Letter 77

19990033
JW

77

FREDERICK-LAW

SUITE 208
1009 WEST 6TH STREET
AUSTIN, TEXAS 78703
(512) 469-6000 / 469-0743 (facsimile)
Mail@Frederick-Law.com

Ms. Jennifer Walker
U.S. Army Corps of Engineers
Fort Worth District
819 Taylor Street
Fort Worth, Texas 76102-0300

November 4, 2002

Regarding: Draft Environmental Impact Statement, Three Oaks Mine;
Supplemental comment of Neighbors for Neighbors

Dear Ms. Walker:

Neighbors for Neighbors today submitted an extensive set of comments on the draft EIS for the proposed Alcoa Three Oaks Mine. A comment on one aspect of the draft EIS was omitted from the larger set. That comment, consisting of two pages addressing the water quality standards anti-degradation impacts of the proposed mine, accompanies this note.

We regret any inconvenience this piecemeal submission of comments may cause vou.

Sincerely,

David O. Frederick

xc: Billie Woods, President
Ms. Michelle McFaddin

NOV 05 2002

Letter 77 Continued

Neighbors for Neighbors Supplemental Public Comment to the USACE Draft Environmental Impact Statement for the Proposed Three Oaks Mine

The DEIS fails to analyze degradation of existing aquatic uses in the tributaries of Sandy Creek as a result likely flow increases during mine operations and, subsequently, of flow decreases after the conclusion of mine operations.

The DEIS presents no analysis of the compliance or noncompliance of the preferred alternative with the anti-degradation requirements of Texas law, 30 TAC § 307.5, for tributaries of Sandy Creek. This is apparently because the DEIS accepts as fact the preliminary determination by TCEQ that these tributaries have no aquatic life uses. DEIS, p. 3.2-65; the actual euphemistic phrase was that the tributaries were, "assume[d] not to have a regulatory classification involving aquatic life uses." See, also, 30 TAC § 307.4(h)(4).

The data presented by Alcoa, however, belie the characterizations of these tributaries as having no significant life uses. See, Tables .133-3 and .133-4 of Alcoa's "Fish and Wildlife Information" presentation to the Railroad Commission, in Alcoa 2000 (Vol. 5). There, at Chocolate Creek sampling station no. 1 (about ¾ mile east of the Chocolate Creek/permit boundary junction), Alcoa's data reflect collection of 8 aquatic invertebrate species. At Chocolate Creek sampling station no. 2 (just downstream from the permit boundary and Outfall 003), the data reflect collection of nine aquatic invertebrate species and 4 fish species. At Chocolate Creek sampling station no. 3 (about a mile north of the permit Chocolate Creek/permit boundary junction), the date reflect collection of 5 aquatic invertebrate species and 10 fish species.

77-1

Chocolate Creek, of course, is one of the creeks destined for wastewater disposal under the preferred alternative; it is the discharge creek for Outfall 003. Neither Alcoa nor other sources referenced in the DEIS report on species sampling in the other unnamed tributary of Sandy Crek that will carry wastewater discharge (Outfall 002) under the preferred alternative. However, the above-referenced presentation (in Alcoa 2000 [Vol. 5]) describes a sampling site just upstream from Outfall 002 as being a "wetland pool" with a canopy of "many macrophytes, emergent marsh, treelined broad swale." Table .133-1, describing sampling station no. 9. Common experience with the outflow of wetland pools and emergent marshes would lead one to believe a lot of aquatic life would be found in the outflow.

Against this background of actual data demonstrating and strongly suggesting aquatic life uses, it is wholly arbitrary and capricious to represent that there are no existing aquatic life uses of the tributaries of Sandy Creek.

Stream flow changes are "pollutants" under the Clean Water Act, at least for purposes of anti-degradation analysis. *PUD No. 1 of Jefferson County v. Washington Department of Ecology*, 511 U.S. 700, 719-720; 114 S. Ct. 1900 (1994). The DEIS

Responses to Letter 77

77-1 The commenter states that the Draft EIS presents no analysis of the applicant's preferred alternative relative to its compliance with the anti-degradation requirements of Texas law (30 TAC § 307.5) for tributaries of Sandy Creek. Currently TCEQ is in the process of evaluating the proposed project as part of the 401 Water Quality Certification and TPDES permitting processes. As part of this review, TCEQ identifies and assesses the potential water quality effects associated with various components of the proposed project and analyzes these effects to determine compliance with the anti-degradation requirements of Texas law. Although the Draft EIS does not analyze the Proposed Action relative to the specific criteria set forth in 30 TAC § 307.5, the USACE conducted an independent analysis of the effects of the Proposed Action, including effects associated with water quality and quantity, on Big Sandy and Middle Yegua Creeks and their tributaries. Please see Section 3.5.2 of the Draft EIS for an analysis of the potential effects that earth disturbance, water level change, and outfall discharge would have on aquatic resources. Overall, the USACE's analysis has indicated that the effect of discharges on the water quality in Big Sandy and Middle Yegua Creeks would be minimal. Sediment levels resulting from increased flows are expected to be within the range currently exhibited by the system during periods of high flow. Throughout most areas, no changes in aquatic communities or their habitat are likely. In making these determinations, the USACE considered the effects of flow alterations, as well as chemical and physical water quality constituents. The Draft EIS acknowledges that certain reaches of Big Sandy and Middle Yegua Creeks, specifically those located immediately below the outfalls, would experience temporary increases in aquatic habitat for some species as a result of flow augmentation. Upon cessation of flow augmentation, combined with potential water level changes, these habitats likely would return to conditions more typical of those present in their pre-disturbance state. The Draft EIS acknowledges that such flow fluctuations are overall an adverse effect, as such changes are beneficial to some species, while detrimental to others. Additionally, to determine if fish and macrophyte populations would be affected by drawdown or altered discharges, the applicant has agreed to implement mitigation measure FW-3 to monitor for, and mitigate if necessary, potential impacts to aquatic resources, if a permit is issued. Please see table 2-15 of the Final EIS for a description of this measure.

The commenter further suggests that the cumulative effect of all stream influences is not discussed relative to their effect on water quality and aquatic life uses. The USACE identified and analyzed these effects in Sections 3.2.4 and 3.5.3 of the Draft EIS.

As a note of clarification, the terminology "having no significant aquatic life uses," as applied to intermittent streams such as those located within the permit boundary of the proposed Three Oaks Mine, is a default category defined by TCEQ under 30 TAC § 307. Pursuant to 30 TAC § 307.3, the definition of this classification is as follows: "the instream use that is typically assigned to a waterbody, such as an intermittent stream, which is not appropriate for an aquatic life use of limited or greater. There can be some aquatic life present in a waterbody which is designated as having no significant aquatic life use." The aquatic resource data that were collected by the applicant and referenced by the commenter support the "no significant aquatic life uses" classification.

acknowledges there will be flow changes on each of these tributaries as a result of mining. DEIS, pp. 3.2-70 through 3.2-83.

Basically, there will be wastewater discharges from Outfalls 002 and 003 during the operational phase of the mine that tend to increase total flows. In the case of Outfall 002, the increased flow during operations may – or may not – be offset by decreased inflows to the unnamed tributary from the drawn-down Simsboro. See, DEIS, Fig. 3.2-24. Also, an unspecified amount of flow augmentation will apparently occur in this tributary and in Chocolate Creek due to discharges of depressurization waters. In the unnamed (Outfall 002) tributary, the Simsboro draw-down will suppress inflows for some years after cessation of mining, during which time wastewater and depressurization water discharges will no longer be occurring. Chocolate Creek will allegedly not be affected by loss of groundwater inflow, since it is allegedly not recharged at all by Simsboro inflows and since only the Simsboro, allegedly, will be drawn down for depressurization purposes. However, Chocolate Creek will forever have its total flow reduced by something on the order of 12% of its baseline value because of evaporation of Chocolate Creek source water from the southern end lake; the end lake, of course, will remain long after the Outfall 003 and depressurization water contributions to Chocolate Creek flows have ended.

77-1

The cumulative results of these interacting and, in some instances, conflicting influences on stream flows (mean, peak and total) are not discussed in the DEIS at all in terms of their impacts on degradation of water quality for aquatic life uses of the tributaries. The DEIS presents some conclusions regarding "Surface Water Quality Impacts" (pp. 3.2-83 through 3.2-86), but these conclusions address only the more conventional water quality pollutants, and the aquatic-life impacts of flow fluctuations/changes are not discussed at all. In this respect, the DEIS is legally inadequate, and decisions based in part on these analyses (or lack thereof) would be arbitrary and capricious.

No. 02-

IN THE
Supreme Court of the United States

HUNTER SCHUEHLE,

Petitioner,

v.

GALE NORTON, Secretary, United States Department of Interior; JAMIE RAPPAPORT CLARK, Director, United States Fish & Wildlife Service; and SIERRA CLUB,

Respondents.

ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FIFTH CIRCUIT

PETITION FOR A WRIT OF CERTIORARI

ROGER J. MAGNUSON
Counsel of Record
SARAH M. NUSS
TODD TRUMPOLD
DORSEY & WHITNEY LLP
Attorneys for Petitioner
50 South Sixth Street
Suite 1500
Minneapolis, MN 55402
(612) 340-2600

176407

COUNSEL PRESS
(800) 274-3321 • (800) 359-6859

Letter 78

J.W

78

Lost Pines Groundwater Conservation District
123 A Old Austin Highway
Post Office Box 1747
Bastrop, TX 78602

512-581-9056
FAX: 512-581-9058
Email: lpgcd@x25.net
Web Site: www.lostpineswater.org

Joe Cooper, General Manager

November 5, 2002

Ms. Jennifer Walker, EIS Project Manager
U. S. Army Corps of Engineers
Fort Worth District
819 Taylor Street
P. O. Box 17300
Fort Worth, Texas 76102-0300

Re: Public Comment on Three Oaks Mine Draft Environment Impact Statement
Application Number [redacted]
Section 404, Clean Water Act

Dear Ms. Walker,

We would first like to thank you for the additional time provided for the preparation of this response. After our review of the EIS we felt that we would be hard pressed to render adequately detailed technical comments of our concerns within the time frame of the original deadline.

The Lost Pines Groundwater Conservation District is submitting the attached Public Comment to the U. S. Army Corps of Engineers in response to the August 23, 2002 Draft Environmental Impact Statement for Three Oaks Mine in Bastrop and Lee Counties.

We appreciate this opportunity to participate in a process which we hope will ensure the protection and preservation of both surface water and groundwater resources in our region.

Sincerely,

Joe Cooper, General Ma
Lost Pines GCD

JOE P. COOPER
General Manager
Office: (512) 581-9056
Mobile: (512) 913-4251
Res.: (512) 360-4197
Email: lpgcd@x25.net

P.O. Box 1747
Bastrop, Texas 78602
www.lostpineswater.org
Serving Bastrop and Lee Counties

Letter 78 Continued

78

Lost Pines Groundwater Conservation District

Public Comment

on the U. S. Army Corps of Engineers'

Draft Environmental Impact Statement

for the proposed Three Oaks Mine

Bastrop and Lee Counties, Texas

Application Number 199900331

Section 404, Clean Water Act

November 5, 2002

Executive Summary

Lost Pines Groundwater Conservation District asserts an interest in conserving, protecting and preserving groundwater resources in Lee and Bastrop Counties, which include the Carrizo-Wilcox Aquifer, the primary source of drinking water for this area. The District will manage the Carrizo-Wilcox Aquifer as a sustainable resource, by limiting pumping from its various formations to rates that, on the average, do not exceed long-term recharge and by protecting sensitive recharge and updip areas to prevent dewatering of the recharge area and to maintain a reasonable level of artesian pressure.

In reviewing this Draft Environmental Impact Statement, (DEIS) several issues of concern and inadequacies in the DEIS became apparent. The final EIS must adequately address these issues and include permit provisions as needed to ensure that groundwater--and surface water--resources in this region are not adversely impacted by this proposed project.

- a true "no action alternative," (one without the SAWS contract)
- groundwater models for additional scenarios as detailed below
- accurate ambient (historic) pumpage at Sandow in groundwater models
- the Central Carrizo-Wilcox GAM
- the Dutton report
- consistency in conducting, describing, and reporting results of groundwater models
- the SAWS contract amounts, according to SAWS and in relation to Three Oaks pumpage
- GCD regulations relative to SAWS contract water wells
- impacts to Simsboro water quality from withdrawals and drawdowns
- remaining artesian head in Simsboro after Three Oaks Mine withdrawals
- impacts to the Colorado River from Simsboro drawdowns
- TPDES discharges from the power plants and smelter operation after Sandow Mine closes
- Simsboro formation water quality impacts from active and post-mine discharges or seepage
- acid or toxic mine water at Sandow Mine, or other identified causes of elevated levels of manganese and barium in surface water discharges
- selenium in spoil groundwater and surface water discharges at Sandow Mine
- water quality impacts from high ash lignite and ash disposal in mine pits
- RCRA regulations for solid waste relative to bottom ash disposal in mine pits
- analysis of Sandow Mine discharges relative to those projected for Three Oaks Mine
- prevention of degradation of receiving streams from mining and post-mining discharges
- post-mining soil chemistry at Sandow Mine and reclamation methods at Three Oaks Mine; long-term (many decades) manditory monitoring of groundwater surrounding reclaimed areas
- water quality in end lakes and their impact on surface water and groundwater; long-term (many decades) manditory monitoring of discharges
- enforcement mechanism for well mitigation by SAWS

Letter 78 Continued

TABLE OF CONTENTS

Letter 78 Continued

Alcoa/SAWS Water Supply Contract

Section 2.6.2.2 describes the SAWS contract, a "reasonably foreseeable future action," as follows:

> "The 1998 SAWS contract is a long range water supply contract between Alcoa and SAWS for 40-66,000 acre feet of groundwater per year from Alcoa and CPS lands to the City of San Antonio." (p. 2-82)

In this opening statement, the DEIS appears to combine the Alcoa/SAWS water supply contract with the CPS/SAWS water rights acquisition and assignment contract, and refers to both as "the 1998 SAWS contract." However, the two contracts are stand-alone documents. An inspection of the Alcoa/SAWS contract reveals that it is for a "minimum" of 40,000 acre-feet and a "maximum" of 60,000 acre-feet annually.

Again, from the DEIS:

> "In 2001, SAWS revised its projected need to be approximately 40,000 acre-feet (SAWS 2001)." (p. 2-82)

The reference is a SAWS press release about a visit made to the Sandow Mine by SAWS CEO Eugene Habiger. The press release states: "While the original contract with Alcoa allows SAWS to acquire up to 19.5 billion gallons (60,000 acre feet) of water per year from the aluminum producer, SAWS has reduced its projected need to the 13 billion gallons (40,000 acre feet) that
78-1 feasibility studies show to be a conservative sustainable yield."

It would be appropriate for the Army Corps of Engineers (the Corps) to acquire the feasibility studies referred to in the press release, and to reference them in the supporting documents for the EIS. The Corps should determine if the Alcoa/SAWS contract has been amended such that the withdrawal amount is capped at 40,000 acre feet/year. The original contract contains no such cap. Further, the 60,000 "Maximum Annual Quantity" can be increased at any time if the two parties so agree.

From the Alcoa/SAWS contract, Section 2.01:

> "The Maximum Annual Quantity shall be 60,000 acre-feet of water per year, unless the amount is . . . increased pursuant to Section 2.08 of this Contract."

From the Alcoa/SAWS contract, Section 2.08:

> "If SAWS at any time during the term of this Contract or any extension thereof should desire more water derived from groundwater withdrawals within the Area, it shall give Alcoa written notice of the additional amount desired by SAWS (the "Requested Additional Amount"). Alcoa shall have one year from the date it receives any such notice to respond and, in such response, to either decline to agree or to agree to increase the Maximum Annual Quantity then in effect under this Contract by the Requested Additional Amount or by any portion thereof. Effective the January 1 immediately

Responses to Letter 78

78-1 Please see the response to general comment NEPA-3 in Section 4.5.1 of the Final EIS relative to the Alcoa/SAWS and CPS/SAWS contracts. The subject water development contracts are addressed in this EIS as a basis for projecting reasonably foreseeable future actions for cumulative impact assessment purposes regarding water pumping from the Simsboro aquifer. The extent of water development projected under these contracts is based on the most recent commitments expressed by the parties involved, not on the maximum development allowable under the contract terms.

Letter 78 Continued

following SAWS' receipt of Alcoa's response, the Maximum Annual Quantity then in effect shall be increased by the amount, if any, agreed to by Alcoa . . ."

78-1 If indeed the Alcoa/SAWS contract has been amended to cap the maximum annual amount at 40,000 acre feet, the Corps needs to reference the contract amendment. If the contract has not been so amended, the Corps must explain why the DEIS does not consider scenarios in which larger amounts will be withdrawn under the Alcoa/SAWS contract if the parties so desire.

Again, from the DEIS:

78-2 "The proposed term of water supply is from 2013 to 2038, with a possible 40-year extension." (p. 2-82)

The Alcoa/SAWS contract actually terminates in 2040, with a 40-year extension option.

From the DEIS:

"Alcoa would provide up to 40,000 acre-feet from depressurization wells located in the Sandow Mine area in the Simsboro Formation." (p. 2-82)

Water supply wells at Sandow Mine used to fulfill the SAWS contract should not be called "depressurization wells." Depressurization wells are designed to produce drawdown, not water. They are not built to specifications necessary for public water supply wells, they are closely spaced, screened in the upper part of the formation, and intended to operate in concert so that their drawdown cones overlap. Depressurization wells, by definition, fall under the jurisdiction of the Railroad Commission of Texas which regulates surface mining activities, and they are exempt from groundwater district regulation.

The DEIS states that SAWS contract delivery will commence in 2013, whereas mine-related pumping at Sandow Mine will cease in 2003 (p. 3.2-38) or 2005 (p. 3.2-46). It is highly unlikely that Alcoa will use the same wells for water supply as were used for depressurization unless they

78-3 are modified or replaced with water supply wells; depressurization wells would be highly inefficient for water production. Insofar as the DEIS states that the Alcoa/SAWS contract water will not be pumped until eight or ten years after Sandow Mine closes, the Corps should acknowledge that wells at the former Sandow Mine used for the SAWS contract are water supply wells and subject to regulation by local groundwater districts.

The DEIS assumes that water in the Alcoa/SAWS contract will come from the Sandow Mine property. This assumption is not supported by contract language.

The Alcoa/SAWS contract states:

"Water delivered by Alcoa under this Contract at the Point of Delivery shall be derived from groundwater withdrawn from lands within the Area. All or any portion of the water may be withdrawn from lands within any county within the Area."

The "Area," shown in Exhibit 1 of the contract, is bounded by the Carrizo-Wilcox outcrop, the Brazos River, U.S. Hwy 290 and TX Hwy 21.

Responses to Letter 78

78-2 The text on page 2-82 of the Final EIS has been revised to clarify the relationship of groundwater pumpage for Three Oaks and SAWS. Also see the response to general comment NEPA-3 in Section 4.5.1 of the Final EIS relative to SAWS contracts.

78-3 The text has been revised on page 2-82 of the Final EIS. Corrections have been made in Section 2.6.2.2 of the Final EIS to accurately reflect the nature of the wells. As described in Section 2.6.2.2 of the Draft EIS and in the response to general comment NEPA-3 in Section 4.5.1 of the Final EIS, depressurization water produced at the Three Oaks Mine (from CPS lands) could be supplied to SAWS beginning in approximately 2013. The amount produced at the Three Oaks Mine area during the life of the mining operation, however, would not exceed the amount necessary to ensure safe and efficient mining operations as approved by RRC (i.e, up to 11,000 acre-feet per year). Any additional water to be supplied under the Alcoa/SAWS contract during the life of the Three Oaks Mine would be produced from wells on Alcoa lands outside the Three Oaks Mine permit area (i.e., the Sandow area).

78-3 This "Area" is much larger than the Sandow Mine, which is located in the most sensitive, shallow, updip part of the aquifer. Since water supply wells are subject to regulation by local groundwater districts, and the water supply contract allows the wells to be located anywhere within the "Area," it is likely that such wells would have to be located in the deeper portion of the aquifer, where impacts would be less severe, to ensure that groundwater resources are adequately protected. The DEIS does not address this likelihood.

CPS/SAWS Contract Amount

The DEIS continues:

> "Concurrently, SAWS, through a separate contract with CPS, would produce up to 15,000 acre-feet per year from the CPS property at Three Oaks. . . . lignite mining may result in a reduction in groundwater provided for the [CPS/SAWS] contract of up to 15,000 acre-feet per year . . . SAWS water production from CPS lands would be a maximum of 15,000 acre-feet per year inclusive of any water produced from the proposed Three Oaks Mine."

The DEIS seems to be saying that the maximum amount of water pumped from CPS lands at Three Oaks for the CPS/SAWS contract would be 15,000 acre-feet per year, and that on-site needs for lignite mining could reduce this amount to zero. Using the (revised as of 2001, according to the DEIS) maximum annual amount pumped under the Alcoa/SAWS contract (40,000 acre-feet) and the DEIS description of the CPS/SAWS amount (0-15,000 acre feet), the "Alcoa-SAWS" and "CPS/SAWS" contracts actually involve 40-55,000 acre-feet per year, not "up to 66,000 acre-feet" per year as stated in Section 2.6.2.2 and reiterated in Section 3.2.3.3.

78-4

It is not clear which original document(s) helped the Corps arrive at the 15,000 acre-feet per year maximum amount for the CPS contract, nor is it certain that CPS and SAWS presently acknowledge this pumping cap as the total for the contract plus mining needs.

From the CPS/SAWS Water rights acquisition and assignment contract, December 31, 1998:

> "If and once SAWS has fully developed SAWS Water Rights under this Contract, CPS and SAWS intend that the SAWS Water Rights will provide between 15,000 and 30,000 acre feet of water per year for SAWS' beneficial use. However, CPS does not guarantee or warrant that such quantity will in fact be available. CPS and SAWS understand that SAWS, at SAWS' expense, intends to produce this water and transport it for beneficial use by SAWS in Bexar County or such other locations in Texas as determined by SAWS in SAWS' sole discretion."

In July 1999, HDR Engineering published a study prepared for SAWS titled: "Assessment of Groundwater Availability on CPS Property in Bastrop and Lee Counties, Texas." This study, which is not referenced in the DEIS, concluded:

78-4 Please see the response to comment 78-1. For purposes of this analysis, water production from the Simsboro aquifer has been estimated to reach a maximum production during the life of the mine of 60,000 acre-feet per year, including 15,000 acre-feet per year from CPS lands at the Three Oaks Mine, 40,000 acre-feet feet per year from the Sandow area for SAWS, and 5,000 acre-feet per year from the Sandow area for Alcoa's Rockdale operations. The USACE recognizes that these figures are projections of future water production that may change before implementation of such plans, but the analyses presented in the EIS are based on the best available information at this time.

> ". . . with a considerable degree of confidence, a well field on the CPS Property can produce water at a rate of 15,000 ac-ft/yr for 40 years. The degree of confidence is considered to be limited for a pumping rate of 15,000 acft/yr for 80 years and for a pumping rate of 30,000 acft/yr for 40 years. There is essentially no expectation that the scenario of 30,000 acft/yr for a period of 80 years can be met." (p. v)

This study assumed that withdrawals from "the ALCOA area" (presumably Sandow Mine) would reach 70,000 ac ft/yr as of year 2000, and remain constant from that point on. If SAWS has now accepted that a smaller amount, 40,000 acre feet, would be pumped annually from Sandow Mine, it is possible that SAWS would revisit HDR's conclusions to determine if larger amounts could be pumped from the CPS properties after all.

The following passage comes from a recent article in the Austin American Statesman:

78-4

> "Susan Butler, director of water resources and conservation for the San Antonio Water System, said the city utility plans to export 15,000 acre-feet of water a year from Alcoa's proposed Three Oaks Mine in Bastrop and Lee counties by 2015, if not earlier. It plans to export 40,000 acre-feet a year from Milam and Lee counties -- Alcoa's Sandow Mine site -- also by 2015." (Robert W. Gee, *Counties hope vote will keep wells wet*, Austin American-Statesman, Oct 18, 2002.)

It does not appear that SAWS intends to export any less than 15,000 acre feet per year from the CPS properties, regardless of what is needed for Three Oaks Mine. It would be appropriate to include SAWS in discussions relating to delivery amounts for the Alcoa/SAWS and CPS/SAWS contracts, to ensure that the groundwater withdrawal amounts included in the final EIS appropriately represent the intent of all parties involved.

It would also be appropriate for the Corps to explain how the EIS can adequately address the cumulative impacts from groundwater withdrawals which have no firm limits.

No Real "No Action Alternative" Considered

78-5

Based on the DEIS, it is questionable whether pumpage from the Simsboro Aquifer at Three Oaks Mine will be for depressurization or for water supply purposes. It is clearly stated that to the extent pumpage for others, including SAWS, reduces artesian pressure in the Simsboro, depressurization requirements will be reduced. Therefore, it would appear that depressurization of the Simsboro Aquifer for mining purposes is ancillary to production of groundwater for water supply purposes.

The "No Action Alternative" included in the DEIS assumes fulfillment of the SAWS/Alcoa/CPS contracts for water production, even without mining. Pumpage from the Simsboro in the Three Oaks Mine area under the "No Action" scenario is greater than under the "Three Oaks plus SAWS" scenario because it is presumed that the pumpage until the year 2030 is no greater than

78-5 As stated in Section 2.5.1.2 of the Draft EIS, depressurization of the Simsboro aquifer would be necessary to provide for safe mining operations. The disposition of the depressurization water does not affect the amount that must be pumped for mining operations. Thus, pumpage for other purposes, including local municipal usage, may reduce the amount that Alcoa would have to pump to achieve the desired depressurization. Also see the responses to general comments NEPA-3 and Alternatives-2 in Sections 4.5.1 and 4.5.2, respectively, of the Final EIS.

that needed for depressurization, whereas under the "No Action" scenario, pumpage is assumed to be the full amount of 15,000 acre feet/yr, beginning in 2013.

While the potential exists that these contracts will be exercised for the production of water from the Carrizo-Wilcox Aquifer system, this is by no means certain and its assumption as a "No Action Alternative" is not justified by the DEIS. This is strongly indicated by consideration of a scenario of mining at Three Oaks, but without the SAWS contracts.

78-5 As demonstrated in the previous sections, the "SAWS contract" amount is not well-defined. It is subject to revision as the parties see fit. Its infrastructure is not in place, so it is impossible to know where the wells will ultimately be located, or the amounts which will be pumped from each. All of these unknowns discredit its inclusion in the "No Action Alternative" because the assumptions made by the DEIS in defining its parameters are unsupported.

Since the pumpage for the water supply contract is assumed to be greater and longer than for the mining only scenario, the "No Action Alternative" skews the conclusions of the DEIS. Inclusion of pumpage related to the SAWS contracts in the absence of mining should have been a separate analysis, but not the "No Action Alternative."

In short, the DEIS does not truly consider a "No Action Alternative."

Table 3.2-5 vs. DEIS Text

From the DEIS:

> "The estimate of future groundwater demand for the Carrizo-Wilcox aquifer system was developed from the data presented in ***Water for Texas - 2002*** **(TWDB 2002A). As the Carrizo-Wilcox aquifer system is addressed in this EIS the estimates of future groundwater use from the Carrizo-Wilcox in Table 3.2-5 were used for developing cumulative impact scenarios to the year 2050 for the lower basin area of Region G."** (p. 3.2-32)

78-6 It is unclear by whom the estimates were developed and whether these demands are consistent among the three models described by the DEIS. Further, numerous inconsistencies become evident when comparing the amounts and scheduling of groundwater demands shown in the table with what is described in the narrative text of the DEIS.

- The table includes 40,000 acre-feet for the SAWS/Alcoa contract in Milam County.

If this is the 40,000 ac ft intended to come from Sandow Mine property, some of it should come from Lee County, as Sandow Mine extends into Lee County, and depressurization is occurring there presently.

78-6 Table 3.2-5 is a summary table that presents data from the TWDB website and from *Water for Texas – 2002,* along with data on Sandow provided by Alcoa. The table was used as a guide in developing the cumulative impact modeling scenarios, but it was not used directly in the computer models. In the table, all of Sandow's 40,000 acre-feet per year was placed in Milam County for convenience, to avoid having to determined which wells in which county would pump how much and for how long. Because SAWS has not determined which wells it would pump and at what rate, the 40,000 acre-feet per year was distributed evenly over all wells at Sandow in the computer model used for cumulative impact scenarios. A footnote has been added to Table 3.2-5 in the Final EIS for clarification. Please see the response to general comment NEPA-3 in Section 4.5.1 of the Final EIS relative to the Alcoa/SAWS and CPS/SAWS contracts.

Letter 78 Continued

- The table shows 10,000 acft/yr for (Three Oaks) mining demand, split between Lee and Bastrop Counties, during Three Oaks LOM. However, the table dedicates NO water from Bastrop or Lee Counties to the CPS/SAWS contract during Three Oaks life of mine.

The text explains that the projected pumpage at Three Oaks Mine (maximum depressurization of 10,889 ac ft in years 21-25; maximum annual dewatering of 1350 ac ft) is rounded down to 10,000 ac ft/yr over entire LOM. The text states (as quoted above): "SAWS water production from CPS lands would be a maximum of 15,000 acre-feet per year inclusive of any water produced from the proposed Three Oaks Mine." No explanation is given for exclusion of SAWS contract water during Three Oaks LOM.

78-6

The table should be corrected, and groundwater models run again, so that the amount of water from Lee and Bastrop Counties for Three Oaks Mine and the CPS/SAWS contract totals 15,000 (rather than 10,000 ac ft/year) during Three Oaks LOM. If discussions with SAWS indicate that amounts larger than 15,000 acre feet/yr are to be pumped from Three Oaks property for mining demand plus the CPS/SAWS contract, those larger amounts should be used when modeling the scenarios.

- On p. 2-82, the text acknowledges that after Sandow Mine closes, "4443 gpm of groundwater would continue to be pumped from the mine site for ongoing industrial use."

Using a conversion factor of 1.61, this equals 7153 ac ft/yr. However, Table 3.2-5 includes only 5000 ac ft/yr for "steam electric demand" in Milam County after Sandow closure. The following decade, an additional 5000 ac ft/yr is added to Milam County for "manufacturing demand." This water is shown to come from "Brazos River/Carrizo Wilcox," but no mention of it is made in the text, and it is not clear if the groundwater models include this amount as a future demand, of if they assume it will come from the river.

78-7

The table and text amounts and schedules of projected groundwater withdrawals for "ongoing industrial use.," "steam electric demand," and "manufacturing demand" should agree, and substantial increases such as the 5000 ac ft/yr jump in manufacturing demand noted above, should be explained.

Sandow Mine Depressurization Amount

Table 3.2-5 seems to show that the present mining demand for Sandow Mine (45,000 acre feet/yr) will simply be replaced by 40,000 acre feet/yr for the Alcoa/SAWS contract plus 5000 acre feet/yr for steam electric. It is not clear how the Corps arrived at the 45,000 acre foot figure for present (year 2000) mining demand. On p. D-2, the current depressurization amount is said to be 35,000 acre feet per year.

78-8

The Sandow Mine permit did allow depressurization pumpage of 41,780 acre feet from the Simsboro formation in year 2000. However, nowhere near this amount was actually pumped.

Responses to Letter 78

78-7 The Draft EIS text reference to "4,443 gpm of groundwater" for continued industrial operations at Sandow is incorrect. The correct figure, as used elsewhere in the Draft EIS, is 5,000 acre-feet per year or approximately 3,100 gpm. This correction has been made in the Final EIS. This quantity is included in the cumulative impact assessment as an ongoing withdrawal.

78-8 The value of 45,000 acre-feet per year for year 2000 in Table 3.2-5 is an upper range estimate for the maximum demand by Sandow. The cumulative impact scenarios modeled with the Modified Region G Model used the upper range estimates, which are conservative and designed to evaluate the anticipated worst-case scenario.

The following table shows historic and projected depressurization (Simsboro formation) pumpage at Sandow:

year	GPM (actually pumped)	Ac-Ft/Yr (actually pumped)	#wells	GPM (permitted amount)	Ac-Ft/Yr (permitted amount)	% of approved
1988	7907	12,730	no data	no data	no data	
1989	7413	11,935	no data	no data	no data	
1990	7413	11,935	no data	no data	no data	
1991	8894	14,319	no data	no data	no data	
1992	9866	15,884	no data	no data	no data	
1993	17,885	28,795	no data	no data	no data	
1994	17,789	28,640	no data	no data	no data	
1995	18,087	29,120	no data	no data	no data	
1996	18,590	29,930	no data	19,450	31,315	95.58
1997	15,540	25,019	no data	22,650	36,467	68.61
1998	16,683	26,910	no data	24,100	38,801	69.22
1999	23,470	37,787	47	23,900	38,479	98.20
2000	19,082	30,865	52	25,950	41,780	73.53
2001	19,526	31,496	63	27,700	44,597	70.49
2002	--	--	67	29,990	48,284	--
2003	--	--	70	30,440	49,008	--
2004	--	--	72	31,440	50,618	--

78-8

Actual pumpage for years 2002-2004 is not known.
Years 1994-98 fall under Permit 1D; years 1999-2004 fall under Permit 1E.

From this table the following averages can be derived:

Average annual Simsboro pumpage, years 1988-92: 13,361 ac ft.
Average annual Simsboro pumpage, years 1993-2001: 29,840
Average annual Simsboro pumpage, all years: 23,955
Maximum annual Simsboro pumpage: 37,787

Depressurization, or "underburden" pumpage withdraws water from the Simsboro formation. This is the formation targeted by the Alcoa/SAWS and CPS/SAWS water contracts. While the "mining demand" figures would technically include pumpage for dewatering, those amounts are much smaller--generally no more than 2000 acre feet/yr--and come from the overlying Calvert Bluff formation, which is not targeted by the SAWS contracts.

The 45,000 acre feet for "mining demand" in 2000 overstates the amount being pumped for this purpose in Milam County by about 13,000 acre feet. It is not clear if the 45,000 acre foot figure from Table 3.2-5 was included in the groundwater models as ambient pumpage. If ambient groundwater pumpage was assumed to be much higher than it has been historically, the models are skewed and projected impacts from increased pumpage are understated.

Letter 78 Continued

78-8 The EIS must ensure that amounts of ambient pumpage included in the models concur with the amounts reported by Alcoa to the Railroad Commission of Texas as being pumped from Sandow Mine.

Groundwater Conservation Districts (GCDs)

It is troubling that the Corps does not include, as a "reasonably foreseeable future action," the presence of local groundwater conservation districts in this project's area of impact. GCDs are mentioned only in passing, as if their existence in this area were purely hypothetical: "In addition to the common law restrictions, landowners in many areas are subject to regulations of local underground water conservation districts." (p. 3.2-5). Several of these districts anticipate passing confirmation election this November, including the Lost Pines GCD, which covers Lee and Bastrop Counties, and the Post Oak Savannah GCD in Milam and Burleson Counties.

Lost Pines GCD submitted EIS scoping comments to the Corps in September 2001. From those comments:

78-9 *The Lost Pines Groundwater Conservation District is the local political subdivision charged with the responsibility to conserve, protect and preserve the Carrizo-Wilcox Aquifer. See Tex. Water Code §36.015. As a groundwater district, the district is the preferred method of managing groundwater resources in Texas. See Tex. Water Code §§16.054 and 36.015. This important proposition was reiterated in Senate Bill 2, Section 2.20 ("Notwithstanding the provisions of this subsection, groundwater districts are the state's preferred method of managing groundwater resources"). Out of respect for this Legislative policy decision, the U.S. Army Corps of Engineers should allow adequate time for informed comment by the local groundwater district. To finalize the EIS without such input is premature and would undermine the Legislative policy that such districts are the preferred method of management of the groundwater resources.*

The presence of groundwater districts in the project area could dramatically impact the locations of wells and withdrawal amounts for the SAWS contracts. Groundwater districts have the authority to place special protections on sensitive, shallow portions of aquifers, and on outcrops and recharge zones. While wells which are permitted for surface mining operations fall under the authority of the Railroad Commission of Texas, those same wells become subject to groundwater district regulation if they are no longer used for mining or if they are used to pump more water than is actually needed for mine purposes. This means that the wells at Sandow mine which are presently used for depressurization will become subject to rules of the local groundwater conservation districts once Sandow Mine closes and they are used for the SAWS contract.

Central Carrizo-Wilcox Groundwater Availability Model

78-10 Again, from EIS scoping comments submitted by Lost Pines GCD to the Corps in September 2001:

Responses to Letter 78

78-9 Please see the response to general co mment GW-5 in Section 4.5.4 of the Final EIS relative to groundwater conservation districts.

78-10 Please see the response to general comment GW-1 in Section 4.5.4 of the Final EIS relative to the GAM.

Since 1997, the Texas Legislature has aggressively addressed state-wide water planning. In 1997, Senate Bill 1 created sixteen regional water planning groups made up of local stakeholders charged with generating 50-year plans to address the management of surface and groundwater resources in each region. Having addressed, in Senate Bill 1, the amount of water available in surface water streams, the Legislature turned its attention to groundwater with a sense of urgency. Senate Bill 2, passed in 2001, includes an important policy decision regarding groundwater and presents the reason why the Corps should delay completion of its EIS.

Recognizing the lack of groundwater modeling throughout the state, the Legislature served notice to speed up the process of developing the necessary groundwater availability models by giving a specific directive to TWDB, which can be found in Section 2.15 of Senate Bill 2 and states:

> *SECTION 2.15. Section 16.012, Water Code, is amended by adding Subsection (l) . . . to read as follows:*
>
> *(l) The executive administrator shall obtain or develop groundwater availability models for major and minor aquifers in coordination with groundwater conservation districts and regional water planning groups created under Section 16.053 that overlie the aquifers. Modeling of major aquifers shall be completed not later than October 1, 2004. On completing a groundwater availability model for an aquifer, the executive administrator shall provide the model to each groundwater conservation district and each regional water planning group created under Section 16.053 overlying that aquifer.*

78-10

The Carrizo-Wilcox is a major aquifer in Texas and is therefore included in the above quoted GAM directive. It is appropriate that the task was assigned to the Texas Water Development Board. TWDB is the state agency primarily responsible for state water planning. See Tex. Water Code §6.011. The sixteen regional water plans initiated by Senate Bill 1 in 1997 will be collected into a state water plan by January 5, 2002. The statewide plan will be reconsidered for each successive five-year period after that date. See Tex. Water Code §16.051. It is into this plan that the groundwater availability models will be injected.

It is troubling that the Corps does not even mention the Groundwater Availability Model for the Central Carrizo-Wilcox Aquifer developed by the Texas Water Development Board (TWDB) which will be completed in January 2003. J. Kevin Ward, TWDB Executive Administrator said this about the GAM Process at a recent Texas Water Law Conference:

- GAM will incorporate, at all levels, input from the public and private sector through a variety of technical advisory groups, public meetings, and technical forums.
- GAM will be based on a standardized approach using state-of-the-art, universally accepted, numerical groundwater flow models and computer capabilities.

Letter 78 Continued

- GAM will evaluate interrelationships between groundwater systems and the protection of environmental resources.
- GAM will facilitate the development of more realistic drought management plans for areas dependent on groundwater.

Ward, J. Kevin, *Senate Bill 2 and Groundwater Modeling*, CLE International, Austin, October 2002.

The GAM will be utilized by groundwater conservation districts in the impact area of this project, to develop management plans and coordinate efforts with neighboring districts to manage groundwater resources. Lost Pines GCD intends to manage groundwater resources on a sustainable basis, rather than adopting a schedule for eventual depletion.

78-10

Again, from Lost Pines GCD's EIS scoping comments of September 2001:

The local groundwater district has a Legislative mandate to conserve, protect and preserve the Carrizo-Wilcox Aquifer, but it is unable to fully participate until the groundwater availability modeling of TWDB is completed and can be considered in determining impacts of the proposed application on regional hydrology. Both NEPA's purpose and the Legislative mandate support extending the comment period and extending the EIS until the Central Carrizo-Wilcox Aquifer GAM can be integrated into hydrological consideration, given the profound potential impact of this application on groundwater resources in this region.

Groundwater Models: LOM, Modified Region G, Region G, Dutton Report, GAM

From the DEIS:

- RWHA developed a nine-layer, three-dimensional ground water flow model for the Three Oaks Mine to estimate dewatering requirements and mine-related depressurization needed in the Simsboro Aquifer. The model code used was the USGS version of MODFLOW. (p. 3.2-19). USACE, USGS, and OSM evaluated the RWHA model for applicability. (p. 3.2-19).

- ENSR and HydroGeo also examined the model input files, the grid design, the boundary conditions, and hydraulic parameters for suitability. In addition, the model was run to examine calibration, stability, convergence, and ability to replicate results presented in the Three Oaks Mine permit application. USACE and OSM determined that the model was adequate for determining environmental impacts. The results of the ENSR/HydroGeo evaluation are provided in a separate report entitled: *Review of the Three Oaks Life-of Mine Groundwater Flow Model for Groundwater Analyses in the Three Oaks Mine EIS.* (p. 3.2-19 & 3.2-20)

78-11

There is no discussion in the DEIS of what changes ENSR may or may not have made to the LOM Model prepared by RWHA for the Three Oaks Mine permit application. There is no discussion in the DEIS of the relationship of the LOM Model to the Modified region G Model.

Responses to Letter 78

78-11 The technical review document prepared for the USACE by ENSR and HydroGeo (2002b) summarizes the changes made to the Region G Model to form the Modified Region G Model. No changes were made to the Three Oaks Mine LOM Model (ENSR and HydroGeo 2002a). These technical documents are referenced in the EIS and are available from the USACE. Input parameters used in both models are presented in the technical documents. Appendix D of the EIS summarizes both models and their design.

Figure C-7 has been corrected in the Final EIS to show groundwater levels.

Figure C-6 in the Draft EIS represents existing groundwater levels (with no mine-related pumpage) in the Simsboro aquifer in the Three Oaks Mine area for year 2000. Figure D-15 in the Draft EIS is a regional cumulative impact figure that extends well beyond Bryan/College Station and shows existing regional drawdown (year 2000) for the cumulative impact area of the EIS. The two figures are not meant to be comparable.

Figures D-16 and D-17 in the Draft EIS do not indicate that Sandow is a recharge area for the Simsboro aquifer; the aquifer does not outcrop at the Sandow Mine. The outcrop area is to the west of the mine, as shown in both figures. What the figures depict at Sandow is the recovery of the aquifer with no SAWS pumpage.

R.W. Harden & Associates, Inc. did not develop the Modified Region G Model; this model was developed for the USACE by ENSR and HydroGeo from R.W. Harden & Associates, Inc.'s Region G Model that was prepared for the TWDB. Changes made to the Region G Model to develop the Modified Region G Model are described in the technical document prepared for the USACE by ENSR and HydroGeo (2002b).

Please see the responses to general comments GW-1 and GW-2 in Section 4.5.4 of the Final EIS relative to the GAM and Dutton models, respectively.

The geopressured zone downgradient (to the southeast) of Bryan/College Station was not incorporated into the Modified Region G Model. The Region G Model of R.W. Harden & Associates, Inc. and the Modified Region G Model used in the EIS both have a specified head boundary to represent the southeastern boundary of the models. The presence of drawdown contours in the geopressured zone would not affect the impacts modeled for the Three Oaks/Sandow area because of the considerable distance of the geopressured zone from the Three Oaks/Sandow area.

At a minimum, a figure depicting the areal coverage of each model would have been helpful in understanding the relationship between them.

From the DEIS:

- RWHA's (1999) estimate of recharge to the Simsboro Aquifer at approximately 2.5 inches per year in the outcrop area west of the Sandow Mine. (p. 3.2-14)

There is no discussion of whether this recharge rate was used consistently among the three models described in the DEIS.

From the DEIS:

- Figure C-7 purportedly shows general ground water levels in the Upper Calvert Bluff Aquifer. (p. C-38)

No ground water levels are shown.

From the DEIS:

- Figure C-6 purportedly depicts general ground water levels in the Simsboro Aquifer in the Year 2000; Figure D-15 purportedly depicts regional ground water levels in the Simsboro Aquifer in the year 2000.

78-11 Both Figures are based on modeling by ENSR (p. C-37 & D-18). Yet the two maps appear to bear no relationship to each other than the territory they cover.

Contours based on the regional modeling extend well into the geopressured zone, an unlikely occurrence.

From the DEIS:

- Figures D-16 and D-17 purportedly show regional drawdown in the Simsboro Aquifer by the year 2030 and the year 2050, respectively, for the Three Oaks Mine without SAWS scenario. (p. D-19& D-20)

Drawdowns related to the Three Oaks Mine are shown as greater than 50 feet, but less than 100 feet. Drawdown contours in the Sandow Mine area suggest that the Sandow Mine serves as a recharge area for the Simsboro Aquifer. This depiction calls into question the modeling performed by ENSR. This condition is unlikely and, again, calls into question the care with which the Draft EIS was prepared by ENSR and reviewed by the Corps.

From the DEIS:

- ENSR and HydroGeo evaluated the Brazos Region G Water Planning Area model, which was developed by RWHA, for applicability on behalf of USACE. (p. 3.2-32). The results of the ENSR/HydroGeo evaluation are provided in a separate report entitled: *Review of the Modified Region G Water Planning Area Groundwater Flow Model for Groundwater Analyses in the Three Oaks Mine EIS*. (p. 3.2-32 & p. 3.2-37)

The DEIS confuses the Region G Model developed by RWHA for the State Water Planning Region G and the Modified Region G Model, also created by RWHA, for the Three Oaks Mine permit application. Discussion of the changes made to the Region G Model to construct the Modified Region G Model are limited in the DEIS. There is a dearth of discussion of what changes were or were not made to the Modified Region G Model by RWHA in adapting it for use for the proposed Three Oaks Mine permit application, and there is no discussion in the DEIS of what changes were or were not made to the RWHA's Modified Region G Model by ENSR in adapting it for use for the DEIS.

There was no comparison in the DEIS to a previous model developed by Dr. Alan Dutton of the University of Texas at Austin Bureau of Economic Geology, which was developed at the behest of the Texas Legislature specifically to address the SAWS contracts, nor even that such a model exists. This is a serious omission from the DEIS.

Similarly, there is no mention in the DEIS that the State of Texas is completing Groundwater Availability Models for the Carrizo-Wilcox Aquifer that are to be used as a basis for state, regional, and ground water conservation district planning. While we understand that the GAM model was not made available to the Corps, its future existence and the general nature of the models, input parameters and boundary conditions are available on the Texas Water Development Board's web site or by attending public stake-holders meetings.

78-11

The Corps should use the Central Carrizo-Wilcox GAM to model the different scenarios presented in the DEIS, using the documented values for ambient pumpage at Sandow Mine, and including CPS/SAWS contract amounts provided by SAWS for the periods during and after Three Oaks LOM. The Corps should also make certain that the amounts, locations, and schedules of withdrawals for the SAWS contracts are accurate, defensible, consistent, and clearly defined throughout the document for each scenario and model run. Additional scenarios should be modeled, including those which locate the SAWS contract pumping in deeper parts of the aquifer, as allowed in the contract, where it will do less harm to the aquifer, and a "No Action Alternative" which does not include the SAWS contracts.

Failing to include the GAM in the final EIS, 2003 would constitute an inconsistency with the State water planning effort presently underway, and would require the Corps to address the following provision of NEPA:

40 CFR Ch. V Part 1506 §1506.2 Elimination of duplication with State and local procedures

> (d) To better integrate environmental impact statements into State or local planning processes, statements shall discuss any inconsistency of a proposed action with any approved State or local plan and laws (whether or not federally sanctioned). Where an inconsistency exists, the statement should describe the extent to which the agency would reconcile its proposed action with the plan or law.

Groundwater Impacts: Drawdowns

The DEIS abounds in near-redundancies, inconsistencies, and errors as it describes and depicts modeling results for the different scenarios.

From the DEIS:

- "Pumpage for dewatering is expected to range from approximately 300 to 1,300 acre-feet per year over the life of the mine." (p. iii)
- "Estimated dewatering pumping rates would range from 290 acre-feet per year . . . to 1,349 acre-feet per year." (p. 3.2-20)
- Figure 3.2-13 appears to indicate no effect by the year 2030 from dewatering of the Calvert Bluff at the Three Oaks Mine under the cumulative impacts scenario of mining plus SAWS withdrawals. (p. 3.2-45).
- Figure 3.2-14 supposedly indicates cumulative drawdown in the Calvert Bluff Aquifer for the Three Oaks with SAWS scenario by the year 2050. (p. 3.2-48)

No drawdown associated with mining activities is shown. Instead, drawdown in the Calvert Bluff is shown to increase away from the Three Oaks Mine, which makes no hydrologic sense and calls into the question the validity of the DEIS.

From the DEIS:

78-12

- Ground water level declines would be approximately 10 to 50 feet in the outcrop area of the Simsboro Aquifer west of the Three Oaks Mine. (p. iii)
- Under the Three Oaks with SAWS cumulative scenario, drawdown in the outcrop area of the Simsboro Aquifer west of the Three Oaks Mine would be 70 to 100 feet. (p. iv)
- Table 3.2-3 shows estimated ground water level drawdown as a result of mine pumpage to be 10 to 50 feet in the outcrop area of the Simsboro west of the Three Oaks Mine by the year 2030 (reference Figure 3.2-8). (p. 3.2-21)
- Figure 3.2-8 shows drawdowns to exceed 100 feet in some parts of outcrop west of Three Oaks Mine, for Three Oaks Mine without SAWS, Simsboro, Year 2030.
- Table 3.2-6 shows ground water level declines in the Simsboro west of the Three Oaks Mine to be 30 to 50 feet in the outcrop area by the year 2030 and 70 to 100 feet by the year 2050. (p. 3.2-39 & 3.2-40)
- Water level declines in the outcrop area of the Simsboro Aquifer west of the Three Oaks Mine are projected to be approximately 30 to 50 feet by the year 2030 and 70 to 100 feet by the year 2050. (p. 3.2-46 & 3.2-47)

Figures given in the DEIS for water level drawdowns in the outcrop area of the Simsboro Aquifer west of the proposed Three Oaks Mine are not entirely consistent. This suggests lack of care in preparing the DEIS.

From the DEIS:

- Ground water level declines in the artesian portion of the Simsboro Aquifer will be approximately 100 to 200 feet. (p. iii)

78-12 Cumulative impact modeling for the EIS was conducted using the Modified Region G Model. The Calvert Bluff is only a single layer in that model. Because the model considered all pumpage in the Calvert Bluff aquifer, the drawdown reflects the cumulative pumpage from all sources. As a result, the Three Oaks Mine area shows minimal effect on the Calvert Bluff; other sources of pumpage in the Calvert Bluff have more impact on the aquifer than Three Oaks Mine.

The commenter is confusing the modeling that was conducted using the Three Oaks LOM Model to evaluate the direct impacts of the Three Oaks Mine with the cumulative impact modeling that was conducted using the Modified Region G Model. The cumulative impact scenario models include pumpage from many sources, especially municipal pumpage. The Three Oaks LOM Model only includes pumpage from the Three Oaks Mine. To understand the patterns shown in the figures for the cumulative impact scenario models, please refer to the pumpage projections for east Texas from year 2000 to year 2050 as presented in Table 3.2-5 of the Draft EIS.

Letter 78 Continued

- Table 3.2-3 shows estimated ground water level drawdown as a result of mine pumpage to be 100 to 200 feet in the Simsboro Aquifer within the mine permit area (reference Figure 3.2-8). (p. 3.2-21)
- Table 3.2-6 shows ground water level declines in the Simsboro at the Three Oaks mine to be 60 to 100 feet by the year 2030 and 100 to 180 feet by the year 2050. (p. 3.2-39 & 3.2-40; p. 3.2-46 & 3.2-47)
- By the year 2050, drawdown in the Simsboro Aquifer in the Three Oaks Mine area is projected to be 100 to 180 feet. (p. 3.2-47)

- Figure 3.2-15 shows cumulative drawdown of between 50 and 100 feet in the Simsboro Aquifer by the year 2030 for the Three Oaks Mine with SAWS pumpage scenario. (p. 3.2-49)
- Figure D-18 shows regional drawdowns of between approximately 50 feet and 100 feet in the Simsboro Aquifer for the combined Three Oaks with SAWS scenario for the year 2030. (p. D-21)

78-12

- Figure 3.2-16 shows cumulative drawdown in the Simsboro Aquifer of between 100 and somewhat less than 200 feet in the mine area by the year 2050. (p. 3.2-50)
- Figure D-19 shows regional drawdowns greater than approximately 100 feet and less than 200 feet in the Simsboro Aquifer by the year 2050 for the Three Oaks Mine with SAWS pumpage scenario. (p. D-22)

- Figure 3.2-19 shows cumulative drawdowns in the Simsboro Aquifer by the year 2030 from approximately 50 feet to more than 100 feet without Three Oaks pumpage, but including SAWS pumpage. The approximate 10-foot drawdown related to impacts of the Three Oaks Mine also is shown. (p. 3.2-53)
- Figure 3.2-20 shows greater drawdowns in the Simsboro Aquifer by the year 2050, but the same amount of mining-related drawdown. (p. 3.2-54)

78-13 Figure 3.2-20 depicts the SAWS without Three Oaks scenario. It is hard to imagine mining-related impacts without mining. Although this could just be a graphical error, it is so obvious, it calls into question the care given in preparing the DEIS and the Corps review of the DEIS before releasing it for public comment.

Water Quality Impacts from Three Oaks Mine--Simsboro Formation

From the DEIS:

- There will be no impacts to ground water quality in the Simsboro as a result of depressurization activities. (p. 3.2-30 & p. 3.2-55)

78-14

There is no information or basis provided in the DEIS to support this conclusion. Natural water quality in the Simsboro varies from place to place. Therefore, it must be presumed, absent other information, that water quality in the Simsboro Aquifer will be impacted to some degree by depressurization pumpage for the Three Oaks Mine.

Responses to Letter 78

78-13 Figure 3.2-20 does not depict mining impacts. The figure represents a cumulative impact scenario that shows regional municipal pumpage, including projected SAWS pumpage, without the Three Oaks Mine. This scenario was modeled for comparison of regional impacts with and without mining. The dotted line in the figure represents the projection from Figure 3.2-8 of the Draft EIS of where the direct impacts of the Three Oaks Mine 10-foot drawdown contour would occur. This was done to aid the reviewer in assessing the area of influence from the Three Oaks Mine in relation to the cumulative effects area. A footnote clarifying this explanation has been added to Figure 3.2-20 in the Final EIS.

78-14 The separation of the Calvert Bluff and Simsboro aquifers has been demonstrated by field drilling and by field aquifer tests using wells and piezometers screened in both aquifers above and below the clay zone. Additional information relative to the separation between these two aquifers is presented in the response to comment 75-2. Based on this hydraulic separation, no mine-related impacts to groundwater quality in the Simsboro aquifer would occur.

As clarification, the RRC permit for the Three Oaks Mine requires groundwater quality monitoring, as does the EIS, for all aquifers affected by the proposed mine.

Letter 78 Continued

The DEIS states (p. 3.2-16, 18) that the Simsboro is separated from the lowest mineable seam in the Calvert Bluff by a low permeability clay unit that averages 60 feet thick. According to Alcoa, presence of this zone underneath the area targeted for mining ensures that there will be no communication between the mine pits and the Simsboro formation, during or after mining.

It is not clear how this can be known with confidence; core data are limited. The fact that Alcoa considers it necessary to depressurize the mine site starting in the first year of mining suggests a lack of confidence that this thick basement Clavert Bluff zone is stout enough to prevent floor heave. It also suggests that this zone may not be as vertically impermeable as it has been represented to be.

78-14

Yet the mine permit for Three Oaks Mine accepts this assumption without question, and requires no longterm groundwater quality monitoring. The Simsboro formation has been identified as a drinking water source for many communities in Texas--including the city of San Antonio, as evidenced by the SAWS contracts--and is expected to be an important drinking water source well into the future, long after Three Oaks Mine has closed. The EIS should address how this important drinking water resource will be protected from mine-related impacts, if the mine permit does not have provisions for long-temr (many decades) groundwater quality monitoring and require appropriate preventative or mitigation measures before the project can proceed.

Aquifer Recovery after Three Oaks Mine

From the DEIS:

- Pumpage of ground water from the Sandow Mine and the Three Oaks Mine area by SAWS would contribute substantially to the cumulative ground water impacts. (p. iii) The proposed term of the water supply contract is 2013 to 2038, with a possible 40-year extension. (p. 2-82)
- Pumpage for the Three Oaks Mine would have limited contribution to cumulative ground water impacts, as mine-related drawdown would mainly be in the immediate area of the mine and would cease in approximately 2030 shortly after mining ceases. (p. iii)
- Based on model results dewatering of the lower Calvert Bluff and depressurization of the Simsboro Aquifer will affect ground water levels in both formations over the life of the mine and for 100 years after cessation of the mining. (p. 3.2-20)
- Away from the mined area and downdip in the artesian portion of the Calvert Bluff, it is estimated that recovery of ground water levels may take approximately 100 years. (p. 3.2-27)
- Based on modeling by RWHA and assuming no additional pumpage for other purposes, the potentiometric surface of the Simsboro Aquifer should recover to 90 percent of premining levels in 40 years and 100 percent of premining levels in approximately 100 years. (p. 3.2-28)

78-15

It appears that a fundamental conclusion of the DEIS is that ground water withdrawals solely related to the Three Oaks Mine have little impact, but that the impacts of withdrawals for other purposes, including meeting the SAWS/Alcoa/CPS contracts, are much greater. This conclusion seems inconsistent with the estimates of time to full recovery by the aquifer.

Responses to Letter 78

78-15 As stated in the comment, the referenced Draft EIS text does address the anticipated recovery time for the Simsboro and Calvert Bluff aquifers from direct Three Oaks Mine-related impacts (i.e., in absence of other groundwater pumping from the aquifers). Mining effects on groundwater drawdown would be greatest at end of the life of the mine. Once pumping stops, recovery from mine-related impacts would start. However, other pumpage could cause further, ongoing drawdown as discussed in Section 3.2.3.3 of the Draft EIS.

Letter 78 Continued

78-15 Furthermore, the statement of recovery time is misleading because it assumes the mining occurs in isolation. This is untrue, as there will be increased pumpage for local use as well as, probably, by SAWS.

Impacts on the Colorado River

From the DEIS:

- Under the Three Oaks Mine with SAWS cumulative impacts scenario, drawdown in the Simsboro at the Colorado River would be 10 to 80 feet. (p. iv)
- By the year 2030, it is stated that the drawdown in the Simsboro at the Colorado River is projected to be approximately 10 to 50 feet and by the year 2050, 10 to 80 feet. (p. 3.2-46 & 3.2-47)
- Table 3.2-6 indicates that under the Three Oaks Mine and SAWS cumulative impacts scenario, drawdown in the Simsboro at the Colorado River would be 10 to 50 feet by the year 2030 and 10 to 80 feet by the year 2050. (p. 3.2-39 & 3.2-40)
- No impacts to the Colorado River are anticipated. (p. v)

78-16

The relationship between the Colorado River and the Simsboro Aquifer needs to be discussed in the DEIS. A conclusion of no impact needs to be substantiated.

Uncertain Future of Sandow Mine

From the DEIS:

- Closure of the Sandow Mine in approximately 2003 would result in termination of ground water pumpage for depressurization and dewatering, and the surface discharge of this water, but 4,443 gpm of ground water would continue to be pumped from the mine area for ongoing industrial use (power plant). (p. 2-82; p. 3.2-37)
- The Sandow Mine will cease mine-related pumpage in approximately 2003. (p. 3.2-38)
- The amount of continued pumpage is specified as 5,000 ac-ft/year. (p. 3.2-38; p. 3.2-46)
- The Sandow Mine will cease operations in 2005. (p. 3.2-46)

78-17 This rate of 4,443 gpm pumpage is equivalent to 7,167 ac-ft per year. (calc), not 5,000 ac-ft/year The rate of pumpage figure and the annual total are inconsistent.

The DEIS is inconsistent with respect to the anticipated closing date for the Sandow mine.

Again from the DEIS:

- Table 3.2-6 shows ground water level declines in the Simsboro Aquifer in the Sandow Mine area to be 100 to 140 feet by the year 2030 and 180 to 230 feet by the year 2050 for the Three Oaks Mine plus SAWS scenario. (p. 3.2-39 & 3.2-40)
- Table 3.2-6 shows ground water level declines in the outcrop area of the Simsboro Aquifer west of the Sandow Mine area to be 40 to 100 feet by the year 2030 and 100 to 180 feet by the year 2050 for the Three Oaks Mine plus SAWS scenario. (p. 3.2-39 & 3.2-40)

Responses to Letter 78

78-16 Please see the response to general comment GW-6 in Section 4.5.4 of the Final EIS regarding the Colorado River. Also see the response to comment 74-2.

78-17 Please see the response to comment 76-36 regarding the current schedule for closure of the Sandow Mine and the response to comment 78-7 regarding continued pumping for industrial use at Rockdale.

The cumulative impact scenario models started with year 2000 as the base case. All drawdowns and impacts, including the portion associated with the Sandow Mine, are for the period from year 2000 to years 2030 and 2050, as appropriate. There is no practical basis or available data for quantitatively comparing current and historical conditions in the aquifers.

Letter 78 Continued

78-17 It is unclear whether the declines in the Sandow Mine area are only from the year 2000 forward, or include historical declines, also. The EIS needs to clarify this point.

Mitigation of Damaged Wells

From the DEIS:

- Wells located within the drawdown areas of 20 feet or more for either the Simsboro Aquifer or the lower one-third of the Calvert Bluff may need to be modified or replaced by Alcoa as required by the TRC. (p. iii).
- The City of San Antonio has agreed to adhere to the same ground water well mitigation requirements as those required of Alcoa by TRC (p. 2-82)

78-18

The DEIS is silent as to the enforcement mechanism. It would appear that mitigation requirements imposed on SAWS by Alcoa have no basis in the regulations of the Railroad Commission of Texas. This means individuals whose wells are impacted would have to sue SAWS and/or Alcoa to enforce the mitigation requirement in the contract between Alcoa and SAWS. The socio-economic impact this would have on the local community must be addressed.

Depressurization at Three Oaks Mine: Purpose and Impact

From the DEIS:

- The Simsboro is separated from the lowest mineable seam in the Calvert Bluff by a low permeability clay unit that averages 60 feet thick. (p. 3.2-16)
- The Simsboro Aquifer is separated from the lowest Calvert Bluff sand lenses and mineable lignite by a clay zone averaging 60 feet thick. (p. 3.2-18)
- The depth of the lowest lignite seam ranges from 30 feet to 250 feet. (P. iii)
- The artesian portion of the Simsboro Aquifer lies at depths of several hundred feet below the mine permit area. With a water level decline of 200 feet, the aquifer would remain fully saturated. (p. iii)

78-19

Conservatively assuming that the density of the underburden between the lowest mineable lignite seam and the top of the Simsboro Aquifer is twice the density of water, excavation at the Three Oaks Mine should be able to proceed to approximately half the total depth of mining planned before depressurization of the Simsboro is required. Depressurization pumpage of the Simsboro before this depth is reached would appear to be solely for water supply purposes to meet the SAWS/Alcoa/CPS contracts.

Depressurization of the Simsboro Aquifer for mining at Three Oaks would appear to leave little remaining artesian head. Discussion of the amount of artesian head remaining at the end of mining is conspicuous by its absence.

Responses to Letter 78

78-18 Please see the response to general comment NEPA-3 in Section 4.5.1 of the Final EIS relative to SAWS.

78-19 The commenter's statement is not the finding of the RRC, which has approved mine-related pumpage. The Three Oaks Mine pumpage rates are based on the calculated depressurization needs as approved by the RRC. As stated in the Draft EIS, it is not expected that any of the excess depressurization water from the Three Oaks Mine (or production by SAWS on CPS lands) would be utilized by SAWS during the initial 8 years of mining.

Letter 78 Continued

Groundwater and Surface Water Interaction

Lost Pines Groundwater Conservation District, in its mission to preserve and protect groundwater resources, asserts an interest as well in surface water quality as it would be impacted by this project. The impact area includes a portion of the Carrizo-Wilcox Aquifer outcrop, where it is understood that interaction between groundwater and surface water is quite dynamic. The DEIS discusses, at some length, how large groundwater withdrawals would affect surface water resources and acknowledges that base flow in certain area streams would be reduced. Figure 3.2-24 shows several portions of Big Sandy Creek and its tributaries, which lie within projected drawdowns of greater than 20 feet, and hence "would experience a measurable decline in groundwater baseflow contribution." (p. 3.2-78)

From the DEIS, p. 3.2-80:

> "The effects of baseflow reduction would be most noticeable upstream of Station LBS (near McDade). Below LBS, USGS stream gage data indicate that the reach is generally losing flow to the Simsboro outcrop in its pre-mining condition."

78-20 In other words, below Station LBS, (which is actually near Butler, not McDade), a substantial stretch of Big Sandy Creek presently recharges (loses water to) the Simsboro formation.

From the DEIS, p. 3.2-91:

> "The projected cumulative groundwater drawdown from water supply pumping . . . potentially would affect surface water flows by decreasing baseflow contributions from the Simsboro aquifer or by increasing channel seepage losses in areas where the streams cross aquifer outcrops. The latter consequence would occur as runoff-generated streamflows in creekbeds above the water table infiltrate into unsaturated aquifer zones."

Because Big Sandy Creek recharges the Simsboro formation below the proposed outfalls for Three Oaks Mine, wastewater discharges from the mine will enter the aquifer. The rate of recharge from Big Sandy Creek will increase as drawdowns increase. The DEIS states that all discharges will meet effluent standards included in the TPDES permit. However, the draft TPDES permit contains no monitoring requirements for certain pollutants which presently occur in discharges from Sandow Mine. Since mining methods at Three Oaks Mine are modeled closely after those at Sandow Mine, it is appropriate to consider the practices at Sandow Mine in relation to discharge water quality, to determine if additional safeguards, such as monitoring and treatment, should be mandatory at Three Oaks Mine.

Manganese Releases at Sandow Mine

78-21 Lignite contains significant amounts of arsenopyrites--iron sulfides with arsenic and selenium as minor constituents--and probably manganese with the iron. The overburden materials also have iron and manganese, as evidenced by weathered outcrops visible on the surface. Any water in contact with the lignite will likely have a pH just over 4 (acidic) which could leach out all manner of constituents from the lignite and surrounding sediments.

Responses to Letter 78

78-20 It is not necessarily true that Big Sandy Creek between the two former USGS stations is losing surface flow to Simsboro aquifer recharge. In actuality, the data only show that the average annual watershed yield at the downstream station is substantially lower, per square mile of basin area, than the average annual watershed yield per square mile of basin area at the upstream station. This may be due to channel seepage to the aquifer, or to increased evapotranspiration along the reach. Aerial photographs indicate more extensive woodlands along the stream below the upstream gage, so the latter explanation for the yield differences may be valid. Also, if significant recharge does occur along the stream reach, it is already highly influenced by existing surface water flows. These baseline conditions have been shown to frequently exceed current TDS, chloride, and sulfate standards (see Tables C-10 and C-12 in Appendix C of the Final EIS). Based on overburden characteristics and Alcoa's selective handling procedures, water quality monitoring, and Sandow Mine data, the proposed Three Oaks Mine discharges are not expected to create adverse impacts to aquifer water quality. Section 3.2.4.2 of the Final EIS has been modified for clarity. Please see the response to general comment SW-1 in Section 4.5.5 of the Final EIS relative to surface water monitoring.

78-21 Please see the response to general comment SW-5 in Section 4.5.5 of the Final EIS relative to releases of manganese and other contaminants listed in the TRI data. Presently, Alcoa has one TPDES permit for the smelter, the power plant, and the Sandow Mine combined. Alcoa has applied for a separate TPDES permit for the Three Oaks Mine. As the Sandow Mine closes, some of the TPDES outfalls will be eliminated but some will remain for the smelter, the power plant, and the part of the Sandow Mine that has the Three Oaks conveyor running through it. A small part of the Sandow Mine will remain active until coal deliveries from Three Oaks cease and will likely continue to be a part of the existing smelter, the power plant and the mine TPDES permit. The TPDES permit application for the proposed Three Oaks Mine is completely separate from the Sandow site in a regulatory sense. There are no physical connections to the Sandow complex with respect to potential transfer of Sandow Mine releases to the Three Oaks Mine TDPES system.

From the DEIS, p. 3.2-83:

> "Surface water quality issues associated with lignite mining generally involve the potential for increased sediment transport, nutrient and pesticide loading, and acid or toxic drainage resulting in increases in iron, manganese, or TDS. Sediment, metals, and metalloids can be treated through the use of flocculant or other chemical methods to reduce their concentration."

As noted in the above passage, elevated levels of manganese in surface water discharges can indicate acid or toxic mine water drainage. While the passage acknowledges that manganese and other pollutants "can be treated," there are no requirements in the TPDES or the mining permit requiring such treatment. It would not appear that any such treatment is occurring for discharges from the existing TPDES permit for Sandow Mine.

EPA's Toxic Release Inventory (TRI), available on line, shows the following releases of manganese and manganese compounds at Alcoa Rockdale, including the Sandow Mine.

Manganese and manganese compounds released from Alcoa Rockdale and Sandow Mine
Toxic Release Inventory (TRI) data from EPA website, years 1988-2000
units in pounds

Year	discharged to Yegua Creek	on-site disposal: Other landfills (5.5.1B)	air emissions: stack / non-point fugitive	total release	total mang & comp
2000	30,300	--	4515 / 0	34,815	--
2000 (comp)	--	309,600	4540 / 0	314,140	348,955 (yr 2000)
1999	15,500 (M)	--	3800 / (1-10)	19,305	--
1999 (comp)	--	307,000	4400 / (1-10)	311,405	330,710 (yr 1999)
1998	8000 (M)	260,000	8200 / (1-10)	276,205	--
1997	4900 (M)	260,000	7200 / (1-10)	272,105	--
1996	2000 (M)	--	2700 / (1-10)	4705	--
1995	4499 (M)	--	2488 / (1-10)	6992	--
1994	--	--	2774 / (1-10)	2779	--
1993	--	--	2427 / (1-10)	2432	--
1992	--	--	2902 / (1-10)	2907	--

78-21

1991	–	–	2403 / (1-499)	2653	–
1990	–		1900 / (1-10)	1905	–
1989	–	–	1484 / (1-499)	1734	–
1988	–	–	2400 / (1-499)	2650	–

(M) denotes monitored or measured amounts; all others calculated on mass balance average
(comp) amounts designated as "manganese compounds" in TRI database
Dashes indicate no available data

Unless acid or toxic drainage of mine water is accelerating transport of manganese into surface water discharges, it is unclear why manganese releases would increase so dramatically from 1996 to 2000. Concurrent, substantial releases of manganese and manganese compounds occurred to "other landfills, 5.5.1B" which are those not authorized under Subtitle C of RCRA to accept hazardous wastes. It is not clear if mine pits would fall under this definition of a landfill, but in any event, it appears likely that these large releases to land are rapidly making their way into surface water discharges.

78-21

The DEIS states:

> "The power generating facilities (including the three Alcoa generating units and the TXU unit) currently operate, and would continue to operate, under their existing permits as separate facilities from the Sandow Mine or the proposed Three Oaks Mine." (p. 2-45)

This statement is somewhat misleading.

Alcoa's existing wastewater discharge permit allows the following discharges:

> "previously monitored effluent from the cooling pond (Alcoa Lake) at a total volume not to exceed 326 million gallons per month . . . ; previously monitored effluent from Pond No. 3 of Alcoa Lake on a flow variable basis . . . ; domestic wastewater at a daily average flow not to exceed 0.28 million gallons per month (MGD) . . . ; once-through cooling water at a daily average flow not to exceed 800 MGD . . . ; process wastewater from the aluminum smelting operation at a daily average flow not to exceed 7.0 MGD . . . ; power plant low volume waste sources, utility wastewater, and bottom ash transport water at a daily average dry weather flow not to exceed 3 MGD . . . ; storm water and utility wastewater from the smelter on a flow variable basis . . . ; plant area storm water runoff on an intermittent and flow variable basis . . . ; wastewater from the active mining area on an intermittent and flow variable basis . . . ; and wastewater from the post-mining area on an intermittent and flow variable basis . . . "
> (TPDES Permit No. 00395; EPA I.D. No. TX0000876, p. 4)

The smelter, electrical generating facilities owned by Alcoa and TXU, and the Sandow Mine all share the existing TPDES permit. Excluding discharges from active mining and post-mining

areas, the total amount of water permitted for discharge under this permit is over 15,000 acre feet per year. While these discharges could be quite high in manganese, it is not clear why the levels would have doubled every year. It is also not clear how these discharges will be permitted once Sandow Mine closes, or if any of these non-mining discharges would be added to the Three Oaks Mine TPDES permit at some later date It is not clear if the effluent limits in the existing permit could be met absent mine-produced water.

Depressurization water from the Simsboro formation, also discharged under the existing TPDES permit, is known to be high in iron and manganese. However, the amounts pumped did not double every year between 1996 and 2000 to match the dramatic ramping up of manganese releases.

The following table shows Alcoa's depressurization history at Sandow Mine, for years 1996-2000, according to the Railroad Commission of Texas.

year	acre-feet/year pumped
1996	29,930
1997	25,019
1998	26,910
1999	37,787
2000	30,865

78-21

While substantial quantities of depressurization water are discharged to Middle and East Yegua Creeks, a considerable amount is used on-site at Sandow Mine.

Table C-8 in the DEIS lists "Average Sandow Mine Pumpage Discharges" for years 1993-2001, "based on Sandow well field pumping history and a consumption of 5,000 acre-feet per year at the Sandow facilities." Adding up the monthly averages yields an annual average discharge amount of 20,122 acre feet. Assuming discharges in year 2000 were on the order of 21,000 acre feet, the concentration of manganese in the discharges (roughly 1.4 pounds per acre foot) would have averaged more than 0.5 mg/l -- ten times the drinking water standard of 0.05 mg/l.

By way of comparison, every other lignite-powered industrial complex in Texas monitors surface water discharges for manganese. In 2000, three of them show no manganese and the fourth shows just 79 pounds released, while Sandow Mine released 30,300 pounds to Yegua Creek.

These rapidly increasing manganese concentrations in surface water discharges suggest that acid or toxic mine water drainage is occurring at Sandow Mine, something which neither the applicant nor the regulatory agencies presently acknowledge. It would be appropriate for the EIS to require a thorough, independent investigation of Sandow Mine to determine if acid or toxic mine water drainage is occurring there, and if not, to determine what else might be causing these escalating manganese discharges. The Section 404 Permit should include provisions which would prevent or mitigate such occurrence at Three Oaks Mine. The EIS should contain mandatory and enforceable provisions to ensure that the TPDES permit for Three Oaks Mine prohibits inclusion

78-21 of discharges from the smelter operation or the electrical generating facilities, or from Lake Alcoa. The TPDES permit should require frequent monitoring of discharges for manganese, and set limits on the releases to ensure protection of human health, safety and the environment.

High Ash Lignite at Three Oaks Mine

From the DEIS:

"At full capacity, the power generating units [three 120-megawatt (MW) units owned by Alcoa and one 595-MW unit owned by TXU] could use approximately 6 million tons of crushed lignite per year." (p. 1-6)

"At full capacity, the power generating units use approximately 7 million tons of lignite annually." (p. 3.16-1)

From the Three Oaks Mine permit application:

"Coal production is expected to average approximately 6,200,000 tons per year. Maximum production could be 8,000,000 tons per year. The anticipated total lignite production for the life of the mine is approximately 180,000,000 tons." (Supplement 3 p .139-4)

78-22 "Exploration drilling has shown some of the lignite seams to be of marginal quality. Plans are to blend these higher ash seams with lower ash seams. If this blending operation proves to be unsuccessful, these higher ash seams will be spoiled and mining will have to cover a larger area to recover the tonnage required for the power plant." (Supplement 3 p .139-8)

It appears that up to 2 million tons per year of higher ash lignite may be deposited in spoil piles to await reburial in the mine pits. The Three Oaks Mine permit grants a variance to the RRC rule which requires that mine spoil be leveled, graded and prepared for replanting within 6 months of mining; instead, Alcoa will have 25-30 months to reclaim mined areas. This means that spoil piles are likely to contain substantial quantities of high ash lignite, will be much larger than the 6-month reclamation schedule would have allowed, and will be subject to runon and runoff for 4-5 times as long. It is not clear that surface water detention and treatment facilities at Three Oaks Mine will adequately handle the level of degradation in storm water runoff which will result from these practices. The DEIS does not address the likelihood that groundwater quality in the reclaimed area and undisturbed adjacent lands will be affected by the presence of substantial quantities of pulverized or unconsolidated lignite mixed in with generally acidic overburden material in the reclaimed mine pits.

Fly Ash and Bottom Ash

78-23 From the DEIS, p. 1-6:

"Approximately 875,000 tons of ash are produced per year, comprising 350,000 tons of bottom ash and 525,000 tons of fly ash. Since 1998, approximately 30 percent of the fly

78-22 No large volumes of coal would be left on the surface of the reclaimed mine area. This would be due to the implementation of the proposed overburden selective handling program and compliance with RRC regulations. Such regulations prohibit the placement of potentially toxic and/or acid-generating materials on or near the reclaimed surface, and require a verification sampling program. Small stringers of lignite unsuitable for combustion would be immediately placed at the bottom of the spoil piles for burial. Further assessment of coal combustion by -products has been conducted and is presented in the response to general comment PA-1 in Section 4.5.3 of the Final EIS. Alcoa no longer proposes to use coal combustion by -products as minefill.

Regarding poor quality lignite handling, this material is left in-situ (lowest seam only), spoiled, or placed in stockpiles. If low-quality lignite is placed in stockpiles, it would be blended when high quality lignite is available. Where spoiled, the selective handling plan and required RRC monitoring plans ensure water quality meets permit criteria. Selective handling places poorer quality spoil, including any spoiled lignite, at the bottom of the pit from the start of mining. With respect to the 25 to 30 month selective handling, the timeline starts from when a spoil peak is developed, not from the start of pit excavation. The Sandow Mine utilizes the same monitoring and placement approach, and there have been no permit exceedences. It has been demonstrated at Sandow that surface water detention and treatment facilities adequately handle water quality in storm water runoff.

78-23 Please see the response to general comment PA-1 in Section 4.5.3 of the Final EIS.

ash and 100 percent of the bottom ash has been recycled; a portion of the bottom ash is currently used for road surfacing and ramp construction at the Sandow Mine. Fly and bottom ash to be recycled is transported offsite by dump truck. All non-recycled fly ash is transported by dump truck to a Texas Natural Resource Conservation Commission (TNRCC)-approved landfill adjacent to the generating station and the Sandow Mine."

From the DEIS, p. 3.2-29:

"Alcoa proposes to use bottom ash from the existing Rockdale power generating facility as a road surfacing material in pit and ramp areas of the proposed mine. Bottom ash used on temporary roads would be removed from the roadway during concurrent and final reclamation and placed as backfill in the mine pit, as currently approved at the Sandow Mine."

From the DEIS p. 2-39:

"Prior to use of bottom ash at the proposed mine site, Alcoa would obtain TNRCC and RRC approval, as appropriate. Bottom ash is currently approved by the TNRCC for use as road surfacing on haul roads, and it is approved by the RRC for use as backfill at Alcoa's existing Sandow Mine."

From the DEIS, p. 3.14-1:

"... incorporation of bottom ash into the backfill material is not anticipated to degrade groundwater and thus is not expected to pose a health risk."

78-23

These passages suggest that practices at Sandow will carry over to Three Oaks Mine. If so, substantial quantities of bottom ash (hundreds of thousands of tons) will be placed directly in unlined mine pits at Three Oaks Mine, or placed there after removal from temporary roadways and ramps. Before such practices are allowed, it would be appropriate for the Corps to require thorough, independent laboratory analyses of bottom ash from all of the TXU and Alcoa facilities, to determine what materials are present in this coal combustion waste. It does not appear that any such tests or analyses have been conducted, because no site-specific test results are included or referred to in the Mine Permit Application or in the DEIS.

Placement of bottom ash in mine pits could also lead to problems arising from movement of groundwater in the spoil aquifer. Bottom ash tends to be vitrified and vugular, rendering it highly transmissive. Depending on its distribution in the mine pit, it could act as a permeable layer directing or redirecting ground water movement in the reclaimed area, and could provide a permeable, porous material next to the unmined lignite zone over the whole headwall length of the mining. This would have serious implications for water quality in the spoil aquifer, in the surrounding undisturbed areas, and potentially for deeper groundwater resources as well.

78-24

It is not clear what will happen to the fly ash landfill adjacent to Sandow Mine once that mine closes. As fly ash has the potential of causing serious harm to groundwater resources, it would be appropriate for a provision to be added the Three Oaks Mine permit which expressly prohibits burial of fly ash in mine pits or other unlined pits in the mine permit area.

78-24 Please see the responses to general comments PA-1 and PA-2 in Section 4.5.3 of the Final EIS.

Letter 78 Continued

Resource Conservation and Recovery Act (RCRA)

Revisiting this excerpt from the DEIS, p. 2-39:

> "Prior to use of bottom ash at the proposed mine site, Alcoa would obtain TNRCC and RRC approval, as appropriate. Bottom ash is currently approved by the TNRCC for use as road surfacing on haul roads, and it is approved by the RRC for use as backfill at Alcoa's existing Sandow Mine. In advance of approval for use at that facility, it was determined by TNRCC that the bottom ash from the generating facility met the criteria for classification as a Class 3 industrial waste as defined in 30 TAC 335.507 (Alcoa 2000 [Volume 8])."

From p. 2-62

> "Prior to recontouring of roadways, bottom ash, where used as a road surfacing material, would be removed from the roadway and placed as backfill in the pit areas or hauled to a licensed disposal area for Class III wastes."

These passages imply that the mine pits at Sandow (and at Three Oaks) can be used in lieu of licensed disposal areas for Class III industrial wastes. They also suggest that classification of the material as a Class III industrial waste by the State exempts it from federal regulation under RCRA. However, RRC has no EPA-delegated RCRA authorization to either regulate solid waste management facilities or to exempt such facilities from regulation.

78-25

The federal regulations for solid wastes are as follows:

> 40 CFR
> Protection of Environment
> Chapter I
> Environmental Protection Agency
> Subchapter I -- Solid Wastes
>
> Part 257 -- Criteria for Classification of Solid Waste Disposal Facilities and Practices
>
> Subpart A -- Classification of Solid Waste Disposal Facilities and Practices
> §257.1 Scope and purpose.
> (a) "Unless otherwise provided, the criteria in §§257.1 through 257.4 are adopted for determining which solid waste disposal facilities and practices pose a reasonable probability of adverse effects on health or the environment under sections 1008(a)(3) and 4004(a) of the Resource Conservation and Recovery Act (The Act). Unless otherwise provided, the criteria in §§257.5 through 257.30 are adopted for purposes of ensuring that non-municipal non-hazardous waste disposal units that receive conditionally exempt small quantity generator (CESQG) waste do not present risks to human health and the environment taking into account the practicable capability of such units in accordance with section 4010(c) of the Act."

Responses to Letter 78

78-25 Please see the responses to general comments PA-1 and PA-2 in Section 4.5.3 of the Final EIS.

With respect to 40 CFR Subtitle C Hazardous waste regulations:

> 40 CFR §261.4(b) "Solid wastes which are not hazardous wastes.
> The following solid wastes are not hazardous wastes: . . .
> (4) Fly ash waste, bottom ash waste, slag waste, and flue gas emission control waste, generated primarily from the combustion of coal or other fossil fuels, . . ."

From the above definitions, Alcoa's combustion products clearly are not regulated as hazardous wastes, however, just as clearly, they are classified as (non-hazardous) solid wastes under RCRA.

With respect to 40 CFR Subtitle D Non-hazardous waste regulations:

There is no exclusion from RCRA Subtitle D for coal or fossil fuel combustion products at 40 CFR §257.1 Scope and purpose.

There is an exclusion for mining at 40 CFR §257.1(c)

> "These criteria apply to all solid waste disposal facilities and practices with the following exceptions. . . (2) The criteria do not apply to overburden resulting from mining operations intended for return to the mine site."

78-25 However, coal combustion wastes do not naturally occur in the overburden so this exemption does not apply.

From the DEIS, p. 2-37:

> "Material that is allowed by TNRCC to be re-used for beneficial use or recycled would be recycled. This may include placing the material in the pit to bring the land back to approximate original contour."

However, it does not sound as though bottom ash would be needed to provide enough volume of fill material to achieve approximate original contour.

From the DEIS, p. 2-43:

> "Overburden and interburden material is expected to swell to a loose volume of 15 to 20 percent greater than its in-place volume after excavation."

With respect to 40 CFR, the repeated federal definition of a recycled material is "a material that is utilized in place of a primary, raw, or virgin material in manufacturing a product." Use of bottom ash for an improved road surface would be recycling since the bottom ash is used in place of road base material. Placing the bottom ash from decommissioned service roads into the mine pits, or placing the bottom ash directly into the mine pits, does not meet this definition for recycling, but instead meets the definition for solid waste disposal.

40 CFR §257.2 Definitions.

"*Disposal* means the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including ground waters."

"*Open dump* means a facility for the disposal of solid waste which does not comply with this part."

78-25 It would appear that Alcoa's practice of placing bottom ash directly in the mine pits at Sandow Mine constitutes a violation of RCRA, as they are operating what is essentially an unregulated "open dump." The EIS must properly address the burial of coal combustion waste in unlined mine pits and acknowledge that the practices ongoing at Sandow and apparently intended for Three Oaks are subject to regulation under RCRA. The EIS must include provisions whereby this waste would be handled and managed in accordance with RCRA to ensure protection of human health, safety and the environment. To ensure that such practices do not degrade surface or groundwater resources, long term (many decades) of groundwater monitoring must be included as a condition of the mining and TPDES permits.

Barium compounds

From the DEIS, p. 3.2-29:

"It has been determined that the primary constituents removed from bottom ash by leaching with an acidic solution under the guidelines of USEPA SW-846 for Toxicity Characteristic Leaching Procedure (Test Method 1311 (USEPA 1992) are barium and selenium (Alcoa 2000 [Volume 8])."

The TCLP test is not indicative of what the leaching conditions will be in the mine or of the concentration of contaminants that will form in the mine leachate. That is not what the test is designed for and that is not what it should be used for. Nevertheless, it is instructive to consider available information for barium releases from the Sandow property.

78-26 EPA's TRI database shows barium compounds discharged to Yegua Creek under the existing TPDES permit for Alcoa Rockdale and TXU Sandow. A number of Texas electrical generating plants show barium releases, but again Alcoa shows releases orders of magnitude above the others.

Barium released from Texas electrical generating plants and Alcoa Rockdale smelter
Toxic Release Inventory (TRI) data from EPA website, Year 2000
units in pounds

Facility	surface water discharges	Other landfills (5.5.1B)	air emissions: stack / non-point fugitive	total on-site release
Limestone	--	2,200,000	730 / 0	2,200,730

78-26 Please see the response to general comment SW-5 in Section 4.5.5 of the Final EIS regarding TRI data. Also see the response to comment PA-1 in Section 4.5.3 of the Final EIS regarding bottom ash. Sandow complex releases would not be part of the Proposed Action (or its potential direct impacts) due to the regulatory and physical separation of Three Oaks Mine TPDES features from the Sandow TPDES features. Barium levels elevated beyond the background concentrations in local soils and rocks are not expected at Three Oaks, since the project would not be involved in metals processing (which is the common source of elevated barium concentrations in effluent). Selenium concentration is a suitability parameter for the overburden selective handling program, which would minimize the potential for selenium to accumulate in surface water runoff. Selenium concentrations are generally low in the overburden and interburden, and additional mitigation has been recommended so that the occasional zones where this is not the case would be identified and set aside from use in near-surface reclamation. The surface water monitoring program includes these parameters, so if a compliance problem does develop in spite of these pre-emptive procedures, additional mitigation actions would be taken.

Jewett Limestone Co					
TXU Martin Lake Rusk Co	91 to Caney Creek Tributary MONITORED	2,616,241	3135 / 0	1,530,629	
TXU Monticello Titus Co	0 to Monticello Reservoir MONITORED	2,568,601	8784 / 9	2,577,394	
TXU Big Brown Freestone Co	51 to Fairfield Lake MONITORED	1,441,092	4331 / 9	1,445,483	
American Electric Harrison Co	940 to Hatley Ck 1 to Brady Branch Reservoir MONITORED	1,300,000	3500 / (0-10)	1,884,451	
TXU Sandow Milam Co	--	607,928	1520	609,448	TXU Sandow and Alcoa Rockdale total releases: 1,076,823
Alcoa Rockdale Milam Co	14,230 MONITORED	446,600	6545	467,375	

78-26

TXU Sandow shows no surface water releases for any materials because it shares Alcoa's existing TPDES permit, which covers the smelter complex as well as Sandow Mine. As the two industrial complexes also share a cooling pond and are immediately adjacent to each other, they can be considered a single source of releases listed in the TRI.

Historic TRI data show a ramping up in barium releases to surface water similar to the manganese releases.

Barium Compounds released from Alcoa Rockdale
TRI data, Years 1997-12000
units in pounds

Year	discharged to Yegua Creek	on-site disposal: Other landfills (5.5.1B)	air emissions stack / non-point fugitive	total on-site release
2000	14,230 (M)	446,600	6540 / (1-10)	467,375
1999	7160 (M)	523,000	7500 / (1-10)	537,665

1998	4200 (M)	443,000	7700 / 1-10)	454,905
1997	none listed	605,000	9300 / (1-10)	614,305

78-26

(M) denotes monitored or measured amounts; all others calculated on mass balance average

This exponential rise in surface water discharges of barium suggests that bottom ash buried at Sandow may be leaching into shallow groundwater and beyond.

Selenium

The second contaminant implicated in leachate tests on bottom ash is selenium. The DEIS summarily dismisses the possibility that selenium would affect surface water or groundwater. From p. 3.2-83-4: "No impacts to surface water quality are anticipated from dissolved or total metals, metalloids, or non-metals content in runoff or groundwater. . . . In combination with Alcoa's proposed selective handling program and TPDES provisions, no sources of selenium that could affect surface water quality are expected to occur."

Selenium is present in lignite and in the overlying sediments which must be removed as part of the mining process. It reenters the environment in non-point fugitive emissions, and stack emissions when lignite is burned. It concentrates in bottom ash from burned lignite.

Drinking water standards for selenium (primary and secondary) are 0.05 mg/l. In its National Primary Drinking Water Standards table (available online), EPA lists among "common sources of contaminant," "discharges from mines."

78-27

According to the EPA's Toxic Release Inventory, the Alcoa Rockdale complex released 44,600 pounds of selenium on site: 2000 pounds in air emissions (stack and non-point fugitive) and the rest in "other landfills" (those not authorized to accept hazardous waste).

Selenium Compounds released from Alcoa Rockdale
TRI data, Years 1997-2000 (no data available for earlier years)
units in pounds

Year	on-site disposal: Other landfills (5.5.1B)	air emissions stack / non-point fugitive	total on-site release
2000	42,600	2000 / (1-10)	44,605
1999	26,500	2000 / (1-10)	28,505
1998	12,000	2000 / (1-10)	14,405
1997	20,000	(11-499) / (1-10)	20,225

78-27 Please see the responses to general comments PA-1, SW-1, and SW-5 in Sections 4.5.3 and 4.5.5, respectively, of the Final EIS relative to bottom ash, surface water monitoring, and TRI data. The USACE is considering additional monitoring requirements for the annual analysis of bottom ash used at the Three Oaks Mine as presented in Section 3.2.4.4 of the Final EIS. As clarification, low pH waters do not carry selenium; selenium is a metalloid that is soluble only in waters with a pH of 7.0 or greater. Also see the response to comment 78-6.

TXU Sandow electric plant shows these releases of selenium:

Selenium Compounds released from TXU Sandow
TRI data, Years 1998-2000 (no data available for earlier years)
units in pounds

Year	on-site disposal: Other landfills (5.5.1B)	air emissions stack / non-point fugitive	total on-site release
2000	7341	4322 / 0	11,663
1999	22,963	5454 / 0	28,417
1998	21,420	5100 / 0	26,520

The EPA TRI data shows these releases of selenium from all lignite-powered electrical plants in Texas for the year 2000:

Selenium Compounds released from Texas electrical generating plants including Alcoa Rockdale complex
TRI data, Year 2000
units in pounds

78-27

Facility	surface water discharges	Other landfills (5.5.1B)	air emissions: stack / non-point fugitive	total on-site release
TXU Monticello Titus Co	0 to Monticello Reservoir MONITORED	21,092	32,201 / 0	53,293
TXU Martin Lake Rusk Co	0 to Caney Creek Tributary MONITORED	31,098	11,233 / 0	42,331
TXU Big Brown Freestone Co	0 to Fairfield Lake MONITORED	11,031	19,033 / 0	30,064
TXU Sandow Milam Co	(does not have a TPDES permit for wastewater discharges; shares Alcoa's)	7341	4322 / 0	11,663
Alcoa Rockdale Milam Co	none reported; NOT MONITORED	42,600	2000 / (1-10)	44,600

Alcoa Rockdale is the largest source of selenium releases to "other landfills" in 2000. Unlined mine pits may be included under this definition of "other landfills." Alcoa Rockdale and TXU Sandow, when considered as one source, would be the largest single source of on-site selenium

release in Texas, for a lignite-fueled industrial complex. The Alcoa Rockdale complex is the only lignite powered electrical generating facility in Texas which reported releases of selenium but did not monitor surface water discharges to ensure that none was being released to receiving waters.

Three Oaks Mine is directly south of the existing Sandow Mine and Alcoa Rockdale complex, Selenium is also present there, both in the lignite and surrounding sediments.

From the DEIS, p. 3.8-17:

> "The highest concentration of selenium fund in a core sample at the Three Oaks Mine site was 30.2 ppm."

If bottom ash from Three Oaks lignite is handled as it is at Sandow, selenium will make its way into shallow groundwater and into area streams, either through seepage, runoff, or by being pumped out of the mine pits and discharged into receiving waters. The fact that sediments are acidic will compound the problem: low pH waters carry selenium in solution.

78-27

It would be appropriate for the EIS to include analyses of surface water discharges at Sandow Mine to determine if selenium is being released to area streams. Groundwater should also be tested for selenium in areas where bottom ash has been buried. It would be appropriate for the TPDES permit to require monitoring of discharges for selenium, and to prohibit the discharge of selenium to area streams.

As part of the EIS it would be appropriate for the Corps to require thorough, independent laboratory analyses on bottom ash from all of the facilities at the Alcoa Rockdale/TXU Sandow complex. The mine permit and TPDES permit should be amended to include any necessary provisions to ensure that groundwater and surface water discharges are protected from contamination by bottom ash or high-ash lignite. Since many Texas communities will rely on this portion of the Carrizo-Wilcox Aquifer to provide high quality drinking water in the years to come, it is reasonable to require safeguards in this permit to ensure that it is not contaminated by any of the practices proposed at the mine site.

Total Dissolved Solids (TDS)

From the DEIS, p. 3.2-83:

> "Total dissolved solids may increase in mine area discharges, depending on the nature and timing of groundwater contributions to the sediment pond/storm water management system. All discharges during the life of the mine would be treated as necessary to meet TPDES and RRC water quality standards."

78-28

Three Oaks Mine Permit Application utilizes mass balance estimates to project TDS levels in discharges under low flow and average flow conditions. The tables in the permit application which list projected TDS levels assume that all groundwater pumped will be discharged. Depressurization water (415 mg/l TDS) is used to dilute overburden groundwater (2500 mg/l TDS) and disturbed area runoff (1000 mg/l TDS) so that outfall discharges to Big Sandy Creek

78-28 Please see the response to general comment SW-2 in Section 4.5.5 of the Final EIS regarding TDS.

have mass balance total of <500 mg/l TDS (average flow periods) and <850 mg/l (low flow). Discharges to Middle Yegua Creek show mass balance totals of <460 mg/l (average flow) and <1000 (low flow). (Three Oaks Mine permit application Supplement 3, p. .146-62, 63)

From the DEIS, (p. 3.2-81-2):

> "Alcoa currently proposes to use collected storm water runoff from disturbed areas and dewatering water from the Three Oaks Mine for the approximately 950 to 1,300 acre-feet per year of projected water usage at the mine. Excess dewatering well water and disturbance area storm water runoff volumes would be discharged through the sediment pond system. Depressurization water would be discharged from the site without routing through the sediment ponds. Also it should be noted that runoff collected in the pits would be routed through the mine storm water control system (Alcoa 2001b [Volume 5])"

78-28 The DEIS states repeatedly that once delivery of the SAWS contract water begins in 2013, no depressurization water will be discharged to area streams. Discharges, then, will be made up of releases from sediment ponds, which would receive pit inflow, overburden dewatering waters from disturbed and undisturbed portions of the Calvert Bluff formation, and storm water runoff from disturbed areas.

It appears likely that TDS in discharges to area streams will be considerably higher than the effluent concentrations indicated in the mine permit application. It also appears likely that the majority of water discharged from the mine will have TDS levels far higher than ambient water quality in the receiving streams. Such high TDS water, if discharged to outfalls 002 and 003, will migrate into the Simsboro formation via Big Sandy Creek below Butler. The EIS should address this problem and require that the TPDES permit include stringent monitoring for TDS in all discharges, and prohibit the discharge of effluent with TDS levels which would lead to degradation of the receiving waters.

Receiving Streams Water Quality Criteria

From the DEIS, p. 3.2-63-65:

> "According to 30 TAC 307, two classified stream segments exist within the region. These include the Colorado River above La Grange (Segment 1434) and Somerville Lake (Segment 1212) in the Brazos River basin."

78-29

> "Site-specific water quality criteria as listed in 30 TAC 307 apply to these segments. Other streams, including East and Middle Yegua Creek, are unclassified. Water quality criteria for Segments 1434 and 1212 apply as default criteria for the non-designated stream segments in their respective basins. Table C-10 in Appendix C indicates surface water criteria for classified stream segments."

In Table C-10, Segment 1434 Colorado River criteria for chloride, sulfate and TDS are incorrect.

Corrected criteria (from LCRA website) are as follows:

78-29 Applicable water quality criteria for the default stream segments have been reviewed with TCEQ and are presented in revised tables in Appendix C of the Final EIS. The current criteria for TDS, chloride, and sulfate also are presented in the table below as presented in Chapter 307, Texas Water Quality Standards, effective April 30, 1997. Subsequently proposed criteria have not been approved by the USEPA for these stream segments and, therefore, are not legally in effect at this time (Davenport 2002).

Segment No.	Segment Name	Criteria (mg/l)		
		Chloride	Sulfate	TDS
1212	Somerville Lake	75	100	300
1434	Colorado River above La Grange	90	60	425

Further investigations of regional surface water quality attributes, baseline inventory characteristics, and Sandow Mine monitoring data have been conducted in response to this comment. Changes have been made to the EIS as a result. The baseline surface water quality characteristics are summarized in revised Table C-12 (see Appendix C of the Final EIS). These data represent more than 3 years of sampling in the area. Other data from the USGS and Brazos River Authority also were reviewed and are summarized on page 3.2-65 of the Final EIS. Data for streamflows that are not affected by Sandow Mine discharges frequently exceed the criteria for their respective segments by large amounts. In short, there are no significant differences in the overall levels of chloride, sulfate, or TDS between the Sandow Mine discharges and background conditions for Big Sandy Creek and its tributaries, Middle and West Yegua Creeks and their tributaries, and Brushy Creek. It is anticipated that discharges from the proposed Three Oaks Mine would not create surface water quality impacts beyond those already occurring in nearby streams from regional background factors. Therefore, no substantive changes to the surface water quality impact assessment in the EIS are required.

Letter 78 Continued

Chloride	90 mg/l
Sulfate	60 mg/l
TDS	425 mg/l

The same criteria for Segment 1212 Lake Somerville are shown correctly:

Chloride	100 mg/l
Sulfate	100 mg/l
TDS	400 mg/l

78-29 Under the Texas Clean Rivers Program, the Brazos River Authority has conducted water monitoring of the Yegua Creek watershed in several locations. Monitoring data are available at the Brazos River Authority website. One monitoring station is located on E. Yegua Creek at Highway 77, downstream from Sandow Mine discharge outfalls. Ten readings taken between March 1999 and January 2000 from this location show elevated levels of sulfate, ranging from 100.1 to 282.4 mg/l. No readings meet the standard.

Monitoring stations on Middle Yegua Creek, also downstream of Sandow Mine, show much lower sulfate readings for the same test dates, though they too often exceed the standard. Supporting documents for the DEIS (Hodges 2002) indicate that discharges from Sandow Mine to East Yegua Creek are much larger than to Middle Yegua Creek under the existing TPDES permit.

It would be appropriate for the Corps to investigate if discharges from Sandow Mine may be causing elevated levels of sulfate in East Yegua Creek. If so, it would be necessary to require provisions in the TPDES permit for Three Oaks Mine such that the same problem does not occur at Three Oaks. The receiving waters in the Colorado River watershed have more stringent standards for sulfate and chloride than those in the Brazos River watershed. These standards must be upheld, particularly since Big Sandy Creek recharges the Simsboro formation below Butler, and high sulfate levels in discharges could degrade this important groundwater resource.

Post-Mine Soil Chemistry

78-30 Rather than placing topsoil on reclaimed areas, Alcoa proposes to use "suitable growth media substitutes from overburden materials encountered during the mining process. These materials are proposed for use in place of native soil materials on the basis that they have better suitability for successful restoration of productive post-mining land uses." (DEIS p. 3.3-12)

From p. 3.3-13:

> "The use of more suitable growth media from overburden and interburden sources, as opposed to the native topsoil materials, is not anticipated to limit the success of the reclamation program and possibly may enhance it."

From p. 3.3-15:

Responses to Letter 78

78-30 As stated in Section 2.5.3.1 of the Draft EIS, the upper 4 feet of soil would be tested for suitability as a growth medium. Soil samples would be collected from a grid to a depth of 4 feet, and laboratory analyses for specific parameters as approved by RRC would be performed. In addition, growth media that does not meet the criteria for suitability would be replaced with topsoil substitutes or amendments would be added to the growth media to meet the criteria. Sections 10.0, Soils, and 18.0, Mitigation Monitoring, in the Mitigation Plan for the Three Oaks Mine (see Appendix E of the Final EIS) provide information regarding the use of growth media for reclamation and annual monitoring that would occur at the Three Oaks Mine to ensure reclamation success. Also see the response to general comment SW-1 in Section 4.5.5 of the Final EIS regarding water quality monitoring.

Because of concerns regarding water quality in reconstructed drainages on the mine site, additional mitigation has been recommended with respect to overburden characterization and implementation of the overburden selective handling program for the Proposed Action. Suitability criteria and the placement of suitable materials in the upper 4 feet of the reclaimed surface are required for compliance with RRC regulations. This selective handling approach has been demonstrated to facilitate successful reclamation and achieve regulatory compliance at the Sandow Mine, despite assertions of "serious problems" by the commenter. Further discussion of this issue, and the RRC internal memo alluded to in the comment, was undertaken with RRC in response to this comment (Caudle 2002a). The agency indicated that the memo was generated as a result of Phase II bond release inspections and that the "hot spots" seen in the field were small and isolated. RRC indicated that Alcoa was able to readily mitigate these areas by excavating unsuitable materials and replacing them with suitable materials. This corresponds to verification and mitigation (if needed) procedures in the proposed Three Oaks selective handling program. It should be noted that the concerns expressed in this memo have not resulted in Notices of Violation or other requests by RRC for corrective action or change of approach by Alcoa. Thus, it appears that the selective handling program, coupled with the monitoring of reclaimed areas and mitigation of isolated problem spots, is achieving the desired goals of effective reclamation and environmental protection. Similar results are expected at the proposed Three Oaks Mine.

Exceedences of some water quality constituents have occurred at the Sandow complex. These probably are not due to mining influences, however, and by themselves, they are not indicative of an acid drainage condition as the comment asserts. RRC permit requirements specific to selective handling and the additional recommended mitigation measure are expected to prevent exceedences from occurring at the Three Oaks site, as explained in responses to other comments. The monitoring program is further explained in revisions to the EIS, and would be implemented as an ongoing performance check. The expected impacts on runoff water quality and the proposed monitoring program are described in the EIS text for the Proposed Action.

"Based on reclamation procedures practiced at the existing Sandow Mine, it is anticipated that successful site stabilization and restoration of productive post-mining land uses would occur at the Three Oaks Mine as required by RRC regulations."

If reclamation results at Sandow are held up as the example of what will occur at Three Oaks, the Corps should thoroughly analyze conditions at Sandow. An internal RRC memo (June 29, 2001) concerning deficiencies in soil information provided for the Three Oaks Mine permit application indicates serious problems exist at Sandow:

"Staff stressed . . . that the overburden handling plan proposed for the Three Oaks application is similar to the plan approved for Alcoa's Sandow Mine, and further, that an apparent disconnect exists between Alcoa's approved handling plan and the results of reclamation, as evidenced by a large number of hot spots that have been treated and continue to be treated in postmine soils in the Sandow Mine. Staff indicated that Alcoa needs to get a better handle on what is going on with the chemistry of its postmine soils."

From the DEIS (p. 3.3-13):

"Two of the boreholes have no suitable material, if RRC criteria are rigorously applied. . . In some cases, trace metals (mostly selenium) and salt accumulations (as indicated by higher electrical conductivity and/or sodium adsorption ratio) restrict the suitability of materials. Acid-base conditions and net neutralization potential also are limiting in some zones."

78-30

From the DEIS, p. 3.8-17:

"The highest concentration of selenium fund in a core sample at the Three Oaks Mine site was 30.2 ppm."

From the June 29, 2001 RRC memo,

"Staff also reiterated its concern about selective use of core data."

The overburden handling plan included in the reclamation plan for Three Oaks Mine is by no means a "tried and true" process. The June 29 memo indicates a lack of confidence among RRC staff--either in the process or in Alcoa's ability to implement it at Sandow. The "disconnect" referred to by RRC staff suggests truly egregious mistakes one way or the other. The DEIS seems unaware that such problems exist at Sandow Mine, or that surface water discharges in the existing TPDES permit contain high levels of constituents which indicate acid mine drainage. Surface "hot spots" in reclaimed areas may also be the source of surface water degradation.

From the DEIS, p. 3.2-84:

"In combination with Alcoa's proposed selective handling program and TPDES provisions, no sources of selenium that could affect surface water quality are expected to occur."

Given the problems evident at Sandow Mine, absent any monitoring data for selenium in surface water discharges under the existing TPDES permit, and given that the proposed TPDES permit

Letter 78 Continued

for Three Oaks requires no monitoring of discharges for selenium, there is no basis for making this statement.

78-30 The EIS must address how the reclamation plan for Three Oaks will ensure that post-mine soil chemistry problems do not recur. If reclaimed lands do not revegetate due to inappropriate soil chemistry, erosion will be a serious, long-term problem, and degradation of runoff water quality is likely. Soil which cannot support vegetation may pose human health risks when particles become airborne; dust storms could be frequent and dangerous. Absent vegetation, fertilizer and soil amendments applied to such soils will be carried away in runoff, making their way into area streams. Presence of selenium in high concentrations has implications for surface and groundwater quality, particularly since permit area sediments tend to be acidic; low pH waters carry selenium in solution.

End Lakes

Alcoa proposes two large end lakes to be left as open water when mining at Three Oaks concludes. Clearly these end lakes will cut costs related to mine closure by removing the need to replace monumental quantities of fill into the last two deepest mine pits. However, the assertion that they will be high-quality wildlife habitat is not well supported. There are several reasons why these lakes may instead prove to be sources of surface water and shallow groundwater degradation, requiring long-term monitoring and possible mitigation.

78-31 The lakes will be in place permanently after closure of Three Oaks Mine. The lakes will be at the deepest part of the mine, so they will receive pit inflow from several thousand acres of reclaimed mine pits. They will also receive inflow from the adjacent, undisturbed Calvert Bluff formation, including exposed lignite seams. Water in contact with lignite will have a pH of just over 4--quite acidic--which accelerates the leaching out of all manner of constituents from the lignite and surrounding sediments. Such materials include, but are not limited to, arsenic, barium, manganese, selenium, mercury, and zanadium. They will also receive runoff from reclaimed areas, and they will receive rainfall directly. Their waters will commingle and communicate with waters in the surrounding disturbed and undisturbed sediments. The end lakes will discharge into area streams. Yet no long-term (many decades) monitoring provisions are included in the environmental permits related to the mine.

The end lakes will be bounded by reclaimed mine pits on the updip side and undisturbed Calvert Bluff formation on the downdip side. The Calvert Bluff formation, as described on p. 3.2-13,

> "is not a true aquifer. The Calvert Bluff is a formation that is predominately clay and silt with local sand channels and discontinuous sand-rich units."

On p. 3.2-15:

> "Water quality in silts, clays, and siltier sand zones have poorer water quality [sic] with TDS often exceeding 5,000 mg/l."

Responses to Letter 78

78-31 The end lake water quality is likely to be dominated by surface water runoff from the recontoured and revegetated site. Additional factors that are likely to have smaller roles in end lake water quality at the site include evaporation, recovered groundwater levels, the chemical nature of exposed geologic materials, the size and depth of the end lake, siltation, and the rate of water exchanges between groundwater and the end lakes. With selective handling of overburden, and the implementation of reclamation monitoring and revegetation standards, runoff water quality is expected to be suitable for end lake uses and downstream water quality considerations. Water exchange between the lakes and the Calvert Bluff Formation is anticipated to be limited due to the relatively low permeability of the formation. Based on preliminary analyses conducted to date, it is estimated that the average spoil groundwater contribution to a typical end lake at the Sandow Mine is approximately 10 acre-feet per year, with a range of 0 to 20 acre-feet per year. This compares to average annual runoff of approximately 160 acre-feet per year to an end lake at the Sandow Mine. This analysis indicates that spoil groundwater contributions would be small compared to the overall water balance of the end lake.

As described in the EIS, the end lakes are expected to spill in general correspondence to the existing occurrence of storm runoff in the adjacent channel system. No data are available from the Sandow Mine that represent conditions of recovered equilibrium for a reclaimed end lake. Because adjoining watersheds (uncontrolled by the proposed end lakes) also contribute to downstream surface waters, any effects of the proposed end lakes on water quantity or quality would diminish rapidly with distance downstream. Future conditions are expected to support designated water quality criteria and existing instream uses.

The DEIS relies on a 20-year-old masters' thesis (Pollock 1982) for information regarding the resaturation rate of reclaimed mine spoil at Sandow Mine. It is somewhat surprising that this is the only research available on the topic, considering the fact that the Sandow Mine has been in operation since the early 1950's. More puzzling is the statement that Pollock studied groundwater chemistry within an area which had been reclaimed 25 years earlier. Since surface mining and reclamation regulations did not come into existence until the 1970's, it is hard to imagine where Pollock would have found areas which had been reclaimed in the mid-1960's. A copy of the thesis was provided to Lost Pines GCD for review, but it did not include appendices, which made it difficult to evaluate.

Pollock's water quality data are interesting, particularly when compared to the information in the DEIS.

Pollock's three "good" test wells show these sulfate levels in the spoil aquifer: 749, 793 and 961 mg/l. The fourth well (which failed due to siltation and was therefore considered an unreliable data source) showed sulfate levels of 1019 mg/l.

The DEIS again contains internal inconsistencies. From p. 3.2-29, referring to Pollock's work: "Sulfate in the reclaimed spoil groundwater was approximately twice that found in the Calvert Bluff aquifer." Table C-5 contains different water quality data and shows undisturbed Calvert Bluff sulfate levels to range from 16 to 1148, and to average 308 mg/l at Sandow Mine. The same table shows sulfate levels in the "reclaimed spoil groundwater" to range from 240 to 2400 and to average 1,176 mg/l.

78-31

It is interesting to note that Pollock found manganese levels approximately four times that in the undisturbed Calvert Bluff, or 2.5 mg/l. Table C-5 shows average manganese levels in undisturbed Calvert Bluff at 0.67 mg/l and in reclaimed spoil groundwater at 4.15 mg/l.

Pollock found total iron to average 4.4 mg/l in spoil groundwater, whereas Table C-5 shows levels to average 4.86 mg/l in the undisturbed Calvert Bluff and 11.76 mg/l in spoil groundwater.

Pollock's data show TDS to average 3500 mg/l in spoil groundwater. Table C-5 shows undisturbed Calvert Bluff TDS ranging from 348 to 3800, averaging 487 mg/l. Reclaimed spoil groundwater shows TDS ranging from 1108 to 6570, and averaging 3925 mg/l.

The DEIS acknowledges (p. C-3) that groundwater in reclaimed spoil is considerably higher in sulfate, iron and TDS than groundwater in the sandier Calvert Bluff units. (It does not mention manganese in this regard.) It does not quantify how high these elevated levels may get. Pollock's data were collected twenty years ago. Surely the other water quality data presented in the DEIS are more recent. Recognizing that sampling error plays a large role in such studies, the possibility exists that these data indicate changes in spoil groundwater quality over the last twenty years, and that levels of sulfate, manganese iron, and TDS in spoil groundwater at Sandow have risen since Pollock's samples were collected, and may still be rising. It would be appropriate for the EIS to include studies to determine what the maximum concentrations would be for these constituents, and any others which could be anticipated to occur in spoil groundwater, given the chemistry of

the sediments, lignite, bottom ash and other materials which are expected to be integrated with spoil in the reclaimed mine pits. Permit provisions should be required to ensure that spoil groundwater does not degrade surface water or groundwater in the surrounding area, including by way of discharges from end lakes.

The DEIS acknowledges that the end lakes will bring about a net loss of surface water due to evaporative loss. From p. 3.2-73:

> "According to estimates of post-mining conditions, approximately 1,724 acre-feet per year are anticipated to be evaporated from the two end lakes (Alcoa 2001b [Volume5])."

From Table 3.18-1:

> "After recontouring and reclamation, surface water runoff would be decreased in Middle Yegua Creek and Big Sandy Creek as a result of topographic changes. Most of the retained flow would be lost by increased evaporation from the end lakes and other permanent impoundments developed as part of the wetlands mitigation efforts. As a result, the magnitude and duration of low flows and the duration and extent of perennial pools may decrease in the affected stream reaches. These flow restrictions and increased evaporation losses would be irreversible and irretrievable impacts to surface water resources."

78-31

From p. 3.2-71:

> "Following mine closure and final reclamation, drainage from approximately 9,800 acres would be routed through detention ponds and end lakes."

From p. 3.2-3:

> "Within the permit area, the average annual rainfall is approximately 33 inches."

From p. 3.2-4:

> "Over the consistent period of record from 1954 through 1998, the total free-water surface evaporation (e.g., from a lake) in the study area averaged approximately 52.8 inches per year."

The fact that the end lakes will receive water largely from runoff from reclaimed mine pits and from groundwater seepage through the spoil aquifer, and will be subject to evaporation rates which exceed annual precipitation, suggests that these water bodies may indeed face serious water quality problems in the future. High levels of TDS, selenium, manganese, iron, barium and possibly other constituents are likely.

78-32

The end lakes will discharge to the Big Sandy and Middle Yegua Creek drainages.
From the DEIS, p. 3.2-71:

> "The end lakes would be provided with spillways, and discharges to these downstream channels would occur fairly frequently."

From p. 2-52:

78-32 Please see the response to comment 78-31.

Letter 78 Continued

"Groundwater seepage and storm water runoff from the reclaimed area would be routed through the remaining ponds and end lakes to ultimately discharge to the Middle Yegua Creek and Big Sandy Creek drainages. These discharges would be through the outfall locations described in Section 2.5.1.1 plus an additional outfall to be permitted at a later date for discharge from the South End Lake. This additional outfall would discharge into an unnamed tributary of Big Sandy Creek at the south end of the lake. Post-mining discharges through these outfalls would be monitored for flow, settleable solids, and pH in accordance with the TPDES permit requirements for the operation."

78-32 No long-term monitoring provisions are presently included in any of the environmental permits to ensure that the water quality of discharges from these lakes (which will be permanent fixtures on the landscape) will not degrade the ambient quality of receiving streams. Since Big Sandy recharges the Simsboro formation below Butler, groundwater resources upon which several communities in Texas rely will be likewise threatened. The EIS must address this by imposing mandatory, long-term (many decades) water monitoring requirements, addressing a broad range of potential pollutants, including barium, manganese, selenium, iron, TDS and other materials present in the overburden, interburden, lignite and bottom ash, to ensure that such degradation of surface and groundwaters does not occur, and to ensure that human health, safety and the environment are adequately protected.

EIS Process Concerns

Lost Pines GCD submitted comments to the Corps in September 2001 regarding this EIS. When the DEIS was released in late August 2002, the District was not sent a copy. While the Corps did make the EIS available on line, it was not accessible to individuals who do not have up-to-date computer technology.

After several phone calls to the Fort Worth office, two copies finally arrived on September 6. This effectively cut short the District's time to review the document and prepare comments by two weeks.

78-33 On September 30, the District faxed to the Corps a request for a number of supporting documents. The fax letter included a reminder that comments were due October 22, and requested a prompt response. The Corps responded by phone the same day, quoting the price for photocopying, and indicating that the documents would be sent by week's end. When the documents had not arrived by early the following week, several phone calls between a Board Member and Corps staff suggested that the documents would arrive imminently. When they had not arrived by Friday October 11, the Board Member traveled to Fort Worth to pick them up in person. Upon arrival, it was learned that the documents had been photocopied but nobody in the office knew for whom or that there was any hurry in sending them out. Following several more phone calls between the Board Member and Corps staff, a two-week extension was granted in the comment period.

Responses to Letter 78

78-33 The USACE acknowledges and regrets the communication problems in providing the Lost Pines GCD with copies of the requested supporting documents. Relative to inconsistencies identified in comments on the Draft EIS, the USACE has resolved these inconsistencies in the Final EIS.

While the extra two weeks is appreciated, it is discouraging and disappointing that the public comment process was made so difficult in the meantime.

Reviewing the DEIS is a monumental undertaking. It appears that preparing the document was equally daunting, as it is poorly organized, rife with redundancy and full of internal inconsistencies. This makes it almost impossible to respond with meaningful comment. One cannot know if an incorrect statement in the DEIS is a proofreading error or a mistake in content.

Lost Pines GCD has presented the above comments in the spirit of ensuring that the Corps does a better job on the final EIS. Many issues need further study and analysis before the full magnitude of impacts from the proposed project can be estimated.

The final EIS should include or address the following:

78-33

- a true "no action alternative," (one without the SAWS contract)
- groundwater models for additional scenarios as detailed above
- accurate ambient (historic) pumpage at Sandow in groundwater models
- the Central Carrizo-Wilcox GAM
- the Dutton report
- consistency in conducting, describing, and reporting results of groundwater models
- the SAWS contract amounts, according to SAWS and in relation to Three Oaks pumpage
- GCD regulations relative to SAWS contract water wells
- impacts to Simsboro water quality from withdrawals and drawdowns
- remaining artesian head in Simsboro after Three Oaks Mine withdrawals
- impacts to the Colorado River from Simsboro drawdowns
- TPDES discharges from the power plants and smelter operation after Sandow Mine closes
- Simsboro formation water quality impacts from active and post-mine discharges or seepage
- acid or toxic mine water at Sandow Mine, or other identified causes of elevated levels of manganese and barium in surface water discharges
- selenium in spoil groundwater and surface water discharges at Sandow Mine
- water quality impacts from high ash lignite and ash disposal in mine pits
- RCRA regulations for solid waste relative to bottom ash disposal in mine pits
- analysis of Sandow Mine discharges relative to those projected for Three Oaks Mine
- prevention of degradation of receiving streams from mining and post-mining discharges
- post-mining soil chemistry at Sandow Mine and reclamation methods at Three Oaks Mine; long-term (many decades) manditory monitoring of groundwater surrounding reclaimed areas
- water quality in end lakes and their impact on surface water and groundwater; long-term (many decades) manditory monitoring of discharges
- enforcement mechanism for well mitigation by SAWS

Letter 79

SW
199900331

79

Public Comment

on

the U. S. Army Corps of Engineers'

Draft Environmental Impact Statement

for the proposed Three Oaks Mine

Bastrop and Lee Counties, Texas

Application Number 199900331

Section 404, Clean Water Act

Submitted by

Bastrop County Environmental Network, Inc.

November 5, 2002

NOV 05 2002

Letter 79 Continued

BCEN
Bastrop County Environmental Network

PO Box 1069
Bastrop, TX 78602
(512) 321-3535
bcen.org

November 4, 2002

Ms. Jennifer Walker, EIS Project Manager
U.S. Army Corps of Engineers
Fort Worth District
819 Taylor Street
P.O. Box 17300
Fort Worth, TX 76102-0300

Re: Public Comment on Three Oaks Mine Draft Environmental Impact Statement
Application Number 199900331
Section 404, Clean Water Act

Dear Ms. Walker,

These comments are submitted by the Bastrop County Environmental Network (BCEN) as public comment on the Draft Environmental Impact Statement for Three Oaks Mine in Bastrop and Lee Counties, Texas.

The comments consist of this letter and a bound document which was originally submitted to the Texas Natural Resource Conservation Commission (now Texas Commission on Environmental Quality, or TCEQ) as public comment on the TPDES permit for the same project. Having reviewed the Draft EIS, it is apparent that many of our concerns regarding the TPDES permit are relevant to the EIS as well.

We appreciate this opportunity to comment on the Draft EIS and hope that these comments assist your agency as it prepares the final EIS.

Sincerely,

Tom Dureka, President

Public Comment

on

Proposed TPDES Permit No. 04348

SOAH Dockett No. 582-02-3008

TNRCC Dockett No. 2002-0484-IWD

submitted by

Bastrop County Environmental Network, Inc. (BCEN)

June 27, 2002

Letter 79 Continued

BCEN
Bastrop County Environmental Network

PO Box 1069
Bastrop, TX 78602
(512) 321-3535
bcen.org

27 June, 2002

Office of the Chief Clerk
TNRCC, MC-105
P.O. Box 13087
Austin, TX 78711-3087

Re: SOAH Docket No. 582-02-3008
TNRCC Docket No. 2002-0484-IWD
Proposed TPDES Permit No. 04348

Dear Sir or Madam,

The following comments are submitted on behalf of the Bastrop County Environmental Network (BCEN). BCEN is an all-volunteer, member-supported 501(c)(3) advocacy group whose mission is to preserve and protect the environment in Bastrop County so that the high quality of life in this largely rural county is maintained.

Our comments include this cover letter and 2 attached documents:

1. BCEN draft position paper 2002-1, dated June 25, 2002: *Surface Water Impact of Lignite Mining Operations in North Central Bastrop and Western Lee Counties, Texas.*

2. Errors, Omissions, and Process Concerns: Accuracy and Completeness in Application and Agency Review for Proposed TPDES Permit No. 04348

A number of provisions should be included in this permit to ensure that the intent of the NPDES program--to ELIMINATE pollution--is upheld:

- Permit should require more frequent monitoring of effluent to ensure that water control and treatment facilities are adequate.

79-1

- Discharges should be monitored for all metals present in lignite (based on core analysis and other sampling methods) and for all pollutants listed in Alcoa Rockdale and TXU Sandow historical TRI data.

- Permit should limit or prohibit discharge of all metals and other pollutants present in lignite or listed in TRI data base in order to protect ever-diminishing water resources of Texas and the United States from toxic pollution.

Responses to Letter 79

79-1 Please see the response to general comment SW-1 in Section 4.5.5 of the Final EIS relative to the monitoring plan for surface water quantity and quality.

- Present permit is flow variable and intermittent, with no limitation on cumulative amount. Mass-based limits on non-rain events should limit the AMOUNT of pollutants being discharged over time.
- For depressurization water, permit must specify location and quantity of discharges.
- Permit must prohibit discharge of water from Lake Alcoa.
- Permit must prohibit discharge of water from Alcoa smelter complex or from TXU Sandow electrical generating plant.

79-1 Inclusion of the following provision in permit could actually enhance the quality of Big Sandy Creek:

In cooperation with Texas Parks and Wildlife Department, U.S. Fish and Wildlife Service and Lower Colorado River Authority, applicant could maintain a minimum flow to Big Sandy Creek on a constant basis. Flow amount would need to be adjusted over time, as cooperating agencies monitor conditions and make recommendations. Effluent water chemistry would need to meet appropriate standard for aquatic life present in Big Sandy Creek for entire stretch below discharge points. A constant base flow would greatly reduce dangers of stream scour, erosion, and sediment loading of the creek channel, and if managed properly, would reduce the frequency of non-storm event releases. This would enable Big Sandy Creek to continue serving as a tributary refuge for aquatic species in the event of a catastrophic event on the mainstem, and would enable aquatic life forms to more successfully weather high flow storm events.

Respectfully submitted,

Tom Dureka

Tom Dureka, President
Bastrop County Environmental Network

Surface Water Impact of Lignite Mining Operations in North Central Bastrop and Western Lee Counties Texas

BCEN Position Paper 2002-01
June 25, 2002

DRAFT

Bastrop County Environmental Network, Inc.
P.O. Box 1069 Bastrop, TX 78602
(512) 321-3535 bcen@bcen.org

Letter 79 Continued

DRAFT

PREFACE

The findings set forth in this paper are predicated upon two explicit assumptions:

First: A miner, any miner, will make a good-faith effort to comply with existing law and regulations and to conduct lignite mining operations in an environmentally responsible manner.

Second: The Surface Mining Division of the Railroad Commission of Texas (and other responsible regulatory bodies) will exercise alert and vigorous oversight and supervision of surface mining activities.

Therefore, it is assumed that such short and long-term degradation of surface water quality as will occur is the result of conflicting and competing imperatives:

- The intrinsic nature of the lignite extraction process.
- The economic imperative of producing six million tons per annum of lignite over a period of thirty years.
- The immutable hydrologic, geologic, and geographic character of the lignite mining setting.

We observe, without comment, that several large entities in the past have contemplated and rejected, presumably for economic and environmental reasons, development of the proposed mining area. Among them: City Public Service of San Antonio, Mountaineer Coal Development Co., Shell Mining Co., Phillips Coal Co., Morrison Knudsen Corporation, Lower Colorado River Authority.

A permit which imposes no limitation upon the volume of water discharged or upon the schedule of releases creates almost impossible obstacles to an objective assessment of surface water quality impacts. Accordingly, the uncertainties inherent in granting such a permit under the TPDES program ought to impose a correspondingly high level of "proof" of no degradation on the permit applicant.

DRAFT

U.S. Army Corps of Engineers (USACE) regulations provide:
"The person proposing to undertake mechanized land clearing, ditching, channelization or other excavation activity *bears the burden of demonstrating* that such activity would not destroy or degrade any area of waters of the United States" (Title 33, Chapter 11, Section 323(d)(3)(i), emphasis added).

Similarly, 40 CFR §131.12 provides:
"Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected."

Standards and practices protecting surface waters of the State of Texas should be no less stringent.

Finally, this is a work in progress, hence the DRAFT stamp on every page.
We invite and encourage comments and corrections to the array of facts and findings set forth in this position paper.

Tom Dureka, President BCEN
June 25, 2002

DRAFT

TABLE OF CONTENTS

Letter 79 Continued

DRAFT

Letter 79 Continued

DRAFT

APPENDIXES

Letter 79 Continued

DRAFT

DRAFT

I. The Project

A prospective miner proposes to conduct surface lignite mining activities on approximately 16,000 acres of land near the community of Butler in Bastrop and Lee Counties, Texas, lying within the Texas Claypan area of the Post Oak Savannah. Project is designed to produce approximately six million tons of Wilcox Formation lignite per year over a period of 25-30 years.[1]

A. Surface mining activities will include:

- haul road, service road and conveyer construction and operations
- reroute and construction of public roads
- construction of power lines
- construction and operation of maintenance facilities, warehouses, and offices
- lignite extraction to depths of 300 feet (estimated 5561 acres)
- mechanized land clearing and devegetation (estimated 10,000 acres--based on the assumption that buffer zones and similar areas will not be devegetated)
- lignite and soil storage
- lignite preparation (crushing and blending) activities
- reclamation activities

B. Water control and management features include:

- surface water diversions
- ditches and levees
- channels
- sedimentation ponds and other water impoundments
- pipelines
- conduits and culverts
- dewatering and depressurizing wells

II. The Proposal

It is proposed that surface water runoff from natural areas, devegetated and disturbed lands, spoil lands, pit drainage, and groundwater from dewatering and depressurizing wells be discharged into natural water courses in the vicinity.

The U.S. Army Corps of Engineers (USACE) has identified the following hydrologic consequences of the first five years of surface mining activities:

"The first five-year mine block would result in direct adverse impacts to approximately 9.87 acres of waters of the United States, including 4.12 acres of ephemeral and intermittent streams, 5.2 acres of open water ponds, and 0.55 acres of emergent wetlands. These impacts would result from the discharge of approximately 35,395 cubic yards of material." The USACE also found that the project would directly impact "greater than 3 acres of waters of the State or 1,500 linear feet of streams . . ."[2]

Accordingly, the USACE is preparing an Environmental Impact Statement (EIS) under the provisions of the National Environmental Policy Act (NEPA). Results of this study are anticipated in Summer, 2002. (Application Number: 199900331, July 20, 2001)

A prospective miner has requested a permit to discharge "treated industrial wastewater" to area streams under the federal Clean Water Act and Title 31, Texas Administrative Code.[3] This permit application, under the Texas Pollution Discharge Elimination System (TPDES Number 04348), is currently undergoing technical review by the Texas Natural Resource Conservation Commission (TNRCC). Permit would allow discharge of treated mine wastewater, intermittently and in unlimited quantities from the mine area at three points:

- Outfall 001 Via West Yegua Creek to Lake Sommerville
- Outfall 002 Via Big Sandy Creek to the Colorado River
- Outfall 003 Via "Chocolate Creek" and Big Sandy Creek to the Colorado River.

A permit to mine has been filed and public hearings have been held by the Railroad Commission of Texas.[4]

III. Scope of position paper

Because of the lack of information on West Yegua Creek and its watershed, it is not possible to adequately address water quality impacts in that basin. However, numerous studies by various agencies have been conducted in the Big Sandy Creek watershed. Among these are U.S. Geological Survey (USGS), U.S. Bureau of Land Management (BLM), U.S. Office of Surface Mining (OSM), Texas Railroad Commission (TRC), Texas Parks and Wildlife Department (TPWD), and Lower Colorado River Authority (LCRA). Information gained from these investigations and others assures that water quality impacts resulting from lignite surface mining in the basin can be objectively addressed.

Therefore, this position paper will:

- establish existing (ambient) water quality and screening criteria;
- address mining activities and discharges affecting water quality;
- identify impacts which will result in degradation of water quality.

IV. Ambient water quality

A. Big Sandy Creek

In response to the requirements of Public Law 95-81: ("an appropriate Federal or State agency [shall] provide to each mining permit applicant hydrologic information on the general area prior to mining."), USGS established and monitored several rainfall and stream-monitoring stations within and adjacent to the proposed mining area.[5] Two "periodic water quality and sediment stations with Automatic Sampler" on Big Sandy Creek are relevant to TPDES Permit No. 04348:

- 08159165 (Hydrologic Unit 12090301); "left bank at upstream side of left abutment of U.S. 290 bridge."
- 08159170 (Hydrologic Unit 12090301); "right bank at downstream side of bridge on State Highway 95."

Station 08159170 is located approximately 10.8 miles upstream of Big Sandy Creek confluence with mainstem of the Colorado River (Segment 1434, Bastrop Reach). Station 08159165 is located approximately 14.2 miles upstream of confluence with the Colorado River. Both stations are downstream of proposed outfalls 002 and 003, with station 08159165 being located immediately downstream of proposed Outfall 003 and station 08159170 approximately 3.2 miles further downstream.

1. USGS data

a. Total dissolved solids (TDS)

TDS is the sum of constituents dissolved--in milligrams per liter (mg/l).[6]

Station 08159165. Three samples, water year October 1980-September 1981:

Streamflow (cfs)	TDS (mg/l)
424	77
35	167
1.4	147

Station 08159170. Three samples, water year October 1980-September 1981:

Streamflow (cfs)	TDS (mg/l)
71	125
1.8	172
28	173

Letter 79 Continued

DRAFT

b. Total suspended solids (TSS)

TSS is the sum of suspended particulates, in milligrams per liter (mg/l). Four samples: low, base flow (2 samples), slightly elevated flow; water year 1979-1980.[7]

Station 08159165

Streamflow (cfs)	Suspended sediment (mg/l)	Sediment discharge (tons per day)
0.03	6.00	0.00
0.22	16.00	0.01
0.63	21.00	0.04
11.00	203.00	6.00

Station 08159170

Streamflow (cfs)	Suspended sediment (mg/l)	Sediment discharge (tons per day)
0.30	10.00	0.01
1.30	25.00	0.09
0.69	22.00	0.04
20.00	258.00	20.00

c. Biochemicals, pesticides, herbicides

Twenty-one listed pesticide analyses were conducted at the two sampling stations. Station 08159165 sampling detected no presence of pesticides or herbicides. At station 08159170, diazinon was detected in one sample (0.02 mg/l), and two samples indicated the presence of the herbicides 2,4D (0.54 mg/l and 0.12 mg/l) and 2,4,5-T (0.02 mg/l, each sample).[8]

d. Public Water Supply parameters

Iron was the prevalent constituent which approached or exceeded national drinking water standards. At the two stations, 5 of 15 samples exceeded secondary standards (300 µg/l). The fifteen samples averaged 315 µg/l. Fecal coliform was detected in all samples, as might be expected in an upper watershed which contains extensive livestock grazing and pasture lands. Levels fluctuated widely, from less than fifty, to several thousand colonies per one hundred milliliters (cols/100ml). Low levels correlated with periods of baseflow and high incidences were associated with flood events, especially during "first flush" conditions.

2. Additional water quality data - TPWD

In 1995 Texas Parks and Wildlife Department (TPWD) conducted an extensive study of Big Sandy Creek on the stretch between the two USGS sampling stations (see Appendix A). The survey included habitat characterization, water quality analysis, environmental contaminant analysis, and aquatic flora and fauna identification.[9]

a. Description of study

Seven transects were placed through the major habitat types and physiochemical data were collected and analyzed. Nineteen fish species were collected and eleven benthic macroinvertebrate taxa were identified. One fish species, Dusky Darter (*Percina sciera*), identified as "pollution intolerant" was cited as "generally indicative of high water quality." Additionally, "several pollution intolerant taxa [of benthic macroinvertebrates] were found in Big Sandy Creek." These included the "dominant taxa," *Hydrosychidae*. No samplings were conducted in the area of mainstream affect at confluence with the Colorado River. Additional fish species (among the 40-plus species in segment 1434) have been observed in this section of the creek.

b. Selected water quality parameters, Big Sandy Creek

TPWD measurements, April 1995 (140 samples):

PARAMETER	RANGE
Dissolved Oxygen	6.36-8.98 mg/l
pH	7.15-7.31
Specific conductivity	654-1243 µS/cm
Resistivity	08-1.2 Kohm/cm
Salinity	0-0.1 PPT
Total Dissolved Solids	0.5-0.8 g/l

See Appendix B.

The TPWD study found that "Big Sandy Creek had good water quality and habitat capable of supporting a diverse stream community."[10]

3. Summary: Big Sandy Creek ambient water quality

The Creek, if not quite "pristine," is remarkably free of the water quality degradation which modern incursion has visited upon many if not most, comparable Central Texas streams. It is essentially the same stream which Stephen Austin's "Little Colony" pioneers encountered more than 150 years ago.

Letter 79 Continued

DRAFT

- Its high quality waters support a wide range of fish species and other aquatic life. In its lower reaches it nurtures numerous species of federally protected water-dependent birds, including "endangered" and "threatened" bird and fish species. (See Appendices C and D.)
- Its virtually unpopulated riparian reaches sustain substantial terrestrial wildlife populations and provide safe-corridor between the river bottomlands and the uplands.
- In its lower reaches its high-quality, palatable water supports hundreds of head of livestock.
- Its heavily forested banks and margins deter flood flows and retard delivery of silt and sediment to the river.
- Classified as a "major tributary," it contributes a much-needed infusion of "good" water to the mainstem during low flow.
- For approximately six miles below Sayersville it recharges the Simsboro formation of the Carrizo-Wilcox Aquifer through streambed infiltration.[11]

B. Colorado River, Segment 1434, Bastrop Reach - Ambient water quality

Designated uses of this segment are contact recreation, exceptional aquatic life, and public water supply.[12] Other important uses are steam electric generation, agricultural irrigation, and livestock watering. Cooling water to support electric power generation at Lake Bastrop is withdrawn approximately one mile downstream of confluence with Big Sandy Creek.

The upstream limit of this segment is just above the FM 969 bridge at Utley. The downstream limit is near La Grange. The Bastrop Reach extends from the Webberville Reach (at FM 969 bridge) to the Smithville Reach (KM 401 to KM 337).

1. Designated uses and attainment

Numerical criteria to support designated uses are (annual averages):[13]

Total Dissolved Solids	425 mg/l
Chlorides	90 mg/l
Sulfates	60 mg/l
Dissolved Oxygen	6.0 mg/l
pH range	6.5 to 9.0
Fecal coliform (30-day mean)	200 cols/100ml

Water quality in this stretch of the river generally meets or exceeds use criteria.

February through April 1999 averages at Bastrop Gauge are as follows[14]:

Total Dissolved Solids	403.65 mg/l (based on electrical conductivity)
Chlorides	53.1 mg/l
Sulfates	51.6 mg/l
Dissolved Oxygen	7.86 mg/l
pH	7.9
Fecal coliform (30-day mean)	93 cols/100ml

2. "Concerns"

Based on a 10-year period of record, three rankings of levels of "concern" have been established:

1) "concern" -- more than 25% of readings exceed criteria;

2) "possible concern" -- 10% to 25% of readings exceed criteria;

3) "no detectable concern" -- fewer than 10% of readings exceed criteria.

In segment 1434, according to these ratings, five parameters (TDS, chlorides, sulfates, fecal coliform, metals) were designated "possible concern." Nutrients were considered of "concern." Three parameters (dissolved oxygen, temperature, and pH) were designated "no detectable concern."[15] TPWD has indicated that fecal coliform levels "immediately downstream of Bastrop and Smithville" periodically only "partially" support contact recreation.

3. Dedicated uses - Summary

a. Aquatic life value

Aquatic life values within the Colorado River basin are classified as: Limited; Intermediate; High; and Exceptional. The Bastrop segment is one of only two mainstem segments (out of 34 total) supporting the "Exceptional" classification. (Lake Travis is the other).[16] TPWD has designated the segment as "ecologically significant." This designation is based on the presence of a "threatened" fish species "and the stream segment's overall use."[17]

LCRA's 1992 Final Report *Instream Flow for the Lower Colorado River* determined:

"The Bastrop segment provides unique habitat for the blue sucker (*Cycleptus elongatus*). Populations of this species are depleted throughout its natural range and it is listed as threatened in the state of Texas. Although Tilton (1961) did not collect this species during the 1950's, the

Letter 79 Continued

DRAFT

Texas Parks and Wildlife Department reported *C. elongatus* as one of the most common fishes in the Colorado River between Webberville and Smithville in 1979 (Bounds and Butler 1980). The results of this study confirm the abundance of *C. elongatus* in the segment between Utley and Bastrop. Given the status of *C. elongatus* throughout most of its natural range, protection of this population should be a high priority."[18]

Note: Big Sandy Creek enters the Colorado River midway between Utley and Bastrop.

b. Contact recreation standards

Generally these standards are maintained, although aesthetic and water safety features are sometimes adversely affected by instream vegetative growth, (due to elevated nutrient loads), turbidity, and sediment load, largely related to localized flooding. Recreational use (tubing and canoeing) has greatly increased in recent years, largely attributable to activities and publicity generated by LCRA's Mark Rose Environmental Learning Center at McKinney Roughs. Increasingly crowded conditions and other constraints on popular area rivers such as the Guadalupe and San Marcos seem to have contributed to greater Colorado River recreational use. The presence of ten "sport" fish species in the segment has contributed to increased sport and subsistence fishing; as has the generally improved water quality in the segment in recent years, (attributed to enhanced wastewater treatment by the City of Austin and the imposition of more stringent effluent discharge standards).

c. Public Water Supply and drinking water standards

These are met (although there are no public surface water users within the reach). Possible withdrawals of water for San Antonio may focus more attention on PWS criteria in the future.

Selected drinking water quality parameters of interest and concern:

Nitrate (primary)	10.0 mg/l
Nitrite (primary)	1.0 mg/l
Selenium (primary)	0.05 mg/l
*Chloride (secondary)	250 mg/l
*Sulfate (secondary)	250 mg/l
*Total Dissolved Solids (secondary)	500 mg/l
Iron (secondary)	0.3 mg/l

*State criterion for Segment 1434, Colorado River is more stringent than secondary drinking water standard.

The above drinking water criteria are clearly placed at risk by mine discharges.

4. Summary: Segment 1434, Colorado River ambient water quality

While presently achieving water quality levels adequate for support of its dedicated uses, the segment/reach is balanced rather tenuously on the fine line between meeting and failing to meet established quality criteria in the future. The precarious situation as regards maintaining water quality in Segment 1434 may be illustrated: The Texas Clean Rivers Techhnical Report, October 1, 1996, ranks the 34 segments of the Colorado River. "With this method, a higher [smaller number] Segment Ranking Score (SRS) indicates a greater level of concern for water quality and a *greater need for action or attention* [emphasis added]." Segment 1434 ranks *third* highest. However, Segment 1428, immediately uupstream, ranks *first*. And Segment 1402, immediately downstream, ranks *second*. Parameters considered in this system are: basic water quality, nutrients, metals, organics, and total dissolved solids (TDS).

It is also relevant to note that all seven tributaries of the river immediately upstream of Segment 1434 have been identified under the Clean Water Act as failing to meet water quality standards. No tributaries in Segment 1434 have, thus far, been so designated.[19]

V. Soils

Soil characteristics, inasmuch as they greatly affect erosion, siltation and sedimentation, and the functioning of water control structures are perhaps even more important than rainfall in determining the impact of stripmining activities on surface water quality. The propensity of soil particles to respond to wind and water, to go into suspension or contribute to bedload, to become solutes, to support vegetation can be measured with existing technology.

A. Soil Series – Axtell/Crockett

Soil series in the proposed mine area belong to the Axtell-Crockett group.[20] Examination of the Soil Survey verifies that these two soil associations comprise 75-90% of the proposed mine land area.

1. Hydrologic soil classification

Hydrologic soil groups indicate the runoff potential of rainfall. Four major soil groups are used. The classifications are based on intake of water at the end of storms of long duration that occur after prior wetting and opportunity for swelling and without the protective effects of vegetation.[21]

These soils are classified Hydrologic Group D. "Group D: (high runoff potential) . . . soils have a very slow infiltration rate when thoroughly wetted. They are mostly clay soils that have a high swelling potential, soils that have a permanent high water table, soils that have a claypan or clay

Letter 79 Continued

DRAFT

layer at or near the surface, and soils that are shallow over nearly impervious material. They have a very slow rate of water transmission."[22]

2. Engineering properties

Selected Engineering Properties-Limitations[23]
(mine water control features)

Soil Series	Terraces and diversions	Embankments, dikes and levees	Ponds	Roads	Road fill
Axtell (AfC/AfC2)	"erodes easily"	moderate	slight	severe	"poor"
Crockett (CsC2)	"erodes easily" "percs slowly"	moderate	slight	severe	"poor"

"Slight" means that soil properties are generally favorable for the rated use, or in other words, limitations are minor and easily overcome.
"Moderate" means that some soil properties are unfavorable but can be overcome or modified by special planning and design.
"Severe" means that soil properties are so unfavorable and so difficult to correct or overcome as to require major soil reclamation, special design, or intensive maintenance.

3. Soil characteristics[24]

The important characteristic of the surface horizon in the Axtell and Crockett soil series is the sandy or loamy texture. The major mineral component in this horizon has a particle size of 0.42-0.074 millimeter. According to Russell[25], this size fraction requires the lowest velocity of flowing water (less than 40 centimeters per second) to initiate critical erosion (see Appendix L). The important subsoil characteristic is the claypan, a massive, dense layer in the Axtell, Crockett, and Demona soils. (Note: small, scattered areas of Demona series soils occur in the proposed mine area.) This claypan has negative effects on soil structure and soil density.

4. Soil composition and texture

USGS recorded the following sediment constituents (17 samples).[26]

Station 08159165, immediately downstream of proposed outfall 003 (7 samples):
Sand - 10%; Silt - 11%; Clay - 79%.

Station 08159170, approximately 3.2 miles downstream of proposed outfall 003 (3 samples):
Sand - 14%; Silt - 22%; Clay - 64%

U.S. Soil Conservation Service and the American Geophysical Union have adopted the following particle classifications (millimeters in diameter):[27]

Sand: 0.062-2.00
Silt: 0.004-0.062
Clay: 0.0024-0.004

Texas Department of Transportation (TXDOT) has tested Crockett soils with the following results:[28]

Percentage (by weight) Passing Sieve

soil depth (inches)	2.0 mm sieve	0.42 mm	0.074 mm	fraction smaller than 0.02 mm
0-8	98%	95%	57%	10%
8-18	100%	99%	87%	55%
18-36	99%	94%	84%	48%
36-50	100%	95%	72%	39%

At its two gauging stations, USGS recorded the following suspended sediment data:[29]

Percentage (by weight) Passing Sieve

Station	.008 mm sieve	.016 mm	.031 mm
08159165 (4 samples)	67-90%	70-93%	84-95%
08159170 (3 samples)	43-69%	52-83%	65-85%

B. Erodibility

1. Erosion potential

Bastrop County Soil Survey rates the two soil series as follows:[30]

Axtell:	AfC	moderate	Crockett:	CCsC2	severe
	AfC2	severe		CCsD3	severe

U.S. Soil Conservation Service assigns a soil erodibility index for the Axtell and Crockett series (0-8 inches) of .43 (K factor).[31]

2. Sheet and rill erosion

The proposed mine is located within the Texas Claypan area.[32] The portion of the mine within the Colorado River basin possesses an ambient sheet and rill weighted average erosion rate loss for "cropland" of 4.48 tons per acre per year. This exceeds the ambient soil loss rate of any of the other the twelve "land-resource" areas within the river basin. Ambient erosion rates by land use in the proposed mining area, in tons per acre per year (TPA), are as follows:

Pasture	Range	Forest
1.27	1.49	0.12

These three land uses constitute more than 95% of the current land uses involved in the proposed mine area.

3. Universal Soil Loss Equation

Prospective miner's computation for "recent disturbed lands":[33]

slope	length	R	K	L/S	C	P	yield TPA
3.5%	250	285	0.32	0.77	0.604	1	42 tons

R-factor assumed by applicant is based on Austin database.
K-factor assumed by applicant is based on soil types at Big Brown Mine.
C-factor assumed by applicant is not explained.

Independent computation, based on site values, derived from site-specific information, based on Bastrop County Soil Survey, supported by referenced publications and expert opinion:

slope	length	R	K	L/S	C	P	yield TPA
3.5%	250	325	0.47	0.77	1	1	117 tons

R-factor is derived from map titled: "Average Annual Values of the Factor R."[34] (See Appendix G).

"OSM agrees with the K-factors [0.43-0.47] and with the sheet and rill erosion factors by TDWR [Texas Department of Water Resources, now Texas Water Development Board]".[35]

"The C-factor is 1.0 because there is no protective cover and the surface is freshly disturbed."[36]

4. Gully, streambank, streambed and floodplain erosion

Data are not at hand which would permit a supportable estimate of soil erosion from these sources. Texas Department of Water Resources estimates ambient losses at the rate of 1.79 tons per acre per year for the Colorado River lower basin.[37] U.S. Bureau of Land Management (BLM) estimated an increased streamflow in Big Sandy Creek (resulting from a modeled mining operation roughly one-half of that proposed) of 24 cubic feet per second.[38] BLM noted: "Clearly, 24 cfs is a high base flow for a creek of this size [Big Sandy]." Further: "If mean velocities are above 2.0-2.5 feet per second (fps), significant erosion of an alluvial sand channel would probably occur." BLM concluded: "It is difficult to assess the potential for sediment delivery and channel erosion in Big Sandy Creek without performing intensive field surveys and sampling." (Note: BLM plotted discharge to the creek at a point between USGS gauges 08159165 and 08159170. See Appendix F).

C. Sedimentation[39]

Sediment yield is attributable to a number of factors. Ambient yields may be established by direct measurement or by application of several models and equations. Moreover, sediment constituents may vary significantly, depending upon the mineral and organic components and milieu from which the particulates were originally dislodged. A watershed's sediment yield is the sum of erosional soil losses from sheet and rill and gully, streambank, streambed, and floodplain sources. Rainfall volume and intensity, infiltration, topography and soil characteristics are significant variables. Within the proposed mine area, the only available sources from which sediment yield may be inferred are the measurements and projections of USGS.[40] At gauge 08159165, suspended sediment discharge ranged from "virtually zero at low flow to 3,260 tons per day during flood runoff." At gauge 08159170, sediment discharge "ranged from 0.01 ton per day during low flow to 1.670 tons per day during flood runoff." (See Appendix H).

VI. Factors affecting surface water quality

Two factors essentially determine the severity of surface mining impacts on Big Sandy Creek and the Colorado River:

- **Quality** of discharged waters
- **Volume** of discharged waters

Almost as important is the **schedule** of discharge releases or curtailment (up-ramping and down-ramping). Considerations contributing to these salient factors are: rainfall, soil characteristics of the O and A horizons, characteristics of overburden and spoil, and quality of groundwater.

Letter 79 Continued

DRAFT

Before a detailed analysis of efforts and probability of success of measures to prevent surface water degradation can be undertaken, on-the-ground conditions which affect impact must be established.

A. Rainfall

1. Annual distribution

Average annual rainfall is slightly more than 36 inches.[41] Thus in a normal rainfall year over three acre-feet of water will fall on each acre of the mine area. (An acre-foot is approximately 326,000 gallons.) This amounts to nearly one million gallons of water per acre per year which must be dealt with: routed, impounded, perhaps treated, and discharged.

This rainfall is not evenly distributed throughout the year, as data developed by USGS depict:

Monthly Rainfall Distribution (inches)

Wateryear/ Gauge	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1980												
BS-3	1.55	0.57	3.11	2.27	2.25	4.05	2.61	6.41	0.64	0.36	1.44	3.32
BS-4	1.35	0.90	3.23	2.58	1.98	3.38	2.13	6.55	0.64	0.07	0.26	2.74
1981												
BS-3	2.21	3.05	0.77	1.78	1.07	3.87	0.80	7.80	11.36	2.63	1.70	2.31
BS-4	2.09	2.66	0.93	2.02	0.98	4.20	1.06	6.61	11.06	2.47	1.64	1.72

Gauge BS-3 is located adjacent to and upstream of proposed Three Oaks mine area; gauge BS-4 is located within proposed mine area.

Wateryear 1980 was a "dry" year. Wateryear 1981 recorded about three inches above an "average" year. Monthly rainfall ranges from less than one inch to more than eleven inches.

Drought-like spells and common short rainy periods further exacerbate the ranges of rainfall mal-distribution.

Daily rainfall ranges (inches):

DRAFT

Wateryear/ Gauge	Total rainfall	Daily totals	Number of days	% of total
1980				
BS-3	28.58	13.14	9	46
BS-4	25.81	11.57	7	45
1981				
BS-3	39.35	21.47	12	55
BS-4	37.44	21.90	11	58

During a two-year period of record of two raingauges in the area of the proposed mine, approximately half of the total rainfall occurred on only 9 days in rainyear 1980, and on only 12 days in rainyear 1981.[42]

2. Antecedent rainfall

When the effect of antecedent rainfall is considered, the impact of rainfall events of comparable duration and intensity on runoff and erosion is magnified. USGS states: "Because the shrink-swell potential, permeability, and moisture content of these soils (Axtell-Crockett associations) vary greatly in relation to antecedent precipitation, the runoff characteristics for a given storm can vary accordingly. After prolonged dry periods, the absorption characteristics of the soils can be very large, and thus the surface runoff can be small. During wet periods, water storage capacity of the soils is greatly decreased, and thus surface runoff may be relatively large."

USGS data illustrate this effect:

Rainfall Event	rainfall*	Antecedent rainfall**	runoff	maximum discharge
1	3.26 inches	0.41 inches	0.49 inches	989 cfs ***
2	2.58 inches	2.70 inches	0.66 inches	984 cfs
01	3.05 inches	0.40 inches	0.43 inches	1340 cfs ****
02	2.58 inches	2.70 inches	0.74 inches	1720 cfs

*the 10-year/24-hour event is 7 inches
**preceding two weeks
***at streamgauge 08159165, near proposed outfall 003
****at streamgauge 08159170, downstream of proposed mining area

DRAFT

Although rainfall for Event 1 was actually *more* than for Event 2, runoff and discharges were significantly *less* than for Event 2. USGS concludes: "The effects of antecedent rainfall as exemplified by these storms are typical for other storms in the drainage area of Big Sandy Creek."

It is significant to observe that antecedent rainfall (Event 2) may have filled sedimentation ponds and loaded diversion ditches and water control features prior to the event. For comparison of runoff discharges noted, U.S. Bureau of Land Management (BLM) has noted: "As stated in the EIS, the two-year flood on Big Sandy Creek near Elgin (USGS station 08159170) has been roughly estimated at 3100 cfs."[43] (Note: the two-year flood has a 50% probability of occurring in any given year).

3. Rainfall intensity

Rainfall intensity is also important in the assessment of surface water quantity and quality. The Big Sandy Creek basin is characterized by short, heavy downpours occurring during events of more moderate rainfall. Intensity in excess of 3 inches per hour is not uncommon. In the above example of antecedent rainfall effect, the following intensities were recorded (in inches per time period indicated)[44]:

Gauge	15-minute interval	30-minute	60-minute
08195165	0.30 inches	0.54 inches	1.04 inches
08195165	0.49	0.71	0.98
08195170	0.41	0.73	1.13
08195170	0.71	1.08	1.15

For comparison, a storm of June 11-14, 1981 yielded the following intensities:

15-minute	30-minute	60-minute
1.35 inches	2.51 inches	3.76 inches

The U.S. Soil Conservation Service (now Natural Resource Conservation Service) has assigned values for rainfall intensity/erosion indices for various areas of Texas. The "Rainfall Factor, R-Factor" is a measure of the average annual erosive force of rainfall. For the proposed mine area a value of approximately 325 has been assigned.[45] (See Appendix G).

VII. Water quality impacts

A. Total dissolved solids (TDS)

79-2

The TDS load in Big Sandy Creek will be tripled. The prospective miner's "Active Mining Surface Water Quality Mass Balance Estimates" at average and low-flow conditions project the following TDS discharge levels:[46]

79-2 The TDS load in Big Sandy Creek is not expected to be tripled or otherwise significantly affected. Baseline water quality data for Big Sandy Creek are presented in Appendix C of the Final EIS for purposes of comparison. Mass balance scenarios for TDS are shown in Section 146 of the RRC permit application and its supplements. These indicate that anticipated TDS concentrations from the proposed mine typically would be well within the range of ambient conditions as indicated by USGS, BRA, and baseline sampling programs. The proposed monitoring programs (RRC and TPDES) are further explained in the response to general comment SW-1 in Section 4.5.5 and Appendix C of the Final EIS. Also see the response to general comment SW-2 in Section 4.5.5 of the Final EIS relative to total dissolved solids.

DRAFT

flow	overburden (groundwater dewatering)	underburden (groundwater depressurizing)	disturbed areas (runoff)	baseline contributing areas
Low	2500 mg/l	415 mg/l	1000 mg/l	508 mg/l
Average	2500 mg/l	415 mg/l	1000 mg/l	300 mg/l

After "mass balance total" computations, miner projects the following totals:

Mining year	TDS Low flow (mg/l)	TDS Average flow (mg/l)
1	911	447
2	773	439
3	549	386
4	1019	567
5	504	393

These projections are skewed in several respects:

79-2 • "Good water" (underburden) pumping is included for mine years 1-3, when other projections in the mine permit application indicate that depressurization pumping will not be necessary until mining year 4 and later.

- "Bad water" (overburden) pumping will precede mining by an unreported length of time.
- TDS load of runoff from "mining disturbed" areas is suspect, and unsupported. If, as miner proposes, final leveling of spoil piles is deferred until 30 months after lignite removal, with revegetation further postponed "to the next growing season," several hundreds of acres of additional "mining disturbed" land will contribute high-TDS water (1000 mg/l).
- It is absurd to propose that "low flow" and "average flow" conditions will occur concurrently or simultaneously with "mine years."

TDS load for "overburden groundwater" is optimistically low. Whereas, the "overburden groundwater" estimated average value of 2500 mg/l for TDS is substantial, it is probably too low, especially for seepage water pumped from the mine pit.

Investigations were conducted by SAI Inc. for U.S. Office of Surface Mining (OSM) on adjacent Camp Swift and reviewed by Underground Resource Management Inc. and HSI Consultants. Conclusion by U.R.M.: "The solute transport model by Konikow and Bredenhoeft has been in use for several years and is widely accepted. The selection [by SAI Inc.] of the input water-

DRAF

quality parameters, *10 mg/l Fe and 6000 mg/l TDS* are of the same order of magnitude as the only data we have been able to develop"[47] (emphasis added).

Further, prospective miner reports effluent concentrations in Discharge Permit Application Technical Report (page B-3): "Total Dissolved Solids"-- average 920 mg/l; maximum 1530 mg/l.

79-2

In any event, not under "worst case," but optimum projections, the surface mining operations will result in exceedance, by several orders of magnitude, of the ambient TDS load of less than 200 mg/l for Big Sandy Creek and will exceed the minimum standard for dedicated uses in Segment 1434 of the Colorado River (425 mg/l). (See Appendix J). Degradation of surface water quality in "Waters of the State," and the United States will demonstrably occur.

B. Mine discharge water

1. Acid mine water drainage

While acid mine water drainage has not been a widespread problem in Texas, especially in East Texas where sandy soils predominate, site-specific conditions in the clay soils within the proposed mine area present a threat to surface water quality. Acidity in mine water generally develops when iron disulfides (FeS_2, pyrites) and other sulfur-content minerals are oxidized during overburden handling, disposition, and reclamation.

2. Soil and ovberburden acidity

Mine area soils and overburden are acidic[48]:

79-3

Axtell	Horizon	Depth (inches)	pH
	A	0-8	5.6-6.5
	A	8-48	4.5-6.5
	A	48-76	5.6-8.4
	B	8-18	"strongly acidic"
	B	18-35	"medium acid"
	B	35-48	"medium acid"
	C	48-60	"medium acid"
	C	60-76	"slightly acid"
Crockett	A	0-4	6.1-6.5
	A	4-60	6.1-8.4
	B	4-12	"medium acid"
	B	12-28	"slightly acid"
	B	28-40	"mildly alkaline"
	C	40-50	"mildly alkaline"
	C	50-60	"moderately alkaline"

79-3 The generally adverse characteristics of the native soil materials (topsoil and subsoil) are a major reason for the proposed use of selective handling in the Proposed Action. Suitable overburden and interburden would provide comparable or better characteristics with respect to erosion and plant growth. Extensive characterization of these proposed materials has been completed and presented. Additional mitigation has been recommended with regard to monitoring and management of materials in reconstructed drainages. Selective handling practices at Sandow have been successful. It must be kept in mind that Alcoa would be bonded to perform successful reclamation, and that monitoring and inspections would be required as part of the RRC bond release program.

With respect to acid-mine drainage, it is true that zones having acid-generating potential or marginal acid-neutralization capability exist at the Three Oaks site. On the other hand, large areas of highly suitable materials, with excess neutralization potential, also exist. Additional discussions with regional experts on this topic (Feagley 2003; Rhodes 2003; and Hossner 2003) indicate that acid-mine drainage is rare in the Gulf Coast lignite belt overall, and essentially non-existent where selective handling has been properly carried out. This is the expected condition at the proposed Three Oaks Mine.

Please see the response to general comment SW-6 in Section 4.5.5 of the Final EIS relative to selective handling of overburden in relation to surface water quality.

Note: pH 7.0 is neutral.
Strongly acid -- pH 5.1/5.5
Medium acid -- pH 5.6/6.0
Slightly acid -- pH 6.1/6.5
Mildly alkaline -- pH 7.4/7.8
Moderately alkaline -- pH 7.9/8.4

3. Acid neutralization capacity

Overburden has marginal acid-neutralization capacity (USGS Core C-13)[49]:

Stratum depth/thickness (feet)	Pyritic sulfur (%)	Neutralization potential
15-30	.42	<1.0
30-45	.34	1.5
75-90	.39	2.0
90-105	.46	1.5
105-120	.33	1.0
135-150	.36	2.0
210-225	.23	1.0
234-239	.11	2.0

79-3

Note: USGS Core C-13. Total core is 255 feet. Remaining core possesses low deficiency or excess neutralizers.

The neutralization capacity is based on pyritic content compared to calcium carbonate ($CaCO_3$) equivalents in a given amount of soil/overburden. This "acid-base account" is identified by EPA as "potentially acid-producing" if there is a net deficiency of 5 tons of calcium carbonate equivalents to one thousand tons of overburden. (EPA 600/2-78-054).[50]

The crucial aspect of the process of acid mine water development is the exposure of pyrites to oxygen.[51] Oxygen is transported to pyrite in quantities sufficient to produce hydrogen ion concentrations, oxidation of ferrous ion, hydrolysis, and precipitation of ferric hydroxide. "Convective transport" of oxygen by wind supplies adequate amounts of oxygen to spoil and soil surfaces to initiate the reaction. Wind currents against spoil piles and steep slopes supply sufficient pressures to impel oxygen into the soil mass. The process can also be initiated and maintained by "molecular diffusion." This occurs when gradients exist in oxygen and pyrite concentrations at various points within the spoil. Rainfall on spoil and acidic soils can mobilize acids and erode surfaces, thus exposing additional pyritic material.

DRAFT

4. Lignite sulfur content

Lignite in the proposed mine area contains sulfur in varying amounts. From USGS Core C-13[52]:

Seam depth (feet below surface)	thickness (feet)	% sulfur
91.5-93.1	1.6	0.76
135.2-136.2	1.0	0.66
184.5-190.7	6.2*	0.98
223.3-225.7	2.4	1.48
225.7-230.5	4.8*	1.62
234.5-239.0	4.5*	1.30

*probable target seams, based on thickness
Average percent sulfur for target seams: 1.3%

Lignite enters the postmining/reclamation environment in two ways:

- In spoil directly from unrecovered mined "stringers."

79-3

- Airborne fugitive particles from crushers, blenders, stockpiles, and other lignite handling and transportation activities.

Further, the miner's proposal to defer "final leveling" of spoils until 30 months after lignite removal, with revegetation to begin "in the first [succeeding] growing season" after leveling[53] will expose excessive areas of "spoil" to pyritic reaction (with consequent opportunity for low pH water to develop). Moreover, the miner's plans to surface seven service roads with up to six inches of bottom ash from the Rockdale smelter[54] will introduce large quantities of heavy-metal-rich materials into the mine area. Heavy metal content is "enriched" during combustion. Miner proposes over one mile of service road construction in the Outfall 003 watershed. Six inches of bottom ash spread over 6,000 feet of 30-feet wide service roads in the Outfall 003 watershed amounts to 3,333 cubic yards of ash. Calvert Bluff lignite ash typically contains 5.1% Ferric Oxide (Fe_2O_3); 9.8% Sulfur Trioxide (SO_3)and 16.2% alumina (Al_2O_3), among other constituents, according to Texas Municipal Power Agency analyses (TMPA File No. 13290.45.1000).

Acid mine water drainage will result in increases in total dissolved solids and in the mobilization of heavy metals and trace elements. If, as is probable, eventual infiltration to and resaturation of shallow aquifers in the mine area occurs, Big Sandy Creek may be adversely impacted since base flow in the creek is provided by inflow from shallow aquifers.

DRAFT

79-3 Minimum pH in discharge permit may not be achieved. The fact that existing overburden water is highly mineralized (2500 mg/l) may be indicative that the water acidification process is now taking place in near-surface "oxidized" lignite seams.

C. Dissolved Oxygen (BOD)

Prospective miner asserts that there will be no impact on dissolved oxygen in receiving streams.[55] Dissolved oxygen percentage is the parameter of water quality which most accurately indicates the health of a freshwater body. Big Sandy Creek dissolved oxygen levels are excellent (6.36-8.98 mg/l). Thirteen samples reflected an average percentage of 7.19 mg/l.

Segment 1434, Colorado River, dissolved oxygen standard is 6.00% (an increase from previous criterion of 5.0%). Dissolved oxygen levels in this segment have historically met criteria, though the revised standard decreases the margin by which standards are met[56] (see Appendix I).

A number of physical hydraulic conditions and biological processes determine dissolved oxygen content:

- atmospheric reaeration
- carbonaceous decay
- sediment oxygen demand
- nitrogenous decay
- photosynthesis-respiration

79-4

1. Atmospheric reaeration

Atmospheric reaeration which replenishes oxygen in a stream is generally a function of stream geometry, substrate, velocity, and flow depth. The presence of waterfalls, riffles, runs and turbulence, in general, is decisive. The discharge of large amounts of water during surface mining can be expected to enhance reaeration significantly, at least initially. However, alteration of stream physiography, sedimentation, and siltation, and substrate change may reduce long-term benefits. This effect has not been studied or quantified (in Big Sandy Creek).

2. Carbonaceous decay

Biological oxygen demand, (BOD), is a measure of organic material in the water and the amount of oxygen consumed by bacteria while decomposing the carbonaceous fraction of organic matter under aerobic conditions. This process begins rapidly when oxygen levels are high and proceeds slowly when oxygen concentrations are low. Demand is routinely sampled and reported on the basis of measurements of total organic constituent decomposed within a given time period. Oxidation is usually 60%-70% complete within five days (hence, BOD_5). The ambient BOD for Big Sandy Creek (17 samples) is a modest 3.64. Ranges are 1.3 to 6.6, reflecting temperature and flow variations.

79-4 Water quality constituents discharged to native stream channels at Three Oaks Mine would create no noticeable effects on downstream water quality and would be monitored in accordance with approved permits. The same conclusions were independently reached by RRC in its cumulative hydrologic impact assessment (CHIA) for the project. With regard to dissolved oxygen, Sandow Mine monitoring data indicate that the current Brazos River standard (5.0 mg/l) for Segment 1212 is met or exceeded approximately 92 percent of the time. When compared to the current Colorado River Segment 1434 standard (6.0 mg/l), the Sandow Mine would have met this more stringent requirement approximately 81 percent of the time. Most of the times when that standard would not have been met at Sandow, sampled values were under by less than 1.0 mg/l. So dissolved oxygen is not likely to be a compliance problem at the Three Oaks Mine. If it became a problem, it could easily be remedied by increased aeration of the discharge.

In contrast, baseline data for all the streams downgradient of the Three Oaks site show that flows met the appropriate dissolved oxygen standards only approximately 60 percent of the time. More specifically, for several monitoring points along Colorado River tributaries (i.e., the Big Sandy system), the dissolved oxygen standard was only attained between 30 and 53 percent of the time in the existing pre-mining condition.

Surface mining activities will greatly increase the amount of oxygen-demanding materials in Big Sandy Creek. New sources will include those produced by mechanized devegetation, including disruption and dispersal of the "O" soil horizon, which consists of "decaying plant residues." Within the proposed mine area, especially in riparian areas, forested areas, and those in "old-field succession," the accumulated depth of such organic materials is considerable. Mechanized clearing will also disturb and disperse the "A" soil horizon, "the mineral horizon at the surface or just below the 'O' horizon. This horizon is the one in which living organisms are most active and therefore is marked by the accumulation of humus."[57] (Humus is the well-decomposed, more or less stable part of the organic matter in mineral soils.")

Fugitive airborne lignite particles and lignite contained in mine spoils will also contribute to the organic constituent in runoff. Moreover, trees, brush, roots and other vegetation are commonly bulldozed into large piles and burned as "agricultural residue" during land clearing. This process creates large mass concentrations of carbonaceous materials, finely divided, which will be transported in runoff. None of these mobilized new sources is amenable to interception and removal from runoff departing the mine area.

3. Sediment oxygen demand

79-4 Another source of oxygen loss is sediment and silt accumulation within the watercourse. Bottom deposits, in the form of settled organics along the streambed, accumulate when velocities are not high enough to maintain particles in suspension. Surface mining will introduce new and expanded sources of organic matter from streambank and floodplain erosion caused by increased streamflow during dewatering and depressurization discharges. Bank erosion especially, since it delivers organic materials directly to the conveyance in the form of vegetation and detrital matter, (often from bank collapse) is a source of large additional organic load.

4. Nitrogenous decay

Various nitrogen compounds also exert an oxygen demand on receiving streams. Nitrification is accomplished by specific bacteria species:

Ammonia nitrate (NH_3-N) plus *Nitrosomas* yields Nitrite nitrogen (NO_2-N) plus *Nitrobacter* yields nitrate-nitrogen. The original organic nitrogen is converted to ammonia nitrogen by hydrolysis (no oxygen is consumed in this conversion).

Ambient total nitrite/nitrate level in Big Sandy Creek (based on 25 samples) is 0.24 mg/l, well within the state criteria of 1.0 mg/l and the primary and secondary drinking water standards of 10.0 mg/l.

Analysis of oxygen-demand processes is further complicated by temperature and the existence of plant growth. Planktonic (free floating) algae, attached algae, and rooted plants (macrophytes)

can contribute or remove oxygen in the photosynthesis/respiration cycle. These processes are not considered in this paper.

5. "New source" nitrogen - mining and reclamation

Mining and reclamation will introduce massive amounts of new-source nitrogen into the Big Sandy Creek watershed. Experiments and experience in reclamation of stripmined lands in adjacent Milam County and elsewhere in Texas have demonstrated that applications of large amounts of nitrogen are necessary to establish and maintain vegetative cover adequate for the control of erosion.

Studies have shown that 224 kg of nitrogen per hectare (200 pounds per acre) are required to obtain and maintain optimum vegetative coverage.[58] Nitrogen application must be continued at varying rates during and after initial coastal bermudagrass establishment: "Elimination of annual fertilizer treatments causes decreased plant vigor and growth, with resultant loss of plant cover." Prospective miner proposes maintenance amounts of 40-60 pounds per acre for Coastal and Tifton 85 bermudagrass varieties. (Parenthetically, it is noted that phosphorus will also be required. "The recommended rate of application to achieve maximum grass yields and satisfactory legume yields is approximately 119 pounds per acre per year.")

79-4 Approximately 500 acres of land will be "in some state of disturbance at any given time."[59] Mine permit application indicates "mining disturbed areas" in Big Sandy Creek watershed will increase from 274 acres in Year 1 to 922 acres in Year 5 (for Big Sandy and Yegua watersheds combined, from 479 acres to 2238)[60]. As mining and reclamation proceed, increasing areas will require application of nitrogen (vegetation establishment and maintenance) on successively, cumulatively larger, acreages. Several hundreds of acres will be in some stage of revegetation during the mine permit term. Tens of tons of nitrogen fertilizers will, over time, be required for establishment and maintenance of erosion-controlling vegetative cover. Development of "hot spots," "slick-offs," surface crusting, excessive rill and gully development, drought, etc., requiring recultivation, replanting and refertilizing may add significantly to nitrogen applications.

The percentage of up-take of applied nitrogen by vegetation varies widely with rainfall (amounts and intensities), temperature, soil condition, and method of application. A significant fraction of nitrogen is lost to dispersion and runoff. The growing season for bermudagrass varieties in the proposed mine area generally extends from March to November, but is frequently curtailed by early and late frosts. Nitrogen up-take is virtually zero during the dormant season. The recommended planting (sprigging) season is "mid to late spring." The horticultural requirements of bermudagrass are such as to necessitate that fertilizer applications be concentrated within a 5-month period (April-August). Applicant projects 21 inches of rain during the "growing" season. Soil Conservation Service Annual Erosion Index reflects that approximately 35% of annual erosion occurs in the sixty days following May 1.[61] (See Appendix K).

DRAFT

U.S. Department of Agriculture estimates "that 15-54% of total applied nutrients reach surface waters. The amount of nitrogen reaching surface water ranges from 6.03 pounds to 8.4 pounds per acre [per year]."[62] Also, "Data suggest that with the usage of NH_4NO_3 (ammonium nitrate) as a nitrogen source, approximately 50% of the applied nitrogen [on stripmined lands] is unavailable to plants because of the low use efficiency of the added NH_{4+} (ammonium)."[63] (Note: ammonium nitrate, 35-0-0, is the common bermuda grass fertilizer used in Bastrop County.)

Employing minimum figures (6.03 pounds per acre, multiplied by 500 acres) it appears that at least 1.5 tons per year of nitrogen will be delivered to Big Sandy Creek, of which a significant fraction will be discharged to the Colorado River.

6. Nutrient loads, Segment 1434 Colorado River

Nutrient loads (nitrogen and phosphorus), which have been related to proliferation of noxious weeds and low dissolved oxygen levels downstream of Austin, are a continuing cause for concern.[64] Screening criteria have been established as follows:

79-4

Nutrient	screening criteria
nitrate-nitrogen	1.0 mg/l
nitrate + nitrite	1.0 mg/l
ammonia-nitrogen	1.0 mg/l
organic nitrogen	2.0 mg/l
total nitrogen	3.0 mg/l
dissolved phosphorus	0.2 mg/l
orthophosphate-phosphorus	0.2 mg/l
total phosphorus	0.2 mg/l

Sampling of 34 Colorado River segments and 10 unclassified tributaries reveals that 36% of samples were of "concern" and an additional number, 39% were rated "possible concern" for nutrients. Segment 1434 is rated of "concern."

7. Intermittent discharge effect

During surface mining, cessation of groundwater pumping and/or periodic decreases and increases in stream flow (down-ramping and up-ramping) can have serious impacts on dissolved oxygen levels and devastating effects on aquatic communities. Flowing stretches can become stagnant or semi-stagnant pools, subject to solar heating and accelerated BOD activity. On the other hand, abrupt up-ramping can erode fish spawning and shelter features, dislodge vegetation, increase drastic short-term changes in substrate, temperature, and turbidity.[65]

In flowing water, one of the most important abiotic factors is temperature. Many fish have a wide temperature tolerance and can survive in intermittent pools, (e.g., yellow bullhead, *Ameirus natalis*, longear sunfish). However, sudden changes without adequate time to acclimate may be lethal. Also, current velocity often determines the occurrence and distribution of species. Temperature and current velocity affect oxygen, limiting survival to fishes which have a high tolerance for fluctuating oxygen levels.

At present, Big Sandy Creek is well within established criteria for dissolved oxygen, nitrogen and phosphorus. Degradation, to some extent the unavoidable result of surface mining, is imminent.

D. Metals and Minerals

1. Iron

Low pH water is associated with the development of high levels of dissolved iron (ferric and ferrous). Secondary drinking water criterion for iron is 0.3 mg/l. Big Sandy Creek ambient dissolved iron level is 0.315 mg/l.[66] Prospective miner reports "representative" effluent values of 0.17 mg/l "average" and 0.56 mg/l "maximum" discharge (12 samples).[67]

79-4

However, prospective miner's quarterly reports to RCT reveal average discharge levels from depressurization wells, "underburden," of 5.59 mg/l (15 samples); at depths of 17.40 feet to 216.20 feet, miner reports groundwater sample analyses of 8.9 mg/l (30 samples).[68] Permissible discharge levels in mining regulations are 7.0 mg/l (maximum), and 3.5 mg/l (30 day average).

2. Selenium

Selenium toxicity has become a problem in certain lakes and water bodies in the lignite mining and burning areas of East Texas (e.g., Lake Monticello).[69] Selenium is present in mine area overburden and lignite. In six lignite samples analyzed by USGS, mean content was 1.13 µg/g.[70] Ranges were 0.84 to 1.7 µg/g. Fifteen overburden intervals averaged 1.07 µg/g.

Drinking water standards for selenium (primary and secondary) are 0.05 mg/l. EPA lists among "sources of contaminant," "discharges from mines."[71]

U.S. Fish and Wildlife Service has stated that freshwater organisms should "never" be subjected to selenium concentrations in excess of 0.26 ppm [parts per million] "at any time."[72] The potential for long-range adverse impact to health, water, and wildlife resources lies in selenium's toxic cumulative effect.[73] USFWS has reported that input of less than .02 ppm accumulated to more than 9.00 ppm in water within a ten-year period.[74]

Studies at Fairfield and Rockdale revealed that "Selenium concentrations (10-51 ppb) [10-51 µg/l] were observed to exceed maximum U.S. EPA drinking water standards in many instances.[75]

Selenium principally enters the environment in three ways: stack emissions, disposed bottom ash, and solute in low pH waters. Uncontrolled emisson rates from a power plant burning 3.1 million tons of coal annually have been estimated to be 0.88 pounds per hour (cited in EPRI Publication FP-1145; publication not at hand).[76] Aquatic levels of selenium are generally proportional to selenium concentrations in the soil. It can accumulate in vegetation without noticeable effect on plants, but can cause disease in browsing and grazing animals ("blind staggers").[77]

Elevated levels of selenium may exist within the Big Sandy Creek watershed and Segment 1434, Colorado River. Established Texas Criteria to protect freshwater aquatic life: acute level, 20 µg/l; chronic level, 5 µg/l. Selenium levels to protect human consumption of fish: 10 µg/l.[78]

Samples of "stunted" largemouth bass, a predator species, collected by TPWD on Camp Swift revealed selenium levels in whole fish tissue of 0.55 to 0.48 mg/kg, with mean of 0.49 mg/kg (five specimens)[79]. A reading of 0.79 mg/l was recorded on September 17, 1998 at the Bastrop sampling station. A paucity of data does not permit a conclusion as to the chronic levels of selenium in Segment 1434, Colorado River. However, it is noted that metals are a "possible concern" in the segment.[80]

79-4 According to USFWS, selenium in high concentrations results in increased fish and aquatic invertebrate mortality. The "exceptional aquatic life" designated use of Segment 1434, Colorado River may be jeopardized.

3. Sulfates

Big Sandy Creek ambient load of sulfates is 39.8 mg/l (16 samples, as SO_4).[81] Criterion for Segment 1434, Colorado River is 60 mg/l.[82] Prospective miner reports to TNRCC "representative effluent" values of 355 mg/l (average) discharge to 621 mg/l (maximum) discharge.[83] Prospective miner quarterly reports to RCT indicate average sulfate levels in test wells at Sandow Mine as 370 mg/l (30 samples, randomly selected).[84]

4. Chlorides

Big Sandy Creek ambient level of chlorides is 51.4 mg/l (16 samples).[85] Screening criterion for chloride in Segment 1434, Colorado River is 90 mg/l.[86] Prospective miner has reported to TNRCC "representative" effluent levels of chlorides as 128 mg/l (average), and 208 mg/l (maximum).[87] Prospective miner's quarterly report to RCT reflects chloride level of 249 mg/l (30 samples, randomly selected).[88]

Elevated levels of sulfates and chlorides will seriously impact water quality in receiving streams. Not only will established criteria be exceeded in the Colorado River, but secondary drinking water standards for each of these pollutants (250 mg/l) may also be violated. Further, levels of these minerals are presently of "possible concern" in Segment 1434, Colorado River.

DRAFT

Parenthetically, it must be observed that Yegua Creek, the receiving stream of Sandow Mine discharge has experienced "water quality problems," i.e., "average chloride and sulfate levels are elevated."[89] Sommerville Lake has TDS levels above criterion.[90] Such elevated chloride and sulfate levels apparently occur nowhere else in the Brazos River basin.

E. Total Suspended Solids (TSS)

That enormous quantities of suspended solids will be produced by the proposed surface mining activities in the Big Sandy Creek watershed is beyond dispute. Erodible soils, high clay content, runoff volume, denuded slopes, and seriously disturbed lands; all of these present textbook conditions for generation of suspended solids.

For the purpose of analysis here, Sedimentation Pond 3 (SP-3), Outfall 003 and contributing watershed are considered.

1. Outfall 003

Outfall 003 is the principal discharge point to Big Sandy Creek.

79-4

Ambient (non-flood) levels of suspended solids at USGS station 08195165, near Outfall 003, attest to the potential for development of immense quantities of TSS: e.g., 10 cubic feet per second (cfs) of stream flow results in over six tons per day of suspended sediment discharge.[91] (See Appendix H).

The conservative USGS states: "Large sediment yields may result from surface mining: suspended sediments in the lignite mining area are predominantly clay."[92]

The imminent threat of catastrophic degradation of water quality exists. The challenge facing a prospective miner is: can these exceedingly large quantities of mobilized, suspended, and base-loaded particulates be controlled within existing standards prior to discharge to waters of the state of Texas?

2. Characteristics of SP-3:[93]

Feature	Altitude - feet above mean sea level - msl	Capacity - acre feet
Incised base	441	--
Operating surface	455	60.48*
Spillway	459	84.35
Top of embankment	465	130.60**
Toe of embankment	455	--

*appears to be overstated: Depth 9 ft X Area 5.59 acres = 50.31 acre feet.
**since emergency spillway is 6 feet below top of embankment, this figure is irrelevant.

DRAFT

Note also: There is an apparent discrepancy between miner's reports of surface acreages at "normal pool" of 5.59 acres (Discharge Permit Application, Exhibit F.), and 5.68 acres at "normal operating" level (Mine Permit Application, p. 148-18). The difference is insignificant--less than one acre-foot of capacity. However, both figures project pond capacity significantly less than 60.48 acre feet reported by miner.

Standing water from bottom to spillway is 18 feet. However, normal operating depth is 9 feet. Surface area at "normal" operating level is 5.68 acres.

"Normal" operation levels will be "managed" by steel underdrain and gate system. Pond will receive principal input from diversions DD-4 and DD-6.[94]

Modeled detention time is 14.73 hours. Modeled sediment loading is 4.2 acre feet. Total watershed is 825 acres. "Immediate" watershed is 362 acres.

3. Suspended and baseload sediment input to SP-3[95]

79-4

This is based upon analyses of prospective miner and BCEN, utilizing the Universal Soil Loss Equation (previously discussed, see **V. Soils**).

Prospective miner -- 42 tons per acre per year (TPA); BCEN -- 117 TPA.

U.S. Ecological Services conversion factor (1709 tons of sediment equal 1 acre foot) shows the following sediment yield:

miner: 825 acres X 42 TPA = 20.3 acre feet per year
BCEN: 825 acres X 117 TPA = 56.5 acre feet per year

miner: 362 acres X 42 TPA = 8.8 acre feet per year
BCEN: 362 acres X 117 TPA = 24.2 acre feet per year

4. Estimated surface water runoff (cf/s)[96]

Miner's estimated surface water runoff, based upon a "mining disturbed" area of 274 acres:
0.09 cu ft/second = 324 cf/hour = 7776 cf/day = 2,838,240 cf/year = 65.157 acre feet per year
(43,560 cubic feet equal 1 acre foot)

BCEN alternative computation, based on rainfall/runoff data (USGS estimate of 6% runoff of *ambient* watershed rainfall):

DRAFT

79-4

Total watershed:	"Immediate" watershed:
825 acres	362 acres
X 36 inches (average annual rainfall)	X 36 inches
= 2475 acre feet annual rainfall in watershed	= 1086 acre feet
X 6% runoff, yields:	X 6% runoff, yields:
148.50 acre feet per year	65.16 acre feet per year

(Note: miner's computation for runoff is for mining-disturbed lands; BCEN's is for ambient land uses. Water quality will differ significantly. Sediment load for miner's estimated runoff will be several times larger than BCEN's computations.)

5. Estimated dewatering pumpage

Miner estimates dewatering pumpage as follows:[97]

	cu ft/second	cu ft/day	cu ft/year	acre ft/year
mine year 1	0.11	9504	3,468,960	79.636
mine permit average	0.41	35,424	12,929,760	296.826

F. Characteristics of contributing watershed

The SP-3 contributing watershed can hardly be considered "normal," in terms of Texas surface mining experience. It contains over *four miles* of designated floodplain, and overall *six miles* of intermittent tributaries. (See Appendix A). Diversions DD-4 and DD-6 intersect and are partially located within the designated floodplain. (Parenthetically, SP-3 itself appears to be within the designated floodplain.)[98]

1. Additional input from disturbed lands

79-5

The prospective miner's plan to defer final grading and the start of revegetation activities until *30 months after coal removal*[99] will result in an increase of "unvegetated" acreage throughout the life of the mine. Projected "unvegetated" area of 60.3 acres (USLE soil loss of 42 TPA, with an incremental loss of 2540 tons/year projected) substantially understates sediment loading to SP-3. Additionally, the mining of "Contingency Area 3," which seems highly likely, will contribute additional "disturbed" acreage to the watershed during the initial 5-year permit term. This area consists of approximately 369 acres.

This analysis does not consider input of depressurization water to SP-3. Miner projects average discharge of 2125 gallons per minute in the first year, ramping up to 6750 gallons per minute for mine years 21-25[100]; however, it was not possible to assign a percentage of this volume to a particular sedimentation pond. Runoff and sediment from undisturbed, "baseline" lands is not considered.

79-5 The EIS clearly identifies the procedures used to design the proposed mine water control system in accordance with applicable regulations. The text clearly indicates that precipitation conditions were considered, antecedent moisture was considered, and that treatment for TSS would be conducted as necessary to comply with regulations and permit requirements. Review of Sandow Mine monitoring data indicates that discharges have TSS concentrations largely in line with ambient conditions in the region. This also is expected at the proposed Three Oaks Mine. At Sandow, for example, only 6 percent of the samples have TSS concentrations above 200 mg/l (this value is approximated from baseline maxima shown in Table C-12 in Appendix C of the Final EIS). The rest of the values reflected regional average conditions. Table C-12 in Appendix C of the Final EIS provides additional TSS baseline information. Keeping the runoff from undisturbed lands away from the mine site is depicted in EIS figures and text and has been taken into account in the design efforts. As described in the Draft EIS, depressurization water would not be routed into the sediment ponds. In addition, the RRC has extensively reviewed the application materials, required additional information where necessary, and approved the proposed approach. Furthermore, RRC conducted its own internal review of potential cumulative hydrologic effects, and made determinations largely in line with what was independently concluded in the Draft EIS. The mine water control system also has been reviewed by TCEQ as part of the TPDES permit process.

"Normal" rainfall volume and distribution was assumed. Flooding was not considered. The rainfall for a 10-year, 24-hour event was not approached (7 inches). Antecedent precipitation was not considered.

2. Characteristics of sediment

Analysis of sediment by USGS at station 08159165, immediately downstream of Outfall 003 is, as noted earlier, 79% clay, 11% silt, and 10% sand.[101] The rate at which particles will settle under optimum conditions, still water at 10° centigrade, has been established[102]:

Constituent	Time required to settle one foot
coarse sand	3 seconds
fine sand	38 seconds
silt	33 minutes
clay particles	230 days
colloidal particles	63 years

Soil particles generally possess a specific gravity of 2.65. Particles are also assumed to be spherical. However, coal particles, which may be flat (and have a specific gravity of 1.29 to 1.32), will have lower settling velocities.[103]

79-5

3. SP-3: load versus capacity

Accepting, for the purposes of illustration, prospective miner's most optimistic projections of water and sediment load, the pond's inadequacies are demonstrable.

Water input (as shown above) is as follows.
Dewatering pumpage (mine year 1 projections): 79.636 acre feet per year
Rainfall runoff: 65.157 acre feet per year
Sediment load: 8.8 acre feet per year (modeled sediment load of 4.2 acre feet)

Sediment summary (using miner's data):
362 acres X 42 TPA yields 15,204 tons per year
clay fraction: 12,011 tons (79%)
silt fraction: 1,672 tons (11%)
sand fraction: 1,520 tons (10%)

Time for sediment constituents to settle to the bottom (9 feet):
clay fraction -- 2070 days
silt fraction -- 297 minutes
sand fraction (combined coarse and fine) -- 184 seconds

From the above it is obvious that a "plug" of typical sediment delivered to the pond will not settle in an appreciable amount within the modeled detention time of 14.73 hours; or, indeed, within a 5-year mine permit.

4. Sediment pond efficiency

Of course, it is unrealistic to expect that any sedimentation pond will be 100% effective in trapping sediment. "Short-circuiting," "dead areas," jet action of high velocity water input during rainfall events, wave and wind action, impoundment configuration, outlet design features were not considered. "Each of these factors could decrease the efficiency of the pond and would have to be compensated by increasing the surface area . . . Studies on actual versus theoretical retention times have shown ponds to be from 30-70 percent efficient, *with most falling in the lower category* [emphasis added]."[104]

An EPA study of nine "better constructed ponds," during baseflow and during a rainfall event concluded "that approximately one-half did not meet EPA effluent guidelines."[105] In Texas, a review of permitted effluent discharges "indicated that Total Suspended Solids (TSS) is the parameter most frequently exceeding standards. Values reported indicate that each permitted discharge has been out of compliance for TSS 50% of the time or more often."[106]

79-5 Similarly, Texas A&M Studies for U.S. Bureau of Mines at four Texas surface mines reported that TSS discharged at each ". . . were above the maximum allowable values in Office of Surface Mining regulations."[107]

The above analysis of SP-3, Outfall 003 and contributing watershed did not consider the propensity of exceedingly small clay particles to enter into colloidal suspension. Nor did it consider the ameliorative effects, admittedly extremely site specific and variable, of the employment of polymer, coagulant, or other chemicals to enhance settlement times and pond efficiencies.

5. Additional TSS discharges to Big Sandy Creek

It will be observed that in terms of total delivery of TSS to Big Sandy Creek, Outfall 003 is one of two delivery points.[108] Outfall 002, SP-2, contributes directly to the creek.

6. Uncontrolled discharges

Furthermore, in excess of 700 acres within the southeastern portion of the mine area discharges (non-point) water **without control** into an unnamed tributary which merges with "Chocolate Creek" immediately **prior** to confluence with Big Sandy Creek. Whether or not surface mining activities (e.g., service road construction, etc.) will take place during the mine permit term is unknown. Mine plan indicates "Future Diversion CD-3/DD-8" will be constructed within this area. Uncontrolled discharge from this extensive mine area and unnamed tributary concurrently

DRAFT

with discharge from Outfall 003 will seriously and adversely affect stream velocity and volume of TSS and suspended sediment delivered to Big Sandy Creek.

7. Downstream erosion

Emergency spillway for SP-3 is at 459 feet msl. Bed of "Chocolate Creek" at pond discharge point is approximately 445 feet msl--a vertical fall of 14 feet from SP-3.[109] Miner models a peak discharge of 268.34 cfs during the 10-year, 24-hour flood event. This results in a velocity of 7.74 feet per second. The channel from SP-3 to "Chocolate Creek" (approximately 250 feet) is modeled to transport water at a peak velocity of 19.4 ft/sec during the 10-year event. The miner proposed: "A grouted rip-rap-lined channel will be provided . . . to further reduce the velocity of the channel to non-erosive levels. . . . The rock will be extended until velocities fall below those considered erosive."[110] The distance from SP-3 to the mine permit boundary at Outfall 003 is approximately 500 feet. It is problematical whether these high velocity flows can be reduced to "non-erosive" levels by the measures proposed prior to discharge from the permit boundary at Outfall 003. Generally, fine sand "will move with a mean water velocity of about 1.5 feet per second (fps). If mean velocities are above 2.0-2.5 fps, significant erosion of an alluvial sand channel would probably occur. Finer material (e.g., clay particles) of course, would erode at lower velocities."[111] Forty centimeters per second, or less, may initiate critical erosion. (See Appendix L).

79-5

Obviously, should, as it appears probable, velocities of discharged water not be reduced below approximately 2.0 to 2.5 fps (during baseflow and rainfall events) at Outfall 003, large quantities of total suspended solids will be discharged to "Chocolate Creek" and Big Sandy Creek. The situation is compounded by the fact that proposed construction takes place within the designated floodplain.

An objective review of factors presented above with due consideration given to the load of contaminated water and sediment delivered to sedimentation pond, SP-3; the pond's capacity; the nature of the contributing watershed; and the characteristics of delivered sediment must conclude that compliance with effluent discharge standards (70 mg/l maximum; 35 mg/l average) is a possibility so remote as to be non-existent.

VIII. Conclusion

Following is a table which depicts fifteen commonly measured parameters of water quality. These are subject to regulation by state and federal agencies on the basis of health concerns, wildlife and commercial animal impacts, palatability, and aesthetic considerations.

79-6

A certain degree of subjectivity was necessarily present in assigning degradation levels. Objectivity was achieved by considering the following factors:

79-6 Please see the responses to general comments SW-1 and SW-2 in Section 4.5.5 of the Final EIS and responses to comments 76-44, 76-45, 78-29, 79-2, and 79-4. Additional data review has included periodic water quality summaries for the Lower Colorado River from LCRA, monitoring data and annual watershed reports from the Brazos River Authority, USGS water quality data, regional water quality assessments from Texas A&M University and the Natural Resources Conservation Service, the Cumulative Hydrologic Impact Assessment (CHIA) from RRC, and extensive water quality data from the Three Oaks Mine baseline and Sandow Mine monitoring programs. The potential impacts to existing surface water quality and related beneficial uses are anticipated to be minimal as a result of the proposed Three Oaks Mine in either the Brazos River or the Lower Colorado River watersheds.

In addition, further explanations of TCEQ and RRC permit compliance and monitoring requirements have been added to the Final EIS. The proposed surface water control infrastructure and water management approach have also been described in the text. These factors would assist in minimizing potential impacts from the project on surface water quality and related uses.

DRAFT

- Literature survey of lignite mining impacts
- Present levels of the ambient pollutants and probable effect of increased mining-induced levels (even though small, e.g., iron).
- Projected impacts by experts and responsible governmental entities.
- Review of reports and records at various state and federal agencies.
- Consultation with persons knowledgeable in the areas of surface mining and reclamation and surface water quality.
- Finally, the validity of the data presented in this paper is enhanced and assured by the expertise and reputation of the sources relied upon.

The unavoidable conclusion, based upon the evidence-buttressed findings of this paper, is that surface mining of lignite at the location proposed and in accordance with the plans proposed will result in significant and impermissible degradation of water quality in waters of the state of Texas and of the United States.

79-6

Summary Table: Projected Degradation of Big Sandy Creek, Colorado River and Public Water Supply from proposed discharges under proposed mine plan

Parameter	**Big Sandy Creek** (ambient levels)	**Colorado River** (state screening levels)	**Public Water Supply** (federal drinking water standards)
Suspended solids	C	*	*
Turbidity	C	*	***
Dissolved solids	C	C	L (secondary)
Chlorides	C	C	L (secondary)
Sulfates	C	C	L (secondary)
Nutrients	C	*	*
Nitrates	C	L	L(primary)
Nitrites	C	L	L (primary)
Microbes	U	U	***
Metals	L	**	**
Iron	L	L	L (secondary)
Selenium	L	L	L (primary)
Dissolved Oxygen	L	U	*
pH	L	U	U
Temperature	U	U	U

C: Degradation Certain
L: Degradation Likely
U: Degradation Unlikely

* standard/screening level not established
** established for specific metals
*** after-treatment standards

NOTES

[1] U.S. Army Corps of Engineers, "Public Notice," Application for Permit (Section 404, Clean Water Act), Number 19990031, July 20, 2001.
Hereafter, "CWA 404"

[2] CWA 404

[3]TNRCC, "Notice of Receipt and Intent," Permit to Discharge Treated Industrial Wastewater (Section 401, Clean Water Act and Title 31, Texas Administrative Code), December, 2001.

[4] Railroad Commission of Texas, Surface Mining Division, "Public Notice of Application for Surface Coal Mining and Reclamation Permit," (16 TAC, Chapter 12), Docket No. C1-0004-SC-00-A), December, 2001.

[5]Gaylord, J.L. et al. Water Resources Appraisal of the Camp Swift Lignite Area, Central Texas, U.S.G.S. Water Resources Investigations Report 84-4333, 1985.
Hereafter, "USGS."

[6] USGS, p. 99-116.

[7] USGS, p. 110-116.

[8] USGS, p. 69.

[9] Linam, G.W. et al. Aquatic Survey Results From Camp Swift, Bastrop County, Texas. Texas Parks and Wildlife Department, River Studies Report No. 15F.
Hereafter, "TPWD, Linam."

[10] TPWD, Linam, p. F-25.

[11] Baskin (Texas Department of Water Resources) letter to Hill (Surface Mining Division, Texas Railroad Commission), September 30, 1981.

[12] Lower Colorado River Authority, Texas Natural Resource Conservation Commission, et. Al., Regional Assessment of Water Quality, Colorado River Basin, Technical Report, Texas Clean Rivers Program, 1996.
Hereafter, "CRP 1996."

[13] Lower Colorado River Authority, Texas Water Quality Stream Standards for Lower Colorado River Segments. Downloaded from LCRA website at URL
http://www.lcra.org/lands/wrp/wq/wq_strmstd.htm

Letter 79 Continued

DRAFT

Hereafter, "Stream Standards."

[14] Lower Colorado River Authority, Water Quality Data from River Gauging Stations. Downloaded from LCRA website at URL http://www.lcra.org/lands/wrp/wq/data/.

[15] CRP 1996, p. A-10 and A-12.

[16] CRP 1996, p. A-9.

[17] Bradsby, D. et.al., Evaluation of Natural Resources in Bastrop, Burleson, Lee and Milam Counties, Texas Parks and Wildlife Department, 1999.

[18] Mosier, Doyle T. and Russell Ray, *Instream Flows for the Lower Colorado River*, LCRA, 1992.

[19] Lower Colorado River Authority, Texas Clean Rivers Program, Colorado River Basin Highlights Report, 2000-2001.
Also, Stream Standards.

[20] Baker, F.E., Soil Survey of Bastrop County, Texas, Soil Conservation Service, U.S.D.A. and Texas Agricultural Experiment Station, Texas A & M University, 1979.
Hereafter, "Soil Survey."

[21] Soil Survey, p. 60.

[22] Soil Survey, p. 60.

[23] Soil Survey, p. 52-60.

[24] Camp Swift, Texas, 522 SMCRA Evaluation OSM-PE-4, U.S. Office of Surface Mining Reclamation and Enforcement, U.S. Department of the Interior, 1982.
Hereafter, "PED."

[25] Russell, R.J., River and Delta Morphology, Louisiana State University Technical Report No. 52, prepared for Geology Branch, U.S. Office of Naval Research, 1967, cited in Camp Swift EIS

[26] USGS, p. 62-64.

[27] USGS, p. 164.

[28] Soil Survery, p. 63.

[29] USGS, p. 104 and 110.

[30] Soil Survey, p. 8-13.

[31] U. S. Soil Conservation Service, Erosion and Sediment Control Guidelines for Developing Areas in Texas, U. S. Department of Agriculture, 1976, p. 3-20.
Hereafter, "SCS 1976."

[32] Greiner et. al., Erosion and Sedimentation by Water in Texas, U.S. Soil Conservation Service (USDA), for Texas Department of Water Resources, TDWR Report 268, 1982, fig. 3.
Hereafter, "TDWR Report 268."

[33] Harden, R.W. & Associates, Inc., Technical Report Protection of Hydrologic Balance, Three Oaks Mine Permit Application, prepared for Alcoa Inc., Rockdale, Texas, September 2000, p. .146-56.
Hereafter, Three Oaks Mine Permit Application will be referred to as: "MPA."

[34] SCS 1976, p. 3-13.

[35] PED, p. 219.

[36] PED, p. 59-60. Also, SCS 1976, p. 3-6.

[37] TDWR Report 268, p. 105.

[38] U.S. Bureau of Land Management, Proposed Camp Swift Lignite Leasing, Bastrop County, Texas, Final Environmental Impact Statement, USDI, September, 1980, p. A-2-7 and A-2-12.
Hereafter, "Camp Swift EIS."

[39] Haan, C.T. and B.J. Barfield, Hydrology and Sedimentology of Surface Mined Lands, Papers Presented Before the Sixth Symposium on Coal Mine Drainage Research, Louisville KY, October 19-21, 1976, p. 177-248.
Hereafter, "Haan and Barfield."

[40] USGS, p. 62-63.

[41] USGS, p. 117-139.

[42] USGS, p. 44-49.

Letter 79 Continued

DRAFT

[43] Camp Swift EIS, p. A-2 to A-9.

[44] USGS, p. 48.

[45] SCS 1976, p. 3-13

[46] MPA, Supplement 1, August 2001, p. .146-62 and .146-63.

[47] Investigation of Ground-water Conditions As Affected By Past and Proposed Lignite Mining, Powell Bend Area, Bastrop County, Texas, Underground Resource Management, Inc. (Prepared for Texas Railroad Commission and Engineering Science Inc., 1982, p. 45.
Hereafter, "URM."

[48] Soil Survey, p. 52-54.

[49] Preliminary Hydrogeologic Investigation Related to Possible Mining Operations, Bastrop County, Texas, HSI Consultants Inc., (for LCRA), April, 1981, p. 6-7 and 6-8.
Hereafter, "HSI."
Also, USGS, p. 148-49.

[50] Cited in HSI, p. 6-7.

[51] Documentation of Water Related Programs Pertaining to Lignite Mining, Henley Environmental services Inc., (for EPA and TDWR), 1978, p. 23-27.
Hereafter, "Henley Report."

[52] USGS, p. 153-55.

[53] MPA, Supplement 2, November, 2001, p. 145-5 and 145-6.

[54] MPA, Supplement 2, November 2001, p. 154-2.

[55] TPDES Permit Application Alcoa Three Oaks Mine, Permit No. 04348, May 22, 2001, p. E-13.
Hereafter, "Discharge Permit Application."

[56] Waste Load Evaluation for the Colorado River Below Town Lake, Texas Water Commmission, April 1986, p. 14-20.

[57] Soil Survey, p. 72.

[58] PED, p. IV-25 to IV-27.

[59] CWA 404, p. 2.

[60] MPA, Supplement 3, March 2002, p. 146-62.

[61] SCS 1976, p. 3-18.

[62] U.S. Department of Agriculture, Resource Conservation Act, Program Report and Environmental Impact Statement, 1981, p. 4-11.

[63] Hons, F.M. et. al., Physical and Chemical Properties of Lignite Spoil Material as it Influences Successful Revegetation, in Bureau of Economic Geology, Report of Investigations No. 90, 1978, p. 209-217.
Also, Hons, F.M. and Hossner, L.R., Soil Nitrogen Relationships in Spoil Material Generated by the Surface Mining of Lignite Coal, *Soil Science*, Vol. 129, No. 4., 1980, p. 222-228.

[64] CRP, p. A-5.

[65] Potential Aquatic Ecological Impacts of Interbasin Water Transfers (in the southwest, west-central and south-central study areas), Geo-Marine, Inc., (for TWDB, TPWD, TNRCC), 1996, p. III-70 to III-72.
Hereafter, "Geo-Marine."

[66] USGS, p. 99-108.

[67] Discharge Permit Application, p. B-7.

[68] Groundwater Monitoring Report (Sandow Mine), permit 1C, 4th Qtr., 1996, H. B. Zachry Co., Jan 27, 1997, Attachments I-IV.
Hereafter, "Quarterly Monitoring Report."

[69] Henley Report, p. 29, (citing W.P. James et.al., Texas Water Resources Institute, TAMU, Technical Report No. 78, 1976.)

[70] USGS, p. 150-52.

[71] Environmental Protection Agency, Current Drinking Water Standards, downloaded from EPA website at http://www.epa.gov/safewater/mcl.html

Letter 79 Continued

DRAFT

[72] U.S. Fish And Wildlife Service, Division of Ecological Services (Hall), letter to EPA Region 6 (Spotts), January 29, 1985.
Hereafter, "USFWS, Hall."

[73] USFWS, Hall, (Citing EPA, 1980, Ambient Water Quality Criteria for Selenium).

[74] USFWS, Hall.

[75]Henley Report, p. 29, (citing W.P. James et.al., Texas Water Resources Institute, TAMU, Technical Report No. 78, 1976.)

[76] USFWS, Hall.

[77] USFWS, Hall.

[78] Geo-Marine (citing 30 TAC 307) p. III-13.

[79] TPWD, Linam, Table 8.

[80] CRP, p. A-11.

[81] USGS, p. 99-111.

[82] CRP, p. A-9.

[83] Discharge Permit Application, p. B-3.

[84] Quarterly Monitoring Report, Attachment 1.

[85]USGS, p. 99-111.

[86] CRP, p. A-9.

[87] Discharge Permit Application, p. B-3.

[88] Quarterly Monitoring Report, Attachment 1.

[89] TNRCC, The State of Texas Water Quality Inventory: Surface Water Monitoring Program, 1994.
Hereafter, "TNRCC 1994."

Letter 79 Continued

Attachments for Comment Letter 79

The following attachments were submitted with this comment letter. The attachments have not been reproduced in this Final EIS; the attachments have been addressed, as applicable, in the specific responses to the related comments. The attachments are on file with the USACE.

- Map showing the proposed location of Three Oaks Mine Outfall 003 (Source: USACE 2001).
- Physiochemical measurements recorded in Big Sandy Creek at Camp Swift, Bastrop County during April 1995 (Source: TPWD).
- Camp Swift, Bastrop County, Big Sandy Creek transects 1 through 7 (Source: TPWD).
- Photos showing the Big Sandy Creek/Colorado River confluence and the Bluffs at Powell Bend (500 feet downstream of the confluence).
- Wildlife Impacts – Fish (prepared in cooperation with Bastrop County …).
- List of Freshwater Fishes Found in the Colorado River and its Tributaries Downstream of Austin (Source: Robbins et al. 1991; Patek 1994).
- List of Freshwater Mollusks Potentially Occurring in the Colorado River Basin (Source: Turgeon et al. 1988; Howells 1995a).
- Impact on Protected Water-dependent Bird Species.
- Bureau of Land Management (BLM). No date. Excerpts from Final Environmental Impact Statement Proposed Camp Swift Lignite Leasing, Bastrop County, Texas. New Mexico State Office.
- Texas State map showing average annual values of the factor R (Source: SCS 1976).
- Relationship between stream discharge and suspended sediment (Big Sandy Creek near McDade and near Elgin) (Source: USGS).
- Chart – Historical Dissolved Oxygen Trend in the Colorado River (SMN Station 1428.0500 at SH 95 at Smithville).
- Chart – TDS for the Colorado River above La Grange (Segment 1434).
- Chart – Erosion-index Distribution Curves 7 (part of Texas) (Source: SCS 1976).
- Chart – Critical Erosion Velocities (Source: Camp Swift EIS).
- Bastrop County Environmental Network, Inc. (BCEN). 2002. Errors, Omissions, and Process Concerns, Accuracy and Completeness of Application and Agency Review. Prepared as Public Comment on Proposed TPDES Permit No. 04348. June 27, 2002.

Letter 80

80

Riley Walker, Jennifer L SWF

From: GilesRon@aol.com
Sent: Tuesday, November 05, 2002 2:07 PM
To: 3oakseis@swf02.usace.army.mil
Cc: mmcfaddin@hgag.com; MGGangnes@aol.com
Subject: A Comment on the Three Oaks Mine 404 Permit Application Public Notice

U.S. Army Corps of Engineers (USACE)
Fort Worth District
819 Taylor Street
P.O. Box 17300
Fort Worth, Texas 76102-0300

Dear USACE Representative:

The attached comments are an addendum to other comments submitted by Neighbors for Neighbors Regarding the draft Environmental Impact Statement issued by the U.S. Army Corps of Engineers concerning the proposed Three Oaks Mine applied for by the Alcoa facility in Rockdale, Texas.

This addendum is also being sent by U.S. Postal Service, postmarked November 5, 2002.

Sincerely,
Ron Giles
On behalf of,
Neighbors for Neighbors

Letter 80 Continued

Neighbors for Neighbors – Addendum to Public Comment to the USACE Draft Environmental Impact Statement for the Proposed Three Oaks Mine

Addendum to comments on errors and omissions in analyzing "Air Quality" (Section 3.8)

National Ambient Air Quality Standards (NAAQS)

The following statement seems to address fine particulate matter of 2.5 microns or less, but does not clearly specify the importance of the PM2.5 Standard. It is recommended that the Corps clarify this sentence and highlight the importance of USEPA's PM2.5 NAAQS.

> *"The main health-based standards are the federal PM10 standard and the fine dust particulate matter with an aerodynamic diameter of 10 microns or less in diameter (PM 2.5) standard"*

In the final paragraph of this section, the Corps references PM10 monitoring that was conducted at four sites in vicinity to the Sandow Mine for the period of 1990 to 1995 (Table 3.8-7). The paragraph closes with the statement, "There were no exceedences of the [N]AAQS for PM10 during this time."

80-1

Comment: It is unclear who conducted the monitoring, and the data source for this monitoring, without footnoting the data, it is assumed that the monitoring data is Alcoa's, thereby creating questions of data validity, monitoring protocols, quality assurance, quality control, instrument zeroing and span methodology. Unless the data was specifically collected through USEPA or TNRCC monitoring protocols and quality assurance procedures, it should not be included in this report. Even if the data is high quality monitoring data generated by TNRCC or USEPA, the data is seven to twelve years old and cannot be considered relevant to the Three Oaks Mining activities. As a final argument for discarding this outdated data, the data pertains to the Sandow Mine and only addresses the PM10 NAAQS. In 1997, USEPA passed the fine particulate matter standard (PM2.5), monitoring data and modeling should address this more recent standard as well as the PM10 standard.

Prevention of Significant Deterioration (PSD)

"The existing power generating stations operated [and owned] by Alcoa and TXU are not adjacent to the proposed lignite mine; therefore, they are separate sources for PSD purposes."

80-2

Comment: The paragraph previous to the above-mentioned statement makes the incorrect assumption that fugitive emissions from the mining operation are separate and exclusive from the Alcoa aluminum smelter and lignite-burning power plant. This assumption incorrectly "segments" Alcoa's operations and attempts to circumvent the requirements of the Clean Air Act. Segmentation is specifically forbidden by the clean air act, a stationary source is defined as "a source, or group of stationary sources that are located on one property or two or more contiguous or adjacent properties under common control that emits of has the potential to emit in the aggregate [more than the major source thresholds of the Clean Air Act]."
This Clean Air Act definition specifically addresses the statements made in paragraph 1 and 2

Responses to Letter 80

80-1 Particulate monitoring for PM_{10} was conducted by an air quality consulting firm under contract to Alcoa during the period September 1999 to August 2000. The particulate monitoring at Three Oaks Mine showed an annual average of 15.3 $\mu g/m^3$ and a 24-hour maximum of 51.9 $\mu g/m^3$. The Three Oaks monitor was located near the predicted point of maximum impact. The monitored levels were assumed to be background concentration of PM_{10} and were added to the impacts found by conducting dispersion modeling. Dispersion modeling of emissions projected for Three Oaks Mine, when added to the measured background concentrations, indicate that the ambient air quality standards would be met for the proposed project. Please see the response to general comment NEPA-1 in Section 4.5.1 of the Final EIS relative to the use of Alcoa data. Also see the response to general comment AQ-3 in Section 4.5.6 of the Final EIS relative to $PM_{2.5}$ impacts.

80-2 Please see the response to general comment AQ-1 in Section 4.5.6 of the Final EIS relative to cumulative impacts.

80-2 of this section. Alcoa owns the lignite-fired power plant and aluminum smelter, Alcoa also owns the contiguous Sandow and Three Oaks Mines. Fugitive emissions from all facilities should be specifically considered under one stationary source [as defined by the Clean Air Act]. When completing emissions inventory estimates, the entire Alcoa facility will submit one inventory, thereby, fugitive emissions from the mining operation will require Alcoa to perform a PSD determination.

80-3 **Table 3.8-7**

Comment: This data is outdated and does not address PM2.5 NAAQS. It is strongly suggested that these tables are removed from the final EIS. At a minimum, the source of the data should be cited.

New Source Performance Standards (NSPS)

"……there are no NSPS for mining operations"

80-4 **Comment:** In Table 3.8-8, the operating parameters are specified for Conveyors, Feeder Breaker, Radial Stacker, Conveyor Drops, Aux Reclaim Hopper, and Vibratory Feeders. The pieces of equipment are considered to be coal processing and conveying equipment. New coal processing and conveying equipment is subject to the NSPS Subpart Y – Standards of Performance for Coal Preparation Plants. The above quoted statement is incorrect; this paragraph should address the needs and monitoring requirements of the Subpart Y NSPS.

3.8.2 Environmental Consequences

Section 3.8.2.1 Proposed Action

"However, construction, mining, and reclamation activities at the Three Oaks Mine generally would be a replacement of diminishing similar source at the Sandow Mine. ……temporary air quality impacts due to increases in local fugitive dust levels. …The principle sources of fugitive dust would include land clearing, earth moving, scraping, hauling, materials storage and handling; truck loading operations; and wind erosion from stockpiles.

80-5 *Air quality impacts due to emissions from mining operations would occur throughout the operational phase of the project."*

Comment: The Three Oaks Mine project is quite different from the Sandow Mining operation. The human health impacts will be much more severe at the Three Oaks Mine due to the proximity to neighbors and human dwellings. Fugitive emissions of VOCs, NOX PM10, PM2.5, CO, and SO2 should be extensively modeled prior to any construction. PM2.5 is of particular concern due to the carcinogenic properties of diesel emissions and the

80-3 Please see the response to comment 80-1.

80-4 NSPS for conveyors, feeder breakers, radial stackers, conveyor drops, etc., is applicable for coal preparation plants, not mines.

80-5 Please see Section 3.8.2 of the Draft EIS for modeling results and a discussion of air quality impacts. Also see the response to general comment AQ-3 in Section 4.5.6 of the Final EIS relative to $PM_{2.5}$ impacts.

detrimental human health impacts. Construction, Operations and Reclamation will significantly deteriorate the ambient air quality beyond the fence line of the Three Oaks Mine.

Alcoa should consider taking every feasible measure to minimize diesel emission from construction equipment. These measures should include the use of ultra-low-sulfur diesel fuel, fine particulate control devices, and anti-idling measures. These measures should be included in the final EIS.

80-5

Alcoa should also conduct modeling on PM2.5 fugitive emissions. Modeling results and specific mitigation measures should be included in the final EIS. Since the mining operation is projected for several years, the statement that these emissions "…would be transitory and limited in time…." does accurately describe the proposed mining operation. Fugitive emissions (PM10 and PM2.5) should be estimated for each year of the construction, operation, and reclamation phases of this project and should be included in the final EIS. Emission factors for the construction equipment and the operations are readily available and emissions should be calculated.

Table 3.8-9

Comment: Numerical values supplied in this table were generated by Alcoa and represent the Sandow Mine. By providing data generated by Alcoa on a non-relevant, non-comparable mine, it is unclear that the intent of NEPA is satisfied through this draft EIS. Table 3.8-9

80-6

identifies emission estimates that are not relevant to the Three Oaks Mine Environmental Impacts. These estimates are definitely conservative, since they are Alcoa generated. The emission estimates also specify gravel haul roads, does this imply that **all** of the roads at the Three Oaks mine will be gravel?

PM2.5 emission estimates are the most important item missing from this table, if the table is to remain, it is strongly encouraged to estimate PM2.5 in the final EIS.

Paragraph directly below Table 3.8-9

"….Measured particulate concentrations (Tables 3.8-10 and 3.8-11) at the existing Sandow Mine are well below the AAQS, indicating that there are no significant impacts due to particulate emissions from the existing mine or from other sources in the local region……" "Due to the low emissions levels of gaseous pollutants (i.e. NOx, CO, SO2, and VOCs) the

80-7

impacts from these pollutants would not exceed state or federal AAQS. The proposed Three Oaks Mine is anticipated to comply with all existing air quality standards in Texas, including those for TSP and PM10."

Comment: As stated previously, measured particulate matter concentrations by Alcoa in 1990-1994 are outdated and do not address the USEPA fine particulate matter standards (PM2.5). Seven to twelve-year-old PM10 data of questionable sources does not accurately depict any ambient air pollutant concentrations. Alcoa's data is undoubtedly biased and

80-6 Emissions estimates for modeling air quality impacts were generated by an air quality consultant using standard TCEQ and USEPA approved emissions factors and calculations. Also see the response to general comment AQ-3 in Section 4.5.6 of the Final EIS relative to $PM_{2.5}$ impacts.

The primary and most secondary haul roads at the Three Oaks Mine would be surfaced with gravel (bottom ash) as outlined in the Draft EIS. Table 3.8-9 shows projected emissions at the Three Oaks Mine and not emissions at the Sandow Mine as stated by the commenter.

80-7 Please see the response to comment 80-6. Also, per the note to Table 3.8-11 in the Draft EIS, routine $PM_{2.5}$ monitoring is not required of industry.

Letter 80 Continued

80-7

inadequately addresses PM2.5. Table 3.8-10 is neither timely nor pertinent to the environmental impacts of the Three Oaks Mine. Ambient air pollutant modeling should be conducted for all criteria pollutants emitted at the Three Oaks Mine.

The statement "Low emission levels…" is very subjective, modeling should be conducted to determine pollutant concentrations and hotspots, thereby eliminating all subjective interpretations. Plume modeling concentrations and the assumed model inputs should be included in the final EIS.

80-8

Table 3.8-10

Comment: As mentioned above, this data is biased and outdated. Also, PM2.5 is not included in the monitoring analysis. Being that PM2.5 is a NAAQS, it should be monitored and/or modeled

80-9

Table 3.8-11

Comment: Once again, this data could be perceived as biased being that it is Alcoa generated. There is not sufficient data to conduct an accurate statistical analysis and draw human-health-based conclusions. Sample dates appear to be random, inconsistent, and inconclusive. This data should be removed from the final EIS unless monitoring protocols, quality assurance, quality controls, monitor zero and monitor span, and monitor locations are presented and meet TNRCC and USEPA specifications.

80-10

Ambient Air Quality Impacts

"The estimated PM10 ambient air impacts from the proposed Three Oaks Mine were calculated using USEPA and state agency approved air dispersion computer models…….For the model, Alcoa initially assumed that the first box cut would result in a 30-foot-high berm along the northwest property line."

Comment: Modeling should also be performed for the NAAQS PM2.5, PM2.5 emissions will likely have a significant impact on the ambient air quality surrounding the proposed mine. Also, the specific "state agency approved air dispersion computer model" should be specified by name, as well as the modeling assumptions and inputs. All of this data, along with the PM2.5 modeling runs should be included in the final EIS.

Modeling should be conducted with dirt road and without the 30-foot berm in order to identify realistic conditions. Unless Alcoa plans to construct a 30-foot berm around the entire mine and suppress all fugitive emissions while constructing the berm, modeling should be conducted without the PM2.5 and PM10 mitigation impacts of the 30-foot berm.

Responses to Letter 80

80-8 Please see the responses to comments 80-6 and 80-7.

80-9 Please see the response to comment 80-1.

80-10 Please see the response to general comment AQ-3 in Section 4.5.6 of the Final EIS relative to $PM_{2.5}$ impacts. The air quality dispersion modeling was performed using the ISCST3 model version 02035. The assumptions made in the modeling include:

- Location of mine pit is that of Year 1 operation (closest to boundary);
- Size of mine pit is 503 acres;
- Coal production is 7 million tons per year;
- Haul trucks travel 215,278 miles per year on the haul roads and 30,586 miles per year within the mine;
- Water trucks travel 30,374 miles per year;
- The empty weight of haul trucks is 90 tons;
- The weight of loaded haul trucks is 250 tons;
- Mine pits were assumed to have a depth of 100 feet;
- Drop distance for dragline was 25 feet;
- Haul roads are gravel;
- Water sprays have 70 percent control efficiency;
- Crushing and coal blending operations occur off mine premises;
- Total number of 52 sources were modeled; and
- Background concentrations of PM_{10} are 15.0 $\mu g/m^3$.

Letter 80 Continued

Neighbors for Neighbors – Addendum to Public Comment to the USACE Draft Environmental Impact Statement for the Proposed Three Oaks Mine

80-10

Actual modeled ambient air concentrations should be specified in the final EIS. Subjective statements like "…concentrations.. are not expected to be above 20 micrograms/m^3 for background and incremental impacts." should be removed and replaced with real modeling PM2.5 and PM10 concentrations.

Any PM2.5 and PM10 mitigation measures should be specifically detailed and outlined in the final EIS. These mitigation measures should include all available mitigation strategies, including fuel switching at Alcoa's lignite-fired boilers.

3.8.2.2 No Action Alternative

"Air emissions from Alcoa's aluminum smelter would be eliminated due to lack of fuel from the mine or other viable fuel source alternatives."

80-11

Comment: This statement blatantly ignores several fuel alternatives that Alcoa could exercise instead of mining lignite coal from the Three Oaks Mine. Option 1: Alcoa could feasibly switch all three boilers to low sulfur bituminous or anthracite coal imported from Wyoming, Montana, West Virginia, Kentucky, etc. Option 2: Alcoa could feasible and cost effectively switch all three lignite-fired boilers to Texas natural gas, thereby, preventing the need for the mine and dramatically reducing air pollution, landscape destruction, endangered species habitat destruction, and pending litigation. All of these alternatives are viable and feasible, the no action alternative does not result in the elimination of Alcoa's aluminum smelter. This statement is absolutely incorrect and must be removed from the final EIS. All lignite fuel alternatives should be explored and detailed in the final EIS.

3.8.3 Cumulative Impacts

"…..For the Three Oaks Mine, the maximum spatial extent of annual PM10 impacts greater than 1 microgram/m^3 and 24-hour impacts……"

80-12

Comments: Once again, emphasis must also be given to the NAAQS for PM2.5. PM2.5 modeling and concentrations should also be presented in this section. Numerical values for cumulative concentrations should be specified for both PM2.5 and PM10, subjective statements such as "…concentrations of PM10 are expected to be less than existing concentrations at Sandow…." should be replaced with actual values. Also, comparisons of pollutant concentrations to Sandow are not pertinent to this EIS. The Standards are set by the USEPA and TNRCC, not the Sandow Mine.

Second paragraph following Table 3.8-16

80-13

"…These units (1,2, and 3) are older units (built in the 1950's) that are less efficient at removing pollutants than Unit 4. ……. Monitoring is expected to continue for ambient concentrations of SO2 as well as meteorology."

Responses to Letter 80

During the review of the mine permit, a change was made to the configuration of the mine haul road configurations. This configuration changed the emissions that were reflected in the annual emissions estimate for the Three Oaks Mine presented in Table 3.8-9 of the Draft EIS but not in the estimated operating parameters shown on Table 3.8-8 of the Draft EIS.

Modeling results presented in the Draft EIS demonstrated high impacts at locations due west of the mine. Alcoa has subsequently obtained rights to this property; therefore, the new property boundary is located approximately 250 feet to the north-northwest of the previous boundary. Prior to this boundary change, the closest emission source was approximately 200 feet from the property boundary. The new property boundary is approximately 450 feet from the nearest emissions source resulting in a significant reduction in the ambient air impacts.

The combination of changes to the mine haul road and to the property boundary result in modeled PM_{10} concentrations shown in Table 80-10.

Table 80-10
PM_{10} Ambient Air Modeled Impacts
Gravel Roads, 15-foot Berm, New Haul Roads, and New Property Boundary
(Assuming a 6.2 Million Ton per Year Production Rate)
(µg/m^3)

Scenario	Period	Three Oaks Mine	Background	Total Mine and Background	AAQS
Gravel roads, 15-foot berm	Annual	18.0	15.0	33.0	
	24-Hour	52.4	15.0	67.4	150.0
Gravel roads, 15-foot berm, western boundary only	Annual	20.0	15.0	35.0	
	24-Hour	62.3	15.0	77.3	150.0
Gravel roads, no berm	Annual	20.9	15.0	35.9	
	24-Hour	66.3	15.0	81.3	150.0

[1]AAQS = ambient air quality standards

All three modeled scenarios, including the no berm case, demonstrate acceptable ambient air levels for each averaging period.

7.0 Million Ton per Year Scenario

Additional modeling evaluated the impact of running the Three Oaks Mine at a 7.0 million tons per year production rate. The modeling results are summarized in Table 3.8-14b on page 3.8-17 of the Final EIS. This table shows that the ambient air concentrations would be higher than under the 6.2 million tons per year case, as expected. The data also demonstrate that all scenarios, including the no berm case would result in maximum 24-hour and annual impacts that would be in compliance with the AAQS.

Statements regarding ambient air concentrations are based on the modeling results. The term "expected" simply reflects the known uncertainty associated with modeled results and is not subjective in nature.

80-11 Please see the response to general comment Alternatives-1 in Section 4.5.2 of the Final EIS regarding costs of fuel alternatives. See the response to comment 76-3 regarding smelter closure as part of the No Action Alternative.

80-12 Please see the response to general comment AQ-3 in Section 4.5.6 of the Final EIS relative to $PM_{2.5}$ impacts.

Letter 80 Continued

Neighbors for Neighbors – Addendum to Public Comment to the USACE Draft Environmental Impact Statement for the Proposed Three Oaks Mine

80-13 **Comment:** This paragraph is misleading and should be restated. The older units are not equipped with flue-gas desulfurization devices and therefore emit raw acid gases into the atmosphere. The fact that none of Alcoa's boilers are equipped with scrubbers should be highlighted in this section. It should also be stated that these boilers have undergone serious overhauls and may be subject to New Source Review and the New Source Performance

Standards for modified boilers. The gases emitted by these boilers is detrimental to ambient air quality, human health, and the environment. The cumulative impacts of lignite combustion should be highlighted, included increased asthma incidence and premature death.

80-14 *"...The decision to upgrade the boilers or shut them down would be made by Alcoa by the year 2005 (Hodges 2001)."*

Comment: The final EIS should identify where this quote originated, when and where "Hodges" made this statement. Please provide the supporting documentation and quotation in the appendix of the final EIS.

80-15 **3.8.4 Monitoring and Mitigation Measures**

"Alternatively, Alcoa may move the haul road farther east away from the proposed mine boundary or move the permit boundary farther west away from the road. This mitigation is based on the results of Alcoa's air dispersion modeling."

Comment: *It is expected that all mitigation measures will be specified in the final EIS, vague statements like the above do not fulfill the intent of an EIS and the NEPA process.*

80-16 **3.8.5 Residual Adverse Effects**

"Some air quality impacts are unavoidable due to the nature of the proposed mine operations. The primary air quality effects would be increases in TSP and PM10 concentrations in the immediate vicinity of the mine."

Comment: Granted some air quality impacts are inevitable if the mine is determined to be necessary, however, several viable and feasible fuel alternatives exist. The proposed mining operation should not move forward without intensive exploration of alternative fuel sources, other fuels are cleaner and less intrusive than the low BTU lignite at the proposed Three Oaks Mine. PM2.5 must also be modeled and considered when weighing the impact of the Three Oaks Mine.

80-17 **Final Comment:** The final EIS should also include references and control measures to the following Texas Code Rule 101.4 (see appendix). Particular comments should address how Alcoa plans to deal with regulations, and all monitoring and mitigation measures responding to Texas Administrative Code Title 30 Rule 101.4.

Responses to Letter 80

80-13 Please see the response to general comment AQ-2 in Section 4.5.6 of the Final EIS relative to proposed reductions in emissions from the power plants.

80-14 Please see the response to general comment AQ-2 in Section 4.5.6 of the Final EIS relative to proposed reductions in emissions from the power plants.

80-15 Alcoa may mitigate the modeled air quality impacts in any of the alternative ways specified in the EIS.

80-16 Relative to the use of other fuels, please refer to Section 2.4.1 of the Draft EIS for a discussion of the USACE's consideration of other fuel sources as alternatives to lignite. Also see the response to general comment AQ-3 in Section 4.5.6 of the Final EIS relative to $PM_{2.5}$ impacts.

80-17 The commenter requests that the Final EIS should address how Alcoa plans to address the Texas Administrative Code Title 30, Chapter 101.4, (30 TAC §101.4). This regulation deals with nuisance and states:

"No person shall discharge from any source whatsoever one or more air contaminants or combinations thereof, in such concentrations and of such duration as are or may tend to be injurious to or to adversely affect human health or welfare, animal life, vegetation, or property, or as to interfere with the normal use and enjoyment of animal life, vegetation, or property."

Based on the analyses discussed in Section 3.8, the USACE has concluded that nuisance conditions would not exist at the Three Oaks Mine. Alcoa would be required to comply with this and all other applicable regulation.

Letter 80 Continued

Appendix A to "Air Quality" Addendum

Next Rule>>

Texas Administrative Code

TITLE 30	ENVIRONMENTAL QUALITY
PART 1	TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
CHAPTER 101	GENERAL AIR QUALITY RULES
SUBCHAPTER A	GENERAL RULES
RULE §101.4	**Nuisance**

No person shall discharge from any source whatsoever one or more air contaminants or combinations thereof, in such concentration and of such duration as are or may tend to be injurious to or to adversely affect human health or welfare, animal life, vegetation, or property, or as to interfere with the normal use and enjoyment of animal life, vegetation, or property.

Source Note: The provisions of this §101.4 adopted to be effective January 1, 1976

Letter 81

81

George R. Givens
P.O. Box 276
Paige, TX 78695
(512) 825-7221
grgivens@acnet.net

November 4, 2002

Ms. Jennifer Walker, EIS Project Manager
U.S. Army Corps of Engineers (USACE)
Fort Worth District
P.O. Box 17300
Fort Worth, TX 76102-0300

This letter is to provide my personal comments on the USACE Draft Environmental Impact Statement (DEIS) for the Three Oaks Mine, dated August 2002.

The DEIS does not meet the standards required under the National Environmental Policy Act (NEPA) in that it does not address key factors important to the community and does not provide sufficient information for the community, and USACE, to allow them to make a truly informed decision about the proposed action.

81-1 Accordingly, the current DEIS should be withdrawn and revised to overcome these deficiencies. After it has been revised, it should be resubmitted to the community, as an initial Draft EIS, in order that the community may gain sufficient information, analyze it, and provide USACE with the initial input required by NEPA.

Specific comments, to substantiate the comments above, are provided on the following pages.

Thank you for the opportunity to participate in this important process.

George R. Givens

Responses to Letter 81

81-1 Comment noted. Section 1502.9 of the CEQ regulations for implementing NEPA stipulate: "If a draft statement is so inadequate as to preclude meaningful analysis, the agency shall prepare and circulate a revised draft of the appropriate portion" (CEQ 1986). The USACE does not consider that the Three Oaks Mine Draft EIS meets this criterion; therefore, preparing a revised or supplemental Draft EIS is considered unwarranted and unnecessary.

Letter 81 Continued

Specific Comments on Three Oaks Mine DEIS by G.R. Givens

GENERAL:

1. Water Mining By San Antonio:

The proposal by ALCOA includes an alternative to include Water Mining of Bastrop County by the City of San Antonio's City Public Services (CPS) and San Antonio Water Supply (SAWS) – both of which are to be accomplished through contracts with ALCOA. This activity is not necessary to accomplish the requested Lignite Mining for the production of Aluminum. Throughout the DEIS, ALCOA consistently refers to the impacts of dewatering to mine Lignite, without also addressing the SAWS water mining in the same paragraph. This gives the reader a false, more favorable, impression of the significant, long-lasting impacts of the combined projects.

81-2

San Antonio/SAWS/CPS wants this water to support its future growth and is a de facto "silent partner" of ALCOA in this permit. San Antonio is under a Federal mandate to minimize pumping from the Edwards Aquifer. However, the city has failed to develop alternative local water resources. In fact, it was in the process of building the Applewhite Reservoir, when San Antonians voted to stop construction and abandon the project. A subsequent city administration tried to revive the project, to be once again overruled by local citizens. Failing to develop their own local water sources, San Antonio decided to fuel and sustain its future growth by spreading its tentacles across rural areas in the region, drilling a series of wells across aquifers under other communities, and pumping the water back to San Antonio.

The pipeline from the 3 Oaks Mine will run about 120 miles to support San Antonio's future development. This 50-year plan to mine water from surrounding rural areas was made part of the South Central Texas (Region L) Regional Water Plan, which was first issued Sep. 20, 1989, and amended March 1, 1999. (The plan is available on CD from the Texas Water Development Board as part of their State Plan.) San Antonio's plans include a 32 mile long well field across the very aquifer that SAWS and ALCOA has mentioned in this DEIS. In Footnote 5 on page 5.2.3 of the Region L Water Plan, it is mentioned that "There are adequate 'contingency' supplies available within the Region L Plan to compensate"…. for a proposed 19,000 acre foot reduction. Obviously then, all the water pumping in the SAWS contract is not NECESSARY, as Region L already has a sizable alternative source which could replace water not pumped from the 3 Oaks mine.

However, if San Antonio is allowed to start exporting water out of Bastrop County, the CPS/SAWS Water Mining will evolve into a permanent draw down of the affected aquifers. On page 3.2-47, and in other places, this DEIS indicates that the SAWS water mining could/potentially (will) extend at least 50 years beyond the end of mining, yet analysis of long-terms impacts fails to address this additional 50 years of operation – much less the highly probable permanent nature of the pumping. Clearly, once San Antonio is allowed to become dependent on this water source, it will be impossible to stop them from PERMANENTLY pumping from the Three Oaks mine area. Such a permanent, unnecessary, drawdown of aquifer levels will undoubtedly adversely impact the Waters of the United States. As such, the Water Mining by San Antonio/SAWS is a

81-3

81-4

Responses to Letter 81

81-2 Please see the response to general comment NEPA-3 in Section 4.5.1 of the Final EIS regarding the relationship between the proposed Three Oaks Mine and the Alcoa/SAWS and CPS/SAWS contracts.

81-3 Please see the response to general comment NEPA-3 in Section 4.5.1 of the Final EIS regarding the relationship of SAWS to the proposed Three Oaks Mine.

81-4 Please see the response to general comment NEPA-3 in Section 4.5.1 of the Final EIS regarding potential permitting requirements for future development of SAWS.

Letter 81 Continued

81-4 stand-alone Significant Action under NEPA, requiring a full, separate, EIS, consideration, and permitting process.

81-5 This is reinforced by in para. 2.13, page 8, of the Errata Sheet for the Region L Water Plan, dated June 15, 2001. In that document, San Antonio claims that there will be sufficient water to support its plan to import water from Bastrop County. However, it goes on to state that the SAWS/ALCOA project will cause an annual regional water supply deficit of 11,818 acre feet of water per year, if drought conditions occur in two or more years out of a six year period. Recent droughts prove that such conditions are highly likely to occur. As San Antonio also admits (under Environmental Concerns of the Executive Summary of the Region L Plan) that its pumping of the Carrizo and Simsboro aquifers will "potentially" affect springs and seeps in the area, there can be little doubt of regularly-occurring droughts magnifying the potentially serious damage to the waters of the United States by the ALCOA/San Antonio alliance.

81-6 ALCOA failed to disclose all these known and potential impacts on Bastrop County water. For example, in para 3.2.3.5 "Residual Adverse Effects," on page 3.2.57, ALCOA only addresses "Three Oaks Mine pumping," while ignoring the SAWS Contract, CPS exports, and alternative Reinjection options.

81-7 ALCOA also failed to note that, by lumping the Lignite and Water mining activities together, San Antonio is attempting to avoid local control of water exports by the Bastrop/Lee County Lost Pines Groundwater Conservation District. By bypassing such local control, San Antonio is seeking to avoid paying for the water it will use and also avoid any limitations to protect the environment and community. This is supported by recent changes to para. 36.117 of the State Water Code, which "happens" to appear to exempt water required for mining, under a State Mining Permit, from local Groundwater Conservation District control. As revised, no matter the adverse consequences, the Code directs that the GCD "may not restrict the production of any well" permitted by the Railroad Commission. By giving ALCOA a "good deal" on the lignite contract, San Antonio has set itself up to permanently take water out of Bastrop County, despite objections by local citizens.

Additionally, San Antonio plans on buying Colorado River Water from the Lower Colorado River Authority (LCRA), building a dam across the Colorado River, near Bastrop, and pumping that surface water to San Antonio, to feed future growth. By doing so, ALCOA's San Antonio partners are effectively denying that surface water to the citizens of Bastrop County to support its own growth, environmental mitigation, or use of the water for recreation-focused tourist businesses. The Colorado River water is obviously part of the "waters of the U.S." In spite of that, all of these plans were ignored by ALCOA when it prepared this inaccurate and misleading DEIS for USACE.

81-8 Under "References" (page 6-16), ALCOA mentions the State Water Plan, yet failed to mention the included plans by San Antonio to use water resources from Bastrop County to feed its future growth. ALCOA also proved that it knew of the Regional Water Plans by mentioning (in the middle of page 3.2-55) the Regional Water Plans for Regions G, H,

Responses to Letter 81

81-5 Comment noted.

81-6 Section 3.2.3.5 of the Draft EIS addresses residual adverse effects of the Proposed Action (i.e., unmitigable adverse direct and indirect effects). Please note that SAWS was addressed as a reasonably foreseeable future action for the analysis of cumulative groundwater impacts in Section 3.2.3.3 of the Draft EIS. The alternative of groundwater reinjection or reinfiltration was addressed in Section 2.4.2.4 of the Draft EIS.

81-7 Comment noted.

81-8 The use of and reference to regional water plans in the EIS was for the purpose of summarizing estimated future groundwater use in the lower basin area of Region G; that area does not include San Antonio. Any water taken from Bastrop County would be in the Region K study, which was consulted and used by the USACE in the cumulative impact analysis in the EIS.

Letter 81 Continued

81-8 I, and K, while omitting any reference to the Region L Water Plan -- which covers San Antonio/SAWS/CPS/ALCOA plans to export water from Bastrop County to San Antonio.

81-9 Under para. 3.2.1.2 "State and Local Water Resource Management," ALCOA also failed to mention the Lost Pines Groundwater Conservation District (LPGWCD), and the fact that, without the ALCOA mine, CPS/SAWS water exports could be limited by the LPGWCD, and subject to export fees. With ALCOA, CPS/SAWS will be able to export water extracted for 3 Oaks operations, without controls by LPGWCD, and without paying fees to LPGWCD. The District depends on such fees to support itself. Without those fees, the District will be hard pressed to protect groundwater in the area. It appears that this is a clear attempt by ALCOA to hide how its partnership with San Antonio/CPS/SAWS in this deal will circumvent local control of the export of mining water from Bastrop County --- and adversely affect the local community at the same time.

Under para 3.2.2 "Water Resource-related Regulations," ALCOA again failed to disclose the existence of the LPGWCD, and its authority to limit pumping and exports of water from the District, which is not required for mining. Those facts are also missing from ALCOA's discussion of the SAWS Contract on page 2-82, and all three Alternatives, such as on pages 3.2-46 and 3.2-47.

81-10 The fact that, while preparing this DEIS for USACE, ALCOA failed to disclose these facts is a clear indication of how lack of critical information and poor analysis have fatally flawed this DEIS. Without the information, which ALCOA omitted, the community cannot make an informed decision and provide fully informed comments to USACE – and neither can USACE make an informed decision on this project.

Recommendation:

81-11 a. That the SAWS Water Contract activities be separated from the ALCOA Lignite Mining activities and that SAWS be required to undergo full the full NEPA permitting process. However, ALCOA should also include full, long-term impacts of potential San Antonio/CPS/SAWS water mining as part of cumulative affects on the environment.

81-12 b. That this permit, if granted, specifically limit any allowable water exports from the Permit Area, to only water which was demonstrably necessary for the extraction of Lignite to support the smelting of Aluminum in Milam County, Texas. This is assuming that ALCOA/CPS/SAWS can prove that reinjection of such water is not a viable alternative.

81-13 c. That the current DEIS be revised to cover all missing information (including that mentioned in this document) and analysis, and be resubmitted for public comment as a First Draft DEIS.

81-14 d. That all sections dealing with Water and Impacts on Water be revised to

Responses to Letter 81

81-9 Please see the response to general comment GW-5 in Section 4.5.4 of the Final EIS relative to groundwater conservation districts.

81-10 Comment noted. It should be noted that in this comment and in other comments throughout this letter, the commenter alludes to Alcoa as the preparer of the EIS document. The USACE was responsible for preparation of the Three Oaks Mine EIS.

81-11 Please see the response to general comment NEPA-3 in Section 4.5.1 of the Final EIS regarding the relationship between the proposed Three Oaks Mine and the Alcoa/SAWS and CPS/SAWS contracts as well as potential permitting requirements for future development of SAWS.

81-12 Comment noted. The alternative of groundwater injection or reinfiltration was addressed in Section 2.4.2.4 of the Draft EIS.

Chapter 1.0 of the Draft EIS identifies the permitting authority of the USACE relative to the Section 404 permit for the Proposed Action, which is described in detail in Chapter 2.0 of the Draft EIS. These permitting actions are independent of the various permits and approvals that may be required for potential water development under the Alcoa/SAWS or CPS/SAWS contracts.

81-13 Please see the response to comment 81-1.

81-14 Please see the response to general comment NEPA-3 in Section 4.5.1 of the Final EIS regarding the relationship between the proposed Three Oaks Mine and the Alcoa/SAWS and CPS/SAWS contracts. All available plans and associated data were included and addressed for reasonably foreseeable future actions within the study area.

Letter 81 Continued

81-14 include ALL potential water actions, to include export of CPS water and the SAWS contract, as well as export of water in the State Water Plan, including Region K and L.

81-15 2. Studies Included By Reference Not Available for Public Review:

Throughout the DEIS, ALCOA refers to numerous studies, without including enough information from the study to allow the reader to discern the validity of ALCOA's allegations/conclusions purportedly based on the study. Based on the principle of "Included by Reference," the entirety of the referenced studies are virtually included in the DEIS. In order that the affected citizens may be able to make informed decisions, comments, and recommendations, ALL of those referenced studies must be made conveniently available for review by the citizens of the affected areas.

Recommendation:

a. Full sets of all the referenced studies be provided to all the locations which were provided copies of this DEIS, and citizens be allowed sufficient time to review those documents before any deadline for submitting comments.

b. The Region K and L Water Plan, which were omitted by ALCOA in this DEIS, should also be made available to the citizens of Bastrop County when the DEIS is resubmitted for review.

81-16 3. Hiding Impacts on Bastrop County By Lumping It In With Other Counties.

Throughout the DEIS, ALCOA hides the impact of the proposed actions by lumping Bastrop County data in with other counties. This hides/dilutes the actual impact on Bastrop County and makes it impossible for citizens to determine the actual impacts on their community. For example, I could not find anywhere that ALCOA revealed how many acres of the proposed project are in Milam County and how many are in Bastrop County. Instead, ALCOA says, on page 3.9-4, "The 8,654 acres…represents approximately 0.8 percent of the 1,048,100 acres in Bastrop and Lee Counties." Looking at Figure 2-20, one might guess that about one third of the disturbance area is in Milam County and two thirds is in Bastrop County, but there is no way of telling what the actual figures are. The illustration of "0.8 percent" discussed above is also rendered meaningless unless one knows how many acres are in each county. ALCOA knows this information, yet chose not to provide it for our citizens to consider. This technique is also used extensively in Section 3.10, Social and Economic Values. The result is that citizens have been denied access to clear information on this DEIS, and therefore have been denied their rights under NEPA.

Recommendation: USACE should require ALCOA to break out all data in the DEIS to show data and impacts on Bastrop, Milam, and Lee County separately. This information should be included in a revised DEIS and resubmitted to our citizens for their review and comment.

81-17 4. Maps Omit Cultural Features Making It Hard for Citizens to Comprehend.

Responses to Letter 81

81-15 It is not practical to provide complete sets of the entire reference library used as supporting documentation for the Three Oaks Mine EIS. This documentation is available for review at the USACE Fort Worth District office, the federal agency responsible for the EIS. Note that all state water plans are available to the public.

81-16 As noted in the response to comment 81-10, Alcoa did not prepare the EIS; the USACE was responsible for preparing the EIS. Please also see the response to general comment NEPA-1 in Section 4.5.1 of the Final EIS regarding the use of data provided by Alcoa and its consultants. Also see the response to general comment SE-2 in Section 4.5.10 of the Final EIS regarding aggregated data. A breakdown of proposed disturbance by county has been added on page 3.9-4 of the Final EIS.

81-17 The EIS maps depicting project direct, indirect, and cumulative water level changes associated with Three Oaks Mine pumpage are not intended to quantify the projected change at a precise location. The analysis and the associated maps are designed to show the approximate areal extent of project changes in groundwater levels across the project area and cumulative effects area.

As recommended by the commenter, a reference map (Figure 3.2-4a) of similar size, orientation, and scale to the groundwater maps has been added as page 3.2-20a of the Final EIS. County boundaries have been added to Figures 2-3 and 2-15 in the Final EIS in response to this comment.

Letter 81 Continued

In several places in the DEIS, ALCOA has provided a series of maps depicting impacts on the community. These maps are generally devoid of recognizable cultural features such as towns, highways, and roads. Without these features, it is very difficult for the average citizen to visualize the extent of the impacts and how it might affect their property.

A solution could be to include such recognizable features on all maps. Alternatively, ALCOA could insert Reference Maps (of the same size, scale, and orientation), just before other maps, so that people can easily compare the maps and locate their property and/or the areas impacted. For instance, a Reference Map could be inserted just before Figures 3.2-5 through 3.2-20, all 15 of which are based on the same map, and all are without roads, towns, etc. Likewise, Appendix D consists of a series of 21 maps, all based on one base map, all at the same scale, and all of which are without highways, towns, etc. The only references the reader has are county boundaries. An introductory map, or overlay, with common cultural features such as roads and towns would greatly assist the property owner in understanding the information in the Appendix.

81-17

Recommendation:

a. USACE should require ALCOA to include roads, highways, and towns/settlements on maps in the DEIS, or:

b. USACE should require ALCOA to include, in the DEIS, a reference map of the same size, scale, and orientation, in close proximity to all related maps depicting operations and/or impacts. All related maps should be cross referenced so that citizens will easily be able to relate a Reference Map to an Operations/Impact Map, and vice versa.

c. USACE should require ALCOA to include County boundaries on Figures 2.3 and 2-15, as these are the only maps that show the entire project and its relation to the soon to be defunct Sandow mine and the smelter in Rockdale.

d. USACE should require ALCOA to include common cultural features on all maps, or a baseline map with cultural features, in Appendix D.

Section 3.9 Land Use and Recreation

5. Protection of lands not owned or controlled by ALCOA or CPS.

Figure 3.12-1 shows Existing Occupied Residences Not Owned or Controlled by ALCOA or CPS. Figure 3.9-1 shows several areas within the permit's proposed disturbance area, which are neither owned nor controlled by ALCOA or CPS. These lands are privately owned by citizens who have chosen not to sell or lease their land for strip mining. In the text of the DEIS, ALCOA does not mention the holdout landowners, nor does it give the background of its attempts to gain control of those lands. Most significantly, ALCOA has not provided any information as to how it proposes to protect

81-18

Responses to Letter 81

81-18 Please see the new text, which has been added on page 2-21 of the Final EIS to address the issue of uncontrolled lands. Potential impacts of these uncontrolled lands are addressed in the individual resource analyses in Chapter 3.0 of the Final EIS, as applicable.

the peace and property of those citizens who refused to sell. These landowners are also not mentioned in Section 3.10, Social and Economic Values.

USACE must not issue a permit to mine private land, which is not owned or controlled by those who propose to mine it. At least one such private landowner has publicly reported being harassed by San Antonio/ALCOA trying to buy/lease his land for several years. This has included threats by the City of San Antonio to use its Power of Eminent Domain to force the sale of private property, so it can be converted to Public Property, then leased to a Private Corporation for strip mining. As an agency of the U.S. Government, USACE must not allow the use of this permitting process to aid and abet corporate/municipal attacks on the peace and property rights of landowners who don't want to sell.

81-18 Recommendations:

a. USACE take immediate and direct action to insure that this permitting process is not used to intimidate or otherwise harass landowners who do not wish to sell/lease their land for strip mining. ALCOA (and its silent partner – the City of San Antonio) should be required to provide affirmation by ALL potential property owners of any claims by ALCOA that they "have the land under contract" (or similar claims). In short, ALCOA should not be allowed to show that they are going to use the land without proof that they currently own or lease the land. Allowing ALCOA to propose such actions without owning/leasing the land is harassment of the current landowner, limits his use of the land, and adversely affects the value of the land.

b. USACE direct ALCOA to demonstrate the feasibility and impacts of the proposed action if these private lands are not owned/controlled by ALCOA/CPS/SAWS.

6. Reinjection of Dewatering Water Ignored.

In paragraph 2.4.2.4 of this DEIS, ALCOA summarily dismissed the possibility of taking the water it pumps out of an aquifer, to dewater the mined area, and reinjecting it into the aquifer at another location, thereby replenishing the aquifer and limiting drawdown effects on nearby property owners, and on the Waters of the U.S.

Analysis of the reasons given by ALCOA, for rejecting Reinjection, indicates that ALCOA "stacked the deck" against Reinjection so it could better support their CPS and SAWS contracts. However, just because ALCOA doesn't "want" to reinject the water is
81-19 no reason for USACE not to require ALCOA to reinject the water. Otherwise, ALCOA could reject many other mitigation measures simply because it didn't "want" to or unilaterally decided that reinjection was not worth the cost. In should be noted that Oil Well Drillers/Operators are routinely required to reinject salty water into the ground, to protect the Waters of the U.S. By replenishing the aquifers, ALCOA/San Antonio could likewise protect the groundwaters that support the Waters of the U.S.

ALCOA also uses the excuse that it would have to obtain the water rights to the dewatering/depressuration water, from San Antonio, in order to reinject the water.

81-19 Please see the response to general comment NEPA-3 in Section 4.5.1 regarding the relationship between the proposed Three Oaks Mine and the Alcoa/SAWS and CPS/SAWS contracts.

Letter 81 Continued

However, ALCOA also states that such water will be dumped into local watercourses (last paragraph of page 3.2.6). Obviously, the two claims are contradictory and illustrate how the DEIS fails to adequately address potential reinjection of water.

As USACE considers this failure by ALCOA, it should remember that ALCOA is planning to mine PUBLIC land, owned by the City of San Antonio/CPS, and plans to sell water from dewatering operations, and additional non-mining waters, to San Antonio. Such "marriages of convenience" should have no impact on how USACE enforces U.S. law to protect the Waters of the U.S.

In that CPS is the owner of about 75% of the land to be mined, CPS should be considered a Partner of ALCOA and not be allowed to block Reinjection of Dewatering Water simply because it wants to export water to San Antonio. Simply put, the two
81-19 partners (ALCOA and San Antonio/CPS/SAWS) should not be allowed to hide behind each other's skirts so they can successfully collude to export water from Bastrop County.

Recommendation:

a. In a Revised DEIS, ALCOA should be required to provide an unbiased evaluation of the possibility of Reinjecting Water, from Dewatering Operations, into the aquifers from which the water was pumped.

b. Objections of San Antonio/CPS/SAWS to reinjection of the dewatering waters should not be allowed, as San Antonio is a de facto "partner" in this operation.

7. Mine "Footprint" Unnecessarily Large.

In Figure 2-4, ALCOA's "Mine Block Sequence" provides for the maximum possible length of the mining operation, therefore increasing the impacts on neighboring property owners for the maximum length of time. The extensive size/length of this "footprint" does not appear to make economic sense, as it requires the immediate construction of the maximum length of roadways, along with requiring dewatering of the largest area possible. "Explanations" in paragraph 2.4.2.1 also fail to support the large mine footprint.

This apparently unnecessarily long/large operational area increases unwanted side effects of mining and unnecessarily impacts on adjoining property owners, the environment, and the Waters of the United States. Conversely, it provides increased
81-20 pressure on adjoining property owners to sell to ALCOA, as well as increases the area to be dewatered at any given time --- and the volume of water produced from dewatering is also increased, thereby supporting the production of water under the CPS/SAWS contract.

ALCOA's failure to delineate and provide analysis for alternative mining sequences, such as the two draglines operating in close proximity (with a greatly reduced "footprint") denies the citizens of Bastrop County, and USACE with viable alternatives

Responses to Letter 81

81-20 The Proposed Action, as defined and analyzed in the EIS, is based on Alcoa's purpose and need for the proposed project (Section 1.2 of the Draft EIS). The mine block shapes and sizes are based on achieving an efficient and economically viable recovery of the lignite resources involved. Please see Section 2.4.2.1 of the Draft EIS for discussion of the dip oriented mine layout alternative. The Proposed Action represents the maximum disturbance considered by Alcoa to enable a conservative impact analysis in the EIS.

Letter 81 Continued

by which ALCOA could be allowed to mine while minimizing impacts on people, the environment, and the Waters of the U.S.

81-20

Recommendation: In a Revised DEIS, ALCOA should be required to delineate and provide analysis of impacts of mining with a reduced "footprint," as discussed above.

8. Post-mining "Conceptual" Land Usage Claimed as Mitigation But Not Guaranteed.

Throughout the DEIS, ALCOA claims that the post-mining uses of the land in the permit area will be almost all Fish & Wildlife Habitat or pastureland --- along with a seemingly implied promise that the land will remain open space forever. Those uses are depicted in Figure 2-12, page 50. Those uses are also included as Mitigation for loss of wildlife viewing/hunting and decline in property values, in Table 2-16, Impact Summary and Alternatives Comparison, on page 2-89, as well as page 2-74, and para 3.9.4, and as noise mitigation at the end of para 3.12.3.1. Unfortunately, discussion with USACE staff at the Information Open House at Elgin High School indicates that nothing in the USACE permit will REQUIRE ALCOA to abide by such "conceptual" land use promises. In short, the public is promised an end-product open space land use, but ALCOA will not be required to deliver it, even though it consistently uses such "conceptual" promises as mitigation for strip mining Bastrop County.

In fact, in Table 2-15, page 2-76, ALCOA reveals that it does not intend to make this permanent open space when it says "A majority of the reclaimed area would be dedicated to wildlife management ***until the bond is released***." Typically, ALCOA failed to list the date when the bond will be released.

81-21

Recommendation:

a. ALCOA be directed to rewrite the DEIS to remove all such promises/inferences of Open Space as the post-mining land use, and claims that the Open Space Land Use will mitigate other impacts or:

b. ALCOA/San Antonio/CPS/SAWS revise the DEIS to include contractual arrangements whereby the land will be made permanent Open Space after mining ceases.

c. ALCOA/San Antonio/CPS/SAWS consider donating the resultant Open Space to either Bastrop County or Texas Parks and Wildlife.

d. If ALCOA opts to keep the condition that the land will be used for wildlife management until the bond is released, then ALCOA should be required to go back and clearly communicate that reservation, wherever it has stated the post-mining land uses of Wildlife Management, Pastureland, and Open Space… throughout the DEIS. The DEIS should then be reissued as a first draft, for public comment, with changes highlighted for ease of reference.

Responses to Letter 81

81-21 Please see the response to general comment LU-2 in Section 4.5.9 in the Final EIS relative to long-term land use patterns subsequent to release of the RRC reclamation bond. In essence, the land would revert to its current, pre-mine status after the bond is released. See the response to comment 82-2 regarding possible deed restrictions for on-site and off-site mitigation sites.

Letter 81 Continued

81-21

e. All the mitigation measures, which ALCOA proposes in para 2.5.4 and Table 2-15, and which USACE finds acceptable, should be either contractually mandated or removed from the DEIS. The public should also be informed of the actual, contractual mitigation actions, which USACE will require of ALCOA, and of those actions which were previously promised but withdrawn.

f. The contractual term of all mitigation actions should also be clearly spelled out so that average citizens can comprehend what ALCOA will, and will not do, where, and for how long. ALCOA must not be allowed to infer that it "might" do something, which it is not contractually obligated to do.

Section 3.10 Social and Economic Values

9. Absence of Information on Social Values, Attitudes, and Impacts of on Human Environment

Sociological Information & Analysis Missing

Section 3.10 purports to address "Social Values" but fails to do so. The only Societal information presented is a regurgitation of Census Data on Population, and Employment. The rest of the Section is devoted to a regurgitation of data on Economic factors, with a small amount of analysis thrown in.

81-22

The most glaring Societal omission is that ALCOA has chosen to completely ignore Bastrop County's opposition to strip mining and grass roots organizing efforts to "Say NO to ALCOA." Also glaringly absent is any documentation or discussion of the cultural/attitudinal differences between the three counties. ALCOA simply lumped them together in order to gloss over those critical differences. Most tellingly, ALCOA also chose to simply ignore the damage its project has, and will, inflict on the citizens of Bastrop County.

ALCOA failed to mention brutal efforts by San Antonio/CPS/SAWS and ALCOA's lawyers to silence citizen opposition through intimidation ….. and the resultant negative impact on the social fabric of the community.

Cultural Differences Between Counties

81-23

As mentioned in para. 3 above, this DEIS wrongly lumps Bastrop County in with Milam and Lee counties, as if they were a homogenous mass – which they are not! Milam County is the home of ALCOA's strip mining efforts in the region. ALCOA has been operating there for over 50 years, and the community is dependent on ALCOA for its survival. In short, Milam County is a "company town," dominated by ALCOA.

Milam County lags behind Bastrop and Lee Counties in population growth and economic factors. Table 3.10-1 clearly shows that Milam County gained 5.6% population from 1990 to 2000, while Bastrop County grew 50.9% during the same period. Table 3.10-3 shows that, during the same period, Milam County experienced a

Responses to Letter 81

81-22 Comment noted.

81-23 Comment noted. Please see the response to general comment SE-2 in Section 4.5.10 of the Final EIS relative to the presentation of aggregated data. Also see the response to comment 74-10 regarding effects on economic diversity.

Letter 81 Continued

0.1% LOSS in Average Annual Growth Rate in its Civilian Labor Force, while Bastrop County experienced a 4.6% growth rate. While Milam County stagnates under ALCOA's dominance, Bastrop County is evolving into a much more cosmopolitan community, with a diverse population, which is fiercely dedicated to maintaining the semi-rural lifestyle treasured by its inhabitants. A deep-seated respect for the land, and revulsion to strip mining goes with that semi-rural lifestyle.

81-23

Lee County generally trails Bastrop County by about half, in the economic indicators covered in the DEIS. While not dominated by ALCOA, Lee County has a culture heavily influenced by Oil production, with a boom as recent as the 1980's. This appears to be the basis for any support of ALCOA within Lee County.

ALCOA/SAWS/CPS Attack on the Bastrop County Community

Bastrop County Commissioner's Court has gone on record as opposing strip mining in the county. In apparent retaliation for taking that stance, Newspaper articles report that ALCOA's lawyers went to the County Judge and Commissioners and threatened to sue Bastrop County for $120 million if the County refused to ALCOA to move some County Roads so ALCOA could strip mine the Lignite from under the existing roads. As Bastrop County has only about a $17 million annual budget, the threatened lawsuit could have disastrous impacts on the county and its taxpayers. Community leaders are torn between supporting their constituents outrage against ALCOA's heavy-handed actions, and risking the financial well-being of the County by becoming involved in a legal war with the corporate giant, ALCOA, and the power wielded by its "silent partner," San Antonio.

In response to the threats inherent in the ALCOA/San Antonio project, local citizens formed a new grass roots organization, Neighbors for Neighbors. This organization included members from throughout the community, joined in their common concern for the future of Bastrop County. The organization is most visible in the thousands of red and white signs on private property throughout the county. The signs carry the simple message: "Say NO to ALCOA."

81-24

Neighbors for Neighbors initially sought to oppose the 3 Oaks project's Mining Permit from the Texas Railroad Commission. ALCOA reportedly responded by asking a judge to:

- force Neighbors for Neighbors to provide a list of names and addresses of ALL members of the organization,
- provide ALCOA with the Criminal History of all the members of NFN,
- authorize ALCOA to search, measure, and record the physical facilities and conditions of all lands owned by the members in Bastrop County, including the interiors of their homes.

Faced with such powerful corporate opposition, Neighbors for Neighbors eventually withdrew its formal opposition to the Railroad Commission mining permit, publicly proclaiming that it was simply conserving its resources to battle the ALCOA project in a venue where they had a greater likelihood of successfully opposing the 3

Responses to Letter 81

81-24 Comment noted. Local opposition is acknowledged; the opportunity to comment on the EIS gives ample opportunity to express concerns. The public has been provided the opportunity for input regarding the proposed Three Oaks Mine during the public scoping process and during the public review period for the Draft EIS. The input received during the scoping process was summarized in the Public Scoping Document distributed to the individuals on the USACE's EIS mailing list. In addition, the issues raised during scoping were addressed in the Draft EIS. All of the public comments received during the Draft EIS public review period are included verbatim in Appendix H of this Final EIS, together with the USACE's responses to these comments. The USACE will consider all substantive comments in its decision.

Oaks Mine. It appears that ALCOA's corporate bullying has stiffened the resolve of many citizens to oppose the 3 Oaks Mine project.

Probable Impacts of ALCOA's Actions on the People of Bastrop County

The sum of ALCOA/San Antonio/CPS/SAWS actions to date have had considerable negative impact on the Bastrop County community. Informal observation of, and interaction with, local citizens indicates varying adverse impacts which may include:

- Loss of sense of Community as Corporate Giant ALCOA forces its will on the community, in violation of their community values.
- Loss of sense of Control, as Corporate Giant overwhelms local government.
- Loss of sense of Protection under the Constitution and representative form of government.
- Loss of sense of Security and Well Being as ALCOA seeks to publicize private information and search private property in response to citizens expressing concern for the well being of their community.
- Sense of being Violated, both personally and as a community as ALCOA violates community norms.
- Loss of Self Esteem as local American Citizens find themselves powerless to fight frighteningly powerful Corporate Interests and distant San Antonio's Governmental greed for water.

81-24

These adverse impacts appear to be magnified by recent scandals in Corporate America, and resultant lack of faith and trust in those institutions. After the lies and deceit of ENRON and WORLDCOM, and the abusive treatment of local citizens by ALCOA and San Antonio's lawyers, there is little reason for the people of Bastrop County to place any trust in the DEIS presented by ALCOA. It is up to USACE to insure that those citizens are provided the full information and analysis required by NEPA, and the protection of the laws of the United States.

Recommendations:

a. USACE require ALCOA to include information on local social values and norms, as discussed above, including attitudes toward stewardship of the land and opposition to strip mining.
b. USACE require ALCOA to document local concerns and opposition to the project.
c. USACE consider mandating that ALCOA include, in the DEIS, information from groups/citizens opposing the project (to include Neighbors for Neighbors, Bastrop County Environmental Network, and possibly private citizens).
d. USACE coordinate with the Department of Interior to institute minimum standards for DEIS/EIS to insure that such documents actually address Societal Conditions/norms and the potential impacts of the project on the community.

10. Mitigation for Ultimate Social and Economic Losses From Mine Closure.

81-25

In the DEIS, ALCOA demonstrates Milam County's economic dependence on the Sandow, and future 3 Oaks Mines. ALCOA also documents the lack of economic

81-25 Comment noted.

diversity in Milam County and the accompanying negative impacts on their economy and society.

Concurrently, ALCOA relates how the mine will close when the Lignite supply runs out, with no replacement of the lost jobs and money to the economy indicated. Then, ALCOA states, in para. 3.10-4, that "No monitoring or mitigation measures are being considered for social and economic values."

In many places in the DEIS, ALCOA claims that they will reclaim the land and put it back much like it was before mining. However, it provides no hope of assistance to the community that it will do anything to help offset the impacts of it closing the mine and the smelter. After about 100 years in the community, ALCOA says it will simply close the doors, turn off the lights, and leave the community to deal with such a devastating loss.

There is much that ALCOA could do to offset the impacts of the future mine closure. These could be ongoing Community Assistance projects, which would benefit both the community and ALCOA. Such actions might include:

81-25

a. Assist the community in diversifying the local economy,

b. Assist the community in Workforce Education to support diversifying and expanding the local economy.

c. Assist the community in attracting new businesses to the area, and helping to sustain them through the mine closures.

d. Begin planning now for retraining the mine and smelter workforces when the facilities close.

e. Plan for alternate/follow-on uses of the smelter site. Incorporate those plans in the design and operation of current and future facilities to ease the transition and cleanup.

Recommendation:

ALCOA mitigate impacts on the community by providing assistance to:
- lessen the community's dependence on ALCOA,
- help diversify the economy of the communities around the mine,
- help the community plan and take appropriate actions to alleviate the impacts from the future closure of the ALCOA mines in the region.

11. Presentation of Economic Data Needs Improvement.

81-26

The Economic Data presented in section 3.10 is presented in tabular form, with limited text explaining some views of the data. The only way the average citizen can evaluate and comprehend the data presented is to do their own analysis. Presentation of the data in other formats would greatly facilitate the reader's comprehension of the data presented. A greater use of graphs and pie charts, similar to figure 3.10-1, would help.

81-26 Comment noted.

Letter 81 Continued

81-26

For example, Table 3.10-7, 3.10-8, and 3.10-9 would be much easier to read if they were also presented in pie charts or graphs. An ascending or descending order listing of earnings of industries for the counties would also help – expanding the limited textual explanations shown on page 3.10-6.

Recommendation: The DEIS be revised to make greater use of visual depictions of data to facilitate interpretation of tabular data, as discussed above.

81-27

12. Post- Mining Conceptual Topography Unacceptable.

Figure 2-14, page 2-54, provides a "conceptual" Post-mining Topography. In para. 2.5.3.2, page 2-51 of the DEIS, ALCOA claims that the post-mining topography will be similar to that which exists today, as depicted in Figure 2-13 on the previous page. If that were true, then ALCOA's view of how to mold topography would be what the earth would look like if God was a Mining Engineer!! ALCOA's proposed topography looks a lot like that which is used on closed garbage dumps/"sanitary land fills" …. And is totally unlike the existing topography.

In para. 3.12.4.2, VR-2, USACE has also noted this problem, and is considering requiring ALCOA to provide a more naturalistic topography, modeled after the existing topography.

Recommendation: USACE require ALCOA to provide a more naturalistic post-mining topography, modeled after the topography currently existing on the area requested for permitting. This should include features listed as possibilities in para. 2.5.3.7.

81-28

13. Night Lighting Mitigation Needs Standards.

Many of the citizens of Bastrop County treasure the night sky and would be harmed if ALCOA were allowed to destroy the view of the night sky with light. Given the length of the mine operations, many would lose their view of the night sky for the rest of their lives, unless USACE effectively minimizes ALCOA's night lighting. Spillover of light to off site areas, including the night sky, is not necessary to safe mining and should not be allowed.

In third paragraph from the bottom of page 3.12-20, ALCOA notes that their "Night operations at the mine would introduce light into what is now a rural and generally dark area. Although the lights used at the pit area would be shielded and aimed downward, there would be an overall increase in ambient light levels in the area."

This appears to be a common practice at "taking a stab" at mitigating the impacts of night lighting. However, the DEIS does not contain any enforceable standards by which ALCOA's efforts can be measured by USACE. There are several ways by which these impacts can be mitigated, which are not mentioned by ALCOA.

First, ALCOA should use absolutely the minimum amount of night lighting that is proven to be necessary for safe operations. Too often, people think they must literally flood the area with light. This type of lighting frequently obliterates shadows, reducing

Responses to Letter 81

81-27 Comment noted. As noted in the comment, proposed mitigation measure VR-2 in Section 3.12.4.2 of the Draft EIS addresses this concern as do RRC reclamation monitoring requirements.

81-28 Please see the response to comment 76-82. Most of the mining equipment is painted with a fairly high reflective paint to increase visibility and provide a safer work area at night. Use of dull, non-reflective paint in darker light absorbing colors is contrary to MSHA requirements. Not shining light directly on bodies of water also is not practical; for safety, MSHA requires that water bodies be well lit when people are working near them. Night work in the vicinity of large water bodies would not be a common occurrence, however, so water reflected light would not be a major concern.

Alcoa would incorporate into its training program steps that could be taken by employees to reduce light coming from the mine area. These steps would include turning lights off in areas where they are not needed and directing lighting away from neighbor's views when possible without compromising safety.

vision to a two-dimensional effort, making depth perception difficult, and operations more dangerous. A more effective technique is to use LESS lighting, highlighting some critical areas with just enough light to see to safely work while taking advantage of the human eye's ability to adjust to low light conditions. This low level lighting produces a much more 3 dimensional, and safer viewing area. The use of more, smaller lights, instead of large floodlights, will enable ALCOA workers to more effectively place the light where it is needed, and avoid it escaping to where it is not needed, or wanted.

Second, Light Shielding and Control Standards should be mandated by USACE, which ALCOA can then follow to minimize excess lighting. This should include measurable design and performance standards. For example, light should only be allowed to shine on the mine area. If you can see the light source from outside the mine area, then the light is not properly shielded. Shining light on reflective sources should also be prohibited. Use of dull, non-reflective paint, in darker, light absorbing colors should be required. Likewise, light should not be allowed to shine on standing bodies of water, to prevent it being reflected into the night sky. All of these standards should be expressed in specific, measurable terms, which can then be enforced.

81-28

Third, ALCOA should implement training and enforcement programs to effectively implement light control measures. Given the improper use of night lights by many people in the general public, it can be safely assumed that the average mine worker will not intuitively implement the best night lighting control measures. To overcome this problem, ALCOA should devise and implement a training program to teach their workers how to best implement these measures and work safely at night. Enforcement programs should also be devised and integrated into ALCOA's standard operating procedures, with periodic checks by independent outside agencies to insure the standards are met.

Recommendations:

a. USACE establish measurable, enforceable standards to minimize adverse impacts of night lighting, and a program whereby the standards can be enforced.
b. ALCOA devise a program to comply with those standards, including internal procedures for insuring compliance. Employee training programs should be included in that program.

14. Section 3.17 Unacceptable

Section 3.17, "Relationship Between Short-term Uses and Long-Term Productivity," is unacceptable as it is lacking in detail, cross-references to other sections where more detail can be found, and most importantly, fails to address the impacts of the SAWS contract and export of depressuration water from Bastrop County. The Section merely glosses over many of the important points it mentions, and leaves out many others. As such, it fails to provide the reader with a fair and comprehensive presentation of the Relationships it claims to address. The lack of cross-references requires the reader to search through this enormous document to try and find sufficient information with which to evaluate ALCOA's claims.

81-29

81-29 As indicated in the introduction to Section 3.17 of the Draft EIS, this section is intended to summarize the tradeoffs between the short-term impacts during construction, operation, and reclamation versus long-term impacts that would continue beyond reclamation. This section is not intended to reiterate all of the individual direct, indirect, and cumulative impacts identified in the individual environmental resource sections of Chapter 3.0. Please see the response to general comment NEPA-3 in Section 4.5.1 of the Final EIS regarding the relationship between the proposed Three Oaks Mine and SAWS contracts.

Letter 81 Continued

81-29

Recommendation:

a. USACE should require ALCOA to rewrite this section, giving greater detail in the discussion and relationships, as well as cross-references where the detailed presentation of the information can be found.

b. ALCOA should include a discussion of the SAWS Contract (and its probable permanent nature) and export of depressurization water in this section.

81-30

15. False Implication in Section 3.18

In Table 3.18-1, page 3.18-3, under "Land Use and Reclamation," ALCOA claims that "for end lake areas where the enlarged water features would be considered a beneficial impact by users." This implies that the End Lakes will be available for public use, as a mitigation for the project. However, para. 3.17.9, "Land Use and Recreation," clearly states, "… there is no plan to provide public access for recreation purposes."

Recommendation: ALCOA be required to remove all stated and implied Mitigations, unless such Mitigations are contractually enforceable by USACE and the public.

81-31

16. Section 4.0 Indicates Lack of Coordination Required by NEPA

Section 4.0, "Consultation and Coordination," indicates that ALCOA failed to properly coordinate this project as required by NEPA. For example:

- Para. 4.3.4, "Newspapers, Libraries, and Local Repositories," does not show that ALCOA coordinated with any of the local newspapers in Bastrop, Elgin, Smithville, or Lexington. The Houston newspapers are also missing from the list of Newspapers, even though many tracts of land in Bastrop County are owned by people from Houston.
- Para 4.3.5, "Other Organizations," fails to mention "Bastrop County Environmental Network," even though it is one of the leading opponents of this strip mine.
- Para. 4.3.7, "Elected Officials," fails to mention any officials from Bastrop County, even though newspapers report that ALCOA's lawyers personally visited the County Judge and Commissioners and threatened to sue the County for $120 million if the County refused to allow ALCOA to move County roads in the project area.
- Para. 4.3.7 does not list any Milam County officials, even though it is highly probable, and suspected, that ALCOA closely coordinated their efforts with these, and other, officials. Concerned citizens should have a list of all officials contacted, in order that they may present their views to such officials.

Recommendation:

a. ALCOA be required to coordinate their efforts with ALL organizations, which may be impacted by this project.

b. ALCOA be required to prove that it has provided clear and accurate information to all local newspapers. (See comments throughout this document, which demonstrates ALCOA's consistent failure to provide such clear and accurate information.)

Responses to Letter 81

81-30 The reference to end lakes as beneficial to users has been revised (see Table 3.18-1 in the Final EIS). The Final EIS may contain measures that are enforceable by the USACE and other federal and state agencies as well as measures that are recommended for implementation by Alcoa, although they are not enforceable by a regulatory entity.

81-31 As indicated in the introduction to Section 4.2, this section identifies the agencies with which the USACE (rather than Alcoa) consulted and coordinated during preparation of the Three Oaks Mine EIS. The Bastrop County Environmental Network (BCEN) was inadvertently omitted from the list of Draft EIS recipients in Section 4.3.5; BCEN has been added to Section 4.3.5 of the Final EIS.

Letter 81 Continued

81-31 c. ALCOA be required to list ALL officials it contacted/lobbied on behalf of their project.

17. MITIGATION PLAN:

The mitigation plan does not support the claims made in the body of the DEIS. For instance page 38 of Appendix E, Mitigation Plan says "a minimum of 6 tree species… and 4 shrub species… from … Table 6-1 will be planted….. a minimum of 5 native grass and forb species will be seeded throughout." However, in the body of the DEIS, ALCOA consistently claims that it will effectively restore the native vegetation it will remove by mining. Also, a review of Tables 2-12 and 2-13 leads the reader to believe that ALCOA will be bound to replanting a much more diverse mix of plants. Obviously, a minimum variety of plants, as described in the Mitigation Plan will not support the reclamation wildlife management/habitat objectives that ALCOA says it intends to implement.

81-32

The Mitigation Plan is also difficult to use because the Table of Contents is not accurate. For example the Planting Plan was found on page 38, not page 41 as listed in the Table of Contents.+

Recommendation:

a. ALCOA be required to revegetate with a mix of plants that approximates the widely varied species and diversity of existing vegetation.

b. ALCOA revise the Table of Contents of Appendix E to accurately reflect the location of information on pages within the Appendix.

18. Lack of Timely Planning and Applications by ALCOA Does Not Constitute A Crisis

ALCOA has been operating the Sandow mine since the 1950's. Undoubtedly, ALCOA has known about the limited supply of Lignite in the Sandow mine area for several decades. In para 1.2, and throughout this DEIS, ALCOA claims that it must close the Sandow mine and immediately open the 3 Oaks mine, to avoid disastrous economic losses to ALCOA and surrounding communities. The timing of the Permit application appears to be a "just in time" effort, by a Corporate Giant that has known about the depletion of Lignite in the Sandow mine for decades.

81-33 The "last minute"/"crisis" nature of the application is irrelevant and should be given absolutely no credence or consideration by USACE. ALCOA has provided no evidence that it acted in a timely manner to avoid this "crisis." In fact, some might consider that this "crisis" was actually manufactured by ALCOA, to put pressure on regulating authorities to act hastily, and give short shrift to regulatory requirements.

Additionally, the Houston Toad has been "listed" as an Endangered Species since the 1970's. ALCOA has had ample opportunity to thoroughly document the presence, or absence of the Toad on its property -- and generally failed to do so, until others began to take action.

Responses to Letter 81

81-32 Alcoa has revised the Mitigation Plan in Appendix E of the Final EIS to: 1) reflect the final seed mix agreed upon by the USACE and TPWD, and 2) correct the table of contents. The USACE and TPWD believe that the mixture of species proposed in the Mitigation Plan would meet the reclamation objectives for the affected areas.

81-33 Comment noted.

Letter 81 Continued

Only recently has extensive research been done to document the Toad's requirements for survival. This effort was spearheaded by Bastrop County, to protect the Toad and it's citizens. ALCOA has provided funding to support this effort, as it as meshed with the 3 Oaks project. However, research on the Houston Toad, and actions necessary to insure its survival, is just now beginning to pay off. A Draft Habitat Conservation Plan, with supporting research is expected to be finished by the fall of 2003.

While initial reports may have indicated that the 3 Oaks project might have limited impacts on the Toad, it is far too early to definitively answer pertinent questions. As the proponent of the 3 Oaks project, it has been ALCOA/San Antonio's responsibility to insure that the project will have minimal impact on the Toad's survival. A "rush to judgment" on the potential impact of the 3 Oaks project on the Houston Toad is inappropriate, and might imperil the survival of the species. We should wait until all the data is in, and then make an informed decision on this issue.

81-34

Recommendation:

a. USACE discount any attempts by ALCOA to "rush" this permit, as the "crisis" appears to be entirely of ALCOA's making.

b. USACE coordinate this action with the Bastrop County Houston Toad project, and the U.S. Fish and Wildlife Service, to insure that a reasonable effort is made to evaluate the results of current research and insure that the project does not adversely impact the Houston Toad.

Responses to Letter 81

81-34 Comment noted.