SECTION 1

Summary

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1.1 Introduction

Starbuck Power Company, L.L.C., (the Applicant) of Bellevue, Washington, seeks a Site Certification Agreement to construct, own, and operate the Starbuck Power Project (SPP) for generation of electricity. The proposed SPP is a 1,200-megawatt-capacity, natural-gas-fueled, combustion turbine power plant and related facilities. The proposed generation plant site is located on a terrace above the Snake River, near the Town of Starbuck in Columbia County, Washington (see Figure 1.1-1).

The SPP is privately sponsored. The Energy Facility Site Evaluation Council's (EFSEC) role is to review and process the proponent's Application for Site Certification (ASC), to make recommendations as to approval or rejection, and to prepare a draft Site Certification Agreement for the SPP if approval is recommended. The Applicant's objective is to construct, own, and operate a natural-gas-fired plant to generate electricity for sale, achieving long-term efficiency and commercial success through use of the proposed site's features and the Applicant's experience with similar facilities.

United States laws and policies have encouraged private development of energy plants to supplement governmental and private utilities' generation. The purpose of the SPP is to serve the competitive market for electrical energy in the western United States. The SPP will be interconnected to transmission facilities serving the Western System Coordinating Council (the western United States) and will sell its output to entities in this geographic area. As is typical at this stage of the facility development process, the Applicant cannot yet identify which utilities or other entities will purchase the SPP's output.

1.2 Purpose and Need for the Project

There is currently a significant power deficit within the Pacific Northwest, and that deficit is unlikely to recover soon. The Pacific Northwest Utilities Conference Committee (PNUCC) reports that the region has increased its energy demand by nearly 3,500 megawatts (MW) in the last 10 years. Yet, during that same period, power-generating resources have increased only 550 MW (PNUCC, 2000). Data from the Bonneville Power Administration (BPA) suggest that this imbalance between energy demand and production in the Northwest is projected to continue. According to BPA's *1999 Pacific Northwest Loads and Resources Study*, BPA projected the regional energy deficit in 2001 to be 3,517 average MW, and to surpass 4,000 MW by 2008 (BPA, 1999).

The growing regional energy deficit threatens to affect residents throughout the Pacific Northwest. The current imbalance between energy demand and production has driven energy prices too high for many Northwest businesses to compete effectively, causing industry closures and loss of jobs. The heavy regional reliance on hydropower, combined

with the current drought conditions, has resulted in the need to hold back water at dams—possibly at the expense of future salmon stocks. It is in the public's interest to seek a balanced energy solution that results in reasonable energy prices, favorable economic conditions, and environmental preservation. The Applicant believes the proposed project contributes meaningfully to this solution by providing an efficiently operating, clean-burning, natural-gas power plant.

Long-term need for the SPP's output will be determined by the SPP's ability to generate power efficiently and in compliance with applicable laws and regulations. During the generation plant's useful life of approximately 30 years, the Pacific Northwest's demand for generation capacity will likely rise and fall. In periods of generation shortfall, such as the deficit currently being experienced, the plant's output of 1,200 MW will clearly respond to a regional need. In periods of surplus power production, the need for the plant's output may depend on the price of that output relative to other generation sources. The Applicant believes that the following attributes of the SPP will enable its output to respond effectively to Pacific Northwest energy needs, thus generating electricity efficiently throughout the SPP's useful life.

Technology: The SPP's combined-cycle, natural-gas-fueled combustion turbine generates electricity with significantly greater efficiency than do simple-cycle technologies, or technologies that use other fuels. This increased power generation efficiency results in reduced carbon dioxide (CO_2) emissions. Use of two power blocks in a two-on-one configuration provides for flexible operation.

Scale: The plant's relatively large capacity (1,200 MW) will allow plant operations to take advantage of economies of scale, further increasing efficiency.

Water conservation: The plant's proposed investment in the use of air cooling results in a reduction in water demand of approximately 95 percent, compared with a similarly sized water-cooled power plant, and preserves this valuable resource for other regional needs.

Proximity to fuel transmission sources*:* The proposed site is within 200 feet of existing Pacific Gas & Electric (PG&E) natural gas transmission facilities (the Gas Transmission-Northwest [GTN] system). This proximity will allow the generation plant to access regional fuel supply with minimal impacts and costs associated with the construction of new gas lines.

1.3 Description of Alternatives

The following sections provide a summary discussion of the proposed action, impacts of the proposed action, alternatives considered, and mitigation measures. Table 1.3-1 presents these actions, impacts, and mitigation measures in order of their section number within this ASC.

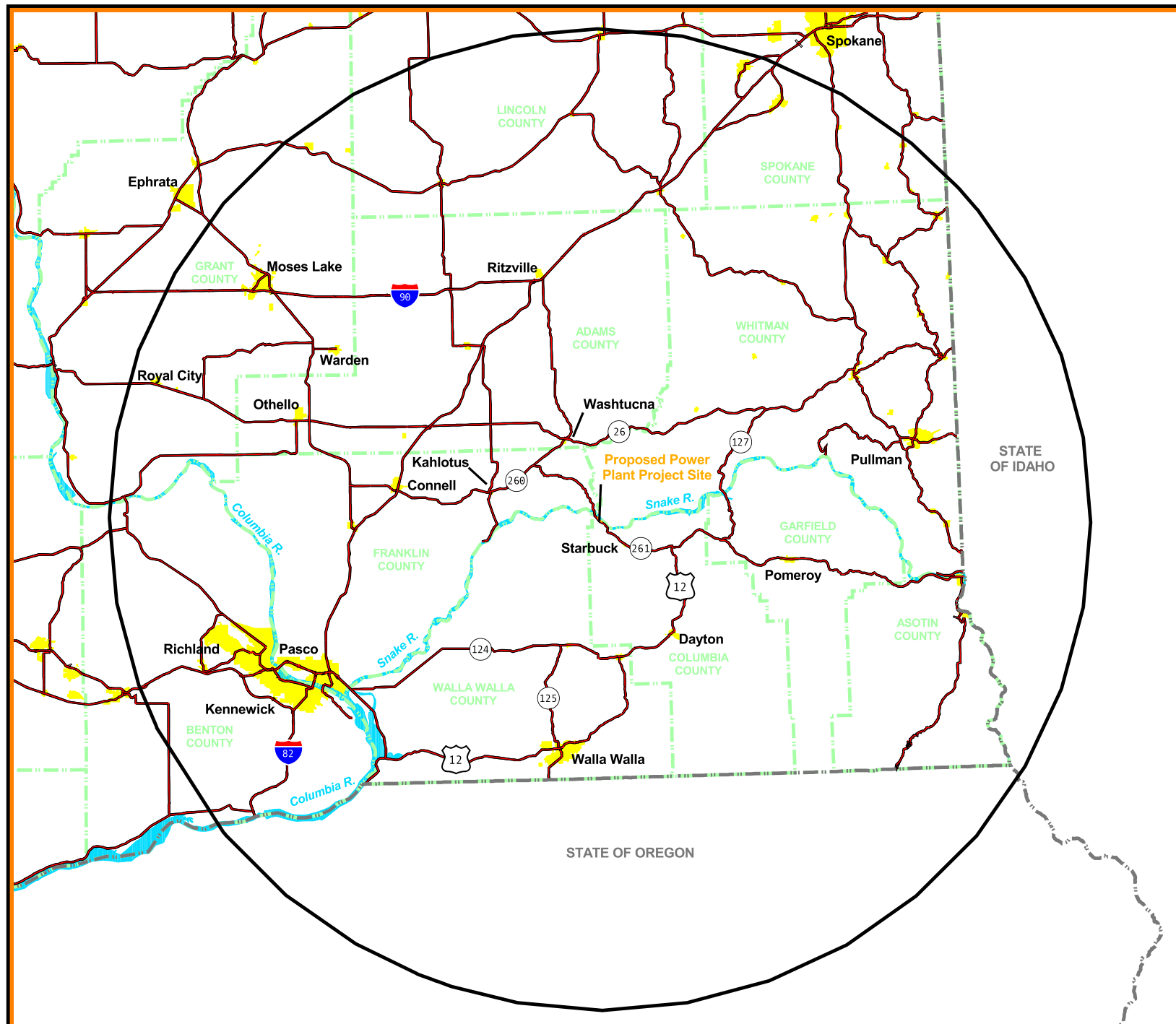

Figure 1.1-1
Area Map

Application for Site Certification Starbuck Power Project Starbuck, Washington

N

10 0 10 20 Miles

Legend

- Highways/Interstates
- State Routes (SR)
- US Highways
- Interstate Freeways
- Urbanized Areas
- County Boundaries
- 75 Mile Radius from Site

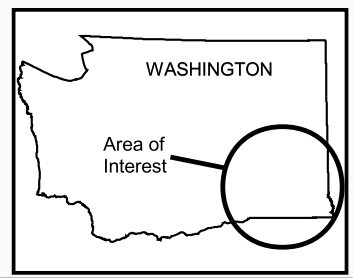

Figure 1.1-1
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TABLE 1.3-1
Summary of Proposed Action, Impacts, and Mitigation Measures

2. Proposed Action	
Proposed Generation Plant	1,200-megawatt, natural-gas-fired, electricity generation facility near Starbuck, Washington
Proposed Onsite Well	Withdrawal of water from the flood gravel aquifer at the rate of 300 gpm
Northwest Site Alternative (NW)	As an alternative to the proposed generation plant being located on the southeast portion of the property, the Applicant considered a northwest portion of the property
Wet-Cooled Alternative (Wet)	As an alternative to the proposed air-cooled system, the Applicant considered a wet-cooled system
Water Pipeline Alternative (Pipeline)	As an alternative to the proposed onsite well, the Applicant considered construction of a water pipeline that would transport water from a well at the Town of Starbuck to the generation plant site

	Impacts of Proposed Action (Construction)	Impacts of Proposed Action (Operation/Maintenance)	Impacts of Alternatives Considered	Mitigation Measures
3.1 Earth	Grubbing, clearing, grading, and foundation preparation of 40-acre site Increased potential for erosion	Minimal impacts on geology, soils, topography, unique features, and erosion	NW: Unique ripples in topography resulting from historical floods would be destroyed, but reduced soil movement during excavation Wet: No change in impact Pipeline: Trench excavation may create an increased potential for erosion and may encounter contaminated soils in abandoned railroad bed	Implementation of a Stormwater Pollution Prevention Plan during construction
3.2 Air Quality	Creation of dust Some odors resulting from paint, adhesives, materials	Release of sulfur dioxide (SO_2), carbon monoxide (CO), oxides of nitrogen (NO_X), particulate matter (PM), PM_{10}, H_2SO_4 mist, volatile organic compounds, toxic air pollutants, and hazardous air pollutants, but at rates that ensure compliance with air quality standards Release of greenhouse gases, including between 3.8 and 4.4 million tons of carbon dioxide (CO_2) per year	NW: No change in impact Wet: No change in impact Pipeline: No change in impact	BACT to reduce air emissions Control dust during construction by water spraying, vehicle washing, and use of aggregate surfaced access roads Good operating practices and procedures will minimize odors Offset net CO_2 emissions above 0.675 pound per kilowatt-hour at a cost of $0.57 per ton emitted
3.3 Water Resources	Increased potential for runoff when rainfall occurs Peak demand for water required at a rate of 252 gpm	Onsite well withdrawal from aquifer that is hydrologically connected to surface water body Water routed to stormwater and infiltration/evaporation ponds will infiltrate to ground	NW: No change in impact Wet: Eight million gallons of water per day (5,555 gpm) is required for operation, and would be an additional withdrawal from the regional aquifer system Pipeline: Potential impact to surface waters and groundwater resulting from trench excavation (potentially contaminated soils and erosion), and potential impact on Town of Starbuck water supplies	Implementation of a Stormwater Pollution Prevention Plan during construction Adherence to stormwater management measures, best management practices, and spill prevention and control measures reduces the impacts to water resources Water quantity mitigation to compensate for onsite well withdrawal by acquiring water rights in the Snake River system
3.4 Wetlands & Vegetation	Grubbing, clearing, grading, and foundation will remove native vegetation, non-native vegetation, and noxious weeds from approximately 50 acres Introduced species of vegetation and noxious weeds will be removed	Vegetation will be trimmed and managed to avoid interference with generation plant operation Invasive plant species may colonize cleared areas.	NW: No change in impact Wet: No change in impact Pipeline: No change in impact	Seeding and replanting of native plant species to reduce erosion potential Development and implementation of a landscaping plan, including long-term weed control measures Equipment will be cleaned to prevent the spread of noxious weeds

TABLE 1.3-1
Summary of Proposed Action, Impacts, and Mitigation Measures

	Impacts of Proposed Action (Construction)	Impacts of Proposed Action (Operation/Maintenance)	Impacts of Alternatives Considered	Mitigation Measures
3.5 Agricultural Crops & Livestock	Property is zoned for industrial use; development will displace current agricultural uses Livestock currently grazing on the property will be permanently relocated	Emissions will consist of some nitrates and sulfates, not in concentrations great enough to significantly impact nearby crop production Gaseous ammonia used at the generation plant can cause respiratory irritation and burn vegetation	NW: No change in impact Wet: No change in impact Pipeline: Construction activities may disrupt private plantings along the pipeline	No mitigation is required.
3.6 Wildlife	No anticipated impacts	Potential for bird collisions with manmade structures, including towers 175 feet in height	NW: No change in impact Wet: No change in impact Pipeline: Potential impact to wildlife and their habitat along the water pipeline route	Conduct breeding bird surveys prior to construction. Breeding raptor surveys would be conducted within 0.5 miles of the generation facility. Breeding bird surveys would be conducted in the construction area and within a 100-meter buffer surrounding the construction. If raptor nests are detected within 0.5 mile of the proposed construction, the Applicant will contact Washington Department of Fish and Wildlife (WDFW) and develop a monitoring and avoidance plan After construction is completed, disturbed areas not used for the generation plant will be restored to preproject habitat conditions to allow continued use by wildlife Seeding and replanting of native plant species will provide wildlife habitat and reduce the use of pesticides, herbicides, and irrigation Lighting design will minimize light intrusion into surrounding areas
3.7 Fisheries Resources	No anticipated impacts	Onsite well withdrawal from aquifer that is hydrologically connected to surface water bodies Water routed to stormwater and process wastewater ponds will infiltrate to ground	NW: No change in impact Wet: Eight million gallons of water per day is required for operation, and would be an additional withdrawal from the regional aquifer system Pipeline: Trench excavation may cause an increased potential for erosion and may encounter contaminated soils in the abandoned railroad bed, possibly reaching surface waters	Mitigation measures presented in Section 3.3 (Water Resources) will ensure there are no impacts on fisheries in the Snake River
3.8 Energy & Natural Resources	Peak demand for potable water required at a rate of approximately 252 gpm Use of 14,000 cubic yards of gravel and aggregate Use of 240,000 to 280,000 gallons of gasoline and diesel fuel	Consumption of electricity at a rate of 30 megawatts per hour Consumption of natural gas at a rate of 0.187 billion cubic feet per day for a high heat value	NW: No change in impact Wet: Eight million gallons of water per day is required for operation, and would be an additional withdrawal from the regional aquifer system Pipeline: Trench excavation and pipeline construction will require additional fuel, energy, and materials	Facility design creates an operational efficiency of 53 percent and reuse of blowdown reduces water consumption and discharge
3.9 Noise	Noise levels will be audible at the Lyon's Ferry Marina, but not in exceedance of current exposure levels	Start-up and stoppage of power generation during testing will result in bursts of loud steam venting Sound levels during operation will be audible, but well below required nighttime levels	NW: Site would be closer to the nearest residence, possibly increasing audible noise levels Wet: No change in impact Pipeline: Trench excavation would create additional noise, however operation and maintenance would not	Loud activities will be limited to the hours between 7 a.m. and 10 p.m. All construction equipment will be properly muffled to reduce engine noise Power generation equipment will be located within an acoustically insulated building Combustion turbine inlet will be equipped with a silencer

TABLE 1.3-1
Summary of Proposed Action, Impacts, and Mitigation Measures

	Impacts of Proposed Action (Construction)	Impacts of Proposed Action (Operation/Maintenance)	Impacts of Alternatives Considered	Mitigation Measures
3.10 Land Use	Property is zoned for industrial use; development will displace current agricultural use Livestock currently grazing on the property will be permanently displaced	No additional impacts	NW: No change in impact Wet: The cooling system would require additional development of land for site disposal of wastewater Pipeline: Trench excavation would disturb land along abandoned railroad bed	Comply with applicable land use codes Provide proper road signage and warnings
3.11 Visual Resources	Presence of heavy equipment would reduce quality of visual environment	Visual impact simulations conclude impact ratings for the generation plant are not significant and contrast ratings are weak to moderate	NW: No change in impact Wet: Steam plume would be visible under certain weather conditions Pipeline: Trench excavation would reduce quality of visual environment	Store construction materials and equipment in less visible areas of the site Control dust during construction by water spraying, vehicle washing, and paving access roads Facility paint and exterior colors will be selected to blend with the surrounding landscape Vegetative screening will be used where appropriate
3.12 Population, Housing, & Economics	Peak workforce of approximately 700 workers will increase population of the region Increased economic activity in the region, including tax revenue and retail spending	Tax revenue in region would increase Increase in per capita income Potentially negative impact on community cohesion	NW: No change in impact Wet: Additional use of water by system would increase water-related revenue for the Town of Starbuck Pipeline: Additional employment for the region and water-related revenue for the Town of Starbuck	No mitigation is required
3.13 Public Services and Utilities	Emergency personnel will require training in management of natural gas explosions Increased potential for accidents, incidents, and crime results in the need for four additional police officers, one 911 dispatcher, one part-time judge, and one full-time staff clerk	No additional impacts	NW: No change in impact Wet: Additional use of water by system would increase water-related revenue for the Town of Starbuck Pipeline: Additional employment for the region and water-related revenue for the Town of Starbuck	Equipment and training for fire suppression at the generation plant will be provided The Applicant will seek financial arrangements with Columbia County and the Town of Starbuck to provide revenue that will offset County and Town costs associated with generation plant construction
3.14 Cultural Resources	Surface inventory and subsurface testing performed onsite indicate construction activities are unlikely to affect archaeological sites	No additional impacts	NW: No change in impact Wet: No change in impact Pipeline: Potential for impacts to cultural resources is increased due to the 6 mile length of the pipeline	A full-time archaeologist and tribal monitors will observe all earth-disturbing activities during construction of the generation plant Development and implementation of a cultural resources monitoring and mitigation plan (CRMMP), prepared in consultation with the affected Tribes and government agencies
3.15 Traffic & Transportation	Increased vehicular traffic and road use	No additional impacts	NW: No change in impact Wet: No change in impact Pipeline: Construction of the pipeline may impact traffic along SR-261 and impede access to adjacent properties	Landowners will be notified when construction takes place to minimize or negate access disruption. Proper road signage and warnings will be provided Construction-related traffic will be scheduled to limit road use during peak hours In consultation with Columbia County, detour plans and warnings will be developed in advance of any disturbances One travel lane will be maintained at all times

TABLE 1.3-1
Summary of Proposed Action, Impacts, and Mitigation Measures

	Impacts of Proposed Action (Construction)	Impacts of Proposed Action (Operation/Maintenance)	Impacts of Alternatives Considered	Mitigation Measures
3.16 Health & Safety	Risk of fire during construction is low Chemical cleaning of equipment will require use of hazardous materials Some hazardous wastes will be produced	Sludge will be created by the cooling towers, but is not expected to be hazardous Compressed gasses and flammable solutions will be onsite	NW: No change in impact Wet: No change in impact Pipeline: Slight risk of small isolated water explosion if pipe wall fails and increased land area subject to construction-related risks	A Spill Prevention and Control Plan and an Emergency Plan will be developed Construction of access roads will reduce risk of fires resulting from construction vehicles in dry grass Construction crews will be supplied with fire extinguishers A specialized contractor will perform chemical cleaning of generation plant equipment and is responsible for proper handling of hazardous chemicals Ammonia storage tanks will be placed downwind of offices and other work areas to prevent risk of respiratory irritation

1.3.1 Proposed Action

1.3.1.1 Generation Plant

The Applicant proposes to build a 1,200-MW, natural-gas-fueled, combined-cycle combustion turbine power plant. Related project facilities include a natural gas pipeline and an electrical transmission line.

The 100-acre proposed SPP property is located about 6 miles northwest of the Town of Starbuck in Columbia County, Washington.

The property is underlain by a fairly level terrace located alongside a steep bluff adjacent to the Snake River. The property is approximately 170 feet above normal river elevation and approximately 350 feet back from the shoreline. The terrace is a geological formation created by floodwaters that backed up from the confluence of the Palouse and Snake Rivers during catastrophic floods almost 13,000 years ago. The property is currently used for cattle grazing, but it is zoned for heavy industrial uses. A conditional use permit, or its equivalent through the EFSEC process, is required to construct and operate an energy production facility such as the SPP. State Route 261 (SR-261), a two-lane highway, is adjacent to the southwest side of the property. Approximately 40 acres of the property will be developed for the generation plant, and an additional 10 acres will be disturbed during the construction process.

The generation plant is expected to include four Siemens Westinghouse Model 501F combustion gas turbines (CGTs) (or their equivalent), four heat recovery steam generators (HRSGs) equipped with supplemental duct firing, two steam turbine-generators (STGs), and two air-cooled condensers. Electrical generation equipment will be arranged within two "power blocks," each in a "two-on-one" configuration. In a two-on-one configuration, two CGTs are directly connected to two electricity generators and two HRSGs. Steam produced by the two HRSGs is combined and directed to a single STG.

Buildings and structures associated with the generation plant include a Generation Building, two STG housing structures, two air-cooled condensers, a control/administration structure, a Fire Water Pump Building, and a Substation Control Building. Most buildings will be shorter than 90 feet in height; however, the air-cooled condensers will be approximately 120 feet high and exhaust stacks for each of the four HRSGs will be approximately 175 feet high.

Natural gas used to fuel the generation plant will be provided continuously by the construction of a gas lateral and metering/regulatory station (M/R station) that will connect to a nearby natural gas mainline. This GTN mainline is located approximately 200 feet from the southeast corner of the generation plant site. The gas lateral and M/R station are considered "related" facilities and are not under EFSEC's siting purview.

The generation plant will be supplied with water by the proposed onsite well at a rate of 300 gallons per minute (gpm) (see Section 1.3.1.2). If the proposed onsite well is not feasible, the Applicant would implement the water pipeline alternative, which would supply the generation plant with water from the Town of Starbuck at a rate of 100 gpm (see Section 1.3.3.3).

Process wastewater from the generation plant will be routed to an unlined infiltration/evaporation pond that will be constructed onsite. (As used in this Application, the term "process wastewater" means housekeeping water from equipment/plant drains.) No wastewater is generated from the power production processes. Contaminated stormwater at the site will be managed with construction of an additional unlined infiltration/evaporation pond.

1.3.1.2 Onsite Well

The Applicant currently is awaiting the Washington State Department of Ecology (Ecology) recommendation on its 300-gpm water right application. If granted, this water right will authorize the proposed onsite well that will serve as the nonpotable and potable water supply for the generation plant (Elmer, pers. comm.).

The proposed onsite well could be constructed approximately 600 feet away from the generation plant, withdrawing water from the flood gravel aquifer. To reach its source of groundwater, the well will be drilled to a depth of approximately 190 feet below ground surface.

1.3.2 Impacts of Proposed Action

1.3.2.1 Construction

Several criteria contribute to the environmental impacts associated with construction of the generation plant and onsite well. Because all construction activities are expected to be completed within a 2-year period, most impacts are temporary. Additionally, because there are different phases of construction, most construction impacts will not last through the entire 2-year period.

Construction at the generation plant site will change topography and how the land is used by humans, wildlife, and vegetation. Through grubbing, cutting, and filling activities, approximately 40 acres of vegetation will be permanently removed from the site. The presence of construction equipment at the site while these activities are under way will create visual impacts to the environment, as well. However, these activities will be performed in a manner that avoids disrupting significant archaeological and cultural properties nearby and that minimizes impacts to unique geology at the site (ripples resulting from the catastrophic floods).

Eight head of cattle currently grazing at the site will be relocated. Similarly, the site will occupy land that wildlife currently use for foraging, hunting, and nesting. While bald eagles may occur in the area and salmonids are present in the nearby Snake River, construction activities are not expected to adversely affect federally listed threatened or endangered wildlife species. A state-listed sensitive ferruginous hawk nesting area is located slightly more than 0.6 mile from the proposed generation plant, but local topography will significantly reduce the risk of disturbance. The amount of land that will be developed for the generation plant is relatively small, and no significant impacts to these species are expected.

Noise created during construction will also affect the surrounding environment. The use of heavy machinery and equipment may cause additional displacement of wildlife not in the

immediate area of site construction. It is unlikely that noise will disturb nesting activities of osprey, prairie falcon, or ferruginous hawk because topographic features and appreciable distances separate the nests from the site (osprey and prairie falcon nests are approximately 0.5 and 0.75 mile away, respectively). Construction noise at the nearest residence (approximately one mile away) is expected to range between 51 and 40 decibels A-weighted sound level (dBA), which will not exceed noise regulations and is near currently observed noise levels.

The use of water, gravel, electricity, and gasoline during construction will affect supplies of natural resources. Peak demand for water is expected to reach approximately 252 gpm; however, in 26 of the 28 months of construction less than 65 gpm will be required. Almost 14,000 cubic yards of gravel and aggregate will be necessary for creation of parking lots and access roads. Additionally, electricity and gasoline will be required for operation of construction equipment.

It is expected that construction will affect socioeconomic factors in the region as well, creating both benefits and costs. Construction of the generation plant will provide numerous jobs, with a maximum workforce of approximately 700 workers. Benefits that will result from the increased employment include favorable impacts on local tax revenues, retail sales, and rental housing occupancy rates. An estimated 20 percent of the workers will come to the project from outside the region and will require temporary housing. Even during peak occupancy throughout the summer season, there appears to be more than enough temporary housing available within 50 miles of the generation plant site. However, if the peak construction period coincides with the peak harvesting season and occupancy rates will rise, rental rates may temporarily rise also.

Local roadways, as well as public services and utilities, will be affected by the additional temporary in-migration of workers and their families during SPP construction. The delivery of generation plant equipment and commuting by construction workers will increase vehicular traffic on SR-12, SR-260, and SR-261. This increased traffic volume, together with the potential for increased incidents, accidents, and crime, will require the addition of four police officers and one 911 dispatcher to ensure effective service. Although fire services and emergency medical services have sufficient resources and personnel to meet this increased demand, all emergency personnel will need to be trained in the potential hazards associated with natural gas use. Schools in the area have adequate capacity for the in-migration of workers and their families; however, increased use of local recreational resources may displace existing users.

The temporary increase in population will have varied impacts to regional public water supplies, depending on the town. The Town of Starbuck's water system has an old distribution network that could provide water for up to 22 additional connections, but further expansion is limited by available storage capacity. The City of Dayton's water system is anticipated to be capable of sustaining the projected amount of growth resulting from construction activities. Only a small number of construction workers are expected in the towns of Kahlotus and Washtucna because of their distance from the project site; therefore, these water systems will not be affected.

1.3.2.2 Operation and Maintenance

Because the number of workers at the generation plant during operation will be much lower than during construction, most of the impacts discussed above will be reduced significantly once construction is completed and operation commences. Operation of the generation plant will require approximately 40 employees. The average hourly wage of these employees is predicted to be $28.35, which is $17.91 higher than the county average. Because fewer workers will be present than during periods of construction, the operation phase will see substantially lower impacts on local housing, public services, natural resources, traffic, and utilities.

During operation, impacts to air quality will result from the release of such air emissions as carbon monoxide (CO), oxides of nitrogen (NO_x), sulfur dioxide (SO_2), and volatile organic compounds (VOCs). However, emission amounts for NO_x, SO_2, and particulate matter will be at or below those required by applicable requirements set by Ecology and the U.S. Environmental Protection Agency (EPA). Similarly, toxic air pollutant impacts are also expected to be below acceptable criteria established in state regulations. Greenhouse gases, including CO_2, will be produced during energy production. Depending on operation specifications, CO_2 output is estimated to be between 3.8 million and 4.4 million tons per year when power production is between 1,060 and 1,178 annual average MW. None of these impacts to air quality is expected to affect surrounding wildlife or fishery resources.

Primary sources of noise during plant operation will include the CGT inlets, HRSG packages, and air-cooled condensers. Secondary noise sources include the combustion turbine, steam turbine, generator step-up transformers, and building ventilation system. Noise modeling predicts steady-state generation plant sound levels at the nearest residence to be approximately 45 dBA, well below the required nighttime level of 50 dBA for a residential area. Similarly, generation plant sound levels at the Lyons Ferry State Park campground are predicted to be approximately 43 dBA. Certain steam vents may open during generation plant startup and shutdown, but they will be silenced to ensure that the sound level complies with all requirements.

The flood gravel aquifer, which lies 190 feet bgs, will not be adversely affected by two unlined infiltration/evaporation ponds at the generation plant site. Process water and stormwater from the ponds will infiltrate toward the flood gravel aquifer. Water in the infiltration/evaporation ponds is expected to meet groundwater quality standards and will cool to ambient temperatures during infiltration, thereby not adversely affecting the aquifer.

1.3.3 Alternatives Considered

1.3.3.1 Northwest Site Alternative

In choosing a location for the generation plant, the Applicant considered the northwest portion of the 100-acre site as an alternative to the proposed southeast portion. Plant construction and operation at the northwest site presented additional environmental impacts that could be avoided at the southeast location.

As mentioned previously, the generation plant site resides on a geologic formation created by floodwaters that backed up from the confluence of the Palouse and Snake Rivers during catastrophic floods thousands of years ago. These events are represented by ripple marks on

the northwest part of the property. If the northwest site alternative were chosen, construction activities would destroy these ripple marks.

Locating the generation plant at the northwest portion of the site would create additional visual and noise impacts to a residence at the Lyons Ferry Marina. Because the northwest portion of the site is closer to the marina, noise created at the site would dissipate less, and the plant's visual contrast to the surrounding environment would be increased.

1.3.3.2 Wet-Cooled Alternative

While choosing equipment for cooling water vapor discharge, the Applicant considered a wet-cooled system as an alternative to the proposed air-cooled system because the wet-cooled system would lower the cost of plant operations. However, the wet-cooled system would require about 8 million gallons of water per day (5,555 gpm) and a larger onsite location for wastewater discharge. It is unlikely that either the proposed onsite well or the water pipeline alternative would be capable of supplying sufficient water for operation of a wet-cooled system. Additional wells and/or a larger pipeline would be required. Impacts on water resources would be greater. Furthermore, if either water source could meet such a demand, there would be a resulting increase in impacts to regional groundwater supplies.

1.3.3.3 Water Pipeline Alternative

As an alternative to the proposed onsite well, the Applicant considered construction of a water pipeline that would transport water at the rate of 100 gpm from an existing well at the Town of Starbuck to the generation plant site. An additional town well would be constructed to serve as a backup in case of failure of the existing well. The water pipeline would be approximately 6 miles long, located within an abandoned railroad bed for the majority of its route. The water pipeline would cross seven intermittent drainage areas and the Tucannon River. Impacts that would result from construction and operation of a water pipeline have led the Applicant to propose an onsite well.

Because much of the water pipeline would be constructed in an abandoned railroad bed along the Tucannon River, construction activities could cause sedimentation to surface water bodies. Trench digging and excavation along the railroad bed may encounter soils contaminated by previous vegetation control, contaminants released from trains, or possibly contaminants that may be in the ballast (although there is no evidence of this). In addition, excavated soils stockpiled during pipeline construction would be susceptible to erosion until they were returned to the excavation. If such erosion were to occur, the sediment and its constituents could be deposited into the Tucannon River, then carried downstream to the Snake River.

Construction of a water pipeline would also result in impacts to energy consumption and nonrenewable resources. Pipeline route excavation would require additional electricity, gasoline, and labor not necessary for construction of the onsite well, plus energy consumed to pump the water 6 miles to the plant, thereby increasing energy consumption as well as construction costs.

The Town of Starbuck would experience an economic gain by supplying water to the generation plant via the water pipeline. If the Applicant purchased water from the Town of Starbuck, the town would receive approximately $52,600 in additional revenue per year.

However, if the town's population were to increase to more than 275 residents, the current well would not be sufficient to meet both plant and citizen peak water demand during summer months. In this case, an additional water supply would be necessary. (Note: the present town population is 160 residents.)

1.3.4 Mitigation Measures

1.3.4.1 Construction

During construction, a Stormwater Pollution Prevention Plan (SWPPP) will be implemented to minimize the impact of runoff and possible soil erosion. Because of adherence to best management practices (BMPs), stormwater management measures, and defined spillage prevention and control measures, no significant construction-related impacts to surface water or runoff are anticipated and mitigation measures are not required.

Noise will be limited through the use of such mitigation measures as muffling all loud equipment and conducting construction during specific time periods. In addition, those activities will be conducted only between 7 a.m. and 10 p.m. The Applicant will conduct breeding bird surveys and raptor surveys to determine whether construction noise is likely to have a significant adverse impact on protected bird species during bird breeding and nesting periods (from April 15 to July 1). If such surveys indicate a probable significant impact, the Applicant will develop and implement a plan to avoid or mitigate such impact.

The Applicant will promote a safe work environment during construction by complying with all local, state, and federal health and safety regulations. In addition, the Applicant will develop and implement a Spill Prevention and Control Plan and an Emergency Response Plan.

To mitigate the increased demand for public services during construction, the Applicant will make financial arrangements with Columbia County and the Town of Starbuck to provide revenue that will cover the costs of additional resources necessary to meet the demand. Increased tax revenue from the project will provide mitigation for these services as well.

1.3.4.2 Operation and Maintenance

The impacts associated with construction of the generation plant will be reduced significantly once operations begin because fewer workers will be present. However, the Applicant will implement some mitigation measures to further reduce impacts during operation and maintenance.

The design of the generation plant will enable it to operate efficiently, reducing its impact on nonrenewable resources and air quality. Existing combined-cycle plants operate at thermal efficiencies of greater than 44 percent (EFSEC, 2000); the Starbuck generation plant will operate at up to 53 percent thermal efficiency. Operation as such will result in lower natural gas consumption per kilowatt-hour of energy, and in less production of air pollutants. Air pollution also will be mitigated by the Applicant's voluntary agreement to offset CO_2 emissions above 0.675 pound per kilowatt-hour at a cost of $0.57 per ton emitted.

To reduce the visual impact of structures at the generation plant site, paint colors will be chosen to assist with blending into the existing environment. Dark and tan/beige shades of paint will be used.

After construction has been completed, native vegetation will be planted in order to restore unoccupied portions of the site to pre-existing conditions. Seeding of native plants and shrubs will prevent the spread of noxious weeds and restore wildlife habitat.

The Applicant is currently awaiting the Ecology recommendation on its 300-gpm water right application. If granted, this water right will allow the Applicant to construct the proposed onsite well that will serve as the water supply for the generation plant. The Applicant intends to propose water quantity mitigation to compensate for water withdrawn from the onsite well and used by the generation plant. The Applicant is in the process of acquiring water rights in the Snake River system for mitigation purposes, and details are not yet available.

1.4 Significant Adverse Impacts

The SPP does not create any significant adverse impacts. The impacts previously discussed have few consequences and most are temporary, occurring only during phases of construction. The Applicant has recommended appropriate mitigation measures to significantly reduce the degree of impacts that do result. As a result, no significant adverse impacts are associated with construction or operation and maintenance of the SPP.

1.5 Significant Areas of Controversy or Uncertainty

The Applicant is confident in the design, construction, and operation of the SPP, and does not foresee any significant controversy or uncertainty resulting from execution of the proposed action. Site studies and modeling have directed generation plant design, removing elements of uncertainty. Most impacts to the surrounding environment will result from temporary disturbances during construction. In addition, the Applicant has taken action to ensure that mitigation measures will minimize those impacts.