

TECHNICAL MEMORANDUM

TO: Malcolm Nash, Director / Sevier County Economic Development
FROM: Michael D. Brehm, P.E. / **BREHM ENVIRONMENTAL LLC (BELLC)**
Joseph E. Beste, Managing Director / **Ocean Energy Group, Inc. (OEGI)**
RE: Review & Comments on Conceptual Site Plan
Proposed Sevier Power Plant
DATE: November 14, 2007

BACKGROUND & PURPOSE

This Technical Memorandum documents the technical review of relevant information provided by Sevier County and the Sevier Power Company (proponent) related to potential short and long-term environmental and infrastructural impacts that may derive from the construction and operation of a 270-megawatt, circulating fluidized bed, coal-fired power plant in Sevier County, Utah. The review was conducted by BREHM ENVIRONMENTAL LLC in partnership with OEG, Inc., at the request of Sevier County. The relevant information relied on for this review was provided by Sevier County and representatives from the proponent. The scope of this review, including assumptions and limitations, was developed by Malcolm Nash, Economic Development Director for Sevier County.

We understand the proposed facility is located approximately 10 miles northeast of Richfield, Utah, in Sigurd, Utah. Sigurd is located in Sevier County, near the mouth of a northeast-southwest oriented canyon. The project site is 6.7 miles north of the Richfield city limits on State Road 118 (Old Highway 89) in the Sevier Valley, and encompasses 162 acres. The site was chosen for the availability of land and water supply. The proposed coal, with a low sulfur content ranging from 0.25 to 0.90 percent, will be obtained from the Sufco Mine or other Utah coal sources.

Major plant buildings include the boiler and turbine building, including covered limestone and fuel storage bays. Additional buildings and facilities include coal material handling and limestone unloading and conveying, ash storage and conveying, lime receiving and handling, plant stack and air-cooled condenser, electrical distribution, control room, administration, and water treatment.

The major components of the proposed power plant include:

- Combustion and generating systems
- Exhaust systems and pollution control equipment
- Emergency power and fire equipment
- Coal and limestone material handling and storage systems
- Cooling water systems, and
- Transportation systems.

BREHM ENVIRONMENTAL LLC

1335 EAST GILMER DRIVE - SALT LAKE CITY, UTAH 84105 / PH&FX: (801) 582 - 2310 / C: (801) 541 - 6602
MBREHMPE@BREHMENVLLC.COM / WWW.BREHMENVLLC.COM

The proposed Sevier Power Plant (SPP) will have a net power output capacity of 250 megawatts of electricity (270 MW gross) and is based on circulating fluidized bed (CFB) combustion technology. It will be a coal-fired plant that will use approximately 960,000 tons of Utah coal and 33,600 tons of Utah limestone annually, purchased from suppliers located in Sevier County. The plant will be equipped with limestone injection, dry-lime scrubbers, selective, non-catalytic reduction with ammonia injection and a bag house for control of the various emissions. The proposed facility will be a small plant compared with other coal-fired plants in the state. With a production capability of 270 MW, it would rank fifth behind IPP (1,800 MW), Hunter (1,320 MW), Huntington (805 MW) and Bonanza (458 MW). The CFB design that will be used by the proposed plant is relatively new compared to the more commonly used pulverized coal combustion (PCC) boiler design.

The plant is scheduled to take four years to build out. The earliest the plant could commence operations is 2011. When fully operational, the plant would employ a total of 77 people.

This Technical Memorandum addresses seven technical areas:

- Evaporative Ponds
- Ash Handling & Disposal
- Coal Handling
- Dust Control
- Storm Water Runoff
- Site Security & Safety
- Residential Proximity
- Fire Safety

Because the data available to our review team was limited to general, non-detailed, planning-level information, we have generated and provided these notes as a framework of items and issues that deserve further consideration in your planning and approval process. We have found them to be helpful and applicable on other, similar projects. Some may have already been contemplated by your staff or the project proponent, but we have not yet received sufficient plan detail to determine this. This review is provided primarily from the engineering perspective and purpose of advocating for the preservation and protection of local government infrastructure and assets, public works and environmental health and safety, of both human and natural resources.

As we indicated at the June 1 public meeting attended by our team, local, State and Federal environmental regulations represent a substantial compliance obligation on the part of the project applicant, covering several aspects of air, water and soil media. Typically, a project applicant will focus their efforts on meeting some minimum standard of completeness in obtaining project approvals and permits, based on the cost and time required to achieve success. This standard may meet the needs and expectations of the local community and elected officials, or it may not. We believe the greatest value our team can represent to Sevier County is to anticipate and identify those areas that may represent some unique interest to the local community and governments, or which the existing regulatory community is potentially unprepared or unable to adequately execute, given limited agency resources, and in consideration of the objectives of the local community and government entities. In the end, we view our role as one that will result in a stronger energy facility application, and one the local community and elected officials can be comfortable with, if constructed. These potential impacts are routinely addressed as part of the facility planning, design and permitting process. Additional review may be appropriate once Sevier County staff receive additional plans provided by the applicant.

EVAPORATIVE PONDS

Environmental concerns associated with evaporative ponds can include: odors, contaminant leaks, nuisance or inappropriate wildlife attractant, sludge/silt accumulation, disruption of natural stream flows, and water quality impacts from unplanned/uncontrolled discharges. The following items summarize items to be considered or implemented in your planning and approval process:

- Pond size shall exceed maximum design discharge by a substantial margin.
- Multiple ponds shall be provided to allow for maintenance or emergency.
- Pond location shall be reviewed and approved by a licensed professional geologist.
- Ponds shall be lined in a manner and using a system approved by the geologist.
- Ponds shall have adequate freeboard such that wind driven waves will not crest the top of the pond dike.
- Ponds shall minimize the possibility of wind blown spray from landing on any surrounding un-paved area.
- Pond structures shall withstand freezing.
- The pond liners shall withstand the impact of fixed or floating ice without damage.
- The ponds shall be accessible around their full perimeter.
- The pond dikes shall allow travel in a vehicle such as a pick up truck on the top of the dike.
- Ponds shall allow transfer of waste liquid from one to another in the case of a leak or need to remove silt from the bottom of any pond.
- The evaporation ponds shall comply with all federal and state regulations pertaining to their design and operation.

ASH HANDLING & DISPOSAL

Environmental concerns associated with ash disposal can include: odors, contaminant leaks/leachate/runoff, water quality impacts from unplanned/uncontrolled discharges, dust generation, inadequate space/volume requirements that result in the need for off-site disposal, impacts associated with reuse of the material.

Ash by-products will be stored in two concrete silos. These silos (bed ash and fly ash) will be capable of off-loading by gravity directly to trucks (enclosed trailers) using a telescopic spout, utilizing a dust removal fan at negative pressure, routed back into the silo. Ash will be transported daily off-site to an approved ash disposal site in covered trailers that deliver coal to the plant. It is estimated that 5 tons of fly ash and 25 tons of bed ash per hour will be generated from the boiler, on average, during operation.

The following items summarize items to be considered or implemented in your planning and approval process:

- The plant ash handling system shall be designed by a firm specializing in such systems, under the direction of a registered profession engineer experienced in the design of ash handling systems.
- The ash disposal system shall minimize water consumption.
- The ash disposal system shall minimize the possibility of dropping ash on to any unpaved area.
- The ash disposal system shall prevent ash from entering the plant sump and drain system.
- The ash disposal system shall prevent the dispersion of ash fines by wind.
- The ash disposal system shall allow ash haul trucks to enter and leave the plant site without being required to back up at any time.
- Ash haul trucks shall be equipped with covers to ensure that ash fines will not be dispersed while in transit.
- The ash disposal site shall be approved by a registered professional geologist and professional Civil Engineer.
- The ash disposal site shall be selected to minimize impact on groundwater and/or surrounding vegetation.
- The ash disposal site shall be well distant from any present or planned human habitation development.
- The ash disposal site shall be reviewed by a competent professional biologist and certified to not contain any endangered species.
- The ash disposal site shall be reviewed by a competent professional archaeologist and certified to not contain any cultural or historic materials.
- To the maximum degree possible, ash shall be recycled for construction materials, etc.
- The ash handling system shall comply with all federal and state regulations pertaining to its design and operation

COAL HANDLING

It is estimated that 75 coal trucks with pups will arrive daily at the site. The coal will be transported by conveyor to the active 30-day coal storage pile. The coal-feed system empties from the piles into three silos, each with a capacity of 665 tons.

Environmental concerns associated with coal handling can include: dust generation and air quality impacts, and water quality impacts from unplanned/uncontrolled discharges.

The following items summarize items to be considered or implemented in your planning and approval process:

- The coal handling system shall be designed by a firm specializing in such systems, under the direction of a registered profession engineer experienced in the design of coal handling systems.
- The coal handling system shall be capable of being stopped and re-started as required, with all conveyor systems fully loaded with coal.
- Whether by rail or truck, the coal unloading system shall be paved, covered and/or otherwise provided to prevent coal fines from being released to the atmosphere and/or waste water.
- If delivery is by truck, the system shall be capable of allowing coal delivery trucks to enter and leave the plant site without being required to back up at any time.
- The coal handling system shall minimize water consumption.
- The coal handling system shall minimize the possibility of dropping coal fines on to any unpaved area.
- The coal handling system shall prevent coal fines from entering the plant sump and drain system.
- The coal handling system shall prevent the dispersion of coal fines by wind.
- The coal handling system shall include fire smothering to control fires in the silo, conveyor, and tipple to the extent that such features are included in the design.
- The coal handling system shall include fire smothering in the mills (assuming that the plant will be a pulverized coal design).
- Coal piles shall be contained on paved areas within domes or galleries to avoid dispersion of fines by wind.
- Coal pile containment structures shall be equipped with smothering systems to control potential spontaneous combustion.
- The coal handling system shall comply with all federal and state regulations pertaining to its design and operation

DUST CONTROL

Environmental concerns associated with dust control include both construction-phase and operational measures to control dust, and other airborne particulates. Dust and particulate generation is one of the most common impacts identified by the general public, who reside and travel near an operating coal plant. Dust and particulate control measures are well-known in the industry, and can be proactively implemented, or developed as part of a response plan.

Dust control and collection systems are proposed for each material transfer point. The proposed systems will either be induced-draft filter bag units or insertible cartridge-type filters, as appropriate.

The following items summarize items to be considered or implemented in your planning and approval process:

- All raw, process and byproduct material handling systems and operations shall be enclosed, covered, managed or otherwise conducted, during both construction and operational phases, to minimize the generation of dust and windblown particles, either natural or man-caused.
- These systems and controls shall include, but not be limited to: material handling, conveyance, vehicle hauling and movements, and both on-facility and off-facility operations.
- Permit compliance shall be considered a minimal performance standard in this regard. Observations of excessive dust generation provided by local officials and residents shall be addressed immediately.
- Soil and other debris tracking onto roadways shall be avoided, and, immediately removed if it occurs for any reason.
- The phone number and of a facility contact (and other information as appropriate) shall be displayed prominently on the facility exterior, for use by the public, in encouraging the avoidance of - and timely response to - dust and other particulate emissions impacts.
- At such time as the details of the plant emission control equipment are finalized, the following system enhancements (or equivalents) should be considered and utilized where/if applicable:
 - Folic filtration (particulates)
 - Limestone injection and liquid scabbing (sulfur oxides)
 - Selective non-catalytic reduction w/ ammonia injection (nitrogen oxides)
 - Fluidized Bed combustion control (carbon monoxide and VOCs)

STORM WATER RUNOFF

Environmental concerns associated with storm water runoff can include: sludge/silt accumulation, disruption of natural stream flows, and water quality impacts from unplanned/uncontrolled discharges.

The following items summarize items to be considered or implemented in your planning and approval process:

- The plant shall comply with all aspects of the National Pollution Discharge Elimination System (NPDES) as well as all other applicable federal and state regulations.
- The plant shall not conduct stormwater into or through any system, such as coal handling or ash handling, where the storm water can become contaminated with fines.
- The plant storm water may not come into contact with any lubricants or any material or substance used in the operation of the plant who's Material Safety Data Sheet (MSDS) indicates toxicity or hazard to humans, livestock, wildlife, fish or plant life.
- Storm water flow control systems, including sheet flows, shall be designed under the direction of a registered professional civil engineer experienced in the design of storm water flow systems.
- Storm water exiting the plant shall be directed such that it will not cause erosion or flood hazard to any neighboring property.
- The plant layout and civil design shall ensure that it does not interfere with any existing waterways or storm flow channels.
- All areas of the plant shall be either paved, or covered with gravel to minimize erosion.

SITE SECURITY & SAFETY

The following items summarize items to be considered or implemented in your planning and approval process:

- The required Worker Safety Plan will address both Construction and Operations phases.
- The site shall be surrounded with a chain link fence, topped with barb or slash wire at least eight feet in height. The fence and/or security plan shall be designed such that it is not trivial to burrow under the fence fabric to gain entry into the plant.
- A Site Security Plan shall be prepared and submitted to local law enforcement entities for concurrence. This plan shall be consistent with all local, state and federal plans related to security and safety, including Homeland Security, if applicable.
- The site shall be equipped with a rolling electric operated gate for vehicle entrance and exit. It is recommended that a security officer be stationed at the gate at all times.
- If coal is to be delivered by rail, a separate gate system shall be installed at the point where the rail line enters the plant perimeter to ensure that unauthorized personnel are not allowed to enter the site. It is recommended that a security officer be stationed at the gate at all times deliveries are scheduled.
- One or more personnel “emergency exit” gates shall be located at strategic points on the perimeter to allow plant personnel to safely exit the plant site in event of emergency.
- Site personnel shall be required to wear badges at all times for identification.
- Visitors shall be required to wear badges and hard hats that clearly identify them as visitors at all times.
- Plant lighting shall be designed to ensure safe operation of the plant as well as provide sufficient illumination to detect plant operation issues and/or intruders.
- Monitoring with TV cameras that display in the security office and control room is recommended.
- The plant shall be designed in accordance with requirements of local fire and police departments to ensure that “first responders” have proper access when required.
- Roads shall be designed to allow entrance of emergency vehicles such as fire engines.
- Coal Handling entrance should have provisions in the design of the scale area for a “work around” road, in case the scale needs maintenance or repairs..
- A remote camera should be on the North site entrance, as well as some in various perimeter areas
- An emergency helicopter landing zone area should be located near or on the plant site for transporting seriously ill or injured workers to a hospital out of the area. The surface and surrounding area shall be suitable for landing (with the prior approval of local EMS representatives), free of material and debris that would represent a hazard from rotor wash, and have ample overhead and lateral clearance..
- Is the gate on the North side intended to a contractor’s entrance?. It could be converted to an employee and guest entrance so as to not have the Trucks and automobiles in the same traffic pattern. This concern might be accommodated at the current Truck entrance with a separate lane or lanes for the automobiles.
- Will there be a location for food trucks within each contractor designated work area or a common break and lunch area set aside?

RESIDENTIAL PROXIMITY

The following items summarize items to be considered or implemented in your planning and approval process:

- The plant shall make reasonable effort to mitigate impact on neighboring residential property.
- The site lighting shall be designed to provide necessary illumination on site, but prevent a “bright sky” impact on the surrounding area.
- Lighting design shall comply with all applicable codes.
- The plant shall provide proper noise mitigation such that noise at the perimeter of the property from plant machinery complies with all applicable codes. It is desirable that plant noise at the perimeter not be distinguishable from the ambient noise level outside of the plant.
- Architectural fencing and landscaping shall be employed to mitigate visual impacts, as described in the Bear West report.
- Utilize berms for visual and noise impact mitigation at all beneficial locations, while preserving visual and physical access at the facility office/headquarters building(s).
- Prepare and submit a landscape plan for approval.
- Implement the construction phase recommendations outlined in the Traffic Impact Study. Meet with UDOT prior to initiating construction, so that UDOT is fully informed regarding both construction and operational phase traffic types, vehicle weights, and volumes.

FIRE SAFETY

The following items summarize items to be considered or implemented in your planning and approval process:

- The plant and all of its systems shall meet the codes and standards of the National Fire Protection Association (NFPA) and the National Electric Code (NEC).
- The coal handling system shall prevent fire and/or explosion from coal fines or dust.
- The coal handling system shall prevent spontaneous combustion in coal piles.
- Smothering systems shall be installed at appropriate locations of the coal handling system.
- CO2 smothering shall be provided for enclosures where electrical fires may occur, provided that such enclosures are not manned locations.
- A sprinkler system shall be provided where lubricating oil fires are potential to occur.
- Transformers shall be equipped with appropriate fire suppression systems and blast walls to prevent damage to surrounding equipment in case of a fire.
- A private hydrant loop shall be installed within the plant perimeter in accordance with Industry and local fire authority standards.
- Gypsum plant steam supply line design should be jacketed in the Truck and road areas. What are the design delivery temperature, pressure and volume?
- Provide a backup provision for fire suppression, in the event that water supplies are limited or unavailable.
- Fire response and fighting training for all contractors on site during construction. Developer should provide on- site Fire Safety monitoring of all contractor's, and include County Fire personnel.
- The Conceptual site plan does not seem to indicate the location of the Fuel Tanks? What type of fuel? And for what purpose?
- Item #17, the Fire water storage tank- What is the projected size and pumping capacity?
- Details of the ammonia storage and operations must be included in all workplace and safety plans.

REFERENCES

- Prevention of Significant Deterioration Permit Application for Sevier Power Company Proposed 270 MW Coal-Fired Power Plant Volume 1 (September 10, 2003)
- Memorandum from Sigurd Town Council to Sevier County Commissioners (2 p., undated)
- Conceptual Site Plan (Stanley Consultants, Figure 1, September 13, 2006)
- The Economic and Demographic Impacts of the Sevier Power Plant (January 2007)
- Letter from Applicant to Central Utah Public Health Department (2 p., March 5, 2007)
- Letter from Central Utah Public Health Department to Applicant (1 p., undated)
- Letter from Applicant to Richfield City Fire Department (2 p., March 5, 2007)
- Letter from Applicant to Sevier County School District (1 p., March 5, 2007)
- Letter from Applicant to Sevier Valley Hospital (2 p., March 5, 2007)
- Letter from Sevier Valley Medical Center to Applicant (1 p., March 12, 2007)
- Letter from Applicant to Sevier County Sherriff Office (2 p., March 3, 2007)
- Letter from Sevier County Comprehensive Emergency Management to Applicant (1 p., March 14, 2007)
- Letter from Applicant to Central Utah District DEQ (1 p., March 5, 2007)
- Traffic Impact Study (April 27, 2007)
- Visual Impact Analysis Report (BearWest, June 1, 2007)