APPENDIX B

401 CERTIFICATION QUESTIONNAIRE

Texas Natural Resource Conservation Commission

Tier II
401 Certification Questionnaire

The following questions seek to determine how adverse impacts will be avoided during construction or upon completion of the project. If any of the following questions are not applicable to your project, write not applicable ("NA") and continue.

Please include the applicant's name as it appears on the Corps of Engineers' permit application (and permit number, if known) on all material submitted. The material should be sent to:

Texas Natural Resource Conservation Commission
Attn: 401 Coordinator (MC-150)
P.O. Box 13087
Austin, TX 78711-3087

I. Impacts to surface water in the state, including wetlands

A. What is the area of surface water in the state, including wetlands, that will be disturbed, altered or destroyed by the proposed activity?

The total acreage of surface water in the state that is disturbed altered or displaced during the 25-30 year life-of-project will be 67.4 acres. This consists of the following categories of surface waters:

Ephemeral Stream Channels (OHWM)	**19.9 acres**
Intermittent Stream Channels (OHWM)	**3.7 acres**
Ponds (OHWM)	**38.5 acres**
Non-Forested Wetlands	**5.3 acres**
Forested Wetlands	**0. 0 acres**
TOTAL	**67.4 acres**

B. Is compensatory mitigation proposed? If yes, submit a copy of the mitigation plan. If no, explain why not.

Compensatory mitigation is proposed. See Attachment B – Mitigation Plan for Proposed Three Oaks Mine, Lee and Bastrop Counties, Texas, USACE Project Number 199900331. The plan includes mitigation for both temporal and permanent impacts within the disturbance area.

C. Please complete the attached Alternatives Analysis Checklist

See attachment A – Alternatives Analysis Checklist.

II. Disposal of waste materials

A. Describe the methods for disposing of materials recovered from the removal or destruction of existing structures.

There are no proposed disposal sites within the proposed 3-Oaks Mine permit boundary; consequently, if waste materials are recovered from the removal or destruction of existing structures, the materials will be disposed of at an off-site, designated, registered disposal facility designed and operated in compliance with local, State, and Federal requirements. Prior to disposal, recovered waste materials may be stored in the 3-Oaks facility-area dumpsters. Dumpsters may be periodically located at various locations within the permit area when existing structures containing recoverable waste materials are encountered. Some materials, such as concrete, wood, rock, or bricks, etc. may be incorporated into the spoil or placed in an excavated mine pit.

B. Describe the methods for disposing of sewage generated during construction. If the proposed work establishes a business or a subdivision, describe the method for disposing of sewage after completing the project.

There will be no sewage generated during construction. Construction workers will be provided with portable toilets, and these facilities will be supplied and maintained by an outside contractor that is licensed to provide this service. Additionally, Three Oaks Mine facilities buildings (such as office buildings, change houses, maintenance buildings, etc.) constructed for the mining operation will have an on-site treatment facility permitted by the TNRCC for treatment of sewage. Effluent from the

treatment facility will discharge to FP-1 a "no-discharge" sedimentation pond located within the facilities area. Water retained in FP-1 will be used for dust suppression and truck washing. In the unlikely event that pond FP-1discharges, the pond releases are routed to SP-1, a final-discharge sedimentation-treatment pond. Releases from SP-1 will be required to meet RCT discharge limits.

C. For marinas, describe plans for collecting and disposing of sewage from marine sanitation devices. Also, discuss provisions for the disposing of sewage generated from day-to-day activities.

NA

III. Water quality impacts

A. Describe the methods to minimize the short-term and long-term turbidity and suspended solids in the waters being dredged and/or filled. Also, describe the type of sediment (sand, clay, etc.) that will be dredged or used for fill.

The proposed mine operation plan includes several sedimentation ponds for water quality treatment of active mine and postmine runoff areas. All discharge of storm water falling onto areas disturbed by surface mining activities, and all ground water resulting from pit inflow and surface water collected in the mine pit will be directed through these on-site treatment ponds. The treatment ponds will be permitted by the TNRCC and the RCT. Sedimentation ponds SP-1 and SP-5 will treat and control all mining related drainage which flows to Middle Yegua Creek, while SP-2 and SP-3 will treat and control all mining related drainage which flows to Big Sandy Creek. The sedimentation ponds are designed with adequate storage and detention times for proper water quality treatment with polymers and chemical additions prior to discharge downstream. All of the sedimentation ponds are proposed to be equipped with decanting outlet structures. Normal operating position of the decanting outlet structure will be in the closed position. The decanting outlet structure will be opened following a runoff event once the water quality in the pond is suitable for release to receiving streams. All discharges from the sedimentation ponds are subject to new-source performance standards (40 CFR, Part 434) for total suspended solids (TSS), total iron, pH, and settleable solids (SS). These discharges are regulated by law to meet applicable performance standards.

The detention times and water quality treatment measures incorporated into the design of the sediment ponds will prevent additional contributions of suspended solids to downstream streamflow. We base this assumption on monitoring data from similarly designed structures at the Sandow Mine. Monitoring results from Sandow indicate that Suspended Solids (SS) concentrations in sedimentation pond effluent are much lower than baseline SS concentrations from the same watershed.

Typical sediments dredged or used for fill include a mixture of native sands and clays, and mixed overburden following mining.

B. Describe measures that will be used to stabilize disturbed soil areas, including: dredge material mounds, new levees or berms, building sites, and construction work areas. The description should address both short-term (construction related) and long-term (normal operation or maintenance) measures. Typical measures might include containment structures, drainage modifications, sediment fences, or vegetative cover. Special construction techniques intended to minimize soil or sediment disruption should also be described.

The proposed operation and reclamation plan includes fresh water stream diversions to divert upstream freshwater flows around disturbed mine areas for subsequent discharge downstream. Diverting portions of Big Sandy Creek and Willow Creek around areas of mining disturbance will help maintain the natural water quality of these channels. Construction of other surface water control systems, including erosion control features, runoff control systems such as berms and diversions, and sedimentation ponds for water quality treatment purposes, will also help protect local surface waters and the hydrologic balance of the watersheds where mining activities take place. As required by the mining regulations, all surface drainage from active mining areas will be routed to sedimentation ponds for proper treatment before being released to receiving streams.

Mining activities will be conducted to limit erosion and subsequent production of suspended solids. Clearing ahead of mining will be minimized and other disturbed areas regraded and revegetated, as soon as practical, so newly exposed soil surfaces are kept to a minimum. Other erosion control practices including mulching, local sediment filter devices (e.g., hay bale dikes), drop structures, check

dams, etc. may be used, as needed, to reduce delivery of suspended solids. All disturbed drainage will be routed through sedimentation ponds which function as sediment control structures. Generally, when sedimentation ponds are being constructed, there are no downstream sedimentation ponds for sediment control. Under these circumstances, Alcoa uses rock-check dams, hay-bale structures, silt fencing and water-control berms to minimize construction-related sediment transport. After every rainfall, the field engineer in charge of the project monitors these structures in order to assess the effectiveness of the silt fencing and the necessity of silt-fence maintenance.

Following mining in an area, reclamation activities are conducted, which include regrading and revegetation. In addition, postmining ground cover testing will occur to ensure applicable cover standards are met prior to bond release. Both of these items, the proposed reclamation plan and regulatory testing programs, will prevent excessive suspended solids contributions to receiving streamflow following reclamation and bond release.

C. Discuss how hydraulically dredged materials will be handled to ensure maximum settling of solids before discharging the decant water. Plans should include a calculation of minimum settling times with supporting data. (Reference: Technical Report, DS-7810, Dredge Material Research Program, GUIDELINES FOR DESIGNING, OPERATING, AND MAINTAINING DREDGED MATERIAL CONTAINMENT AREAS) If future maintenance dredging will be required, the disposal site should be designed to accommodate additional dredged materials. If not, please include plans for periodically removing the dried sediments from the disposal area.

Hydraulic dredging is not a normal practice, but may occasionally be used to desilt a sedimentation pond or clean the mud out of a pit. Any decant water would be retained in a mine-pit sump until the suspended solids have largely settled out, then pumped to a sedimentation pond and treated to conform to approved water-quality effluent limits.

D. Describe any methods used to test the sediments for contamination, especially when dredging in an area known or likely to be contaminated, such as downstream of municipal or industrial wastewater discharges.

Alcoa does not anticipate encountering areas of suspected potential soil contamination as described above. However, should Alcoa encounter suspected contaminated sediments, the sediments will be tested in accordance with 30 TAC Chapter 335 Subchapter R, and, if necessary, will be disposed in an

off-site, designated, registered disposal facility designed and operated in compliance with local, State, and Federal requirements.

Attachment A

Tier II
Alternatives Analysis Checklist

Tier II
Alternatives Analysis Checklist

I. Alternatives

A. How could you satisfy your needs in ways which do not affect surface water in the state?

The lignite recovered at the Three Oaks Mine will be used to provide a long-term economically stable fuel supply for the Rockdale Power Generating Station which provides electrical power to the Rockdale aluminum smelter. There are a number of alternate fuels available which can be used at the Rockdale Power Generating Station which would not affect surface water in the state in the immediate area; however, these have been determined to be economically infeasible. The available options are as follows:

1) **Power purchased from the commercial utility grid,**
2) **Coal from the western United States, and**
3) **Natural Gas.**

Please note, however, that each of the options listed above has the potential for impacting surface waters in the state. Power purchased from the utility grid may require additional surface coal mining in other locations within the state, thereby impacting surface waters of the state at a different location; likewise, the exploration, development and transportation of additional natural gas reserves will have impacts on surface waters of the state; and, when coal from the western United States is delivered to locations in Texas, rail lines which necessarily traverse surface waters of the state must be constructed and maintained.

B. How could the project be re-designed to fit the site without affecting surface water in the state?

Surface mining is, by nature, controlled in its surface extent by the distribution of subterranean lignite reserves and the technological processes necessary for recovery. Effective and efficient recovery of these reserves limits the minimization of surface disturbance over the reserves. Due to the highly bifurcated nature of the area's surface waters, altering project design to achieve avoidance and minimization of impacts to surface-water features is not practicable over the area of reserve recovery. However, outside the area of reserve recovery, avoidance and minimization can and has been achieved within the design of the project. For example, within the entire Three Oaks Mine permit area, there are 161.5 acres of waters of

the state; yet, the project has been designed to limit disturbance of the waters of the state to only 67.4 acres of waters of the state, leaving over 58% of the surface waters of the state within the project boundary undisturbed. Avoidance alternatives incorporated into project include designing minimally impactive sedimentation ponds that are constructed by excavating the storage capacity from higher-elevation off-stream locations rather than by amassing storage capacity through embankment construction within or near stream channels. Similar considerations are incorporated into the design of diversions and diversion berms. Additionally, Alcoa typically uses a number of small off-channel sedimentation ponds located close to the point of sediment production, rather than using fewer, yet larger, on-stream sedimentation structures located further downstream of the mining activity. This practice avoids in-stream construction of embankments, and avoids sedimentation of streams and channels upstream of the would-be downstream embankment structure. Further, Alcoa typically designs and constructs haul roads and access roads on high ground, minimizing the number and size of stream crossings.

C. How could the project be made smaller and still meet your needs?

The project is currently sized to meet a current and anticipated demand for lignite at the Sandow Generating Station over the next 25-30 years. Only if that current and projected demand for fuel is decreased, could the project be made smaller in extent.

D. What other sites were considered?

1. What geographical area was searched for alternative sites?

Alcoa has mined nearly all lignite seems with less than 200 feet of overburden within the Sandow Mine. These lignite seams, however, continue past the 200-foot depth line, dipping toward the southeast, and Alcoa has considered mining deeper at the Sandow Mine to recover these deeper reserves. After deliberation, though, Alcoa does not regard this option to be viable because of safety and economic considerations. Thousands of acres of new reserves would have to be purchased, and a large capital investment would be required to purchase earth-moving equipment capable of such deep mining. Additionally, employee safety and slope-stability would be a major concern in the unconsolidated overburden.

Alcoa has also considered mining reserves located northeast of the Sandow Mine in Milam County, commonly referred to as the Milam reserve. However, property control issues in recent years have effectively eliminated the Milam reserve as a feasible option. The last company to control the reserve as a logical unit, sold individual parcels to many different individuals, and the difficulty of acquiring contiguous parcels of property of the size needed for development of a mine limits the viability of this option.

Further, it is highly likely that mining either the deep Sandow reserves or the Milam reserve would have a larger impact on surface waters of the state than mining at the Three Oaks site. This is because the Three Oaks Mine site is located at the drainage divide between the Colorado River and the Brazos River – meaning, essentially, that the site is situated on the top of a hill and has relatively few surface water features. Consequently, there are fewer surface-water features at the Three Oaks site than at either of the alternate locations considered.

2. How did you determine whether other non-wetland sites are available for development in the area?

The fact is, all areas of the Texas landscape of mineable acreage contain surface waters of the state, and no other area exists that could be mined without impacts to surface water features. It follows that any mining project in Texas has the potential for impacting wetlands. Specifically, mining deeper at the Sandow Mine would require disturbance of forested wetlands adjacent to Walleye Creek and East Yegua Creek. Likewise, mining the Milam Reserve would require rerouting and mining through a major tributary of Ham Branch, which has the potential of containing forested wetlands, although Alcoa has not made this assessment. By comparison, there are no identified forested wetlands at the Three Oaks site.

3. In recent years, have you sold or leased any lands located within the vicinity of the project? If so, why were they unsuitable for the project?

Alcoa has only acquired lands within the vicinity of the project. None have been sold or leased to other parties.

E. What are the consequences of not building the project?

Aluminum smelting requires large amounts of electricity, and the cost of electricity is important to the viability of aluminum production, making up approximately 1/3 of the cost of aluminum. Our cost analyses indicate that alternative fuel sources are too costly to allow aluminum production at Alcoa's Rockdale smelter at a competitive price. Consequently, if the project does not go forward, Alcoa would be forced to close the Rockdale mining and smelter operations. These industries employ about 1,610 people and produce an output valued at $322.3 million. The power plant might continue to operate with alternative fuels and supply power to the utility grid.

The socioeconomic and fiscal impacts of the Three Oaks Mine and the Alcoa aluminum smelter extend well beyond the direct output and employees. This basic industry is the single largest manufacturing facility in the three-counties area of Milam, Lee and Bastrop Counties. Its economic importance extends to all businesses in the area that supply, either directly or indirectly, goods and services to the mine and smelter. Moreover, the payroll from the mine and smelter in excess of $80 million is spent within the local area, providing a demand for companies in wholesale and retail trade, personal and business services, banking, real estate, entertainment and others. The annual economic losses that may be expected if the Three Oaks Mine does not open are estimated to have a present value equivalent of over $5.7 billion. Permanent employment loss in the study area would be reach an estimated 3,276 jobs. The regional economy, composed of Lee, Bastrop and Milam counties, cannot withstand these magnitudes of losses without severe impacts on private businesses and public service providers.

II. Comparison of alternatives

A. How do the costs compare for the alternatives considered above?

Three Oaks lignite can be produced for about $0.95/MM Btu. Power purchased from the electric grid would cost about $2.70/MM Btu. Natural Gas would cost approximately $2.30/MM Btu if using the average cost over the past couple of years, and would have cost as much as $4.00/MM Btu during the summer of 2001. As these recent price fluctuations show, long term natural gas prices are very unpredictable. Western Coal would cost about $1.49/MM Btu, according to an estimate by the US Army Corps of Engineers. Additionally, transportation contracts with the railroads (necessary for western coal delivery) are for 5-year terms, maximum. And, these transportation costs are the largest component of the cost of western coal. Consequently, the long-term prices for western coal are also unpredictable.

If long-term fuels costs are greater than $1.25/MM Btu, then aluminum cannot be produced at costs which are competitive on the world market. Consequently, lignite from the Three Oaks Mine is the only available fuel supply which is economically feasible for aluminum production at the Rockdale smelter. Additionally, local lignite is the only fuel source that is controlled by Alcoa, meaning that in addition to being the lowest-cost fuel supply, the costs of this fuel supply can be held stable for decades.

B. Are there logistical (location, access, transportation, etc.) reasons that limit the alternatives considered?

Lignite fuel sources need to be within a short distance of the power plant to be an economically feasible fuel source; and, local lignite reserves are limited to the lignite deposits in the lower Calvert Bluff formation. This limits practical reserve recovery to about 20 miles northeast or southwest of the plant. Within these limitations, the Three Oaks reserve is the only practical long-term reserve recovery area.

Property control issues have effectively eliminated the feasibility of pursuing the Milam reserve for surface coal mining. The reserve has been sold to many different individuals, and it would be extremely difficult

and expensive to acquire the large number of contiguous land tracts necessary to support a surface-mining operation.

If western coal were to be used as a fuel source for the Rockdale Power Generating Station, rail offloading and storage facilities would need to be installed at the power plant at an estimated cost of $30 million.

If natural gas were to be used as a fuel source for the Rockdale Power Generating Station, a pipeline would have to be built capable of providing 85 million cubic feet per day of natural gas to the power plant, costing approximately $100 million.

C. Are there technological limitations for the alternatives considered?

Use of either western coal or natural gas to fuel the existing power plants would require that the existing boilers be modified.

D. Are there other reasons certain alternatives are not feasible?

All fuel or energy alternatives other than lignite are cost prohibitive to making aluminum for sale on the world-wide commodity market. To be competitive, the fuel source for making aluminum must not only be below $1.25/MM Btu, it must also be stable and predictable. The cost of the energy alternatives are as follows:

1. **Power purchased from the commercial utility grid -- $2.70/MM Btu**
2. **Coal from the western United States -- $1.49/MM Btu**
3. **Natural Gas -- $2.70/MM Btu**

III. If you have not chosen an alternative which would avoid impacts to surface water in the state, explain:

A. Why your alternative was selected, and

The Three Oaks Mine site is the only feasible alternative for long-term continued aluminum production, considering cost, recoverable reserves, and distance from the power plant.

B. What you plan to do to minimize adverse effects on the surface water in the state impacted.

Alcoa has developed a reclamation/mitigation plan for the Three Oaks Mine similar to the plan used at the Sandow Mine, which has been demonstrated to be effective at the Sandow Mine. It has been demonstrated at the Sandow Mine that the mining and reclamation process necessarily results in a net increase of surface waters over the life of the mine.

IV. Please provide a comparison of each criteria (from Part II) for each site evaluation in the alternatives analysis.

Alternative	Cost	Logistics	Technology	Other
Three Oaks	Good – low overburden to coal ratio, & relatively low depressurization costs	Good	Good	
Milam Reserve	Fair – overburden to coal ratio is high, and depressurization requirements are high	Poor – property control is fragmented	Good	
Deep Sandow	Poor –capitalization requirements are high, and the overburden to coal ratio is very high	Fair – property acquisition will be costly	Poor – technology for mining to depths of 400 feet is questionable	
Western Coal	Fair – but 50% higher cost than lignite	Fair – railroad span required	Fair – slagging problem with boiler units 1,2, & 3	Cost is unpredictable for long term
Natural Gas	Poor – extremely high cost	Fair – gas line required	Good, but boilers must be modified	Cost is unpredictable for long term
Utility Grid	Poor – extremely high cost and is predicted to go higher	Good	Good	Cost is unpredictable for long term

Attachment B

Mitigation Plan for Proposed Three Oaks Mine
Lee and Bastrop Counties, Texas
USACE Project Number 199900331

July 2002

(Please see Appendix E of the EIS)