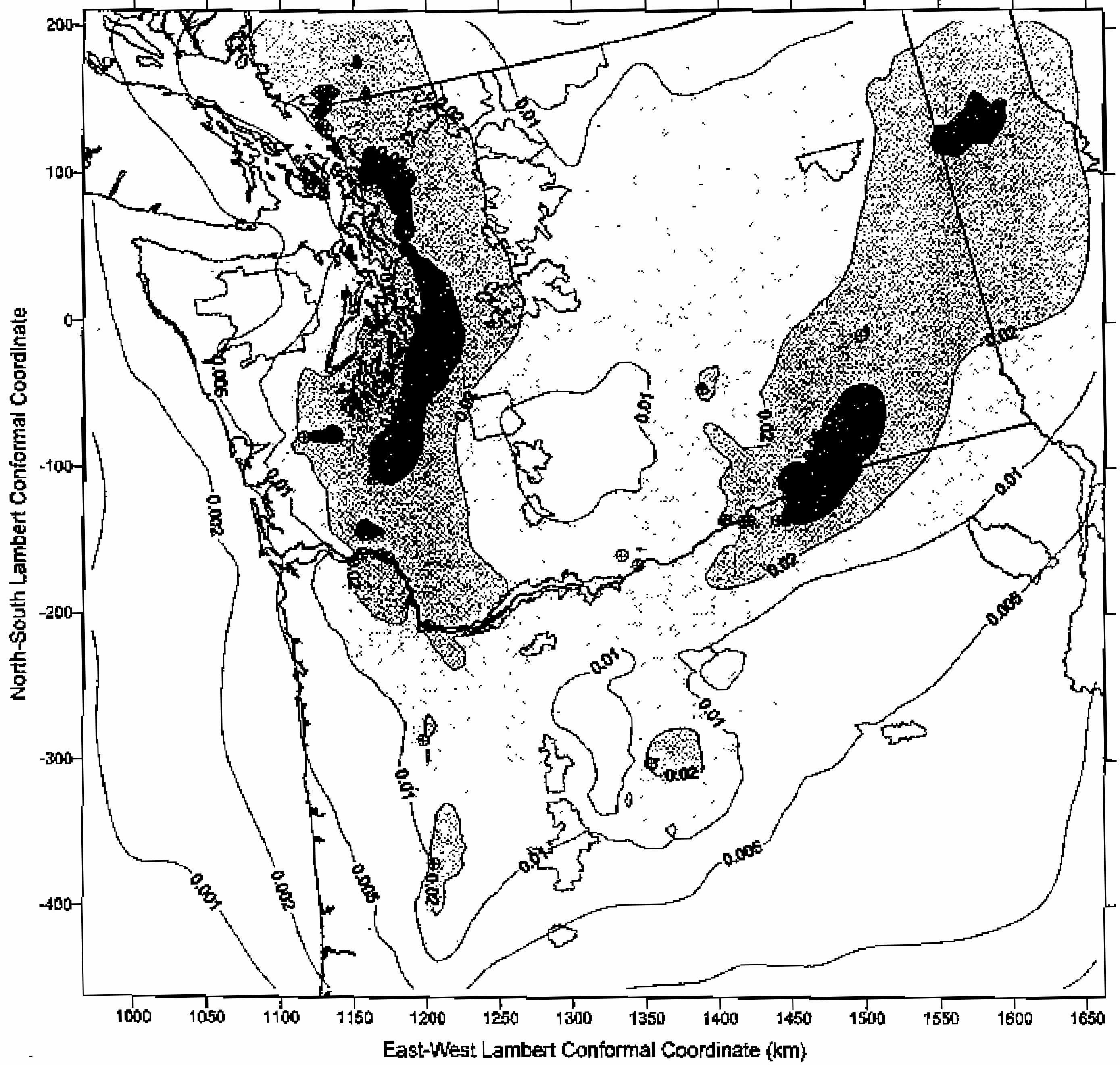
Area	Annual Sulfur Deposition (kg/ha/yr)				Annual Nitrogen Deposition (kg/ha/yr)			
	Background	Sources	Total	Change (%)	Background	Sources	Total	Change (%)
Diamond Peak Wilderness	4.000	0.003	4.003	0.064%	2.200	0.005	2.205	0.231%
Three Sisters Wilderness	5.600	0.006	5.606	0.101%	3.600	0.011	3.611	0.310%
Mt. Jefferson Wildnerness	4.000	0.006	4.006	0.148%	1.800	0.012	1.812	0.644%
Strawberry Mtn. Wilderness	1.400	0.003	1.403	0.194%	1.200	0.005	1.205	0.406%
Mt. Hood Wilderness	8.600	0.006	8.606	0.070%	5.400	0.013	5.413	0.240%
CRGNSA	12.000	0.009	12.009	0.075%	10.000	0.021	10.021	0.214%
Eagle Cap Wilderness	1.600	0.004	1.604	0.250%	1.600	0.010	1.610	0.595%
Hells Canyon Wilderness	1.400	0.004	1.404	0.256%	1.200	0.009	1.209	0.760%
Mt. Adams Wilderness	10.800	0.006	10.806	0.053%	9.000	0.011	9.011	0.126%
Goat Rocks Wilderness	11.800	0.006	11.806	0.049%	9.000	0.010	9.010	0.113%
Mt. Rainier National Park	3.100	0.011	3.111	0.354%	2.400	0.017	2.417	0.706%
Olympic National Park	5.600	0.007	5.607	0.119%	2.000	0.015	2.015	0.758%
Alpine Lakes Wilderness	7.200	0.024	7.224	0.327%	5.200	0.034	5.234	0.654%
Glacier Peak Wilderness	8.000	0.020	8.020	0.250%	5.800	0.023	5.823	0.401%
North Cascades National Park	3.500	0.029	3.529	0.812%	5.200	0.025	5.225	0.483%
Pasayten Wilderness	7.200	0.011	7.211	0.146%	5.200	0.012	5.212	0.222%
Mt. Baker Wilderness	No Data	0.052			No Data	0.040		
Spokane Indian Res.	No Data	0.008			No Data	0.019		
USFS Criteria			3.000				5.000	

Note: Nitrogen deposition includes ammonium ion.

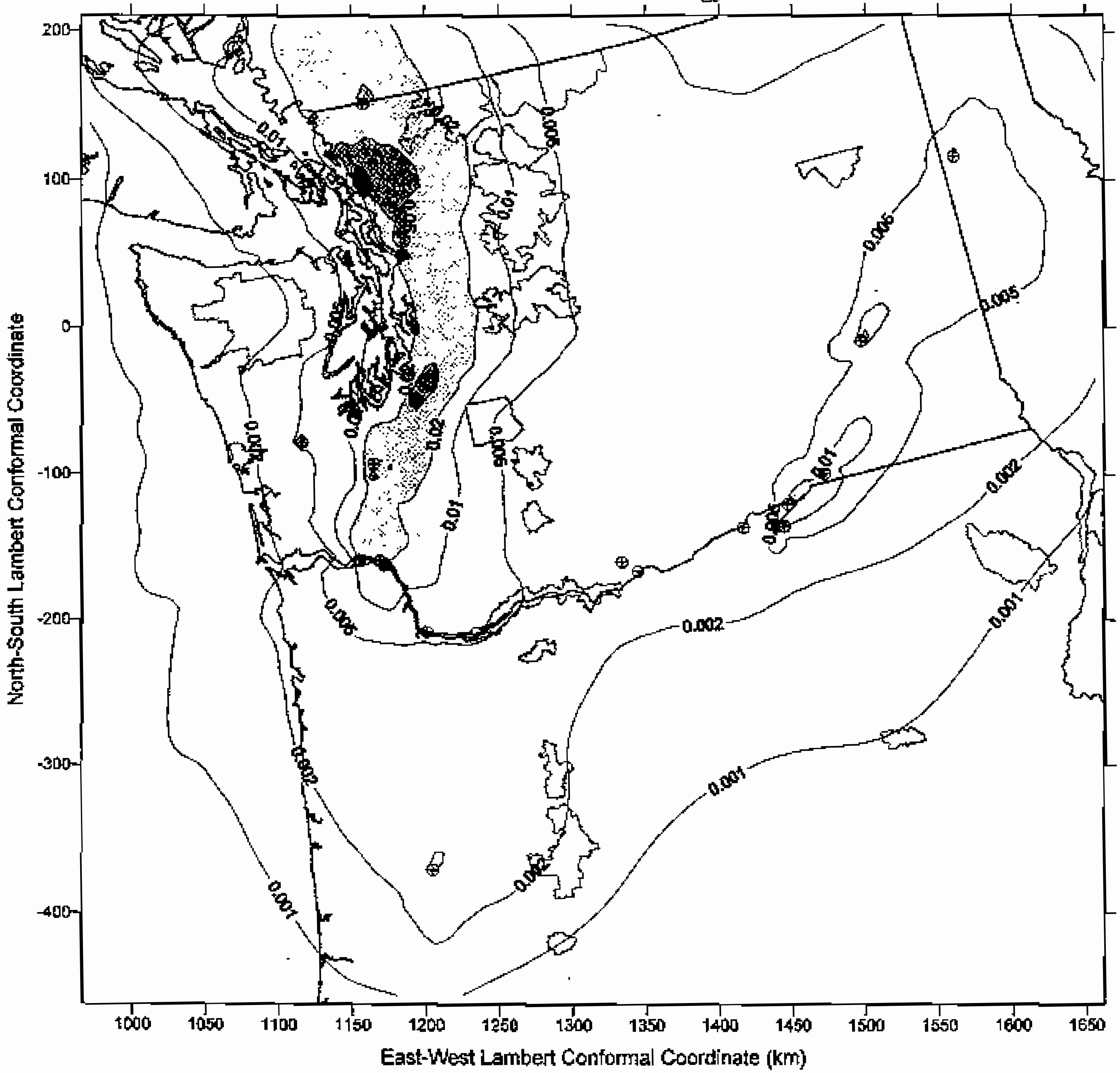
Total Nitrogen Deposition (kg/ha/yr), Sources with Energization Date Before 1/04
4/1/98 to 3/15/99 Meteorology, Includes Ammonium Ion



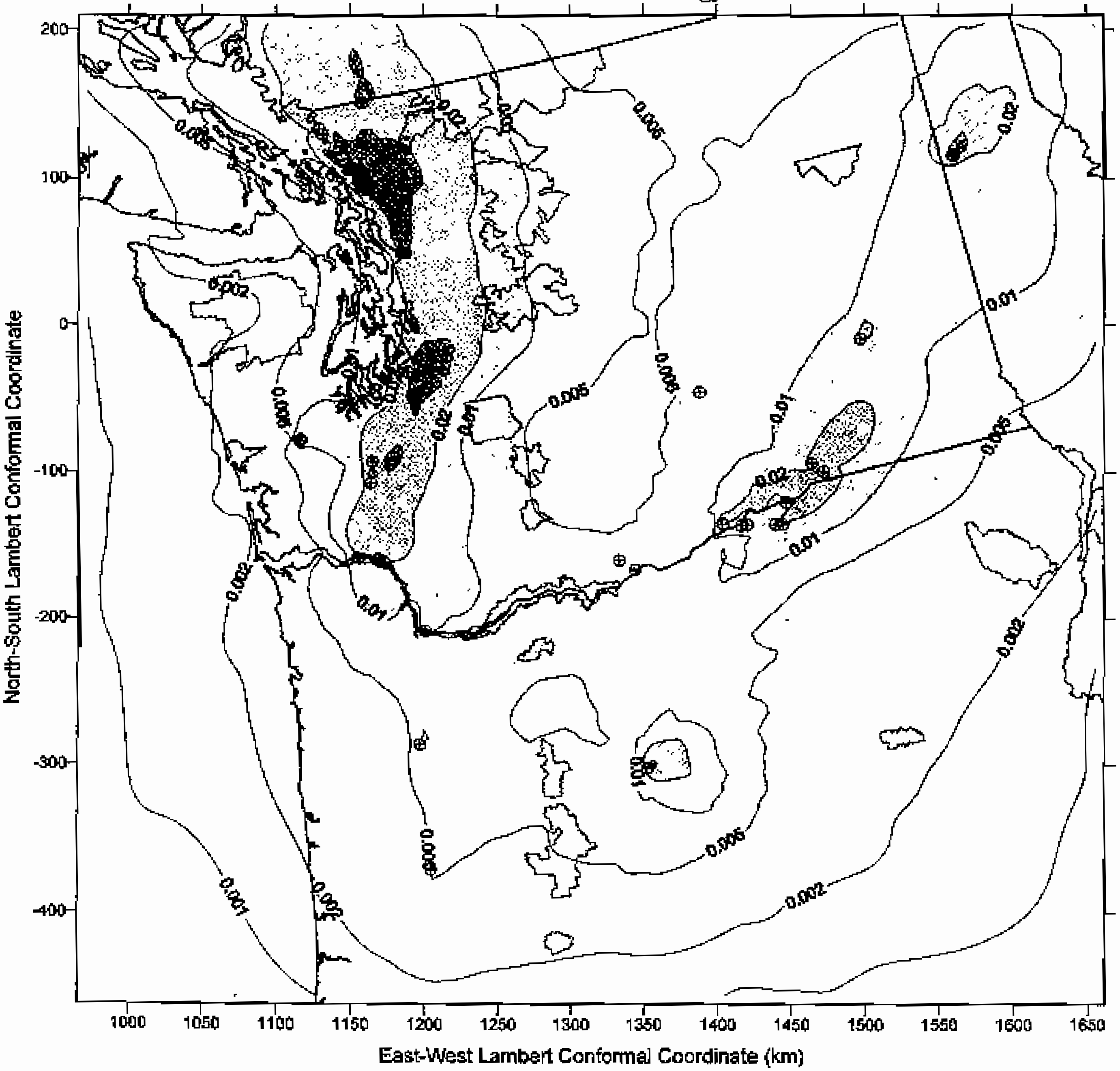
Total Nitrogen Deposition (kg/ha/yr), All Sources
4/1/98 to 3/15/99 Meteorology, Includes Ammonium Ion



Total Sulfur Deposition (kg/ha/yr), Sources with Energization Date Before 1/04
4/1/98 to 3/15/99 Meteorology



Total Sulfur Deposition (kg/ha/yr), All Sources
4/1/98 to 3/15/99 Meteorology



Number of Days with Greater than 5% Change to Background Extinction
Includes Sources with Energization Dates Before Jan 2004

Area	Spring	Fall	Summer	Winter	Total
Diamond Peak Wilderness	0	0	0	0	0
Three Sisters Wilderness	1	1	0	0	2
Mt. Jefferson Wildnerness	0	0	0	1	1
Strawberry Mtn. Wilderness	0	0	0	0	0
Mt. Hood Wilderness	2	2	0	5	9
CRGNSA	3	9	9	5	26
Eagle Cap Wilderness	0	1	0	0	1
Hells Canyon Wilderness	0	0	0	0	0
Mt. Adams Wilderness	1	0	0	2	3
Goat Rocks Wilderness	0	1	0	0	1
Mt. Rainier National Park	13	4	4	1	22
Olympic National Park	1	7	0	8	16
Alpine Lakes Wilderness	19	6	5	10	40
Glacier Peak Wilderness	6	6	6	6	24
North Cascades National Park	3	3	2	5	13
Pasayten Wilderness	0	0	0	0	0
Mt. Baker Wilderness	12	9	11	11	43
Spokane Indian Res.	0	2	0	5	7

Background extinction based on aerosol concentrations on days with the best visibility. For the CRGNSA and Spokane Indian Reservation based on top 20 percent, for all other areas based on the average of the top 5 percent.

Number of Days with Greater than 5% Change to Background Extinction Includes All Sources					
Area	Spring	Fall	Summer	Winter	Total
Diamond Peak Wilderness	0	0	0	0	0
Three Sisters Wilderness	6	9	5	2	22
Mt. Jefferson Wildnerness	2	5	0	3	10
Strawberry Mtn. Wilderness	0	0	0	2	2
Mt. Hood Wilderness	5	17	3	6	31
CRGNSA	10	19	17	11	57
Eagle Cap Wilderness	1	2	0	3	6
Hells Canyon Wilderness	0	0	0	0	0
Mt. Adams Wilderness	1	8	0	7	16
Goat Rocks Wilderness	2	6	0	2	10
Mt. Rainier National Park	18	11	9	8	46
Olympic National Park	8	14	1	16	39
Alpine Lakes Wilderness	28	19	16	22	85
Glacier Peak Wilderness	12	12	12	12	48
North Cascades National Park	6	6	6	7	25
Pasayten Wilderness	1	2	0	4	7
Mt. Baker Wilderness	18	20	18	17	73
Spokane Indian Res.	0	9	2	13	24

Background extinction based on aerosol concentrations on days with the best visibility. For the CRGNSA and Spokane Indian Reservation based on top 20 percent, for all other areas based on the average of the top 5 percent.

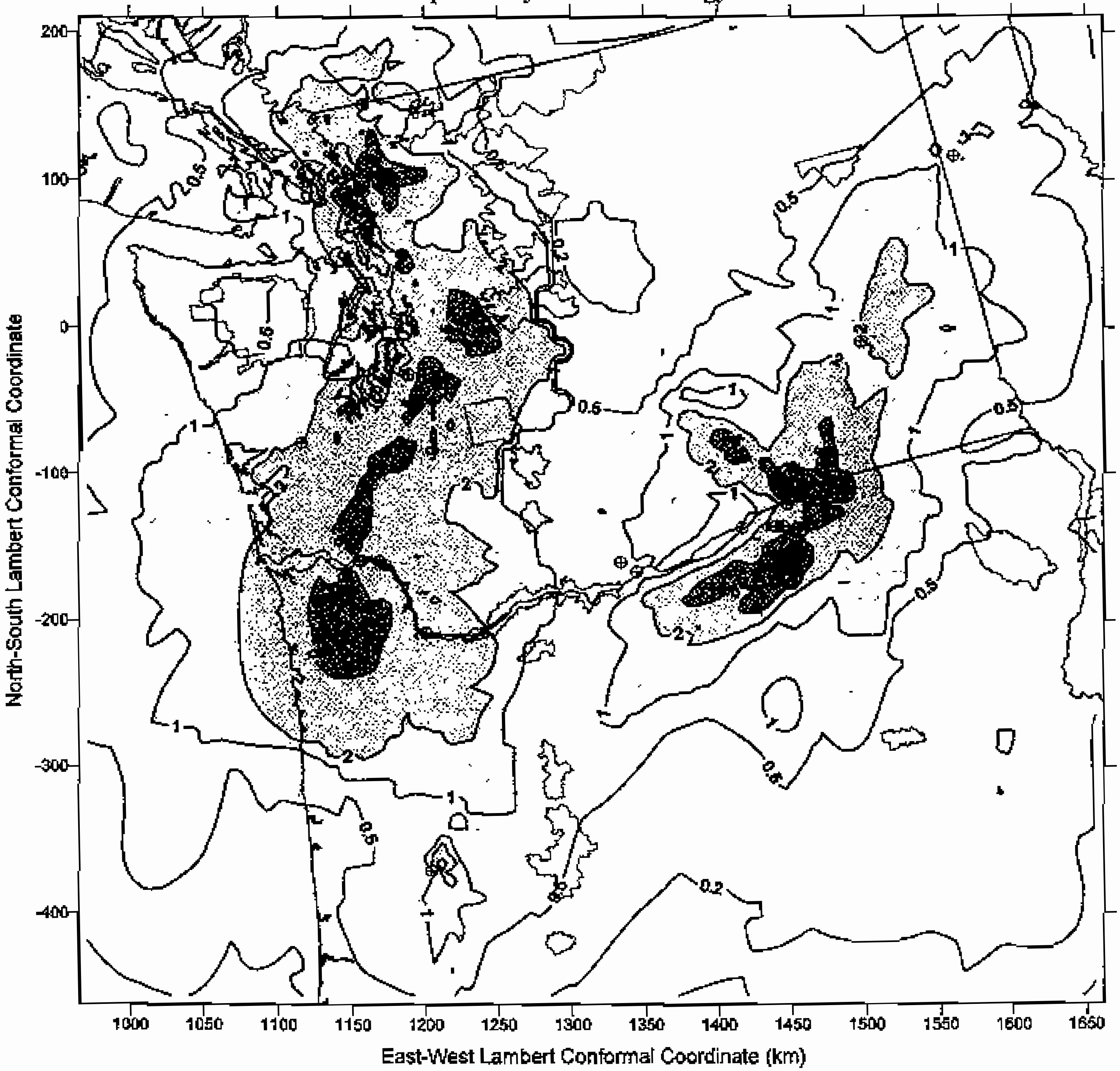
Number of Days with Greater than 10% Change to Background Extinction Includes Sources with Energization Dates Before Jan 2004					
Area	Spring	Fall	Summer	Winter	Total
Diamond Peak Wilderness	0	0	0	0	0
Three Sisters Wilderness	0	0	0	0	0
Mt. Jefferson Wildnerness	0	0	0	0	0
Strawberry Mtn. Wilderness	0	0	0	0	0
Mt. Hood Wilderness	0	0	0	1	1
CRGNSA	0	0	0	1	1
Eagle Cap Wilderness	0	0	0	0	0
Hells Canyon Wilderness	0	0	0	0	0
Mt. Adams Wilderness	0	0	0	0	0
Goat Rocks Wilderness	0	0	0	0	0
Mt. Rainier National Park	6	1	0	0	7
Olympic National Park	0	1	0	1	2
Alpine Lakes Wilderness	4	0	0	3	7
Glacier Peak Wilderness	0	0	0	0	0
North Cascades National Park	0	1	0	0	1
Pasayten Wilderness	0	0	0	0	0
Mt. Baker Wilderness	2	2	2	1	7
Spokane Indian Res.	0	1	0	0	1

Background extinction based on aerosol concentrations on days with the best visibility. For the CRGNSA and Spokane Indian Reservation based on top 20 percent, for all other areas based on the average of the top 5 percent.

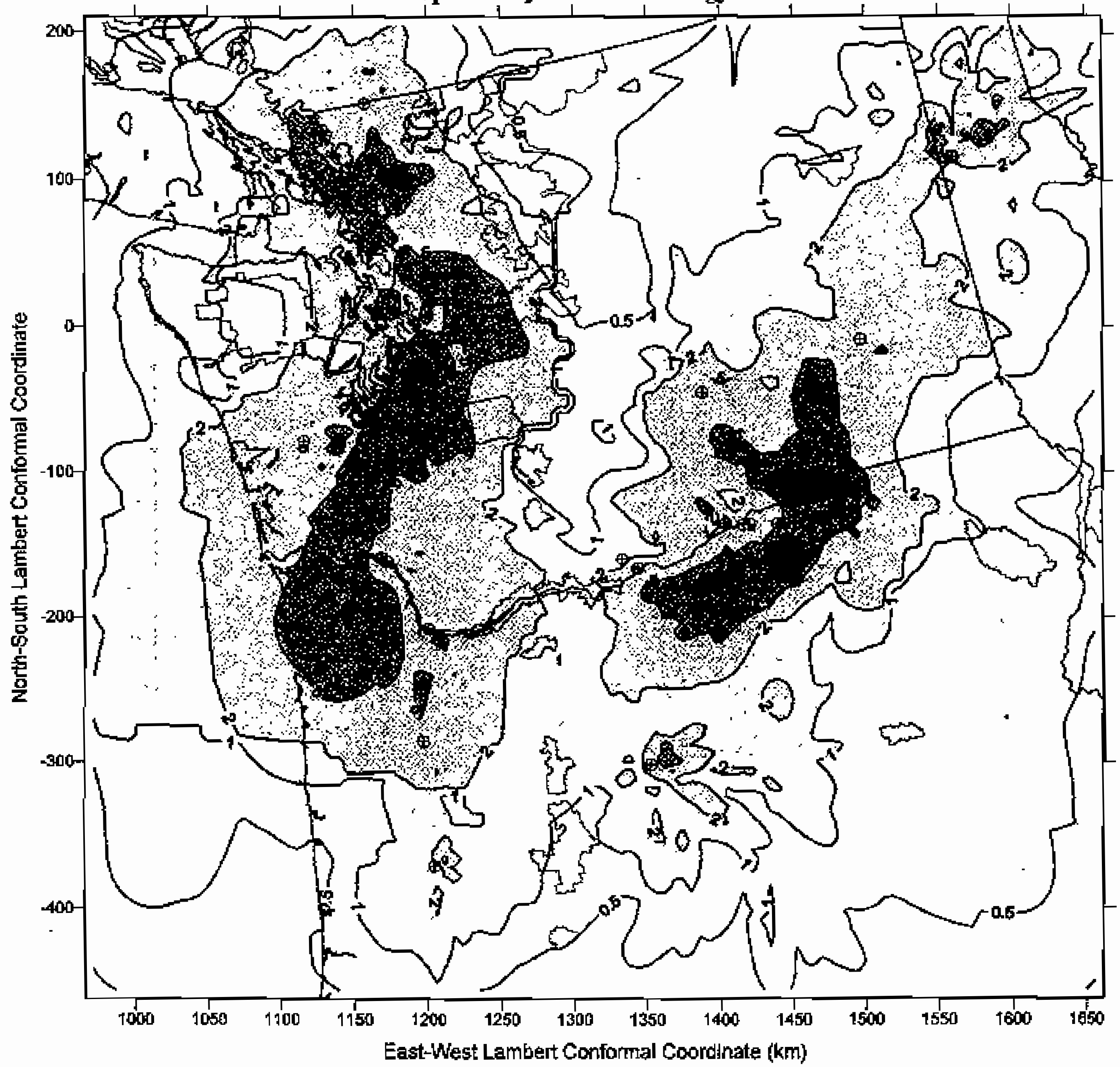
Number of Days with Greater than 10% Change to Background Extinction Includes All Sources					
Area	Spring	Fall	Summer	Winter	Total
Diamond Peak Wilderness	0	0	0	0	0
Three Sisters Wilderness	0	2	0	1	3
Mt. Jefferson Wildnerness	0	0	0	2	2
Strawberry Mtn. Wilderness	0	0	0	0	0
Mt. Hood Wilderness	0	2	0	5	7
CRGNSA	0	9	1	6	16
Eagle Cap Wilderness	0	0	0	0	0
Hells Canyon Wilderness	0	0	0	0	0
Mt. Adams Wilderness	0	1	0	2	3
Goat Rocks Wilderness	0	0	0	0	0
Mt. Rainier National Park	9	2	1	0	12
Olympic National Park	0	6	0	5	11
Alpine Lakes Wilderness	12	2	0	4	18
Glacier Peak Wilderness	1	1	1	1	4
North Cascades National Park	0	1	0	1	2
Pasayten Wilderness	0	0	0	0	0
Mt. Baker Wilderness	5	5	5	5	20
Spokane Indian Res.	0	4	0	2	6

Background extinction based on aerosol concentrations on days with the best visibility. For the CRGNSA and Spokane Indian Reservation based on top 20 percent, for all other areas based on the average of the top 5 percent.

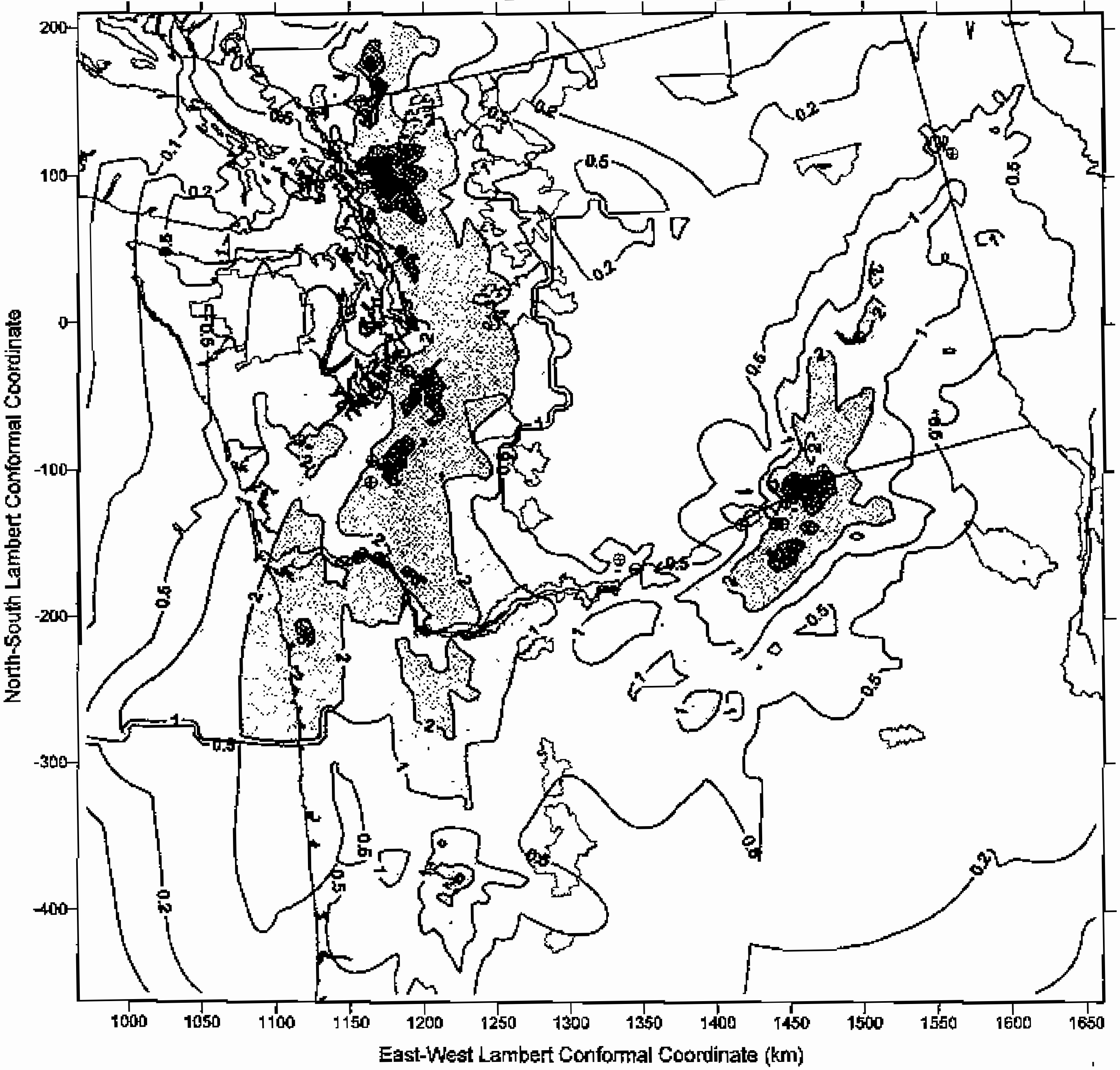
24-hr Max Bext (1/Mm), Sources with Energization Date Before 1/04
April - May 1998 Meteorology



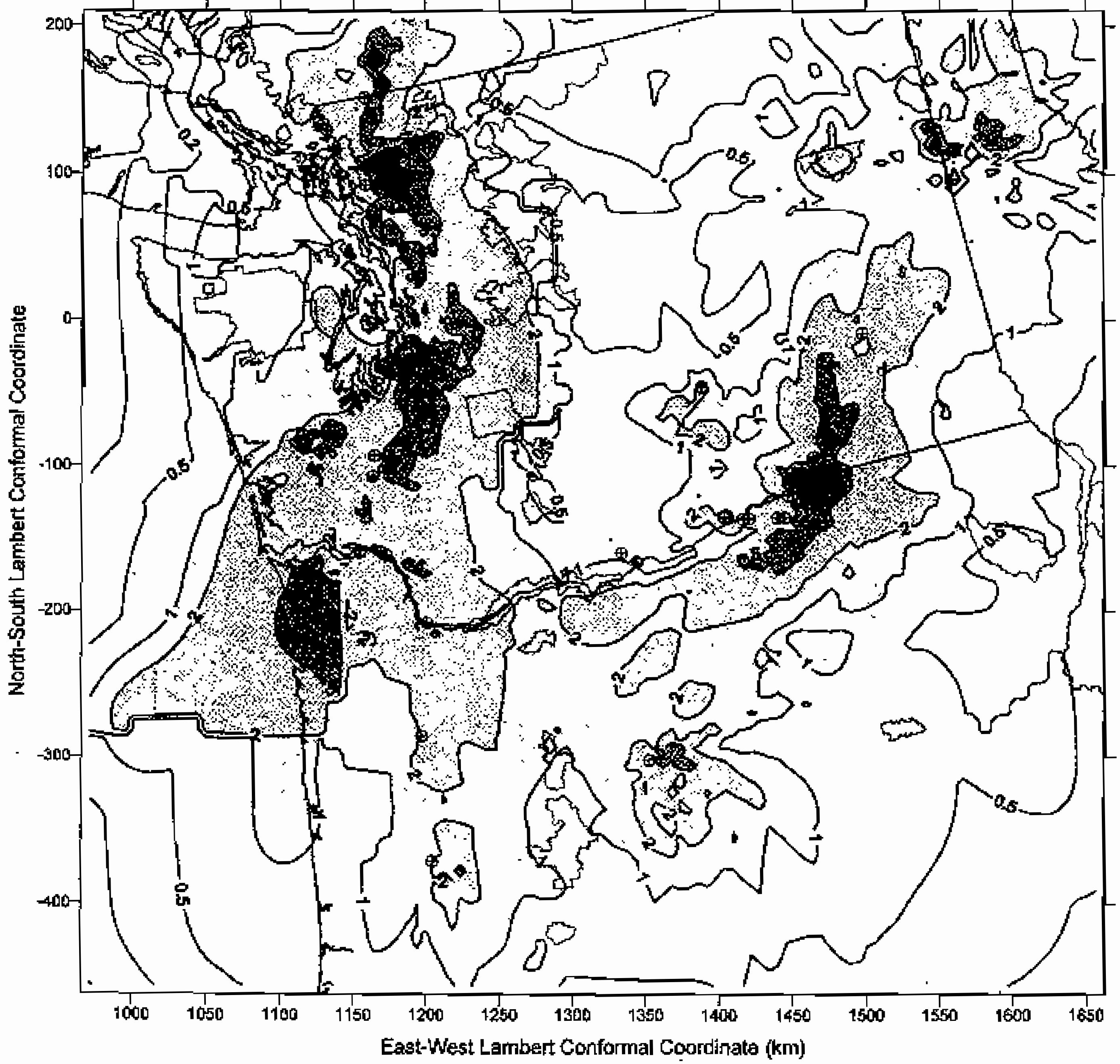
24-hr Max Bext (1/Mm), All Sources
April - May 1998 Meteorology



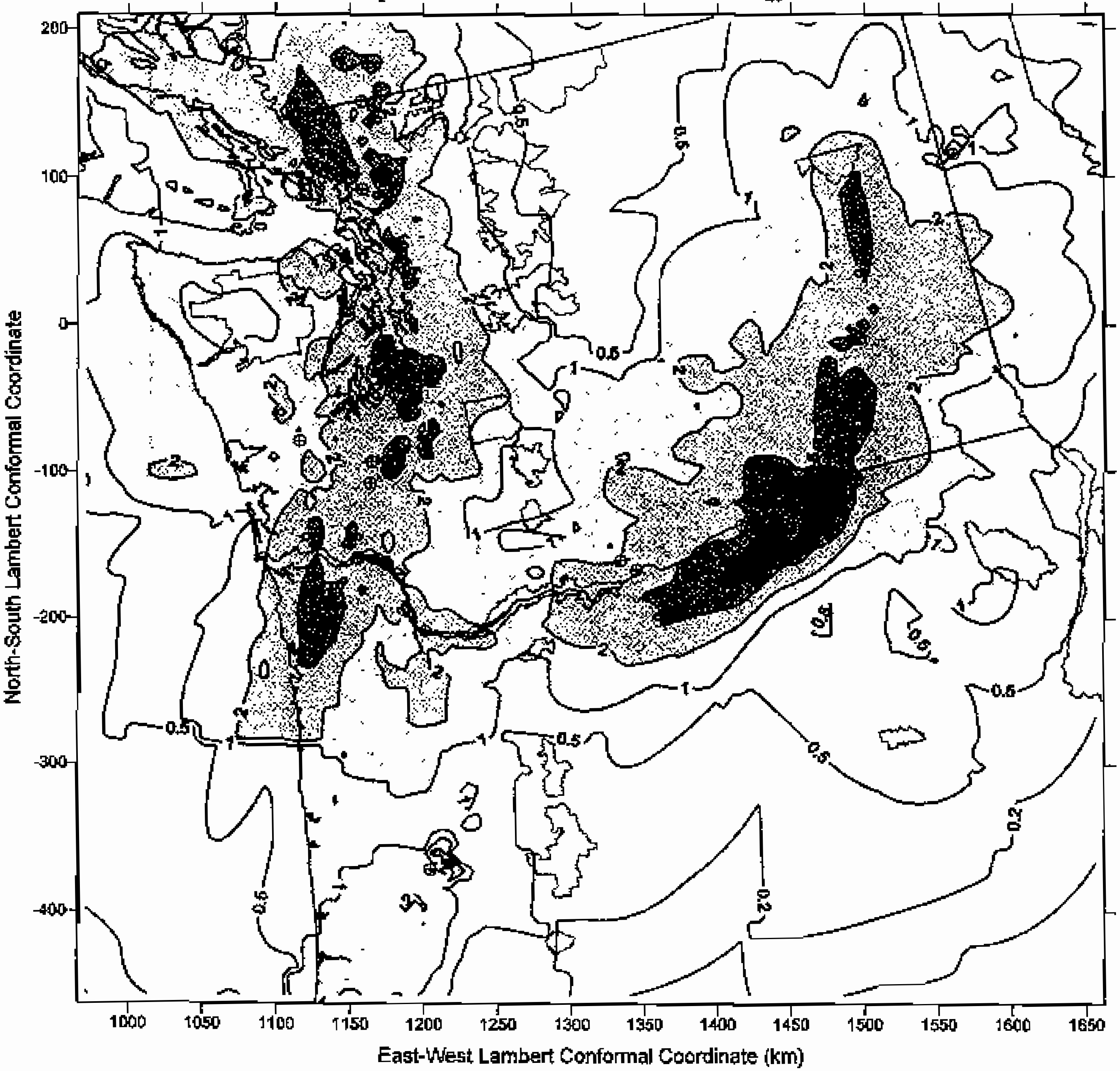
24-hr Max Bext (1/Mm), Sources with Energization Date Before 1/04
June - August 1998 Meteorology



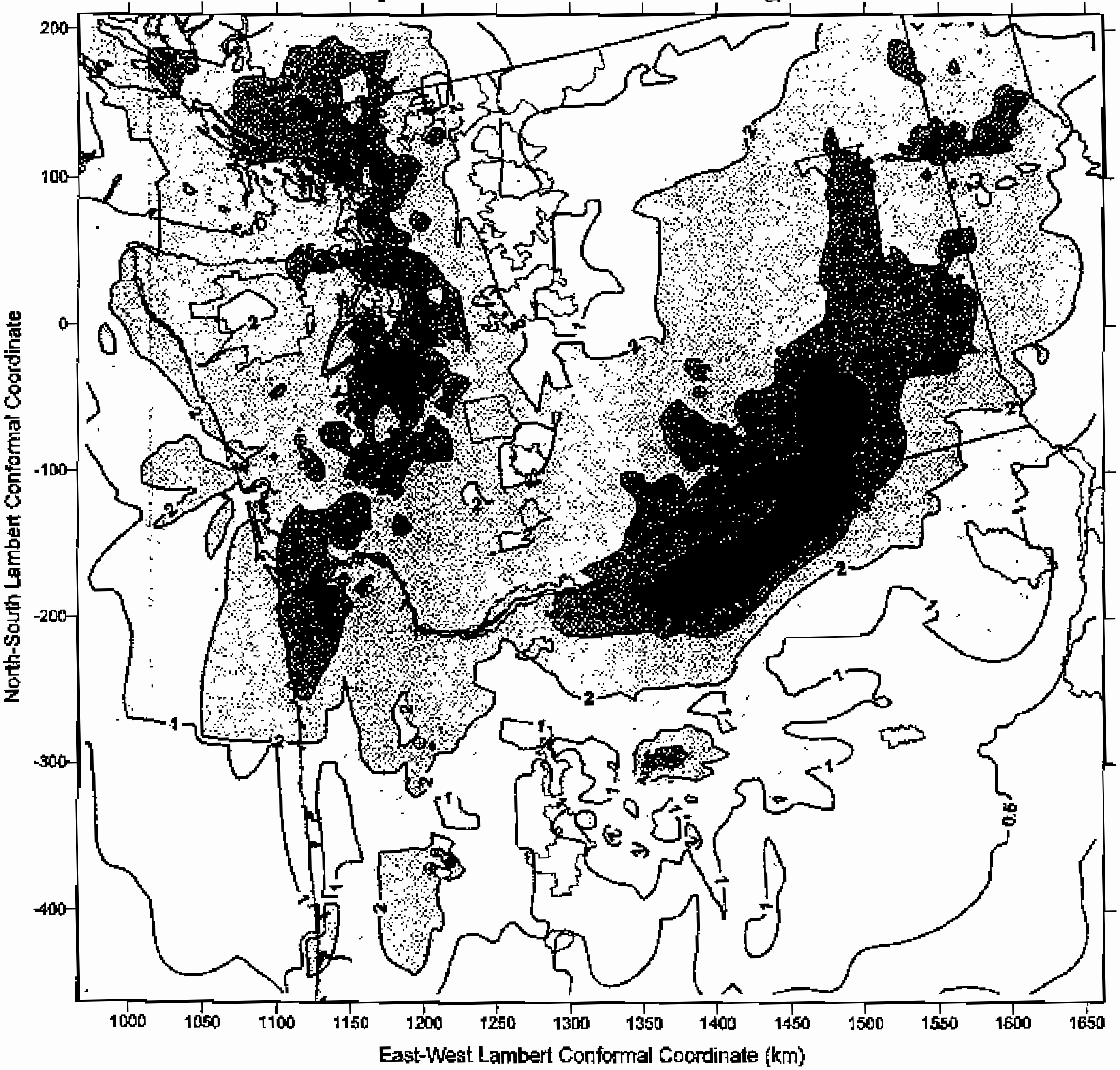
24-hr Max Bext (1/Mm), All Sources
June - August 1998 Meteorology



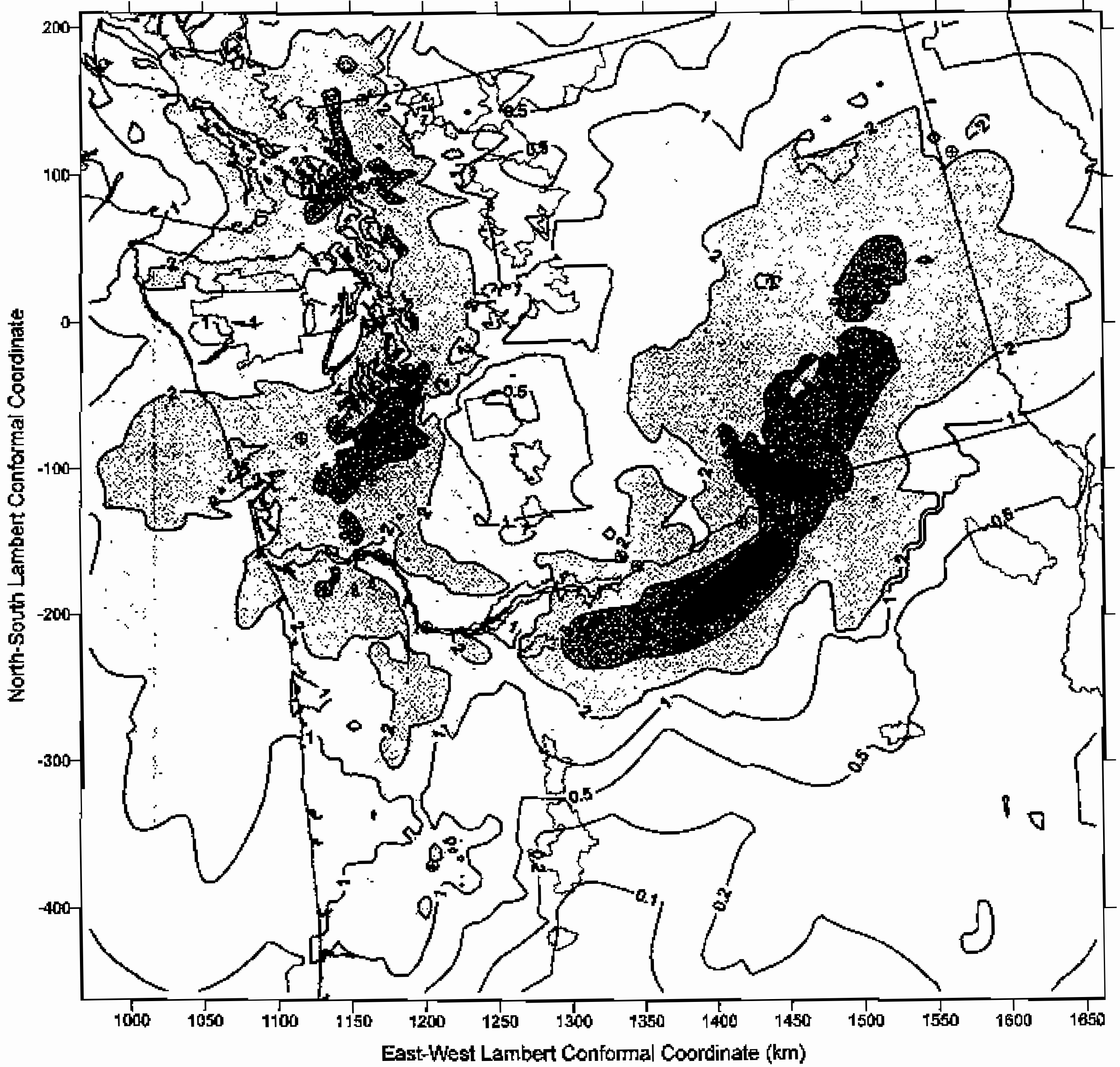
24-hr Max Bext (1/Mm), Sources with Energization Date Before 1/04
September - November 1998 Meteorology



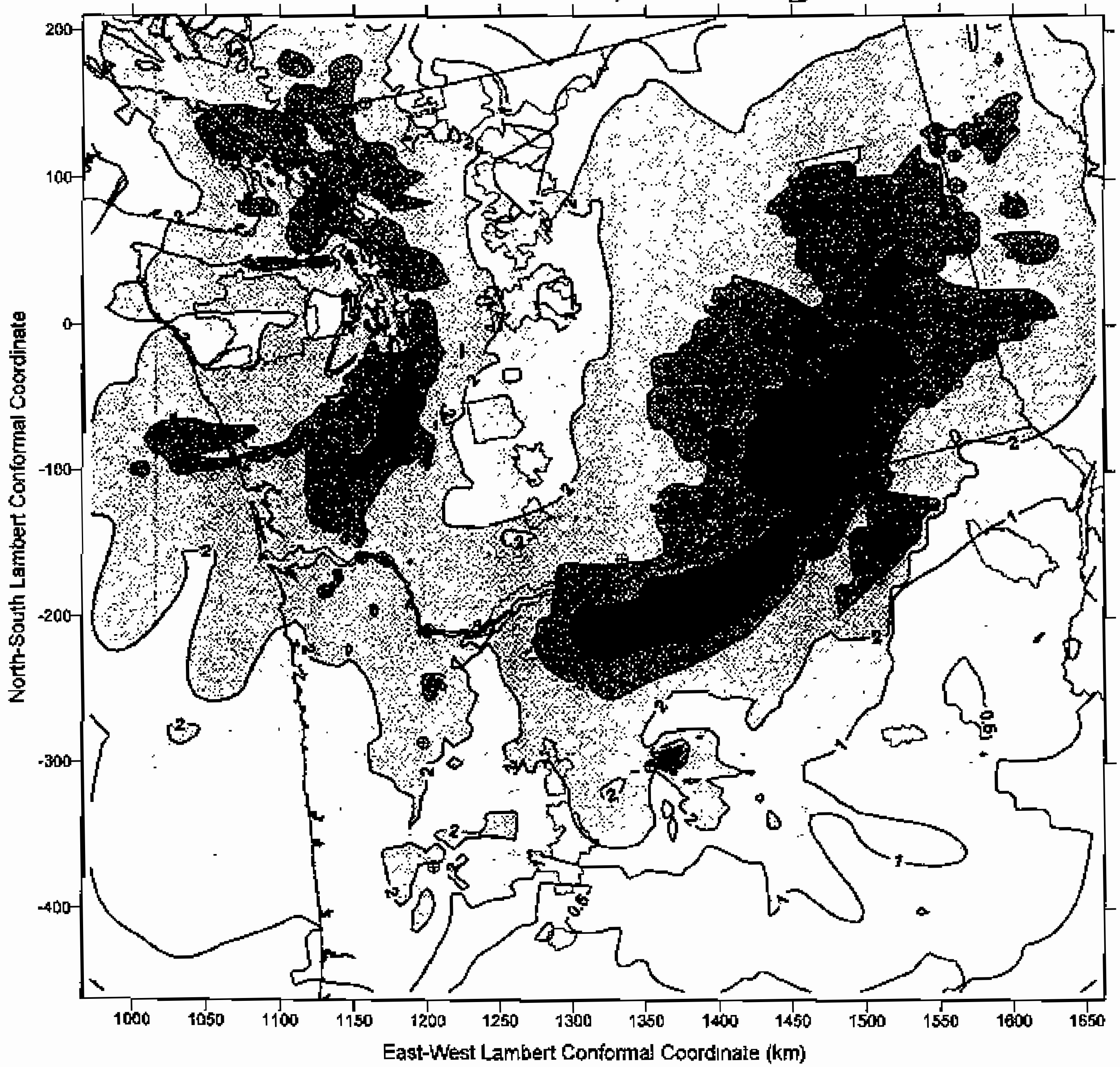
24-hr Max Bext (1/Mm), All Sources
September - November 1998 Meteorology



24-hr Max Bext (1/Mm), Sources with Energization Date Before 1/04
December 1998 - March 15, 1999 Meteorology



24-hr Max Bext (1/Mm), All Sources
December 1998 - March 15, 1999 Meteorology



Regional Air Quality Impacts Study
Carbon Dioxide Emissions from Proposed Power Plants
(08/01/2001)

Source Name		State	Ener. Date	Net Output (MW) Ann Avg	CO2 Annual (tons)
AES COLUMBIA					
Columbia River Project		WA	May-02	220	1,201,718
AVISTA					
Coyote Springs 2		OR	Jun-02	280	920,939
Mint Farm Generation Project I		WA	Jul-03	248	1,001,835
Columbia Peaking Generation Project		WA	Dec-01	192	775,614
BP					
Cherry Point		WA	Jan-04	750	3,029,744
CALPINE					
Ferndale		WA	Jun-05	600	2,423,795
Fredrickson		WA	May-02	350	1,413,881
Hermiston		OR	Sep-02	546	2,205,654
Hermiston II		OR	Jun-04	600	2,423,795
Hermiston Peaker		OR	Dec-01	200	807,932
Mount Vernon		WA	Jun-05	600	2,423,795
Salem (Bethel PGE)		OR	Jun-04	600	2,423,795
Vancouver a (Alcoa)		WA	Nov-01	100	403,966
Vancouver b (Alcoa)		WA	Jun-05	600	2,423,795
Goldendale Energy Project		WA	Jul-02	248	1,001,835
COGENTRIX					
Rathdrum Power, LLC		ID	Aug-01	270	1,090,708
Mercer Ranch Generation Project		WA	Oct-04	800	3,231,727
Grizzly Power		OR	Jul-04	874	3,530,662
Northern Idaho Power		ID	Dec-04	810	3,272,124
CONFEDERATED TRIBES					
Umatilla Tribal Generation Project		OR	Jul-03	1,000	4,814,671
DUKE					
Pierce County Project		WA	Jan-03	84	90,084
Satsop CT Project - Phase I		WA	Jan-03	562	2,042,963
Satsop CT Project - Phase II		WA	Oct-04	638	2,392,847
Satsop CT Project - Phase III		WA	Oct-04	638	2,392,847
ENRON					
Longview Energy		WA	Jul-03	290	1,126,567
	CO2 from burning #2 fuel oil	WA	Jul-03	----------	265,898
FPL/NORTHWEST POWER					
Everett Delta I		WA	Sep-02	248	973,674
Everett Delta II		WA	Sep-02	248	973,674
FRONTIER ENERGY					
Coburg Power		OR	Aug-03	570	1,943,368
	CO2 from burning #2 fuel oil	OR	Aug-03	----------	1,458,686
GRANT County LLC					
Mattawa (Grant Co)		WA	Jun-05	1,300	5,251,556

Regional Air Quality Impacts Study
Carbon Dioxide Emissions from Proposed Power Plants
(08/01/2001)

Source Name	State	Ener. Date	Net Output (MW) Ann Avg	CO2 Annual (tons)
Kootenai Generation				
Kootenai Power (Rathdrum)	ID	Jun-05	1,240	5,009,177
NESCO				
Sumas Energy 2	WA	Jan-02	660	2,417,744
NEWPORT GENERATION				
Wallula Power Project	WA	Jul-04	1,300	5,251,556
NORTHWEST POWER ENT.				
Starbuck	WA	Oct-03	1,180	3,769,997
PG&E				
Umatilla Generating Project	OR	Nov-03	580	2,077,749
Morrow Generating Project	OR	Jan-05	580	2,077,749
PORTLAND GENERAL ELECTRIC				
Coyote Springs I only	OR	On-line	250	1,000,783
CO2 from burning #2 fuel oil	OR	On-line	----------	82,520
Port Westward	OR	Dec-03	650	2,480,718
PUGET SOUND ENERGY				
Fredonia Facility	WA	Jul-01	No Data	
SOUTHWESTERN POWER GROUP				
Port of Tacoma Generation Project Phase I Peaking Project	WA	Jun-02	170	158,625
Port of Tacoma Phase II (5 units)	WA	Jun-04	No Data	793,125
SUMMIT				
Goldendale (The Cliffs)	WA	Feb-02	225	977,550
Summit/Westward (Clatskanie)	OR	Nov-03	520	1,857,120
TRACTABEL				
Chehalis Generating Facility	WA	Nov-03	520	1,725,240
CO2 from burning #2 fuel oil	WA	Nov-03		208,050
TRANSALTA				
TransAlta Centralia Generation LLC Big Hanaford Project	WA	Jun-01	174	702,901
WESTCOAST				
Frederickson Power	WA	May-02	249	1,005,875
Frederickson Power II	WA	Jan-04	249	917,610
Total				92,248,239

EXHIBIT B-2
Technical Support Document

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
Seattle, Washington

Preliminary Technical Support Document for Prevention of Significant Deterioration (PSD)
No. PSD 2005-01

Diamond Wanapa I, L.P.
Wanapa Energy Center

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ABBREVIATIONS AND ACRONYMS

Units of Measure
%: percent
≤: less than or equal to
≥: greater than or equal to
°F: degrees Fahrenheit
gal: gallon
hr: hour
lb: pound
min: minute
MMBtu/hr: Million British thermal units per hour
MW: megawatt
ppmdv: parts per million on a dry volumetric basis
ppmw: parts per million by weight
tpy: ton per year

Compounds
CH_4: methane
CO: carbon monoxide
H_2SO_4: sulfuric acid mist
NH_3: ammonia
NO_2: nitrogen dioxide (subset of NO_x)
NO_x: nitrogen oxides
O_2: oxygen
O_3: ozone
PM_{10}: particulate matter with an aerodynamic diameter less than 2.5 micrometers
PM_{10}: particulate matter with an aerodynamic diameter less than 10 micrometers
SO_2: sulfur dioxide
VOC: volatile organic compound

Acronyms
Act: Clean Air Act
AQRV: Air quality related values
BA: biological assessment
BACT: best available control technology
BIA: Bureau of Indian Affairs
CAMD: Clean Air Markets Division
CEMS: continuous emissions monitoring system
CFR: Code of Federal Regulations
CT: combustion turbine

CTUIR: Confederated Tribes of the Umatilla Indian Reservation
DB: duct burner
DEIS: draft environmental impact statement
Diamond: Diamond Wanapa I, L.P.
EAB: Environmental Appeals Board
EFH: essential fish habitat
EPA: United States Environmental Protection Agency
ESA: Endangered Species Act
GTN: Gas Transmission Northwest Corporation
LHV: lower heating value
HAP: hazardous air pollutant
HHV: higher heating value
HRSG: heat recovery steam generator
NAAQS: National Ambient Air Quality Standards
NESHAP: National Emission Standards for Hazardous Air Pollutants
NSPS: New Source Performance Standards
NSR: new source review
PPS: Preliminary Performance Specification
PS: Performance Specification
PSD: Prevention of Significant Deterioration
QA: Quality Assurance
RBLC: RACT/BACT/LAER Clearinghouse of pollution control technology
SCR: selective catalytic reduction
SER: significant emission rate
ST: steam turbine
TDS: total dissolved solids
USFWS: U.S. Fish and Wildlife Service
WEC: Wanapa Energy Center

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1 INTRODUCTION

1.1 The PSD Process

The Prevention of Significant Deterioration (PSD) rule is documented in Title 40, Code of the Federal Regulations (CFR), Part 52 [40 CFR 52.21] and 40 CFR 124. The PSD rule requires review of all new or modified air pollution sources that meet certain criteria. The objective of the PSD program is to prevent significant adverse environmental impact from emissions into the atmosphere by a proposed new or modified source. The PSD rule limits degradation of air quality to that which is not considered "significant." In addition, the PSD rule includes a requirement for evaluating the effect that the proposed emissions might have on air quality related values such as visibility, soils, and vegetation. The PSD rule also requires the utilization of the best available control technology (air pollution control equipment and procedures), after considering energy, environmental and economic impacts

1.2 Project Description

Diamond Wanapa I, LLP (Diamond), a Diamond Generating Corporation, proposes to construct and operate an electrical generating facility located on land held in trust by the United States Government for the benefit of the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) near Hermiston, Oregon. Diamond and CTUIR, in conjunction with the City of Hermiston, the City of Eugene acting through the Eugene Water & Electric Board and the Port of Umatilla entered into an agreement to develop and construct a greenfield combined cycle gas/steam turbine electric generating facility. The proposed combined cycle facility is to be known as the Wanapa Energy Center (WEC). The proposed location of the WEC, as presented in Figure 1.1-1 of the October 2003 WEC Draft Environmental Impact Statement (DEIS)[1], is approximately three miles east of Umatilla, Oregon and five miles north of Hermiston, Oregon. Figure 1.1-1 of the October 2003 WEC DEIS has been reproduced in Attachment 1 to this document.

Diamond proposes to install F-technology combustion turbines (CTs) at the WEC. Each CT will be able to operate under normal conditions at loads of 50% or greater and will exhaust through a heat recovery steam generator (HRSG) that can be fired by auxiliary duct burners (DBs). Steam generated in the HRSGs will be used on-site in condensing steam turbines. The CTs and DBs will employ low-NO_x combustors and post-combustion controls including selective catalytic reduction (SCR) and oxidation catalysts to minimize emissions of air pollutants.

[1]DOE-EIS-0342, http://www.efw.bpa.gov/cgi-bin/PSA/NEPA/SUMMARIES/WanapaEnergy

The WEC design will incorporate two power blocks with each block having a nominal capacity of 600 megawatts (MW). Each block will consist of two CTs, two HRSGs with DBs and one steam turbine (a 2 by 1 configuration) plus associated plant equipment. Based upon a natural gas higher heating value (HHV) of 23,085 Btu/lb, the maximum heat input of each CT is approximately 1,778.5 million Btu/hr at 52.2°F and will generate approximately 172.3 MW of electricity. Each DB has a maximum heat input of approximately 605.6 million Btu/hr (HHV). Each steam turbine will power an electrical generator with a maximum capacity of approximately 326.5 MW. Natural gas will be used as the sole fuel for the CTs and DBs. Electrical energy from the WEC will be provided to the Bonneville Power Administration grid system.

2 AIR POLLUTANT EMISSIONS

2.1 Proposed Emission Units

As proposed by Diamond, the WEC will have seven emission units as shown in Table 2-1. In addition, the facility will include a number of insignificant emission units which may emit air pollutants in trivial amounts. The insignificant emission units include equipment such as: air compressors, blowdown tanks, lubrication oil storage tanks, tanks, mixers and feed pumps for chemicals used for boiler feedwater treatment, and miscellaneous maintenance activities such as welding, solvent degreasing, parts washing and janitorial services. According to the PSD permit application, all of the insignificant emission units will emit less than one ton per year of any air pollutant.

Table 2-1 Emission Units

HRSG #1 (CT1 & DB1)	1
HRSG #2 (CT2 & DB2)	2
HRSG #3 (CT3 & DB3)	3
HRSG #4 (CT4 & DB4)	4
Cooling Tower (North)	5A - N
Cooling Tower (South)	6A - N
Backup Diesel Engine for Emergency Fire Pump	--

2.2 HRSG Short-term Potential Emissions Under Normal and Startup Conditions

Table 2-2 presents HRSG short-term emission rates for nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), volatile organic compounds (VOC), particulate matter with an aerodynamic diameter of less than 10 micrometers (PM_{10}), and sulfuric acid mist (H_2SO_4). Emissions are presented in units of pounds per hour (lb/hr) for each HRSG (CT & DB).

Emissions are characterized for two distinctly different operating conditions: (1) normal maximum operation at 100% CT & DB load @ 52.5 degrees Fahrenheit (°F) and air-inlet evaporative coolers functioning, and (2) CT startup. Note that DBs do not operate during startup. The projections for normal maximum emission considered the effectiveness of low-NO_x combustors and post-combustion controls, while the projections for CT startup assumed only that the CT would be operated consistent with manufacturer's specifications to minimize NO_x and CO emissions.

A 50 percent (%) conversion rate of SO_2 to H_2SO_4 across the post-combustion control equipment (oxidation and SCR catalyst) was assumed prior to stack exit to estimate H_2SO_4 emissions during normal operation. Further conversion to sulfate particulate was assumed to estimate PM_{10} emissions, again only during normal operation. Post-combustion control equipment is assumed to have no effectiveness during startup, and is assumed to have no effect upon VOC emissions under all load conditions.

Table 2-2 Maximum Short-Term Emission Rates for the HRSG (lb/hr)

CT- Maximum Load DB - Maximum Load	17.17	10.50	3.25	19.7	33.5	31.04	2.49
CT- Maximum Load DB - No Load	12.60	5.17	2.38	5.44	20.5	20.5	1.83
CT - Cold Startup DB - No Load	128.6	327.59	2.38[a]	29.0	20.5	18.0[a]	0

[a] Emissions of SO_2 and PM_{10} are estimated assuming emissions are proportional to the quantity of fuel burned and are not affected by the mode of operation. Emissions from these two pollutants are lower during startup given that the DB is not being fired.

As seen in Table 2-2, the emission rates for NO_x and CO are considerably higher during startup while VOC emissions are marginally higher. Because of this fact, EPA considers minimizing startup emissions to be an important component of the overall PSD review for WEC.

Calculations for maximum hourly emissions of VOC from each HRSG are presented here given that EPA's projections differ from those provided by Diamond in Table 2-3A of the August 8, 2003 PSD permit application.

VOC Calculations - Normal (Maximum) Operation

For the purpose of determining PSD applicability, EPA requires that emissions be calculated as the total mass of VOCs. See December 21, 2000 EPA letter to ODEQ (Attachment 2).

CT VOC Emissions: 5.44 lb/hr

Diamond estimates that 2.9 lb VOC / hr (as methane (CH_4)) are emitted from each CT. See page 10 of Appendix B of the PSD permit application. EPA estimates that all the VOC is formaldehyde (CH_2O) based upon information provided in an EPA database of emissions factors entitled, Speciate 3.2 (Attachment 3).

VOC (CT) = (2.9 lb CH_4/hr)(30.0 lb CH_2O) / 16.0 lb CH_4
= 5.44 lb/hr

DB VOC Emissions: 14.3 lb/hr

Diamond estimates that 14.53 lb VOC (as CH_4) are emitted from each DB. See page 11 of Appendix B of the PSD permit application. EPA estimates that the VOC is comprised of the following compounds: benzene (9%), n-butane (20%), cyclohexane (2%), formaldehyde (19%), isomers of hexane (2%), n-pentane (14%), isomers of pentane (20%), propane (9%), and toluene (5%) based upon information provided in Speciate 3.2 (Attachment 3).

Carbon (DB) = (14.53 lb CH_4)(12.0 lb C/16.0 lb CH_4)
= 10.9 lb C/hr

Utilizing this information and given the molecular weight and carbon content of these individual compounds, EPA is able to solve multiple equations with multiple unknowns to determine that the VOC emission rate is approximately 14.3 lb/hr. See Attachment 3 for the detailed analysis.

The resultant HRSG (CT + DB) VOC emission rate is 19.7 lb/hr.

VOC Calculations - Startup

CT VOC Emissions: 29.0 lb/hr

DW estimates that 15.44 lb VOC / hr (as CH_4) are emitted from each CT during startup. See Table 2-4 of the PSD permit application. EPA estimates that all the VOC is CH_2O based upon information provided in Speciate 3.2 (Attachment 3).

$$VOC\ (CT) = (15.44\ lb\ CH_4/hr)(30.0\ lb\ CH_2O)\ /\ 16.0\ lb\ CH_4$$
$$= 29.0\ lb/hr$$

DB emissions are 0 lb/hr during startup.

The resultant HRSG (CT + DB) VOC emission rate is 29.0 lb/hr.

2.3 Annual Potential Emission Under Normal Operations

The annual potential emissions are shown in Table 2-3 in units of tons per year (tpy). The annual potential emissions were estimated by Diamond based on normal operation (not including startup or shutdown) considering the effectiveness of emission control systems and the combustion of natural gas from supplied by Gas Transmission Northwest Corporation (GTN). Each CT was assumed to operate at maximum capacity for 8,760 hours per year. The DBs, combined, were assumed to operate only 6,800 hours per year based upon a request from Diamond for operational restrictions to maintain VOC emissions below 100 tpy. The HRSG (CT & DB) emissions are estimated based on a controlled emission concentration of 2.0 parts per million dry, by volume (ppmdv) at 15 % oxygen (O_2) for both NO_x and CO.

Table 2-3 Annual Potential Emissions under Normal Operation Scenario (tpy)

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	HRSG #1	59.07	27.18	11.16	35.94	100.84	98.75	8.58
2	HRSG #2	59.07	27.18	11.16	35.94	100.84	98.75	8.58
3	HRSG #3	59.07	27.18	11.16	35.94	100.84	98.75	8.58
4	HRSG #4	59.07	27.18	11.16	35.94	100.84	98.75	8.58

5A - N	Cooling Tower (North) [d]	--	--	--	--	8.89	8.89	--
6A - N	Cooling Tower (South) [d]	--	--	--	--	8.89	8.89	--
--	Diesel Engine	0.20	0.06	0.02	0.02	0.02	0.02	--
	Total	**237**	**109**	**45**	**144**	**422**	**413**	**35**

[a] SO_2 emissions are calculated based on a natural gas total sulfur content of 0.5gr/100 scf to conservatively reflect maximum emissions based upon actual measured data from the GTN pipeline.
[b] VOC emissions are calculated as actual VOCs, not as CH_4.
[c] H_2SO_4 emissions are calculated assuming 50% (by weight) oxidation of SO_2 to SO_3 and 100% (by weight) conversion of SO_3 to H_2SO_4.
[d] Cooling tower emissions are calculated based on a drift rate of 0.0005%, a total dissolved solids content (TDS) in the cooling water of 3,532 parts per million, by weight (ppmw), and maximum cooling water circulation rate of 459,360 gal/min for the facility.

Calculations for annual potential emissions of VOC from each HRSG are presented here given that EPA's projections differ from those provided by Diamond in Table 2-3B of the August 8, 2003 PSD permit application. Annual potential PM emission calculations are also provided here given that Diamond calculated only PM_{10} emissions, not PM emissions. Cooling tower PM and PM_{10} emission calculations are presented here given that the calculations were not provided by Diamond.

PM Calculations - Per HRSG
With only the CT operating at maximum capacity, the PM emission rate is 20.5 lb/hr. If both the CT and DB are operating, PM emissions are 33.5 lb/hr. Both PM emission values consider the effects of flue gas oxidation (sulfate particulate formation) across the CO catalyst and SCR. The hourly PM emission rates were extracted from page 13 of Appendix B to the PSD permit application.

VOC Calculations - Per HRSG
Assume each DB is limited firing only 1700 hours per year. (6800 ÷ 4 = 1700)

VOC (HRSG) = CT + DB
= [(8760 hr/yr)(5.44 lb/hr) + (1700 hr/yr)(14.3 lb/hr)] / 2000 lb/ton
= 35.94 tpy

Based upon EPA's VOC calculations, limiting facility-wide DB-firing to 6,800 hours per year will result in maximum VOC emissions of nearly 144 tpy (36 x 4). The proposed operating restriction will not limit facility potential emissions to less than 100 tpy as Diamond intended. Diamond calculated VOC emissions as CH_4, whereas EPA requires that emissions be calculated as the total mass of VOCs.

PM_{10} Calculations - Per Cooling Tower

Assumptions: (1) maximum cooling water circulation rate = 229,680 gal/min, (2) maximum cooling tower drift loss = 0.0005% of circulation rate, (3) maximum TDS concentration = 3,532 ppmw, (4) all solids from evaporation of drift losses result in PM_{10} emissions, (5) full-time operation, and (6) assume all PM is also PM_{10}.

PM_{10} = (229,680 gal/min)(8.345 lb water/gal)(0.000005 lb water loss/lb water circulation)(3,532 lb TDS/1,000,000 lb water)(60 min/hr)
= 2.031 lb/hr or 8.9 tpy

3 DETERMINING PSD APPLICABILITY

WEC will be a fossil fuel-fired steam electric plant of more than 250 million Btu per hour heat input. EPA identified this type of source as one of 28 source categories at 40 CFR 52.21(b)(1)(iii) with a PSD applicability threshold of 100 tpy for any regulated pollutant. As seen in Table 2-3, the estimated potential emissions for five pollutants are greater than 100 tpy. Once the 100 tpy PSD threshold is triggered for any single pollutant, all pollutants are compared to the PSD significant emission rate (SER) for that pollutant to determine which pollutants are subject to review under the PSD rule. As seen in Table 3-1, WEC's potential to emit NO_x, CO, SO_2, VOC, PM_{10}, and H_2SO_4 is greater than the respective SER. Therefore, a PSD review is required for each of these pollutants.

Table 3-1 Pollutants Undergoing PSD Review

[illegible]	[illegible]	[illegible]	[illegible]
NO_x (as NO_2)	237	40	✓
CO	109	100	✓
SO_2	45	40	✓
VOC (O_3)[a]	99[b]	40	✓
PM[c]	422	25	✓

PM_{10}	413	15	✓
H_2SO_4 [b]	35	7	✓

[a] VOC contributes to ground-level O_3 formation, and a NAAQS exists for ground-level O_3.
[b] WEC has requested that the PSD permit limit VOC emissions to less than 100 tpy to avoid conducting an ambient impact analysis.
[c] Regulated pollutant for which no NAAQS exists.

Consistent with existing EPA policy[2], PSD review of PM_{10} emissions will serve as a surrogate for review of $PM_{2.5}$ emissions while EPA continues to work through the significant technical difficulties associated with integrating the new $PM_{2.5}$ standard into the PSD program. Diamond estimated emissions for other regulated pollutants including lead, asbestos, beryllium, mercury, vinyl chloride, fluorides, hydrogen sulfide and total reduced sulfur compounds and found that they will not be emitted in quantities greater than the respective PSD SER and a PSD review is not required. See Appendix B of Diamond's PSD permit application.

4 DETERMINATION OF BEST AVAILABLE CONTROL TECHNOLOGY

4.1 Definition of Best Available Control Technology

Best Available Control Technology (BACT) is defined as an emissions limitation based on the maximum degree of reduction for each pollutant subject to regulation under the Clean Air Act (Act) which would be emitted from any proposed major stationary source or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant [40 CFR 52.21(b)(12)]. In addition, a BACT emission limitation must be at least as stringent as any applicable standard of performance under 40 CFR Part 60, 61, and 63.

BACT may also be a design, equipment, work practice, operational standard, or combination thereof in the event EPA determines that emission measurement limitations for a particular emissions unit would make the imposition of an emission standard infeasible.

EPA guidance requires that BACT be determined using the top-down method (Reference 1, page

[2] 1997 EPA memorandum from Office of Air Quality Planning and Standards. http://www.epa.gov/Region7/programs/artd/air/nsr/nsrmemos/pm25.pdf

B.2). The top down BACT process requires that the available control technologies be ranked in descending order of control effectiveness. The applicant first examines the most effective control technology alternative (the most stringent emission limitation). That alternative is established as BACT unless the applicant demonstrates, and the permitting authority agrees, that technical considerations, or energy, environmental or economic impacts justify a conclusion that the most stringent technology is not achievable in this particular case. If the most stringent technology is eliminated through the analysis described above, then the next most stringent alternative is considered, and so on until a BACT determination is reached.

4.2 New Source Performance Standards

As discussed in the BACT definition section, the BACT emission limitation must be at least as stringent as any applicable performance standard under 40 CFR Part 60, commonly called new source performance standards (NSPS). One of the applicable NSPS is Subpart GG - Standards of Performance for Stationary Gas Turbines which has emission standards for NO_x and SO_2. The NO_x standard is expressed as a formula which when applied to the proposed Diamond turbines yields a value of 110 at 15% O_2 [40 CFR 60.332(a)(1)]. Therefore, the BACT emission limit for NO_x must be $\leq$110 ppmdv at 15% O_2. As presented in Section 4.4.1 below, the BACT emission limit for NO_x is 2.0 ppmdv at 15% O_2 which is very much lower than the NSPS.

EPA's calculation of the 110 ppmdv NSPS Subpart GG NO_x emission limit for each CT differs from the "203 ppmdv" value presented by Diamond on page 3-3 of the PSD permit application. EPA's calculation is presented here: NO_x (%vd @ 15%O_2) = [(0.0075)(14.4 / 9.82)] + 0, where 9.82 kj/w-hr (9310 Btu/kw-hr) reflects the heat rate (LHV) for the CT operating at 100% load with an ambient temperature of 52.5°F. See page 8 of Appendix B of PSD permit application.

The NSPS for SO_2 includes two requirements: 0.015 % by volume on a dry basis at 15% O_2 (150 ppmdv at 15% O_2) and a fuel sulfur content of 0.8% or less by weight. Diamond proposes to burn natural gas which may have a sulfur content up to 0.5 gr/100 scf as reflected by GTN operating data (Attachment 4). Burning natural gas with this sulfur content will result in an SO_2 exhaust gas concentration of 0.27 ppmdv at 15% O_2 (Reference 2, Appendix B, Page 9). Combusting GTN natural gas results in SO_2 emissions very much lower than the NSPS emission limitation. The sulfur content of natural gas is also very much lower than the NSPS requirement of 0.8% by weight. This part of the NSPS emission requirement for SO_2 was specifically intended for gas turbines fired with liquid fuels which typically have much higher sulfur content than natural gas.

Another applicable NSPS is Subpart Da - Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978. Subpart Da applies to steam generating units with a heat input greater than 250 million Btu/hr. In the case of a HRSG with duct burners, the emission limits apply to the emissions resulting from combustion of the fuel in the HRSG only (and not the emissions from the CT). Since the heat input in each of the proposed HRSGs is 605.6 million Btu/hr, they are subject to the NSPS Subpart Da emission limits. The NSPS Subpart Da emission limits are: 0.03 lb/million Btu for PM; 0.20 lb/million Btu for SO_2; 0.20 lb/million Btu for NO_x and 20% opacity (6-minute average). Using GTN natural gas and the control technology proposed by Diamond, the estimated emission rates are 0.020 lb/million Btu for PM, 0.0014 lb/million Btu for SO_2 and 0.080 lb/million Btu for NO_x.

At the maximum firing rate of the duct burners (605.6 million Btu/hr), the mass emission rate allowed by the NSPS Subpart Da would be 18.17 lb/hr for PM and 121.12 lb/hr for each of NO_x and SO_2. Using GTN natural gas fuel and the control technology proposed by Diamond, the emission rates for each pollutant at maximum firing rate would be 12.11 lb/hr for PM, 0.825 lb/hr for SO_2 and 48.45 lb/hr for NO_x. The proposed emissions satisfy the requirement to be at least as stringent as the applicable NSPS.

4.3 National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines

On March 5, 2004, EPA's National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Combustion Turbines - Subpart YYYY became effective. NESHAP Subpart YYYY is focused on regulating organic hazardous air pollutants such as formaldehyde from combustion turbines. The final emission limit for formaldehyde requires an exhaust gas concentration less than 91 parts per billion dry, by volume (ppbvd) at 15% O_2. Based on the preamble to the proposed NESHAP Subpart YYYY, a CO oxidation catalyst system with a CO removal efficiency of about 90% would have been required to comply with a formaldehyde emission limit of 91 ppbvd at 15% O_2. Since the final NESHAP YYYY does not explicitly require a specific CO removal efficiency, the NESHAP YYYY does not directly effect the BACT decision process for CO. However, since the NESHAP YYYY is a separate applicable requirement, Diamond will have to determine whether achieving compliance with the NESHAP YYYY will require a catalytic oxidation system that is more efficient than one which satisfies the PSD CO BACT requirement.

EPA has temporarily stayed the effectiveness of NESHAP Subpart YYYY, apart from the initial notification requirement, for new lean pre-mix natural gas-fired combustion turbines like those proposed at WEC. The temporary stay was promulgated in light of an EPA proposal to delist new lean pre-mix natural gas-fired combustion turbines from regulation under Section 112 of the Act. Depending upon EPA's final delisting decision, each CT may not ultimately be subject to NESHAP Subpart YYYY.

4.4 BACT for the Combustion Turbines and Duct Burners - Normal Operation

4.4.1 BACT for NO_x

Following the top down BACT process, Diamond presented and discussed five alternatives for NO_x control. The two most effective alternatives are SCONOx and selective catalytic reduction (SCR) in conjunction with low-NO_x burners intrinsic to the proposed gas turbines. In the original permit application dated January 2003 (Reference 2), Diamond argued that SCONOx was technically infeasible because it had not been applied to or permitted for large scale operations on a turbine of similar size to what Diamond proposed. Notwithstanding the technical infeasibility argument, Diamond conducted and presented a cost effectiveness analysis for SCONOx as well as for SCR. The emission limit representative of BACT using SCONOx or SCR presented in the original Diamond permit application was 2.5 ppmdv at 15% O_2 with 3-hour averaging (rolling average). Since the cost for the SCONOx alternative was significantly higher than for SCR at the same level of emission performance ($15,850 per ton of NO_x removed for SCONOx compared to $1909 per ton of NO_x removed for SCR), Diamond proposed that the emission limit representative of BACT was 2.5 ppmdv at 15% O_2 with 3-hour averaging (rolling average) based on the use of SCR.

As a result of discussions between Diamond, their environmental consultant, and EPA, Diamond submitted a revised PSD permit application by letter dated August 8, 2003 (Reference 3). One of the revisions Diamond made was to propose that the emission limit representative of BACT is 2.0 ppmdv at 15% O_2 with 3-hour averaging (rolling average). After considerable review as summarized below, EPA agrees that the emission limit representative of BACT is 2.0 ppmdv at 15% O_2 with 3-hour averaging (rolling average).

EmeraChem is now the vendor for SCONOx which was developed by Goal Line Environmental Technologies. EmeraChem markets this technology under the name "EMx^{GT}, the next generation of SCONOx," and describes this technology as a multi-pollutant technology for NO_x ,CO, VOC and PM_{10} reduction for gas fired turbines. Since the term SCONOx is more widely know, that is the term used to describe this technology in this document. SCONOx is a catalytic technology that simultaneously oxidizes CO to CO_2, VOCs to CO_2 and water, NO to NO_2, and then absorbs the NO_2 onto the surface of a catalyst coated with potassium carbonate. The overall chemical reaction between NO_2 and the potassium carbonate catalyst is shown in the following equation.

$$2NO_2 + K_2CO_3 \rightarrow CO_2 + KNO_2 + KNO_3$$

The optimum temperature range for operation of the SCONOx system is from 300 to 700°F. The catalyst has a finite capacity to react with NO_2. In order to maintain a high level or NO_x removal, the catalyst must be regenerated periodically. Regeneration is accomplished by passing a reducing gas containing a dilute concentration of hydrogen across the surface of the catalyst in the absence of oxygen. Hydrogen in the regeneration gas reacts with the nitrites and nitrates to form water and molecular nitrogen. Carbon dioxide in the regeneration gas reacts with the potassium nitrite and nitrates to form potassium carbonate, which is the original chemical in the catalyst coating. The overall chemical reaction during regeneration is shown in the following equation.

$$KNO_2 + KNO_3 + 4\ H_2 + CO_2 \rightarrow K_2CO_3 + 4\ H_2O_{(g)} + N_2$$

The regeneration gas is produced in gas generator using a two-stage process to produce hydrogen and carbon dioxide. In the first stage, natural gas and air are reacted across a partial oxidation catalyst to form carbon monoxide and hydrogen. Steam is added to the mixture and then passed across a low temperature shift catalyst, forming carbon dioxide and more hydrogen. The regeneration gas mixture is diluted to under 4% hydrogen using steam. In order to accomplish the periodic regeneration, the SCONOx system is constructed in 10 - 15 modules in parallel so that one module can be closed off from the exhaust stream using inlet and outlet dampers and regenerated while the remaining modules are open for treatment of the exhaust gas stream.

One unique feature of the SCONOx system is that it does not use ammonia (NH_3) to accomplish the NO_x reduction. Therefore, there are no NH_3 emissions to the atmosphere (known as NH_3 slip). This topic is discussed further in the sections related to SCR and the NH_3 emission limit.

According to EmeraChem literature, performance guarantees for NO_x emissions are available to <2.0 ppmdv at 15% O_2. SCONOx systems have been installed and operated successfully on smaller turbines in California and Massachusetts, but have not yet been installed and operated on the large Frame 7 turbines proposed for the Diamond project. However, since 1999 ABB Alstom Power (ABB) has offered commercial availability of the SCONOx system for large gas turbines (Reference 4). ABB conducted testing on the mechanical damper systems for the modules on a scale needed for larger turbines and is confident that the SCONOx system can be scaled up to the size needed to treat the gas stream from the Frame 7 turbines.

As long ago as 1998, EPA reviewed operating data for SCONOx performance for a California installation, and determined that SCONOx technology was "available" and could achieve a NO_x emission limit of 2.0 ppmdv at 15% O_2. The South Coast Air Quality Management District (SCAQMD) subsequently determined BACT as 2.5 ppmdv at 15% O_2 with 1-hour averaging. In correspondence dated June 10, 1998, EPA (Region 9) stated that 2.0 ppmdv at 15% O_2 with 3-hour averaging was essentially equivalent to 2.5 ppmdv at 15% O_2 with 1-hour averaging as levels that would represent BACT for NO_x from gas turbines (Reference 5).

After review of the available information, EPA determines that SCONOx is an available control technology that can achieve a NO_x emission limit of 2.0 ppmdv at 15% O_2 with 3-hour averaging (rolling average).

The other NO_x control technology that can achieve a NO_x emission limit of 2.0 ppmdv at 15% O_2 with 3-hour averaging (rolling average) is SCR. SCR is a control technology that has been widely used for over ten years in a large number gas turbine combined cycle power plant such as the one proposed by Diamond. Over the years the NO_x emission limits based on SCR have decreased due in part to advances in the technology, competition from other technologies such as SCONOx and more stringent BACT and LAER decisions by permitting authorities. SCR is a catalyst based system which uses NH_3 as a reactant to reduce NO and NO_2 to elemental nitrogen. A number of catalysts are available from different vendors. One typical catalyst uses vanadium and titanium as the active ingredients in the catalyst. Most SCR systems have an operating temperature range of 600 - 800°F although the temperature window can be from 475 - 1100°F depending on the particular catalyst used. The fixed catalyst bed is located in the HRSG at a point where the gas temperature is within the 600 - 800°F range, typically downstream of the superheater.

NH_3 (usually an aqueous solution of <20% NH_3) is vaporized external to the HRSG and introduced in front of the catalyst bed through an injection grid designed to evenly distribute the ammonia throughout the cross section of the gas stream. The amount of ammonia injected is controlled by a signal from the NO_x continuous emission monitoring system (CEMS) located in the stack. The objective is to inject enough ammonia to react with the NO_x emissions so that the NO_x emission limit is achieved with a minimum of excess ammonia (ammonia slip) going out the stack. Over the years the design of the SCR systems have been improved so that the NO_x emission rate can be finely controlled near the emission limit with very low ammonia slip.

While it is common to associate one emission limit with SCR technology, a SCR system can be designed to achieve any specified NO_x emission limit down to ≤2.0 ppmdv at 15% O_2 with 3-hour averaging (rolling average). The performance of a SCR system can be improved by changing one or more of the design variables such as the type of catalyst, the ammonia injection grid and the residence time within the catalyst bed (increasing the gas path through the catalyst bed). As expected, the capital and operating costs increase with improved performance since more catalyst is needed and the corresponding pressure drop is increased.

EPA reviewed a number of references to determine what NO_x emission limit is representative of BACT based on use of a SCR control system. Typically the EPA RBC database is searched. However, because of the large number of gas turbine power plants permitted across the country in the past few years, EPA has developed a database specifically for gas turbine projects. This database is accessible over the internet at: http://www.epa.gov/region4/air/permits/index.htm. As of July 16, 2003, the most recent update of the database prior to the writing of this report, the EPA gas turbine database included 15 entries where the NO_x permit limit was 2.0 ppmdv at 15%

O_2 or less in states outside of Region 10 (CT - 4, MA - 5, NY - 2, PA - 2, CA - 2). In Region 10 three recent gas turbine power projects have a NO_x permit limit was 2.0 ppmdv at 15% O_2. SCR has been the control technology on which most of these permit limits were based (only two cited SCONOx and one of those included a contingent requirement for SCR if SCONOx was not actually installed).

The California Air Resources Board document "Guidance for Power Plant Siting and Best Available Control Technology" (Reference 5) includes correspondence from four SCR vendors describing the guarantees that they were willing to make as far back as 1998. Each of the four vendors was willing to guarantee SCR system performance of 2.0 ppmdv at 15% O_2 with 3-hour averaging. These quotes were based on an inlet NO_x concentration of 25 ppmw which is more than twice as high as from the gas turbines proposed by Diamond (9 ppmw).

The EPA Clean Air Markets Division (CAMD) database for power plants subject to the Acid Rain program was reviewed for power plants similar to Diamond. Hourly continuous emissions monitoring data is reported quarterly to the CAMD database. The CAMD makes these data available at the following website: http://www/epa.gov/airmarkets/monitoring/mdc/index.html. Data from the CAMD database indicate that a number of units similar to the proposed Diamond project are achieving NO_x emissions of less than 2.0 ppmdv through the use of SCR control systems.

Since there is evidence of a number of precedents for a NO_x permit limit of 2.0 ppmdv at 15% O_2 and Diamond proposed to meet this emission limit, EPA determines that the NO_x emission limit representative of BACT is 2.0 ppmdv at 15% O_2 with 3-hour averaging (rolling average). At the maximum operating rate the NO_x mass emission rate is 17.17 pounds per hour (lb/hr) per turbine. EPA believes that these emission limits can be achieved by using either SCR or SCONOx. The primary NO_x control difference between the two technologies is that SCR requires ammonia which results in some amount of ammonia slip whereas SCONOx has no ammonia emissions associated with it. Therefore, EPA has determined that the use of SCR must be accompanied with an associated emission limit on ammonia slip to insure that the SCR system is designed and operated in a manner consistent with good air pollution control practice for minimizing emissions (both NO_x and NH_3 emissions). This issue is discussed further in Section 4.4.6 below.

4.4.2 BACT for CO

Diamond evaluated two control alternatives for CO beyond the base case of good combustion design and operation. The first was thermal oxidation which is not a feasible alternative for both technical and economic reasons and has never been permitted for gas turbines. Catalytic oxidation is the control technology most often used with gas turbines and consists of a catalyst bed located in the HRSG downstream of the duct burner where the temperature is in the range of 700 - 1100°F. The oxidation catalyst causes a small pressure drop (approximately 1.5 inches of water) which causes a slight loss in power output from the turbine. No additional reactants are required since there is sufficient oxygen in the gas stream for the oxidation reactions to proceed in the presence of the catalyst. The catalyst is subject to loss of activity over time due to physical deterioration or chemical deactivation. Oxidation catalyst vendors typically guarantee catalyst life for three years, but experience with these systems in Region 10 indicates that the expected lifetime of an oxidation catalyst system with natural gas as the fuel should be at least twice the guaranteed three year life.

In the original PSD permit application, Diamond proposed an emission limitation representative of BACT based on the use of an oxidation catalyst system was 3.0 ppmdv at 15% O_2. As a result of discussions between Diamond, their environmental consultant, and EPA, Diamond submitted a revised PSD permit application by letter dated August 8, 2003. One of the revisions Diamond made was to propose that the CO emission limit representative of BACT is 2.0 ppmdv at 15% O_2 with 3-hour averaging (rolling average). Diamond estimated that the annualized control cost for the CO oxidation catalyst system is $1161 per ton of CO removed, and stated that this is economically feasible for the proposed gas turbines. After considerable review as summarized below, EPA agrees that the CO emission limit representative of BACT is 2.0 ppmdv at 15% O_2 with 3-hour averaging (rolling average).

Although Diamond did not evaluate SCONOx as a control alternative for CO, SCONOx does reduce CO in addition to NO_x . SCONOx can achieve a control level equivalent to an oxidation catalyst system since SCONOx incorporates an oxidation catalyst in combination with the NO oxidation catalyst and potassium carbonate coating. As discussed in Section 4.4.1, SCONOx is a more costly control alternative. In fact, according to the costs presented in the Diamond permit application, SCONOx is more costly than the sum of SCR for NO_x control and oxidation catalyst for CO control. Since the emission control levels using SCONOx or an CO oxidation catalyst are essentially the same, the choice of technology to meet the CO emission limitation representative of BACT is up to the applicant.

As with any catalyst control system, the performance of the oxidation catalyst system for CO can be designed for progressively lower outlet emissions by varying the design parameters such as catalyst type, residence time of the catalyst (catalyst volume) and the gas temperature. There is not much that can be done to vary temperature since the CO catalyst system is already proposed to be located in the gas stream where the temperature is greatest. More exotic catalyst and larger catalyst volume (longer residence time) can result in lower emissions at the expense of greater capital and operating costs.

Review of the national gas turbine database cited in Section 4.4.1 above, found seven entries where the permitted CO emission limitation was 2.0 ppmdv at 15% O_2 (CT - 1, MA - 3, NJ - 2 and CA - 1). In Region 10 four recent gas turbine power projects have a CO permit limit of 2.0 ppmdv at 15% O_2. In two cases the averaging period was 1 hour. Although it is expected that the CO emission concentration will not be as variable as for NO_x emissions, EPA has decided to use 3-hour averaging for CO which is consistent with the NO_x emission limitation.

Actual emissions data for gas turbines in Region 10 of similar size to the ones proposed by Diamond indicate that the CO emissions are consistently lower than 2.0 ppmdv at 15% O_2. For example, data from the performance test at the Chehalis Power plant show that the CO emissions were less than 0.5 ppmdv at 15% O_2.

As mentioned in the discussion of the NESHAP Subpart YYYY for gas turbines (Section 4.3), Diamond will be required to meet a formaldehyde concentration emission limit of 91 ppbvd at 15% O_2. Diamond may choose to install a more efficient CO oxidation catalyst system to ensure compliance with the NESHAP. If so, EPA expects the CO emission concentration to be even lower than 2.0 ppmdv at 15% O_2.

Since there is evidence of a number of precedents for a CO permit limit of 2.0 ppmdv at 15% O_2 and Diamond proposed to meet this emission limit, EPA determines that the CO emission limit representative of BACT is 2.0 ppmdv at 15% O_2 with 3-hour averaging (rolling average). At the maximum operating rate the CO mass emission rate is 10.50 lb/hr per CT/HRSG-DB.

4.4.3 BACT for VOC

In the permit application Diamond evaluated thermal oxidation and catalytic oxidation as control alternatives for VOC emissions. As discussed in Section 4.4.2, thermal oxidation was not considered technically or economically feasible; a conclusion with which EPA agrees. Diamond argued that catalytic oxidation was not economically feasible if done only for VOC emission control due primarily to the small number of tons of VOC that could potentially be reduced.

However, catalytic oxidation technology has already been proposed for CO control and will achieve some reduction of VOC emissions. During development of the NESHAP Subpart YYYY, EPA found that oxidation catalyst systems also reduce HAP emissions such as formaldehyde, acetaldehyde, and benzene (Reference 6). In particular formaldehyde emissions which make up a large fraction of the total VOC emissions from turbines firing natural gas, are reduced at about the same percentage as CO. The NESHAP Subpart YYYY uses CO reduction across the catalytic oxidation system as a surrogate for HAP monitoring. Since formaldehyde and the other organic HAP emissions are a subset of VOC emissions, VOC emissions should similarly be reduced by the use of oxidation catalyst systems.

If the catalytic oxidation system was designed specifically for VOC reduction, some of the design parameters may differ from a catalytic oxidation system designed for CO reduction. For example, the active materials in the catalyst may be changed, the temperature range would probably be raised and the amount of catalyst used may be increased (Reference 7). The cost to install a separate or additional oxidation catalyst system specifically designed for VOC removal is considered to be excessive. However, the same oxidation catalyst system used for CO control will be somewhat effective in reducing VOC emissions especially the HAP emissions of most concern such as formaldehyde, acetaldehyde and benzene.

The actual emission level that can be expected by the use of the CO oxidation catalyst system is not well documented. Qualitatively, it is clear that using pipeline quality natural gas as the exclusive fuel and having a CO oxidation catalyst system will minimize VOC emissions. Therefore, EPA has determined in this case that BACT is the use of these two practices: exclusive use of natural gas and the CO oxidation catalyst control system. WEC calculates that the resultant VOC emission rate at full load will be 0.0081 lb/MMBtu.

4.4.4 BACT for PM/PM_{10}

In the permit application Diamond evaluated a number of particulate control technologies including a baghouse, dry ESP, wet ESP and venturi scrubber. The calculated cost effectiveness for all these devices was high ($8,427 - 34,733 per ton PM_{10} removed). In actual practice no control devices have been installed on gas turbines for PM_{10} control primarily for two reasons: (1) the volumetric flow rate of the exhaust gas is very large (>1 million actual cubic feet per minute per turbine) which translates into very large capital and operating costs; and (2) the PM_{10} concentration in the exhaust gas is very low (<0.005 gr/dscf). This concentration of PM_{10} in the exhaust gas (which would be the inlet to any PM_{10} control device) is lower than the exit PM_{10} concentration for many other types of sources.

Using exclusively natural gas will result in much lower PM_{10} emissions than any other fuel (oil or jet fuel for example). The presence of both oxidation and SCR catalyst may create some additional PM_{10} due to oxidation of some SO_2 to SO_3 and H_2SO_4 and subsequent reaction with NH_3 to produce ammonium sulfite or sulfate. However, these emissions are included in the concentration value discussed above which is very low compared to most other stationary sources. In order to minimize the formation of PM_{10} emissions (both in the stack and downwind of the source) due to reaction with NH_3, the ammonia slip must be kept to a minimum while still meeting the NO_x emission limitation. EPA proposes to accomplish this by imposing an emission limitation for ammonia slip (Sectión 4.4.6).

Diamond projected that PM_{10} emissions in terms of pounds per million Btu (lb/million Btu) would be 0.0145 lb/million Btu. Recall that the NSPS Subpart Da emission limit for gaseous fuels is 0.03 lb/million Btu. Therefore, the PM_{10} emissions from the gas turbines are projected to be less than half the NSPS Subpart Da standard.

Based on the factors discussed above, EPA has determined that in this case BACT for PM_{10} is the exclusive use of natural gas, proper design and operation of the gas turbines and minimizing the ammonia slip. WEC calculates that the resultant PM_{10} emission rate at full load will be 0.015 lb/MMBtu.

4.4.5 BACT for SO_2 and H_2SO_4

The SO_2 and H_2SO_4 emissions originate from oxidation of sulfur in the fuel. Diamond evaluated control alternatives for removing sulfur from the fuel prior to combustion and from the exhaust gas from the turbine. Because of the very low concentration of sulfur in the fuel and SO_2 in the exhaust gas, the control technologies are not feasible for technical and economic reasons. Low sulfur fuel substitution is a control alternative considered in many BACT analyses for combustion sources with pipeline natural gas considered the lowest sulfur fuel available. In this case natural gas was proposed as the only fuel. Pipeline natural gas has the lowest sulfur content of any fuel that could be used in a gas turbine.

In a letter to Hermiston Power Project dated April 10, 2002, GTN (Attachment 4), one of the two pipelines that could supply natural gas to the Diamond project, indicated that the maximum sulfur content of the natural gas must be less than 0.25 grains of hydrogen sulfide per 100 scf and less than 1 gr/100 scf of total sulfur. These are requirements of GTN's tariff and the California Public Utilities Commission. Hermiston Power Project Acid Rain Program monitoring plan data indicates that the sulfur content in the GTN natural gas pipeline is consistently less than 0.4 gr/100 scf on an hourly basis. Further data provided directly by GTN for the Stanfield Compressor Station (Attachment 5) further supports the low sulfur concentration in the pipeline natural gas.

For the most part, an annual average total sulfur value of 0.5 gr/100 scf natural gas was used within the PSD permit application for estimating emissions of SO_2. If all the sulfur is oxidized and emitted as SO_2, the SO_2 concentration in the exhaust gas would be approximately 0.27 ppmdv at 15% oxygen. The mass emission rate of SO_2 assuming no subsequent oxidation would be approximately 3.25 lb/hr per emission unit. In terms of lb/million Btu, the SO_2 emission rate would be approximately 0.0014 lb/million Btu. Recall that the NSPS Subpart Da SO_2 emission limit for gaseous fuels is 0.2 lb/million Btu. Therefore, the SO_2 emissions from the gas turbines are projected to be over two orders of magnitude lower than the NSPS Subpart Da standard.

H_2SO_4 emissions are created by oxidation of some of the SO_2 to SO_3 and subsequent reaction of the SO_3 with water vapor to form H_2SO_4. This reaction process is a consequence of using SCR and oxidation catalyst to reduce NO_x and CO, the primary pollutants of concern from gas turbines. There are no technically or economically feasible control alternatives for H_2SO_4 other than to use fuel with the lowest available sulfur content.

Based on the factors discussed above, EPA has determined that in this case BACT for SO_2 and

H_2SO_4 is the exclusive use of pipeline natural gas[3].

4.4.6 Minimizing Collateral Impact from Ammonia Emissions

Ammonia is not a pollutant normally regulated under the PSD regulations. However, in the case of gas turbines with SCR control technology, ammonia has collateral impacts on PM_{10} and NO_x emissions. Therefore, EPA believes it is necessary and appropriate to establish an emission limitation for ammonia in order to minimize PM_{10} and NO_x emissions[4]. In the permit application, Diamond proposed that ammonia slip would be less than 10 ppmdv at 15% O_2.

As discussed in Section 4.4.1, ammonia is a reactant in the SCR system. There is no incentive on the part of the operator to use more ammonia that necessary to achieve the NO_x emission limitation (since ammonia slip constitutes a loss of reactant which must be purchased). As the SCR system ages, there may be a need to increase the ammonia injection rate to achieve the same level of NO_x emission reduction. However, based on SCR vendor information and ammonia values measured at other gas turbines with SCR, ammonia slip can be kept to a few ppmdv at 15% O_2.

The four SCR vendors cited in The CAR document "Guidance for Power Plant Siting and Best Available Control Technology" (Reference 5) stated that ammonia slip would be <5 ppmdv at 15% O_2. In a letter to EPA dated September 12, 2000 (Reference 8), the Institute of Clean Air Companies, Inc. (ICAC) provided data from its member companies which provide SCR control systems for NO_x emissions. ICAC stated that "SCR and other technologies are currently achieving NO_x emission rates of 2 ppmw...." Regarding ammonia slip from SCR systems, ICAC stated that "Vendors are guaranteeing ammonia slip from SCR equipped gas turbines at less than 2 ppmw. Since the ammonia slip increases as a catalyst ages, this means that over a significant part of the catalyst life (currently about 8 - 10 years for gas turbines), ammonia emissions are far less than 2 ppmw." ICAC goes on to state that "advanced SCR systems are under development that show promise in reducing ammonia slip to undetectable levels throughout the life of the system."

Ammonia slip has been addressed in the recent PSD permits in Region 10. In most cases the ammonia emission limit in these permits has been set at 5 ppmdv at 15% O_2 (Wallula Generation, LLC; Plymouth Energy, LLC; Goldendale Energy Facility, LLC and COB Energy

[3]Pipeline natural gas means natural gas provided by a supplier through a pipeline. Pipeline natural gas, for purposes of this PSD permit, does not mean pipeline natural gas as defined by EPA at 40 CFR 72.2.

[4]The authority to address collateral impacts is the subject of a June 3, 1986 EPA Remand Order for North County Resource Recovery Associates, PSD Appeal No. 85-2.

Facility, LLC). The Goldendale Energy Facility, LLC permit also requires that the ammonia emission limit be decreased to 3 ppmdv at 15% O_2 after 12 months of operation.

Based on the factors discussed above, EPA has determined that the ammonia emission limit representative of presently available technology is 5 ppmdv at 15% O_2. At the maximum operating rate the ammonia mass emission rate is 15.90 lb/hr. The ammonia emission limits are necessary to ensure proper operation of the SCR system for NO_x emission control and to minimize direct ammonia emissions and the PM_{10} emissions that occur as a result of reaction of sulfur compounds with ammonia in the stack or in the plume from the gas turbines.

4.4.7 BACT for the Combustion Turbines and Duct Burners - Startup

Because of the expected mode of operation is in response to electrical demand, Diamond estimates that there may be up to 250 startups per gas turbine each year. Since startup emissions from the gas turbines are much higher in both concentration (ppmdv) and mass rates (lb/hr), it is important to quantify and minimize emissions during startup periods. In the PSD permit application, Diamond described three types of startups based primarily on how long the gas turbines had been shutdown prior to the startup: cold startup; warm startup; and hot startup. Cold startup occurs when the unit has been shutdown long enough for the temperature of the steam drum in the HRSG to fall below 200°F. A cold startup takes about 3.5 hours. If the HRSG steam drum temperature is above 200°F prior to startup, the startup is referred to as a warm or hot start depending on how long the unit had been shutdown. According to the information provided in the permit application which was based on the gas turbine vendor data, a warm startup takes approximately 2.75 hours and a hot startup approximately 2.0 hours.

Diamond provided estimates of the emissions during each startup mode (Table 2-7 and Appendix C of the August 8, 2003 revised permit application). The average hourly emissions during each mode of startup is shown in Table 4-1 below compared with the hourly emissions during normal operation.

Table 4-1 Startup Emissions (per CT)

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Cold Startup	3.5	103.2	327.6	15.6
Warm Startup	2.75	102.8	320.9	15.5
Hot Startup	2.0	102.2	309.1	15.6
Normal	–	17.2	10.5	17.4

From Table 4-1 one can see that the emissions of NO_x and CO are much larger during startup than during normal operation. This is due to higher emissions generated in the gas turbines during startup and the fact that the control systems (catalytic oxidation and SCR) are not at normal operating conditions during startup. According to the annual emission calculations presented in Appendix C of the August 8, 2003, revised permit application, the annual emissions of NO_x for two startup scenarios are approximately 48 - 89% of the annual emissions during normal operation. Similarly, for the CO the annual startup emissions are 243 - 464% of the annual emissions during normal operation even though the number of startup hours represent between 7 - 10% of the hours of normal operation.

From these emission comparisons, it is clear that emissions during startup are significant when compared to emissions during normal operation. Therefore, in order to minimize startup emissions, the number and duration of startups must be minimized to the maximum practical extent. EPA has determined that the number of startups will not be limited because this is a function of the electrical market demand that Diamond does not have direct control over. EPA has determined that the duration of startup can be limited as an operational work practice under BACT.

The PSD permit will require Diamond to develop a Startup, Shutdown and Malfunction Procedures Manual based on the equipment manufacturers recommended procedures and Diamond's operational experience. The startup period will commence when fuel is first fired in the gas turbine and end when the first of two events occurs: 1. when the turbine is operating above 50% load and normal operating temperatures are reached in the catalytic oxidation and SCR systems; or 2. two hours, 2.75 hours or 3.5 hours have elapsed since fuel was first introduced to the turbine on a hot, warm or cold startup respectively. Normal operating emission limits for NO_x and CO are relieved during startup mode; however, all emissions must be measured and counted toward the applicable emissions limitations established to protect ambient air quality standards or established to avoid an otherwise applicable requirement.

Diamond stated in the permit application that a planned shutdown is expected to take place over a period of about 10 minutes during which time the firing rate will be gradually reduced. Since the control systems will still be operational during shutdown and the emission limits are averaged over 3 hours, EPA has determined that no exemption from the emission limits needs to be provided for shutdown. If a turbine is shutdown due to a unit "trip" or other malfunction, the emission limits are relieved. The burden of demonstrating that a malfunction has occurred rests with Diamond.

4.4.8 BACT for the Cooling Towers

As seen in Table 2-3, PM_{10} is the only pollutant emitted from the cooling tower. The PM_{10} emissions originate from small droplets of cooling water carried out of the cooling tower (called drift) by the air moving countercurrent to the water. When the water droplets evaporate, the dissolved solids in the water droplet remain suspended in the air as PM_{10}. In the permit application, Diamond states that none of the usual add-on particulate control technologies are technically or economically feasible to control PM_{10} emissions from the cooling towers. In addition, EPA found no instances where exhaust stack add-on controls have been used in actual practice.

Cooling towers typically are equipped with static devices called drift eliminators which are installed at the top of the cooling tower above the level where water is introduced and just ahead of the propeller fans used to induce air flow through the cooling tower. The drift eliminators are designed to remove water droplets from the air stream leaving the cooling tower. Several types of drift eliminators are available with correspondingly different removal efficiencies. Diamond proposes to install high efficiency drift eliminators designed to attain a drift loss equal to or less than 0.0005% of the cooling tower circulating flow rate. This is the lowest drift loss that cooling tower manufactures will guarantee.

The drift loss rating of the drift eliminators is the primary variable in determining the magnitude of PM_{10} emissions from a cooling tower. The second important variable is the total dissolved solids (TDS) content in the cooling water. The TDS content is a function of the quality of the make-up water supply and the number of times the water is cycled through the cooling tower before blowdown. Blowdown is the term given to water discharged from the cooling tower system to control the buildup of TDS, such as salts or other impurities that occur in water as well as suspended solids that are washed out of entering the air. For more information regarding cooling towers and drift, you may consult various resources on the internet, including www.epa.gov/ttn/chief/ap42/ch13/final/c13s04.pdf, www.pgt-online.com/services/driftbackground.shtml, and www.thecoolingtowercompany.com/faqs.html.

Treatment for TDS reduction for the size of facility anticipated at WEC is generally expensive. Most physical-chemical methods concentrate the TDS and then require disposal of a concentrated side stream of 10 to 30 percent flow. Partial treatment of the flow for TDS reduction would be the less costly than treating the entire flow stream. The cost of partial treatment, however, would still cost more than \$1 MM/year as shown in Table 4-2. The expected maximum amount of PM-10 produced yearly is about 18 tons assuming 12 cycles of concentration and a maximum concentration of 3,532 ppmw. An acceptable BACT cost is \$10,000/ton of pollutant removed, which would be \$180,000/year for the WEC assuming TDS treatment technologies are 99% efficient. As can be seen in Table 4-2, the least expensive method to treat for TDS would involve operating costs alone of more than \$1 million/year.

Dissolved solids cannot be removed by standard filtration; they are material deposited as scale after water has been evaporated. For this reason, methods other than filtration are necessary to remove or reduce TDS. Treatment of TDS involves removal of ionic forms using limited and sophisticated technologies. Usually these technologies are employed for small amounts of water where ultra-clean water is needed in boiler systems, for electronics manufacturing, and pharmaceutical manufacturing. As a result, the technologies are costly, highly specialized, and produce side streams of concentrated wastes that need to be disposed of or treated as well. The costs and information discussed here are based on a study conducted for a lead-zinc mine in northern Alaska. The main treatment options applicable to the WEC would be reverse osmosis and ion exchange.

Reverse osmosis is a process that strains ionic species from water. In the process, pressurized water is passed over a semi-permeable membrane which allows passage of water but restricts the passage of ions. The size of the membranes are selected based on the desired quality of the water. Depending upon the type of membrane chosen, reductions of TDS to 20 mg/l could be achieved. One of the disadvantages of these systems, besides the high cost, is that the membranes can be easily fouled and thus require frequent cleaning. As a result, pre-softening of the feed water would be necessary. Another by-product of this process is concentrated brines that would need to be disposed of or treated. Evaporation is typically a method to address the brine issue. Evaporation requires electrical power and fuel; for a system in the range of 1-4 mgd (700 - 3000 gpm), approximately 15 MW would be needed to evaporate the brine.

Ion exchange is a process in which ions are adsorbed from solution onto an active resin solid. Concurrent with the adsorption, a counter io is released into solution, thereby replacing the adsorbed ion. The choice of resin is based on the desired water quality. As the resin becomes saturated with the adsorbed ions, it would need to be regenerated before continued use. Regeneration is accomplished through elution with an acid, such as hydrochloric acid. Regeneration and disposal of the regenerant solutions involves potential environmental impacts with added costs for treatment and disposal. Ion exchange units are typically used in relatively small volume applications such as water softening or when very high quality water is needed.

The following table[5] summarizes estimated construction and operating costs for the different options. Because the values were originally developed for the mine in Alaska, they have been reduced by a factor of 2.5 to reflect a base costs in the Pacific Northwest (bolded values).

[5]Based on information from 1999 Update, "Effluent Treatment and Water Management for TDS Control, Red Dog Mine," for Cominco Alaska, Inc., March 1999 edited by Gene Andrews, Environmental Associate, HCR 85 Box 336, Bonners Ferry, ID 83805.

Table 4-2 Estimated Construction and Operating Costs - TDS Management

[illegible]	[illegible]	[illegible]	[illegible]
Ion exchange	$60,000,000	$3,500,000	$8,100,000
	$24,000,000	**$1,400,000**	**$3,240,000**
Reverse osmosis	$55,000,000	$3,000,000	$7,400,000
	$22,000,000	**$1,200,000**	**$2,960,000**

NOTES:

1 Operating cost includes power, chemicals, personnel, maintenance, materials and equipment for maintenance, contingency, and appurtenant issues mitigation

2 Construction cost amortized over 15 years

3 Values in bold have scale factor of 2.5 removed to construction costs developed relative to Pacific Northwest

A review of EPA's RACT/BACT/LAER Clearinghouse (RBLC) reveals that a PSD permit has been issued by the Iowa Department of Natural Resources prescribing a cooling water TDS operating limit (1,050 ppmw), a drift loss design efficiency standard (0.0005%), and an opacity standard (0%). The PM_{10} BACT requirements were prescribed for a cooling tower at MidAmerican Energy Company's proposed power generation facility in Council Bluffs, Iowa. For more information, consult EPA's RBLC, Entry IA-0067, at www.epa.gov/catc/rblc.

One other alternative that could be considered is the use of a dry cooling system (rather than a water cooling system) using air-cooled condensers given that the Diamond facility intends to extract, on average, approximately 11 million gallons of water per day (17 cubic feet per second) from the Columbia River. Cooling towers are not needed to support a dry cooling system. This dry cooling system approach is being used at the Chehalis Power Plant (Chehalis Power) in Chehalis, Washington. A dry cooling system is being used at Chehalis Power in response to the concern over the use of surface water and the use of reclaimed water that would otherwise be discharged into the Chehalis River. According to Chehalis Power, choosing air cooling rather than water cooling provides significant benefits to protection of water resources because it provides for a massive reduction in water use from 3,000,000 gallons per day to an average of 192,000 gallons per day. For more information, consult the State of Washington Energy Facility Site Evaluation Council (EFSEC) website at www.efsec.wa.gov/FILES/orders/order753.pdf. A similar dry cooling system is being prescribed for the proposed COB Energy facility in Klamath County, Oregon. For more information, consult the State of Oregon Department of Energy website at www.energy.state.or.us/siting/document/COBdPO.pdf.

Dry cooling, however, results in a slightly lower efficiency in the steam turbine generating system. In order to do a proper comparison (on the basis of equal electrical power production), a system using dry cooling would have to be slightly larger, burning more natural gas, and thereby generating more combustion PM_{10} emissions. Although a complete analysis was not done for the Diamond application, an analysis was done for the Wallula Power Project. In the Fact Sheet for the Wallula Power PSD permit (Reference 9), Washington EFSEC concluded that the PM_{10} emissions would be slightly higher for a power plant using dry cooling compared to one using a cooling tower based on sizing each power plant to produce the same net electrical output. In addition, the Wallula Power Project Fact Sheet pointed out that the cost of the dry cooling system was substantially more than the cost of a water cooling system. The relative cost of a dry cooling system to control PM_{10} emissions is greater than $500,000 per ton of PM_{10} emissions removed.

Given that the selection of a dry cooling system to reduce PM_{10} emissions results in a relatively poor cost effectiveness, EPA concludes that a dry cooling system is not BACT for the Diamond project. EPA has determined that the combination of using high efficiency drift eliminators designed for a drift loss ≤0.0005% and maintaining a cooling water TDS content ≤3,532 ppmw represents BACT for the cooling towers.

4.4.9 BACT for the Diesel Engine Driven Emergency Fire Pump

The Diamond project will include a diesel engine driven emergency fire pump which Diamond proposes to use only in the case of a fire when the electric fire pump is unavailable. The only other time the diesel engine driven emergency fire pump will operate is for short periodic test periods totaling ≤52 hours per year. The diesel engine driven emergency fire pump is sized at 350 horsepower (261 kW) in order to meet the National Fire Protection Association standards for the largest potential fire at the facility (in this case the cooling tower structures).

Because the diesel engine driven emergency fire pump will be operated infrequently and intermittently, EPA does not think it is reasonable to require any post combustion controls as part of the BACT process. However, it is reasonable to take two actions which can minimize emissions with minimal cost to Diamond. One action is to purchase a new diesel engine that meets the EPA 2004 highway heavy-duty diesel-cycle engine standards or the standards applicable at time of purchase, whichever is later. These on-road engine specifications for emissions of PM, NO_x, and VOC are more stringent than the specifications for nonroad engines, except for CO. For more information on regulations applicable to onroad diesel engines, please EPA's website at http://www.epa.gov/otaq/diesel.htm#regs. For more information on regulations applicable to nonroad engines, please see EPA's website at http://www.epa.gov/otaq/equip-hd.htm. Table 4-3 presents a comparison of the onroad and nonroad diesel engine standards.

Table 4-3 Onroad and Nonroad EPA Diesel Engine Standards

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Onroad	40 CFR 86.004-11	2.4	15.5	0.10
Nonroad	40 CFR 89.112	4.8	2.6	0.15

The other action is to use on-road specification diesel fuel, as specified in 40 CFR 80.520(a)(1). The sulfur content of on-road specification diesel fuel is currently ≤0.05%. In mid 2006 the sulfur content limit for on-road specification diesel fuel is scheduled to be reduced to ≤15 ppmw (0.0015%).

EPA has determined that the combination of purchasing a new diesel engine that meets the EPA on-road engine specification for the year of purchase and using on-road specification diesel fuel represents BACT for the diesel engine driven emergency fire pump.

4.4.10 Summary of BACT Emission Limitations and Work Practice Standards

Tables 4-4 through 4-6 summarize the emission limits and work practice standards resulting from the BACT determinations discussed above.

Table 4-4 BACT for CT & DB

[illegible]	[illegible]	[illegible]
NO_x at 15% O_2	2.0 ppmdv [a]	3-hour
CO at 15% O_2	2.0 ppmdv [a]	3-hour
SO_2 / H_2SO_4	Exclusive use of pipeline natural gas	N/A
PM_{10}	a) Exclusive use of pipeline natural gas, b) proper design and operation of equipment, and c) minimize ammonia slip	N/A
VOC	a) Exclusive use of pipeline natural gas and b) CO oxidation catalyst	N/A
NH_3 at 15% O_2	5.0 ppmdv [a]	3-hour
Opacity	5% [a]	N/A

* Emission limit only applies during normal operation, excluding startup and shutdown.

Table 4-5 BACT for Cooling Towers

PM_{10}	a) Drift eliminator efficiency of 0.0005% and b) TDS ≤3,532 ppmw	a) N/A. Initial inspection. b) Performance Test: Seven-day average. Monitoring: One-day average.

Table 4-6 BACT for Diesel Engine Emergency Fire Pump

Operating hours	52 hr/yr	12-month rolling average
NO_x, CO, VOC, PM/PM_{10}	Engine shall satisfy the EPA 2004 highway heavy-duty diesel-cycle engine standards of 40 CFR 86.004-11 or the EPA highway heavy-duty diesel-cycle engine standards applicable at time of purchase, whichever is later.	N/A
SO_2	Engine shall combust only highway diesel fuel as specified by EPA in 40 CFR 80.520(a)(1) at time of purchase.	Fuel supplier certification with each purchase.

5 AMBIENT AIR QUALITY IMPACT ANALYSIS

The proposed Wanapa power plant is a PSD listed stationary source with maximum operation emissions calculated to exceed the major stationary source threshold of 100 tons per year for NO_X, CO and PM_{10}. In addition, the calculated emissions of six criteria or regulated air pollutants will exceed their significant emission rate thresholds. The six air pollutant are SO_2, NO_X, CO, PM_{10}, VOC and H_2SO_4. Of the six, NAAQS have been promulgated for five, SO_2, NO_2, CO, PM_{10}, and O_3. These five air pollutants are either attaining or attainment cannot be determined for the NAAQS in the area.

Federal guidance has been developed to implement the ambient air quality impact analysis (AQIA) portion of the PSD regulations. The guidance allows new major stationary sources that emit criteria air pollutants in significant amounts to conduct a two part AQIA. The first part consist of a comparison of the air pollutant highest predicted concentration with its significant impact level (SIL). If the concentration does not exceed the SIL, further air quality analysis for compliance with NAAQS and air quality increments is not necessary. However, if the concentration exceeds its SIL, a second part AQIA is required for that air pollutant. Essentially, the second part AQIA should contain (1) a demonstration of compliance with NAAQS and Class II air quality increments, (2) a demonstration of compliance with Class I area air quality increments for all air pollutants, (3) an evaluation of project impacts on soils, vegetation, and Class II area visibility, (4) an analysis associated with growth, and (5) a Class I area analysis (i.e., acid deposition and visibility) that includes consultation with the applicable Federal Land Manager (FLM) which in this case, is the U.S. Forest Service. Preconstruction air quality monitoring may be needed unless the existing air quality level or the predicted concentration for the air pollutant is less than its significant monitoring threshold.

This AQIA summarizes a technical review of the Wanapa power plant ambient air impact analyses contained in the January, 2003 PSD application and subsequent revisions per comments by Region 10. The report focuses on Wanapa's adherence to federal PSD regulations and guidelines, the assumptions and data used in the analyses, and whether the demonstrations and results are adequately supported in the application and revisions. References used by Region 10 in the review include:

- 40 CFR Part 50 - National Primary and Secondary Ambient Air Quality Standards
- 40 CFR Part 51, Appendix W - Guideline on Air Quality Models
- 40 CFR Part 52.21 - Prevention of Significant Deterioration of Air Quality
- Draft New Source Review Workshop Manual - Prevention of Significant Deterioration and Nonattainment Area Permitting, October 1990
- Meteorological Monitoring Guidance for Regulatory Modeling Applications, EPA-454/R-99-005
- Ambient Monitoring Guidelines for Prevention of Significant Deterioration, EPA-

450/4-87-007

* Federal Land Mangers' Air Quality Related Values Workgroup (FLAG) Phase I Report, December 2000

5.1 Significant Emission Thresholds and Baseline Dates

5.1.1 Emission Rates

Pollutant specific significant emission rates have been codified into the CFR to exempt proposed major stationary sources and major modifications to stationary sources from PSD review. For criteria air pollutants, significant emission rates have been established for SO_2, NO_x, CO, PM_{10}, O_3 based on VOC, and lead (PB). Emission rates also have been established for eight non-criteria air pollutants including H_2SO_4.

Calculated air pollutant emission rates from combustion and non-combustion units at the power plant exceed significant emission rate thresholds for SO_2, NO_X, CO, PM_{10}, and H_2SO_4 as provided by DW and shown in the below Table 5-1. Consequently, an AQIA was performed and is discussed in the following sections. Although the VOC emission rate is greater than 40 tons per year, the regulation exempts a project from performing an AQIA and conducting pre-construction monitoring for O_3 if the proposed annual VOC emission rate is less than 100 tons per year.

Table 5-1 Significant Emission Rates

[illegible]	[illegible]	[illegible]
SO_2	56	40
NO_x	588	40
CO	109	100
PM_{10}	566	15
VOC	99	40
H_2SO_4	34	7

[a] Emission rates are based on four combustion turbines and heat recovery steam generators with duct burners, two cooling towers, the application of Best Available Control Technology (BACT), 100 percent load at 52.2 degrees Fahrenheit, and duct burner firing.
[b] Sulfur dioxide emission rate is based on a natural gas sulfur content of 0.5 gr/100scf.
[c] Annual particulate emissions include four HRSGs and two cooling tower blocks.
[d] Diamond Wanapa has accepted a VOC permit limit of 99 tons per year to avoid an O_3

ambient air quality analysis which would include preconstruction monitoring.

5.1.2 Minor Source Baseline Dates

A minor source baseline date is the date of the first complete PSD application submitted to an air permit agency after a trigger date in an area attaining (or cannot be determined if attaining) the NAAQS. Trigger dates for the area have been set for SO_2, NO_2 and PM_{10} with minor source baseline dates established as listed in Table 5-2. Two areas are listed because the power plant is expected to have significant concentrations within the states of Oregon and Washington

Table 5-2 Baseline Dates

[illegible]	[illegible]	[illegible]
SO_2	January 1, 1978	December 14, 1977
PM_{10}	January 1, 1978	December 14, 1977
NO_2	February 8, 1988	February 11, 1992

5.2 Modeling Methodology

An emissions impact of the power plant on ambient air was conducted in five discrete steps.

- During the first step, representative meteorological data were obtained. Programs within the AERMOD Modeling System and the CALPUFF Modeling System processed the data and generated input files for the dispersion programs.

- The ISC-PRIME Model with screening meteorology was employed in the second step to identify the operating load and ambient temperature that would result in the greatest concentration for those air pollutants with short term NAAQS (e.g., SO_2, CO and PM_{10}).

- In the third step, the dispersion program within the AERMOD Modeling System, with meteorological data files from the first step and operating load information from the second step, was utilized to determine which air pollutant would have a predicted concentration above its SIL. If the predicted concentration was above its SIL, the maximum radial distance from the power plant in which there was a significant concentration, or the significant impact area (SIA), was also computed.

* Nearby stationary source emission inventories were obtained in this fourth step and applied to only those stationary sources emitting air pollutants predicted to have a significant concentration in the SIA. Evaluations of the emission inventories were performed to determine which stationary sources must be included and which stationary sources can be excluded from the compliance determination modeling.

* In the fifth step, the dispersion program within the AERMOD Modeling System was used to predict ambient concentrations in Class II areas while the CALPUFF Modeling System was utilized to assess impacts to air quality related values (AQVR) as well as calculate ambient concentrations in Class I areas. The third and fourth steps do not apply to the CALPUFF Modeling System.

The ISC-PRIME Model was used in the second step with screening meteorology from the SCREEN3 Model and building information generated from the Building Profile Input Program-PRIME (BPIP-PRIME), to calculate concentrations. The fifty-four (54) hours of meteorology from SCREEN3 were incremented every ten degrees of wind direction with a net result of 1944 hours of meteorology. BPIP-PRIME was executed with four heat recovery steam generator (HRSG) stacks, two fourteen cell cooling towers and all nearby buildings and structures to assess the effects of building wake induced downwash.

The three programs within the AERMOD Modeling System were applied to determine significant concentrations, and compliance with NAAQS and Class II air quality increments. AERMAP was used to extract terrain elevations from U.S. Geological Survey 7.5 minute Digital Elevation Model (DEM) files and calculate height scales, both based on the provided location coordinates (i.e., Universal Transverse Mercator [UTM], NAD27). AERMET was used to process hourly surface and upper air data and generate two output files - a surface file and a profile file. Using the files generated from AERMAP and AERMET, source information, and specific model run options within the AERMOD Dispersion Program, air pollutant concentrations were predicted at designated locations and averaging periods.

The CALPUFF Modeling System contains three primary programs - CALMET, CALPUFF and CALPOST. CALMET was used to develop hourly meteorological variables on a three-dimensional gridded modeling domain. With the output from CALMET, source information, and specific model run options, CALPUFF was used to generate hourly concentration and/or deposition flux files. CALPOST was employed to process the CALPUFF output files to determine compliance with Class I area air quality increments and impacts to AQRVs. POSTUTIL was used to read CALPUFF generated wet and dry deposition flux files and output another file which was used as an input file for CALPOST.

Although the ISC-PRIME Model and the AERMOD Modeling System are currently non-guideline techniques, Region 10 is approving the use of these two models for the AQIA. The CALPUFF Modeling System is an approved USEPA model and is recommended for long range transport and complex wind cases.

The following subsections provide more details related to the modeling data and assumptions used in the AERMOD Modeling System and CALPUFF Modeling System.

5.2.1 Urban/Rural Area Determination

Land use within a 3-kilometer radius of the power plant is either grassland or water. Based on this information, the area is considered rural for dispersion purposes.

5.2.2 Ambient Air Definition

A physical barrier surrounding the power plant will be constructed to prevent public access. As a result, the definition of ambient air for predicting air pollutant concentrations begins at, and extends outward from the physical barrier or fence line.

5.2.3 Good Engineering Practice (GEP) Stack Height

The BPIP-PRIME Program was used to determine if an exhaust plume from an emission unit would be affected by a nearby structure or building. Parameters from four exhaust stacks and twenty-eight (28) cooling tower cells, and dimensions from twenty-three (23) connected and unconnected buildings were input into BPIP-PRIME to make this determination. The output from the program identified all thirty-two (32) emission units were of insufficient height and if constructed, may be affected by a wake generated from a nearby structure or building.

5.2.4 Meteorology

5.2.4.1 AERMOD Modeling System

Surface and upper air meteorological data are needed by the AERMOD Dispersion Program to characterize transport and dispersion of air pollutants contained in an exhaust plume. Hourly surface observations measured at the Umatilla Army Depot (UAD) and the National Weather Service (NWS) Walla Walla, WA station, and upper air data collected at Spokane, WA were obtained and used in the AERMOD Modeling System for this purpose. The meteorological data collected at these three locations are considered adequately representative of the project location for the purpose of this AQIA.

Hourly surface meteorological data collected at another location should have similar land uses as the site in which it is to be used. In addition, the predominant winds should blow over same land uses. Using a three kilometer radius area centered at the UAD and the project location, it was determined that the two areas have similar land uses and the predominant wind direction blows over the same land uses. As a result, the UAD measured wind directions, wind speeds and temperatures for the period 1995 to 1999 were judged to be adequately representative of the project location and appropriate for use with the AERMOD Modeling System. The UAD is located about eight kilometers southwest of the power plant. In addition, the UAD data were found to meet the PSD monitoring requirements for air quality modeling.

To complete the surface data set, cloud cover and ceiling height measured at the Walla Walla, WA NWS station from 1995 to 1999 were merged with the UAD wind and temperature data. The Walla Walla station is located roughly eighty-five (85) kilometers northeast of the power plant.

Spokane, WA is the nearest NWS station with upper air measurements for the period 1995 to 1999. The upper air measurements include atmospheric pressure, temperature, wind direction and wind speed, and height above ground level.

The AERMET Program read the five individual years of surface and upper air meteorology and generated five pairs of surface and profile files. For calculating boundary layer parameters, the power plant location was divided into three land use areas with surface characteristics varying seasonally.

5.2.4.2 CALPUFF Modeling System

Like the AERMOD Modeling System, the CALPUFF Modeling System also requires surface and upper air meteorological variables to simulate transport and dispersion of plume materials. A March 19, 1998 to March 16, 1999, 12-kilometer grid Mesoscale Model 5 (MM5) data set was selected for the initial wind fields. In addition, measurements from twenty-three (23) surface, twenty-two (22) precipitation and three upper air stations were added to complete the data set. The MM5 data and the surface, precipitation and upper air station data were judged to be adequately representative for long range transport modeling using the CALPUFF Modeling System.

Supplementing the measurements were 1294 pseudo precipitation stations and 66 pseudo relative humidity stations created from the MM5 data set. A pseudo precipitation station was located at every grid point. Pseudo relative humidity stations were located at Class I areas with the maximum relative humidity set at 95 percent per FLM guidance.

Taking all the meteorological data as well as the geophysical data, CALMET generated hourly gridded data for input into the CALPUFF Program.

5.2.5. Receptors and Terrain Elevations

5.2.5.1 AERMOD Modeling System

Air pollutant concentrations were calculated at receptor points using a Cartesian coordinate system and discrete receptors.

- Discrete receptors were spaced 30 meters apart long the physical barrier or fence line surrounding the power plant.
- Extending from the fence line to 2000 meters from the center of the power plant, receptors were incremented every 50 meters.
- From 2000 meters to 5000 meters, receptors were spaced at 100 meter intervals.
- From 5000 meters to 10000 meters, receptors were incremented every 500 meters.

To determine the extent of the SIA, additional receptors were placed out past 17000 meters from the power plant for 24-hour average PM10.

Using AERMAP and nine DEM files, a terrain elevation was extracted and a height scale was calculated at each receptor point and written to an output file.

5.2.5.2 CALPUFF Modeling System

The CALPUFF modeling domain consisted of a grid with 4-kilometer spacing. The 4-kilometer grid used 132 cells by 97 cells and included parts of eastern Washington, Eastern Oregon, and Western Idaho. Within this grid is the power plant and five Class I wilderness areas - Eagle Cap, Goat Rocks, Mount Adams, Strawberry Mountain and Mount Hood. In addition, the grid includes the Columbia River Gorge National Scenic Area, a Class II area where visibility is important.

Discrete receptor locations at each of the five Class I wilderness areas were downloaded from the National Park Service web site. For the Columbia River Gorge National Scenic Area, receptor points were spaced at three kilometer intervals along the boundary and at one kilometer increments inside the area. Terrain elevation at each receptor point was interpolated from DEM files.

5.2.6 Nearby Stationary Source Emission Inventories for NAAQS and Class II Area Increment

Analyses

5.2.6.1 Point Sources

The Oregon Department of Environmental Quality and the Washington Department of Ecology provided emission inventories of the nearby stationary sources. Region 10 reviewed the emission inventories and determined that they were not adequate or complete. Missing stationary sources were added to the inventories. Default stack parameters by source type were developed and used to fill in the gaps including height, temperature, velocity and diameter. If an emission rate was missing, technical judgement was used to derive the allowable emission rate for the emission unit. Depending on the emission unit, the missing short term emission rate was based on an assumed operating rate of either 2080 or 8760 hours per year.

After the revisions to the emission inventories, each individual stationary source was examined to determine if it could be removed from the modeling. This was accomplished by technical judgement or by the use of the SCREEN3 Model. All stationary sources inside the SIA found during the third step were included in the modeling. A stationary source located between the SIA and fifty kilometers beyond the SIA was removed if the air pollutant predicted concentration inside the SIA was less than its SIL.

Prevention of Significant Deterioration regulations and/or guidelines state that actual emission increases and decreases should be used in the PSD increment consumption analysis and allowable emissions should be used in the NAAQS compliance analysis. In this AQIA, allowable emissions were used each analysis. By using allowable emissions, the amount of increment consumed would be considered conservative. That is, the predicted concentrations would bias towards overestimation. It should be noted that increment expansion (emission decreases) were not included in the analysis.

5.2.6.2 Mobile Sources

Vehicular traffic has increased over the years, however, the emissions per vehicle mile traveled have decreased. The decrease can be attributed to improved technology with fleet turnover and cleaner fuels. Hence, vehicular source emissions are expected to have an insignificant affect on air quality increments and were not considered in the increment analysis. Similarly, waterborne traffic has also increased but with the burning of lower sulfur content fuels, the emissions impact from these sources should not be significant.

5.2.7 Project Emission Rates and Stack Parameters

The four power plant combustion turbines will operate between 50 percent and 100 percent load with or without duct burner firing in the HRSG. To determine the short term worst-case operating load, a screening analysis was conducted at four operating loads. The operating loads included 100 percent, 85 percent, 70 percent and 50 percent loads with and without duct burner firing. Ambient temperatures for the operating loads were 100, 52.2 and -20 degrees Fahrenheit. The stack parameters used also reflect the operating loads.

Implementing the ISC-PRIME model per the second step, the short-term worst-case operating load was found to be 100 percent load with duct burner firing at an ambient temperature of 52.2 degrees Fahrenheit. The stack parameters and emission rates associated with this operating load were subsequently used in determining significant concentrations and significant impact areas, and in the full AQIA.

Tables 5-3 to 5-5 show the potential emission rates, location coordinates and stack parameters of the four HRSG stacks, the dominant power plant mass emission units, used in the Class I and Class II area modeling analyses. For the Class I area AQRV, it has been assumed that the in-stack sulfur oxides is composed of 50 percent SO_2 and 50 percent ammonium sulfate ($(NH_4)_2SO_4$). Similarly, the total particulate matter has been split into elemental carbon (EC) (23.1 percent), organic carbon (OC or secondary organic aerosols [SOA]) (25.4 percent), and total fine particulate matter (51.5 percent). The total fine particulate matter is further divided into particulate matter fine (PMF) and $(NH_4)_2SO_4$ (i.e., PMF = total PMF - $(NH_4)_2SO_4$). For the Class I area increment analysis, all the in-stack sulfur oxide emissions is SO_2 (or 0.41 g/sec) like the Class II area increment analysis.

For the Class II area emissions, the NO_x emission rate is based on a worst case day in which there is a 3.5 hour cold start period followed by 20.5 hours of combustion turbine firing and duct burner firing in the HRSG. No downtime is considered before the cold start. The total PM_{10} emission rate includes $(NH_4)_2SO_4$.

Secondary emissions should be minimal. The source of the emissions would be primarily from employee vehicles.

Table 5-3 Class I Area Modeled Emission Rates

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	HRSG #1 (CT1&DB1)	0.205	0.422	4.230	0.903	0.993	1.590
2	HRSG #2 (CT2&DB2)	0.205	0.422	4.230	0.903	0.993	1.590
3	HRSG #3 (CT3&DB3)	0.205	0.422	4.230	0.903	0.993	1.590

4	HRSG #4(CT4&DB4)	0.205	0.422	4.230	0.903	0.993	1.590

Table 5-4 Class II Area Modeled Emission Rates

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	HRSG #1 (CT1&DB1)	0.41	4.23	1.98	3.91
2	HRSG #2 (CT2&DB2)	0.41	4.23	1.98	3.91
3	HRSG #3 (CT3&DB3)	0.41	4.23	1.98	3.91
4	HRSG #4(CT4&DB4)	0.41	4.23	1.98	3.91

Table 5-5 Stack Parameters

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	326957	5087886	156.7	65.0	346.5	18.0	5.8
2	326957	5087843	156.7	65.0	346.5	18.0	5.8
3	326957	5087703	156.7	65.0	346.5	18.0	5.8
4	326957	5087660	156.7	65.0	346.5	18.0	5.8

Datum of UTM coordinates is NAD27

For chemical transformation in CALPUFF, a background ammonia concentration of 17 ppb was used while hourly O_3 measurements were obtained from representative Oregon and Washington monitoring stations.

5.3 Significance, Monitoring, Air Standards and Class II Area Increment Modeling Results

The following subsections summarize the modeling results. Region 10 conducted its own meteorological data processing and modeling analysis to confirm the 24-hour PM_{10} predicted concentrations and the results were similar.

5.3.1 Significant Concentration Results

Using the AERMOD Modeling System and five years of meteorology, the emissions from the four HRSG stacks and cooling towers (PM_{10} only) were modeled to determine which air pollutant would cause a significant impact on the ambient air quality. The predictions shown in Table 5-6 indicate that only the impacts of NO_2 and PM_{10} were greater than its SIL and would require a second part AQIA.

Table 5-6 Significant Impact Levels

[illegible]	[illegible]	[illegible]	[illegible]
SO_2	3-Hour	8.20	25
	24-Hour	2.02	5
	Annual	0.25	1
NO_2	Annual	2.57	1
CO	1-Hour	84.55	2000
	8-Hour	17.86	500
PM_{10}	24-Hour	19.23	5
	Annual	4.14	1

For all predicted air pollutant concentrations above the SIL, a SIA or radial distance from the power plant in which there is a significant concentration needs to be determined for the purpose of defining the nearby source emission inventories as discussed in Section 5.2. The radius of the SIA for NO_2 and PM_{10} is shown in Table 5-7.

Table 5-7 Radius of Significant Impact Area

[illegible]	[illegible]	[illegible]	[illegible]
NO_2	Annual	1	1500
PM_{10}	24-Hour	5	17000
	Annual	1	1600

5.3.2 Preconstruction Air Quality Monitoring and Background Air Quality

The same concentrations used in the SIL determination were also compared to the significant monitoring concentration levels to determine if preconstruction air quality modeling would be necessary. Only PM_{10} was predicted to exceed its monitoring level as shown in Table 5-8.

Table 5-8 Preconstruction Monitoring Levels

[illegible]	[illegible]	[illegible]	[illegible]
NO_2	Annual	2.6	14
PM_{10}	24-Hour	19.23	10

Preconstruction monitoring data is needed to establish the existing air pollutant concentrations in the area of the proposed project. USEPA has the discretion to use existing representative air quality measurements in lieu of preconstruction monitoring data even though the predicted concentration is above its SIL. In this case, Region 10 has determined that the existing NO_2 and PM_{10} measurements at Coyote Springs are adequate to represent existing air quality levels or background, in the project area (see Table 5-9).

Coyote Springs is located about twenty-four (24) kilometers west of the power plant. The period of record of the data is 1994 to 1995. Although the data are ten years old, the modeling included all recently permitted and operating NO_2 and PM_{10} point sources in the area and PM_{10} fugitives sources inside the SIA to determine compliance with NAAQS. The monitoring data meets the USEPA quality assurance requirements.

Table 5-9 Background Concentrations

[illegible]	[illegible]	[illegible]
NO_2	Annual	13
PM_{10}	24-Hour	105
	Annual	20

5.3.3 National Ambient Air Quality Standards

Compliance with NAAQS for NO_2 and PM_{10} are based on the sum of the predicted concentration and the existing air quality for the same averaging period. The emissions impact of the Wanapa power plant and other nearby sources make up the predicted concentration. For the annual average, the highest concentration of the five years was used to determine compliance. However, the highest, second-highest predicted concentration for 24-hour average PM_{10} was used to determine compliance because five years of meteorology was used to quantify the period concentration.

The predicted total concentrations are expected to be less than the NAAQS as shown in Table 5-10. Although Wanapa's contribution at the point of maximum impact for the 24-hour average PM_{10} is zero, the highest predicted concentration is 19.23 μg/m^3 anywhere inside the SIA (see Table 5-6). At the point of Wanapa's maximum impact, the predicted total 24-hour PM_{10} concentration is expected to be less than 125 μg/m^3.

Table 5-10 Comparison with NAAQS

NO_2	Annual	2.3	2.2	13.0	17.5	100	18
PM_{10}	24-Hour	0.0	29.6	105.0	134.6	150	90
	Annual	2.8	0.7	20.0	23.6	50	47

5.3.4 Class II Area Air Quality Increments

The predicted highest annual average concentration and the highest, second-highest 24-hour average concentration were used to determine the amount of degradation or increment consumed in the area. The total increment consumed is the sum of the Wanapa power plant concentration and other nearby source concentration as shown in Table 5.11. Predicted annual and 24-hour concentrations were calculated to be less than the air quality increments. Like the NAAQS results, Wanapa's contribution at the point of maximum impact for the 24-hour average PM_{10} is zero, but the highest predicted concentration is 19.23 μg/m^3 anywhere inside the SIA (see Table 5-6). At the point of Wanapa's maximum impact, the predicted total 24-hour PM_{10} increment consumption is expected to be less than 20 μg/m^3.

Table 5-11 Comparison with Class II Area Increments

NO_2	Annual	2.3	2.2	4.5	25	18
PM_{10}	24-Hour	0.0	29.6	29.6	30	99
	Annual	2.8	0.7	3.6	17	21

5.3.5 Start-up Analysis

A cold start modeling analysis was performed for CO. The short-term concentrations were predicted to be less than the NAAQS.

5.4 Impacts of Growth, Soils, Vegetation and Visibility

The power plant is expected to require twenty-five (25) new full-time employees. This increase in the work force should have a modest affect on local traffic, secondary emissions and air quality.

The 2001 area surveys did not list any sensitive vegetation or soils within the SIA of the project. Hence, the emissions from the power plant should not have an adverse impact on vegetation and soils.

A Class II area visibility analysis was performed for the Columbia River Gorge National Scenic Area. The predicted change in extinction (Δb_{ext}) of 3.43 percent is less than the five percent significance threshold and therefore, is considered insignificant.

Steam plumes from the cooling towers will be visible during the operation of the power plant.

5.5 Class I Area Modeling Results

Using the CALPUFF Modeling System, emission impacts from the power plant were predicted at five Federal Class I wilderness areas. The wilderness areas are Eagle Cap, Strawberry Mountain, Mount Adams, Mount Hood and Goats Rock and are located approximately 133 kilometers, 165 kilometers,181 kilometers, 181 kilometers and 195 kilometers from the power plant, respectively. Air quality impacts and impacts on AQRVs were considered in consultation with the U.S. Forest Service. Emissions from other sources were not considered in this Class I area analysis.

5.5.1 Air Quality Increments

Based on the power plant emissions, predicted concentrations at each of the five wilderness areas were found to be less than the USEPA draft Class I area significance levels and less than the Class I area increments for SO_2, NO_2 and PM_{10}. Table 5-12 to 5-16 provides a comparison of the highest predicted concentrations at each of the wilderness areas with Class I area air quality increments and significance levels.

Table 5-12 Eagle Cap Wilderness Area

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SO_2	3-Hour	$1.32x10^{-2}$	1.0	25
	24-Hour	1.8110^{-3}	0.2	5
	Annual	$7.75x10^{-5}$	0.1	2
NO_2	Annual	$2.77x10^{-4}$	0.1	2.5
PM_{10}	24-Hour	$2.71x10^{-2}$	0.3	8
	Annual	$1.53x10^{-3}$	0.2	4

Table 5-13 Strawberry Mountain Wilderness Area

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SO_2	3-Hour	$3.51x10^{-3}$	1.0	25
	24-Hour	$1.35x10^{-3}$	0.2	5
	Annual	$3.07x10^{-5}$	0.1	2
NO_2	Annual	$7.95x10^{-5}$	0.1	2.5
PM_{10}	24-Hour	$2.81x10^{-2}$	0.3	8
	Annual	$6.43x10^{-4}$	0.2	4

Table 5-14 Mount Adams Wilderness Area

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SO_2	3-Hour	$5.99x10^{-3}$	1.0	25
	24-Hour	$1.27x10^{-3}$	0.2	5
	Annual	$3.81x10^{-5}$	0.1	2

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
NO_2	Annual	1.78×10^{-4}	0.1	2.5
PM_{10}	24-Hour	2.14×10^{-2}	0.3	8
	Annual	7.63×10^{-4}	0.2	4

Table 5-15 Mount Hood

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SO_2	3-Hour	1.62×10^{-2}	1.0	25
	24-Hour	3.64×10^{-3}	0.2	5
	Annual	8.90×10^{-5}	0.1	2
NO_2	Annual	3.99×10^{-4}	0.1	2.5
PM_{10}	24-Hour	7.12×10^{-2}	0.3	8
	Annual	1.76×10^{-3}	0.2	4

Table 5-16 Goat Rocks Wilderness Area

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SO_2	3-Hour	7.04×10^{-3}	1.0	25
	24-Hour	1.67×10^{-3}	0.2	5
	Annual	2.85×10^{-5}	0.1	2
NO_2	Annual	1.46×10^{-4}	0.1	2.5
PM_{10}	24-Hour	2.44×10^{-2}	0.3	8
	Annual	5.37×10^{-4}	0.2	4

5.5.2 Visibility

The emissions from the power plant and its change in extinction (Δb_{ext}) was predicted to be less than five percent at all five Class I wilderness areas and is therefore considered insignificant. See Table 5-17.

Table 5-17 Visibility Impacts

[illegible]	[illegible]
Eagle Cap	1.36
Strawberry Mountain	1.07
Mount Adams	1.13
Mount Hood	2.94
Goats Rock	1.29

5.5.3 Deposition

Based on the power plant emissions, the predicted sulfur and nitrogen deposition impacts were less than the Deposition Analysis Threshold of 5 gm/ha/yr at all five Class I wilderness areas and therefore, should not be significant. Deposition flux results are present in Table 5-18.

Table 5-18 Deposition

[illegible]	[illegible]	[illegible]
Eagle Cap	1.22×10^{-1}	4.78×10^{-1}
Strawberry Mountain	5.30×10^{-2}	1.88×10^{-1}
Mount Adams	3.90×10^{-2}	4.78×10^{-1}
Mount Hood	3.90×10^{-2}	3.90×10^{-1}
Goats Rock	3.10×10^{-2}	1.38×10^{-1}

5.6 Conclusions

The air quality impact analyses contain accepted assumptions, data, and procedures used in the application of the ISC-PRIME Model, the AERMOD Modeling System and the CALPUFF

Modeling System. The results predicted by the latter two modeling systems support the conclusion that the Wanapa power plant is not expected to cause or contribute to a violation of the applicable NO_2 and PM_{10} NAAQS or PSD Class I and Class II area air quality increments, or cause significant impacts to the AQRVs of the five Class I wilderness areas and one national scenic area. In addition, the modeling supports the conclusion that a full AQIA is not necessary for SO_2 and CO, while the VOC emissions are less than the threshold requiring an O_3 AQIA.

6 PROPOSED EMISSION LIMITS & WORK PRACTICE STANDARDS FOR PERMIT

6.1 CT/HRSG-DB

For each CT/HRSG-DB, emission limits and work practice standards are presented in Table 6-1. Emission limits can be based upon the results of a BACT analysis or an ambient impact demonstration. In the event the emission limit is based upon an ambient impact analysis, the emission limits reflect emission rates employed in either the NAAQS, Class II increment, Class I increment, or AQRV demonstration. Each pollutant emission rate is assigned an averaging period to coincide with the averaging time of the pollutant's ambient standard or AQRV.
In the event multiple emission limits are generated for a common averaging period, only the most stringent limit will be carried over into the permit. Also, if a limit for one averaging period is effectively more stringent than that of a different averaging period, then again, the most stringent limit will be used.

Table 6-1 Emission Limits and Work Practice Standards per CT/HRSG-DB

NO_x	• 2.0 ppmdv NO_x, 3-hr average, corrected to 15.0 % O_2, except during CT startup and shutdown.	• 121.3 tons NO_x (as NO_2) / 12-month period.	• 802 lb NO_2 / calendar day. • 121.3 tons NO_x (as NO_2)/ 12-month period.	–
NH_3	• 5.0 ppmdv NH_3, 3-hr average, corrected to 15.0 % O_2, except during CT startup and shutdown.	–	–	–
CO	• 2.0 ppmdv CO, 3-hr average, corrected to 15.0 % O_2, except during CT startup and shutdown.	• 328 lb CO / hr • 1,194 lb CO / 8-hr period.	–	–
PM_{10}	• Combust only pipeline natural gas. • Properly design and operate combustion equipment. • Minimize NH_3 slip.	• 745 lb PM_{10} / day. • 136 tons PM_{10} / year.	• 745 lb PM_{10} / day. • 136 tons PM_{10} / year.	–
VOC	• Combust only pipeline natural gas. • Employ CO oxidation catalyst.	–	–	99 tons VOC / 12-month period.

SO_2	• Combust only pipeline natural gas.	• 9.75 lb SO_2 / 3-hr period. • 78.0 lb SO_2 / 24-hr period. • 14.2 tons SO_2 / year.	• 78.0 lb SO_2 / day. • 14.2 tons SO_2 / year.	–
H_2SO_4	• Combust only pipeline natural gas.	–	–	–

6.1.1 NO_x

In the Class II analysis, the annual NO_2 emission rate utilized by Diamond was calculated assuming 365 cold starts per year and continuous maximum operation at all other times. Diamond calculated annual emissions as follows:

NO_2 = STARTUP + CT & DB COMBINED FIRING
= [(365 start/year)(3.5 hr/start)(128.6 lb/hr)] + [(365 day/yr)(20.5 hr/day)(17.17 lb/hr)] / 2,000 lb/ton
= 146.4 ton/yr

Utilizing an annual NO_2 emission rate of 146.4 tpy is an unrealistic modeling analysis given that each cold start must be proceeded by 8 hours of down time. The annual emission limit calculation, assuming 8 hours of downtime between cold starts, is as follows:

NO_2 = DOWNTIME + STARTUP + CT & DB COMBINED FIRING
= [365 days/year)][(8 hr/day)(0 lb/hr)+(3.5hr/start)(128.6lb/hr)+(12.5hr/day)(17.17 lb/hr)] / 2,000 lb/ton
= 121.3 ton/yr

In the Class I analysis, the 24-hr NO_2 emissions were calculated assuming one cold start per day.

NO_2 = STARTUP + CT & DB COMBINED FIRING
= [(3.5 hr/start)(128.6 lb/hr)+(20.5 hr/day)(17.17 lb/hr)] / 2,000 lb/ton
= 802 lb/day

6.1.2 NH_3

No applicable ambient air quality standards exist for NAAQS, Class I increment, Class II increment, or AQRV. The short-term flue gas concentration emission limit is the result of EPA's consideration of collateral impacts in the BACT analysis.

6.1.3 CO

The maximum one-hour emission rate of 328 lb/hr represents maximum CO emissions during startup as estimated by the CT vendor.

Over an eight-hour period, the maximum emissions are calculated as follows:

CO = STARTUP + CT & DB COMBINED FIRING
= (3.5 hr/start)(327.59 lb/hr)+(4.5 hr/day)(10.5 lb/hr)
= 1,194 lb / 8-hr period

6.1.4 PM_{10}

For the ambient impact analysis, Diamond utilized the PM_{10} emission rate provided by the CT vendor to calculate maximum 24-hour and annual emissions as follows:

PM_{10} = CT & DB COMBINED FIRING
= (31.04 lb/hr)(24hr/day)
= 745 lb/day

PM_{10} = CT & DB COMBINED FIRING
= [(31.04 lb/hr)(24 hr/day)(365 day/yr)] / 2000 lb/ton
= 136 ton/year

PM_{10} emission factors were provided by Oregon Department of Environmental Quality (ODEQ) for similar F-technology CTs permitted in Oregon. The data is presented here in Table 6-2:

Table 6-2 PM_{10} Emissions Data from Other Sources

Westward Energy	Siemens V84.3A2	0.013	No
Port Westward	GE 7FB or SW 501S	0.0055	No
Klamath Cogeneration	SW 501F	0.0038	Yes
Klamath Generation	GE 7FB or SW 501S	0.0042	No
COB	GE 7FA	0.0042	No
Hermiston Generating	GE 7FA	0.0043	Yes
Umatilla Generating	GE 7FB	0.0099	No
Hermiston Power Partners	SW WF501FD2	0.00925	Yes
Coyote Springs	GE 7FA	0.004	Yes
EPA AP-42	Various	0.0066	No

Note that the PM_{10} emissions value of 0.0038 lb/MMBtu for Klamath Cogeneration's Siemens-Westinghouse 501F CT is based upon September 2002 performance testing conducted with DB firing (Attachment 6). This corresponds to a emission rate of 6.8 lb/hr given the CT operating conditions during the test.

August 2003 performance test data from Chehalis Power in Chehalis, Washington reveals PM_{10} emissions value of 11.44 lb/hr and 10.60 lb/hr (Attachment 7). Assuming a heat input of approximately 1,600 MMBtu/hr at Chehalis Power during performance testing, the hourly PM_{10} emission rates translate to approximately 0.007 lb/MMBtu.

Emissions data for New Jersey provided by Corio and Sherwell (Reference 10) also suggests that PM_{10} emissions from natural gas fired combustion turbines may be in the 1/1,000th lb/MMBtu order of magnitude.

EPA is aware of emissions data that suggests that Diamond's PM_{10} emissions estimates (0.015 lb/MMBtu and 31.04 lb/hr) are conservatively high. Correspondingly, it appears that WEC's PM_{10} impact upon the airshed may be overstated. In order to allow future industrial growth while still protecting the NAAQS and increment, it is important to know each source's potential to emit. Overstating one source's emissions may prohibit another source from future activity if resultant predicted ambient concentrations approach the NAAQS or increment.

In an effort to more accurately know WEC's PM_{10} emissions and to better manage the airshed, EPA is proposing that WEC's allowable PM_{10} emissions be revised in the PSD permit based upon performance testing. If performance test results indicate that WEC's PM_{10} emissions are significantly less than Diamond had projected in the PSD permit application, then EPA may revise the PSD permit.

6.1.5 SO_2

For the ambient impact analysis, Diamond utilized the SO_2 emission rate provided by the CT vendor to calculate maximum 3-hour, 24-hour, and annual emissions assuming a 0.5 gr/100 scf sulfur loading as follows:

SO_2 = CT & DB COMBINED FIRING = (3.25 lb/hr)(3hr) = 9.75 lb/3-hr

SO_2 = CT & DB COMBINED FIRING = (3.25 lb/hr)(24hr/day) = 78 lb/day

SO_2 = CT & DB COMBINED FIRING = [(31.04 lb/hr)(24hr/day)(365day/yr)] / 2000 lb/ton = 14.2 ton/year

6.2 Cooling Tower

For each of the two identical cooling towers emission limits and work practice standards are presented in Table 6-3. Emission limits can be based upon the results of a BACT analysis or an ambient impact demonstration. In the event the emission limit is based upon an ambient impact analysis, the emission limits reflect emission rates employed in either the NAAQS, increment, or AQRV demonstration. Each pollutant emission rate is assigned an averaging period to coincide with the averaging time of the pollutant's ambient standard or AQRV. In the event multiple emission limits are generated for a common averaging period, only the most stringent limit will be carried over into the permit.

Table 6-3 Cooling Tower

PM_{10}	• Install a high-efficiency drift eliminator with a guaranteed efficiency of 0.0005%. • The TDS content within the cooling water shall remain less than 3,532 ppmw.	• 48.8 lb PM_{10} / 24-hour period. • 8.9 tons PM_{10} / 12-month period.	• 62.9 lb PM_{10} / 24-hour period. • 11.5 tons PM_{10} / 12-month period.	–

6.3 Backup Diesel Engine Driven Emergency Fire Pump

Table 6-4 Backup Diesel Engine Driven Emergency Fire Pump

PM_{10}	A new engine that satisfies the EPA on-road compression-ignition engine standards applicable at time of purchase. Exclusive use of EPA on-road specification diesel as designated at time of purchase.	–	–	–

7 COMPLIANCE TESTING AND CONTINUOUS EMISSIONS MONITORING FOR PERMIT

7.1 CT/HRSG-DB

7.1.1 CEMS for NO_x, CO, and NH_3

Emission limits established for the purpose of requiring BACT, protecting ambient air quality standards, or creating limits to avoid otherwise applicable requirements must be associated with a specific emission test method for determining compliance with the emission limit. Most emission test methods are short term tests with the results indicative of the emissions for the time period that the test was performed. If technically and economically possible, it is desirable to also have CEMS to ensure continuous compliance.

For the WEC, the pollutants of most concern (and for which control devices will be installed) are NO_x, CO, and NH_3. CEMS are available for NO_x, CO, and NH_3 and have occasionally been required for combustion turbines permits in recent years. In addition, the WEC will be subject to the Acid Rain regulations which require CEMS for NO_x. Therefore, the PSD permit will reference the Part 75 Acid Rain CEMS requirements for NO_x and diluent (CO_2 or O_2) CEMS. The NH_3 CEMS shall meet the requirements of EPA Preliminary Performance Specification for NH_3 CEMS (PPS 001) and Appendix F to 40 CFR Part 60 (Appendix F) for quality assurance (QA) procedures. The CO CEMS shall meet the requirements of 40 CFR 60 Appendix B, PS 4A and Appendix F for QA procedures.

7.1.2 Calculating SO_2 Emissions based Upon Annual Sampling

Monitoring data from the GTN system indicates that the maximum daily average total sulfur concentration was has consistently been comfortably less than 0.5 gr/100 scf. The 3-hour SO_2 emission limit is based upon a 0.5 gr/100scf sulfur content. Thus, Diamond's ability to consistently comply with the 3-hr SO_2 emission limit is in little doubt. Given this certainty, EPA proposes to require infrequent sampling and fuel metering to calculate SO_2 emissions.

7.1.3 Summary

The specific emission test methods, CEMS requirements and the required testing frequency are detailed in Table 7-1. Diamond may request alternative testing methods or testing frequencies. EPA must approve any alternative testing request in writing prior to use. Until EPA provides such written approval, Diamond is obligated to follow the testing requirements in the permit.

Table 7-1 CT/HRSG-DB Emission Testing and Monitoring Requirements

NO_x	EPA Method 20	CEMS / Continuous	Initial and annual CEMS RATA[6] per 40 CFR 75
CO	EPA Method 10	CEMS / Continuous	Initial and annual CEMS RATA per 40 CFR 60 Appendix F
VOC	EPA Method 25A or 25B	•EPA emission factors or site-specific emission factors / 5 years for site-specific emission factors •Meter fuel flow rate / continuous	-
SO_2	EPA Reference Method 6C	•Sample fuel sulfur content / Annually •Meter fuel flow rate / Continuous	See 40 CFR 75, Appendix D
PM_{10}	•EPA Method 5, 201, or 201A for filterable particulate. •EPA Method 202 for consensible particulate. •EPA CTM-039 may be used as an alternative.	•Develop site-specific emission factors / 5 years •Meter fuel flow rate / Continuous	

[6]RATA = relative accuracy test audit.

NH_3	EPA Conditional Test Method 27	CEMS / Continuous	Initial and annual CEMS RATA per 40 CFR 60 Appendix F
Opacity (PM_{10})	EPA Method 9	EPA Method 22 and Method 9, if applicable / Once per day	–

7.2 Cooling Tower

EPA is not aware any testing methods proven to accurately measure PM_{10} emissions exiting a cooling tower.

Table 7-2 Cooling Tower Emission Testing and Monitoring Requirements

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TDS in cooling tower (PM_{10})	7-day test. Standard Methods, 18th Ed., Method 2540 C or EPA Method 160.1, at 40 CFR § 136.3.	Initial	Same as test method, except sample once per week.	-

7.3 Backup Diesel Engine Driven Emergency Fire Pump

No performance testing or emissions monitoring is required.

8 RESULTANT ANNUAL EMISSIONS

8.1 WEC is required to (a) install BACT to minimize significant emissions of regulated NSR pollutants, (b) demonstrate that its emissions will not cause or contribute to a NAAQS or increment violation, and (c) demonstrate that its emissions will not have an adverse impact upon Class I air quality related values. Table 8-1 reflects WEC's annual emissions, including startup emissions, after undergoing EPA review.

Table 8-1 WEC Annual PTE (including startup emissions) After PSD Review

CO	Total: 933[a]	(4) CT and HRSG: Pipeline natural gas and oxidation catalyst. (1) Backup Diesel Engine: A new engine that satisfies the EPA on-road compression-ignition engine standards applicable at time of purchase.
PM_{10}	136 tpy per CT/HRSG-DB. 8.9 tpy per cooling tower block. Total: 562	(4) CT and HRSG: Pipeline natural gas, proper design and operation of equipment, minimize NH_3 slip. (2) Cooling Tower: Install a high-efficiency drift eliminator with a guaranteed efficiency of 0.0005%. The total dissolved solids content within the cooling water shall remain less than 3,532 ppmw. (1) Backup Diesel Engine: A new engine that satisfies the EPA on-road compression-ignition engine standards applicable at time of purchase. Exclusive use of EPA on-road specification diesel as designated at time of purchase.
NO_x (as NO_2)	121.3 tpy per CT/HRSG-DB Total: 486	(4) CT and HRSG: Pipeline natural gas, lean premix dry low-NO_x CT combuster, and dry low-NO_x DB. SCR. (1) Backup Diesel Engine: A new engine that satisfies the EPA on-road compression-ignition engine standards applicable at time of purchase.
VOC	Total: 99[b] (owner requested limit)	(4) CT and HRSG: Pipeline natural gas and oxidation catalyst. (1) Backup Diesel Engine: A new engine that satisfies the EPA on-road compression-ignition engine standards at time of purchase.

SO_2	14.2 tpy per CT/HRSG-DB. Total: 57	(4) CT and HRSG: Pipeline natural gas. (1) Backup Diesel Engine: Exclusive use of EPA on-road specification diesel as designated at time of purchase.
H_2SO_4	21.8 tpy per CT/HRSG-DB. Total: 88 [a]	(4) CT and HRSG: Pipeline natural gas. (1) Backup Diesel Engine: Exclusive use of on-road specification diesel as designated at time of purchase.

[a] Estimate, not an enforceable limit.
[b] Owner requested limit.

Supporting calculations:

CO = SHUTDOWN + COLD START + CT & DB COMBINED FIRING
= [365 day/yr][(8 hr/day)(0 lb/hr) + (3.5 hr/day)(327.59 lb/hr) + (12.5 hr/day)(10.5 lb/hr)] / 2000 lb/ton
= 233.2 ton/yr x 4 CT/HRSG-DB
= 933 tpy

PM_{10} = CT & DB COMBINED FIRING
= [365 day/yr][(24hr/day)(31.04 lb/hr)] / 2000 lb/ton
= 136.0 ton/yr x 4 CT/HRSG-DB
= 543.8 tpy

PM_{10} = (229,680 gal/min)(8.345 lb water/gal)(0.000005 lb water loss/lb water circulation)(3,532 lb TDS/1,000,000 lb water)(60 min/hr)
= 2.031 lb/hr or 8.9 tpy

NO_2 = DOWNTIME + STARTUP + CT & DB COMBINED FIRING
= [365 days/year)][(8 hr/day)(0 lb/hr)+(3.5hr/start)(128.6lb/hr)+(12.5hr/day)(17.17 lb/hr)] / 2,000 lb/ton
= 121.3 ton/yr x 4 CT/HRSG-DB
= 486 ton/year

SO_2 = CT & DB COMBINED FIRING
= [365 day/yr][(24hr/day)(3.25 lb/hr)] / 2000 lb/ton
= 14.2 ton/yr x 4 CT/HRSG-DB
= 57 tpy

H_2SO_4 = CT & DB COMBINED FIRING... assuming all incoming sulfur goes to H_2SO_4
= [365 day/yr][(24hr/day)(3.25 lb SO_2/hr)(98/64)] / 2000 lb/ton
= 21.8 ton/yr x 4 CT/HRSG-DB
= 88 tpy

9 OTHER LEGAL REQUIREMENTS

9.1 Environmental Justice

Pursuant to Executive Order 12898[7] issued on February 11, 1994 and entitled, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," EPA is required to identify and address disproportionately high and adverse human health or environmental effects of regulatory programs, policies, and activities on minority populations and low-income populations.

According to a December 1, 2000 EPA memorandum[8] entitled, "EPA Statutory and Regulatory Authorities Under Which Environmental Justice Issues May Be Addressed in Permitting," EPA may consider environmental justice issues in the context of PSD permitting decisions on a case-by-case basis, without waiting to issue a generally applicable rule or guidance document. See EPA Environmental Appeals Board (EAB) decisions for Ecoeléctrica, 7 E.A.D. 56, 1997 WL 160751 (1997)[9] and Puerto Rico Electric Power Authority, 6 E.A.D. 253, 1995 WL 794466 (1995)[10]. In these two decision, the EAB stated that notwithstanding the lack of formal rules or guidance on environmental justice, EPA could address environmental justice issues. EPA considers environmental justice issues on a case-by-case basis in issuing PSD permits consistent with its legal authority.

The WEC is being constructed near high minority and low-income populations. See map generated by EPA based upon 2000 census tract data (Attachment 7). See also Section 3.9 of the October 2003 WEC DEIS. The ambient air in the area is satisfying all NAAQS, and it is anticipated that the area will be classified attainment for the new ozone and $PM_{2.5}$ standards.

The cumulative air quality modeling results demonstrate that under no conditions will the resultant ambient pollutant concentrations exceed the NAAQS.

EPA conducted a series of meetings on February 5 to educate the public with respect to WEC and EPA's review of the air quality impacts. No environmental justice issues were raised by the public. EPA seeks further input to determine if WEC will have a disproportionately high or

[7] http://www.epa.gov/Compliance/resources/policies/ej/exec_order_12898.pdf

[8] http://www.epa.gov/Compliance/resources/policies/ej/ej_permitting_authorities_memo_120100.pdf

[9] http://www.epa.gov/eab/disk11/ecoelect.pdf

[10] http://www.epa.gov/eab/disk9/prepa.pdf

adverse human health or environmental impact on minority or low-income populations in the area surrounding the facility.

9.2 Endangered Species Act

The Endangered Species Act (ESA) requires that federal agencies insure that any action authorized, funded, or carried out by such agencies are not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat. Regulations promulgated by NOAA Fisheries and the U.S. Fish and Wildlife Service (USFWS) require that a federal agency consult with the Services if the agency's action "may affect" any listed species or critical habitat. In a letter dated March 19, 2004, the Bureau of Indian Affairs (BIA) designated Diamond as the BIA's non-Federal representative for purposes of requesting species lists, conducting informal consultation and preparing a biological assessment (BA) under Section 7 of the ESA, in accordance with 50 C.F.R. § 402.08. Diamond and its consultants will prepare documents constituting the biological assessment regarding the effects of the WEC on listed species and critical habitat. EPA will work with BIA, Diamond, its consultants, and the Services, to facilitate the consultation process as expeditiously as possible.

On October 20, 2004, the BIA submitted a BA of impacts from the WEC on the threatened species bald eagles and bull trout. Bull trout occur in the Columbia River drainage.

The Columbia River near the McNary Dam is located within the Columbia River Distinct Populations Segment (DPS) for bull trout. The section of the Columbia River above and below the McNary Dam is part of the Umatilla-Walla Walla Recovery Unit, which is one of the 22 units designated for bull trout in the Columbia River Basin. Within the Umatilla-Walla Walla Unit, critical habitat has been designated for the Umatilla and Walla Walla River basins. The BA concludes that construction of the WEC is not likely to adversely affect bull trout.

The bald eagle is a federally threatened species. The BA concludes that this project would have no effect on the bald eagle.

On November 8, 2004, a BA to consider potential impacts to salmon was submitted to NOAA Fisheries. The BA concludes that withdrawal of 11 - 13 million gallons per day of Columbia River water would have no effect on critical habitat for Snake River fall-run chinook, Snake River spring/summer-run chinook, and Snake River sockeye. In addition, the BA concludes that there would be no effect on listed salmonid species in the Columbia River.

9.3 Essential Fish Habitat of Magnuson-Stevens Act

Essential fish habitat (EFH) is the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires EPA to consult with NOAA Fisheries when a proposed action "may adversely affect" (reduce quality and/or quantity of) EFH. In a letter dated March 19, 2004, BIA designated Diamond as BIA's non-Federal representative for purposes of requesting species lists, conducting informal consultation and preparing an assessment of EFH under the Magnuson-Stevens Act. NOAA Fisheries has developed guidance and recommended procedures for integrating EFH consultations with ESA Section 7 consultations where appropriate. The BA submitted on November 8, 2004 also concludes that the action may result in short-term adverse effects on habitat features involving water quality due to construction activities. These effects would be minimized by implementing erosion control, stormwater runoff control, and spill control and containment measures.

10 LIST OF ATTACHMENTS

1. Figure 1.1-1 of the October 2003 WEC DEIS.
2. December 21, 2000 EPA letter to Oregon Department of Environmental Quality.
3. Natural gas fired combustion turbine and external combustion boiler emission factors as presented by EPA Speciate 3.2 Emission Factor Database.
4. PG&E National Energy Group letter to Mr. Tomas Price, Plant Engineer, Hermiston Power Project dated April 10, 2002. Submitted to EPA as part of 40 CFR Part 75 Monitoring Plan.

5. GTN Stanfield Compressor Station Monitoring Data - Sulfur Content in the Pipeline Natural Gas.
6. Klamath Cogeneration September 2002 PM_{10} Performance Test Report for Siemens-Westinghouse 501F CT.
7. Chehalis Power August 2003 PM_{10} Performance Test Report for GE Frame 7FA CTs.
8. Environmental justice map.

11 REFERENCES

EPA cited a number of specific references in the text of this Technical Support Document (references 1 - 10 in the list below). In addition, EPA reviewed other references as part of the background research for preparation of this Technical Support Document. The specifically cited references and most of the general references are listed below.

1. New Source Review Workshop Manual, EPA, OAQPS, October 1990. http://www.epa.gov/Region7/programs/artd/air/nsr/nsrmemos/1990wman.pdf
2. Wanapa Energy Center, LP, PSD Permit Application, January 2003.

3. Wanapa Energy Center, LP, Revised PSD Permit Application, August 8, 2003.
4. Goal Line Environmental Technologies, LLC, June 2000 Newsletter, Vol.2, Issue 2.
5. Guidance for Power Plant Siting and Best Available Control Technology, California Air Resources Board, Stationary Source Division, September 1999. http://www.arb.ca.gov/energy/powerpl/guidocfi.pdf http://www.arb.ca.gov/energy/powerpl/appcfin.pdf http://www.arb.ca.gov/energy/powerpl/appdfin.pdf
6. Hazardous Air Pollutants (HAP) Emission Control Technology for New Stationary Combustion Turbines, memo from Sims Roy, EPA, OAQPS to Docket A-95-51, dated April 3, 2002 (http://www.epa.gov/ttn/atw/combust/turbine/cttech8.pdf).
7. Stationary Combustion Turbines Control Options Cost Information summary, memo from Keri Leach, Alpha-Gamma Technologies, Inc. to Sims Roy, EPA, OAQPS, dated May 14, 1999, EPA Docket OAR-2002-0060-0026, A-95-51, II-B-14. http://cascade.epa.gov/RightSite/dk_public_collection_detail.htm?ObjectType=dk_docket_collection&cid=OAR-2002-0060&ShowList=items&Action=view
8. Letter from Jeffery C. Smith, Institute of Clean Air Companies, Inc. to EPA, OAQPS dated September 12, 2000, Re: Draft Guidance on BACT for NO_x Control at Combined Cycle Turbines (http://www.epa.gov/ttnnsr01/gen/turbcom.pdf Document 7).
9. PSD No. EFSEC/2001-03 & Notice of Construction No. EFSEC/2001-03 Wallula Generation, LLC, Wallula Power Project, Walla Walla County, Washington, January 23, 2003 and November 18, 2002, respectively. http://www.efsec.wa.gov/wallula.html
10. Corio, L.A.; Sherwell, J. In-Stack Condensible Particulate Matter Measurements and Issues; *J. Air & Waste Manage. Assoc.* **2000**, *50*, 207-218.
11. Several documents in EPA Docket ID: OAR-2002-0060, Legacy Identifier: A-95-51, Title: National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines. http://cascade.epa.gov/RightSite/dk_public_collection_detail.htm?ObjectType=dk_docket_collection&cid=OAR-2002-0060&ShowList=items&Action=view
12. AP-42, Compilation of Air Pollution Emission Factors, Section 3.1, April 2000. http://www.epa.gov/ttn/chief/ap42/ch03/final/c03s01.pdf
13. Peerless Manufacturing website: http://www.peerlessmfg.com/product.htm several pages related to SCR systems.
14. Fewel, K.F. PE; Conroy, J.H. *Engineering of Ammonia Injection Grids Used in Selective Catalytic Reduction Systems*; Peerless Mfg. Co., Dallas, TX.
15. Wilhite, D.C. The Use of Computational Fluid Dynamics (CFD) in Selective Catalytic Reduction System Ductwork Design; In *Proceedings of the ASME Fluids Engineering Division*, American Society of Mechanical Engineers: New York, Ny, 1998; Volume 247, 211-214.
16. General Electric website related to combined cycle gas turbines: http://www.gepower.com/prod_serv/products/tech_docs/en/combined_cycle.htm
17. EmeraChem LLC website: http://emerachem.com pages related to EMx™ the next

generation of SCONOx.

18. Benton Clean Air Authority Notice of Construction Order of Approval No. 2002-0012, Plymouth Energy, LLC, 28-Apr-2003.
19. State of Washington Department of Ecology Order No. 01AQCR-2037 First Revision, Goldendale Energy Center, August 22, 2003.
20. Energy Facility Site Evaluation Council No. EFSEC/2002-01 Preliminary Approval Notice of Construction and Prevention of Significant Deterioration, BP Cherry Point Cogeneration Project, BP West Coast Products, LLC, November 7, 2003. http://www.efsec.wa.gov/bpcogen.html
21. State of Oregon Department of Environmental Quality Standard Air Contaminant Discharge Permit, Permit No.: 18-0029, COB Energy Facility, LLC, Final: December 30, 2003.
22. Blanchard, C.L.; Roth, P.M., Tanenbaum, S.J.; Ziman, S.D.; Seinfeld, J.H. The Use of Ambient Measurement to Identify which Precursor Species Limit Aerosol Nitrate Formation; *J. Air & Waste Manage. Assoc.* **2000**, *50*, 2073-2084.
23. Standard Methods for the Examination of Water and Wastewater 20[th] Edition, 1998.

EXHIBIT C-1

Public Comment Submitted by Ken Thompson

Wanapa Energy Center
R10PSD-OR-05-01
Comment 1

Received
DEC 17 2004
Office Of Air, Waste And Toxics

Ken Thompson
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January 18, 2004

K E Thompson

Mr. Dan Meyer
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Subj: Opposition to the EPA's Wanapa Energy Center Permit

Introduction

My observation is that few if any of America's elected nor appointed agency officials any longer adhere to or even actively support the statements in the documents upon which our Country was conceived and founded. It appears that Benjamin Franklin was accurate when he speculated during his final speech at the Constitutional Convention that; "*there is no Form of Government but what may be a Blessing to the People if well administered; and I believe farther that this is likely to be well administered for a Course of Years, and can only end in Despotism as other Forms have done before it, when the People shall become so corrupted as to need Despotic Government, being incapable of any other.*" I discovered numerous examples of what Benjamin Franklin so thoughtfully predicted as governmental corruption and/or discriminatory process application in the siting procedure for the Wanapa Energy Center.

In my following oppositional testimony, I will illustrate how our once great nation no longer treats every citizen equally, and in the case of the Environmental Protection Agency (EPA) every industry. Such exclusion vice inclusion process violates both in principle and practice The Declaration of Independence's statement of "*We hold these truths to self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness.*"

My family and I are downwind of the proposed Wanapa Energy Center. Our crops and our personal health have no protection from the air pollution poisons that shall be emitted from the project because neither Umatilla County nor the State of Oregon will be at the siting table to protect our health or the welfare for our crops by local or state statutes, rules or ordinances. Our individual rights to Life, Liberty and pursuit of Happiness have been obfuscated without due regard for those individual rights by any State or local governmental body. Official statements that this project is for the good of the whole citizenship while at the same time there will be forfeiture of a few citizens' individual rights, which are of no significant consequence, just does not hold any merit with me. However, I appear to be alone in an expectation of faithfulness to our God given rights and the principles of our founding documents by elected and appoint agency officials. I believe C.S. Lewis says it best: "*Of all tyrannies, a tyranny exercised for the good of its victims may be the most oppressive. It may be better to live under robber barons than under omnipotent moral busybodies. The robber baron's cruelty may sometimes sleep, his* *cupidity may at some point be satiated; but those who torment us for our own good will torment us without end, for they do so with the approval of their own conscience."*

I have spent the past three years striving towards the development of an effective strategy to counter the Wanapa Energy Center's EPA air quality permit application. I knew that combating against the yearly use of 5.4 billion gallons[1] of the Port of Umatilla's water, the discharging of the deadly waste water into the Cold Springs Reservoir, the negative community impact that will never be presented in any socioeconomic impact statement, the lack of adherence to local, county, and State regulations, the complete ignoring of the property's deed covenants, the sound premise that power should be produced near the consumers of the power, or the nonpayment of what the EPA called a landmark law[2], Oregon's CO2 tax, would be fruitless. Thanks to my incredible discovery of SUPPORTIVE Oregon Department of Environmental Quality (ODEQ) and EPA data and regulations, I have been able to formulated, via modeling (which I am sure will be rejected by both elected and agency officials as not germane or statistically valid), a strategically sound defense of my position that the Wanapa Energy Center's air pollution shall do quantifiable harm to my family and my health as well as harm to the welfare of our crops. I cannot stress enough that the data used to defend my testimony is EPA and ODEQ data and processes, there is no information used that is or was not validated by these two agencies. In addition, the siting process of the Wanapa Energy Center is not equivalent to those regulations and procedures that the EPA applies to other industries that pollute the Umatilla County airshed. As the EPA implements restrictive new Regional Haze[3] and non-road diesel regulations[4], 17,000 industrial plants have been guaranteed exemptions from having to install clean air controls when they update equipment to improve plant efficiency[5], resulting in millions of tons of additional air pollution. What is good for the goose is not good for the gander when being dealt with by EPA regulators and regulations. Such governmental regulatory inconsistencies in processes and regulations demonstrate that particular industries and individuals are granted privileges not shared with ordinary citizens or those industries viewed unfavorably, i.e. agriculture, by the elected and appointed agency officials.

Noted Application Discrepancies

Upon reviewing the Diamond Wanapa *Revised PSD Permit Application* dated June 12, 2003 and the *Addendum to the August 2003 Revised PSD Permit Application for the proposed Wanapa Energy Center, Umatilla Tribal Trust Lands, Oregon,* I was first dubious that a plant that has been publicly hyped as a facility that would only operate on an "as needed" basis has all the air quality data computed upon 8,760 hrs/yr (24hrs for 365 days) in the applicant's EPA application. All the EPA's permit material has 4 duct burners (DB) annual potential emissions that are based upon 6,800 hours of operation per year (that is 24 hours/day for 283 days or 77.6% of the year). Interesting that the 6,800 hour limit is discussed the EPA's Technical Support Document, but NEVER appears anywhere in the actual EPA permit. Isn't it interesting that something as critical of total operation usage is conveniently left out of the actual permit?

[1] Williams Research, December 29, 2003, Wanapa Energy Center DEIS public comments
[2] EPA-236-F-98-003, September 1998, Climate Change Solutions, *Oregon Switches to Cleaner Power*
[3] EPA's Regional Haze Rule (40 CFR Part 51)
[4] EPA420-R-03-008, April 2003, *Draft Regulatory Impact Analysis: Control of Emissions from Non-road Diesel Engines*
[5] Fox News, 8/27/2003, New Rule Encourages Plant Modernization

In addition, I discovered that the meteorological data for ceiling height and cloud cover *"are taken from a nearby National Weather Service (NWS) station, the Walla Walla, WA Regional Airport (ALW).[6]"* Even further to my surprise the EPA's own Technical Support Document states, *"Surface and upper air meteorological data are needed by the AERMOD Dispersion Program to characterize transport and dispersion of air pollutants contained in an exhaust plume. Hourly surface observations measured at the Umatilla Army Depot (UAD) and the National Weather Service (NWS) Walla Walla, WA station, and upper air data collected at Spokane, WA were obtained and used in the AERMOD Modeling System for this purpose. The meteorological data collected at these three locations are considered adequately representative of the project location for the purpose of this AQIA.[7]"* Any local citizen knows that Walla Walla and Spokane are first, not nearby McNary and second, have statistically significant different weather patterns for both ceiling height, cloud cover and upper air patterns than a bluff sitting upon the flat mesa of the Columbian River. In the Appendix, I have included the various historical meteorological data from surrounding area towns. Umatilla, Oregon is the closest major town to the proposed Wanapa Energy Center site with historical meteorological data. All critical meteorological data for air pollutant emission modeling, if it is expected to be considered statistically valid, should be drawn from a similar site not from ones with significantly different weather patterns as well as being appreciably removed by distance. The proposed site has an elevation between 450 to 500 feet while Walla Walla's weather station is at 1205 feet and Spokane is at 2356 feet. I do acknowledge that there is not any ceiling height or cloud cover listed in Umatilla's historical data, but within Eastern Oregon a significant data comparison that does indicate cloud cover is the amount of annual rainfall. Umatilla, Oregon has a 45-year average rainfall of 7.9 inches while Walla Walla, Washington has a 12-year average rainfall of 18.6 inches and Spokane, Washington has a 48-year average rainfall of 16.9 inches.. I am sure that 10.7 and 9 inches of moisture per year are statistically significant and supports my contention that there are significantly different meteorological patterns between the Wanapa Energy Center's proposed site and both Walla Walla and Spokane, Washington. It is difficult to comprehend that not all the meteorological data was available from the Depot's ODEQ application and subsequent air quality permit. At the Hermiston County Commissioners' February 5th, 2004 meeting with the EPA and ODEQ officials, Mr. Herman Wong, EPA Air Modeler, stressed that all the pollutant emission modeling was based upon the Umatilla Army Depot's weather data. However, that is not the case when I read the applicant's application materials and/or the EPA's Technical Support Document. If any of the meteorological data is not statistically significant then how can the subsequent modeling ever be considered statistically significant? To me, the underclass citizen, such invalid modeling only substantiates the requirement for site specific air emission monitoring to validate the modeling claims vice inaccurate assumptions based upon data not legitimate for the specific site, i.e., meteorological data for ceiling height, cloud cover, and upper air patterns "are taken from a nearby National Weather Service (NWS) station, the Walla Walla, WA Regional Airport (ALW).[8]" and "*upper air data collected at Spokane, WA*[9]"

[6] Revised PSD Permit Application, Diamond Wanapa I, LP – Proposed Wanapa Energy Center, pg 5-6
[7] EPA Region 10's Preliminary Technical Support Document for Prevention of Significant Deterioration (PSD), No. PSD 2005-01, November 17, 2004, page 36.
[8] Revised PSD Permit Application, Diamond Wanapa I, LP – Proposed Wanapa Energy Center, pg 5-6
[9] EPA Region 10's Preliminary Technical Support Document for Prevention of Significant Deterioration (PSD), No. PSD 2005-01, November 17, 2004, page 36.

Opposition Strategy

To illustrate my opposition to the EPA's Wanapa Energy Center's siting process I going to compare the Wanapa Energy Center PSD permit application to the recently proposed EPA process and regulations to control of the emissions from non-road diesel engines. There are four momentous differences between the EPA regulatory processes applied to the two polluting entities: (1) cumulative effects, (2) Best Available Control Technology (BACT), (3) quantitative impacts, and (4) National Ambient Air Quality Standard (NAAQS) minimums for emitted pollutants. <u>All the data for this presentation was obtained from the ODEQ and EPA.</u> Some of the EPA data is modeled or extrapolated to demonstrate the significant differences between the processes and/or regulations applied to the two polluting entities. If modeling is acceptable by the EPA in the Wanapa applicant's air quality application it should also be so with the evidence I present in opposition to the EPA air quality permit for the Wanapa Energy Center. However, I am a realist and know that as an underclass citizen with nonperson status the modeling I will perform will be rejected out of hand by both elected and appointed agency officials as frivolous, irrelevant, and not statistical significant. Can the applicant and air quality agency prove that the air quality modeling that they all performed for this application is statistically significant? I content that the applicants and agency's modeling is no more and maybe even less statistically significant than the modeling I performed.

I was informed at the Umatilla County Commissioners' February 5th, 2004 meeting at Hermiston, Oregon with the EPA and ODEQ officials by Mr. Dan Opalski, Oregon EPA Management Lead, that any discussion related to the non-road diesel regulations is not appropriate and will not be considered in public oppositional comments of the Wanapa Energy Center permit application. I respectfully disagree with Mr. Opalski, because it is a unique opportunity for an underclass citizen with nonperson status to illuminate the EPA's discriminatory practices by its own policies, regulations, and siting administrative rules between two air polluting entities, non-road diesel engines and carbon based thermo power plants. I strongly believe that the comparison is critical and supportive of my testimony because of the EPA's regulatory expectations and impact of one industry versus another. Particularly when non-road diesel engines individually and cumulatively <u>NEVER</u> exceed the same Title V NAAQS locally or statewide, whereas the air pollution emissions from the non-road diesel engines have EPA documented quantifiable impacts that justify the dramatic EPA non-road regulations while there exist no similar EPA or consultant's quantifiable impact documentation about the carbon based thermo power plants individually or cumulatively. I also was not aware that any agencies had the right to limit citizens' testimony content or data. Such statements by agency officials support why I am labeled an underclass citizen with nonperson status.

The Wanapa Energy Center's EPA air quality permit is not the only carbon based thermo power plant permit I have or will protest against. In April I wrote public testimony protesting the renewal of the Hermiston Power Project's ODEQ air quality permit and the Umatilla Generating Company's ODEQ air quality permit extension for construction. The modeling of ODEQ and EPA data in support of my position was summarily dismissed as inappropriate, frivolous, without merit, and outside the ODEQ's authority. Just another nuisance underclass citizen with nonperson status dismissed via regulatory techniques and process as I anticipate that this testimony will be by EPA officials.

Cumulative Impacts

The EPA permit agrees with the applicant that the cumulative impact of the emitted air pollutants will have "no impact" upon the local airshed because none of the EPA's minimum emission NAAQS is ever exceeded. For any layperson reading this testimony you need to be aware when one examines the NAAQS tables that the column labeled Standard Value is a measurement related to public health and the column labeled Standard Type for public welfare. Public welfare is the production of crops and animals for food consumption.

Not one elected or appointed public official appears willing to acknowledge that there is one sector of the region's economy that is and has experienced a spectacular increase of the pollutants emitted into the airshed, the region's carbon based thermo power plants. Table 1 is the 1996 Oregon Statewide Estimated Annual Emissions table[10] for Umatilla County point source pollutants, which obviously doesn't include any of the presently operating, sited, or proposed carbon based thermo power plants in Umatilla County.

Table 1. Umatilla County Point Source Pollution

	PM	NOx	VOC	CO	SOx
	Tons per Year				
1996	174	181	215	130	10

These 1996 point source emissions came mostly from facilities associated with the natural resource industries of the region. The facilities were adding value to the natural resource products prior to their export from the region. Table 2 includes the public information available from the permitted air pollutant emissions of the Hermiston Power Partnership (HPP) (operational 1997), Hermiston Generating Project (HGP) (operational 2003), Umatilla Generating Project (UGP) (on the shelf with an ODEQ extension), and Wanapa Energy Center (applying for permits). The Umatilla/Morrow Counties Depot Facility (UMCDF) permitted emissions are included because the facility will be a major polluting entity within the region. However, Table 2 doesn't include any of the other 4 near-by operating or permitted carbon based thermo power plants in Morrow, Benton, and Walla Walla Counties (Coyote Springs 1 & 2 (540MV), PGE coal fire (550MV), Plymouth Generating (306MV), and Wallula (1,350MV)).

Table 2. Umatilla County Point Source Pollution with Carbon Based Thermo Power Plants

	PM	NOx	VOC	CO	SOx
	Tons per Year				
1996	174	181	215	130	10
HGP	64	272	34	447	11
HPP	120	315	50	759	39
UGP	198	167	72	39	86
UMCDF	20	129	4.8	55	22
Wanapa	566	588	99	109	56
Total	**1142**	**1652**	**474.8**	**1539**	**224**
% Increase	**556.3%**	**812.7%**	**120.8%**	**1083.8%**	**2140.0%**

[10] 2001 Oregon Air Quality Data Summaries, Appendix L

If the local elected or appointed public officials saw such a remarkable increase in emissions of pollutants from any of the other region's industries or even motor vehicles they would be demanding that the ODEQ and EPA implement suppressive regulations to limit the damage to the airshed immediately. Don't hold your breath, although you should, such action will not occur anytime soon to limit the carbon based thermo power plant emissions. Only when the airshed reaches a non-attainment status will any action ever be taken and I would guarantee that the carbon based thermo power plants will not suffer any consequences from the non-attainment regulation implementation. Those non-attainment regulations will be levied upon those industries that lack the political clout to protect themselves, the natural resource industries.

One of the catchy buzz phrases of air quality folks is "emission offsets". The Wanapa Energy Center and EPA don't ever mention this phrase in any of their materials related to the Wanapa project. I became very suspicious of why there was no mention of such a procedure, but could not determine why until Mr. Peter Brewer shared with those present at the Hermiston County Commissioners' February 5th, 2004 meeting with the EPA and ODEQ officials the latest ODEQ Emission Inventory for Umatilla County.

Table 3. 1999 Emission Inventory - Umatilla County

	PM10	NOx	VOC	CO	SOx
	Tons per Year				
Industrial Point Sources	436	884	537	2073	258
Wood Stoves	1338	143	3102	9864	19
Open Burning	547	171	127	2468	29
Forest - Rx & Wildfire	360	82	221	3350	36
Agricultural Burning	475	189	643	0.11	64
Other Area Sources	42	182	2500	98.69	34
On Road	91	3953	3024	31576.7	105
Non-Road	312	5407	1158	5847.7	625

The emission offset, although never mentioned, will come from the new EPA Non-road diesel emissions regulations. The resulting non-road emissions' decreases for the three regulated pollutants; NOx, PM10, and SOx, appear in Table 4 with the projected increases in Industrial Point Sources from all the new Umatilla County power plants coming online.

Table 4. Projected Emission Inventory for Point Source and Nonroad - Umatilla County

	PM10	NOx	VOC	CO	SOx
	Tons per Year				
Industrial Point Sources	1142	1652	474.8	1539	224
Non-Road	31.16	270.36	1158	5847.7	6.25

The EPA new non-road diesel regulations require a 90% reduction in PM10 emissions, a 95% reduction in NOx emissions, and a 99% reduction in SOx emissions. Comparing present non-road emissions in Table 3 with projected non-road emissions in Table 4 it clearly indicates that the emission offsets not spoken of by the Wanapa Energy Center applicants nor EPA will come from an unsubsidized reduction by the industries that utilize non-road diesel vehicles, i.e. the natural resource industries that were once the economic base industries of Umatilla County. This unsuspecting regulation is another of those wonderful Federal Government unfunded mandates with a twist. The twist this time is the non-road diesel dependent industries will not only subsidize the "emission offsets", but also subsidize directly the exported electrical power for Western Oregonians' economic and quality of life enhancements. The natural resource industries will also be directly impacted by the human health and welfare of the emission NAAQS never quantified in the Wanapa or any other carbon based thermo power plant air quality permit application.

The following discussion is supplementary information about an industry under assault for its pollutant emissions as well as further validation of the inequalities of the EPA emission regulations related to air pollutants and their subsequent cumulative effects.

Each non-road diesel farm vehicle was not given the opportunity to be evaluated on its' own merit as an air polluter or to determine if the vehicle met similar carbon based thermo power minimum NAAQS on an individual basis. Instead, each state's non-road diesel polluter was collected into a state inventory list for an aggregate emissions evaluation impact upon the air quality. Even when aggregated the non-road diesel engines did not exceed the carbon based thermo power plant minimum NAAQS. However, this aggregation inventory gave cumulative and creditable air pollution data according to the EPA. The data was then used to validate the EPA's claim that there needs to be draconian non-road diesel regulations to protect the health and welfare of the American public. How can our two farm tractors and one combine, which are never operated at the same time and never 7/24 for 365 days in a stationary location, be more deadly than one stationary carbon based thermo power plant let alone seven other power plant polluters within 50 miles of our home running at 95 to 97% capacity? This is an excellent example of governmental corruption of targeting one industry and its associated individuals while turning a blind eye to the favored industry by applying a more sympathetic set of standards. My observation is that neither local, state, nor federal public officials want to know what the air quality cumulative impacts without modeling are upon the Morrow and Umatilla County airshed, except for that from the non-road diesel pollutants and agricultural field burning while always excluding carbon based thermo power plants. Maybe those same officials are fearful of what they might discover if they had to consider the cumulative impact without modeling of the carbon based thermo power plants here in "power alley".

It appears from the previous tables that the carbon based thermo power plants came to the region for a number of economic reasons. One of those is the size and once cleanliness of the airshed. Second, the "emission offsets" being accomplished by the EPA regulating other air polluting industries, thus creating a cleaner airshed to dump power plant air pollution without any fear of penalties, "emissions offsets" costs, or regulatory repercussions.. Third, none of these facilities could ever pass the local or EPA permit process if they were located adjacent the population base where the power is required. Fourth, the rural sections of Oregon lack a population base with any significance in quantity or quality. Fifth, not only does Eastern Oregon take Western Oregon's trash and prisoners, but also we must now be the electrical power sump pump and airshed trash can for those "other" significant Oregonians.

Supporting my opinion that Umatilla and Morrow Counties' aished is a dumping atmosphere for Western Oregon's economic growth is the Oregonian's February 15, 2004 article, *Pollution rule revision kicks up dust*. The article documents Jackson County's experience with an EPA non-attainment status for PM10 and subsequent upcoming release from non-attainment status. In 1985, Medford and White City's air exceeded the EPA's PM10 NAAQS for 29 days. The EPA and ODEQ targeted wood stoves as the culprit during the non-attainment process. However, Doctor Robert Palzer, a retired chemistry professor, challenged the EPA and ODEQ's findings after his analysis identified the emissions from timber mills and smoke from burning slash on nearby forestland as significant sources of PM10 year-around. Thanks to Doctor. Palzer and community participation Jackson County implemented the toughest PM10 emissions regulations in Oregon and the United States. Now that Jackson County has met the federal deadline for PM10 standards, the ODEQ and Southern Oregon Regional Economic Development (SORED) organization want to relax the Jackson County PM10 standards so new industrial development can be permitted to create new jobs. Doesn't the call for economic growth have a similar ring to what local power plant development projects and their supporters tout here in Umatilla County? The present Jackson County PM10 emission standard is a limit of **five tons per year** with the use of state-of-the-art pollution controls, no matter how expensive. The ODEQ and SORED are supporting a 15 tons per year limit with the use of the BACT process (which has an economic loophole). 5 or 15 tons of PM10 limit for each project! Please examine Table 2. Is there any of the sited or proposed carbon based thermo facilities for Umatilla County that come anywhere near either of these two figures, 5 or 15 tons, for PM10? Could any of these sited or proposed facilities be sited and/or built in Jackson County? What is in Morrow and Umatilla Counties' airshed that makes it so available for the dumping of pollutants into our atmosphere and not a Western Oregon County? In addition, I want you to compare Table 2's total PM10 figure with that of Table 3's woodstoves. Which table entry has the higher figure as well as is a year round pollutant vice a seasonal pollutant? There is also the comparison of Table 2's total PM10 with Table 4's project non-road diesel PM10 in the out years. One industry is being regulated for air emissions' reductions while another quickly fills that regulated reduction with its own air pollution emissions. The Oregonian article and the figures within this testimony's tables don't lie and clearly support the opinion that Morrow and Umatilla Counties' airshed is a dumping atmosphere for emission pollutants to support Western Oregon's economic growth and subsequent higher quality-of-life enhancements.

When the EPA's draft non-road diesel regulations were announced, I became very interested in the data that was used to predict the dire impact upon the American population by those dreaded and unregulated non-road diesel engines. The EPA's consultant *"estimated 8,522 premature deaths per year could be avoided .... at an estimated monetary benefit of over $67 billion"*[11] by implementing the proposed regulations. On May 10, 2004 the EPA implemented the new clean air non-road diesel rule which among other things will now prevent *"12,000 premature deaths every year"*[12]. My search led me to the EPA's consultants and the document they produced for the EPA. The document is *The Dangers of the Dirtiest Diesels: The Health and Welfare Impacts of Non-road Heavy-Duty Diesel Engines and Fuels* by the State and Territorial Air Pollution Program Administrators (STAPPA) and the Association of Local Air Pollution Control Officials (ALAPCO) in June 2002. I contacted the organization's Deputy Director, Nancy Kruger, who most generously shared with me a copy of the document as well as told me to contact the state DEQ for the non-road inventory numbers I was attempting to locate and that were employed as the basis for her organizations' computations. It is amazing how difficult it is to find state and

[11] *The Dangers of the Dirtiest Diesels: The Health and Welfare Impacts of Non-road Heavy-Duty Diesel Engines and Fuels*, STAPPA/ALAPCO, June 2002, pg 5
[12] EPA420-F-04-029, May 2004 press release.

county non-road diesel inventory numbers, especially compared to the ease of gathering the number of carbon based thermo power plants or even motor vehicles. Thanks to Mr. Pete Brewer, Director of the Eastern Oregon DEQ, I was placed in contact with Mr. Steven Aalbers, Oregon DEQ/Air Quality/Technical Services. Mr. Aalbers kindly shared with me Oregon's MODELED statewide equipment inventory data used in the Draft 2002 NON-ROAD Model for the EPA draft non-road diesel regulations. The following table is the MODELED cumulative non-road diesel data for Oregon as well as the EXTRAPOLATED numbers for Morrow and Umatilla Counties.

Oregon 2002 Nonroad Inventory by ODEQ

	Nonroad	DSL	DSL Mobile	DSL Mobile Ag
Oregon	1,694,069.0	69,662.0	54,592.0	17,283.0
Morrow County (7.8%)	132,137.4	5,433.6	4,258.2	1;348.1
Umatilla County (13.5%)	228,699.3	9,404.4	7,369.9	2,333.2

Table 5. The data source is ODEQ Air Quality Technical Services.

Table 5 contains the critical MODELED non-road diesel mobile agricultural data for my comparison of the EPA's treatment of the two industries, production agriculture and carbon based thermo power plants, within Morrow and Umatilla Counties. I cannot thank the ODEQ and Mr. Steven Aalbers enough for their exceptional assistance in my frustrating search for creditable and acceptable raw air quality data.

After reading the EPA's draft non-road diesel regulations and the STAPPA/ALAPCO document it is extremely difficult to comprehend why no similar detailed EPA documentation exists to quantify the air quality impact of carbon based thermo power plants upon human health and welfare, particularly after considering the extraordinary increase in the number of facilities being sited in our region. Of course using my introduction theorem that special groups and individuals have special rights and privileges that are not afforded the average American citizen it all makes sense, even though consciously and legally it is appallingly immoral.

Best Available Control Technology (BACT)

BACT is a sweet regulatory escape device for the carbon based thermo power plant industry · versus air emissions' controls regardless the expense! With the employment of BACT if the air pollution control process proves too costly because it is "not economically feasible" then "let's not" use it. Why cannot agriculture have the opportunity to employ the same regulatory process with non-road diesel and field burning? There was no discussion of such a process when the EPA proposed the new non-road diesel regulations. Instead it was clearly documented that diesel engines kill people and must be regulated without "economical feasibility" considered as a part of the regulatory process. The result is non-road regulations of air pollutant emissions regardless the expense to the industries and individuals who employ the diesel units.

Three of the five pollutants that are regulated by the EPA for both carbon based thermo power plants and non-road diesel engines are; (1) Sulfur, (2) Particulate Matter (PM), and (3) Nitrogen Oxides (NOx).

Table 6. Remaining Control Technologies Ranked by Effectiveness

Pollutant	Control Technology	Control Efficiency
NOx	Selective Catalytic Reduction (SCR)	80 - 90%
	Non-Ammonia Selective Catalytic Reduction (SCONOx)	80 - 90%
	Selective Non-Catalytic Reduction (SNCR)	60%
	Good Design/Operation of Low NOx Burners	Base Case
PM10	Baghouse	99%
	Dry ESP	95 - 99%
	Wet ESP	95 - 99%
	Venturi Scrubber	90%
	Good Design/Operation	Base Case
SO2	Low-sulfur Natural Gas	Base Case

Table 6[13] clearly documents the opportunity that the carbon based thermo power plant industry has to select, based upon economics, which control technology to employ in the control of air pollutants. Notice that the "Base Case" control efficiency has no percentage figures included.

There is no similar table for non-road diesel engines. However, Table 7 illustrates the recently proposed non-road diesel engine regulations' timetable with the EPA's stipulated control efficiency for the non-road diesel engines.

Table 7. Nonroad Diesel Regulated Pollutant Control Efficiencies

Pollutant	Year	Control Efficiency
NOx	2010	95+%
PM10	2007	90%
SOx	2006	99%

As Table 7[14] and its source document details, there was no opportunity for any BACT process provided to any of the industries that utilize non-road diesel engines. By denying the affected industries the opportunity to employ a BACT process the EPA failed to evaluate other alternatives to reach their specified air quality goals. In the case of agriculture, there was no evaluation done on alternative fuels, i.e. bio-diesel, and their ability to drastically reduce air pollutants further than the required Control Efficiencies listed in Table 7. In addition, the new EPA regulations never have any mention of bio-lubes and the air quality advantages such products produce.

The Wanapa Energy Center has selected, based upon economic feasibility, the Selective Catalytic Reduction (SCR) control technology to control the NOx pollutants[15]. The cost is projected to $1,909 per Ton of NOx removed. The chosen practices equates to 80–90% control

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[13] *Addendum to the August 2003 Revised PSD Permit Application for the proposed Wanapa Energy Center, Umatilla Tribal Trust Lands, Oregon*, page 4-12

[14] EPA420-F-03-008, April 2003, *Summary of EPA's Proposed Program for Low Emission Non-road Diesel Engines and Fuel*

[15] *Addendum to the August 2003 Revised PSD Permit Application for the proposed Wanapa Energy Center, Umatilla Tribal Trust Lands, Oregon*, page 4-15

efficiency of NOx. At the same time non-road diesel engines are required to meet a 95+% control efficiency for NOx pollutants with the cost of the gain bore totally by the owner of the diesel engine at a **minimum** of an additional $2,600 for a 175-horsepower engine. This estimated increase cost is EPA's figure. No economical feasibility is ever considered nor the affect of the resulting increased costs upon the target industries.

The Wanapa Energy Center has selected, based upon economic feasibility, the Good Design/Operation control technology to control the PM pollutants.[16] I could not locate any information as to the control efficiency of this control technology. It is a shame, because I am sure that such data would be valuable in the comparison with non-road diesel engines. At the same time non-road diesel engines are required to meet a 90% control efficiency for PM pollutants with the cost of the gain bore totally by the owner of the diesel engine at a **minimum** of an additional $2,600 for a 175-horsepower engine. No economical feasibility is ever considered nor the affect of the resulting increased costs upon the target industries.

The Wanapa Energy Center has selected, based upon economic feasibility, the low-sulfur natural gas control technology to control SOx pollutants.[17] I could not locate any information as to the control efficiency of this control technology. It is a shame, because I am sure that such data would be valuable in comparison with non-road diesel engines. At the same time non-road diesel engines are required to meet a 99% control efficiency for SOx pollutants with the cost of the gain bore totally by the owner of the diesel engine at a **minimum** of an additional cost of 4.8 cents per gallon of diesel. This estimated increase cost is EPA's figure. No economical feasibility is ever considered nor the affect of the resulting increased costs upon the target industries.

All the BACT data is similar for the regions' other carbon based thermo power plants. When comparing the EPA's non-road diesel engine regulations with the carbon based thermo power plants' BACT process for pollutant controls, I have concluded that the EPA is attempting to maintain the regions' EPA non-attainment air quality status as well as create a cost free "emission offset" for the power plants by severely regulating non-road diesel engine pollutants. The resulting air quality impact is that the non-road diesel engines' air pollutant reductions are replaced by an even higher pollution level with carbon based thermo power plants' air pollutants. The inequity involving the treatment and regulations between the two polluting entities is unfathomable as well as unconsciousable. However, such inequity is to be expected based upon my theorem that equal treatment of individuals and industries will not happen in the new America with the selective management of individuals and groups by elected and appoint public officials.

Quantitative Impacts

Let me clearly state this issue is what I find most insulting about the siting of the proliferation of carbon based thermo power plants in Umatilla-Morrow County's airshed. The Wanapa Energy Center EPA air quality application is no different from any of the other Title V carbon based thermo power plant permits when addressing the quantitative impact of the facilities air pollutants. The only quantitative impact statement is *"the air pollutants can have adverse affects*

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[16] *Addendum to the August 2003 Revised PSD Permit Application for the proposed Wanapa Energy Center, Umatilla Tribal Trust Lands, Oregon*, page 4-19

[17] *Addendum to the August 2003 Revised PSD Permit Application for the proposed Wanapa Energy Center, Umatilla Tribal Trust Lands, Oregon*, page 4-20

on humans, plants, and animals." As long as the facility is in an EPA air quality attainment area and the individual facility does not exceed any of EPA's minimum pollutant NAAQS's, then the EPA and applicants conclude that there are no significant human, crop, or animal impacts. Here are the minimum annual NAAQS requirements to ever have any quantitative impacts upon human health and welfare for the air pollutants from a carbon based thermo power plant; NOx 100 ug/m^3, SOx 80 ug/m^3, and PM_{10} 50 ug/m^3. In contrast to Wanapa and the carbon based thermo power plants' non-quantifiable impact, Table 8 is the EPA's quantitative impact determination of non-road diesel engines[18] occurs when the engines exceed the NAAQS individually and collectively because there is <u>no minimum NAAQS</u> applied to any nonroad diesel engines. STAPPA/ALAPCO researchers concluded *"it is not appropriate to adopt a threshold for use in either the primary analysis or any alternative calculations, because no adequate scientific evidence exists to support such a calculation.[19]"* In other words the first molecule of air pollution from a nonroad diesel engine has quantitative impact upon human premature deaths and health. Where as, a carbon based thermo power plant can pump Tons of air pollution into an airshed without ever having any quantitative impact upon human premature deaths and health as long as the facility individually never exceeds the any of the pollutants' NAAQS. In contrast to the ZERO minimum NAAQS for all nonroad diesel engines' air pollutants such standards are just an other of my discoveries how the elected and appointed agency officials use discriminating process and regulations in support of favorable polluting entities and industries.

[18] *The Dangers of the Dirtiest Diesels: The Health and Welfare Impacts of Non-road Heavy-Duty Diesel Engines and Fuels*, STAPPA/ALAPCO, June 2002, Table ES-2

[19] *The Dangers of the Dirtiest Diesels: The Health and Welfare Impacts of Non-road Heavy-Duty Diesel Engines and Fuels*, STAPPA/ALAPCO, June 2002, pg 19

Table 8. Oregon's Benefits of Regulating Nonroad Heavy-Duty Diesel Engines & Fuels Avoided Incidences (Cases/Year) (Draft EPA Regulations)

Location	A	B	C	D	E	F	G	H	I	J	K	L	M	Monetary Millions
Oregon	111	74	15	12	12	36	28	2,353	235	2,581	2,588	20,596	106,906	$ 879.0
DSL Mobile Agriculture (24.8%)	27.5	18.4	3.7	3.0	3.0	8.9	6.9	583.5	58.3	640.1	641.8	5,107.8	26,512.7	$ 218.0
Morrow County Ag (1.9%)	2.1	1.4	0.3	0.2	0.2	0.7	0.5	44.7	4.5	49.0	49.2	391.3	2,031.2	16.7
Umatilla County Ag (3.5%)	3.9	2.6	0.5	0.4	0.4	1.3	1.0	82.4	8.2	90.3	90.6	720.9	3,741.7	30.8

A = Premature mortality (adults, 30 and over)	H = Asthma attacks (asthmatics, all ages)
B = Chronic bronchitis (adults, 26 and over)	I = Acute bronchitis (children, 8 - 12)
C = Hospital admissions, pneumonia (adults, over 64)	J = Lower respiratory symptons (children, 7 - 14)
D = Hospital admissions, chronic obstructive pulmonary disease (COPD)	K = Upper respiratory symptons (children, 9 - 11)
E = Hospital admissions, asthma (adults, 65 and younger)	L = Work loss days (adults, 18 - 65)
F = Hospital admissions, cardiovascular (adults, over 64)	M = Minor restricted activity days (adults, 18 - 65)

As I have continue my air quality research I did uncovered an extremely interesting EPA web document http://www.epa.gov/air/clearskies/03technical_package_sectionb.pdf . The information I keyed in on is:

"By 2020, the benefits of reductions in fine particles and ozone are estimated to be $113 billion annually (1999$), including:

- $110 billion in annual human health benefits. This is a result of annually avoiding:
    - 14,100 premature deaths;
    - 8,800 new cases of chronic bronchitis;
    - 23,000 non-fatal heart attacks;
    - 30,000 total hospitalizations and emergency room visits for cardiovascular and respiratory causes;
      – Included in this total are 15,000 fewer hospital and emergency room visits for asthma attacks.
    - 12.5 million days with respiratory-related symptoms, including lost work days, restricted activity days, and school absences.
      – Included in this total are approximately 180,000 fewer asthma attacks

- An alternative estimate projects over 8,400 premature deaths prevented and $21 billion in health benefits annually by 2020.

- $3 billion in annual visibility benefits from improving visibility at select National Parks and Wilderness Areas."

Amazing that the nonroad HDD engines account for 12,000 of the estimated 14,100 lives saved in the information presented above! Does anyone truly believe that nonroad HDD engines account for 85.1% of all the premature deaths as the result of their air pollution while carbon based thermo power plants account for ZERO? It appears what is really taking place is as Steven Milloy of JunkScience.com and an adjunct scholar at the Cato Institute states; *"Researchers are trying to scare the public with statistical malpractice."* The latest Journal of American Medical Association November 17, 2004 issue has an article titled "Short-Term Ozone Pollution Raises Mortality Risk". The document states: *"Increases in air pollution caused by cars, power plants and industry can be directly linked to higher death rates in U.S. cites."* The researchers' compared the non-injury-related death rates with the smog measurements for 95 urban areas for the period 1987-2000. They reported a one-half percent (0.5%) increase in premature death (mortality) per 10-part per billion increase in ground-level ozone (smog) in the urban areas. They claim that reducing smog levels by 35% could save about 4,000 lives per year. This document is important to my position because it lists power plants as a source of premature deaths which the EPA cannot or will not validate let alone document with any methodology. The research never mentions nonroad HDD engines as a contributing polluter. In addition, the document's premature death rate, 4,000, plus the EPA's premature nonroad HDD engines' 12,000 equals a total of 16,000 which far exceeds the EPA's 14,100 touted on their above web site document. It makes one really wonder which of the many premature death numbers are truly accurate or is it all *"statistical malpractice"*.

In the case of the Wanapa Energy Center, the only documented concern of the EPA is the impact upon Class I and II wilderness and scenic area's visibility. There is a dichotomy with visibility concerns. Why isn't Umatilla County's local visibility of the same level of importance as Class I and II wilderness and scenic areas? Don't those of us living in Umatilla County have the same right to clear bright days with unlimited visibility? My conclusion from the applicant's air quality EPA permit application is Umatilla County citizens do not have that same right to those same clear skies and unlimited visibility standards because Umatilla County is not within a classified Class I and II wilderness or scenic area. In essence, the EPA and ODEQ are permitting Umatilla County's airshed as an air pollutant throwaway or pollutant dumping airshed without the same rights to clear skies and unlimited visibility as humans within Class I and II wilderness or scenic area. Once again, the issue of equal rights is tossed aside for special groups, industries, and individuals. Amazingly, the EPA has quantified the human health and death impacts of non-road diesel engines, while at the same time, there is a deathlike EPA silence when asked for similar quantitative human impacts from carbon based thermo power plants.

Since I begin working on my draft oppositional testimony the EPA implemented the nonroad HDD engine regulations and moved the premature death figures from 8,500 to 12,000 which is a dramatic 41.2% yearly increase. I have asked the EPA multiple times to provide the documents and data that support the substantial increase over the draft regulation's figures. I have had zero luck in any request to obtain such information. So I have taken the new 12,000 figure and extrapolated the increased into Table 9.

Table 9. Oregon's Benefits of Regulating Nonroad Heavy-Duty Diesel Engines & Fuels Avoided Incidences (Cases/Year) At EPA's 12,000 National Rate (+41.18% Increase)

Location	A	B	C	D	E	F	G	H	I	J	K	L	M	Monetary Millions
Oregon	157	104	21	17	17	51	40	3,322	332	3,644	3,654	29,077	150,930	$ 1,241.0
DSL Mobile Agriculture (24.8%)	38.9	25.9	5.3	4.2	4.2	12.6	9.8	823.8	82.3	903.7	906.1	7,211.2	37,430.6	$ 307.8
Morrow County Ag (1.9%)	3.0	2.0	0.4	0.3	0.3	1.0	0.8	63.1	6.3	69.2	69.4	552.5	2,867.7	23.6
Umatilla County Ag (3.5%)	5.5	3.7	0.7	0.6	0.6	1.8	1.4	116.3	11.6	127.5	127.9	1,017.7	5,282.5	43.4

A = Premature mortality (adults, 30 and over)	H = Asthma attacks (asthmatics, all ages)
B = Chronic bronchitis (adults, 26 and over)	I = Acute bronchitis (children, 8 - 12)
C = Hospital admissions, pneumonia (adults, over 64)	J = Lower respiratory symptoms (children, 7 - 14)
D = Hospital admissions, chronic obstructive pulmonary disease (COPD)	K = Upper respiratory symptons (children, 9 - 11)
E = Hospital admissions, asthma (adults, 65 and younger)	L = Work loss days (adults, 18 - 65)
F = Hospital admissions, cardiovascular (adults, over 64)	M = Minor restricted activity days (adults, 18 - 65)
G = Energency room visits, asthma (adults, 65 and younger)	

I included in Table 8 and 9 the percentage of the Oregon agricultural non-road mobile diesel engines, 24.8%, quantified impact figures. In addition, I included the Morrow and Umatilla agriculture non-road mobile diesel engines, 1.9% and 3.5% respectively, quantified impact figures. The conclusion from Table 8 is that Morrow County's 1,348.1 agricultural non-road mobile diesel engines at a minimum cause 2.1 premature human death per year as well as $16.7 million in monetary related annual health costs. Umatilla County's 2,333.2 agricultural non-road mobile diesel engines at a minimum cause 3.9 premature human deaths per year as well as $30.8 million in monetary related annual health costs. These are staggering and damning figures in my humble opinion. Is anyone, even agriculture concerned about these real lost lives and the associated monetary health costs? Is any agricultural organization at all concerned that agriculture has been targeted for quantifiable air quality impacts while other just as guilty industries escape any such quantifiable impact scrutiny? The Wanapa Energy Center is just one of the many power plants in the region that has avoided such scrutiny when it comes to quantifiable human health and death impact evaluation. Such a practice makes it appear on first flush that these Title V facilities' air pollutants really do have no impact upon humans, plants, and animals as the EPA and applicants clearly state. Do elected and appointed officials really believe that is probable?

Thanks to Mr. Steven Aalbers I am able to quantify the human health and death impacts within Morrow and Umatilla Counties by a simple conversion process. Mr. Aalbers shared with me the conversion formula to equate carbon based thermo power plants' air pollution to non-road mobile diesel engines. At last, I have a procedure to model quantifiable evidence of the impact from the air pollutants produced by carbon based thermo power plants.

Table 10. Automobile Conversion	
Car	
0.7	grams pollutants/mile avg/car
12,000	miles/yr/car
32	miles/day
22.4	grams/day/car
Wanapa NG Energy Facility	
7.86	Tons per day
15720	lbs/day
7,136,880	grams/day
	results in
318,611	Wanapa car equivalents

Table 11. Tractor Conversion		
1999 1 Off-road Ag Tractor		
	Lbs/day	g/day
NOX	0.0	0.7
CO	0.0	0.1
SO2	0.1	48.3
VOC	7.0	3,175.1
PM10	0.0	0.1
Sum	7.1	3,224.3

To convert the Wanapa Energy Center pollutants I used the EPA Wanapa's annual allowable emissions (including startup emissions) at 283 days or 6,800 hours of annual use.

Table 12. Wanapa EPA's Emissions		
Pollutant	Tons per Year	Tons per day (283)
NOx	486.00	1.72
CO	933.00	3.30
SOx	57.00	0.20
VOC	99.00	0.35
PM10	562.00	1.99
H2SO2	88.00	0.31
Total	2,225.00	7.86

Using the information in Tables 10, 11, and 12, the conversion of Wanapa's emission to a non-road mobile diesel engines equivalent is 2,213.4 diesel units. Using the information in Tables 10, 11, and 12 to calculate the equivalent non-road mobile diesel engines for the Wanapa Energy Center I can now model the human health and death impact of the facility within Umatilla County. Table 13 is the result of that modeling. Included in the location is the number of units and what percentage of the state total each location equals. These same numbers are repeated in Table 13a using the EPA's 12,000 premature death rate.

Table 13. Comparison of Wanapa Energy Center's Nonroad Diesel Equivalency Values Avoided Incidences (Cases/Year)

Location	A	B	C	D	E	F	G	H	I	J	K	L	M	Monetary Millions
Oregon	111	74	15	12	12	36	28	2,353	235	2,581	2,588	20,596	106,906	$ 879.0
DSL Mobile Agriculture (24.8%)	27.5	18.4	3.7	3.0	3.0	8.9	6.9	583.5	58.3	640.1	641.8	5,107.8	26,512.7	$ 218.0
Wanapa 2213.4 Equivalent (3.18%)	3.5	2.4	0.5	0.4	0.4	1.1	0.9	74.8	7.5	82.1	82.3	655.0	3,399.6	28.0

A = Premature mortality (adults, 30 and over)	H = Asthma attacks (asthmatics, all ages)
B = Chronic bronchitis (adults, 26 and over)	I = Acute bronchitis (children, 8 - 12)
C = Hospital admissions, pneumonia (adults, over 64)	J = Lower respiratory symptons (children, 7 - 14)
D = Hospital admissions, chronic obstructive pulmonary disease	K = Upper respiratory symptons (children, 9 - 11)
E = Hospital admissions, asthma (adults, 65 and younger)	L = Work loss days (adults, 18 - 65)
F = Hospital admissions, cardiovascular (adults, over 64)	M = Minor restricted activity days (adults, 18 - 65)
G = Energency room visits, asthma (adults, 65 and younger)	

Finally, here is some documentation employing **EPA and ODEQ data and processes** of the actual quantified human impact from a carbon based thermo based power plant. Of course, the next step is having an elected or appointed official use the information to protect the citizens of Umatilla County from further pain, suffering, extraordinary yearly medical expenses, and for that 3.5 citizens each year, death. I am not going to hold my breath in anticipation of such direct and positive action ever occurring, even though I should for my own safety. To illustrate the significant cumulative and quantifiable impact of the carbon based thermo power plants in the region Table 14 and 14a includes the other Eastern Oregon facilities and there similar impact figures as presented in Table 13 & 13a.

Table 13a. Comparison of Wanapa Energy Center's Nonroad Diesel Equivalency Values Avoided Incidences (Cases/Year) Using New EPA Non-road Death Rate (41.18% increase)

Location	A	B	C	D	E	F	G	H	I	J	K	L	M	Monetary Millions
Oregon	157	104	21	17	17	51	40	3,322	332	3,644	3,654	29,077	150,930	$1,241.0
DSL Mobile Agriculture (24.8%)	38.9	25.9	5.3	4.2	4.2	12.6	9.8	823.8	82.3	903.7	906.1	7,211.2	37,430.6	$ 307.8
Wanapa 2213.4 Equivalent (3.18%)	5.0	3.3	0.7	0.5	0.5	1.6	1.3	105.6	10.6	115.9	116.2	924.7	4,798.6	39.5

A = Premature mortality (adults, 30 and over)	H = Asthma attacks (asthmatics, all ages)
B = Chronic bronchitis (adults, 26 and over)	I = Acute bronchitis (children, 8 - 12)
C = Hospital admissions, pneumonia (adults, over 64)	J = Lower respiratory symptons (children, 7 - 14)
D = Hospital admissions, chronic obstructive pulmonary disease	K = Upper respiratory symptons (children, 9 - 11)
E = Hospital admissions, asthma (adults, 65 and younger)	L = Work loss days (adults, 18 - 65)
F = Hospital admissions, cardiovascular (adults, over 64)	M = Minor restricted activity days (adults, 18 - 65)
G = Energency room visits, asthma (adults, 65 and younger)	

Table 14. Comparison of Umatilla County's Nonroad Diesel Equivalency Values With Region Power Plants
Avoided Incidences (Cases/Year)

Location	A	B	C	D	E	F	G	H	I	J	K	L	M	Monetary Millions
Oregon	111	74	15	12	12	36	28	2,353	235	2,581	2,588	20,596	106,906	$ 879.0
DSL Mobile Agriculture (24.8%)	27.5	18.4	3.7	3.0	3.0	8.9	6.9	583.5	58.3	640.1	641.8	5,107.8	26,512.7	$ 218.0
Umatilla Ag 2,333.2 (3.5%)	3.9	2.6	0.5	0.4	0.4	1.3	1.0	82.4	8.2	90.3	90.6	720.9	3,741.7	30.8
Wanapa 2213.4 (3.18%)	3.5	2.4	0.5	0.4	0.4	1.1	0.9	74.8	7.5	82.1	82.3	655.0	3,399.6	28.0
HGP 637.5 (.92%)	1.0	0.7	0.1	0.1	0.1	0.3	0.3	21.6	2.2	23.7	23.8	189.5	983.5	8.1
HPP 1345.2 (1.93%)	2.1	1.4	0.3	0.2	0.2	0.7	0.5	45.4	4.5	49.8	49.9	397.5	2,063.3	17.0
Coyote 657.5 (.92%)	1.0	0.7	0.1	0.1	0.1	0.3	0.3	21.6	2.2	23.7	23.8	189.5	983.5	8.1
Boardman 16,934.6 (24.3%)	27.0	18.0	3.6	2.9	2.9	8.7	6.8	571.8	57.1	627.2	628.9	5,004.8	25,978.2	213.6

A = Premature mortality (adults, 30 and over)	H = Asthma attacks (asthmatics, all ages)
B = Chronic bronchitis (adults, 26 and over)	I = Acute bronchitis (children, 8 - 12)
C = Hospital admissions, pneumonia (adults, over 64)	J = Lower respiratory symptons (children, 7 - 14)
D = Hospital admissions, chronic obstructive pulmonary disease (COPD)	K = Upper respiratory symptons (children, 9 - 11)
E = Hospital admissions, asthma (adults, 65 and younger)	L = Work loss days (adults, 18 - 65)
F = Hospital admissions, cardiovascular (adults, over 64)	M = Minor restricted activity days (adults, 18 - 65)
G = Emergency room visits, asthma (adults, 65 and younger)	

Table 14a. Comparison of Umatilla County's Nonroad Diesel Equivalency Values With Region Power Plants Avoided Incidences (Cases/Year) Using New EPA Non-road Death Rate (41.18% Increase)

Location	A	B	C	D	E	F	G	H	I	J	K	L	M	Monetary Millions
Oregon	157	104	21	17	17	51	40	3,322	332	3,644	3,641	29,077	150,930	$1,241.0
DSL Mobile Agriculture (24.8%)	38.9	25.9	5.3	4.2	4.2	12.6	9.8	823.8	82.3	903.7	903.1	7,211.2	37,430.6	$ 307.8
Umatilla Ag 2,333.2 (3.5%)	5.5	3.7	0.7	0.6	0.6	1.8	1.4	116.3	11.6	127.5	127.4	1,017.7	5,282.5	43.4
Wanapa 2213.4 (3.18%)	5.0	3.3	0.7	0.5	0.5	1.6	1.3	105.6	10.6	115.9	115.8	924.7	4,799.6	39.5
HGP 637.5 (.92%)	1.4	1.0	0.2	0.2	0.2	0.5	0.4	30.6	3.1	33.5	33.5	267.5	1,388.6	11.4
HPP 1345.2 (1.93%)	3.0	2.0	0.4	0.3	0.3	1.0	0.8	64.1	6.4	70.3	70.3	561.2	2,912.9	24.0
Coyote 657.5 (.92%)	1.4	1.0	0.2	0.2	0.2	0.5	0.4	30.6	3.1	33.5	33.5	267.5	1,388.6	11.4
Boardman 16,934.6 (24.3%)	38.1	25.4	5.1	4.1	4.1	12.4	9.6	807.2	80.6	885.5	884.9	7,065.8	36,676.0	301.6

A = Premature mortality (adults, 30 and over)	H = Asthma attacks (asthmatics, all ages)
B = Chronic bronchitis (adults, 26 and over)	I = Acute bronchitis (children, 8 - 12)
C = Hospital admissions, pneumonia (adults, over 64)	J = Lower respiratory symptons (children, 7 - 14)
D = Hospital admissions, chronic obstructive pulmonary disease (COPD)	K = Upper respiratory symptons (children, 9 - 11)
E = Hospital admissions, asthma (adults, 65 and younger)	L = Work loss days (adults, 18 - 65)
F = Hospital admissions, cardiovascular (adults, over 64)	M = Minor restricted activity days (adults, 18 - 65)
G = Energency room visits, asthma (adults, 65 and younger)	

As one can observe the PGE Boardman coal fired plant is a very deadly facility here in Eastern Oregon. Its quantifiable human costs are almost equal to ALL the Oregon agricultural non-road mobile diesel engines. The EPA has the gall to target those deadly non-road mobile diesel engines while doing nothing about the carbon based thermo power plants with their 48.9 human deaths and approximately $387.3 million in health care costs just in Morrow and Umatilla Counties.

Table 15. ODEQ Point Source Emission Data

Facility & Year	CO	NO	PM10	SO2	VOC
	Tons / Year				
Umatilla County 1996 Point Source Emissions	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Lane County 1996 Point Source Emissions	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
1997 HGP DEQ PERMIT	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2001HGP DEQ Permit	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
HGP 2001 Actual Emissions	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
UMCDF DEQ Permit	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2002 HPP DEQ PERMIT	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Table 15 is the data source for the computations used in Table 14 & 14a. The Umatilla County point source pollution was extremely low prior to the invasion of the carbon based thermo power plants. Which industry does the EPA target for emission reductions within the region? It is not these facilities, but agriculture. Table 15 includes Lane County's point source emissions' data as supporting evidence why Mr. Ken Beeson of Eugene Water & Electric Board (EWEB), a 15% owner of the Wanapa Project, will never discuss the placement of carbon based thermo power plants nearer the source of electrical power use, Western Oregon.

After all the data collection and modeling completed above the EPA announced the new non-road diesel regulations on May 10, 2004. The rule will prevent 12,000 premature deaths a year, nearly 9,000 hospitalizations and close to 1 million work days lost annually.[20] The additional 3,500 premature deaths is a 41.18% increase from the draft rule 8,500 figure. Using the 41.18% figure I have remodeled the Wanapa impact tables above. I have attempted to contact both STAPPA/ALAPCO and the EPA for further clarification about the increased premature death rates without success. No organization would respond to my e-mail and snail mail requests so once again I was stonewalled by organizations supposedly representing our citizenships' best interest.

Because of the EPA's long permitting delay has given me the opportunity to continue to research carbon based thermo power plants' air pollutant emissions quantitative impacts. In June 2004 the Clean Air Task Force released a report summarizing the Abt Associates report, *"Power Plant Emissions: Particulate Matter-Related Health Damages and the Benefits of Alternative Emission Reduction Scenarios"*. Clear the Air produced a summary document, *"Dirty Air, Dirty Power"*, of the report that validates my expressed concern about the quantitative impact of carbon based thermo power plants' air pollutant emissions. Just as a result of fine particle pollution from U.S. power plants there are these quantitative human death and health impacts:

- Annual deaths 23,600
- Annual Hospital Admissions 21,850
- Annual Emergency Room Visits for Asthma 26,000
- Annual Heart Attacks 38,200
- Annual Chronic Bronchitis 16,200
- Annual Asthma Attacks 554,000
- Annual Lost Work Days 3,186,000[21]

I don't yet have the break out per carbon based thermo power plant, but my search for how to make those computations continues. However, these figures do substantially support my modeling results. In addition, this new data makes it even more difficult for the applicant and EPA to claim there will be no quantitative human death and health impact from the air pollutants released by the Wanapa Energy Center.

I am not the only Oregonian who has solicited the ODEQ or EPA for quantitative health and welfare data from the air pollutants emitted by human and industrial activities. All who have asked have encountered a silent stonewall. Thanks to an Oregonian article, ***Pollution rule revision kicks up dust***, February 15, 2004, I discovered Doctor and Jackson County Commissioner Dave Gilmour who has also been on a quest to locate quantitative health and welfare data related to air pollutant emissions. Doctor Gilmour has shared with me his collection of data after completing a MEDLINE search, which looked for the health impacts of just PM10's. Of the 2500+ abstracts located, he was able to narrow the field to around 20. These 20 appeared to be the most relevant to the support of his contention that even below the minimum federal NAAQS there is a quantifiable human health and welfare impact. He shared with me 7 of the most supportive abstracts:

- *Health Effects of Outdoor Air Pollution Committee of the Environmental and Occupational Health,* Assembly of the American Thoracic Society, Am J. Crit. Care Med., Vol 153, No. 1, 01 1996, 3-50

[20] STAPPA/ALAPCO, State and Local Air Regulators Praise EPA for Cleaning Up 'Nonroad' Diesel Engines, May 10, 2004.

[21] Abt Associates, *Power Plant Emissions: Particulate Matter-Related Health Damages and the Benefits of Alternative Emission Reduction Scenarios* (June 2004). Available online at: www.catf.us/publications/index.php.

- Lung Function and Long Term Exposure to Air Pollutants in Switzerland Study on Air Pollution and Lung Diseases in Adults (SAPALDIA) Team, Amer J Respir. Crit Care Med 1997-1-1 155(1) 122-9
- Respiratory Effects of Air Pollution in Chronic Obstructive Pulmonary Disease; A Three Month Prospective Study, Thorax 1997 Dec; 52(12): 1040-4 Christchurch, NZ study
- Particulate Air Pollution and Hospital Admissions in Christchurch, New Zealand, Aust NZ J Public Health 2002 Feb; 26 (1): 23-9
- Clinically "Small" Effects of Air Pollution on FVC Have a Large Public Health Impact, Eur Respir J 2000; 15: 131-136
- *Air Pollution and Health in Urban Areas*, Reviews on Environmental Health, vol 15, No. 1-2, 2000
- Respiratory Effects of Air Pollution in Chronic Obstructive Pulmonary Disease; A Three Month Prospective Study, Thorax 1997; 52:1041-1044

From his professional and detailed research, Doctor Gilmour estimated "*that the air pollution allowed by the EPA would lead to 56 additional admissions to local hospitals for cardiovascular disease, two additional deaths from cardiovascular disease and five additional deaths from lung disease in Jackson County.*" The EPA and ODEQ is proposing rules to let the Jackson County NAAQS for PM10 rise to the minimum of 50 micrograms per cubic meter vice the current levels (1997-2002) of 29 micrograms per cubic meter. It was very refreshing to realize that other everyday Oregonians have a deep concern for airshed health and the resulting human health and welfare impacts. Thanks to Doctor Gilmour, I have located two creditable sources, the EPA non-road study and Doctor Gilmour's research, that validate there is quantifiable human health and welfare impacts in an airshed that has air pollutant NAAQS below the minimum EPA's NAAQS.

After modeling the human death and health costs of the Wanapa Energy Center, the recently released Abt Associates' report, and the supportive documentation for Doctor Gilmour I have a question for the partners of the Wanapa Energy Center, local supporters of the project, elected and appointed officials at all levels of government. Will those Umatilla County citizens being required to sacrifice their lives from the air pollution spewed forth from the project be treated as well as Private First Class Chance Phelps was after his death in Iraq on Good Friday in 2004? Will our Umatilla County citizens be treated to the same honors as was give Private Phelps for his sacrifice? I have included in the appendix a first hand report of Private Phelps' transfer from Iraq to his families' funeral in Dubois, Wyoming to emphasis that sacrifices for America by Americans requires such recognition. However, no such recognition or acknowledgement of the ultimate sacrifice, death, by our Umatilla County citizens from the Wanapa Energy Center air pollution will ever occur except in this particular testimony! No project supporter, industry representative, or elected or appointed agency official will admit to the losses modeled in this testimony, so the Umatilla County citizens will pay the cost without any reimbursement or even any honors such as those given Private Chance Phelps for their sacrifice. However, such inequity is to be expected based upon my theorem that equal treatment of individuals and industries will not happen in the new America with selective management of individuals and groups by elected and appoint public officials.

Because of the constant local newspaper articles about the Umatilla/Morrow Counties' Depot Facility and its subsequent airshed impact, Table 16 is an airshed equivalent comparison with non-road diesels. These human health costs were never considered during the permitting process for the facility.

Table 16. Comparison of UMCDF Nonroad Diesel Equivalency Values
Avoided Incidences (Cases/Year)

Location	A	B	C	D	E	F	G	H	I	J	K	L	M	Monetary Millions
Oregon	111	74	15	12	12	36	28	2,353	235	2,581	2,588	20,596	106,906	$ 879.0
DSL Mobile Agriculture (24.8%)	27.5	18.4	3.7	3.0	3.0	8.9	6.9	583.5	58.3	640.1	641.8	5,107.8	26,512.7	$ 218.0
UMCDF (.17%)	0.2	0.1	0.0	0.0	0.0	0.1	0.0	4.0	0.4	4.4	4.4	35.0	181.7	1.5

A = Premature mortality (adults, 30 and over)	H = Asthma attacks (asthmatics, all ages)
B = Chronic bronchitis (adults, 26 and over)	I = Acute bronchitis (children, 8 - 12)
C = Hospital admissions, pneumonia (adults, over 64)	J = Lower respiratory symptons (children, 7 - 14)
D = Hospital admissions, chronic obstructive pulmonary disease (COPD)	K = Upper respiratory symptons (children, 9 - 11)
E = Hospital admissions, asthma (adults, 65 and younger)	L = Work loss days (adults, 18 - 65)
F = Hospital admissions, cardiovascular (adults, over 64)	M = Minor restricted activity days (adults, 18 - 65)
G = Emergency room visits, asthma (adults, 65 and younger)	

The UMCDF has a tractor equivalency of 177.46 non-road diesel units based upon the ODEQ permitted emissions.

In the spring of 2003 I wrote a document as a College project for the Oregon Wheat Growers' League. I did so because of the constant assault upon the region's wheat growers by the EPA in a multitude of areas: non-road mobile diesel engines, haze, field burning, and pesticide usage. I wrote the document in response to a barrage of newspaper articles and ODEQ statements targeting agriculture for what many citizens have visually observed as the deteriorating regional airshed quality. The paper is titled *"Airshed, Is It Important to Umatilla County Agriculture?"* The conclusion of the research was there needs to a cumulative air quality impact study with air quality monitoring of PM10, CO, NOx, SOx, and VOC, not modeling, to determine the overall airshed health. I also discovered that there is proliferous research that has determined that the quality of air is an extremely critical component for healthy crop production. I have included this paper as an appendix because I feel facilities like the Wanapa Energy Center appear to have special siting privileges not share with the agricultural industry. Most importantly, the continued siting of the carbon based thermo power plants, even though the EPA NAAQS are supposedly not exceeded, is a serious compromise of human health and welfare.

One of the areas that I could not find local documentation is the quantifiable impacts by carbon based thermo power plants' air pollution's distress upon our local crop production. However, statements such as this are prolific on the internet when searching for crop air quality impacts; *Ground-level ozone damages plant life and is responsible for 500 million dollars in reduced crop production in the United States each year. It interferes with the ability of plants to produce and store food, making them more susceptible to disease, insects, other pollutants, and harsh weather.*[22] Here is another about SOx; *The information collated during the initial phase of this project (Emberson et al. 2001; Emberson et al, in press) has clearly shown that in many developing country regions, and particularly in parts of Asia, crop yields and forest productivity are being severely affected by local ambient air pollutant concentrations.*[23] Such data advocates that within the "Power Alley" of Morrow and Umatilla County there needs to a cumulative air quality impact study with air quality monitoring of PM10, CO, NOx, SOx, and VOC, not modeling, to determine the overall airshed health. Until that is accomplished, the region's airshed is being unduly stressed by the regionalization of Pacific Northwest carbon based thermo power plants within the Morrow and Umatilla County's airshed.

National Ambient Air Quality Standard (NAAQS) minimums for emitted pollutants

I included this section to highlight the dramatic difference the uses EPA to evaluate the air pollutants impacts of two polluting entities. From the EPA web site here is what the NAAQS requirements are: http://epa.gov/air/criteria.html

The Clean Air Act, which was last amended in 1990, requires EPA to set **National Ambient Air Quality Standards** for pollutants considered harmful to public health and the environment. The Clean Air Act established two types of national air quality standards. ***Primary standards*** set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. ***Secondary standards*** set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

The EPA Office of Air Quality Planning and Standards (OAQPS) has set National Ambient Air Quality Standards for six principal pollutants, which are called "criteria" pollutants. They are

[22] http://www.montgomerycountymd.gov/mc/services/dep/AQ/ozone.htm#Ground-Level%20Ozone
[23] http://www.york.ac.uk/inst/sei/rapidc2/impactscrops.html

listed below. Units of measure for the standards are parts per million (ppm) by volume, milligrams per cubic meter of air (mg/m^3), and micrograms per cubic meter of air ($\mu g/m^3$).

National Ambient Air Quality Standards

Pollutant	Primary Stds.	Averaging Times	Secondary Stds.
Carbon Monoxide	9 ppm (10 mg/m^3)	8-hour[1]	None
	35 ppm (40 mg/m^3)	1-hour[1]	None
Lead	1.5 $\mu g/m^3$	Quarterly Average	Same as Primary
Nitrogen Dioxide	0.053 ppm (100 $\mu g/m^3$)	Annual (Arithmetic Mean)	Same as Primary
Particulate Matter (PM_{10})	50 $\mu g/m^3$	Annual[2] (Arith. Mean)	Same as Primary
	150 ug/m^3	24-hour[1]	
Particulate Matter ($PM_{2.5}$)	15.0 $\mu g/m^3$	Annual[3] (Arith. Mean)	Same as Primary
	65 ug/m^3	24-hour[4]	
Ozone	0.08 ppm	8-hour[5]	Same as Primary
	0.12 ppm	1-hour[6]	Same as Primary
Sulfur Oxides	0.03 ppm	Annual (Arith. Mean)	-------
	0.14 ppm	24-hour[1]	-------
	-------	3-hour[1]	0.5 ppm (1300 ug/m^3)

[1] Not to be exceeded more than once per year.

[2] To attain this standard, the expected annual arithmetic mean PM10 concentration at each monitor within an area must not exceed 50 ug/m^3.

[3] To attain this standard, the 3-year average of the annual arithmetic mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 ug/m^3.

[4] To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 65 ug/m^3.

[5] To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.

[6] (a) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is <= 1, as determined by appendix H. (b) The 1-hour NAAQS will no longer apply to an area one year after the effective date of the designation of that area for the 8-hour ozone NAAQS. The effective designation date for most areas is June 15, 2004. (40 CFR 50.9; see Federal Register of April 30, 2004 (69 FR 23996).)

The above standards apply to the carbon based thermo power plants such as Wanapa Energy Center. However, the same standards where not used to determine the nonroad diesel engines' air pollution impact upon human health and welfare. STAPPA/ALAPCO researchers concluded *"it is not appropriate to adopt a threshold for use in either the primary analysis or any alternative calculations, because no adequate scientific evidence exists to support such a calculation.*[24]" Again, in other words the first molecule of air pollution from a nonroad diesel engine has quantitative impact upon human premature deaths and health. Where as, a carbon based thermo power plant can pump Tons of air pollution into an airshed without ever having any quantitative impact upon human premature deaths and health as long as the facility individually never exceeds the any of the pollutants' minimum NAAQS. In contrast to the ZERO minimum NAAQS for all nonroad diesel engines' air pollutants such standards are just an other of my discoveries how the elected and appointed agency officials use discriminating process and regulations in support of favorable polluting entities and industries.

Design

At the few public Wanapa meetings I have attended the supporters of the project have touted how the Wanapa Energy Center is going to be the "best of the best" when compared with the design of the other regional carbon based thermo power plants. Such bold statements always appear very pretentious when such facilities still cause excessive health costs and even deaths of local citizens. In a search for a different perspective on design I discovered the architect Mr. William McDonough whose statement, *"Regulations are signals of design failure,"* peaked my interest. In his Centennial Sermon entitled *"Design, Ecology, Ethics and the Making of Things"* at the Catherdral of St. John The Divine in New York City on February 7, 1993 I found a very appropriate discussion that supports the position of those opposed to the Wanapa Energy Center. "*We must face the fact that what we are seeing across the world today is a war, a war against life itself. Our present systems of design have created a world that grows far beyond capacity of the environment to sustain life into the future. The industrial idiom of design, failing to honor the principles of nature, can only violate them, producing waste and harm, regardless of purported intention. If we destroy more forests, burn more garbage, drift-net more fish, burn more coal, bleach more paper, destroy more topsoil, poison more insects, build over more habitats, dam more rivers, produce more toxic and radioactive waste, we are creating a vast*

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[24] *The Dangers of the Dirtiest Diesels: The Health and Welfare Impacts of Non-road Heavy-Duty Diesel Engines and Fuels*, STAPPA/ALAPCO, June 2002, pg 19.

industrial machine, not for living in, but for dying in. It is a war, to be sure, a war that only a few more generations can surely survive.

When I was in Jordan, I worked for King Hussein on the master plan for the Jordan Valley. I was walking through a village that had been flattened by tanks and I saw a skeleton squashed into the adobe block and was horrified. My Arab host turned to me and, said, "Don't you know what war is?" And I said, "I guess I don't." And he said, "War is when they kill your children." So I believe we're at war. But we must stop. To do this, we have to stop designing everyday things for killing, and we have to stop designing killing machines."[25] The statement by the supporters of the Wanapa Energy Center's "Best of the Best" comes no where near meeting Mr. William McDonough's criteria for a design that is not killing our children. The war continues as this testimony's modeling clearly details with the deaths of Umatilla County citizens, of which some will be our children.

I am not going to just quote bold provocative advocates like Mr. William McDonough. Such an approach does not characterize my opposition position wholly. However, I do want to return to Mr. William McDonough's writings. I have included in the Appendix his "*Seven Steps to Doing Good Business*" that is the backbone of my proposal for the citizen friendly design of the Wanapa Energy Center. Mr. William McDonough's seven steps are:

- Eliminate the concept of waste
- Restore accountability
- Make prices reflect costs
- Promote diversity
- Make conservation profitable
- Insist on the accountability of nations
- Restore the guardian

With the new EPA non-road diesel engine regulations, the EPA has dictated that the engine design must reduce the air pollution waste with a 90% reduction in PM10 emissions, a 95% reduction in NOx emissions, and a 99% reduction in SOx emissions. Why not the same requirements for the Wanapa Energy Center? Why not collect the Nitrogen and Sulfur which can be reused as fertilizers in the local agricultural industry? Why not collect the CO2 and CO and use the product as a compressed gas in other industrial uses? The same approach needs to be taken with the waste steam and water as the first co-generation power plants in Umatilla County. Only then will the design of Wanapa Energy Center truly be the "Best of the Best".

Restitution not Mitigation

If the EPA chooses to grant Wanapa Energy Center an air quality permit without a design that has no air pollution emission or to meet the same NOx (95%), SOx (99%), and PM (90%) emission reductions as the newly implemented nonroad diesel regulations then there must be restitution for the quantifiable impacts presented within this testimony and never discussed by the applicant, ODEQ, EPA, or local officials. Hiding behind minimum NAAQS for one industry and not the other is unconsciousable and immoral, as well as illegal if society was to truly live by the rule of law. If there is no restitution required then the EPA has further validated my theorem that special groups and individuals have special rights and privileges that are not afforded the average Umatilla County and American citizen. If this particular EPA permit is approved

[25] William McDonough, "*Design, Ecology, Ethics and the Making of Things*", The Cathedral of St. John The Divine, New York, New York, February 7, 1993, page 8-9

without restitution then the Umatilla County citizens are expected to make human sacrifices of health and life that the applicant, their partners, and the ultimate power users are not called upon to make. Of course, that local human sacrifice is currently being paid as presented in Tables 14 and 14a's quantifiable human health and death costs associated with the region's presently existing EPA and ODEQ sited carbon based thermo power plants. Such a practice must cease if there is to be any creditability to EPA and ODEQ's equality of treatment amongst industries. If agriculture shall be required to clean up its air pollution contribution as well as the subsequent quantifiable impacts then should not the other industry that is witnessing unprecedented growth in airshed pollution emissions also do so? The Umatilla County citizens should be justly compensated with community restitution for those carbon based thermo power plant quantifiable human and crop costs bore by the local citizenship.

The restitution costs should be constructed as follows:

- At a minimum for health related damage an annual payment of $14 million divided equally between Good Shepherd Hospital in Hermiston, Oregon and St. Anthony Hospital in Pendleton, Oregon.
- At a minimum for death related losses an annual payment of $2.5 million per death to a countywide K-12 school fund administrated by the Umatilla County Commissioners for K-12 school facility construction. Our young children have no choice where they live, but by providing an exceptional K-12 educational experience they can escape as young adults the region's detrimental airshed.
- At a minimum, an annual payment of $3 million shared equally for the development of an alternative dryland crop and airshed crop impact research programs at the Columbia Basin Research Center in Pendleton, Oregon.
- Annual air pollutant emissions fees as per Table 17 placed in a separate fund for the use by the Umatilla County Commissioners, as they deem appropriate to enhance the Umatilla County citizens' overall quality-of-life.

Table 17. Restitution Cost per Pollutant Emitted

	CO	NOx	SOx	PM10
$/Ton	$ 100.00	$ 1,658.00	$ 3,407.00	$ 2,908.00
Wanapa TPY	933	486	57	562
Total	$93,300.00	$805,788.00	$194,199.00	$1,634,296.00

It is amazing that neither the State of Oregon or EPA are requiring that the Wanapa Energy Center pay the Oregon CO2 tax that other facilities constructed since the law levying the tax was implemented are required to pay. This is the same legislation that the EPA called a landmark law[26], but only for a select few, it appears. It is incredible how many privileges are granted other nations while slamming those selectively chosen "in the State" industries and individuals with even more burdensome laws and regulations. More of that governmental impartiality treatment for all that is so fair!

EPA's Technical Support Document's Misleading Statements

There are some significant misleading statements with the EPA's Technical Support Document that I believe should be clarified by both the applicant and agency.

[26] EPA-236-F-98-003, September 1998, Climate Change Solutions, *Oregon Switches to Cleaner Power*

- On page 9 there is a discussion of the operational limit of 6,800 hours per year (283 days or 77.6% of the year). That operational limit is never delineated or documented in the actual permit, Why not?
- On page 11 points out that there is a significant difference in the maxiumu VOC emissions between the applicant and EPA, 100 tpy versus 144 tpy. As if by magic the permit's VOC emission level is 99 tpy so the applicant doesn't have to complete an Ozone ambient air impact analysis. How can this calculation difference happen?
- On page 36 the EPA states; *"Land use within a 3-kilometer radius of the power plant is either grassland or water. Based on this information, the area is considered rural for dispersion purposes."* I guess the 1632 inmate plus 350 employees Two Rivers Correctional Institution just west of the Wanapa Energy Center site doesn't merit any mention. This convenient deletion of a major Umatilla County concentrated population facility supports my contention that neither the applicant nor EPA considers our rural population of any significance in either quantity or quality.
- On page 37 is the discussion why the Walla Walla and Spokane NWS stations data is employed for modeling. As discussed much earlier in this testimony I contend that neither would qualify as statistically similar to the Wanapa Energy Center expect for government work.

Isn't it interesting that only a 3-kilometer area is considered for the area classification for dispersion purposes, but a 165 mile radius is totally acceptable for meteorological data collection and analysis? These measurement practices are yet another example of that wonderful equality that is so conveniently ignored.

Conclusion

At a Port of Umatilla sponsored *"Wanapa Energy Center Project"* symposium Mr. Roger Hamilton, Advisor to former Governor Kitzhaber on Energy, asked Mr. Ken Beeson of Eugene Water & Electric Board (EWEB), a 15% owner of the Wanapa Project, *"Why, if Eugene requires the electrical power, is the facility not being built in Lane County closer to the electrical power consumer?"* Mr. Beeson declined to answer the question Mr. Hamilton asked of him. However, I now know why Mr. Beeson would not answer the question. He knew what the deleterious impact of such a large carbon based thermo power plant would have upon the citizens of Lane County and how that impact would be unacceptable by those same citizens. He and his organization are more than willing to transfer that venomous impact to the citizens of Umatilla County to obtain the electrical power Lane County requires. It is a shame that only the applicants and its associated customers would alone suffer Wanapa's quantifiable impacts, but that will not be the case. Instead, Umatilla County families just like mine will be the recipients of those quantifiable impacts without any restitution for our losses.

It is amazing to read the local paper, East Oregonian, about the documentation of the ODEQ's concern and monitoring of the Ordinance Depot's preparation to burn the nerve gas. Compare the Depot's projected human death rate with the deaths that have, are, and will occur from the carbon based thermo power plants that the ODEQ and EPA have sited. What an unbelievable level of hypocrisy that the ODEQ and EPA display! I am not of the aristocratic or intelligent'sia class that elected and appointed officials belong, so it does amaze me that an ordinary American citizen can collect the EPA and ODEQ data then using similar agency modeling techniques determine a human death and health care cost from the carbon based thermo power plant air pollution. Whom is trying to deceive who and why?

The killer event of today's news is the discovery of <u>ONE</u> infected American mad cow with no others found and not one subsequent American human infection or death recorded. There has been a call to "General Quarters" to bring to a halt the exportation of beef and even the consumption within America that has been fomented by the press, rabid animal rights organizations, and some governmental agency personal. However, dare ask about carbon based thermo power plants' human health and death impacts and there is nothing but a blank stare by the press, elected, and appointed officials. Even at the Umatilla County Commissioners' February 5th, 2004 meeting with ODEQ and EPA there was not one mention of the quantifiable impacts of the air pollutant emissions from the Wanapa Energy Center. The ODEQ and EPA officials contend that with air quality modeling Wanapa exceeds the NAAQS so there is no impact. However, agricultural diesel engines, with no minimum NAAQS, there is quantifiable impacts as shown in Table 8. Uniformity of concern, is there none?

The Oregon Chapter of the Sierra Club finds that the issuance of new site certificates for large natural gas combustion turbine power plants in Oregon would result in unnecessary human health impacts, environmental damage, excessive use of nonrenewable fuels, delays in diversifying our energy supply and misallocation of capital, during a period of large power surpluses and very limited availability of additional natural gas and high-voltage transmission. Over-reliance on natural gas powered electricity raises the risk of price spikes, market breaks and supply shortages.[27]

Mr. Pete West, Renewable Northwest Project, points out that the environmental impacts associated with thermal power plants include emissions of SOx, NOx, CO, PM10, and VOC, as well as toxic and heavy metals, which contribute to acid rain, ozone depletion, global warming, and lung disease. Power lines, water use, thermal discharge, and land use are other impacts of power plant development. Large gas-fired facilities involve payments of large sums of money to out-of-state interests, including the gas suppliers and financial institutions whose concern about the local airshed is non-existent. The defense of the airshed is critical for those of us airshed dependent for our livelihoods and health.

It is recognized that electrical utilities are the largest sources of pollution in the U.S. The burning of fossil fuels is recognized as the leading cause of global warming. In essence, here in Umatilla County the applicants, elected and appoint officials are indirectly proposing that hydro-power shall be replaced by air pollution. The Umatilla County environmental airshed impacts will worsen without an air quality cumulative effect analysis devoid of modeling. The continued development of the natural gas power facilities in Umatilla County has the potential to cap further economic development that might require the airshed for development and growth. If an EPA air quality non-attainment condition was declared in Umatilla County, new economic development would cease and present industries would be targeted for air pollutant emission reductions. In California's non-attainment areas the industry targeted for restrictive air quality regulations has been agriculture. I would wager Umatilla agriculture would suffer the same consequences under similar conditions.

Why aren't the environmental organizations and protesters with their fervent interest to protect airsheds questioning the Wanapa Energy Center's air quality permit request? Why are these organizations selective about who they protest against? I guess rural Eastern Oregon's airshed quality is of little to no consequence, out of sight out of mind. Why is the Hermiston organization, GASP, which has so strongly opposed the Depot's chemical weapons' incineration

[27] 2002 Oregon Chapter of Sierra Club's Policy Statement; *"New Site Certificates for Large Combustion Turbine Power Plants in Oregon"*

completely silent about the Wanapa Energy Center? Does the organization have any other airshed interests outside the Depot?

The only acceptable EPA air quality permit for the Wanapa Energy Center is one with restitution payments as outlined in the previous section. If that is not to be the case then the EPA has only further validated my theorem that special groups and individuals have special rights and privileges that are not afforded the average Umatilla County and American citizen. If this particular EPA permit is approved without restitution then the Umatilla County citizens are expected to make further human sacrifices of health and life that the applicant, their partners, and the ultimate power users are not called upon to make. Of course, that local human sacrifice has already been expected and is being given by examining Table 14 & 14a's quantifiable human health and death costs associated with the region's presently sited carbon based thermo power plants.

The time has past when Umatilla County can or maybe even will protect its critical airshed from further degradation by the unchecked industrial growth. If there is any doubt, examine Table 2 again. There is proliferous research that has determined that the quality of the air is a critical component of healthy humans and crop production. However, in Umatilla County there is no quality or quantity data that clearly delineates the health of the County's airshed for either crop production or even citizens' well being. Not only does Umatilla County literally have air quality threatening bombs residing at the Ordinance Depot, but the County has a multitude of other air quality time bombs completed and proposed for future development, carbon based thermo power plants. Because these facilities' threaten the local citizenships' health and welfare the EPA has an obligation to make a concerted effort to protect the critical airshed component for Umatilla County's citizens' health and crop production by demanding an air quality cumulative effect analysis as well as air quality monitoring of PM10, CO, NOx, SOx, and VOC, not modeling, to determine the overall airshed health. The EPA needs to make a similar strong statement as the Oregon Sierra Club and not bury its EPA head in the sand or when the EPA does come up for air it will choke from the pollution as the Umatilla County's dead citizens and agriculture's lost productivity will already have. Do not approve the Wanapa Energy Center air quality permit, and if for some unfathomable reason it is to be so, only with restitutions as proposed above to compensate the citizens of Umatilla County for the costs that they alone must bear from the siting of the facility.

Based upon my public testimony and ongoing participation in the Wanapa Energy Center siting process I request contested party status and the privileges that go with that status, i.e. an appeal based upon the lack of documented quantifiable human health and welfare impacts as has been completed for the EPA's approved non-road diesel vehicle regulations.

Appendix

1. Historical Weather Data from Area Sites
2. Taking Chance
3. Seven Steps to Doing Good Business
4. Airshed, Is It Important to Umatilla County Agriculture?

EXHIBIT F-1
PSD Permit

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

PREVENTION OF SIGNIFICANT DETERIORATION PERMIT TO CONSTRUCT

Permit Number: R10PSD-OR-05-01

Issuance Date: August 8, 2005

Effective Date: September 12, 2005

In accordance with the provisions of Part C to Title I of the Clean Air Act and Code of Federal Regulations Title 40, Section 52.21,

Diamond Wanapa I, L.P.
333 S. Grand Ave., Suite 1570
Los Angeles, California 90071

is authorized to construct and operate air emission units and to conduct other air pollutant emitting activities in accordance with the permit conditions listed in this permit. This applicant is authorized to construct and operate the Wanapa Energy Center on land held in trust by the United States Government for the Confederated Tribes of the Umatilla Indian Reservation at the following location:

20-acre parcel of land, zoned industrial, 3 miles east of Umatilla, Oregon, south of the Columbia River and north of the Columbia River Highway between Two Rivers Correctional Institution and Hat Rock State Park.
Latitude: 45°N 55'37" and Longitude: 119°W 14'02"

Terms not otherwise defined in this permit have the meaning assigned to them in the referenced regulations. All terms and conditions of the permit are enforceable by the United States Environmental Protection Agency and citizens under the Clean Air Act.

This Prevention of Significant Deterioration permit has been approved by:

Richard Albright
Director
Office of Air, Waste and Toxics
U.S. Environmental Protection Agency, Region 10

8/8/05
Date

ABBREVIATIONS AND ACRONYMS

AQRV: Air quality related values
BACT: best available control technology
CEMS: continuous emissions monitoring system
CFR: Code of Federal Regulations
CO: carbon monoxide
CT: combustion turbine
CTUIR: Confederated Tribes of the Umatilla Indian Reservation
DB: duct burner
Diamond: Diamond Wanapa I, L.P.
EPA: United States Environmental Protection Agency
GTN: Gas Transmission Northwest Corporation
HAP: hazardous air pollutant
HRSG: heat recovery steam generator
lb: pound
MMBtu/hr: Million British thermal units per hour
MW: megawatt
NAAQS: National Ambient Air Quality Standards
NESHAP: National Emission Standards for Hazardous Air Pollutants
NH_3: ammonia
NO_X: nitrogen oxides
NO_2: nitrogen dioxide
NSR: new source review
O_2: oxygen
O_3: ozone
$PM_{2.5}$: particulate matter with an aerodynamic diameter less than 2.5 micrometers
PM_{10}: particulate matter with an aerodynamic diameter less than 10 micrometers
ppmdv: parts per million on a dry volumetric basis
ppmw: parts per million by weight
PSD: Prevention of Significant Deterioration
SCR: selective catalytic reduction
SO_2: sulfur dioxide
SSMP: startup, shutdown, and malfunction plan
ST: steam turbine
TDS: total dissolved solids
tpy: ton per year
VOC: volatile organic compound
WEC: Wanapa Energy Center

AUTHORITY

The United States Environmental Protection Agency (EPA) is proposing to issue this prevention of significant deterioration (PSD) permit pursuant to the federal PSD air quality regulations, Code of Federal Regulations (CFR) Title 40, Section 52.21. This proposed action is based upon the application submitted by Diamond Wanapa I, L.P. (Diamond) on August 8, 2003, revised dispersion modeling analysis report submitted September 28, 2004, additional dispersion modeling information submitted October 28 and November 1, 2004, and the technical analysis performed by EPA.

DESCRIPTION OF PROJECT

1. Diamond and the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) entered into an agreement to develop and construct a greenfield combined cycle electric generating facility. The agreement was made in conjunction with the City of Hermiston, the City of Eugene acting through the Eugene Water & Electric Board, and the Port of Umatilla. The proposed facility is to be known as the Wanapa Energy Center (WEC) and will be located at latitude 45°N 55'37" and longitude 119°W 14'02" on land held in trust by the federal government for the benefit of the CTUIR near Umatilla, Oregon.

2. The design of the WEC will incorporate two similar blocks (in a 2 by 1 configuration) of combined cycle power generation. The nominal capacity of each block will be 600 megawatts (MW). Each block will consist of two combustion turbines (CT), two heat recovery steam generators (HRSG) each equipped with a duct burner (DB), and one steam turbine (ST). Exhaust gas from each CT will be routed to a dedicated HRSG before discharge to the atmosphere through a common stack. The HRSG will produce steam to be utilized on-site by the ST. Steam exhausted by the ST is recycled back to the HRSG via a water-cooled condenser. The cooling water is supplied by the Columbia River and will experience approximately six cycles of regeneration through a cooling tower before discharge to the Cold Springs Reservoir.

3. The WEC will consist of:

   3.1 Four F-technology CTs. The maximum heat input to each CT is approximately 1,778.5 million British thermal units per hour (MMBtu/hr).

   3.2 Four CT electric generators. Each CT will supply mechanical power to a dedicated electric generator. The maximum electric generating capacity of each CT generator is approximately 172.3 MW.

   3.3 Four HRSGs. Each HRSG is equipped with a DB. The maximum heat input to each DB is approximately 605.6 MMBtu/hr.

   3.4 Two STs. Each ST will receive steam from two dedicated HRSGs.

3.5 Two ST electric generators. Each ST will supply mechanical power to a dedicated electric generator. The maximum electric generating capacity of each ST generator is approximately 326.5 MW.

3.6 Two mechanically induced draft evaporative cooling towers. Each tower will receive hot water from the block's steam cycle condenser.

3.7 One backup diesel engine emergency fire pump rated at approximately 350 horsepower.

4. Natural gas provided by Gas Transmission Northwest Corporation (GTN) will be the only fuel combusted in each CT and DB. For the most part, natural gas within the GTN pipeline consistently achieves a sulfur content of less than 10 parts per million by weight (ppmw) based upon monitoring data provided by GTN.

5. Motor vehicle diesel fuel will be the only fuel combusted in the backup diesel engine emergency fire pump. The maximum concentration of sulfur in motor vehicle highway diesel fuel available for purchase is currently 500 ppmw and will decrease to 15 ppmw by mid-2006.

FACTS

1. WEC will be located in the vicinity of minority populations, and EPA is responsible for addressing environmental justice within these communities pursuant to Executive Order 12898. EPA is required to identify and address disproportionately high and adverse human health or environmental effects, if any, on minority populations due to this PSD permit approval. In February 2004, EPA conducted a public meeting in Hermiston, Oregon to educate the public about WEC and the PSD permit process so as to promote the meaningful involvement of the community.

2. WEC is located in the northeast Oregon intrastate air quality control region. With the exception of the urban growth boundary area for LaGrande, the ambient air in this region is either unclassifiable or attaining the national ambient air quality standards (NAAQS) for carbon monoxide (CO), lead, nitrogen dioxide (NO_2), 1-hour (1-hr) and 8-hr ground-level ozone (O_3), particulate matter with an aerodynamic diameter less than 10 micrometers (PM_{10}), particulate matter with an aerodynamic diameter less than 2.5 micrometers ($PM_{2.5}$), and sulfur dioxide (SO_2).

3. WEC is located just across the Columbia River from the south central Washington air quality control region. With the exception of the limited geographic areas within Yakima County and Wallula, the ambient air in this region is either unclassifiable or attaining the NAAQS for CO, lead, NO_2, 1-hr and 8-hr ground-level O_3, PM_{10}, $PM_{2.5}$, and SO_2.

4. The approximate distance and direction from WEC to the three PM_{10} nonattainment areas are as follows: Wallula, Washington - 35 miles to the northeast, LaGrande, Oregon - 95 miles to the southeast, and Yakima County, Washington - 100 miles to the northwest.

5. The approximate distance and direction from WEC to Class I United States Forest Service wilderness areas are as follows: Eagle Cap - 83 miles to the southeast, Strawberry Mountain - 103 miles to the south, Mount Adams - 112 miles to the northwest, Mount Hood - 112 miles to the west, and Goat Rocks - 121 miles to the northwest. The Columbia River Gorge National Scenic Area is approximately 75 miles to the west.

FINDINGS

1. WEC is subject to the federal PSD permitting requirements of 40 CFR 52.21. WEC is a fossil fuel fired steam electric plant with heat input of more than 250 MMBtu/hr; one of the 28 listed source categories with a "major source" threshold level of 100 tons per year (tpy). If a source's potential to emit any one regulated new source review (NSR) pollutant is at least 100 tpy, it is a "major source" subject to PSD review. As noted in Table 1, WEC is a "major source" as it will emit three regulated NSR pollutants above the 100 tpy threshold level.

2. WEC has the potential to emit significant quantities of CO, nitrogen oxides (NO_X), particulate matter (PM), $PM_{2.5}$, PM_{10}, SO_2, sulfuric acid mist (H_2SO_4), and volatile organic compounds (VOC). Each of these NSR regulated pollutants is undergoing PSD review given that each is emitted at a rate greater than a pollutant-specific threshold defined by EPA as significant. Consistent with EPA guidance, PM_{10} will serve as a surrogate for PM and $PM_{2.5}$.

3. Diamond has requested that EPA limit WEC's annual VOC emissions to less than 100 tpy, thereby exempting WEC from the requirement to conduct ambient O_3 monitoring. Without the requested limit, WEC's potential to emit VOC is 345 tpy assuming each CT and DB is operated at its maximum firing rate for each hour of the year.

4. WEC is required to (a) install best achievable control technology (BACT) to minimize emissions of regulated NSR pollutants, (b) demonstrate that its allowable or permitted emissions will not cause or contribute to a NAAQS or increment violation, and (c) demonstrate that its allowable emissions will not have an adverse impact upon Class I air quality related values (AQRV). Table 1 summarizes WEC's annual allowable emissions, including startup emissions, under this proposed permit.

Table 1 - WEC Annual Allowable Emissions (including startup emissions)

NSR Regulated Pollutant	Allowable Emissions (tpy)	Emission Units / BACT
CO	933	Four CT and HRSG: Exclusive use of pipeline natural gas[1] and oxidation catalyst. One Backup Diesel Engine: A new engine that satisfies the EPA 2004 highway heavy-duty diesel-cycle engine standards or the standards applicable at time of purchase, whichever is later.
PM_{10}	562	Four CT and HRSG: Exclusive use of pipeline natural gas, proper design and operation of equipment, minimize ammonia (NH_3) slip. Two Cooling Towers: Install a high-efficiency drift eliminator with a guaranteed efficiency of 0.0005%. The total dissolved solids (TDS) content within the cooling water shall remain less than 3,532 ppmw. One Backup Diesel Engine: A new engine that satisfies the EPA 2004 highway heavy-duty diesel-cycle engine standards or the standards applicable at time of purchase, whichever is later. Exclusive use of motor vehicle diesel fuel as specified by EPA at time of purchase.
NO_X as NO_2	486	Four CT and HRSG: Exclusive use of pipeline natural gas, lean premix dry low-NO_X CT combuster and dry low-NO_X DB, selective catalytic reduction (SCR). One Backup Diesel Engine: A new engine that satisfies the EPA 2004 highway heavy-duty diesel-cycle engine standards or the standards applicable at time of purchase, whichever is later.
VOC	99	Four CT and HRSG: Exclusive use of pipeline natural gas and oxidation catalyst. One Backup Diesel Engine: A new engine that satisfies the EPA 2004 highway heavy-duty diesel-cycle engine standards or the standards applicable at time of purchase, whichever is later.

[1] Pipeline natural gas means natural gas provided by a supplier through a pipeline. Pipeline natural gas, for purposes of this PSD permit, does not mean pipeline natural gas as defined by EPA at 40 CFR 72.2.

NSR Regulated Pollutant	Allowable Emissions (tpy)	Emission Units/BACT
H_2SO_4	88	Four CT and HRSG: Exclusive use of pipeline natural gas. One Backup Diesel Engine: Exclusive use of motor vehicle diesel fuel as specified by EPA at time of purchase.
SO_2	57	Four CT and HRSG: Exclusive use of pipeline natural gas. One Backup Diesel Engine: Exclusive use of motor vehicle diesel fuel as specified by EPA at time of purchase.

5. WEC has the potential to emit up to 279 tpy of ammonia (NH_3) with the utilization of selective catalytic reduction (SCR) to satisfy BACT in controlling NO_X emissions. Although NH_3 is not a listed regulated NSR pollutant, EPA is requiring WEC to minimize the collateral impacts (NH_3 emissions) by ensuring proper and efficient operation of the SCR control system[2].

6. Diamond has submitted an analysis of the impact WEC emissions will have on ambient air quality. The analysis predicts ambient air pollutant concentrations and AQRV impacts resulting from WEC and nearby source emissions by utilizing background air quality measurements, meteorological data, and dispersion modeling techniques. EPA has reviewed this analysis and finds that it conforms to the rules and EPA modeling guidance.

7. NAAQS and Class II Increment Analysis. Allowable emission from WEC will not cause or contribute to air pollution in violation of the NAAQS or PSD Class II increment. WEC emissions will not result in a significant off-property impact for CO and SO_2. WEC emissions will result in a significant off-property impact for NO_2, O_3, and PM_{10}. WEC will not have a significant impact in the LaGrande, Oregon, Wallula, Washington, or Yakima County, Washington PM_{10} nonattainment areas.

8. Class I Increment Analysis. Allowable emissions from WEC will not cause or contribute to air pollution in violation of PSD Class I increment for NO_2, PM_{10}, or SO_2. WEC emissions will not result in a significant impact on Class I areas. Because WEC emissions will not result in significant concentrations of NO_2, PM_{10}, or SO_2, emissions from nearby sources were not considered and a cumulative impact analysis was not required.

9. Class I AQRV Analysis. Allowable emissions from WEC will not adversely impact AQRVs, including visibility and acid deposition. Because WEC emissions will not result in significant nitrogen loading, sulfur loading, or visibility degradation, a cumulative impact analysis was not performed.

[2] The authority to address collateral impacts is the subject of a June 3, 1986 EPA Remand Order for North County Resource Recovery Associates, PSD Appeal No. 85-2.

10. Each CT is subject to emission limitation, monitoring, recordkeeping and reporting requirements of 40 CFR Part 60, Subpart GG - Standards of Performance for Stationary Gas Turbines.

11. Each HRSG is subject to emission limitation, monitoring, recordkeeping and reporting requirements of 40 CFR Part 60, Subpart Da - Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978.

12. Based upon estimates of hazardous air pollutant (HAP) emissions presented in the PSD permit application, WEC will be a major source of HAP.

13. Each CT is subject to EPA's National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines - NESHAP Subpart YYYY. EPA has temporarily stayed the effectiveness of NESHAP Subpart YYYY, apart from the initial notification requirement, for new lean pre-mix natural gas-fired combustion turbines like those proposed at WEC. The temporary stay was promulgated in light of an EPA proposal to delist new lean pre-mix natural gas-fired combustion turbines from regulation under Section 112 of the Clean Air Act. Depending upon EPA's final delisting decision, each CT may not ultimately be subject to NESHAP Subpart YYYY.

14. EPA has determined that WEC will comply with NESHAP Subpart YYYY requirements that remain effective. EPA has also determined that WEC is capable of complying with the NESHAP Subpart YYYY requirements that are currently stayed. This permit serves as a Section 112(i)(1) preconstruction approval pursuant to 40 CFR 63.5(e).

15. Each HRSG is a natural gas-fired electric utility steam generating unit (EUSGU). EPA has determined that regulation of HAP emissions from natural-gas fired EUSGUs is not appropriate or necessary. Thus, EPA has developed no NESHAP for the HRSGs.

16. Each CT and HRSG is subject to EPA's Acid Rain Program pursuant to 40 CFR Part 72 through 78.

17. WEC is subject to EPA's operating permit program pursuant to 40 CFR Part 71. WEC is required to apply for an operating permit within 12 months of startup.

18. WEC has satisfied all requirements necessary for issuance of a PSD permit for the construction and operation of the WEC.

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APPROVAL CONDITIONS

1 Diamond is authorized to construct and operate WEC consistent with the representations in the permit application and subject to the following conditions:

2 Backup Diesel Engine Driven Emergency Fire Pump

2.1 The backup diesel engine utilized to drive the emergency fire pump:

2.1.1 Shall not exceed 350 HP,

2.1.2 May operate up to 52 hours per year for purposes of maintenance and training,

2.1.3 Shall comply with the EPA 2004 highway heavy-duty diesel-cycle engine standards of 40 CFR 86.004-11 or the EPA highway heavy-duty diesel-cycle engine standards applicable at time of purchase, whichever is later, and

2.1.4 Shall combust only motor vehicle diesel fuel as specified by EPA in 40 CFR 80.520(a)(1). WEC is limited to purchasing motor vehicle diesel fuel with a maximum sulfur content of 15 ppmw beginning July 15, 2006 if the shipment originates from a terminal. If the shipment originates from a retail outlet or a wholesale purchaser-consumer facility, compliance is not required until September 1, 2006.

2.2 Compliance with Condition 2.1.1 shall be demonstrated by engine purchase records.

2.3 Compliance with Condition 2.1.2 shall be demonstrated by maintaining a log of operating hours and reason for operation. Actual emergency firefighting hours shall not be considered for purposes of demonstrating compliance with the annual operating limit in Condition 2.1.2.

2.4 Compliance with Condition 2.1.3 shall be demonstrated by certification of the engine manufacturer.

2.5 Compliance with Condition 2.1.4 shall be demonstrated by fuel purchase records.

3 CT and HRSG-DB Fuel Supply

3.1 Each CT and HRSG-DB shall combust only pipeline natural gas.

3.2 Compliance shall be demonstrated through documentation as provided in a pipeline transportation contract.

4 Oxidation Catalyst Equipment

4.1 Each CT/HRSG-DB exhaust stack shall be equipped with a functioning oxidation catalyst.

5 Commencing Commercial Operation & Emission Limit Applicability

5.1 Commencing commercial operation means to begin generating electricity for sale, including the sale of test generation. This determination is made on an individual CT/HRSG-DB basis.

5.2 The emissions limits and work practice standards established within permit Conditions 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, and 17 do not apply until after the affected emissions unit commences commercial operation.

6 CT Startup, Shutdown, and Normal Operating Conditions

6.1 CT normal load is defined as any operating period during which the heat input of the CT is at least 50% of CT capacity. Heat input, for the purpose of this paragraph, is measured in terms of MMBtu per hour.

6.2 CT startup is defined as any operating period during which the CT is ramping up from less than normal load and ends when the earlier of the following events occurs:

6.2.1 CT normal load is achieved and normal operating temperatures have been reached in both the catalytic oxidation and SCR modules as indicated by the manufacturer's operating manual.

6.2.2 One of the following time limits have been reached, as applicable:

6.2.2.1 Three and one-half hours have elapsed since fuel was first introduced to the CT on a cold startup. A cold startup is any startup occurring after the CT has been shut down for 8 hours or more.

6.2.2.2 Two and three-fourth hours elapsed since fuel was first introduced to the CT on a warm startup. A warm startup is any startup occurring after the CT has been shut down for 4 hours or more but less than 8 hours.

6.2.2.3 Two hours have elapsed since fuel was first introduced to the CT on a hot startup. A hot startup is any startup occurring after the CT has been shut down for less than 4 hours.

6.2.3 CT shutdown is defined as any operating period during which the CT is ramping down from normal load and ends when fuel is no longer being supplied to the CT.

6.2.4 WEC shall not operate the CT at less than normal load except during startup and shutdown.

7 NO_X Emissions Limits for each CT/HRSG-DB

7.1 NO_X emissions from each CT/HRSG-DB exhaust stack shall not exceed:

7.1.1 2.0 parts per million NO_X on a dry volumetric basis (ppmdv), corrected to 15.0 percent (%) oxygen (O_2), averaged over any consecutive three hour period, except during CT startup and shutdown,

7.1.2 802 pound (lb) NO_X (as NO_2) per calendar day, and

7.1.3 122 tons NO_X (as NO_2) per calendar year.

7.2 Initial compliance with Condition 7.1.1 and 7.1.2 shall be demonstrated by measuring NO_X emissions in the exhaust stack pursuant to the following conditions:

7.2.1 Conduct an EPA Reference Method 20 performance test in accordance with an EPA-approved stack test protocol,

7.2.2 Conduct the performance test while both CT and DB are firing at the maximum firing rate, and

7.2.3 Conduct the performance test within 60 days after both CT and DB have achieved the maximum firing rate but no later than 180 days after commencing commercial operation.

7.3 Continuous compliance with Conditions 7.1.1, 7.1.2, and 7.1.3 shall be demonstrated by measuring NO_X emissions in the exhaust stack pursuant to the following conditions:

7.3.1 Install and operate a continuous emission monitoring system (CEMS) satisfying the requirements of 40 CFR Part 75, and

7.3.2 Certify the CEMS pursuant to the requirements of 40 CFR Part 75 no later than 180 days after commencing commercial operation.

8 Daily NO_X Emissions Cap for all CT/HRSG-DB

8.1 In the event four CT/HRSG-DB are constructed and operating on a given day, Diamond may demonstrate compliance with Condition 7.1.2 by limiting combined NO_X emissions from the four CT/HRSG-DB to 3,208 lb NO_X (as NO_2) per calendar day.

8.2 In the event three CT/HRSG-DB are constructed and operating on a given day, Diamond may demonstrate compliance with Condition 7.1.2 by limiting combined NO_X emissions from the three CT/HRSG-DB to 2,406 lb NO_X (as NO_2) per calendar day.

8.3 In the event two CT/HRSG-DB are constructed and operating on a given day, Diamond may demonstrate compliance with Condition 7.1.2 by limiting combined NO_X emissions from the two CT/HRSG-DB to 1,604 lb NO_X (as NO_2) per calendar day.

9 Annual NO_X Emissions Cap for all CT/HRSG-DB

9.1 In the event four CT/HRSG-DB are constructed and operating during a given year, Diamond may demonstrate compliance with Condition 7.1.3 by limiting combined NO_X emissions from the four CT/HRSG-DB to 486 tons NO_X (as NO_2) per calendar year.

9.2 In the event three CT/HRSG-DB are constructed and operating during a given year, Diamond may demonstrate compliance with Condition 7.1.3 by limiting combined NO_X emissions from the three CT/HRSG-DB to 364 tons NO_X (as NO_2) per calendar year.

9.3 In the event two CT/HRSG-DB are constructed and operating during a given year, Diamond may demonstrate compliance with Condition 7.1.3 by limiting combined NO_X emissions from the two CT/HRSG-DB to 243 tons NO_X (as NO_2) per calendar year.

10 NH_3 Emissions Limit for each CT/HRSG-DB

10.1 NH_3 emissions from each CT/HRSG-DB exhaust stack shall not exceed 5.0 ppmdv, corrected to 15.0 % O_2, averaged over any consecutive three hour period, except during CT startup and shutdown.

10.2 Initial compliance with Condition 10.1 shall be demonstrated by measuring NH_3 emissions in the exhaust stack pursuant to the following conditions:

10.2.1 Conduct an EPA Conditional Test Method 27 performance test in accordance with an EPA-approved stack test protocol,

10.2.2 Conduct the performance test while both CT and DB are firing at the maximum firing rate, and

10.2.3 Conduct the performance test within 60 days after both CT and DB have achieved the maximum firing rate but no later than 180 days after commencing commercial operation.

10.3 Continuous compliance with Condition 10.1 shall be demonstrated by measuring NH_3 emissions in the exhaust stack pursuant to the following conditions:

10.3.1 Install and operate a CEMS satisfying the requirements of EPA Preliminary Performance Specification for NH_3 CEMS (PPS 001) and Appendix F to 40 CFR Part 60 (Appendix F), and

10.3.2 Certify the CEMS pursuant to the requirements of PPS 001 and Appendix F no later than 180 days after commencing commercial operation.

11 CO Emissions Limits for each CT/HRSG-DB

11.1 CO emissions from each CT/HRSG-DB exhaust stack shall not exceed:

11.1.1 2.0 ppmdv, corrected to 15.0 % O_2, averaged over any consecutive three hour period, except during CT startup and shutdown, and

11.1.2 328 lb per hour.

11.2 Initial compliance with Condition 11.1.1 and 11.1.2 shall be demonstrated by measuring CO emissions in the exhaust stack pursuant to the following conditions:

11.2.1 Conduct an EPA Reference Method 10 performance test in accordance with an EPA-approved stack test protocol,

11.2.2 Conduct the performance test while both CT and DB are firing at the maximum firing rate, and

11.2.3 Conduct the performance test within 60 days after both CT and DB have achieved the maximum firing rate but no later than 180 days after commencing commercial operation.

11.3 Continuous compliance with Conditions 11.1.1 and 11.1.2 shall be demonstrated by measuring CO emissions in the exhaust stack pursuant to the following conditions:

11.3.1 Install and operate a CEMS satisfying the requirements of EPA Performance Specification 4A (PS 4A) of Appendix B to 40 CFR Part 60 and Appendix F, and

11.3.2 Certify the CEMS pursuant to the requirements of PS 4A and Appendix F no later than 180 days after commencing commercial operation.

12 PM_{10} Emissions Limits for each CT/HRSG-DB

12.1 PM_{10} emissions from each CT/HRSG-DB exhaust stack shall not exceed 745 lb per calendar day.

12.2 Initial compliance with Condition 12.1 shall be demonstrated by measuring PM_{10} emissions in the exhaust stack pursuant to the following conditions:

12.2.1 Conduct a performance test in accordance with an EPA-approved stack test protocol incorporating the following methods:

12.2.1.1 EPA Reference Method 5 or 5I to capture filterable PM_{10}, and EPA Reference Method 202 to capture condensible PM_{10}, or EPA Conditional Test Method 39.

12.2.1.2 Conduct the performance test while both CT and DB are firing at the maximum firing rate, and

12.2.1.3 Conduct the performance test within 60 days after both CT and DB have achieved the maximum firing rate but no later than 180 days after commencing commercial operation.

12.3 Continuous compliance with Condition 12.1 shall be demonstrated by calculating PM_{10} emissions pursuant to the following conditions:

12.3.1 Install and operate a fuel flow metering system satisfying the requirements of 40 CFR Part 75 to measure the amount of fuel being combusting in each CT and DB,

12.3.2 Calculate PM_{10} emissions based upon the measured fuel flow rate and EPA-approved PM_{10} emission factors developed pursuant to Condition 12.3.3 and 12.3.4, 12.3.3 No later than 180 days after commencing commercial operation:

12.3.3.1 Develop PM_{10} emission factors for EPA approval based upon stack test observations for each CT and DB, and

12.3.3.2 Certify the fuel flow metering system pursuant to the requirements of 40 CFR Part 75.

12.3.4 No later than five years after receiving EPA approval of PM_{10} emission factors, develop new PM_{10} emission factors for EPA approval based upon stack test observations for each CT and DB.

12.4 EPA will revise Condition 12.1 to lower the daily PM_{10} emission limit if performance test results indicate lower than expected PM_{10} emissions. The resultant emission limit shall reflect each CT/HRSG-DB's potential to emit while allowing for reasonable operational variability over the life of the CT/HRSG-DB. In no event shall the revised emission limit be less than the CT/HRSG-DB's potential to emit.

13 <u>PM_{10} Emissions Cap for all CT/HRSG-DB</u>

13.1 In the event four CT/HRSG-DB are constructed, Diamond may demonstrate compliance with Condition 12.1 by limiting combined PM_{10} emissions from the four CT/HRSG-DB to 2,980 lb PM_{10} per calendar day.

13.2 In the event three CT/HRSG-DB are constructed, Diamond may demonstrate compliance with Condition 12.1 by limiting combined PM_{10} emissions from the three CT/HRSG-DB to 2,235 lb PM_{10} per calendar day.

13.3 In the event two CT/HRSG-DB are constructed, Diamond may demonstrate compliance with Condition 12.1 by limiting combined PM_{10} emissions from the two CT/HRSG-DB to 1,490 lb PM_{10} per calendar day.

13.4 The PM_{10} emissions caps in Conditions 13.1, 13.2, and 13.3 shall be revised downward consistent with the methodology outlined in Condition 12.4.

14 <u>SO_2 Emissions Limit for each CT/HRSG-DB</u>

14.1 SO_2 emissions from each CT/HRSG-DB exhaust stack shall not exceed 78 lb SO_2 per calendar day.

14.2 Initial compliance with Condition 14.1 shall be demonstrated by measuring SO_2 emissions in the exhaust stack pursuant to the following conditions:

14.2.1 Conduct an EPA Reference Method 6C performance test in accordance with an EPA-approved stack test protocol,

14.2.2 Conduct the performance test while both CT and DB are firing at the maximum firing rate, and

14.2.3 Conduct the performance test within 60 days after both CT and DB have achieved the maximum firing rate but no later than 180 days after commencing commercial operation.

14.3 Continuous compliance with Condition 14.1 shall be demonstrated by calculating SO_2 emissions pursuant to the following conditions:

14.3.1 Install and operate a fuel flow metering system satisfying the requirements of 40 CFR Part 75 to measure the amount of fuel being combusting in each CT and DB, 14.3.2 Calculate SO_2 emissions based upon the measured fuel flow rate and a representative fuel sulfur content value provided by the natural gas provider,

14.3.3 No later than 180 days after commencing commercial operation:

14.3.3.1 Obtain from the natural gas provider a representative value for the sulfur content of the fuel being provided to WEC, and

14.3.3.2 Certify the fuel flow metering system pursuant to the requirements of 40 CFR Part 75 no later than 180 days after commencing commercial operation.

14.3.4 Obtain representative fuel sulfur content values from the natural gas provider at least annually.

15 <u>VOC Emissions Cap for all CT/HRSG-DB</u>

15.1 Combined VOC emissions from all CT/HRSG-DB shall not exceed 99 tons per 12-month period, calculated as the total mass of VOC constituents.

15.2 Continuous compliance with Condition 15.1 shall be demonstrated by calculating VOC emissions pursuant to Condition 15.3 or 15.4.

15.3 Calculate VOC emissions pursuant to the following conditions:

15.3.1 Install and operate a monitoring system to meter CT and DB hours of operation no later than 180 days after commencing commercial operation, and

15.3.2 Calculate VOC emissions based upon the elapsed time and the following emission factors:

15.3.2.1 5.4 lb VOC / hour from the CT, except during startup,

15.3.2.2 29.0 lb VOC / hour from the CT during startup, and

15.3.2.3 14.3 lb VOC / hour from the DB.

15.4 Calculate VOC emissions pursuant to the following conditions:

15.4.1 Install and operate a fuel flow metering system satisfying the requirements of 40 CFR Part 75 to measure the amount of fuel being combusting in each CT and DB,

15.4.2 Calculate VOC emissions based upon the measured fuel flow rate and EPA-approved VOC emission factors developed pursuant to Condition 15.4.3 and 15.4.4,

15.4.3 No later than 180 days after commencing commercial operation:

15.4.3.1 Develop VOC emission factors for EPA approval based upon stack test observations for each CT and DB, and

15.4.3.2 Certify the fuel flow metering system pursuant to the requirements of 40 CFR Part 75.

15.4.4 No later than five years after receiving EPA approval of VOC emission factors, develop new VOC emission factors for EPA approval based upon stack test observations for each CT and DB.

16 <u>Visible Emissions Limit for each CT/HRSG-DB</u>

16.1 Visible smoke emissions from each CT/HRSG-DB shall not exceed 5% opacity over a six-minute average, except during startup and shutdown.

16.2 Initial compliance with Condition 16.1 shall be demonstrated by visually determining the opacity of the exhaust stack pursuant to the following conditions:

16.2.1 Conduct an EPA Reference Method 9 performance test over an eighteen-minute period in accordance with an EPA-approved test protocol,

16.2.2 Conduct the performance test while both CT and DB are firing at the maximum firing rate, and

16.2.3 Conduct the performance test within 60 days after both CT and DB have achieved the maximum firing rate but no later than 180 days after commencing commercial operation.

16.3 Continuous compliance with Condition 16.1 shall be demonstrated by visually determining exhaust stack smoke emissions pursuant to the following conditions:

16.3.1 Conduct visual observations of emissions pursuant to EPA Reference Method 22,

16.3.2 Conduct visual observations once per calendar day while the CT is operating, and

16.3.3 If smoke is observed while conducting visual observations, immediately proceed to determine the opacity of the emissions over an eighteen-minute period pursuant to EPA Reference Method 9.

17 <u>PM_{10} Emissions Limit for each Cooling Tower</u>

17.1 PM_{10} emissions from each cooling tower shall not exceed 49 lb per calendar day. This emission limit is achieved when the following two work practice standards are accomplished:

17.1.1 The drift eliminators have been installed in accordance with manufacturer's specifications to achieve a drift loss of 0.0005 percent of the recirculating water flow rate.

17.1.2 The cooling water 7-day average TDS content is less than 3,532 ppmw.

17.2 Initial compliance with Condition 17.1.1 shall be demonstrated no later than 180 days after the corresponding CT/HRSG-DB commences commercial operation pursuant to the following conditions:

17.2.1 An expert in the field of cooling tower drift eliminators shall conduct an inspection of the assembled cooling tower drift eliminators,

17.2.2 After conducting the inspection, the qualified expert shall author a report documenting the inspection and certifying the findings.

17.3 Continuous compliance with Condition 17.1.1 shall be demonstrated by maintaining the assembled cooling tower drift eliminators consistent with manufacturer's recommendation as described in the operating manual for the cooling tower. Compliance shall be documented by maintaining a log of maintenance activity performed on the cooling tower drift eliminators.

17.4 Initial compliance with Condition 17.1.2 shall be demonstrated no later than 180 days after the corresponding CT/HRSG-DB commences commercial operation pursuant to the following conditions:

17.4.1 Measure the water's TDS content in accordance with the following procedures:

17.4.1.1 Collect a grab sample of the cooling water at least once per day for seven consecutive operating days.

17.4.1.2 Analyze each sample in accordance with Standard Methods, 18th Ed., Method 2540 C or EPA Method 160.1, at 40 CFR §136.3.

17.4.1.3 Record the sampling results.

17.5 Continuous compliance with Condition 17.1.2 shall be demonstrated by maintaining a cooling water TDS content of less than 3,532 ppmw pursuant to the following conditions:

17.5.1 Collect a grab sample of the cooling water at least once per week.

17.5.2 Analyze each sample in accordance with Standard Methods, 18th Ed., Method 2540 C or EPA Method 160.1, at 40 CFR §136.3.

17.5.3 Record the sampling results.

18 <u>Startup, Shutdown, and Malfunction Procedure Manual</u>

18.1 Within 90 days of commencing commercial operation, WEC shall have prepared startup, shutdown and malfunction plans (SSMP) for CTs, DBs, and cooling towers. Each SSMP shall be designed to assist WEC minimize air pollutants emissions.

18.2 Each SSMP shall be reviewed annually, and updated as needed.

18.3 Copies of each SSMP shall be maintained on site and made available to EPA upon request.

18.4 Emissions that result from a failure to follow the requirements of a SSMP may be considered credible evidence that emissions violations have occurred.

19 <u>Recordkeeping</u>

WEC shall maintain all records generated for the purpose of demonstrating compliance with the requirements of this permit. Records shall be maintained on site for at least five years.

20 <u>Reporting</u>

20.1 Monitoring data shall be submitted quarterly within 30 days of the end of each calendar quarter.

20.2 The format of the data shall be consistent with EPA's Acid Rain program reporting requirements. The Acid Rain program reporting format extends to all monitoring data, including data required by this permit but not EPA's Acid Rain Program.

20.3 For each occurrence of monitored or calculated emissions in excess of the permitted limit, the quarterly emissions report shall include the following:

20.3.1 The time and duration of the occurrence,

20.3.2 The magnitude of the emission,

20.3.3 The probable cause, and

20.3.4 Corrective actions taken or planned.

20.4 WEC shall notify EPA in writing at least thirty days prior to:

20.4.1 Initial start-up of any permitted emissions unit for operational testing and manufacturer's certification purposes,

20.4.2 Commencing commercial operation,

20.4.3 The date any emission testing required by this permit will be performed, and

20.4.4 The date(s) CEMS performance testing will be performed.

21 Termination

This approval shall become invalid if construction of WEC is not commenced within eighteen (18) months after the effective date of this permit to construct, or if construction of the facility is discontinued for a period of 18 months, unless EPA extends the 18 month period upon a satisfactory showing that an extension is justified, pursuant to 40 CFR 52.21(r)(2).

22 Permit Revisions

WEC may request that this permit be revised for good cause. The nature and extent of the request will determine the process under which the permit may be revised.

23 Post-Construction Ambient Monitoring

23.1 WEC shall install, operate, and maintain a continuous non-filter based ambient air quality monitoring station for $PM_{2.5}$, in accordance with EPA, 1984a: *Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD)*, EPA-450/4-87-007, May 1987, U.S. Environmental Protection Agency, Research Triangle Park, NC. The monitoring period shall commence within 90 days after the completion of construction and start-up or after commercial operation, which ever is later, and shall continue for a minimum of 1 year and a maximum of 2 years form the date first readings are taken. The data recovery should be at least 80 percent of the data possible for each air pollutant during each 1-year monitoring period. The monitoring station shall continue to operate and record data for a minimum of 1 year, at which time WEC will notify EPA in writing of WEC's intent to terminate operation of the monitoring station; however monitoring station operation will continue until such time that written approval is obtained from EPA authorizing the termination of its operation, such authorization of termination of operation of the monitoring station will not be unreasonably withheld and in any event the termination of operation of the monitoring station can occur unilaterally at WEC's discretion on or after 2 years of operation.

23.2 WEC shall install, operate, and maintain a meteorological monitoring station to monitor and record data in accordance with EPA, 1987b: *On-Site Meteorological Program Guidance for Regulatory Modeling Application*, EPA-450/4-87-013, June, 1987, U.S. Environmental Protection Agency, Research Triangle, N.C. Data shall include horizontal wind speed and direction, temperature, solar radiation and delta-T. Each quarter's data recovery should be at least 90 percent of the data possible for each variable measured during each 1-year monitoring period. The monitoring period shall commence within 90 days after initial the completion of construction and start-up or after commercial operation, which ever is later, and shall continue for a minimum of one (1) year and a maximum of 2 years from the date first readings are taken. The monitoring station shall continue to operate and record data for a minimum of 1 year, at which time WEC will notify EPA in writing of WEC's intent to terminate operation of the monitoring station; however monitoring station operation will continue until such time that written approval is obtained from the EPA authorizing the termination of its operation, such authorization of termination of operation of the monitoring station will not be unreasonably withheld and in any event the termination of operation of the monitoring station can occur unilaterally at WEC's discretion on or after 2 years of operation.

23.3 At least 60 days prior to the scheduled completion of construction, WEC shall submit to EPA for approval an ambient air quality and meteorological monitoring plan for the post-construction monitoring requirements specified in Conditions 23.1 and 23.2 in accordance with EPA, 1993b: *Requirements for Quality Assurance Project Plans for Environmental Data Operations* (QA/R5) July, 1993, U.S. Environmental Protection Agency, Quality Assurance and Management Staff, Washington, DC. The plan shall include the proposed siting location(s). EPA shall provide WEC EPA's approval of or comments to the ambient air quality and meteorological monitoring plan no later than 30 days prior to the scheduled completion of construction.

23.4 WEC shall submit on a monthly basis, a printed or electronic summary of the ambient air quality and meteorological monitoring data collected in each calendar month. The summary shall be submitted within 60 days after the end of each calendar month.

23.5 WEC shall submit audit reports within 60 days after the following events:

- 23.5.1 Completion of the post-installation equipment audit;
- 23.5.2 Completion of the independent performance and system audits;
- 23.5.3 Completion of the quarterly audits required for the ambient air quality data collection system; and
- 23.5.4 Completion of the semi-annual audits required for the meteorological data collection system.

Quarterly and semi-annual audit periods shall be based on periods of three and six calendar months commencing with the first complete calendar month of collected data.

23.6 Within 90 days after the end of each year of collected data and following the completion of the collection of monitoring data, WEC shall submit to EPA annual/final reports in text (i.e., summary), tabular, and graphic forms, including data in digitized format. The digitized form of the measured air quality and meteorological data shall be in (1) EPA Aerometric Information and Retrieval System format and (2) ASCII format accessible by an IBM compatible PC.

23.7 Within 90 days after completion of data collection, WEC shall also submit the final report for the system and performance audit required prior to monitoring termination.

EXHIBIT F-2
Response to Comments

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
Seattle, Washington

Diamond Wanapa I, L.P.
Wanapa Energy Center

Preventi[illegible]ficant [illegible]on (PSD)

RES[illegible]NSE TO [illegible]C COM[illegible]NTS

August 8, 2005

ABBREVIATIONS AND ACRONYMS

Compounds
CH_4: methane
CO: carbon monoxide
H_2SO_4: sulfuric acid mist
NH_3: ammonia
NO_2: nitrogen dioxide (subset of NO_X)
NO_X: nitrogen oxides
O_2: oxygen
O_3: ozone
$PM_{2.5}$: particulate matter with an aerodynamic diameter less than 2.5 micrometers (subset of PM_{10})
PM_{10}: particulate matter with an aerodynamic diameter less than 10 micrometers
SO_2: sulfur dioxide
VOC: volatile organic compound

Acronyms
AAQIA: ambient air quality impact analysis
AQRV: air quality related values
BA: biological assessment
BACT: best available control technology
BIA: United States Department of Interior Bureau of Indian Affairs
BOR: United States Department of Interior Bureau of Reclamation
BPA: United States Department of Energy Bonneville Power Administration
CAA: Clean Air Act
CAMD: Clean Air Markets Division
CEMS: continuous emissions monitoring system
CFR: Code of Federal Regulations
CT: combustion turbine
CTUIR: Confederated Tribes of the Umatilla Indian Reservation
DB: duct burner
DEIS: draft environmental impact statement
Diamond: Diamond Wanapa I, L.P.
EAB: Environmental Appeals Board
EFH: essential fish habitat
EIS: environmental impact statement
EPA: United States Environmental Protection Agency
ESA: Endangered Species Act
ESECA: Energy Supply and Environmental Coordination Act
EUSGU: electric utility steam generating unit
FR: Federal Register
FWS: United States Department of Interior's Fish and Wildlife Service
GTN: Gas Transmission Northwest Corporation
HAP: hazardous air pollutant
HHV: higher heating value

HRSG: heat recovery steam generator
LHV: lower heating value
MW: megawatt
MSA: Magnuson-Stevens Fishery Conservation and Management Act
NAAQS: National Ambient Air Quality Standards
NEPA: National Environmental Policy Act
NESHAP: National Emission Standards for Hazardous Air Pollutants
NOAA Fisheries: National Marine Fisheries Service within the United States Department of Commerce's National Oceanic and Atmospheric Administration
NPDES: National Pollutant Discharge Elimination System
NSPS: New Source Performance Standards
NSR: New Source Review
NWS: National Weather Service
ODEQ: Oregon Department of Environmental Quality
PPS: Preliminary Performance Specification
PS: Performance Specification
PSD: Prevention of Significant Deterioration
ROD: Record of Decision
SCR: selective catalytic reduction
SER: significant emission rate
ST: steam turbine
TDS: total dissolved solids
TPY: tons per year
TSD: technical support document for PSD Permit No. R10PSD-OR-05-01
USFWS: United States Fish and Wildlife Service
WEC: Wanapa Energy Center

Table of Contents

1. BACKGROUND

On August 8, 2003, Diamond Wanapa I, L.P. (Diamond) submitted an application to the United States Environmental Protection Agency, Region 10 (EPA) for a Prevention of Significant Deterioration (PSD) permit to construct and operate the Wanapa Energy Center (WEC). WEC is to be located near Umatilla, Oregon on land held in trust by the United States government for the benefit of the Confederated Tribes of the Umatilla Indian Reservation (CTUIR). Diamond submitted a revised dispersion modeling analysis on September 28, 2004. Additional dispersion modeling information was submitted October 28, 2004 and November 1, 2004.

On November 23, 2004, EPA provided public notice of the preliminary approval of the application for WEC, proposed PSD Permit No. R10PSD-OR-05-01 (Permit), and preliminary technical support document (TSD). The public notice stated that the public had the opportunity to comment upon the Permit. The public notice was performed by mailing it to a list of interested persons and by publication of a legal notice in the East Oregonian (November 23, 2004) and Hermiston Herald (November 23, 2004).

Copies of the draft Permit and associated TSD were made available for public review in the following public libraries and offices: Oregon Trail Public Library in Boardman, Umatilla Public Library, Mid-Columbia Library in Kennewick, Hermiston Public Library, Echo Public Library, Pendleton Public Library, Stanfield Public Library, EPA Region 10 Seattle Office, Oregon Department of Environmental Quality (ODEQ) Eastern Region Pendleton Office, CTUIR Tribal Administration Building, and on EPA's web site at http://yosemite.epa.gov/R10/AIRPAGE.NSF/webpage/WANAPA+Energy+Center.

A public hearing was held on January 5, 2005 in Hermiston, Oregon. The public comment period was originally scheduled to close on January 5, 2005. On December 21, 2004, however, EPA announced its decision to extend the public comment period to January 19, 2005. Public notice of the comment period extension was performed by mailing it to a list of interested persons and by publication of a legal notice in the East Oregonian (December 21, 2004) and Hermiston Herald (December 21, 2004). To be considered, comments had to be postmarked, or sent by e-mail, to EPA no later than the close of the public comment period, on January 19, 2005.

EPA received fourteen written comment letters, and six individuals commented at the public hearing. EPA appreciates the valuable input provided by the community. The nature and extent of the comments indicates that members of the community took the time to learn about a wide range of complex issues surrounding WEC. EPA understands that the community possesses a wide range of legitimate views, perceptions, and concerns. Many of the issues are difficult to resolve in the context of an air construction permit given EPA's PSD permitting regulations. Nonetheless, EPA has made a good-faith effort to do its best to respond to the community.

The following pages summarize the comments that were received and indicate how the concerns are addressed in the final Permit issued by EPA. Some of the comments have been paraphrased or generalized to allow direct responses to the concerns.

Copies of this document and the final Permit are available over the Internet at http://yosemite.epa.gov/R10/AIRPAGE.NSF/webpage/WANAPA+Energy+Center. Copies are also available at the following locations:

Oregon Trail Public Library
200 S Main
Boardman, OR 97818
(541) 481-2665

Hermiston Public Library
235 E Gladys Avenue
Hermiston, OR 97838-1827
(541) 567-2882

Pendleton Public Library
502 SW Dorion
Pendleton, OR 97801-2035
(541) 966-0380

Umatilla Public Library
911 Seventh Street
Umatilla, OR 97882
(541) 922-5704

Echo Public Library
20 S Bonanza
Echo, OR 97826-0009
(541) 378-8411

Stanfield Public Library
180 W Coe Avenue
Stanfield, OR 97875-0978
(541) 449-1254

Mid-Columbia Library
405 S Dayton
Kennewick, WA 99336
(509) 783-7878

Oregon Department of
Environmental Quality
Eastern Region
700 S.E. Emigrant, Suite 330
Pendleton, OR 97801
(541) 276-4063

Confederated Tribes of the Umatilla
Indian Reservation
Tribal Administration Building
73239 Confederated Way
Pendleton, OR 97801
(541) 276-3165

EPA Region 10
Attn: Dan Meyer (AWT-107)
1200 Sixth Avenue
Seattle, WA 98101
(206) 553-4150

2. GENERAL COMMENTS AND RESPONSES

General Comment 1: EPA should not issue the Permit because WEC is not in the public interest.

Response 1: EPA is the PSD permitting authority with the responsibility for either granting or denying Diamond's PSD permit application to construct and operate WEC. In determining whether to grant a PSD permit application, EPA must follow the Clean Air Act (CAA) and its implementing regulations. Additional requirements that EPA must comply with are found in the Endangered Species Act (ESA) and the Magnuson-Stevens Fishery Conservation and Management Act (MSA). These statutes were enacted by the U.S. Congress to protect the public interest in the natural resources. By complying with the requirements of these statutes, EPA has fulfilled its statutory obligations, and thus has protected the public interest in protecting the public interest as established by the U.S. Congress. Therefore, EPA is proceeding to issue the final Permit to Diamond to construct WEC.

General Comment 2: WEC will not benefit the local community.

Comment 2.a: Diamond will not pay property taxes to support the local community because WEC is located on tribal land.

Response 2.a: EPA appreciates this comment. In issuing a PSD permit, such as this one, however, EPA's role is to determine if Diamond's application meets federal laws and regulations required to be met before issuing a PSD permit. Under the federal laws and regulations, the payment of property taxes is not a factor that EPA can consider in determining whether to issue a PSD permit. EPA has determined that Diamond's application satisfies all applicable federal laws and regulations. Therefore, EPA is proceeding to issue the final Permit to Diamond to construct WEC.

It should be noted that WEC's socioeconomic impacts, including the payment of property taxes, were considered during the National Environmental Policy Act (NEPA) process undertaken by the Bureau of Indian Affairs (BIA) in determining whether to grant the lease between the CTUIR and Diamond. See §3.10 of the Final Environmental Impact Statement (Final EIS) for a discussion of WEC's socioeconomic impacts. In responding to public comments, BIA states, in part:

> The project would pay local property taxes, contribute directly to school district, fire districts, county road maintenance and promote other economic development in the region. [T]he ancillary pipeline and other facilities within State jurisdiction would be subject to county property taxes. The approximately three years of construction would increase County tax revenues due to personal property taxes on contractor equipment. In addition, the hundreds of construction jobs along with approximately 40 permanent jobs created ... would result in hundreds of employees paying state income taxes. Because of the high wages

> involved, many of these employees are likely [to] become homeowners and pay (county) property taxes as well. Most importantly, the project would pay property taxes to the entity having jurisdiction... [CTUIR]. This tax is used to provide police, fire, and emergency response services that widely benefit resident[s] of Umatilla County including the non-Indian residents of the Umatilla Indian Reservation. These services are provided tax-free to travelers on I-84, and the residents of the neighboring towns who receive Tribal police, fire and emergency response assistance through mutual aide agreements.

See Final EIS at Appendix D, Response to Comment Letter 6 from the Umatilla County Board of Commissioners.

Comment 2.b: WEC will degrade the overall quality of life in the community as it fails to generate any local benefits.

Response 2.b: As stated in General Comment Response 2.a, above, EPA cannot consider socioeconomic impacts in issuing a PSD permit. EPA has determined that Diamond's application satisfies all applicable federal laws and regulations. Therefore, EPA is proceeding to issue the final Permit to Diamond to construct WEC.

As discussed above, the Final EIS prepared and issued by BIA took into consideration WEC's socioeconomic impacts and found that WEC will benefit the local community. See Final EIS at §3.10 and Appendix D.

Comment 2.c: WEC will consume local airshed capacity making it more difficult for construction of new emissions sources in the area that will be located off tribal land, and thus will not benefit the local community.

Response 2.c: As stated in General Comment Responses 2.a and 2.b, above, EPA cannot consider socioeconomic impacts in issuing a PSD permit. EPA has determined that Diamond's application satisfies all applicable requirements. Therefore, EPA is proceeding to issue the final Permit to Diamond to construct WEC.

Although EPA cannot consider socioeconomic impacts in issuing a PSD permit, such as this one, BIA did consider such impacts in the Final EIS. BIA found that WEC would benefit the local community. See Final EIS at §3.10 and Appendix D.

In addition, while WEC will emit air pollutants into the atmosphere, WEC's emissions will not necessarily preclude the construction and operation of other pollutant emitting sources in the local area. The determination of whether a stationary source or a modification to a stationary source can be undertaken in an area that is meeting attainment of the National Ambient Air Quality Standards (NAAQS) is done on a case-by-case basis. The determination is dependent on many factors including, but not limited to, the proposed source's location, emission rates, control equipment, model predicted concentrations, and representative background air quality levels. At this time, one cannot conclude that construction of additional air emission sources will be prohibited.

General Comment 3: An analysis of existing ambient air quality in the area around WEC has not been adequately conducted.

Comment 3.a: Fine particulate matter[1] ($PM_{2.5}$) monitoring data from Pendleton, Oregon is not representative of existing ambient air quality in the area to be impacted by WEC emissions.

Response 3.a: EPA did not utilize $PM_{2.5}$ monitoring data from Pendleton, Oregon. Instead, EPA utilized PM_{10} monitoring data from Boardman, Oregon and used this monitoring data as a surrogate for $PM_{2.5}$ monitoring data in meeting the PSD requirements. This approach is consistent with EPA's policy concerning $PM_{2.5}$ which is set forth in a memorandum entitled, "Interim Implementation of NSR Requirements for $PM_{2.5}$," dated October 23, 1997 ($PM_{2.5}$ Memo).[2] The $PM_{2.5}$ Memo states that PM_{10} may be used as a surrogate for $PM_{2.5}$ in meeting the NSR requirements including PSD requirements until proper tools, procedures, and models have been developed to review $PM_{2.5}$.

The $PM_{2.5}$ monitor in Pendleton is part of a larger monitoring network enabling the States to recommend air quality designations to EPA. On January 26, 2004, the Governor of Oregon recommended to EPA that all counties in Oregon be designated attainment/unclassifiable. In accordance with this recommendation, EPA's corresponding attainment/unclassifiable designation became effective April 5, 2005. As a result, EPA has modified the permit to reflect the $PM_{2.5}$ designations. See Final Permit Fact 2 and 3.

Comment 3.b: Ozone (O_3) monitoring data from Klickitat County in Washington is not representative of existing ambient air quality.

Response 3.b: EPA did not utilize O_3 monitoring data from Klickitat County, Washington.

40 CFR § 52.21(i)(5)(i) states that EPA may exempt a source from performing an O_3 ambient air quality analysis, including the gathering of ambient air quality data, if the net emissions increase of volatile organic compounds is less than 100 TPY. As shown in the TSD, the calculated net emissions rate of VOC is 99 TPY. EPA has therefore exempted Diamond from performing an O_3 ambient air quality analysis. See TSD at p. 33, Table

[1] The fine particulate fraction of PM_{10} (particulate matter with an aerodynamic diameter of less than 10 microns) is referred to as $PM_{2.5}$.

[2] http://www.epa.gov/Region7/programs/artd/air/nsr/nsrmemos/pm25.pdf. The guidance was recently affirmed by EPA on April 5, 2005. http://www.epa.gov/nsr/documents/nsrmemo.pdf

5-1. As such, EPA did not have to determine whether O_3 monitoring data from Klickitat County is representative of existing ambient air quality in the area to be impacted by WEC emissions.

General Comment 4: The results of the ambient air quality quality impact analysis (AAQIA) are invalid. EPA has failed to demonstrate that WEC air pollutant emissions will not cause or contribute to a NAAQS violation.

Comment 4.a: The AAQIA utilized meteorological data from Walla Walla, Spokane, and the Umatilla Army Depot to predict air pollutant concentrations from WEC and nearby emissions. This meteorological data is not representative of weather conditions in the area around WEC. Site-specific meteorological data should be collected and utilized to conduct a new AAQIA.

Response 4.a: Meteorological data requirements for air quality modeling are detailed in 40 CFR Part 51, Appendix W.[3] Section 9.3 of Appendix W states that the meteorological data selected for air quality modeling should be representative of the area in terms of dispersion and transport and climatic conditions. The following factors are considered in determining whether meteorological data is representative of an area: (1) the nearness of the meteorological data collection site and the stationary source, (2) the surrounding terrain features, (3) the exposure of the meteorological collection site, and (4) the period of record of the data. Moreover, the source of the meteorological data can be representative National Weather Service (NWS) data, nearby data, or site-specific data. Appendix W further states that representative NWS data is routinely used in dispersion modeling due to its availability. See also NSR Workshop Manual at C.22.

Moreover, on January 23, 2003, EPA Region 10 provided additional guidance to its four states for determining the representativeness of meteorological data when using the AERMOD Modeling System.[4] According to this guidance document, representativeness is largely contingent upon whether the meteorological data collection site and the source location are equivalent or similar in land uses (or surface roughness lengths) given this factor's influence on wind speed.

As explained in the AERMOD guidance document, to make the equivalency determination, two tests should be performed. The first test requires the identification of the predominant land use by sector in a 3-kilometer (km) radius area centered at the measurement location (Umatilla Army Depot) and at the source location (WEC). If there are a similar number of sectors with the same land uses (or surface roughness lengths), then the first test has been satisfied.

[3] http://www.epa.gov/scram001/guidance/guide/appw_03.pdf

[4] AERMOD is a proposed guideline model that has been shown to significantly outperform an approved general purpose guideline dispersion model. EPA most recently provided notice and public comment in the Federal Register on September 8, 2003 regarding EPA's intention to approve AERMOD as a general purpose guideline model.

The second test requires a determination of whether the primary wind flow at both the collection site and source location flows over the same land use. Technical judgment is needed to determine the primary wind flow at the source location given that no meteorological data has been collected at the source location. If the primary wind direction flows over the same land use at both locations, then the second test has been satisfied.

As set forth in the TSD on p. 37, EPA determined that "the two areas [Umatilla Army Depot and WEC] have similar land uses and the predominant wind direction blows over the same land uses." Thus, wind speed, wind direction, and ambient temperature observations from the Umatilla Army Depot were deemed to be representative of conditions at WEC.

In terms of transport and dispersion, wind direction, wind speed and surface roughness length are the variables that have the greatest influence and most sensitivity on predicted concentrations.[5] Hence, it was important to determine that these three meteorological variables at the measurement site (Umatilla Army Depot) would be representative of the source location (WEC). Although cloud cover (Walla Walla) and upper air data (Spokane) are important, they are not as influential or sensitive as the above-stated variables for predicting ambient air pollutant concentrations.

The affect of distance and local terrain features between the Umatilla Army Depot and WEC were considered indirectly. In addition, because five years of consecutive hourly meteorological observation were modeled, EPA believes that the worst-case meteorological conditions have been captured in the generated data set even though cloud cover from Walla Walla and upper data from Spokane were used. In the five-year meteorological database, 42,445 hours out of 43,824 hours were generated and used in the model to calculate concentrations. The balance of time (approximately 1,400 hours) was not modeled due to either missing data or indeterminate wind direction observations.

It has been EPA's policy to allow the use of upper air data collected at the nearest NWS station. This is due largely to the cost that would be incurred to collect this data.

In sum, based on its technical expertise and best professional judgment, EPA has determined that the meteorological data from the Umatilla Army Depot, Walla Walla, and Spokane is adequately representative of the project location.

Comment 4.b: The AAQIA utilized ambient $PM_{2.5}$ monitoring data from Pendleton, Oregon to represent the background $PM_{2.5}$ concentration in the area around WEC. This data was ultimately used to predict $PM_{2.5}$ concentrations emitted from WEC and nearby sources. This monitoring data is not representative of background concentrations in the area around WEC.

[5] Wind direction will determine the location of the predicted concentration. Wind speed will determine the amount of dilution or dispersion of the plume that is transported downwind. Surface roughness length is directly or indirectly used to determine the stability of the atmosphere and the mixing height.

Response 4.b: EPA did not utilize $PM_{2.5}$ monitoring data from Pendleton, Oregon. Therefore, EPA did not determine whether $PM_{2.5}$ monitoring data from Pendleton is representative of background concentrations in the area to be impacted by WEC emissions. Instead, as discussed in General Comment Response 3.a., EPA used the PM_{10} monitoring data from Boardman, Oregon as a surrogate for $PM_{2.5}$ in accordance with the $PM_{2.5}$ Memo.

Comment 4.c: The AAQIA utilized ambient O_3 monitoring data from Klickitat County, Washington to represent the background O_3 concentration in the area around WEC. This data was ultimately used to predict O_3 concentrations resulting from WEC and nearby sources. This monitoring data is not representative of background concentrations in the area around WEC.

Response 4.c: EPA did not utilize O_3 monitoring data from Klickitat County, Washington. Therefore, EPA did not determine whether O_3 monitoring data from Klickitat County is representative of background concentrations in the area to be impacted by WEC emissions.

As discussed in General Comment Response 3.b, Diamond is exempt from performing an AAQIA including pre-construction monitoring for O_3 because the proposed permitted VOC emission rate is less than 100 TPY.

Comment 4.d: The AAQIA should account for all sources (stationary and mobile) that contribute to air pollution in the area around WEC. The AAQIA did not take into account all sources, and thus failed to deliver a cumulative impact analysis.

Response 4.d: 40 CFR § 52.21(m) states that an ambient air quality analysis is required for each air pollutant emitted in excess of EPA's significant emission rate thresholds as delineated in 40 CFR § 52.21(b)(23). In this case, an AAQIA is required for carbon monoxide (CO), nitrogen dioxide (NO_2), O_3, PM_{10}, and sulfur dioxide (SO_2).[6] See TSD at p. 33. If it is determined that emissions from the new source will not have a significant impact, no further analysis is required. See 40 CFR § 51.165(b)(2) for identification of the significant impact levels; see also NSR Workshop Manual at p. C.24 for further explanation.

The AAQIA indicated that only NO_2 and PM_{10} exceeded their respective significant impact levels. See TSD at p.43, Table 5-6. Therefore, a cumulative, or second part, full AAQIA was performed for these two air pollutants to determine compliance with NAAQS and Class II area air quality increments. Subsection 5.2.6 of the TSD provided a description of the nearby point source emissions inventory development. Mobile source emissions were determined to be insignificant and were assumed to be included in the measured background concentrations as well fugitive dust emission and agricultural activities. Moreover, in Comment Letter 5 - Response 7, EPA explained that emission

[6] EPA has not yet established a significant emission rate threshold for $PM_{2.5}$. Instead, EPA has issued the $PM_{2.5}$ Memo which explains how PM_{10} should be used as a surrogate in conducting the $PM_{2.5}$ analysis.

impacts associated with agricultural activities, mobile sources and wind blown would be captured by the representative monitoring station.

The results of these two analyses appear in Table 5-10 of §5.3.3 and Table 5-11 of §5.3.4 of the preliminary TSD. The NAAQS include representative background measurements. It should be pointed out that concentrations predicted for the air quality increment analysis are conservative (bias towards over prediction) because allowable emission rates were modeled and emission decreases or credits were not considered.

In sum, EPA has adequately accounted for all sources contributing to air pollution in the AAQIA. Further, the AAQIA properly contained a cumulative impacts analysis as required under the CAA and implementing regulations. Thus, EPA is proceeding to issue the final Permit.

General Comment 5: Post-construction ambient air quality monitoring should be established in the area around WEC to determine its effect upon local air quality.

Response 5: The CAA PSD regulations do not contain thresholds above or below which post-construction air quality monitoring is required. Instead, 40 CFR § 52.21(m)(2) allows EPA discretion to require post-construction air quality monitoring to determine the "effect emissions from the stationary source or modification may have, or are having on air quality in any area." 40 CFR § 52.21(m)(2). For example, according to the Ambient Monitoring Guidelines, EPA may require a permit condition for post-construction air quality monitoring for an air pollutant to determine if a violation of the NAAQS will occur.

The TSD indicates that the highest 24-hour PM_{10} concentration impact (considering background, WEC, and nearby sources) within WEC's significant impact area (SIA) is expected to be less than 125 $\mu g/m^3$. This resultant concentration represents almost 85% of the 150 $\mu g/m^3$ NAAQS. For all other criteria pollutants, impacts within WEC's significant impact area (SIA) are less than 50% of the NAAQS.

Based upon comments received from the public and Diamond's willingness to conduct post-construction to help address ambient air quality concerns expressed by the public, EPA has determined that it is appropriate under the circumstances to require post-construction PM_{10} and $PM_{2.5}$ monitoring. <u>EPA has modified the permit to require Diamond to conduct post-construction $PM_{2.5}$ monitoring. See Final Permit at Approval Condition 23.</u>

General Comment 6: WEC will have an adverse impact upon the personal health of individuals in the area around WEC.

Response 6: Air pollutant emissions from WEC can be broken down into two categories for the purpose of discussing potential health risks: criteria pollutants and hazardous air pollutants (HAPs).

Criteria Pollutants
Criteria pollutants are those pollutants for which EPA has established NAAQS. Primary NAAQS set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly.

Diamond has demonstrated to EPA's satisfaction that WEC will not cause or contribute to a Primary NAAQS violation. See Table 5-10 within §5.3.3 of the preliminary TSD with respect to NO_2 and PM_{10} NAAQS comparisons. The following table illustrates that WEC's maximum impact is relatively small for all criteria pollutants in comparison to the Primary NAAQS.

WEC's Impacts vs Primary NAAQS

Pollutant	WEC's Maximum Impact ($\mu g/m^3$)	Primary Standard ($\mu g/m^3$)	Percentage of NAAQS (%)	Averaging Times
CO	17.86	10,000	0.18	8-hour
	84.55	40,000	0.21	1-hour
Lead	0.0	1.5	0	Quarterly Average
NO_2	2.57	100	2.57	Annual (Arithmetic Mean)
PM_{10}	4.14	50	8.28	Annual (Arithmetic Mean)
	19.23	150	12.82	24-hour
$PM_{2.5}$[7]	N/A	15.0	-	Annual (Arithmetic Mean)
	N/A	65	-	24-hour
O_3[8]	N/A	160	-	8-hour
	N/A	240	-	1-hour
SO_2	0.25	80	0.31	Annual (Arithmetic Mean)
	2.02	365	0.55	24-hour

Since WEC will not cause or contribute to a NAAQS violation and since NAAQS are established to protect public health, WEC will not have an adverse impact upon public health.

HAPs
HAPs, also known as toxic air pollutants or air toxics, are those pollutants that cause or may cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental and ecological effects. Congress requires EPA to control 188 HAP compounds. Examples of HAPs include benzene, which is found in gasoline; perchlorethlyene, which is emitted from some dry cleaning facilities; and methylene chloride, which is used as a solvent and paint stripper by a number of industries.

[7] Review of PM_{10} is being utilized as a surrogate for review of $PM_{2.5}$.
[8] A review of WEC's O_3 impact is not required given its less than significant VOC emissions.

Instead of developing ambient air quality standards for HAPS, EPA has developed emissions standards called maximum achievable control technology (MACT) emissions standards that apply to all major sources[9] of air toxics (and some area sources that are of particular concern). At WEC, three types of emission units will potentially be generating HAP emissions: (1) CT, (2) DB/HRSG, and (3) cooling towers. As noted below, EPA has determined that HAP emissions from these emission units do not pose a threat to human health.

• Combustion Turbines: EPA has developed a MACT standard for CTs – 40 CFR Part 63 Subpart YYYY[10]. However, EPA has stayed the effectiveness of the MACT standard while EPA attempts to delist CT's from the list of source categories regulated under §112 of the CAA[11]. Pursuant to CAA §112(c)(9), EPA may delist a source category from MACT regulation if the following conditions are satisfied:

> (1) … no source… emits such HAP in quantities that may cause a lifetime risk of cancer greater than 1 in 1 million…;
> (2) …a determination that emissions from no source… exceed a level which is adequate to protect public health with an ample margin of safety; and
> (3) … a determination that no adverse environmental effect will result from emissions from any source in the category or subcategory.

EPA has made the preliminary determination that lean premix CTs firing only natural gas (like the ones proposed by WEC) satisfy the criteria outlined above for delisting[33]. EPA stated, "[p]rojected exposures are sufficiently low to provide reasonable assurance that such adverse effects will not occur..[t]he levels which might cause adverse health or environmental effects are sufficiently high to provide reasonable assurance that exposures will not reach harmful levels." See p. 18329 of April 7, 2004 Federal Register. Given these preliminary findings and given that Diamond intends to combust only natural gas in the lean premix CTs at WEC, EPA believes that WEC's DB/HRSG HAP emissions will not adversely impact the personal health of individuals in the area around WEC.

• Electric Utility Steam Generating Units (EUSGUs): Congress directed EPA to regulate HAP emissions from EUSGUs only if EPA concluded that regulation was appropriate and necessary pursuant to CAA §112(n)(1).[12] Congress also directed EPA to conduct a study upon which to make its determination. EPA submitted its study to Congress in February 1998. EPA's study was entitled, "Study of HAP Emissions from EUSGU – Final Report to Congress."[13]

On December 20, 2000, EPA announced that it had found that regulation of HAP emissions from gas-fired EUSGUs was neither appropriate nor necessary given the

[9] 10 TPY of any one HAP or 25 TPY total HAP.
[10] http://www.epa.gov/ttn/atw/turbine/turbinepg.html
[11] http://www.epa.gov/ttn/atw/turbine/fr18au04.pdf
[12] http://www4.law.cornell.edu/uscode/html/uscode42/usc_sec_42_00007412----000-.html
[13] http://www.epa.gov/ttn/atw/combust/utiltox/utoxpg.html#TEC

"negligible" health impacts due to HAP emissions from gas-fired EUSGU.[14] Accordingly, WEC's DB/HRSG HAP emissions will not adversely impact the personal health of individuals in the area around WEC.

• Cooling Towers: The WEC cooling towers will not emit any HAP.

General Comment 7: WEC will have an adverse impact upon visual resources in the area around WEC.

Comment 7.a: WEC emissions will have an adverse impact upon local visibility.

Response 7.a: 40 CFR § 52.21(o) requires an owner or operator of a new stationary source or modification to a stationary source to "provide an analysis of the impairment to visibility … that would occur as a result of the source or modification …." See also NSR Workshop Manual at D.5. Diamond conducted such an analysis with its permit application for WEC. See p. 5-65 of the August 2003 application and §3 of the September 2004 revised application.

As explained in the TSD on p. 46, "A Class II area visibility analysis was performed for the Columbia River Gorge National Scenic Area (CRGNSA). The predicted change [in visibility from the CRGNSA] … is considered insignificant." EPA did, however, acknowledge that "[s]team plumes from the cooling towers will be visible during the operation of [WEC]." TSD at p. 46. These steam plumes are the result of normal operating conditions and are indicative of cooling towers throughout the entire power plant industry.

Each CT/DB-HRSG may emit smoke if not operated properly. In order to minimize these visibility-obscuring emissions, EPA included Approval Condition 16 in the draft permit that states, "Visible smoke emissions from each CT/HRSG-DB shall not exceed 5% opacity over a six-minute average, except during startup and shutdown." Note that visible smoke emissions do not include water vapor.

In sum, EPA has analyzed and addressed impacts on visibility as required under the CAA and its implementing regulations.

Comment 7.b: WEC structures and steam plumes from WEC's cooling towers will obscure people's view of the surrounding vistas.

Response 7.b: EPA acknowledges that WEC structures and steam plumes from the cooling tower will intermittently obscure people's view of the surrounding vistas. In determining whether to grant a PSD permit application, however, EPA's role is to determine if Diamond's application meets all federal laws and regulations before issuing the PSD permit. Moreover, as explained above, EPA has attempted to address some of the visibility issues through implementation of Approval Condition 16. It should also be

[14] http://www.epa.gov/ttn/atw/combust/utiltox/utilfind.pdf

noted that BIA's Final EIS contains a discussion of WEC's visual impacts. See Final EIS at §3.7.2.

General Comment 8: WEC will have an adverse impact upon local agriculture.

Comment 8.a: WEC's emissions will adversely affect crop production.

Response 8.a: EPA acknowledges that elevated levels of air pollutant emissions may damage crops.

Criteria pollutants are those pollutants for which EPA has established NAAQS. Secondary NAAQS protect public welfare, including protection against decreased visibility, and damage to animals, crops, vegetation, and buildings.

Diamond's application included an analysis showing that WEC will not cause or contribute to a Secondary NAAQS violation. See page 2-36 of September 2004 revised application with respect to SO_2 and PM_{10}. See also TSD at p. 45, Table 5-10 with respect to PM_{10}. The following table illustrates that WEC's maximum impact is relatively small in comparison to the Secondary NAAQS.

WEC's Impacts vs Secondary NAAQS

Pollutant	WEC's Maximum Impact ($\mu g/m^3$)	Secondary Standard ($\mu g/m^3$)	Percentage of NAAQS (%)	Averaging Times
CO	17.86	N/A	-	8-hour
	84.55	N/A	-	1-hour
Lead	0.0	1.5	0	Quarterly Average
NO_2	2.57	100	2.57	Annual (Arithmetic Mean)
PM_{10}	4.14	50	8.28	Annual (Arithmetic Mean)
	19.23	150	12.82	24-hour
$PM_{2.5}$	N/A	15.0	-	Annual (Arithmetic Mean)
	N/A	65	-	24-hour
O_3	N/A	160	-	8-hour
	N/A	240	-	1-hour
SO_2	0.25	N/A	-	Annual (Arithmetic Mean)
	2.02	N/A	-	24-hour
	8.20	1300	0.63	3-hour

Since WEC's maximum impact is below the Secondary NAAQS, EPA has determined that WEC will not have an adverse impact upon crops due to criteria pollutant emissions.

Congress directs EPA to complete a review of the NAAQS every five years. See CAA §109(d)(1). If appropriate, such a review will result in a revision to existing air quality criteria and standards to reflect advances in scientific knowledge on the effects of the pollution on public health and welfare.

Comment 8.b: WEC's impacts to the airshed may ultimately contribute to the area failing to attain the NAAQS. Traditional agricultural industry practices may be unfairly sacrificed in order for the area to once again achieve attainment.

Response 8.b: For the reasons noted in response to General Comments 6 and 8.a, EPA believes that local air quality will not degrade to the point where the area fails to attain the NAAQS. In its application, Diamond demonstrated that the area will continue to attain NAAQS and PSD increment while in operation.

Moreover, ODEQ has regulatory tools in place, such as the NSR construction permit program, to prevent the area from falling into nonattainment. If the area fails to attain the NAAQS in the future, ODEQ is required to submit a plan to EPA that demonstrates how the area will achieve attainment. At this time, it is premature to speculate that the area will fall into nonattainment. Further, it is premature to conclude that, if the area falls into nonattainment, ODEQ's attainment plan will adversely impact the local agricultural industry.

Comment 8.c: WEC's wastewater discharge will adversely affect soils and crops receiving irrigation water.

Response 8.c: In issuing a PSD permit, EPA cannot take into consideration wastewater discharges and/or water quality. It should be noted, however, that BIA's Final EIS at §3.3 discusses WEC's effect on surface water and groundwater quantity and quality. See also the discussion under "Geology and Soils" and "Water Resources" in the February 2005 BIA ROD.

General Comment 9: WEC will have an adverse impact upon water resources, water quality, and the species that inhabit local water bodies.

Response 9: In issuing a PSD permit, EPA cannot take into consideration effects on water quality. As discussed above, BIA's Final EIS addressed surface water and groundwater quantity and quality. See Final EIS at § 3.3.

In addition, biological assessments (BA) were prepared to evaluate WEC's potential impacts on threatened and endangered species. The BA's concluded that WEC may affect, but is not likely to adversely affect, bull trout, bald eagles, Snake River Fall-run Chinook Salmon, Snake River Spring/Summer-run Chinook Salmon, Upper Columbia River Spring-run Chinook Salmon, Snake River Sockeye Salmon, Upper Columbia River Steelhead and Snake River Basin Steelhead. In a letter dated November 18, 2004, the U.S. Fish and Wildlife Service (FWS) concurred with the conclusion that the proposed action may affect, but is not likely to adversely affect bull trout and bald eagles. In a letter dated December 2, 2004, the National Oceanic and Atmospheric Administration – Fisheries (NOAA Fisheries) concurred that the proposed activities are not likely to cause adverse effects on ESA–listed anadromous salmonids or designated critical habitat in the action area. Thus, EPA has determined, and FWS and NOAA Fisheries has concurred, that there will not be an adverse impact on any threatened or endangered species in the project area.

General Comment 10: WEC air pollutant emissions will have an adverse impact upon wildlife and vegetation.

Response 10: In issuing a PSD permit, EPA cannot take into consideration general effects on vegetation and wildlife outside the context of the ESA. Moreover, the effects on vegetation and wildlife were studied and discussed in BIA's EIS. The ROD presented a summary of mitigation measures that would be taken in order to lessen any effects upon vegetation and wildlife. Please see Appendix 1, Table ES-1 of the BIA ROD for more information.

See also Response to General Comment 9.

General Comment 11: The Permit does not adequately require WEC to monitor its air pollutant emissions at the point of discharge to the atmosphere.

Response 11: The Permit requires both stack testing and continuous emission monitoring systems (CEMS) for certain specific air pollutants. CEMS are required for nitrogen oxides (NO_X), CO and ammonia (NH_3). These are the pollutants of most concern from the WEC CTs and DBs, and the pollutants for which emission control devices will be installed and operated. CEMS provide continuous real-time data of the pollutant concentration in the stack for each of the pollutants listed above. In addition, the mass emission rates for the pollutants can be calculated from the concentration data and other operating parameters. Therefore, WEC, EPA and the public will have a rich source of emissions data available for these air pollutants. See Approval Conditions 7.3, 10.3, and 11.3 for the requirements for Diamond to install and operate NO_X, NH_3, and CO CEMS on each CT/HRSG-DB stack.

An initial performance test (stack test) is also required for NO_X, CO, NH_3, PM_{10}, and SO_2, and EPA can require additional stack testing if warranted. Estimates of SO_2 emissions will be available based on the fuel monitoring requirements in the permit and annual representative gas sulfur values obtained from the natural gas provider.

See also pages 57 through 60 of the TSD for a summary of emissions monitoring requirements.

General Comment 12: Compare WEC air pollutant emissions to other electric generation facility's emissions.

Response 12: Although this type of comparison is not required under the CAA in the context of a PSD application review, EPA has nonetheless gathered emissions data in the interest of educating the local community. The emissions data presented here covers facilities in the Pacific Northwest (Idaho, Oregon and Washington) exclusively engaged in the business of supplying electricity for sale.

Much of the actual NO_X and SO_2 emissions data was generated by CEMS and submitted to EPA's Clean Air Markets Division pursuant to requirements of the Acid Rain Program. PM_{10} and NH_3 actual emissions data was calculated based upon stack test results or emission factors. Emission estimates from newly permitted facilities are based upon construction permit limits or estimates.

Additional emissions data for electricity generation facilities subject to EPA's Acid Rain Program can be reviewed over the Internet at http://cfpub.epa.gov/gdm/index.cfm?fuseaction=iss.emissions.

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2003 Actual Electric Generating Plant Emissions in Pacific Northwest

Idaho Actual Emissions Estimates

Power Plant	Generating Capacity (MW)	Primary Fuel	County	NO_X (TPY)	SO_2 (TPY)	PM_{10} (TPY)	NH_3 (TPY)
Rathdrum Power	270	Gas	Kootenai	57.9	2.4	27.2	11.38
Mountain Home Generation	90	Gas	Elmore	19.7	0.2	2	0
Rathdrum Combustion Turbine	180	Gas	Kootenai	4.6	0	11.39	0
TOTAL	540			82.2	2.6	40.59	11.38

Oregon Actual Emissions Estimates

Power Plant	Generating Capacity (MW)	Primary Fuel	County	NO_X (TPY)	SO_2 (TPY)	PM_{10} (TPY)	NH_3 (TPY)
Boardman	585	Coal	Morrow	10080	13118.7	700	0
Beaver	586	Gas	Columbia	287	13	11	0
Hermiston Generating	474	Gas	Umatilla	155.8	7.5	54.27	68.42
Hermiston Power Plant	546	Gas	Umatilla	142.6	5.2	58.62	39.77
Klamath Cogeneration Project	484	Gas	Klamath	128.5	5	16.96	49.84
Coyote Springs	530	Gas	Morrow	98.7	3.5	16.01	43
Klamath Energy LLC	100	Gas	Klamath	5.6	0	0.52	0.11
Morrow Power	25	Gas	Morrow	0	0	0	0
Clatskanie PUD	11	Gas	Clatskanie	0	0	0	0
TOTAL	3341			10898.2	13152.9	857.38	201.14

Washington Actual Emissions Estimates

Power Plant	Generating Capacity (MW)	Primary Fuel	County	NO_x (TPY)	SO_2 (TPY)	PM_{10} (TPY)	NH_3 (TPY)
Centralia	1460	Coal	Lewis	20486.1	8283.4	265.72	0
March Point Cogeneration	167	Gas	Skagit	267.6	17	6.3	3
Ferndale Cogeneration	246	Gas	Whatcom	130.6	32	30.8	0.47
Encogen	170	Gas	Whatcom	82	7	32.85	27.9
River Road Generating	248	Gas	Clark	59.9	3.4	30.076	1.3
Frederickson Power	248	Gas	Pierce	43.7	1.7	33.98	1.32
Sumas Cogeneration	126	Gas	Whatcom	64	0	0	12.7
Chehalis Power	520	Gas	Lewis	33.6	3.2	18.82	3.66
Big Hanaford	268	Gas	Lewis	35.7	2.8	6.4	0
Frederickson	169	Gas	Pierce	10.7	2.815	0.622	0
Northeast Combustion Turbine	61	Gas	Spokane	2.92	0	0.0031	0
Fredonia	357	Gas	Skagit	0.92	0	1.2	0.23
Whitehorn	178	Gas	Whatcom	0.32	0	0	0
Finley Combustion	27	Gas	Benton	0	0	0.06	0
Pasco Peak Power	43	Gas	Franklin	0	0	0	0
TOTAL	4288			21218.06	8353.315	426.7711	50.58

Post-2003 Permitted Electric Generating Plant Emissions in Pacific Northwest

Power Plant	MW	NO_X (TPY)	SO_2 (TPY)	PM_{10} (TPY)	NH_3 (TPY)	Facility Status
Wanapa Energy Center	**1200**	**486**	**57**	**562**	**279**	**Permit to be issued by EPA**
West Cascades Energy	900	401.2	51.8	325.9	209.3	Application under review
California Oregon Border	1150	359	39	161	267.4	Permit issued
BP Cogeneration	720	234	51	262	174	Permit issued, EAB denied review
Satsop CT Project	650	246	29	211.2	141	Construction suspended
Summit Westward	540	210	39	224	125.6	Construction delayed
Sumas Energy 2	660	144.5	69	209	139	Permit issued, EAB denied review
Bennett Mountain Power	170	248.16	48.3	132.4	0	Constructing
Mint Farm	319	97.77	84.35	99.31	128.05	Construction suspended
Port Westward	400	157	41	87	93	Constructing
Klamath Generation LLC	480	153	39	69	111.6	Permit issued
Longview Energy	290	98.25	37.16	99.88	120.36	Permit issued
Frederickson Power 2	290	93	33	95	67.4	Permit issued
Plymouth Generating	307	81	38	88	75	Permit issued
Goldendale Energy Center	249	76.7	30	98.9	34.5	Operating in 2004
Morrow Power	25	130	39	14	0	Built/operating as needed
Pasco Peak Power	44	48.9	7.5	30.1	30	Built/operating as needed
Clatskanie PUD	11	39	10	14	0	Built/operating as needed
Finley Combustion	27	24.9	3.7	12.7	18.3	Built/operating as needed
TOTAL	9052	3545.38	785.81	2934.39	2157.71	

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General Comment 13: EPA is extending to Diamond preferential treatment that other permit applicants in other industries do not enjoy.

Response 13: EPA has reviewed Diamond's PSD permit application for WEC in accordance with the CAA and its implementing regulations. As such, EPA has not given Diamond any preferential treatment during this permitting process.

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3. RESPONSES TO WRITTEN COMMENTS

Comment Letter 1: Ken Thompson

Comment 1: Crops and personal health have no protection from the air pollution poisons that shall be emitted from WEC because neither Umatilla County nor the State of Oregon are engaged in the siting process to enforce local or state statutes, rules, or ordinances.

Response 1: See responses to General Comment 6 and 8.a

EPA is aware of no local or state statutes, rules, or ordinances that would further restrict air pollution emissions (as defined by the CAA) from WEC. EPA's implementation of the CAA PSD requirements at 40 CFR 52.21 is essentially equivalent to ODEQ's implementation of its EPA-approved PSD program within Chapter 340 of the Oregon Administrative Rules.[15]

EPA's review of WEC's carbon dioxide (CO_2) emissions, however, will not bring about the same environmental benefit as if the Oregon Energy Facility Siting Council were to be a decisionmaker in the siting process. EPA is not requiring WEC to reduce its CO_2 emissions given its limited authority to do so under the CAA. The Oregon Energy Facility Siting Council, however, has the ability under state statutes to require the mitigation of CO_2 emissions from new large power plants. Because WEC is to be constructed on tribal trust land rather than state land, Oregon's CO_2 emissions mitigation requirements are not applicable.

While CO_2 emissions may contribute to global climate change, CO_2 is neither a HAP nor a criteria pollutant. While there may be consequences to the earth's environment due to CO_2 emissions from the combustion of fossil fuels, EPA is aware of no health risks associated with breathing ambient air at CO_2 concentrations resulting from the operation of WEC.

Comment 2: WEC will utilize 5.4 billion gallons of water per year from the Port of Umatilla.

Response 2: In issuing a PSD permit, EPA is only authorized to take into consideration the CAA and its implementing regulations. EPA's ESA and MSA obligations require that WEC's water usage from the Columbia River be taken into consideration. As noted previously in response to General Comment 9, EPA has determined that there will not be an adverse impact on any threatened or endangered species in the project area. EPA's determination factored in WEC's water usage from the Columbia River.

It should be noted that BIA's Final EIS analyzed water utilization impacts beyond ESA and MSA considerations. See Final EIS at §3.3

[15] http://yosemite.epa.gov/r10/AIRPAGE.NSF/283d45bd5bb068e68825650f0064cdc2/190c1fe31b30951588256cdb0070ed48?OpenDocument

Comment 3: WEC will discharge deadly wastewater into the Cold Springs Reservoir.

Response 3: See response to General Comment 8.c and 9.

Comment 4: WEC will have a negative impact upon the community.

Response 4: See response to General Comment 2.

Comment 5: Property deed covenants apply to the land upon which WEC is to be constructed. Those covenants are being ignored.

Response 5: In issuing a PSD permit, EPA is required to evaluate Diamond's permit application for WEC in accordance with the CAA and its implementing regulations. Consideration of property deed covenants is not a part of this review process.

Comment 6: Electricity should be generated where it is consumed. WEC's electricity will not be consumed locally, thus, WEC should not be constructed here.

Response 6: In issuing PSD permits, EPA is required to evaluate Diamond's permit application for WEC in accordance with the CAA and its implementing regulations. The ultimate destination of WEC's electricity is not a factor that EPA can take into consideration in issuing PSD permits.

Comment 7: WEC will generate electricity for sale, and WEC will emit CO_2. CO_2 emissions in Oregon resulting from the generation and sale of electricity are taxed by the State. Diamond does not intend to pay this CO_2 tax to the State.

Response 7: In issuing PSD permits, EPA is required to evaluate Diamond's permit application for WEC in accordance with the CAA and its implementing regulations. The payment of the Oregon CO_2 tax is not a factor that EPA can take into consideration in issuing PSD permits.

Comment 8: EPA should not employ the PSD permitting process to evaluate WEC's application for approval. Rather, EPA should employ techniques it utilized to control emissions from non-road diesel engines. These techniques ultimately resulted in the promulgation of the non-road diesel engine and fuel regulation published in the Federal Register on June 29, 2004. In the non-road diesel engine and fuel regulation, EPA has dictated that engine design must reduce the air pollution waste with a 90% reduction in PM_{10} emissions, a 95% reduction in NO_X emissions, and a 99% reduction in SO_X emissions.

Response 8: The CAA regulates stationary sources and mobile sources differently, and EPA is required to follow the PSD permitting process for this facility under the CAA. EPA does not have the authority to ignore the PSD permitting process when issuing a PSD permit, such as this one.

Comment 9: I have conducted modeling to determine WEC's downwind impacts. The modeling results soundly demonstrate that air pollution resulting from WEC's air pollutant emissions shall do quantifiable harm to my family, my health, and the welfare of our crops.

Comment 9: EPA appreciates the effort made in attempting to model WEC's emissions so as to determine downwind impacts upon health and welfare. The modeling that was done by the commentor appears to predict WEC's heath impacts based upon information generated by EPA in the context of estimating the health-related benefits of the non-road diesel engine and fuel regulation. The modeling, however, was not conducted in accordance with the air pollutant dispersion modeling approved by EPA nor was it consistent with EPA's Guideline on Air Quality Models (40 CFR Part 51, Appendix W).

As explained in response to General Comment 6 and 8.a, WEC will not adversely affect public health or the local agricultural activities.

Comment 10: Since EPA accepted the modeling submitted by Diamond to determine WEC's air pollutant impacts, EPA should also accept the modeling I have conducted to determine WEC's air pollutant impacts.

Response 10: EPA appreciates the effort that was made in attempting to model WEC's emissions so as to determine downwind impacts upon health and welfare. In order to obtain a PSD permit for WEC, Diamond was required to submit the modeling pursuant to 40 CFR §52.21(k). Thus, EPA accepted the modeling as part of Diamond's permit application.

See also Comment Letter 1, Response to Comment 9.

Comment 11: Can Diamond and EPA prove that its modeling is statistically significant? I contend that the modeling EPA has utilized to support the draft permit is perhaps less statistically significant than the modeling that I have performed.

Response 11: Diamond utilized the AERMOD modeling system to model the ambient air quality and WEC's projected effects on air quality in the area. The AERMOD modeling system is a general purpose dispersion model that EPA is proposing to approve formally into 40 CFR Part 51, Appendix W as a Guideline Air Quality Model. The modeling system consisted of three components: (1) the dispersion program called AERMOD, (2) the meteorological data preprocessor program called AERMET, and (3) the terrain/receptor point preprocessor program called AERMAP. These three programs have undergone numerous developmental and independent testing. The purpose of the testing is to ensure that, under various conditions, the predicted concentrations will not over or under predict concentrations of pollutants. Based on its technical expertise and best professional judgment, EPA believes that the AERMOD modeling system will provide the most accurate results. See also response to General Comment 4.a.

Comment 12: Meteorological data from Walla Walla, Spokane, and the Umatilla Army Depot was utilized to conduct the AAQIA for WEC. Meteorological data from these locations is not representative of weather conditions around WEC. Therefore, the results of the AAQIA are invalid.

Response 12: See response to General Comment 4.a.

Comment 13: Site-specific ambient air pollutant monitoring should be required to validate the results of the AAQIA.

Response 13: See response to General Comment 5.

Comment 14: WEC air emissions will result in quantifiable human health and welfare impacts even if monitoring data suggests that the area remains in compliance with the NAAQS. Scientific studies quantify human health and welfare impacts at concentrations below the NAAQS.

Response 14: See response to General Comment 6.

Comment 15: If EPA chooses to grant WEC an air quality permit that fails to meet the same emission reductions as the newly implemented non-road diesel engine and fuel regulations, there must be restitution for the quantifiable health and welfare-related impacts presented within my testimony. Moreover, these quantifiable impacts have never been discussed by Diamond, ODEQ, EPA, or local officials.

Response 15: The CAA does not provide EPA with the authority to require Diamond to pay restitution. See also response to General Comment 6.

Comment 16: WEC has enjoyed special siting privileges not extended to the agricultural industry.

Response 16: See response to General Comment 13.

Comment 17: WEC's impact to the airshed may ultimately contribute to the area failing to attain the NAAQS. In such an event, stringent non-attainment area regulations (such as emissions off-setting) will be levied upon industries that lack the political clout to protect themselves, like the natural resources industry.

Response 17: See response to General Comment 8.b.

Comment 18: EPA and ODEQ are permitting Umatilla County's airshed as an air pollutant dumping airshed without the same rights to clear skies and unlimited visibility as humans within Class I and II wilderness or scenic areas.

Response 18: The area around WEC, like most other areas within the United States, is classified as a Class II area. EPA has reviewed WEC's impacts upon the surrounding area consistent with PSD requirements for Class II areas. See also response to General Comment 2.c and 7.

Comment 19: Why not collect from WEC exhaust stacks the nitrogen and sulfur that can be reused as fertilizers in the local agricultural industry? Why not collect the CO_2 and CO and use the product as a compressed gas in other industrial uses? The same approach needs to be taken with the waste steam and water as the first co-generation plants in Umatilla County. Only then will the design of WEC truly be the "Best of the Best."

Response 19: EPA is not familiar with recycling programs employed by the first co-generation plants in Umatilla County. EPA has the regulatory authority to require the source to install BACT and to reduce its emissions so that NAAQS and PSD increments remain protected. EPA, however, does not posses the authority to define the source or regulate CO_2 emissions.

Comment 20: The proposed PSD permit fails to limit annual plant-wide duct burner operation to 6,800 hours. Diamond's application was submitted to EPA with such a constraint. EPA should make the operational constraint enforceable. Moreover, please explain the development of a 99-tpy facility-wide VOC emission limit.

Response 20: Diamond's request to limit annual plant-wide DB operation to 6,800 hours was submitted with the intent of establishing enforceable operating restrictions to limit VOC emissions to less than 100 TPY. EPA's emissions estimates, however, suggested that WEC's VOC potential emissions would be around 144 TPY given full-time CT operation and 6,800 hours of annual DB operation. See Table 2-3 from EPA's preliminary TSD. EPA concluded that limiting annual DB operation to 6,800 hours was not effective at limiting VOC emissions to less than 100 TPY.

EPA determined that an effective mechanism for achieving Diamond's request was to create a permit condition limiting VOC emissions to less than 99 TPY. The proposed permit condition entitled, "VOC Emissions Cap for all CT/HRSG-DB" calls upon Diamond to develop site-specific emission factors or to utilize EPA emissions factors to calculate VOC emissions. If EPA emissions factors are utilized, WEC must track hours of operation for CT and DB. If site-specific emissions factors are developed, DB and CT fuel usage must be tracked.

Comment 21: Explain the "rural" classification of the area surrounding WEC. Note the existence of the Two Rivers Correctional Institute within three kilometers of WEC.

Response 22: If more than 50 percent of an area (within a 3.0-km radius centered at the proposed project location) contains land uses that are urban in nature then the area is designated "urban." Otherwise, the "rural" designation is used. See 40 CFR Part 51, Appendix W at § 8.2.3.

Subsection 5.2.1 of the TSD explains the basis for the rural designation of the WEC project area. Because the area surrounding WEC contains predominantly rural land uses, the area was designated "rural" for modeling purposes.

Comment Letter 2: Philip B. Hamm

Comment 1: Typical EPA regulatory guidelines should not be used to evaluate the WEC PSD permit application. Because this facility will ultimately reduce industrial development in the future, without providing significant public good, at a tremendous loss to the taxpayers of the region, it should not be permitted.

Response 1: See response to General Comment 1 and 2.

Comment 2: Diamond will have no tax liability to the public taxing districts in the area around WEC because the facility is to be constructed on an island of land held by CTUIR. A power generating plant of this size and value would contribute at least $12 million annually to defray the costs of public education, law enforcement, maintaining infrastructure, and local bond measures, etc.

Response 2: See response to General Comment 2.a.

Comment 3: WEC will consume a portion of the air shed, a limited resource, without providing a benefit to the citizens of the region.

Response 3: See response to General Comment 2.b and 2.c.

Comment 4: WEC will ultimately prevent future industrial source growth in the area due to its air pollutant contribution to the airshed.

Response 4: See response to General Comment 2.c.

Comment Letter 3: Jim Kanoff, Oregon Department of Human Services

Comment: The Oregon Department of Human Services recommends that EPA require the cooling system to use state of the art design, disinfection and maintenance procedures so as to preclude any potential for exposure to infectious agents via aerosols from the cooling systems to on-site workers and the surrounding area.

Response: The CAA does not give EPA authority to directly regulate infectious agents; however, EPA expects that WEC will operate the cooling towers following good industry practice to prevent microbial growth.

It should be noted that BIA's Final EIS addresses this issue. See Final EIS at Appendix C, p. C.3. Specifically, the Final EIS states that "[v]ery small quantities of one or more microbiocides also will be added to prevent the growth of microbes in the system... Generally, chlorine, in the form of sodium hypochlorite (a low level chlorine compound), is used, and fed intermittently at low levels."

Comment Letter 4: Virginia Jones

Comment 1: Local property values will decline drastically and additional police will be required as a result of WEC.

Response 1: See response to General Comment 2.b.

Comment 2: Air quality monitors should be installed in Hermiston or a nearby town.

Response 2: See response to General Comment 3 and 5.

Comment 3: Where will WEC obtain water to run the plant? Where will WEC discharge its wastewater? What will be the impacts to ground water (residential drinking water) accessed by private wells?

Response 3: See response to General Comment 9.

Comment 4: WEC should compensate the local governments financially to offset its impacts. WEC should contribute financially to projects benefiting the community.

Response 4: The CAA does not provide EPA with the authority to require Diamond to provide financial contributions to the community. See also response to General Comment 2.a and 2.b.

Comment Letter 5: Peter Brewer, ODEQ

Comment 1: The PM_{10} BACT emission limit of 0.015 lb/MMBtu in the proposed PSD permit for each CT/HRSG-DB does not represent BACT as evidenced by source test data from two similar facilities in Oregon: Klamath Cogen and Hermiston Power Partnership. EPA should add a PM_{10} BACT emission limit of 0.0042 lb/MMBtu, 3-hr block average to the permit for each CT/HRSG-DB. ODEQ prescribed such a PM_{10} BACT emission limit to Umatilla Generating. If WEC demonstrates through source testing that it cannot comply with the more stringent 0.0042 lb/MMBtu PM_{10} BACT emission limit, EPA could later revise the permit to reflect an achievable PM_{10} BACT emission limit.

Response 1: EPA may set a BACT limit that reflects the proper operation and maintenance of the technology selected, and that BACT limit may provide the applicant with a reasonable likelihood of consistently achieving compliance with the emission limit. In this case, Diamond has selected a GE Frame 7FA CT.

The proposed Permit does not contain a PM_{10} BACT emission limit of 0.015 lb/MMBtu. This PM_{10} value appears in the TSD and represents an emission factor supplied by Diamond to reflect emissions during maximum CT and DB firing. See TSD at p. 22 and

55. EPA's proposed PM_{10} BACT decision for each CT/HRSG-DB is set forth in Preliminary Finding 4 of the proposed Permit. This finding specifies BACT as the "[e]xclusive use of pipeline natural gas, proper design and operation of equipment, minimize ammonia (NH_3) slip." The following Approval Conditions memorialize this BACT determination:

3.1 Each CT and HRSG-DB shall combust only pipeline natural gas.

10.1 NH_3 emissions from each CT/HRSG-DB exhaust stack shall not exceed 5.0 ppmdv, corrected to 15.0 % O_2, averaged over any consecutive three hour period, except during CT startup and shutdown

WEC's adherence to these operating practices results in the lowest level of PM_{10} emissions that can be achieved since there are no practical (economically feasible) add-on control devices available for PM_{10} emissions from a gas-fired CT/HRSG-DB. Moreover, WEC's obligation to adhere to the approval conditions set forth above has been memorialized in the daily PM_{10} emission limit of 745 lb/day. See Permit at Approval Condition 12.1. This daily mass emission limitation is based upon the 0.015 lb/MMBtu emission factor as follows:

$$745 \text{ lb/day} \approx (24 \text{ hr/day})(0.0145 \text{ lb/MMBtu})(1604.1 \text{ MMBtu/hr} + 546.2 \text{ MMBtu/hr})$$

where "1604.1 MMBtu/hr" and "546.2 MMBtu/hr" values reflect the heat input for the CT and DB, respectively, given a low heating value of 20,882 Btu/lb for natural gas.

In the event performance test results indicate lower than expected PM_{10} emissions, EPA will revise the Permit limit to include a more stringent PM_{10} emission limit. See Permit at Approval Condition 12.4.

In its comment letter, ODEQ encourages EPA to require each CT/HRSG-DB to meet a PM_{10} BACT emission limit of 0.0042 lb/MMBtu, 3-hr block average. EPA believes that it is not reasonable to require WEC to achieve such an emission limit because of the stack test data from similar operating facilities in the Pacific Northwest.

The table below provides PM_{10} emission test data for three similar GE Frame 7FA CTs operating in Washington:

GE Frame 7FA PM_{10} Emissions Data

CT Unit	DB Size	DB On/Off	Run 1 (lb/MMBtu)	Run 2 (lb/MMBtu)	Run 3 (lb/MMBtu)
GEC Unit 1[16]	323	Off	0.00504	0.00034	<0.00024
Chehalis Unit 1[17]	N/A	N/A	0.00821	0.00634	0.00634

[16] August 2004 performance test.
[17] August 2003 performance test.

CT Unit	DB Size	DB On/Off	Run 1 (lb/MMBtu)	Run 2 (lb/MMBtu)	Run 3 (lb/MMBtu)
Chehalis Unit 2[18]	N/A	N/A	0.00837	0.00698	0.00420

This data suggests that two of the three emission units are currently failing to achieve a PM_{10} emission rate of 0.0042 lb/MMBtu.

ODEQ suggests that Klamath Cogen and Hermiston Power Partnership are achieving a PM_{10} emission rate of 0.0042 lb/MMBtu. However, neither Klamath Cogen nor Hermiston Power Partnership operate a GE Frame 7FA CT. In addition, it is EPA's understanding that ODEQ has not required the Hermiston Power Partnership to conduct PM_{10} emissions testing. Emissions test results for Klamath Cogen are presented below:

Siemens Westinghouse Frame 501 Emissions Data

CT Unit	DB Size	DB On/Off	Run 1 (lb/MMBtu)	Run 2 (lb/MMBtu	Run 3 (lb/MMBtu)
Klamath Cogen 1[18]	191	On	0.0038	0.0039	0.0039
Klamath Cogen 2[19]	191	On	0.0037	0.0036	0.0036

This data suggests that the two Klamath Cogen units are currently achieving a PM_{10} emission rate of 0.0042 lb/MMBtu with only a 7 percent compliance margin.

Given this actual emission data, EPA does not believe it is reasonable to establish a BACT limit of 0.0042 lb PM_{10}/MMBtu. EPA further believes that Approval Condition 12.4 will allow EPA to include a more stringent limit should performance test data indicate a more stringent limit is required.

Comment 2: WEC is allowed up to five years to come up with a better estimate of their PM_{10} emissions. Assuming that construction of this facility is delayed because of lack of demand for electricity production this facility may not perform the required emissions test for years at which point WEC would have another five years to propose a better estimate of their PM_{10} emissions.

Response 2: EPA does not believe that the proposed Permit allows WEC up to five years to refine its PM_{10} emissions. Approval Condition 12.3.3.1 requires Diamond to develop PM_{10} emission factors for EPA approval based upon stack test observations for each CT and DB no later than 180 days after commencing commercial operation. Thereafter, PM_{10} emissions factors shall be updated every five years, if warranted, based upon new stack test results.

Comment 3: WEC will consume most of the PM_{10} increment and possibly preclude new sources from locating in the area.

Response 3: See response to General Comment 2.c.

[18] September 2002 performance test.

Comment 4: The source test method (EPA Method 5 and 201) prescribed in the permit that was used to determine PM_{10} emissions from each CT/HRSG-DB is not appropriate for the emission units being tested. The proper test method for emissions units generating low particulate concentrations is EPA Method 5I. ODEQ requests that EPA revise the proposed PSD permit to prescribe EPA Method 5I as the PM_{10} source test method for each CT/HRSG-DB.

Response 4: <u>In response to this comment and for the reasons discussed below, EPA has decided to modify the PM_{10} test method specifications in the permit to allow the use of EPA Method 5I as an alternative to EPA Method 5. EPA is no longer making available EPA Methods 201 and 201A. See Final Permit Condition 12.2.1.1.</u>

ODEQ suggested that EPA Method 5I is a more appropriate PM_{10} test method for emission units generating low particulate concentrations such as the CTs. EPA Method 5I is most effective for total PM catches of 50 mg or less, and was initially developed for performing correlation of manual PM measurements to PM CEMS. However, it is also useful for other low PM concentration applications.

EPA Region 10 has discussed various PM_{10} test methods with EPA's Emissions Measurement Center (EMC) in the Office of Air Quality Planning and Standards (OAQPS) located in Research Triangle Park, North Carolina. The EMC is the most experienced organization within EPA to develop and apply source test methods. The EMC contacts made several observations that are relevant to the PM_{10} testing situation for the WEC.

First, since EPA has not developed a PM_{10} emission standard for CTs under the NSPS or National Emission Standards for Hazardous Air Pollutants (NESHAP) programs, EPA has not specified an official PM_{10} test method for this source category. Second, EPA Method 5 can achieve a minimum detection level similar to EPA Method 5I (about 5 mg) with an experienced test team using good technique. Another method for low PM sources is a continuous PM CEMS such as the Rupprecht & Patashnick Series 7000 Source Particulate Monitor [an In-situ Tapered Element Oscillating Microbalance (TEOM)]. Third, both EPA Method 5 and 5I and the TEOM only measure filterable PM (that is, PM that is a solid or an aerosol at the filter or stack temperature). In order to measure condensable PM in addition to filterable PM, EPA Method 202 or another type of method which captures condensable PM must also be used. One other method that captures both filterable and condensable PM is EPA CTM-039 (a dilution method).

Although not explicit in the permit or the comment, EPA wishes to point out that EPA Method 5 or 5I does not include a device to limit the particle size collected on the filter to PM that is PM_{10} or smaller. The proposed permit included EPA Method 201 and 201A as alternatives to EPA Method 5 for PM_{10}. However, for CTs and DBs, all PM emissions will be less than 10 μm in diameter and therefore PM_{10}. Since EPA Method 201 and 201A use a cyclone on the nozzle which goes into the stack, these methods will likely to be very difficult to use in a large diameter duct with high stack velocity.

Since PM_{10} testing methodology may become more advanced during the period between permit issuance and testing, EPA is requiring Diamond to submit a source test plan for approval prior to any PM_{10} testing so that the most appropriate PM test method available at that time will be employed. See Permit at Approval Condition 12.2.1.

Comment 5: WEC is a 1200 megawatt (MW) project. The facility is projected to emit 824 TPY of CO during startup and shutdown. A similar facility (i.e., the COB Energy Facility), however, is permitted by ODEQ to emit 211 TPY of CO during startup and shutdown. This indicates that WEC could do much more to reduce CO emissions during startup and shutdown.

Response 5: It is EPA's understanding that CT/HRSG-DB CO emissions will be elevated only during startup conditions. The oxidation catalyst is effective only after optimal flue gas temperatures have been achieved in the HRSG. To address these periods of excess emissions, EPA is requiring Diamond to develop and implement a startup, shutdown and malfunction plan as specified in Approval Condition 18 in order to minimize emissions outside of normal operating conditions.

In addition, EPA included in the specific Permit requirements to limit the duration of each startup depending on whether the startup was from a cold, warm or hot CT condition as specified in Approval Condition 6. Approval Condition 6.2.2 prescribes the time limit for each type of startup. EPA believes that directly limiting the duration of startup is an effective way to minimize startup emissions.

EPA did not limit the number of startup events WEC may undertake over the course of time. Although limiting the number of allowable startups during any specified time period would be an alternative to capping CO emissions, EPA does not consider the approach to be either appropriate or consistent with 40 CFR § 52.21 without a request from the applicant. The ability to startup as necessary to satisfy market demand is an integral part of the operating flexibility that Diamond is proposing for this project. Absent a request to restrict the number of startups, EPA simply does not posses the authority to limit the number of startups.

Given a worst-case projected cold startup CO emission rate of 327.59 lb/hr and a worst-case cold startup duration of 3.5 hours, WEC would emit 837 tpy CO during startup conditions in the event the facility experienced one cold start per day. Both the extent and duration of startup emissions are limited in the WEC PSD permit through practically enforceable conditions. See Finding 11.1.2 and 6.2.2.1.

837 tpy = (4 CTs)(365 days/yr)(3.5 hr/day)(327.59 lb/hr)(ton/2000 lb)

In comparison, ODEQ indicates that the similarly sized COB Energy Facility (COB) would only emit 211 tpy given 250 startups per year. ODEQ's Review Report in support of its December 30, 2003 PSD permit to COB reveals that a CO emission factor of 422.5 lb/startup or shutdown was utilized to calculate the 211-tpy estimate.

211 tpy = (4 CTs)(250 starts/yr)(422.5 lb/start)(ton/2000 lb)

WEC is not allowed to emit CO in excess of 328 lb/hr during startup or shutdown. At this emission rate, Diamond has demonstrated that it will not cause or contribute to a NAAQS violation. In contrast, it does not appear that the COB permit contains practically enforceable conditions limiting the duration or extent of startup emissions protective of the NAAQS. Diamond demonstrated that its worst-case CO emissions (328 lb/hr) will not have a significant ambient impact as illustrated in the following table:

Wanapa Energy Center Ambient CO Impacts During Startup

Averaging Period	Maximum Modeled Concentration ($\mu g/m^3$)	Modeling Significance Level ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
1-Hour	1,271.84	2,000	40,000
8-Hour	356.27	500	10,000

Comment 6: Explain how the 1.98 g/sec CO emission rate in Table 5-4 of EPA's preliminary TSD is calculated and why this number was chosen to represent the worst-case CO emissions from each CT/HRSG-DB. Reconcile this 1.98 g/sec CO emission rate with the facility's allowable emissions of 933 TPY.

Response 6: Diamond originally submitted an application assuming a 3.0 ppmdv CO BACT determination for normal operation (outside startup, shutdown, or malfunction). This CO exhaust gas concentration correlates to a 15.75 lb/hr (1.98 g/sec) mass emission rate assuming maximum operation of CT and HRSG-DB with an ambient temperature of 52.2°F. This scenario creates the worst-case CO impacts during normal operation.

1.98 g/sec = (15.75 lb/hr)(kg/2.205 lb)(1000g /kg)(hr/60 min)(min/60 sec)

Although Diamond subsequently revised the BACT analysis to reflect a lower 2.0 ppmdv CO BACT determination for each CT/HRSG-DB, Diamond did not revise the AAQIA. The application continued to demonstrate that ambient air quality standards would be protected under worst-case normal operating conditions characterized by a 1.98 g/sec mass emission rate. The WEC, however, is not allowed to emit greater than 1.32 g/sec at maximum operation and 52.2°F given a 2.0 ppmdv CO BACT limit in Approval Condition 11.1.1.

Under worst-case startup conditions, EPA is permitting a CO mass emission rate of 328 lb/hr (41.28 g/sec) as explained above.

See page 62 in §8 of the preliminary TSD for the calculation supporting the "933 TPY" CO emissions projection. This "933 TPY" value is not a permit limit; it is a projection of worst-case emissions considering one cold start per day. For purposes of this analysis, it is assumed that a cold start is preceded by 8 hours of idle operation and proceeded by 12.5 hours of maximum CT/HRSG-DB firing with an outside temperature of 52.5°F.

CO = SHUTDOWN + COLD START + CT & DB COMBINED FIRING

= [365 day/yr][(8 hr/day)(0 lb/hr) + (3.5 hr/day)(327.59 lb/hr) + (12.5 hr/day)(10.5 lb/hr)] / 2000 lb/ton
= 233.2 ton/yr x 4 CT/HRSG-DB
= 933 tpy

Comment 7: EPA incorrectly concluded that ten-year old PM_{10} and NO_2 monitoring data from Boardman, Oregon is representative of existing ambient air quality in the area. As such, at least one year of representative PM_{10} and NO_2 monitoring data should be collected before construction of WEC is allowed to begin.

Response 7: PSD permit applications must contain an air quality analysis to demonstrate that the proposed facility's emissions will not cause or contribute to a violation of a NAAQS standard and/or any other maximum allowable increase. Pursuant to 40 C.F.R. § 52.21(m)(1)(iii), this analysis is required to contain continuous air quality monitoring data to assess existing air quality in the area to be impacted by the proposed facility. See also CAA § 165(e)(2). Continuous air quality monitoring data, however, is not required where the "new emissions proposed by the applicant would cause impacts less than the significant monitoring concentrations …." Ambient Monitoring Guidelines for Prevention of Significant Deterioration at p. 5, dated May 1987 ("Ambient Monitoring Guidelines"). Only WEC's PM_{10} impacts were predicted to exceed the significant monitoring concentration; thus, only continuous monitoring data for PM_{10} is required pursuant to 40 C.F.R. § 52.21(m). See TSD at p. 44, Table 5-8.

In general, continuous air quality monitoring data must be "gathered over a period of at least one year and represent at least the year preceding receipt of the application …." 40 CFR § 52.21(m)(1)(iv). This requirement can be satisfied by either conducting preconstruction ambient air monitoring or utilizing existing air quality data that is representative of the proposed project area. See New Source Review Workshop Manual at p. C.18-C.19, dated November 1990 ("NSR Workshop Manual").

Here, the TSD concluded that:

> "[p]reconstruction monitoring data is needed to establish the existing air pollutant concentrations in the [proposed project] area. USEPA has the discretion to use existing representative air quality measurements in lieu of preconstruction monitoring data …. In this case, [EPA] has determined that the existing NO_2 and PM_{10} measurements at Coyote Springs [*i.e.*, Boardman, Oregon] are adequate to represent existing air quality levels or background, in the project area …."

TSD at p. 44.

In determining whether the existing data is representative of existing air quality, the Ambient Monitoring Guidelines suggest the use of three factors: monitoring location, data quality, and use of current data. See Ambient Monitoring Guidelines at p. 6; see also NSR Workshop Manual at p. C.19.

With regard to monitoring location, the existing data should be representative of three types of areas: (1) the location(s) of maximum concentration increase from the proposed source or modification; (2) the location(s) of the maximum air pollutant concentrations from existing sources; and (2) the location(s) of the maximum impact area. See Ambient Monitoring Guidelines at p.6. EPA has determined that this factor is satisfied because both areas are rural, have similar topography, have similar land use and climate, and are located in the same airshed.

The existing data meets the data quality requirements contained in 40 CFR Part 58, Appendix B, and thus meets the factor relating to data quality..

With regard to currentness of the data, "generally ... data must have been collected in the 3-year period preceding the permit application ...." Ambient Monitoring Guidelines at p. 9. Although the data was not collected within the three years preceding Diamond's permit application, EPA believes that the existing data is nonetheless representative of the WEC project area.

To further illustrate that the Coyote Springs ambient air quality data is representative, EPA conducted a focused screening analysis in response to ODEQ's comment to determine the concentration increases in the WEC area, if any, resulting from industrial development since 1996. EPA accomplished this analysis using quantifiable emissions from new sources that began operation in the area from 1996 to 2001. The year 1996 represents the first full calendar year after the air quality measurements at Coyote Springs while 2001 represents the first full calendar year prior to the final May 2002 modeling protocol submitted to EPA.[19] The objective of the analysis was to determine the PM_{10} contributions from those new operating sources located within the WEC significant impact area at a hypothetical monitoring station site and in ambient air. The hypothetical monitoring station site represents the approximate area of the maximum 24-hour and annual average PM_{10} concentration locations.

The emissions inventory for the modeling analysis consisted of three sources. During the six year period, the only source inside the significant impact area that added actual emissions to the area was Hermiston Generating. Also inside the significant impact area was Hermiston Power Partnership; but it started operations in 2002 and was not included in the analysis. Although outside of the significant impact area, both the Portland General Electric (PGE) Boardman and Coyote Springs power plants were included in the inventory. PGE Boardman was added because of its increase in actual emissions by about a factor of three during the period. Emissions from the PGE Coyote Springs power plant was added because it came on line in the mid to late 1990's and could have potential downwind impact. The 2001 actual emissions for these three sources were obtained from an in-house State of Oregon emissions inventory, a Boardman inspection report, and from an EPA ACID Rain Program web site.

[19] Utilizing 2001 calendar-year emissions, rather than 2002, is conservative in that emissions from PGE Boardman, PGE Coyote Springs, and Hermiston Generating were greater in 2001.

The conservative SCREEN3 modeling results demonstrated that the contributions of PM_{10} concentration increases from the three power plants are not significant at the hypothetical monitoring station site. Specifically, the total increase in predicted concentration are 1 $\mu g/m^3$ for 24-hour PM_{10} and less than 0.5 $\mu g/m^3$ for annual average PM_{10}. For the PGE Boardman power plant, EPA elected to model their 2001 total actual emissions rather than the emission increase (i.e., 2001 actual emissions minus 1995 actual emissions) so that the predicted concentrations would be conservative. These modeling results are consistent with judgments made about the representativeness of the Coyote Springs data.

Population in Umatilla County has increased 19.1% between 1990 and 2000. See U.S. Census Bureau at http://quickfacts.census.gov/qfd/states/41000.html. Emissions increases associated with increased populations may have occurred. The impact of these emissions, if any, at the hypothetical monitoring station site are expected to be negligible.

In EPA's technical judgment, the use of the 1994 to 1995 Coyote Springs measured data meets the three representativeness standards.

Comment Letter 6: Suzanne L. & Robert T. Keys

Comment 1: I am opposed to WEC given that there is minimal local benefit compared to the cost to the community in terms of potential pollution, climate effects, and esthetics.

Response 1: See response to General Comment 2.

Comment 2: I am opposed to WEC given that adequate monitoring systems are not in place at the facility to effectively monitor the system.

Response 2: See response to General Comment 11.

Comment 3: I am opposed to WEC given that equipment installed at the facility will not be disassembled and removed from the property after the facility shuts down.

Response 3: See response to General Comment 2.b.

Comment Letter 7: Terry Golter, DVM

Comment 1: WEC will decrease airshed capacity available for future development.

Response 1: See response to General Comment 2.c.

Comment 2: WEC will limit water available for future growth.

Response 2: See response to General Comment 9.

Comment 3: How do WEC air pollutant emissions compare to a modern coal-fired power plant, McNary Dam, and wind generators?

Response 3: See response to General Comment 12. McNary Dam and wind generators generate no air pollutant emissions.

Comment 4: Adequate consideration has not been given to deleterious effects on wetlands, nesting areas, and young waterfowl between Umatilla and Hat Rock State Park.

Response 4: See response to General Comment 10. Moreoever, it should be noted that BIA's Final EIS, as well as the BIA ROD, considered effects on wetlands, nesting areas and young waterfowl between Umatilla and Hat Rock State Park. See Final EIS at § 3.4.

Comment 5: Ambient ozone measurements in Klickitat County, Washington indicate high concentrations approaching the NAAQS. This information should not be relevant to EPA's decisionmaking for the WEC application given the distance between Klickitat County and the project site. What is EPA's position on this matter?

Response 5: See response to General Comment 3.b and 4.c.

Comment 6: Ambient $PM_{2.5}$ measurements in Pendleton should not be relevant to EPA's decisionmaking for the WEC application given the distance between Pendleton and the project site. What is the EPA's position on this matter?

Response 6: See response to General Comment 3.a and 4.b.

Comment 7: Meteorological measurements from Spokane, Washington should not be utilized within EPA's ambient impact analysis for this project given the distance between Spokane and the project site. What is the EPA's position on this matter?

Response 7: See response to General Comment 4.a.

Comment 8: Visual impacts have not been adequately addressed. Residents of Salmon Point Lane and Hat Rock can certainly assure EPA that the WEC structures and emissions will have a much larger effect than 5% on the pristine quality of the view of the Columbia River and gorge between Hat Rock and WEC. What is the EPA's position on this matter?

Response 8: See response to General Comment 7.

Comment 9: Has any consideration been given to the effect on river tours, Lewis & Clark Trail, and the general industrial impact this project will have on recreation, tourism and the aesthetics of the area?

Response 9: See response to General Comment 2.

Comment 10: Where is the public good of this project? WEC, being built on sovereign ground, will result in no public benefit, and will put a demand on local infrastructure.

Response 10: See response to General Comment 1 and 2.

Comment Letter 8: Marry Lynn Golter

Comment 1: Ambient O_3 monitoring should be conducted near the project site before approval is granted. The closest O_3 monitoring in Klickitat County, Washington indicated ambient concentrations approaching the NAAQS. Klickitat County is a considerable distance from the project site. Considering that emissions from power plants in the local area will contribute further to O_3 formation, it is appropriate to conduct ambient O_3 monitoring near the project site.

Response 1: See response to General Comment 3.b and 4.c.

Comment 2: Our weather in this area is a concern to me. It is my understanding that these plants can produce changes in our habitat. With three plants in the area, my concern is our ability to develop agriculture and continue the crops we have. Hermiston depends on agriculture for its economy.

Response 2: See response to General Comment 8.a.

Comment 3: Meteorological measurements from Spokane, Washington should not be utilized within EPA's ambient impact analysis for this project given that Hermiston experiences different weather than Spokane.

Response 3: See response to General Comment 4.a.

Comment 4: The $PM_{2.5}$ monitor in Pendleton is all right, but I question whether this is also too far away to give an accurate reading for the Hermiston area. If this proposal is to be granted, I think more monitoring in the Hermiston area should be addressed first.

Response 4: See response to General Comment 3.a, 4.b, and 5.

Comment Letter 9: Tammy L. Dennee, Oregon Wheat Growers League

Comment 1: On December 2, 2004, NOAA Fisheries determined that WEC would pose no harm to anadromous salmonids or designated critical habitat. On November 18, 2004, FWS determined that WEC would pose no harm to trout and bald eagles. These decisions by NOAA Fisheries and FWS circumvent current regulations and restrictions protecting endangered species and habitat.

Response 1: The determinations made by FWS and NOAA Fisheries (the Services) were based on information provided in the BA's based on the requirements of the ESA. These agencies are ultimately responsible for their own decisionmaking.

See also response to General Comment 9.

Comment 2: It is unconscionable that where matters of endangered species are at play, a double standard would emerge which farmers or other developers would never enjoy.

Response 2: See response to General Comment 13.

Comment 3: A special "hold harmless provision" should be crafted for producers in this region affording them the right to continue their current farming practices, without EPA or ODEQ interference, should this airshed fail to attain the NAAQS. Such a provision would provide certainty to producers that their livelihoods will not be harmed by EPA's approval of WEC. EPA should not approve WEC and its impact upon the airshed if the elimination of local farmers is ultimately a likely consequence.

Response 3: Under the CAA and its implementing regulations, EPA does not have the authority to include a special "hold harmless provision" in a PSD permit. See response to General Comment 8.b.

Comment 4: EPA decisionmaking should adequately weigh both the cumulative effects of this power generating facility to the airshed, as well as the potential impacts to the health of the citizens who currently call this region home.

Response 4: See response to General Comment 4.d, 6, and 8.b.

Comment Letter 10: Floyd Turnbull

Comment 1: The local community suffers from adverse weather conditions. For example, inversions periodically stretch from Boardman to the east side of Hermiston during winter. WEC and its massive steam plumes will do nothing to improve these types of adverse weather conditions.

Response 1: See response to General Comment 7.

Comment 2: WEC would sit directly adjacent to the Wanaket Wildlife Management Area and within the bounds of a major migratory pathway. WEC's air pollutant emissions and associated acid rain formation will have an effect on the Columbia River, salmon habitats, and Bald Eagles around Hat Rock State Park. The extent of WEC's effect is unknown.

Response 2: See response to General Comment 9 and 10.

Comment 3: EPA's proposed permitting decision is being supported, in part, by $PM_{2.5}$ and O_3 ambient monitoring data gathered from distant locations. The $PM_{2.5}$ data is provided by a monitor in Pendleton, and the O_3 data is provided by a monitor in Klickitat County, Washington. Each of these monitoring stations is reporting much cleaner air than the local area is actually experiencing. Current and persistent weather patterns observed in the local area suggest that the use of this distant ambient data invalidates EPA's ambient air quality analysis.

Response 3: See response to General Comment 3.a, 3.b, 4.b, and 4.c.

Comment Letter 11: Rick Latham

Comment 1: What are the health impacts on Umatilla County residents resulting from WEC air pollutant emissions? What is going to happen to our airshed?

Response 1: See response to General Comment 6 and 8.b.

Comment 2: Will WEC be paying taxes on this project? Who is paying the taxes for this project?

Response 2: See response to General Comment 2.a.

Comment 3: Where is the pipeline for this project going to be located?

Response 3: BIA's Final EIS discusses the location of the natural gas pipeline for WEC. According to the Final EIS, the pipeline will run from WEC to the Stanfield Compressor Station.

Comment 4: Will there be any effects on farm ground resulting from the drainage pattern established for WEC? If so, what do you think the effect will be to my farm?

Response 4: In issuing PSD permits, EPA is required to evaluate Diamond's permit application for WEC in accordance with the CAA and its implementing regulations. An analysis of the drainage patterns is not a factor that EPA can consider in conducting this evaluation. However, BIA's Final EIS does contain a discussion of storm water management practices that Diamond will implement at WEC. See Final EIS at § *3.3*

Comment 5: Will crops from local farmers be affected or harmed in any way from the pollutants emitted by WEC such as, NO_X, CO, SO_X, PM_{10}, VOC, or acid rain? What damage will the emissions do to my crops? Will the land ever be a great source of soil again?

Response 5: See response to General Comment 8.a.

Comment 6: How can PGE's Boardman coal-fired power plant not cause any premature deaths or other related damage to the Morrow and Umatilla County airshed, yet a John

Deere tractor's air pollutant emissions threaten so many lives? Is WEC less harmful than a single John Deere tractor?

Response 6: Emissions from PGE's Boardman facility are presented in response to General Comment 12. EPA regulates coal-fired power plants differently from non-road diesel engines as directed by Congress. See Comment Letter 1, Response to Comment 8.

Comment 7: The applicant will be utilizing public roads to build WEC. Who will be paying the taxes on the roads?

Response 7: See response to General Comment 2.a.

Comment 8: Is this really the best place for WEC? Where is the majority of the power going?

Response 8: See response to Comment Letter 1, Response to Comment 6.

Comment Letter 12: Kyla Latham

Comment 1: I am concerned about the impact WEC will have upon the local airshed. What effect will WEC have upon our visibility?

Response 1: See response to General Comment 7.

Comment 2: Will WEC air pollutant emissions harm land, crops, people, and animals?

Response 2: See response to General Comment 6, 8.a and 10.

Comment 3: Power plants have been linked directly to higher death rates in U.S. cities. In addition, EPA has listed power plants as a source of premature deaths. EPA, however, has failed to validate or document its methodology to support such claims.

Response 3: In issuing PSD permits, EPA is required to evaluate Diamond's permit application for WEC in accordance with the CAA and its implementing regulations. An analysis concerning the link between high death rates and power plants is beyond the type of evaluation that EPA can conduct at this time.

Comment 4: Can the EPA assure Umatilla County residents that the water WEC expects to discharge back into the Columbia River will not harm the salmon or any other part of the river?

Response 4: See response to General Comment 9 and 10.

Comment 5: Eight fossil fuel-fired power plants and thousands of nonroad heavy duty diesel engines will be operating in Umatilla and Morrow County. Why has there not been a cumulative air quality impact study performed without modeling?

Response 5: See response to General Comment 4.d.

Comment 6: Will the Highway 730 desert area, north and south of the highway in Umatilla County, turn into a marshy wetland ruining the Wanaket Wildlife Management Area? Can EPA assure that the land and animals surrounding WEC (including the animals in the Wanaket Wildlife Management Area) will not be harmed by the discharge of air pollutants and acid rain from WEC?

Response 6: See response to General Comment 9 and 10.

Comment 7: Will the environment and the people of Umatilla County be safe from the discharge of air pollutants from the main stacks of the combustion turbines and duct firing units?

Response 7: See response to General Comment 6 and 10.

Comment 8: Will the residences and buildings in close proximity to WEC be exposed to an increase in electric and magnetic fields? If so, can EPA assure their safety?

Response 8: In issuing a PSD permit, EPA is required to evaluate Diamond's permit application for WEC in accordance with the CAA and its implementing regulations. Consideration of electric and magnetic fields is not part of this review process. However, BIA's Final EIS contains a discussion of the impacts of electric and magnetic fields that will result from the generation and transmission of electricity from WEC. See Final EIS at § 3.11.2.3.

Comment 9: Will local farmers be able to continue agricultural field burning if WEC is constructed and operating? If not, what suggestions can EPA offer as alternatives to field burning?

Response 9: See response to General Comment 8.b.

Comment 10: Local farmers are defending their practices under detailed examination. Why are fossil fuel-fired power plants not under such scrutiny?

Response 10: See response Comment Letter 1, Response to Comment 8.

Comment 11: Why wasn't there any industry representation at the air quality meetings held in Umatilla County? Questions presented to EPA at the meetings were not answered. EPA is not prepared to proceed in the permitting of WEC.

Response 11: EPA conducted a public hearing on January 5, 2005 in Hermiston to receive the community's input on EPA's November 23, 2004 preliminary decision and proposed PSD permit for WEC. Prior to the start of the public hearing, EPA provided a presentation describing EPA's preliminary decision and proposed PSD permit. EPA responded to all questions from the community throughout the presentation. To allow the public additional time to comment on the proposed Permit, the public comment period was extended to January 19, 2005.

Diamond and its agents attended the public hearing, and provided some input during the discussion period. Diamond is not legally required to participate in the public hearing.

After reviewing the public's comments to the proposed Permit, EPA is now prepared to respond to the comments and finalize the Permit.

Comment 12: EPA has not appreciated WEC's impact upon the local community. Given WEC's permanent impact upon noise, tax base, visible effects, road usage, water loss, and air pollution, it is surprising that EPA has not more thoughtfully considering local input so that the project might overall benefit the people of Umatilla County.

Response 12: See response to General Comment 2, 6, 7, 9, and 10.

Comment 13: BACT is based upon a facility's reasonable economic cost for control technology. Does EPA know what control efficiencies these technologies have actually achieved? BACT is not a good source of information.

Response 13: EPA has provided a detailed BACT analysis for WEC in the TSD. The BACT analysis is required by the CAA and the PSD regulations.

Comment 14: Who is actually benefiting from WEC? The project is not in the overall public interest. Perhaps there is a better time and place for WEC.

Response 14: See response to General Comment 1 and 2.

Comment Letter 13: Emille M. Holmeman & Dennis D. Doherty, Umatilla County Board of Commissioners

Comment 1: WEC has the potential to preclude future private development based on the power plant's impact on the regional airshed. WEC will place a private-sector company at a competitive disadvantage for complying with future federal air standards.

Response 1: See response to General Comment 2.c.

Comment 2: WEC will have a potential negative human health impact given the plant's impact upon the airshed.

Response 2: See response to General Comment 6.

Comment Letter 14: Joyce Langley

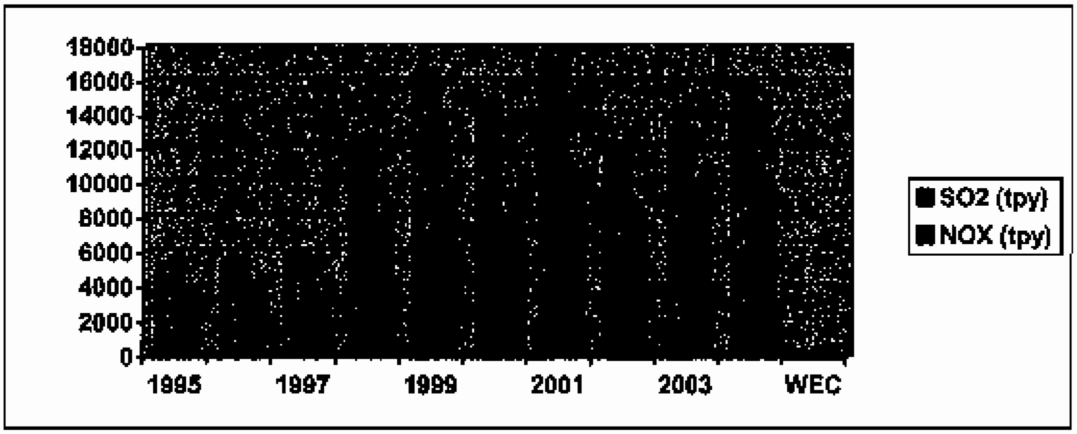
Comment 1: EPA is unable to estimate the human health impact of local power plant emissions.

Response 1: See response to General Comment 6.

Comment 2: Will there be an increase in emission from WEC similar to the increase experienced at the Boardman coal-fired power plant?

Response 2: As illustrated in the chart below, the airshed will not experience an increase in emissions similar to that of the Boardman coal-fired power plant.

Portland General Electric Boardman Actual Emissions: 1995 – 2004[20]
Vs
Wanapa Energy Center Worst-Case Emissions



PGE Boardman produces approximately 585 MW of electricity from the combustion of coal while WEC may produce up to 1,200 MW of electricity from the combustion of natural gas. Yet, as the above graph indicates, the PGE Boardman facility has produced emissions since 1995 ranging from 5,000 to 18,000 TPY SO_2 and 3,000 to 10,000 TPY NO_X. Meanwhile, WEC is being permitted for maximum potential worst-case emissions of 57 TPY SO_2 and 486 TPY NO_X.

Comment 3: On a typical calm and warm day, how high and wide will the plume of air pollutant emissions travel?

Response 3: For a typical calm and warm day, the meteorological conditions would be very light winds and strong to moderate incoming solar radiation. Specifically, the atmosphere would be classified as A stability with a wind speed of 1.0 meters per second. Using this set of conditions and WEC stack parameters identified on Table 5-5 in §5.2.7

[20] PGE Boardman emissions data provided by EPA's Clean Air Market Division.

of the preliminary TSD, the calculated lateral and vertical extent of the plume are shown below at specific downwind distances from WEC.

Downwind Distance (m)	Plume Height (m)	Lateral Extent (m)	Vertical Extent (m)
30	951.2	30.11	29.05
60	951.2	41.26	38.58
90	951.2	55.01	50.88
120	951.2	67.56	62.05
150	951.2	79.32	72.51
180	951.2	90.49	82.48
210	951.2	101.20	92.06
240	951.2	111.54	101.38
270	951.1	121.56	110.61
300	951.2	131.32	119.77
805 (0.5 miles)	951.2	273.50	356.83
1609 (1.0 miles)	951.2	406.59	1267.45
3218 (2.0 miles)	951.2	633.41	5000.00

The AERMOD Modeling System is limited to 50 km. For long-range transport, the CALPUFF Modeling System can be used to quantify concentrations (and visibility impacts) out to several hundred km. Subsection 5.5 of the preliminary TSD discussed Class I area air quality increments quantified at downwind distances of 133 to 195 km from WEC using the CALPUFF Modeling System.

Comment 4: While ambient air pollutant monitoring equipment is employed in Pendleton and the Tri-Cities, no such equipment is employed in either Umatilla or Hermiston. Data from Pendleton and the Tri-Cities is not representative of air quality in either Umatilla or Hermiston, and therefore should not be considered in EPA's decisionmaking for WEC.

Response 4: See response to General Comment 3.a, 4.b, and 5.

Comment 5: WEC's proposed air pollutant emissions are greater than any of the existing four fossil fuel-fired power plants in Umatilla County. In consideration of their health, the residents of Umatilla County do not want to breathe air pollutant emissions from WEC.

Response 5: See response to General Comment 6 and 12.

Comment 6: Umatilla County residents are being asked to endure health-related impacts resulting from WEC's emissions. These emissions contribute to downwind formation of ozone, smog, and acid rain.

Response 6: See response to General Comment 6.

Comment 7: WEC will generate no tax dollars to Umatilla County; to the Education District; the Fire District; and to the State of Oregon.

Response 7: See response to General Comment 2.a.

Comment 8: Characterize the water quality of the plant's effluent as it is discharged to either the Columbia River or the Cold Springs Reservoir.

Response 8: See response to General Comment 9 and 10.

Comment 9: Explain WEC's impacts upon the fish and other wildlife that depend upon the Cold Springs Reservoir in the event WEC's effluent is discharged to this water body.

Response 9: See response to General Comment 9 and 10.

Comment 10: Explain WEC's impacts upon irrigation water and soil in the event WEC's effluent is discharged to the Cold Springs Reservoir.

Response 10: See response to General Comment 8.c, 9, and 10.

4. RESPONSES TO ORAL COMMENTS - JANUARY 5, 2005 PUBLIC HEARING

Commentor 1: Philip B. Hamm

Comment 1: It makes little sense to utilize O_3 monitoring data from Klickitat County, Washington and $PM_{2.5}$ monitoring data from Pendleton to determine the resultant ambient pollutant concentrations in the area surrounding WEC. Prior to approving this project, additional monitoring should be conducted in the immediate area surrounding WEC to determine background pollutant concentrations. Given that background O_3 concentrations may already be approaching the NAAQS and given the permanence of WEC once constructed, this is a very important issue to resolve prior to approval.

Response 1: See response to General Comment 3.a, 3.b, 4.b, 4.c, and 5.

Comment 2: Has EPA permitted any other facilities on sovereign ground within the Pacific Northwest? If so, has EPA applied additional rules during the permitting process? If WEC is unique in this respect, then why not consider issues related to its location on sovereign ground and the overall public good in determining whether or not to grant approval for WEC?

Response 2: EPA has not previously issued a PSD permit to a facility on sovereign ground in the Pacific Northwest. See also response to General Comment 1.

Comment 3: It makes little sense to utilize meteorological data from far away in predicting WEC's air pollutant impacts in the local area. This data should be measured and collected in the local area and subsequently utilized to predict WEC's impacts. Given the permanence of WEC once constructed, this is a very important issue to resolve prior to approval.

Response 3: See response to General Comment 4.a.

Comment 4: EPA should consider the overall public good when determining whether or not to grant approval for WEC given its location on sovereign ground. Electricity production should not be considered in this decisionmaking given that the local area has access to plenty of local electricity production already. Employment should not be considered in this decisionmaking either given the relatively small number of employees WEC intends to hire.

Response 4: See response to General Comment 1.

Commentor 2: Kent Madison

Comment 1: It makes little sense to utilize ozone monitoring data from Klickitat County, Washington and $PM_{2.5}$ monitoring data from Pendleton to determine the resultant ambient pollutant concentrations in the area surrounding WEC. Prior to approving this *project, additional monitoring should be conducted in the immediate area surrounding WEC to determine background pollutant concentrations. Given that background ozone concentrations may already be approaching the NAAQS and given the permanence of WEC once constructed, this is a very important issue to resolve prior to approval.*

Response 1: See response to General Comment 3.a, 3.b, 4.b, 4.c, and 5.

Comment 2: EPA should not grant approval of WEC given that the project will not pay county taxes. The local community is providing a portion of its airshed capacity, natural gas capacity, BPA transmission capacity, and visibility esthetics value. The local community is getting nothing in return.

Response 2: See response to General Comment 1, 2, and 6.

Comment 3: EPA should not grant approval of WEC. WEC's consumption of airshed capacity will limit the local community's ability to attract potential tax-paying businesses to the area.

Response 3: See response to General Comment 2.c.

Commentor 3: Dennis Tillot

Comment: I support the project. The EPA has developed an adequate record to support its proposed decision to grant approval for WEC.

Response: No response necessary.

Commentor 4: Lloyd Piercy

Comment 1: WEC does not serve the public good. WEC will use roads and services funded by local taxpayers, and WEC will not itself pay local taxes. WEC will use the local airshed without providing a benefit. Overall, the negative aspects of the project outweigh the positives.

Response 1: See response to General Comment 2.

Comment 2: Putting warm or hot water back into the Columbia River is probably not wise.

Response 2: See response to General Comment 9.

Comment 3: WEC's H_2SO_4 and NO_X emissions will have an adverse affect upon wetlands and step desert habitat surrounding the plant.

Response 3: See response to General Comment 10.

Commentor 5: Patricia Maier

Comment: EPA should provide additional information with respect to the ambient air pollutant monitoring that has already been performed. In order to get a better understanding of local air quality, a monitor should be moved to Hermiston and operated while the local power plants are running. Monitoring air quality around Hermiston will provide the community with information to determine whether or not we are being protected.

Response: See response to General Comment 3.a, 3.b, and 5.

Commentor 6: Jason S. Torres

Comment 1: EPA does not intend to require WEC to continuously monitor PM_{10} emissions exiting the CT/HRSG stacks. This is bad scientific policy. Consider the ammonium nitrate that combines with SO_2 to form acid rain. Collecting PM_{10} emissions data continuously is good for future study purposes.

Response 1: No continuous monitoring is proposed for PM_{10} for several reasons. The primary reasons are that the PM_{10} emission concentrations from the CTs and DBs are very low compared to other combustion sources, and there is no add-on control technology for PM_{10} that must be continuously monitored to insure adequate performance. CEMS technology for PM_{10} does exist that could be required. PM CEMS have the capability of measuring down to the level expected in the exhaust stack from a gas-fired CT. However, the cost of PM CEMS is quite high; on the order of $75,000 to $100,000 for initial capital cost and $30,000 to $40,000 per year for operating and maintenance cost for each unit. EPA does not think it is necessary or cost effective to require PM CEMS for the CTs at WEC.

One other PM_{10} monitoring technology that could be used is a type of triboelectric detector typically used as a bag leak detector on baghouse control devices. Triboelectric detectors give a relative indication of PM_{10} concentration. Therefore, this type of CEMS is useful for detecting changes such as an upward trend of the baseline PM_{10} emissions or a spike in emissions due to a malfunction (for example, an oil seal leak into the combustion gas stream). One vendor provides a system using a wire rope assembly that extends across the stack. The triboelectric CEMS are less expensive than other PM CEMS, on the order of $5,000 to $20,000 for the equipment plus installation cost. Triboelectric CEMS are primarily used downsteam of an air pollution control device in order to detect deterioration in the control efficiency or a larger failure of the control device that would result in a significant increase in emissions. In the case of CTs and DBs, EPA does not think that there is sufficient likelihood of an increase of PM_{10} emissions over time to warrant requiring installation of a triboelectric CEMS.

Comment 2: The utilization of meteorological data from Spokane, Washington in conducting the ambient air quality analysis for WEC is inappropriate. Data gathered from Spokane is not representative of local weather conditions. Temperatures can vary between Hermiston and Pendleton. Atmospheric conditions can vary wildly just between

Hermiston, Tri-Cities, and Pendleton. EPA is failing to take into consideration the effect dust storms will have upon WEC's downwind impact.

Response 2: See response to General Comment 4.a.

Comment 3: EPA has not fully considered the cumulative effect of all permitted power plants in the area with respect to air quality. EPA has also not considered in its ambient air quality analysis the emissions resulting from all the heavy agricultural activities, including diesel engines, tractors, and trucks that don't meet certain air pollution standards that would normally be required in large metropolitan areas.

Response 3: See response to General Comment 4.d.

Comment 4: EPA has not fully considered the cumulative effect of all permitted power plants in the area with respect to water.

Response 4: See response to General Comment 9.

Comment 5: EPA has not taken into account the health effects that my family will be experiencing. My family is located directly downwind of WEC thirty-six percent of the time. My family will be breathing WEC emissions for roughly a third of the year. EPA has also not taken into account the exposure of the people at Hat Rock.

Response 5: See response to General Comment 6.

Comment 6: EPA has not taken into account WEC's visual impact.

Response 6: See response to General Comment 7.

5. CHANGES TO THE FINAL PERMIT APPROVAL

A. In response to Comment Letter 5, Comment 4, the following change is being made to the proposed permit with respect to the prescribed PM_{10} Stack Test Method:

APPROVAL CONDITIONS

12.2.1 Conduct a performance test in accordance with an EPA-approved stack test protocol incorporating the following methods:

12.2.1.1 EPA Reference Method 5 or 5I ~~Method 201 or 201A~~ to capture filterable PM_{10}, and EPA Reference Method 202 to capture condensible PM_{10}, or EPA Conditional Test Method 39.

B. In response to General Comment 5, the following conditions are being added to the proposed permit with respect to post-construction monitoring:

APPROVAL CONDITIONS

23 Post-Construction Ambient Monitoring

23.1 WEC shall install, operate, and maintain a continuous non-filter based ambient air quality monitoring station for $PM_{2.5}$, in accordance with EPA, 1984a: Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD), EPA-450/4-87-007, May 1987, U.S. Environmental Protection Agency, Research Triangle Park, NC. The monitoring period shall commence within 90 days after the completion of construction and start-up or after commercial operation, which ever is later, and shall continue for a minimum of 1 year and a maximum of 2 years form the date first readings are taken. The data recovery should be at least 80 percent of the data possible for each air pollutant during each 1-year monitoring period. The monitoring station shall continue to operate and record data for a minimum of 1 year, at which time WEC will notify EPA in writing of WEC's intent to terminate operation of the monitoring station; however monitoring station operation will continue until such time that written approval is obtained from EPA authorizing the termination of its operation, such authorization of termination of operation of the monitoring station will not be unreasonably withheld and in any event the termination of operation of the monitoring station can occur unilaterally at WEC's discretion on or after 2 years of operation.

23.2 WEC shall install, operate, and maintain a meteorological monitoring station to monitor and record data in accordance with EPA, 1987b: On-Site Meteorological Program Guidance for Regulatory Modeling Application, EPA-450/4-87-013, June, 1987, U.S. Environmental Protection Agency, Research Triangle, N.C. Data shall include horizontal wind speed and direction, temperature, solar radiation and delta-T. Each quarter's data recovery should be at least 90 percent of the data possible for each variable measured during each 1-year monitoring period. The monitoring period shall commence within 90 days after initial the completion of construction and start-up or after commercial operation, which ever is later, and shall continue for a minimum of one (1) year and a maximum of 2 years from the date first readings are taken.

The monitoring station shall continue to operate and record data for a minimum of 1 year, at which time WEC will notify EPA in writing of WEC's intent to terminate operation of the monitoring station; however monitoring station operation will continue until such time that written approval is obtained from the EPA authorizing the termination of its operation, such authorization of termination of operation of the monitoring station will not be unreasonably withheld and in any event the termination of operation of the monitoring station can occur unilaterally at WEC's discretion on or after 2 years of operation.

23.3 *At least 60 days prior to the scheduled completion of construction, WEC shall submit to EPA for approval an ambient air quality and meteorological monitoring plan for the post-construction monitoring requirements specified in Conditions 23.1 and 23.2 in accordance with EPA, 1993b: Requirements for Quality Assurance Project Plans for Environmental Data Operations (QA/R5) July, 1993, U.S. Environmental Protection Agency, Quality Assurance and Management Staff, Washington, DC. The plan shall include the proposed siting location(s). EPA shall provide WEC EPA's approval of or comments to the ambient air quality and meteorological monitoring plan no later than 30 days prior to the scheduled completion of construction.*

23.4 *WEC shall submit on a monthly basis, a printed or electronic summary of the ambient air quality and meteorological monitoring data collected in each calendar month. The summary shall be submitted within 60 days after the end of each calendar month.*

23.5 *WEC shall submit audit reports within 60 days after the following events:*

23.5.1 Completion of the post-installation equipment audit;

23.5.2 Completion of the independent performance and system audits;

23.5.3 Completion of the quarterly audits required for the ambient air quality data collection system; and

23.5.4 Completion of the semi-annual audits required for the meteorological data collection system.

Quarterly and semi-annual audit periods shall be based on periods of three and six calendar months commencing with the first complete calendar month of collected data.

23.6 *Within 90 days after the end of each year of collected data and following the completion of the collection of monitoring data, WEC shall submit to EPA annual/final reports in text (i.e., summary), tabular, and graphic forms, including data in digitized format. The digitized form of the measured air quality and meteorological data shall be in (1) EPA Aerometric Information and Retrieval System format and (2) ASCII format accessible by an IBM compatible PC.*

23.7 *Within 90 days after completion of data collection, WEC shall also submit the final report for the system and performance audit required prior to monitoring termination.*

C. The following change is being made to the proposed permit to address a typographical error regarding a reference to the procedures to accurately measure the fuel flow rate and PM_{10} emission factors:

APPROVAL CONDITIONS

12.3 Continuous compliance with Condition 12.1 shall be demonstrated by calculating PM_{10} emissions pursuant to the following conditions:

12.3.1 Install and operate a fuel flow metering system satisfying the requirements of 40 CFR Part 75 to measure the amount of fuel being combusting in each CT and DB,

12.3.2 Calculate PM_{10} emissions based upon the measured fuel flow rate and EPA-approved PM_{10} emission factors developed pursuant to Condition 12.3.3 and 12.3.4 ~~11.3.3 and 11.3.4~~,

D. The following change is being made to the proposed permit to reflect EPA's $PM_{2.5}$ air quality designations for northeast Oregon and south central Washington air quality control regions effective April 5, 2005:

FACTS

2. *...the ambient air in this region is either unclassifiable or attaining the national ambient air quality standards (NAAQS) for ... particulate matter with an aerodynamic diameter less than 2.5 micrometers ($PM_{2.5}$)... ~~With respect to the region's attainment of the 24-hr and annual NAAQS for particulate matter with an aerodynamic diameter less than 2.5 micrometers ($PM_{2.5}$), the State of Oregon has recommended to EPA that the region be designated attainment or unclassifiable.~~*

3. *...the ambient air in this region is either unclassifiable or attaining the NAAQS for ... $PM_{2.5}$... ~~With respect to the region's attainment of the 24-hr and annual NAAQS for $PM_{2.5}$, the State of Washington has recommended to EPA that the region be designated attainment or unclassifiable.~~*

E. The following change is being made to the proposed permit to more accurately describe the WEC's steam cycle and water-cooled condensing system.

DESCRIPTION OF PROJECT

2. *The design of the WEC... Steam exhausted by the ST is recycled back to the HRSG via a water-cooled condenser. The cooling water is supplied by the Columbia River and will experience approximately six cycles of regeneration through a cooling tower before discharge to the Cold Springs Reservoir. ~~Steam exhausted by the ST flows to a cooling tower, is condensed, and returned to the HRSG. Cooling tower water will be supplied from the Columbia River.~~*

3.5 Air Resources

The proposed power plant would be a major source of air emissions and require a construction permit under the federally mandated PSD regulations. Since the source would be located on land governed by the Confederated Tribes of the Umatilla Indian Reservation, the PSD permit must be submitted to and approved by the regional office of the USEPA (Region X) in Seattle, Washington.

The PSD application requires analysis of best available control technologies ***(BACT)*** and an assessment of impacts of the plant's maximum emissions on the federal ambient air quality standards (Title 40 of the CFR, paragraph 52.21 [40 CFR 52.21]). That application has been submitted to Region X of the USEPA, and it demonstrates that the proposed facility ***would*** employ the BACT for all air pollutants and ***would*** not cause or contribute to any exceedences of all applicable ambient air quality standards. The facility also ***would*** be required to install monitoring equipment and maintain operations to ensure that it ***would*** comply with emission limits established in the PSD permit.

The proposed power plant site is located in an area that is currently designated as "attainment" for all state and national ambient air quality standards. Meeting these standards indicates that the air quality of the area with the proposed Wanapa Energy Center ***would*** meet or exceed all ambient air quality standards set to protect human health, plant and vegetation health, and ***would*** allow for future growth of farming and industrial activities in the area. The air quality analysis included within the completed PSD application demonstrates that:

- The proposed facility ***would*** not significantly deteriorate the quality of the air surrounding the proposed site;

- The emissions from the proposed operation (when added to the natural background levels of pollutants, existing farming and industrial activities, existing mobile sources of emissions, and recently permitted industrial sources) would not cause or contribute to ambient pollution levels that exceed the ambient air quality standards;

- The facility ***would*** employ BACT that meets or exceeds all recently permitted sources of electrical power in the northwest; and

- The facility ***would*** not lead to deterioration of air quality in nearby pristine areas, such as the Columbia River Gorge, Mount Hood, Mount Adams, Eagle Cap, Goat Rocks, and the Strawberry Mountains.

Under the federal regulations these demonstrations are required for all pollutants for which the source is major. The PSD permit application first identifies the major emissions, the emission units, the control technologies, the emission rates (both short-term and annual average emissions), and a dispersion modeling analysis that compares facility impacts to the applicable standards. After the application has been reviewed and public comments allowed and incorporated, the Region X office ***would*** issue a PSD permit to construct the facility in accord with the accepted application. Any changes to the facility design or operation that affect emissions or impacts would need to be addressed in a revision or update to the PSD permit, depending on the expected change in emissions or impacts. The permitting process itself is designed to ensure that the air quality impacts from this project are acceptable and are minimized to the extent that is reasonably possible.

It should again be noted that the construction and operation of the Wanapa Energy Center ***would*** not impact existing industrial or farming activities and ***would***, in fact, allow room for future growth and development of farming and industrial activities near the proposed site. Moreover, the proposed Wanapa Energy Center is a dramatic improvement over existing methods of electric generation, such as the nearby Boardman Coal Electric Generation Facility as seen below in **Table 3.5-1**.

Table 3.5-1
Comparison of Annual Emissions per Megawatt (MW) of Electricity Produced

Pollutant	Wanapa Energy Center Emissions (tons/MW)[1]	Boardman Coal Facility Emissions (tons/MW)[2]	Improvement
Sulfur Oxides	60.1	101,500.0	99.9%
Nitrogen Dioxide	318.2	42,290.0	99.2%
Particulate Matter	542.8	3,520.0	90.3%
Carbon Monoxide	146.4	2,556.7	94.3%
Volatile Organic Compounds	133.5	306.7	56.5%

[1]Based on a plant-wide electric generation capacity of 1,485 MW.
[2]Based on a plant-wide electric generation capacity of 600 MW.

3.5.1 Affected Environment

Northeastern Oregon has a dry continental climate, typical of locations in the intermountain western U.S. The location has generally low relative humidity, but has distinct seasonal changes in meteorological conditions.

3.5.1.1 Climate

Daily temperatures in January average slightly above freezing, with a wide daily range of temperatures. Temperatures are seldom below 0°F. July temperatures average around 74°F, and a typical summer has only a few days with temperatures above 100°F. The area is very dry with annual average precipitation of slightly more than 23 centimeters (9 inches). Conditions are generally dry in the summer, and most of the precipitation occurs during the winter months (November, December, January, and February). Summertime thunderstorms can occasionally produce intense, short-period rainfall that lead to localized flash flooding on rare occasions. On an annual average a total of 7.8 inches of snowfall occurs in the area, largely during the winter months. Occasionally, (5 years out of a 20-year record) the area will have no snowfall during an entire winter season; however, the area has seen rare heavy snowfall, up to about 25 inches in 1 month (January 1950).

Table 3.5-2 provides a listing of monthly mean and maximum temperatures as well as average precipitation for the Umatilla site.

Wind patterns are most important for assessing impacts of emissions. The region near the Columbia River shows a bimodal distribution of wind direction, with winds "channeled" roughly parallel to the east-west direction of the Columbia River Valley itself. With the prevailing direction of an eastward movement of storms in the area, there is a clear west-southwesterly wind component, and the easterly winds are driven largely by the colder air flow down the river valley at night. Occasional strong storms in the area show a preference for the strongest winds from the west, with the passage of low pressure systems and associated cold fronts, but strong winds can occur from any direction, particularly those related to summertime showers and thunderstorms.

Table 3.5-2
Temperature and Precipitation Data for Umatilla, Oregon[1]

Month	Temperature (°F)					Mean Precipitation (in.)	
	Avg. Max.	Daily Avg.	Avg. Min.	Highest	Lowest	Total	Snowfall
Jan	39.2	31.4	23.6	65	-22	1.20	4.7
Feb	48.1	38.5	28.9	68	-23	0.90	1.4
Mar	56.4	44.2	32.1	80	10	0.82	0.1
Apr	67.0	53.2	39.4	88	22	0.54	0.0
May	74.8	60.8	47.0	98	26	0.79	0.0
Jun	82.1	67.7	53.4	108	38	0.77	0.0
Jul	90.3	74.3	58.3	110	36	0.26	0.0
Aug	88.0	72.5	57.0	114	42	0.27	0.0
Sep	80.6	64.5	48.2	101	31	0.35	0.0
Oct	66.2	52.4	39.0	87	19	0.82	0.0
Nov	50.7	41.3	31.7	77	-6	1.03	0.2
Dec	42.7	35.7	28.6	67	-7	1.40	1.3
Annual	65.5	53.0	40.6	114	-23	9.15	7.8

[1]Source: General Climate Summary, Umatilla, Oregon 1948-1965 (www.dri.edu).

3.5.1.2 Air Quality

<u>Local Air Quality</u>

The air quality in the area is determined by ambient ground-level concentrations of specific pollutants. The air quality regulatory program in the U.S. (as well as within individual states and air pollution control regions) has defined acceptable standards for ambient air quality. These standards protect human health and the health of plants and vegetation. Air quality conditions are determined either through direct measurements with approved instrumentation or by indirectly modeling air quality impacts from the major sources or source groups in an area.

Monitoring data are available for a site approximately 12 miles west of the proposed plant location, and were collected by Portland General Electric at the Coyote Springs Plant near Boardman, Oregon. **Table 3.5-3** lists the air quality conditions at that location for nitrogen dioxide (NO_2), SO_2, and PM_{10}. Impacts of CO emissions are not considered significant (from this proposed source) and therefore ambient CO data are not presented. These data were collected in 1994-1995 and are considered representative of background ambient air quality conditions that include natural background concentrations of these pollutants and also includes area mobile traffic and farming activities. The table demonstrates that the existing background ambient air quality conditions are well below the applicable ambient air quality standards.

Table 3.5-3
Coyote Springs Plant On-site Air Quality Data and Ambient Air Quality Standards

Pollutant	Averaging Period	Maximum Concentration ($\mu g/m^3$)	Highest Second-High Concentration[1] ($\mu g/m^3$)	Ambient Standards ($\mu g/m^3$)
NO_2	Annual	13	--	100
SO_2	Annual	3	--	80
	24-hour	26	26	365[1]
	3-hour	55	52	1,300[1]
PM_{10}	Annual	20	--	50
	24-hour	105	81	150[1]

[1]Highest Second-High Concentration, which applies to 3-hour and 24-hour standards.

The Clean Air Act of 1970 mandated that the USEPA establish ambient ceilings for certain pollutants based on the effects of those pollutant levels on public health and welfare. USEPA promulgated standards for SO_2, NO_2, CO, particulate matter (which was originally based on total suspended particulate matter, but has been replaced by PM_{10}), ozone (O_3), and lead (Pb).

Attainment Status

Section 107 of the Clean Air Act Amendments of 1990 (CAA) requires USEPA and affected regulatory agencies to evaluate attainment of the national ambient air quality standards. Areas may be designated as non-attainment, as unclassified (for areas with insufficient data, but likely attainment), and as attainment for each specific criteria pollutant (NO_2, SO_2, PM_{10}, CO, O_3, and Pb). The unclassified areas are treated as attainment areas.

The proposed power plant is located in Umatilla County, which is currently designated and treated as an area that is in attainment for all criteria air pollutants. The nearest non-attainment areas to the plant include:

- The Wallula, Washington area, for PM_{10};
- The LaGrande, Oregon area for PM_{10}; and
- The Spokane, Washington area for CO.

<u>**Hazardous Air Pollutants**</u>

The CAA, Title III, require the evaluation of a selected list of major sources and their emissions of a specific list of hazardous air pollutants (HAPs). If a proposed facility will emit more than 10 tons/year of any one of the listed HAPs or more than 25 tons/year of the total HAP emissions, then it may be required to comply with emission limits established under the implementing regulations (40 CFR Part 63) or under the case-by-case permit review (CAA Section 112(g)). Emissions data show that the facility is a major source of HAPs, and it is expected that it ***would*** need to comply with the standards for combustion turbines (40 CFR 63 Subpart YYYY) when promulgated.

<u>**Site Configuration and Surrounding Terrain**</u>

The layout of the proposed facility and its relation to nearby terrain features can have an important impact on calculated ground-level concentrations. The terrain immediately around the plant site is fairly flat, with a steep drop in elevation from the edge of the facility to the McNary Dam Reservoir along the Columbia River. Higher terrain is seen along the northern edge of the Reservoir, approximately 8 kilometers (km) north and northeast of the proposed facility. The dispersion modeling analysis incorporates the terrain features, specifically the elevation of each identified receptor grid point, into the model. Since the prevailing winds are generally toward the east-northeast, and there is little increase in elevation in that direction, the topographic features are generally conducive to adequate dispersion of pollutant emissions from this source.

Buildings on the site can create wake effects, especially in strong winds, leading to increased ground-level concentrations near the plant site. If the power plant plumes are trapped into the building wakes, the result can lead to high concentrations near the fence line. The facility may employ Good Engineering Practice stack heights to minimize or eliminate the effects of building wake effects. These building effects on dispersion are incorporated into the dispersion modeling analysis.

Land Use

The nature of land use and surface characteristics have an effect on micrometeorological dispersion characteristics near the site. These characteristics are incorporated into dispersion models to better estimate the dispersion nature of the atmosphere around the site. The sectors around the proposed Wanapa Energy Center have been characterized as water or grassland; and those parameters have been included in the dispersion model to provide an accurate depiction of impacts.

3.5.2 Environmental Consequences and Mitigation

The construction and operation of the proposed facility would lead to emission of air contaminants and potential impacts on ambient air quality near the plant site and in the region. These matters are addressed in the air permit application (Trinity 2003), and the results of those analyses are summarized in this section. Other sources of data are cited where appropriate. The major emissions from the facility include:

- Emissions from the combustion of natural gas in the turbines and in the duct burners;
- Emissions of particulate emissions resulting from "drift" droplets in the water vapor plume of the cooling tower;
- Production of a visible plume from the cooling tower;
- Generation of localized fog near the plant site;
- Contribution to the world-wide production of atmospheric gases that may enhance global warming; and
- Generation of emissions related to construction, including the combustion of fuel from heavy equipment and the generation of fugitive dust from soil handing and exposed areas.

3.5.2.1 Emissions and Compliance with Regulatory Standards

__Emissions from the Combustion Turbines and Duct Burners__

The combustion of natural gas in the turbines generates a very hot exhaust plume, which, in turn, is used to generate steam for operating a steam turbine that is tied to a generator to produce electricity. The performance of the steam turbine can be enhanced by further heating the exhaust plume with a duct burner. The steam turbine generates power from heat that would normally be lost from the turbine exhaust. This method of electric generation produces as much electricity as possible with the same amount of fuel burned since the facility ***would*** take advantage of the hot exhaust gases to produce additional energy in the steam turbines. This additional electricity produced in the steam turbines does not create any additional emissions to the atmosphere. The combined exhaust from the turbine and its associated duct burner are routed to a single stack. Under normal maximum load operations the exhaust plume is about 164°F (346°K) as it exits the stack. The ambient conditions (temperature especially) affect the combustion conditions in the turbine and thereby affect the constituents of the exhaust plume. The emission rates also vary with the "load" on the turbine and the use of the duct burner.

The emissions and impacts of turbine/duct burner operation are the major air quality issue related to obtaining a permit for the facility. The maximum emission rates for each of the criteria pollutants are summarized in **Table 3.5-4**. The emission rates have been demonstrated to comply with BACT requirements, other emission limits, and meet all applicable ambient standards as discussed in the following sections. The permit application included an analysis of emission rates and impacts for each of three ambient temperatures (maximum 109°F, average 52.2°F, and minimum –20°F), at loads ranging from 100 percent to 50 percent of the turbine rating, and both with and without supplemental duct firing at 100 percent load. The maximum short-term impacts were determined to occur at normal temperatures under full load with duct firing. Annual maximum emissions include all four units, at full capacity on the turbines, with duct firing for a combined level of 6,800 hours per year facility-wide. These emission rates were used in modeling the impacts from the proposed facility, because they showed the highest impact.

Table 3.5-4
Summary of Emission Rates of Criteria Air Pollutants from Combustion Turbine/Duct Burner Sources

Pollutant	Emission Rate (ppmvd @ 15% O_2)	Emission rate per CTG (lb/hour)	Combined Units (ton/year)
NO_x	2.0	*33.42*	***588.00***
SO_2	0.5 gr/100 standard cubic feet (scf) in gas	3.25	***56.90***
PM_{10}	Not established	31.04	***548.00***
CO	2.0	10.5	108.70
H_2SO_4 Mist	Not established	2.49	***43.60***
VOC	Not established	17.41	99.15

Emissions of NO_x and CO are mitigated for the combustion turbine/duct burner sources, in response to the requirements of the BACT analysis. Project design includes installation of a SCR system for NO_x emissions. SCR includes: 1) ammonia injection into the exhaust gases prior to emission to the atmosphere and 2) a specially designed catalyst bed in the exhaust stream that promotes the formation of gaseous molecular nitrogen and water vapor from the ammonia and NO_x mixture. The proposed project also includes installation of a catalyst for control of carbon monoxide emissions. The air permitting process provides a thorough technical review of the emission rates and costs for installing these controls. These controls reduce emissions to levels that are as low or lower than controls that are currently applied to new identical sources across the U.S. No other cost effective control technologies would achieve similar or lower emissions.

Table 3.5-5 provides a comparison of control technologies utilized in recently permitted facilities in both Oregon and Washington. This table again demonstrates that the proposed Wanapa Energy Center ***would*** be controlled by control technologies that are equal to, or better than, similar, newly permitted power plants.

The proposed power plant air permit application demonstrates compliance with the full range of applicable requirements, with the proposed emission rates, as discussed below.

Table 3.5-5
Comparison of Emissions Controls of Recently Built and Proposed Power Plants

Facility	Nitrogen Oxides Emissions and Controls	Carbon Monoxide Emissions and Controls
Wanapa Energy Center	**2.0 ppm – Selective Catalytic Reduction**	**2.0 ppm – Oxidation Catalyst System**
Wallula Power Plant	2.5 ppm – Selective Catalytic Reduction	2.0 ppm – Oxidation Catalyst System
Port Westward, PGE	2.5 ppm – Selective Catalytic Reduction	4.9 ppm – Oxidation Catalyst System
Umatilla Generating	2.5 ppm – Selective Catalytic Reduction	6.0 ppm – Oxidation Catalyst System
Summit Westward, Westward Energy	2.5 ppm – Selective Catalytic Reduction	4.0 ppm – Oxidation Catalyst System
Plymouth Generating	2.0 ppm – Selective Catalytic Reduction	2.0 ppm – Oxidation Catalyst System
Fredrickson Power	3.0 ppm – Selective Catalytic Reduction	7.0 ppm – Oxidation Catalyst System
Satsop Power	2.5 ppm – Selective Catalytic Reduction	2.0 ppm – Oxidation Catalyst System
Sumas Energy 2	2.0 ppm – Selective Catalytic Reduction	2.0 ppm – Oxidation Catalyst System

New Source Performance Standards

The USEPA has promulgated a set of national emission standards for a selected list of major sources, under Title 40 of the CFR, Part 60 (40 CFR 60). Various subparts of that rule apply to the proposed project.

- Subpart Da (Standards of Performance for Electric Utility Steam Generating Units)

  This subpart lists emission standards for particulate matter, NO_2 and SO_2, along with monitoring requirements, testing, reporting, and recordkeeping requirements. The standards apply to units with a heat input capacity greater than 250 Million British Thermal Units (MMBtu) per hour. The heat recovery steam generating units, including the duct burners, have a heat input capacity of 546.2 MMBtu/hour at the highest operating scenario. The emission standards for Particulate Matter do not apply to gas-fired boilers. The emission standards for SO_2 are met by firing natural gas that has a maximum sulfur content of 0.5 grain per 100 dry standard cubic feet. The NO_x emission standards are 0.2 lb/MMBtu on a rolling 30-day average. Each unit at the proposed facility duct firing ***would*** meet this limit at about 0.064 lb/MMBtu.

The New Source Performance Standards also require monitoring for NO_x, and the facility is proposing to install a continuous emissions monitor for NO_x emissions (along with oxygen and CO_2) in accord with the regulation. Compliance testing ***would*** be required for NO_x and particulate matter along with opacity. Records of emissions data ***would*** be maintained on site for 2 years. Reports ***would*** include quarterly reports of excess emissions (if they occur).

- Subpart GG (Standards of Performance for Stationary Gas Turbines)

This subpart lists emission limits for SO_2 and NO_x for combustion turbines. The NO_x standard is based on a formulation in the rule, providing an emission rate based on the size of the turbine and on fuel-bound nitrogen. The calculated limit is 203 parts per million by volume, dry (ppmvd) at 15 percent oxygen, while the proposed limit is 2.0 ppmvd at 15 percent oxygen, well within the requirement. The SO_2 limit is based on a fuel sulfur content (0.8 percent by weight), and the natural gas sulfur content is about 0.003 percent sulfur by weight, based on 1 grain per 100 scf of natural gas. Again, the sulfur compliance is well within the required limits.

The facility ***would*** propose and plan to institute a custom fuel monitoring program, as allowed under the regulation. Fuel sulfur content data ***would*** be reported to USEPA Region X in accord with an accepted schedule. The continuous emission monitor for nitrogen oxides ***would*** meet any monitoring requirements for NO_x emissions for this source. An initial compliance test ***would*** be conducted as required by the regulation.

Permitting Under the PSD Program

The PSD program, as promulgated under 40 CFR 52 (paragraph 52.21) applies to the proposed project. A PSD application has been submitted in accord with those requirements. PSD review is triggered initially for the source and subsequently by pollutant, for those pollutants that are emitted above a specified significant emission rate. The PSD process is conducted in the following sequence:

- Is the proposed facility a major source?

  A new source is major if it has the potential to emit any of the regulated pollutants above the established major source threshold. The threshold is 100 tons/year for a list of source categories and 250 tons/year if the source is not listed. Since the facility includes a steam electric generation unit, which is a listed source category, the major source threshold is 100 tons/year of any (at least one) criteria pollutant. The proposed plant ***would*** exceed the major source threshold for NO_x, PM_{10}, and CO. Therefore the construction of the facility requires the issuance of a PSD permit from the relevant regulatory agency (USEPA, Region X).

- Is the facility in an attainment/unclassified area?

  For a source that is proposing to be located in an area that is classified as attainment, or as unclassified, the PSD regulations apply. If the source were locating in an area that is non-attainment for one or more pollutants, the New Source Review requirements for non-attainment areas would apply. The proposed area is attainment or unclassified for all criteria pollutants, and therefore the PSD regulations would apply.

- What pollutants are emitted above the significant emission rate?

  Significant emission rates are established for each of the criteria air pollutants, as well as for additional regulated pollutants. The significant emission rate for NO_x, SO_2, and VOCs is 40 tons/year; for CO it is 100 tons/year; for PM_{10} it is 15 tons/year, for lead it is 0.6 ton/year. The significant emission rates are established for sulfuric acid mist, hydrogen sulfide, total reduced sulfur compounds, and others. The proposed facility ***would*** exceed the significant emission rate for NO_x, SO_2, CO, PM_{10}, VOCs, and sulfuric acid mist.

PSD regulations require several analyses that must be completed for the pollutants emitted above the significant emission rate. Those analyses include an air quality impact analysis, a BACT analysis, a review of background concentrations, and a summary of regulatory requirements.

Table 3.5-6

Other Federal Applicable Requirements for Air Quality

Federal Program	Applicability
Acid Rain Program	
40 CFR Parts 72 and 75	The facility ***would*** be subject and ***would*** need to obtain an acid rain permit. The facility must obtain allowances for SO_2 emissions and must conduct monitoring, reporting, and recordkeeping for SO_2 and NO_x as required by the regulations.
Title V Operating Permit	
40 CFR Part 71	The facility emits over 100 tons/year of any criteria air pollutant, and ***would*** be required to obtain a Federal Operating Permit under 40 CFR 71. A complete and timely application must be submitted to USEPA Region X within 12 months of the start of operation.
Compliance Assurance Monitoring	
40 CFR Part 64	The facility would need to develop a compliance assurance monitoring (CAM) plan for each pollutant that: 1) has a federally enforceable limit, 2) uses a control device to achieve that limit, and 3) has a pre-control potential to emit more than the major source threshold for that permit. The facility ***would*** not need a CAM plan for NO_x emissions because the monitoring is required by the acid rain program, but it ***would*** need a CAM plan to monitor its CO emissions.
Risk Management Program	
40 CFR Part 68	The program requires a risk management plan for sources that store or maintain on site a quantity of a listed substance that is above the stated threshold. The only concern is the ammonia storage for the operation of the SCR. Since the facility is planning to use aqueous ammonia, with a concentration less than 19 percent by weight, this program ***would*** not apply.
National Emission Standards for Hazardous Air Pollutants	
40 CFR Part 63	A federal standard for Maximum Achievable Control Technology (MACT) ***was promulgated on March 4, 2004,*** for combustion turbines (Subpart YYYY). ***In parallel with the rule promulgation, USEPA proposed delisting of gas-fired turbines from the rule. The Wanapa Energy Center would comply with the applicable requirements, if any, of this rule when it begins operation.***
CAA Section 112(g)	This case-by-case MACT standard applies to major sources of HAPs for which no applicable standard has been promulgated. ***A final MACT standard has been issued for combustion turbines (Subpart YYYY); CAA Section 112(g) does not apply.***
Ozone Depleting Compounds	
40 CFR Part 82	The facility ***would*** need to comply with requirements for handling, storing, and disposing of a regulated list of ozone-depleting compounds.

Emissions from Other Sources

Besides the emissions from the Combustion Turbine and Duct Burner sources, the application included modeling of emissions from support units at the site. Chief among those sources are the individual cooling tower cells that are installed in one cooling tower to the southeast of the main combustion sources. Cooling towers dissipate heat from the heat recovery steam generating system by evaporation of cooling water into the atmosphere. This evaporation cools the cooling water droplets in the cooling tower. As the cooling tower operates it generates a small amount of "drift," in the form of small droplets that are entrained into a plume of water vapor from each cooling tower cell. The drift is minimized by installing very efficient cooling tower drift eliminators, which for this project have a drift rate of 0.0005 percent of the total circulating cooling water.

The water vapor is not a regulated emission; however, the drift droplets ***would*** contain a small amount of suspended and dissolved solids (usually inert salts) that lead to the formation of particulate matter (PM_{10}) after the drift droplet is evaporated. The cooling tower drift ***would***, therefore, ***be*** a source of PM_{10} emissions that are regulated by the air permit. Each cell ***would*** represent a source of PM_{10} emissions (no other pollutant emissions) that were included in the model. The total cooling tower emission rate ***would be 2.03*** pounds/hour of PM_{10} or 8 tons/year of PM_{10}. Those emissions as well as the cooling tower "stack" parameters were included in the modeling analysis.

The application also addressed emissions of "refrigeration modules" that were attached to each unit. However, those units ***would*** not be installed. The modeling results included those impacts, which would generally be very small in comparison to the turbine/duct burner emissions, and would be limited to periods when the associated inlet chilling operations were being used. Modeling results have not been modified to account for this reduction in emissions, largely because the expected changes from removing those sources would be very small and would reduce ambient impacts.

Other Federal Permitting Requirements

The proposed facility ***would*** be reviewed for applicability under several additional federal programs. These are listed in **Table 3.5-6**, along with expected applicability of each standard or program. In some cases the standards are not finalized, or the final design or emission rates may lead to a different interpretation. The PSD permit application has identified these requirements and included commitments to meet the applicable requirements as the project is installed and begins operation.

3.5.2.2 Project Air Quality Effects

<u>**Construction Equipment Emissions and Fugitive Dust**</u>

During construction the activities ***would*** include disturbance of the land surfaces and storage of materials and soil piles on site, as well as from operation of heavy diesel fired equipment. These short-term emissions are exempt from permitting requirements on the site.

Construction emissions include exhaust from diesel engines. The total emissions from this equipment is expected to be very small in comparison to the total vehicular traffic in the region. To reduce combustion emissions, idling of construction equipment would be minimized (shut off when not operating) and engine tune-ups ***would be*** required for any equipment that is maintained on site for more than 60 days.

Fugitive dust would be generated by grading, excavation, and soil handling, including storage piles. Some of the dust particles would be carried off the plant site during windy and dry conditions. Since these emissions occur at ground level, and involve particles that are relatively large, the impact of these emissions ***would be*** felt very near the plant site. Impacts ***would*** rapidly decrease with distance from the site.

The following measures ***would*** be employed to mitigate fugitive emissions:

- During construction in dry weather, and during windy periods when site generated dust plumes are observed off site, the facility ***would*** water the disturbed construction areas twice daily. Haul roads that carry active traffic ***would*** be watered twice daily.

- Stored soil piles ***would*** be stabilized with water to create a crust layer that impeded emissions of fugitive dust.

- Vehicle speeds on unpaved project areas would be limited to 20 miles per hour (30 km/hour).

Plant Operations

Because the PSD review triggers this analysis, a formal series of modeling efforts were performed and included in the PSD application. Three separate impact, or modeling, analyses may be required, including:

- A "significance analysis" that evaluates only the emissions from the proposed project, and is used to determine whether the project's impacts are "significant." The source parameters are used, along with characterizations of building downwash, stack data, established receptors at the fenceline and around the site, and meteorological data to determine the maximum impact for each triggered pollutant. Impacts that are above the monitoring significance threshold also require collection of ambient air quality data that is representative of site conditions at the time of the permit application. A significant impact area is determined in this analysis as well, based on the maximum distance to the significant impact level (at the established receptors) plus 50 km.

- An analysis of compliance with National Ambient Air Quality Standards (NAAQS). For those impacts above the significant impact threshold, perform an analysis of impacts on NAAQS is required. This impact analysis is a cumulative dispersion modeling analysis, which includes: 1) emissions from the proposed source; 2) emissions from existing sources (including existing farming, natural, mobile, and industrial emissions); and 3) emissions from recently permitted industrial sources. The impacts are analyzed using the dispersion modeling data for comparison to ambient standards for all pollutants that have impacts above the significant impact threshold.

- An analysis of consumption of PSD increments. For those pollutants with impacts above the significant impact level, a baseline area and baseline date are determined. All major and minor sources within the significant impact area, that received permits to increase emissions since the baseline date, are included in analysis of PSD increment consumption. PSD increments exist for NO_2, SO_2, and PM_{10}. Other pollutants are not regulated by PSD increments. The modeled impacts from these sources, including the reduction in emissions from any enforceable changes to emissions since the baseline date, are then compared to the established PSD increments for both the Class II areas and Class I (pristine areas such as National Parks) areas.

- An analysis of air quality related values at Class I areas. For the nearby Class I areas, the modeling effort should address specific values such as impacts on visibility and on acid deposition. This analysis applies to Class I areas, and is not restricted by ambient air quality impacts.

Ambient air quality impacts were analyzed for the range of applicable requirements. For the turbine and duct burner sources, the analysis selected the individual cases in which the impacts were greatest. (Occasionally, the impacts are greatest when the source is not at full operation, because the plume rise is lessened, even though the emissions also are reduced.) The regulatory guideline model, ISCST3 PRIME, was used to provide this screening analysis, and select those cases for which the maximum impacts were determined.

The full impact analyses were conducted with the regulatory guideline AERMOD-PRIME model, because model development data show that this model is superior to ISCST3 in its assessment of winds around terrain features. Five years of meteorological data (wind speed, wind direction, temperature) that were collected at the Umatilla Army Depot (1995-1999) were used in conjunction with upper air data, from the Hanford Nuclear site and from Spokane Washington, to model these impacts. The Umatilla site is less than 5 miles (8 km) from the proposed plant site, and with no intervening topography, would provide representative meteorological wind data for modeling purposes. Atmospheric stability category data were not available from the Umatilla site, and were developed from the nearby National Weather Service Station at Walla Walla, Washington.

Specific sources were modeled as separate point sources, including each of the four turbine/duct firing stacks, and each of the cooling tower cells.

Table 3.5-7 provides the results of the significant impact analysis, which would address the emissions from only the proposed plant. This table shows the maximum modeled impact, along with the significant impact threshold, and the monitoring impact threshold. The results show that the proposed facility has an insignificant impact for SO_2 and CO emissions but subsequent analyses must be conducted for NO_2 and PM_{10}. The table also shows that the impact for PM_{10} emissions is above the monitoring impact threshold, normally requiring a monitoring program for PM_{10}. However, there are sufficient PM_{10} ambient data in the region to provide a representative background concentration of PM_{10} levels.

Based on these results, the impacts were analyzed for comparison to the NAAQS and PSD increments for NO_2 and for PM_{10}.

Table 3.5-7
Significant Impact Analysis

Pollutant	Averaging Period	Maximum Modeled Concentration ($\mu g/m^3$)	Significant Impact Threshold ($\mu g/m^3$)	Significant Impact for this Pollutant?	Monitoring Impact Threshold ($\mu g/m^3$)
NO_2	Annual	*2.25*	1	Yes	14
SO_2	Annual	0.21	1	No	None
SO_2	24-hour	1.72	5	No	13
SO_2	3-hour	6.82	25	No	None
PM_{10}	Annual	*4.14*	1	Yes	None
PM_{10}	24-hour	*19.23*	5	Yes	10
CO	8-hour	17.86	500	No	575
CO	1-hour	84.55	2,000	No	None

The analysis for compliance with the NAAQS was conducted using the same meteorological data set and receptor grid that were established for the significant impact analysis. The model included emissions from existing and recently proposed nearby industrial sources, along with accepted estimates of background concentrations, which includes natural background pollutant concentrations, existing farming operations, and existing mobile sources of emissions. All known sources were included in this analysis.

The analysis for compliance with PSD increment consumption identified those sources that consume PSD increment also were conducted. The AERMOD model was used to assess impacts in the nearby Class II areas, and a separate modeling effort, using the guideline model CALPUFF, with its associated pre- and post-processing algorithms, was used to assess impacts at the specific Class I areas. Those areas are:

- Eagle Cap Wilderness Area (WA)
- Goat Rocks WA
- Mount Adams WA
- Strawberry Mountain WA
- Columbia Gorge (designated area)
- Mount Hood WA

Modeling for Class I impacts used the guidance that has been provided by the Federal Land Manager's Air Quality Workgroup for assessing impacts on PSD increments in Class I areas.

Table 3.5-8 lists the relevant NAAQS and the modeled impacts for those pollutants, along with the relevant Class II PSD increment and their modeled impacts (at the maximum impact area).

Table 3.5-8
Modeled Maximum Impacts Compared to NAAQS and Class II PSD Increments

		NAAQS (Data in µg/m³)				Class II PSD Increments (Data in µg/m³)	
Pollutant	Averaging Period	Modeled[1]	Background[2]	Total	NAAQS	Modeled	PSD Increment
NO_2	Annual	7.24	13	20.24	100	7.24	25
PM_{10}	Annual	8.86	20	28.86	50	8.86	17
PM_{10}	24-hour	27.33	105	132.33	150	27.33	30

[1]The modeled concentration includes impacts from the proposed operation of the Wanapa Energy Center, existing industrial emission sources, and proposed industrial emission sources.
[2]The background concentration includes emissions from existing farming activities, mobile sources, and natural pollutant concentrations

Table 3.5-9 provides a list of maximum PSD increment analyses for NO_2 and PM_{10} for Class I areas. The results show the greatest impact at any of the listed receptor areas. Impacts at other Class I areas, are less than these levels, and as can be easily deduced, all are below the PSD significance threshold. No additional air quality modeling of impacts at the Class I areas is required.

Table 3.5-9
Maximum Modeled Impacts at Class I Areas and PSD Increments

Pollutant	Averaging Period	Modeled Impact (µg/m³)	Class II Significant Impact (µg/m³)	Allowable PSD Increment (µg/m³)	Location of Maximum Impact
NO_2	Annual	0.0005	0.1	2.5	Columbia Gorge
PM_{10}	Annual	0.0029	0.2	4	Columbia Gorge
PM_{10}	24-hour	0.085	0.3	8	Mount Adams

The Class I analysis also requires an evaluation of air quality related values, to include an assessment of impacts on visibility and on soils (acid deposition) at each area.

The deposition of both nitrogen-based acidic compounds and sulfur-based acidic compounds was analyzed for each site. The sulfur deposition is much less than the nitrogen deposition rates. The maximum nitrogen deposition was determined to be 0.00025 kg/hectare-year at the Columbia Gorge. The threshold for a significant impact is 0.005 kg/hectare-year for nitrogen based acidic compounds. Impacts are well below that threshold at any receptor in any of the Class I areas.

The impacts on visibility resources at Class I areas is calculated using the estimated maximum extinction percent over a 24-hour period. If the maximum extinction is below 5 percent of a "clean" background (natural) extinction level, for all of the modeled days, the impact is determined to be insignificant. Impacts at all Class I areas were below this threshold. There were no days in any of the Class I areas that had an average change in extinction of 5 percent or more. The maximum 24-hour extinction was 2.37 percent at Mount Adams.

Startup Emissions

Operational requirements, as well as demand for electric power, may lead to the startup or shut-down of any of the turbines or any of the duct burners. The operators have the flexibility to fire any or all units, and to operate the turbines at less than full load, in order to tailor production to current demand. Pollutant emissions during startup can exceed the normal operation emission rates, due largely to the fact that control equipment has not reached its optimum operating temperature. CO is the main constituent of concern regarding startup emissions, because the startup events are of short duration, CO emissions are known to be higher during startup, and there are short term (1-hour and 8-hour) standards that apply to CO. The permit application has demonstrated that the emissions of CO during startup lead to an impact that is less than the established significance levels for these standards. Therefore, such emissions would not have a significant impact on ambient air quality.

Cooling Tower Water Vapor Plumes

Cooling towers release water vapor into the atmosphere along with a small amount of water droplets. A recent application has analyzed cooling tower water vapor plume formation, specifically addressing the development of icing and fogging conditions that can occur during very cold weather. Results showed that cooling tower fogging or icing was not predicted to occur as a result of the operation of a similar cooling tower. It also should be noted that the proposed cooling towers ***would*** not be placed near any public roadways where fogging or icing could cause potentially hazardous conditions. Under the proposed design measures, cooling tower fogging and icing are not predicted for this project. No mitigation measures are planned to address this impact.

Cooling Tower Drift

Cooling towers also generate a small amount of "drift" as discussed above. The proposed drift eliminators, designed to reduce drift to 0.0005 percent of total circulating water, are comparable to the best performing drift eliminators that are in operation. The proposed dissolved and suspended solids concentration in the drift, at approximately 1,700 parts per million by weight, is low compared to the concentrations in other cooling tower operations. Given the low emission rates of PM_{10} resulting from these drift droplets, and the anticipated low level of impact, there are no mitigation measures proposed to further reduce drift and PM_{10} emissions from the cooling towers.

Greenhouse Gases

The project would generate large amounts of CO_2, resulting from the combustion of natural gas in the turbines and duct burners. CO_2 is a "greenhouse gas" that has the potential to contribute to global warming. There are no specific federal requirements to mitigate impacts of CO_2 emissions from the proposed facility. The use of natural gas to generate electricity from a combined cycle power plant is perhaps the most efficient method to generate electricity using fossil fuels. Recent studies, including the analysis provided for the Umatilla Generating Station, showed that the efficiency of electric generation with a similar combined cycle natural gas fired power plant was sufficient to meet the requirements of the State of Oregon's CO_2 emission standard for energy facilities. The proposed project would provide a similar level of efficiency. No mitigation measures are proposed for this project.

3.5.3 Proposed Action Impact Summary

Project construction would result in disturbance and handling of surface soils at the plant site and along the pipeline corridors, access road, and transmission line route. By implementing dust control measures, the impacts of construction-related fugitive dust would be minimized. The construction activities would include periodic watering of haul roads and storage piles during periods of observed fugitive dust transport off the site. Traffic speed limits would be established and may be specifically constrained during dry periods when fugitive dust is generated. Once constructed, the soil storage piles ***would*** be stabilized, roadways graveled or hard-surfaced, and exposed areas would be reclaimed or revegetated with native species or with special plantings that are maintained.

The air emissions from of project operation ***would*** include the discharge of air pollutants from the main stacks of the combustion turbines and duct firing units. The proposed project is classified as a major source and would be regulated under the PSD program and the Title V operating permit program. The facility must demonstrate continuous compliance with emissions of NO_x, CO, and SO_2 from these sources, and must perform periodic monitoring of other pollutants including PM_{10} and VOCs.

The facility ***would*** utilize "state of the art" pollution controls including selective catalytic reduction of NO_x emissions and the use of a CO oxidation catalyst. The permit application has demonstrated that the facility ***would*** install BACT for NO_x, CO, SO_2, and PM_{10}. This level of BACT is equal to or better than all recently permitted power production facilities in the Pacific Northwest. The facility also ***would*** produce power in a very efficient and clean way with the use of steam turbines producing power from the hot exhaust gases of the combustion turbines that would otherwise be wasted. The facility also would install high performing drift eliminators on its cooling tower emissions.

The dispersion modeling for the air permit application shows that impacts of these emissions are below established significance levels for CO and SO_2. The dispersion modeling also demonstrates that predicted pollutant concentrations are well within allowable ambient air quality standards and PSD increments for NO_2 and PM_{10} including impacts from existing industrial and farming activities, recently permitted industrial activities, existing mobile sources of emissions, and natural sources of emissions. This therefore indicates that the operation of the Wanapa Energy Center ***would*** not affect any existing industrial or farming activities and also ***would*** allow for any future growth of possible farming or industrial activities. The modeling also addressed impact on nearby pristine (Class I) areas and demonstrated acceptable impacts on visibility, soils (acid deposition), and vegetation within those areas. The operation of the proposed facility would not cause or contribute to an exceedence of any established air quality standard and would not adversely impact air quality related values.

In summary, the Wanapa Energy Center is a very clean and good alternative to older methods of electric generation, such as coal-fired power plants. Also, the Wanapa Energy Center ***would*** meet or exceed emission controls that have been implemented at similar facilities in the Pacific Northwest. And finally, the operation of the Wanapa Energy Center ***would*** not cause or contribute to any exceedences of any established air quality standards and ***would*** not hinder existing or future farming or industrial activities.

3.5.4 Component Alternatives Impact Summaries- Air Quality

The relative air quality effects of the component alternatives would be nearly the same as the Proposed Action for the gas/water discharge pipelines, transmission line alternatives, and the water supply line. It is likely that fugitive dust generation would be slightly greater for the longer pipeline routes that cross croplands and shrublands lands (Alternatives 2 and 4). Construction equipment emissions would depend on the length of the construction period for each pipeline alternative, which are presently unknown. Construction of Alternatives 5 and 6 in the county roadways may result in lower fugitive dust generation, but the construction period may be longer than other alternatives because of the relatively slower construction progress within county road right-of-ways because of less working space.

The air quality effects for constructing and operating plant discharge water facilities would be nearly the same as the Proposed Action. Electrical energy required to operate either water discharge alternative would be similar since plant discharge water would flow to the discharge by gravity.

EXHIBIT G-2

Relevant Portion of the Environmental Impact Statement

3.5 Air Resources

The proposed power plant would be a major source of air emissions and require a construction permit under the federally mandated PSD regulations. Since the source would be located on land governed by the Confederated Tribes of the Umatilla Indian Reservation, the PSD permit must be submitted to and approved by the regional office of the USEPA (Region X) in Seattle, Washington.

The PSD application requires analysis of best available control technologies ***(BACT)*** and an assessment of impacts of the plant's maximum emissions on the federal ambient air quality standards (Title 40 of the CFR, paragraph 52.21 [40 CFR 52.21]). That application has been submitted to Region X of the USEPA, and it demonstrates that the proposed facility ***would*** employ the BACT for all air pollutants and ***would*** not cause or contribute to any exceedences of all applicable ambient air quality standards. The facility also ***would*** be required to install monitoring equipment and maintain operations to ensure that it ***would*** comply with emission limits established in the PSD permit.

The proposed power plant site is located in an area that is currently designated as "attainment" for all state and national ambient air quality standards. Meeting these standards indicates that the air quality of the area with the proposed Wanapa Energy Center ***would*** meet or exceed all ambient air quality standards set to protect human health, plant and vegetation health, and ***would*** allow for future growth of farming and industrial activities in the area. The air quality analysis included within the completed PSD application demonstrates that:

- The proposed facility ***would*** not significantly deteriorate the quality of the air surrounding the proposed site;

- The emissions from the proposed operation (when added to the natural background levels of pollutants, existing farming and industrial activities, existing mobile sources of emissions, and recently permitted industrial sources) would not cause or contribute to ambient pollution levels that exceed the ambient air quality standards;

- The facility ***would*** employ BACT that meets or exceeds all recently permitted sources of electrical power in the northwest; and

- The facility ***would*** not lead to deterioration of air quality in nearby pristine areas, such as the Columbia River Gorge, Mount Hood, Mount Adams, Eagle Cap, Goat Rocks, and the Strawberry Mountains.

Under the federal regulations these demonstrations are required for all pollutants for which the source is major. The PSD permit application first identifies the major emissions, the emission units, the control technologies, the emission rates (both short-term and annual average emissions), and a dispersion modeling analysis that compares facility impacts to the applicable standards. After the application has been reviewed and public comments allowed and incorporated, the Region X office ***would*** issue a PSD permit to construct the facility in accord with the accepted application. Any changes to the facility design or operation that affect emissions or impacts would need to be addressed in a revision or update to the PSD permit, depending on the expected change in emissions or impacts. The permitting process itself is designed to ensure that the air quality impacts from this project are acceptable and are minimized to the extent that is reasonably possible.

It should again be noted that the construction and operation of the Wanapa Energy Center ***would*** not impact existing industrial or farming activities and ***would,*** in fact, allow room for future growth and development of farming and industrial activities near the proposed site. Moreover, the proposed Wanapa Energy Center is a dramatic improvement over existing methods of electric generation, such as the nearby Boardman Coal Electric Generation Facility as seen below in **Table 3.5-1**.

Table 3.5-1

Comparison of Annual Emissions per Megawatt (MW) of Electricity Produced

Pollutant	Wanapa Energy Center Emissions (tons/MW)[1]	Boardman Coal Facility Emissions (tons/MW)[2]	Improvement
Sulfur Oxides	60.1	101,500.0	99.9%
Nitrogen Dioxide	318.2	42,290.0	99.2%
Particulate Matter	542.8	3,520.0	90.3%
Carbon Monoxide	146.4	2,556.7	94.3%
Volatile Organic Compounds	133.5	306.7	56.5%

[1]Based on a plant-wide electric generation capacity of 1,485 MW.
[2]Based on a plant-wide electric generation capacity of 600 MW.

3.5.1 Affected Environment

Northeastern Oregon has a dry continental climate, typical of locations in the intermountain western U.S. The location has generally low relative humidity, but has distinct seasonal changes in meteorological conditions.

3.5.1.1 Climate

Daily temperatures in January average slightly above freezing, with a wide daily range of temperatures. Temperatures are seldom below 0°F. July temperatures average around 74°F, and a typical summer has only a few days with temperatures above 100°F. The area is very dry with annual average precipitation of slightly more than 23 centimeters (9 inches). Conditions are generally dry in the summer, and most of the precipitation occurs during the winter months (November, December, January, and February). Summertime thunderstorms can occasionally produce intense, short-period rainfall that lead to localized flash flooding on rare occasions. On an annual average a total of 7.8 inches of snowfall occurs in the area, largely during the winter months. Occasionally, (5 years out of a 20-year record) the area will have no snowfall during an entire winter season; however, the area has seen rare heavy snowfall, up to about 25 inches in 1 month (January 1950).

Table 3.5-2 provides a listing of monthly mean and maximum temperatures as well as average precipitation for the Umatilla site.

Wind patterns are most important for assessing impacts of emissions. The region near the Columbia River shows a bimodal distribution of wind direction, with winds "channeled" roughly parallel to the east-west direction of the Columbia River Valley itself. With the prevailing direction of an eastward movement of storms in the area, there is a clear west-southwesterly wind component, and the easterly winds are driven largely by the colder air flow down the river valley at night. Occasional strong storms in the area show a preference for the strongest winds from the west, with the passage of low pressure systems and associated cold fronts, but strong winds can occur from any direction, particularly those related to summertime showers and thunderstorms.

Table 3.5-2
Temperature and Precipitation Data for Umatilla, Oregon[1]

	Temperature (°F)					Mean Precipitation (in.)	
Month	**Avg. Max.**	**Daily Avg.**	**Avg. Min.**	**Highest**	**Lowest**	**Total**	**Snowfall**
Jan	39.2	31.4	23.6	65	-22	1.20	4.7
Feb	48.1	38.5	28.9	68	-23	0.90	1.4
Mar	56.4	44.2	32.1	80	10	0.82	0.1
Apr	67.0	53.2	39.4	88	22	0.54	0.0
May	74.8	60.8	47.0	98	26	0.79	0.0
Jun	82.1	67.7	53.4	108	38	0.77	0.0
Jul	90.3	74.3	58.3	110	36	0.26	0.0
Aug	88.0	72.5	57.0	114	42	0.27	0.0
Sep	80.6	64.5	48.2	101	31	0.35	0.0
Oct	66.2	52.4	39.0	87	19	0.82	0.0
Nov	50.7	41.3	31.7	77	-6	1.03	0.2
Dec	42.7	35.7	28.6	67	-7	1.40	1.3
Annual	65.5	53.0	40.6	114	-23	9.15	7.8

[1]Source, General Climate Summary, Umatilla, Oregon 1948-1965 (www.dri.edu).

3.5.1.2 Air Quality

Local Air Quality

The air quality in the area is determined by ambient ground-level concentrations of specific pollutants. The air quality regulatory program in the U.S. (as well as within individual states and air pollution control regions) has defined acceptable standards for ambient air quality. These standards protect human health and the health of plants and vegetation. Air quality conditions are determined either through direct measurements with approved instrumentation or by indirectly modeling air quality impacts from the major sources or source groups in an area.

Monitoring data are available for a site approximately 12 miles west of the proposed plant location, and were collected by Portland General Electric at the Coyote Springs Plant near Boardman, Oregon. **Table 3.5-3** lists the air quality conditions at that location for nitrogen dioxide (NO_2), SO_2, and PM_{10}. Impacts of CO emissions are not considered significant (from this proposed source) and therefore ambient CO data are not presented. These data were collected in 1994-1995 and are considered representative of background ambient air quality conditions that include natural background concentrations of these pollutants and also includes area mobile traffic and farming activities. The table demonstrates that the existing background ambient air quality conditions are well below the applicable ambient air quality standards.

Table 3.5-3

Coyote Springs Plant On-site Air Quality Data and Ambient Air Quality Standards

Pollutant	Averaging Period	Maximum Concentration ($\mu g/m^3$)	Highest Second-High Concentration[1] ($\mu g/m^3$)	Ambient Standards ($\mu g/m^3$)
NO_2	Annual	13	--	100
SO_2	Annual	3	--	80
	24-hour	26	26	365[1]
	3-hour	55	52	1,300[1]
PM_{10}	Annual	20	--	50
	24-hour	105	81	150[1]

[1]Highest Second-High Concentration, which applies to 3-hour and 24-hour standards

The Clean Air Act of 1970 mandated that the USEPA establish ambient ceilings for certain pollutants based on the effects of those pollutant levels on public health and welfare. USEPA promulgated standards for SO_2, NO_2, CO, particulate matter (which was originally based on total suspended particulate matter, but has been replaced by PM_{10}), ozone (O_3), and lead (Pb).

Attainment Status

Section 107 of the Clean Air Act Amendments of 1990 (CAA) requires USEPA and affected regulatory agencies to evaluate attainment of the national ambient air quality standards. Areas may be designated as non-attainment, as unclassified (for areas with insufficient data, but likely attainment), and as attainment for each specific criteria pollutant (NO_2, SO_2, PM_{10}, CO, O_3, and Pb). The unclassified areas are treated as attainment areas.

The proposed power plant is located in Umatilla County, which is currently designated and treated as an area that is in attainment for all criteria air pollutants. The nearest non-attainment areas to the plant include:

- The Wallula, Washington area, for PM_{10};
- The LaGrande, Oregon area for PM_{10}; and
- The Spokane, Washington area for CO.

Hazardous Air Pollutants

The CAA, Title III, require the evaluation of a selected list of major sources and their emissions of a specific list of hazardous air pollutants (HAPs). If a proposed facility will emit more than 10 tons/year of any one of the listed HAPs or more than 25 tons/year of the total HAP emissions, then it may be required to comply with emission limits established under the implementing regulations (40 CFR Part 63) or under the case-by-case permit review (CAA Section 112(g)). Emissions data show that the facility is a major source of HAPs, and it is expected that it ***would*** need to comply with the standards for combustion turbines (40 CFR 63 Subpart YYYY) when promulgated.

Site Configuration and Surrounding Terrain

The layout of the proposed facility and its relation to nearby terrain features can have an important impact on calculated ground-level concentrations. The terrain immediately around the plant site is fairly flat, with a steep drop in elevation from the edge of the facility to the McNary Dam Reservoir along the Columbia River. Higher terrain is seen along the northern edge of the Reservoir, approximately 8 kilometers (km) north and northeast of the proposed facility. The dispersion modeling analysis incorporates the terrain features, specifically the elevation of each identified receptor grid point, into the model. Since the prevailing winds are generally toward the east-northeast, and there is little increase in elevation in that direction, the topographic features are generally conducive to adequate dispersion of pollutant emissions from this source.

Buildings on the site can create wake effects, especially in strong winds, leading to increased ground-level concentrations near the plant site. If the power plant plumes are trapped into the building wakes, the result can lead to high concentrations near the fence line. The facility may employ Good Engineering Practice stack heights to minimize or eliminate the effects of building wake effects. These building effects on dispersion are incorporated into the dispersion modeling analysis.

Land Use

The nature of land use and surface characteristics have an effect on micrometeorological dispersion characteristics near the site. These characteristics are incorporated into dispersion models to better estimate the dispersion nature of the atmosphere around the site. The sectors around the proposed Wanapa Energy Center have been characterized as water or grassland; and those parameters have been included in the dispersion model to provide an accurate depiction of impacts.

3.5.2 Environmental Consequences and Mitigation

The construction and operation of the proposed facility would lead to emission of air contaminants and potential impacts on ambient air quality near the plant site and in the region. These matters are addressed in the air permit application (Trinity 2003), and the results of those analyses are summarized in this section. Other sources of data are cited where appropriate. The major emissions from the facility include:

- Emissions from the combustion of natural gas in the turbines and in the duct burners;
- Emissions of particulate emissions resulting from "drift" droplets in the water vapor plume of the cooling tower;
- Production of a visible plume from the cooling tower;
- Generation of localized fog near the plant site;
- Contribution to the world-wide production of atmospheric gases that may enhance global warming; and
- Generation of emissions related to construction, including the combustion of fuel from heavy equipment and the generation of fugitive dust from soil handing and exposed areas.

3.5.2.1 Emissions and Compliance with Regulatory Standards

Emissions from the Combustion Turbines and Duct Burners

The combustion of natural gas in the turbines generates a very hot exhaust plume, which, in turn, is used to generate steam for operating a steam turbine that is tied to a generator to produce electricity. The performance of the steam turbine can be enhanced by further heating the exhaust plume with a duct burner. The steam turbine generates power from heat that would normally be lost from the turbine exhaust. This method of electric generation produces as much electricity as possible with the same amount of fuel burned since the facility ***would*** take advantage of the hot exhaust gases to produce additional energy in the steam turbines. This additional electricity produced in the steam turbines does not create any additional emissions to the atmosphere. The combined exhaust from the turbine and its associated duct burner are routed to a single stack. Under normal maximum load operations the exhaust plume is about 164°F (346°K) as it exits the stack. The ambient conditions (temperature especially) affect the combustion conditions in the turbine and thereby affect the constituents of the exhaust plume. The emission rates also vary with the "load" on the turbine and the use of the duct burner.

The emissions and impacts of turbine/duct burner operation are the major air quality issue related to obtaining a permit for the facility. The maximum emission rates for each of the criteria pollutants are summarized in **Table 3.5-4**. The emission rates have been demonstrated to comply with BACT requirements, other emission limits, and meet all applicable ambient standards as discussed in the following sections. The permit application included an analysis of emission rates and impacts for each of three ambient temperatures (maximum 109°F, average 52.2°F, and minimum –20°F), at loads ranging from 100 percent to 50 percent of the turbine rating, and both with and without supplemental duct firing at 100 percent load. The maximum short-term impacts were determined to occur at normal temperatures under full load with duct firing. Annual maximum emissions include all four units, at full capacity on the turbines, with duct firing for a combined level of 6,800 hours per year facility-wide. These emission rates were used in modeling the impacts from the proposed facility, because they showed the highest impact.

Table 3.5-4
Summary of Emission Rates of Criteria Air Pollutants from Combustion Turbine/Duct Burner Sources

Pollutant	Emission Rate (ppmvd @ 15% O_2)	Emission rate per CTG (lb/hour)	Combined Units (ton/year)
NO_x	2.0	*33.42*	*588.00*
SO_2	0.5 gr/100 standard cubic feet (scf) in gas	3.25	*56.90*
PM_{10}	Not established	31.04	*548.00*
CO	2.0	10.5	108.70
H_2SO_4 Mist	Not established	2.49	*43.60*
VOC	Not established	17.41	99.15

Emissions of NO_x and CO are mitigated for the combustion turbine/duct burner sources, in response to the requirements of the BACT analysis. Project design includes installation of a SCR system for NO_x emissions. SCR includes: 1) ammonia injection into the exhaust gases prior to emission to the atmosphere and 2) a specially designed catalyst bed in the exhaust stream that promotes the formation of gaseous molecular nitrogen and water vapor from the ammonia and NO_x mixture. The proposed project also includes installation of a catalyst for control of carbon monoxide emissions. The air permitting process provides a thorough technical review of the emission rates and costs for installing these controls. These controls reduce emissions to levels that are as low or lower than controls that are currently applied to new identical sources across the U.S. No other cost effective control technologies would achieve similar or lower emissions.

Table 3.5-5 provides a comparison of control technologies utilized in recently permitted facilities in both Oregon and Washington. This table again demonstrates that the proposed Wanapa Energy Center ***would*** be controlled by control technologies that are equal to, or better than, similar, newly permitted power plants.

The proposed power plant air permit application demonstrates compliance with the full range of applicable requirements, with the proposed emission rates, as discussed below.

Table 3.5-5

Comparison of Emissions Controls of Recently Built and Proposed Power Plants

Facility	Nitrogen Oxides Emissions and Controls	Carbon Monoxide Emissions and Controls
Wanapa Energy Center	**2.0 ppm – Selective Catalytic Reduction**	**2.0 ppm – Oxidation Catalyst System**
Wallula Power Plant	2.5 ppm – Selective Catalytic Reduction	2.0 ppm – Oxidation Catalyst System
Port Westward, PGE	2.5 ppm – Selective Catalytic Reduction	4.9 ppm – Oxidation Catalyst System
Umatilla Generating	2.5 ppm – Selective Catalytic Reduction	6.0 ppm – Oxidation Catalyst System
Summit Westward, Westward Energy	2.5 ppm – Selective Catalytic Reduction	4.0 ppm – Oxidation Catalyst System
Plymouth Generating	2.0 ppm – Selective Catalytic Reduction	2.0 ppm – Oxidation Catalyst System
Fredrickson Power	3.0 ppm – Selective Catalytic Reduction	7.0 ppm – Oxidation Catalyst System
Satsop Power	2.5 ppm – Selective Catalytic Reduction	2.0 ppm – Oxidation Catalyst System
Sumas Energy 2	2.0 ppm – Selective Catalytic Reduction	2.0 ppm – Oxidation Catalyst System

<u>**New Source Performance Standards**</u>

The USEPA has promulgated a set of national emission standards for a selected list of major sources, under Title 40 of the CFR, Part 60 (40 CFR 60). Various subparts of that rule apply to the proposed project.

- Subpart Da (Standards of Performance for Electric Utility Steam Generating Units)

  This subpart lists emission standards for particulate matter, NO_2 and SO_2, along with monitoring requirements, testing, reporting, and recordkeeping requirements. The standards apply to units with a heat input capacity greater than 250 Million British Thermal Units (MMBtu) per hour. The heat recovery steam generating units, including the duct burners, have a heat input capacity of 546.2 MMBtu/hour at the highest operating scenario. The emission standards for Particulate Matter do not apply to gas-fired boilers. The emission standards for SO_2 are met by firing natural gas that has a maximum sulfur content of 0.5 grain per 100 dry standard cubic feet. The NO_x emission standards are 0.2 lb/MMBtu on a rolling 30-day average. Each unit at the proposed facility duct firing ***would*** meet this limit at about 0.064 lb/MMBtu.

The New Source Performance Standards also require monitoring for NO_x, and the facility is proposing to install a continuous emissions monitor for NO_x emissions (along with oxygen and CO_2) in accord with the regulation. Compliance testing ***would*** be required for NO_x and particulate matter along with opacity. Records of emissions data ***would*** be maintained on site for 2 years. Reports ***would*** include quarterly reports of excess emissions (if they occur).

- Subpart GG (Standards of Performance for Stationary Gas Turbines)

This subpart lists emission limits for SO_2 and NO_x for combustion turbines. The NO_x standard is based on a formulation in the rule, providing an emission rate based on the size of the turbine and on fuel-bound nitrogen. The calculated limit is 203 parts per million by volume, dry (ppmvd) at 15 percent oxygen, while the proposed limit is 2.0 ppmvd at 15 percent oxygen, well within the requirement. The SO_2 limit is based on a fuel sulfur content (0.8 percent by weight), and the natural gas sulfur content is about 0.003 percent sulfur by weight, based on 1 grain per 100 scf of natural gas. Again, the sulfur compliance is well within the required limits.

The facility ***would*** propose and plan to institute a custom fuel monitoring program, as allowed under the regulation. Fuel sulfur content data ***would*** be reported to USEPA Region X in accord with an accepted schedule. The continuous emission monitor for nitrogen oxides ***would*** meet any monitoring requirements for NO_x emissions for this source. An initial compliance test ***would*** be conducted as required by the regulation.

Permitting Under the PSD Program

The PSD program, as promulgated under 40 CFR 52 (paragraph 52.21) applies to the proposed project. A PSD application has been submitted in accord with those requirements. PSD review is triggered initially for the source and subsequently by pollutant, for those pollutants that are emitted above a specified significant emission rate. The PSD process is conducted in the following sequence:

- Is the proposed facility a major source?

  A new source is major if it has the potential to emit any of the regulated pollutants above the established major source threshold. The threshold is 100 tons/year for a list of source categories and 250 tons/year if the source is not listed. Since the facility includes a steam electric generation unit, which is a listed source category, the major source threshold is 100 tons/year of any (at least one) criteria pollutant. The proposed plant ***would*** exceed the major source threshold for NO_x, PM_{10}, and CO. Therefore the construction of the facility requires the issuance of a PSD permit from the relevant regulatory agency (USEPA, Region X).

- Is the facility in an attainment/unclassified area?

  For a source that is proposing to be located in an area that is classified as attainment, or as unclassified, the PSD regulations apply. If the source were locating in an area that is non-attainment for one or more pollutants, the New Source Review requirements for non-attainment areas would apply. The proposed area is attainment or unclassified for all criteria pollutants, and therefore the PSD regulations would apply.

- What pollutants are emitted above the significant emission rate?

  Significant emission rates are established for each of the criteria air pollutants, as well as for additional regulated pollutants. The significant emission rate for NO_x, SO_2, and VOCs is 40 tons/year; for CO it is 100 tons/year; for PM_{10} it is 15 tons/year, for lead it is 0.6 ton/year. The significant emission rates are established for sulfuric acid mist, hydrogen sulfide, total reduced sulfur compounds, and others. The proposed facility ***would*** exceed the significant emission rate for NO_x, SO_2, CO, PM_{10}, VOCs, and sulfuric acid mist.

PSD regulations require several analyses that must be completed for the pollutants emitted above the significant emission rate. Those analyses include an air quality impact analysis, a BACT analysis, a review of background concentrations, and a summary of regulatory requirements.

Table 3.5-6

Other Federal Applicable Requirements for Air Quality

Federal Program	Applicability
Acid Rain Program	
40 CFR Parts 72 and 75	The facility ***would*** be subject and ***would*** need to obtain an acid rain permit. The facility must obtain allowances for SO_2 emissions and must conduct monitoring, reporting, and recordkeeping for SO_2 and NO_x as required by the regulations.
Title V Operating Permit	
40 CFR Part 71	The facility emits over 100 tons/year of any criteria air pollutant, and ***would*** be required to obtain a Federal Operating Permit under 40 CFR 71. A complete and timely application must be submitted to USEPA Region X within 12 months of the start of operation.
Compliance Assurance Monitoring	
40 CFR Part 64	The facility would need to develop a compliance assurance monitoring (CAM) plan for each pollutant that: 1) has a federally enforceable limit, 2) uses a control device to achieve that limit, and 3) has a pre-control potential to emit more than the major source threshold for that permit. The facility ***would*** not need a CAM plan for NO_x emissions because the monitoring is required by the acid rain program, but it ***would*** need a CAM plan to monitor its CO emissions.
Risk Management Program	
40 CFR Part 68	The program requires a risk management plan for sources that store or maintain on site a quantity of a listed substance that is above the stated threshold. The only concern is the ammonia storage for the operation of the SCR. Since the facility is planning to use aqueous ammonia, with a concentration less than 19 percent by weight, this program ***would*** not apply.
National Emission Standards for Hazardous Air Pollutants	
40 CFR Part 63	A federal standard for Maximum Achievable Control Technology (MACT) ***was promulgated on March 4, 2004,*** for combustion turbines (Subpart YYYY). ***In parallel with the rule promulgation, USEPA proposed delisting of gas-fired turbines from the rule. The Wanapa Energy Center would comply with the applicable requirements, if any, of this rule when it begins operation.***
CAA Section 112(g)	This case-by-case MACT standard applies to major sources of HAPs for which no applicable standard has been promulgated. ***A final MACT standard has been issued for combustion turbines (Subpart YYYY); CAA Section 112(g) does not apply.***
Ozone Depleting Compounds	
40 CFR Part 82	The facility ***would*** need to comply with requirements for handling, storing, and disposing of a regulated list of ozone-depleting compounds.

Emissions from Other Sources

Besides the emissions from the Combustion Turbine and Duct Burner sources, the application included modeling of emissions from support units at the site. Chief among those sources are the individual cooling tower cells that are installed in one cooling tower to the southeast of the main combustion sources. Cooling towers dissipate heat from the heat recovery steam generating system by evaporation of cooling water into the atmosphere. This evaporation cools the cooling water droplets in the cooling tower. As the cooling tower operates it generates a small amount of "drift," in the form of small droplets that are entrained into a plume of water vapor from each cooling tower cell. The drift is minimized by installing very efficient cooling tower drift eliminators, which for this project have a drift rate of 0.0005 percent of the total circulating cooling water.

The water vapor is not a regulated emission; however, the drift droplets ***would*** contain a small amount of suspended and dissolved solids (usually inert salts) that lead to the formation of particulate matter (PM_{10}) after the drift droplet is evaporated. The cooling tower drift ***would,*** therefore, ***be*** a source of PM_{10} emissions that are regulated by the air permit. Each cell ***would*** represent a source of PM_{10} emissions (no other pollutant emissions) that were included in the model. The total cooling tower emission rate ***would be 2.03*** pounds/hour of PM_{10} or 8 tons/year of PM_{10}. Those emissions as well as the cooling tower "stack" parameters were included in the modeling analysis.

The application also addressed emissions of "refrigeration modules" that were attached to each unit. However, those units ***would*** not be installed. The modeling results included those impacts, which would generally be very small in comparison to the turbine/duct burner emissions, and would be limited to periods when the associated inlet chilling operations were being used. Modeling results have not been modified to account for this reduction in emissions, largely because the expected changes from removing those sources would be very small and would reduce ambient impacts.

Other Federal Permitting Requirements

The proposed facility ***would*** be reviewed for applicability under several additional federal programs. These are listed in **Table 3.5-6**, along with expected applicability of each standard or program. In some cases the standards are not finalized, or the final design or emission rates may lead to a different interpretation. The PSD permit application has identified these requirements and included commitments to meet the applicable requirements as the project is installed and begins operation.

3.5.2.2 Project Air Quality Effects

<u>**Construction Equipment Emissions and Fugitive Dust**</u>

During construction the activities ***would*** include disturbance of the land surfaces and storage of materials and soil piles on site, as well as from operation of heavy diesel fired equipment. These short-term emissions are exempt from permitting requirements on the site.

Construction emissions include exhaust from diesel engines. The total emissions from this equipment is expected to be very small in comparison to the total vehicular traffic in the region. To reduce combustion emissions, idling of construction equipment would be minimized (shut off when not operating) and engine tune-ups ***would be*** required for any equipment that is maintained on site for more than 60 days.

Fugitive dust would be generated by grading, excavation, and soil handling, including storage piles. Some of the dust particles would be carried off the plant site during windy and dry conditions. Since these emissions occur at ground level, and involve particles that are relatively large, the impact of these emissions ***would be*** felt very near the plant site. Impacts ***would*** rapidly decrease with distance from the site.

The following measures ***would*** be employed to mitigate fugitive emissions:

- During construction in dry weather, and during windy periods when site generated dust plumes are observed off site, the facility ***would*** water the disturbed construction areas twice daily. Haul roads that carry active traffic ***would*** be watered twice daily.

- Stored soil piles ***would*** be stabilized with water to create a crust layer that impeded emissions of fugitive dust.

- Vehicle speeds on unpaved project areas would be limited to 20 miles per hour (30 km/hour).

Plant Operations

Because the PSD review triggers this analysis, a formal series of modeling efforts were performed and included in the PSD application. Three separate impact, or modeling, analyses may be required, including:

- A "significance analysis" that evaluates only the emissions from the proposed project, and is used to determine whether the project's impacts are "significant." The source parameters are used, along with characterizations of building downwash, stack data, established receptors at the fenceline and around the site, and meteorological data to determine the maximum impact for each triggered pollutant. Impacts that are above the monitoring significance threshold also require collection of ambient air quality data that is representative of site conditions at the time of the permit application. A significant impact area is determined in this analysis as well, based on the maximum distance to the significant impact level (at the established receptors) plus 50 km.

- An analysis of compliance with National Ambient Air Quality Standards (NAAQS). For those impacts above the significant impact threshold, perform an analysis of impacts on NAAQS is required. This impact analysis is a cumulative dispersion modeling analysis, which includes: 1) emissions from the proposed source; 2) emissions from existing sources (including existing farming, natural, mobile, and industrial emissions); and 3) emissions from recently permitted industrial sources. The impacts are analyzed using the dispersion modeling data for comparison to ambient standards for all pollutants that have impacts above the significant impact threshold.

- An analysis of consumption of PSD increments. For those pollutants with impacts above the significant impact level, a baseline area and baseline date are determined. All major and minor sources within the significant impact area, that received permits to increase emissions since the baseline date, are included in analysis of PSD increment consumption. PSD increments exist for NO_2, SO_2, and PM_{10}. Other pollutants are not regulated by PSD increments. The modeled impacts from these sources, including the reduction in emissions from any enforceable changes to emissions since the baseline date, are then compared to the established PSD increments for both the Class II areas and Class I (pristine areas such as National Parks) areas.

- An analysis of air quality related values at Class I areas. For the nearby Class I areas, the modeling effort should address specific values such as impacts on visibility and on acid deposition. This analysis applies to Class I areas, and is not restricted by ambient air quality impacts.

Ambient air quality impacts were analyzed for the range of applicable requirements. For the turbine and duct burner sources, the analysis selected the individual cases in which the impacts were greatest. (Occasionally, the impacts are greatest when the source is not at full operation, because the plume rise is lessened, even though the emissions also are reduced.) The regulatory guideline model, ISCST3 PRIME, was used to provide this screening analysis, and select those cases for which the maximum impacts were determined.

The full impact analyses were conducted with the regulatory guideline AERMOD-PRIME model, because model development data show that this model is superior to ISCST3 in its assessment of winds around terrain features. Five years of meteorological data (wind speed, wind direction, temperature) that were collected at the Umatilla Army Depot (1995-1999) were used in conjunction with upper air data, from the Hanford Nuclear site and from Spokane Washington, to model these impacts. The Umatilla site is less than 5 miles (8 km) from the proposed plant site, and with no intervening topography, would provide representative meteorological wind data for modeling purposes. Atmospheric stability category data were not available from the Umatilla site, and were developed from the nearby National Weather Service Station at Walla Walla, Washington.

Specific sources were modeled as separate point sources, including each of the four turbine/duct firing stacks, and each of the cooling tower cells.

Table 3.5-7 provides the results of the significant impact analysis, which would address the emissions from only the proposed plant. This table shows the maximum modeled impact, along with the significant impact threshold, and the monitoring impact threshold. The results show that the proposed facility has an insignificant impact for SO_2 and CO emissions but subsequent analyses must be conducted for NO_2 and PM_{10}. The table also shows that the impact for PM_{10} emissions is above the monitoring impact threshold, normally requiring a monitoring program for PM_{10}. However, there are sufficient PM_{10} ambient data in the region to provide a representative background concentration of PM_{10} levels.

Based on these results, the impacts were analyzed for comparison to the NAAQS and PSD increments for NO_2 and for PM_{10}.

Table 3.5-7
Significant Impact Analysis

Pollutant	Averaging Period	Maximum Modeled Concentration (µg/m³)	Significant Impact Threshold (µg/m³)	Significant Impact for this Pollutant?	Monitoring Impact Threshold (µg/m³)
NO_2	Annual	*2.25*	1	Yes	14
SO_2	Annual	0.21	1	No	None
SO_2	24-hour	1.72	5	No	13
SO_2	3-hour	6.82	25	No	None
PM_{10}	Annual	*4.14*	1	Yes	None
PM_{10}	24-hour	*19.23*	5	Yes	10
CO	8-hour	17.86	500	No	575
CO	1-hour	84.55	2,000	No	None

The analysis for compliance with the NAAQS was conducted using the same meteorological data set and receptor grid that were established for the significant impact analysis. The model included emissions from existing and recently proposed nearby industrial sources, along with accepted estimates of background concentrations, which includes natural background pollutant concentrations, existing farming operations, and existing mobile sources of emissions. All known sources were included in this analysis.

The analysis for compliance with PSD increment consumption identified those sources that consume PSD increment also were conducted. The AERMOD model was used to assess impacts in the nearby Class II areas, and a separate modeling effort, using the guideline model CALPUFF, with its associated pre- and post-processing algorithms, was used to assess impacts at the specific Class I areas. Those areas are:

- Eagle Cap Wilderness Area (WA)
- Goat Rocks WA
- Mount Adams WA
- Strawberry Mountain WA
- Columbia Gorge (designated area)
- Mount Hood WA

Modeling for Class I impacts used the guidance that has been provided by the Federal Land Manager's Air Quality Workgroup for assessing impacts on PSD increments in Class I areas.

Table 3.5-8 lists the relevant NAAQS and the modeled impacts for those pollutants, along with the relevant Class II PSD increment and their modeled impacts (at the maximum impact area).

Table 3.5-8
Modeled Maximum Impacts Compared to NAAQS and Class II PSD Increments

		NAAQS (Data in μg/m³)				Class II PSD Increments (Data in μg/m³)	
Pollutant	**Averaging Period**	**Modeled**[1]	**Background**[2]	**Total**	**NAAQS**	**Modeled**	**PSD Increment**
NO_2	Annual	7.24	13	20.24	100	7.24	25
PM_{10}	Annual	8.86	20	28.86	50	8.86	17
PM_{10}	24-hour	27.33	105	132.33	150	27.33	30

[1]The modeled concentration includes impacts from the proposed operation of the Wanapa Energy Center, existing industrial emission sources, and proposed industrial emission sources.
[2]The background concentration includes emissions from existing farming activities, mobile sources, and natural pollutant concentrations.

Table 3.5-9 provides a list of maximum PSD increment analyses for NO_2 and PM_{10} for Class I areas. The results show the greatest impact at any of the listed receptor areas. Impacts at other Class I areas, are less than these levels, and as can be easily deduced, all are below the PSD significance threshold. No additional air quality modeling of impacts at the Class I areas is required.

Table 3.5-9
Maximum Modeled Impacts at Class I Areas and PSD Increments

Pollutant	Averaging Period	Modeled Impact (μg/m³)	Class II Significant Impact (μg/m³)	Allowable PSD Increment (μg/m³)	Location of Maximum Impact
NO_2	Annual	0.0005	0.1	2.5	Columbia Gorge
PM_{10}	Annual	0.0029	0.2	4	Columbia Gorge
PM_{10}	24-hour	0.085	0.3	8	Mount Adams

The Class I analysis also requires an evaluation of air quality related values, to include an assessment of impacts on visibility and on soils (acid deposition) at each area.

The deposition of both nitrogen-based acidic compounds and sulfur-based acidic compounds was analyzed for each site. The sulfur deposition is much less than the nitrogen deposition rates. The maximum nitrogen deposition was determined to be 0.00025 kg/hectare-year at the Columbia Gorge. The threshold for a significant impact is 0.005 kg/hectare-year for nitrogen based acidic compounds. Impacts are well below that threshold at any receptor in any of the Class I areas.

The impacts on visibility resources at Class I areas is calculated using the estimated maximum extinction percent over a 24-hour period. If the maximum extinction is below 5 percent of a "clean" background (natural) extinction level, for all of the modeled days, the impact is determined to be insignificant. Impacts at all Class I areas were below this threshold. There were no days in any of the Class I areas that had an average change in extinction of 5 percent or more. The maximum 24-hour extinction was 2.37 percent at Mount Adams.

Startup Emissions

Operational requirements, as well as demand for electric power, may lead to the startup or shut-down of any of the turbines or any of the duct burners. The operators have the flexibility to fire any or all units, and to operate the turbines at less than full load, in order to tailor production to current demand. Pollutant emissions during startup can exceed the normal operation emission rates, due largely to the fact that control equipment has not reached its optimum operating temperature. CO is the main constituent of concern regarding startup emissions, because the startup events are of short duration, CO emissions are known to be higher during startup, and there are short term (1-hour and 8-hour) standards that apply to CO. The permit application has demonstrated that the emissions of CO during startup lead to an impact that is less than the established significance levels for these standards. Therefore, such emissions would not have a significant impact on ambient air quality.

Cooling Tower Water Vapor Plumes

Cooling towers release water vapor into the atmosphere along with a small amount of water droplets. A recent application has analyzed cooling tower water vapor plume formation, specifically addressing the development of icing and fogging conditions that can occur during very cold weather. Results showed that cooling tower fogging or icing was not predicted to occur as a result of the operation of a similar cooling tower. It also should be noted that the proposed cooling towers ***would*** not be placed near any public roadways where fogging or icing could cause potentially hazardous conditions. Under the proposed design measures, cooling tower fogging and icing are not predicted for this project. No mitigation measures are planned to address this impact.

Cooling Tower Drift

Cooling towers also generate a small amount of "drift" as discussed above. The proposed drift eliminators, designed to reduce drift to 0.0005 percent of total circulating water, are comparable to the best performing drift eliminators that are in operation. The proposed dissolved and suspended solids concentration in the drift, at approximately 1,700 parts per million by weight, is low compared to the concentrations in other cooling tower operations. Given the low emission rates of PM_{10} resulting from these drift droplets, and the anticipated low level of impact, there are no mitigation measures proposed to further reduce drift and PM_{10} emissions from the cooling towers.

Greenhouse Gases

The project would generate large amounts of CO_2, resulting from the combustion of natural gas in the turbines and duct burners. CO_2 is a "greenhouse gas" that has the potential to contribute to global warming. There are no specific federal requirements to mitigate impacts of CO_2 emissions from the proposed facility. The use of natural gas to generate electricity from a combined cycle power plant is perhaps the most efficient method to generate electricity using fossil fuels. Recent studies, including the analysis provided for the Umatilla Generating Station, showed that the efficiency of electric generation with a similar combined cycle natural gas fired power plant was sufficient to meet the requirements of the State of Oregon's CO_2 emission standard for energy facilities. The proposed project would provide a similar level of efficiency. No mitigation measures are proposed for this project.

3.5.3 Proposed Action Impact Summary

Project construction would result in disturbance and handling of surface soils at the plant site and along the pipeline corridors, access road, and transmission line route. By implementing dust control measures, the impacts of construction-related fugitive dust would be minimized. The construction activities would include periodic watering of haul roads and storage piles during periods of observed fugitive dust transport off the site. Traffic speed limits would be established and may be specifically constrained during dry periods when fugitive dust is generated. Once constructed, the soil storage piles ***would*** be stabilized, roadways graveled or hard-surfaced, and exposed areas would be reclaimed or revegetated with native species or with special plantings that are maintained.

The air emissions from of project operation ***would*** include the discharge of air pollutants from the main stacks of the combustion turbines and duct firing units. The proposed project is classified as a major source and would be regulated under the PSD program and the Title V operating permit program. The facility must demonstrate continuous compliance with emissions of NO_x, CO, and SO_2 from these sources, and must perform periodic monitoring of other pollutants including PM_{10} and VOCs.

The facility ***would*** utilize "state of the art" pollution controls including selective catalytic reduction of NO_x emissions and the use of a CO oxidation catalyst. The permit application has demonstrated that the facility ***would*** install BACT for NO_x, CO, SO_2, and PM_{10}. This level of BACT is equal to or better than all recently permitted power production facilities in the Pacific Northwest. The facility also ***would*** produce power in a very efficient and clean way with the use of steam turbines producing power from the hot exhaust gases of the combustion turbines that would otherwise be wasted. The facility also would install high performing drift eliminators on its cooling tower emissions.

The dispersion modeling for the air permit application shows that impacts of these emissions are below established significance levels for CO and SO_2. The dispersion modeling also demonstrates that predicted pollutant concentrations are well within allowable ambient air quality standards and PSD increments for NO_2 and PM_{10} including impacts from existing industrial and farming activities, recently permitted industrial activities, existing mobile sources of emissions, and natural sources of emissions. This therefore indicates that the operation of the Wanapa Energy Center ***would*** not affect any existing industrial or farming activities and also ***would*** allow for any future growth of possible farming or industrial activities. The modeling also addressed impact on nearby pristine (Class I) areas and demonstrated acceptable impacts on visibility, soils (acid deposition), and vegetation within those areas. The operation of the proposed facility would not cause or contribute to an exceedence of any established air quality standard and would not adversely impact air quality related values.

In summary, the Wanapa Energy Center is a very clean and good alternative to older methods of electric generation, such as coal-fired power plants. Also, the Wanapa Energy Center ***would*** meet or exceed emission controls that have been implemented at similar facilities in the Pacific Northwest. And finally, the operation of the Wanapa Energy Center ***would*** not cause or contribute to any exceedences of any established air quality standards and ***would*** not hinder existing or future farming or industrial activities.

3.5.4 Component Alternatives Impact Summaries- Air Quality

The relative air quality effects of the component alternatives would be nearly the same as the Proposed Action for the gas/water discharge pipelines, transmission line alternatives, and the water supply line. It is likely that fugitive dust generation would be slightly greater for the longer pipeline routes that cross croplands and shrublands lands (Alternatives 2 and 4). Construction equipment emissions would depend on the length of the construction period for each pipeline alternative, which are presently unknown. Construction of Alternatives 5 and 6 in the county roadways may result in lower fugitive dust generation, but the construction period may be longer than other alternatives because of the relatively slower construction progress within county road right-of-ways because of less working space.

The air quality effects for constructing and operating plant discharge water facilities would be nearly the same as the Proposed Action. Electrical energy required to operate either water discharge alternative would be similar since plant discharge water would flow to the discharge by gravity.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

ENVIRONMENTAL APPEALS BOARD

In the Matter of:	)	PSD Appeal No. 05-06
WANAPA ENERGY CENTER,	)	**CERTIFICATION OF INDEX TO ADMINISTRATIVE RECORD**
PSD Permit No. R10PSD-OR-05-01	)	

I, Jeff Kenknight, am the Manager of the Federal and Delegated Air Programs Unit, Office of Air, Waste and Toxics, Region 10, U.S. Environmental Protection Agency ("EPA"). I hereby certify that to the best of my knowledge and belief, the materials identified in the attached Index to EPA Administrative Record, with the exception of the verification modeling runs discussed in the Declaration of Herman Wong, filed herewith, constitute the complete administrative EPA record for purposes of judicial review of the PSD permit issued by EPA on August 8, 2005, for the Wanapa Energy Center, PSD Permit No. R10PSD-OR-05-01.

DATED: October 17, 2005

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Before the Environmental Appeals Board
PSD Appeal No. 05-06
Wanapa Energy Center
Index to EPA Administrative Record

A: Permit Application Documents and Review

EPA Record Exhibit	Date	Document Description
A-1	February 1, 1994	Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
A-2	December 1, 2000	EPA Memo re: EPA Statutory and Regulatory Authorities Under Which Environmental Justice Issues May Be Addressed in Permitting
A-3	August 1, 2001	Phase I Results for Bonneville Power Administration Regional Air Quality Modeling Study
A-4	November 8, 2001	Modeling Protocol
A-5	December 17, 2001	From Dan Meyer, EPA to Aaron Day, TC – Subject: WEC – Permitting of Startup & Shutdown Emissions
A-6	January 8, 2002	From Barbara F. McAllister, EPA to Gary Burke, CTUIR – Subject: WEC – PSD Permitting Process
A-7	January 10, 2002	From Rafe Christopherson, TC to Dan Meyer, EPA
A-8	March 7, 2002	From Les Minthorn, CTUIR to Scott Sufficool, EPA
A-9	April 23, 2002	From Les Minthorn, CTUIR to Scott Sufficool and Barbara McAllister, EPA
A-10	May 9, 2002	Revised Modeling Protocol. From Kristine Lawrie, TC to Dan Meyer, EPA
A-11	May 13, 2002	From Bonnie Thie, EPA to Les Minthorn, CTUIR – Subject: WEC PSD Permit Process – Effect of BPA's Regional Air Quality Modeling Study, Phase I & II
A-12	July 10, 2002	From Herman Wong, EPA to David Fife, Williams Energy Marketing and Trading
A-13	January 24, 2003	PSD Permit Application. From Amin Shakill, DGC to Dan Meyer, EPA.
A-14	January 29, 2003	From Dan Meyer, EPA to Rafe Christopherson, TC – Subject: Technical Feasibility of $SCONO_X$™ Catalytic Absorption System on F-Class Combustion Turbines
A-15	February 10, 2003	From Rafe Christopherson, TC to Dan Meyer, EPA
A-16	March 4, 2003	From Robert G. Bachman, FS to Dan Meyer, EPA
A-17	March 4, 2003	From Rafe Christopherson, TC to Dan Meyer, EPA – Subject: PSD Permit Application Submittal Meeting Response Letter
A-18	March 27, 2003	From Rafe Christopherson, TC to Dan Meyer, EPA – Response Letter to U.S. Forest Service PSD Permit Application Comments
A-19	April 4, 2003	From Jeff KenKnight, EPA to Amin Shakill, DGC – WEC PSD Permit Application – Completeness Determination

EPA Record Exhibit	Date	Document Description
A-20	April 11, 2003	From Amin Shakill, DGC to Jeff KenKnight, EPA – Subject: Your letter dated April 4, 2003
A-21	June 12, 2003	Revised PSD Permit Application. Kristine Lawrie, TC to Dan Meyer, EPA
A-22	June 12, 2003	Addition to Appendix K of the Revised PSD Permit Application. Kristine Lawrie, TC to Dan Meyer, EPA
A-23	August 8, 2003	Revised PSD Permit Application. Kristine Lawrie, TC to Dan Meyer, EPA
A-24	August 27, 2003	From Jeff KenKnight, EPA to Amin Shakill, DGC – Subject: WEC PSD Permit Application – Completeness Determination
A-25	November 6, 2003	From Jeff KenKnight, EPA to Amin Shakill, DGC – Subject: WEC PSD Permit Development – Nearby Source NO_2 and PM_{10} Emissions Inventory for Class II Ambient Impact Assessment
A-26	November 25, 2003	Addendum to August 2003 Revised PSD Permit Application. Kristine Lawrie, TC to Dan Meyer, EPA
A-27	December 1, 2003	Appendix Addition to Addendum to August 2003 PSD Permit Application. Kristine Lawrie, TC to Dan Meyer, EPA
A-28	March 17, 2004	From Les Minthorn, CTUIR to Daniel D. Opalski, EPA
A-29	March 18, 2004	From Aaron Day, TC to Dan Meyer, EPA – Subject: Cooling Tower Modeling Analysis
A-30	April 5, 2004	From Aaron M. Day, TC to Dan Meyer, EPA – Subject: WEC PSD Permit
A-31	April 21, 2004	From Aaron M. Day, TC to Herman Wong, EPA
A-32	May 6, 2004	From Les Minthorn, CTUIR to Daniel D. Opalski, EPA – Subject: WEC – Draft PSD Air Quality Permit
A-33	May 11, 2004	From Les Minthorn, CTUIR to Dan Opalski, EPA – Subject: WEC
A-34	May 25, 2004	Email from HermanWong, EPA to Aaron Day and Eri Ottersburg, TC
A-35	May 27, 2004	Modeling Protocol for Additional Class II Area Modeling. From Aaron M. Day, TC to Jeff KenKnight, EPA
A-36	June 29, 2004	From Aaron Day, TC to Dan Meyer, EPA
A-37	July 15, 2004	From Aaron Day, TC to Dan Meyer, EPA – Subject: Class II area dispersion modeling analysis for revised permit limits
A-38	July 2004	Modeling Protocol for Revised PSD Class I Modeling Analysis.
A-39	July 23, 2004	Email from Herman Wong, to ODEQ, FS, TC, and WDOE – Subject: Outcome of July 22, 2004 Conference Call
A-40	July 27, 2004	Email from Herman Wong, to ODEQ, FS, TC, and WDOE – Subject: Outstanding Issues from July 22, 2004 Conference Call
A-41	August 9, 2004	Email from Herman Wong, EPA to Aaron Day and Eri Ottersburg, TC – Subject: Comments on Diamond Wanapa's Class I Area Modeling Protocol

EPA Record Exhibit	Date	Document Description
A-42	August 13, 2004	From Eri Ottersburg, TC to Herman Wong, EPA
A-43	August 18, 2004	Email From Herman Wong, TC to Eri Ottersburg, TC
A-44	August 24, 2004	From Jeff KenKnight, EPA to Amin Shakill, DGC – Subject: EPA Approval of Class I Modeling Protocol for WEC PSD Permit Application
A-45	September 2004	Revised Dispersion Modeling Analysis. From Aaron Day, TC to Dan Meyer, EPA
A-46	October 27, 2004	Email from Herman Wong, EPA to Aaron Day and Eri Ottersburg, TC – Subject: Preliminary Class I Area Modeling Comments
A-47	October 28, 2004	From Eri Ottersburg, TC to Herman Wong, EPA – Subject: Response to comments on the September 2004 Dispersion Modeling Analysis Report
A-48	November 1, 2004	From Eri Ottersburg, TC to Herman Wong, EPA – Subject: Response to comments on the September 2004 Dispersion Modeling Analysis Report

B: Notice of Preliminary Approval, No. R10PSD-OR-05-01

EPA Record Exhibit	Date	Document Description
B-1	November 17, 2004	Proposed PSD Permit No. R10PSD-OR-05-01 for WEC
B-2	November 17, 2004	Preliminary Technical Support Document for PSD Permit No. R10PSD-OR-05-01 for WEC
B-3	November 17, 2004	Fact Sheet for Proposed PSD Permit No. R10PSD-OR-05-01 for WEC
B-4	November 18, 2004	Internal EPA Action Request. From Dan Meyer to Rick Albright Thru Jeff KenKnight.
B-5	November 21, 2004	Public Notice of Proposed Federal PSD Air Quality Construction Permit No. R10PSD-OR-05-01 for WEC
B-6	November 2004	Stakeholder Mailing List
B-7	November 2004	Interested Persons Mailing List
B-8	November 29, 2004	From Dennis D. Doherty, Umatilla County Board of County Commissioners to Ronald A. Kreizenbeck, EPA – Subject: Proposal to Approve Air Quality Construction Permit Application for Diamond Wanapa I's WEC – Opportunity for Public Comment and Review
B-9	December 20, 2004	From Ronald A. Kreizenbeck, EPA to Dennis D. Doherty, Umatilla County Board of County Commissioners – Subject: Proposed PSD Permit for WEC – Request for Extension to Public Comment Period
B-10	December 21, 2004	Public Notice of Proposed Federal PSD Air Quality Construction Permit No. R10PSD-OR-05-01 for WEC. Extension of Public Comment Period to January 19, 2005.

C: Public Comments on Preliminary Approval No. R10PSD-OR-05-01

EPA Record Exhibit	Date	Document Description
C-1	December 17, 2004	Comment 1 – From Ken Thompson, to Dan Meyer, EPA – Subject: Opposition to the EPA's WEC Permit
C-2	December 30, 2004	Comment 2 – From Philip B. Hamm, to Dan Meyer, EPA
C-3	January 6, 2005	Comment 3 – From Jim Kanoff, Oregon Department of Human Services, to Dan Meyer, EPA – Subject: Proposal to Approve PSD Air Quality Construction Permit Application for Diamond Wanapa I's WEC – Opportunity for Public Comment
C-4	January 10, 2005	Comment 4 – From Virginia Jones, to Dan Meyer, EPA
C-5	January 13, 2005	Comment 5 – From Peter Brewer, ODEQ, to Dan Meyer, EPA
C-6	January 13, 2005	Comment 6 – From Suzanne L. and Robert T. Keys, to Dan Meyer, EPA
C-7	January 14, 2005	Comment 7 – From Terry Golter, to Dan Meyer, EPA
C-8	January 14, 2005	Comment 8 – From Mary Lynn Golter, to Dan Meyer, EPA
C-9	January 18, 2005	Comment 9 – Email from Tammy L. Dennee, Oregon Wheat Growers League, to Dan Meyer, EPA – Subject: Air Quality PSD Construction Permit for Diamond Wanapa I Energy Center
C-10	January 19, 2005	Comment 10 – Email from Floyd Turnbull, to Dan Meyer, EPA
C-11	January 19, 2005	Comment 11 – Email from Rick Latham, to Dan Meyer, EPA
C-12	January 19, 2005	Comment 12 – Email from Kyla Latham to Dan Meyer, EPA
C-13	January 21, 2005	Comment 13 – From Emile M. Holeman and Dennis D. Doherty, Umatilla County Board of Commissioners, to Dan Meyer, EPA – Subject: PSD Air Quality Construction Permit for Wanapa I, L.P.
C-14	January 21, 2005	Comment 14 – From Joyce Langley, to Dan Meyer, EPA
C-15	January 5, 2005	Comment 15 – From Phil Hamm, to Socorro Rodriguez, EPA
C-16	January 5, 2005	Comment 16 – From Kent Madison, to Socorro Rodriguez, EPA
C-17	January 5, 2005	Comment 17 – From Dennis Tillett, to Socorro Rodriguez, EPA
C-18	January 5, 2005	Comment 18 – From Lloyd Piercy, to Socorro Rodriguez, EPA
C-19	January 5, 2005	Comment 19 – From Patricia Maier, to Socorro Rodriguez, EPA
C-20	January 5, 2005	Comment 20 – From Jason S. Torres, to Socorro Rodriguez, EPA
C-21	January 5, 2005	Transcript of Public Hearing for Proposed PSD Permit

D: Additional Materials Considered in Responding to Comments

EPA Record Exhibit	Date	Document Description
D-1	June 2005	EPA Modeling Input/Output Files

E: Endangered Species Act

EPA Record Exhibit	Date	Document Description
E-1	December 11, 2003	From Madonna Narvaez, EPA to Maggie Sommer, NOAA Fisheries -- Subject: Designation of Non-Federal Representative and Designation of lead Agency under MSA EFH Consultations for the Proposed WEC
E-2	December 11, 2003	From Madonna Narvaez, EPA to Brett Farman, NOAA Fisheries and Gary Miller, FWS – Subject: Designation of Non-Federal Representative and Designation of Lead Agency under Section 7 of the ESA for the Proposed WEC
E-3	February 3, 2004	Draft Biological Assessment for WEC. From Jerry Lauer, BIA to Madonna Narvaez, EPA
E-4	March 19, 2004	From Philip Sanchez, BIA to Brett Farman, NOAA Fisheries
E-5	March 19, 2004	From Philip Sanchez, BIA to Keith Paul, FWS
E-6	October 20, 2004	Biological Assessment for NOAA Fisheries. From Philip Sanchez, BIA to D. Robert Lohn, NOAA Fisheries
E-7	October 20, 2004	Biological Assessment for FWS. From Philip Sanchez, BIA to Keith Paul, FWS
E-8	November 3, 2004	From D. Robert Lohn, NOAA Fisheries to Donald Sampson, CTUIR
E-9	November 8, 2004	From Philip Sanchez, BIA to Spencer Hovekamp, NOAA Fisheries -- Subject: Consultation Concerning Impacts of the Proposed WEC on Species Lister under the ESA and on EFH Designated Under the MSA
E-10	November 18, 2004	From Garry S. Miller, FWS to Philip Sanchez, BIA – Subject: Informal Consultation for the WEC
E-11	December 2, 2004	From D. Robert Lohn, NOAA Fisheries to Jerry Lauer, BIA – Subject: ESA Section 7 Informal Consultation and MSA EFH Consultation for the WEC

F: Final Permit No. R10PSD-OR-05-01 Approval and Issuance

EPA Record Exhibit	Date	Document Description
F-1	August 8, 2005	WEC PSD Permit No. R10PSD-OR-05-01
F-2	August 8, 2005	Response to Public Comments to Permit No. R10PSD-OR-05-01

F-3	August 2005	From Dan Meyer, EPA to Interested Person – Subject: WEC Final Approval, PSD Permit No. R10PSD-OR-05-01
F-4	August 2005	From Dan Meyer, EPA to Bo Buchynsky, DGC – Subject: WEC Final Approval, PSD Permit No. R10PSD-OR-05-01
F-5	August 2005	From Dan Meyer, EPA to Addresses – Subject: Materials for Public Display – PSD Air Quality Construction Permit Package for WEC

G: Environmental Review Documents

EPA Record Exhibit	Date	Document Description
G-1	December 21, 2003	From Judith Leckrone Lee, EPA to Philip Sanchez, BIA
G-2	December 17, 2004	WEC Final Environmental Impact Statement. From Philip Sanchez, BIA
G-3	February 24, 2005	BIA ROD for WEC Lease
G-4	February 24, 2005	BPA ROD for the Electrical Interconnection of the WEC
G-5	July 5, 2005	BOR ROD on Aspects of the Proposed WEC Subject to BOR Jurisdiction and Approval

BIA: United States Department of the Interior, Bureau of Indian Affairs
BOR: United States Department of the Interior, Bureau of Reclamation
BPA: United States Department of Energy, Bonneville Power Administration
CTUIR: Confederated Tribes of the Umatilla Indian Reservation
DGC: Diamond Generating Corporation
EFH: Essential Fish Habitat
ESA: Endangered Species Act
EPA: United States Environmental Protection Agency
FS: United States Department of Agriculture, Forest Service
FWS: United States Department of Interior, Fish and Wildlife Service
MSA: Magnuson-Stevens Fishery Conservation and Management Act (MSA)
NOAA: United States Department of Commerce, National Oceanic and Atmospheric Administration
ODEQ: Oregon Department of Environmental Quality
ROD: Record of Decision
TC: Trinity Consultants
WEC: Wanapa Energy Center

CERTIFICATE OF SERVICE

I certify that the foregoing "EPA Region 10's Response Brief," "Certified Index to EPA Administrative Record," and "Declaration of Herman Wong" was sent to the following persons, in the manner specified, on the date below:

Original, by Federal Express (original plus 5 copies):

U.S. Environmental Protection Agency
Clerk of the Environmental Appeals Board
1341 G Street NW, Suite 600
Washington, DC 20005

A true and correct copy, by U.S. Mail:

Ken Thompson
McRae Ranch
81157 McRae Road
Helix, OR 97835-4016

DATED: October 17, 2005

Janet Kesler

Janet Kesler, Paralegal
U.S. EPA, Region 10

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

ENVIRONMENTAL APPEALS BOARD

In the Matter of: WANAPA ENERGY CENTER, PSD Permit No. R10PSD-OR-05-01	PSD Appeal No. 05-06 **DECLARATION OF HERMAN WONG**

I, Herman Wong, hereby declare that the following statements are true and correct to the best of my knowledge and belief, and are based on my personal knowledge.

1. I am an Atmospheric Scientist and Regional Air Modeler in the Office of Environmental Assessment, in the U.S. Environmental Protection Agency Region 10 ("EPA"). I have held this position since 2000.

2. In this position, I provide technical assistance and guidance in the development and implementation of specialized air quality modeling, I perform in-depth reviews of air quality modeling methods and analyses performed by state/local agencies and industry in support of State Implementation Plans ("SIP") and PSD applications, and I plan and implement air quality modeling studies in support of regional air programs.

3. As part of my job duties, I reviewed the air modeling submitted by Diamond Wanapa I, L.P. ("Diamond") as part of the company's Prevention of Significant Deterioration

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("PSD") permit application. This modeling included the ambient air quality analysis required under the PSD regulations.

4. To verify Diamond's ambient air quality analysis, I performed an independent evaluation of the model inputs. Specifically, I reprocessed the meteorological data and re-ran the AERMOD dispersion program using Diamond's terrain data and model input files. Although there were small differences in the model concentration predictions, these differences were not significant enough to have an impact on the conclusions set forth in Diamond's permit application.

5. I conducted the verification modeling runs in early 2003. The modeling runs that I conducted were executed on the computer in my cubicle.

6. To free up space on the hard drive of my computer, I copied the verification modeling runs on a Zip disk. I placed the Zip disk with my other archive disks and deleted the verification modeling runs from my computer.

7. During the development of the Response to Comments, I attempted to open the verification modeling runs on the Zip disk. A message appeared on my computer screen that indicated that the Zip disk was unreadable. Since the Zip disk was unreadable, I discarded the disk. As such, the verification modeling results are no longer available.

I declare under penalty of perjury that the foregoing is true and correct.

DATED: October 17, 2005

Herman Wong
Air Modeler, Office of Environmental Assessment
U.S. Environmental Protection Agency Region 10

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