

Final

**Environmental Assessment
for
Changing World Technologies'
Thermal Conversion Process
Commercial Demonstration Plant**

DOE/EA 1506

Weld County, Colorado

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U.S. DEPARTMENT OF ENERGY

GOLDEN FIELD OFFICE

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S. SUMMARY

S.1 INTRODUCTION

In accordance with the Department of Energy (DOE) National Environmental Policy Act (NEPA) implementing regulations, DOE is required to evaluate the potential environmental impacts of DOE facilities, operations, and related funding decisions. Based on action by the U.S. Congress, DOE has funding available to support the proposed private sector project described in this EA.

The decision to use federal funds in support of the Society for Energy and Environmental Research (SEER) requires that DOE address NEPA requirements and related environmental documentation and permitting requirements. In compliance with the NEPA (42 U.S.C. 4321) and DOE's NEPA implementing regulations (10 CFR section 1021.330) and procedures, this EA examines the potential environmental impacts of DOE's decision to support the CWT-TCP project in unincorporated Weld County, Colorado, including construction and operation of the plant, as well as a No Action Alternative as set forth in Chapter 2.

S.1.1 Purpose and Need

The purpose of the Proposed Action, the decision to provide federal funding for the construction of the proposed demonstration plant for the Changing World Technologies' Thermal Conversion Process (CWT-TCP) technology, is to support new technology with the potential to create broad public benefits. The Proposed Action would demonstrate a large-scale technology for the conversion of agricultural residuals/low-value organic streams to energy and other valuable products.

The U.S. Congress has acknowledged the merit of this project by providing specific funding through DOE. Based on Congressional action, DOE has funding available to support SEER's participation in the proposed CWT-TCP demonstration project.

S.1.2 Project Site, Proposed Action and Alternatives

The proposed project site is located in unincorporated Weld County, Colorado, immediately north of County Road (CR) 24, east of CR 39 and west of CR 41, approximately 15 miles (24 kilometers) south of Greeley. The legal description of the project site is SW ¼ Section 32 Township 3N, R65W and Parcel Number 121332000004. Regional access to the site is provided by U.S. Highway 85 located about 5 miles (8 kilometers) east of the site, U.S. Interstate 76 located about 6.5 miles (10.5 kilometers) southeast of the site, and U.S. Interstate 25 located about 15 miles (24 kilometers) west of the site. Local access to the project site is via a dirt road off of CR 24, which is also unpaved.

The project site is owned by ConAgra Foods, Inc. and includes approximately 320 acres (130 hectares) of mostly vacant land situated in a rural area comprising mostly agricultural and industrial uses. Nine leases for oil and gas development held by Patina Oil and Gas are associated with the property, and portions of the property are also leased for grazing. One residence and several buildings associated with the Mile High Turkey Hatchery, Inc. (owned by ConAgra Foods, Inc.) are located in the northern portion of the property. The project site is characterized by shrub and grass type vegetation, with some disturbed areas associated with oil and gas wells and dirt access roads. Nearby land uses include the Mile High Turkey Hatchery,

Inc. to the north, an auto junkyard and a used tire yard to the east, agricultural fields to the south and mostly undeveloped land with some oil and gas development to the west.

Mixed agricultural residuals and low-value organic streams would be transported to the CWT-TCP plant via truck from nearby agricultural processing facilities. It is expected that 20 trucks per day, each transporting about 20 tons (20.3 metric tons) per load, would transport to the site materials for consumption in the CWT-TCP process. These materials would be offloaded from the trucks into hoppers to begin the CWT-TCP process.

The CWT-TCP is a five-step process:

1. *Pulping and slurring the mixed agricultural residuals and low-value organic streams with water*
2. *Heating the slurry under pressure to the desired temperature*
3. *Flashing the slurry into a lower pressure to separate the mixture*
4. *Heating the slurry once again (coking) to drive off water and produce light hydrocarbons*
5. *Separating the products*

Water used for operation of the CWT-TCP plant would come from recycled process water generated through the CWT-TCP process itself, except for the initial start-up of the plant, which would utilize water from an existing on site well to begin the pulping and slurring process. Clean water recycling would be employed to minimize actual water use. After use in the CWT-TCP process, the excess produced water would be cooled from a maximum of 100 degrees Fahrenheit (F) (37.8 degrees Celsius [C]) (the requirement for cooling of this process water is still under review by the Colorado Department of Health and Environment [CDPHE]) and meet groundwater standards defined by the CDPHE for discharge before release into the 4-acre (1.6-hectare) storage lagoon, with final water destined for spray irrigation. Process water would also be used for on-site toilets, and a sanitary waste leach field would be located on site to treat this wastewater.

It is anticipated by the project applicants that the proposed CWT-TCP plant would produce 800-1,000 barrels of oil, 10 to 20 tons (10.2 to 20.3 metric tons) of carbon (coke), 10 to 20 tons (10.2 to 20.3 metric tons) of dry mineral fertilizer, 5,000 to 10,000 gallons (18,927 to 37,854 liters) of liquid fertilizer (ammonium sulfate/glycerol solution), and 58,000 gallons (219,554 liters) of water on a daily basis, based on an input of 400 tons per day (tpd) (406.4 metric tons per day [mtpd]) of agricultural residuals and low-value organic streams. Remaining coke-like solids would be accumulated in a storage bin for pickup, as necessary, for off-site use either for blending as fuel, or for use as fertilizer. The CWT-TCP plant would include about five days of storage for oil, and about 10 days of storage for each type of fertilizer produced; however, these products would be picked up on a regular basis (i.e., several times per week). It is anticipated that 10 liquid tanker trucks would travel to and from the site on a daily basis to remove oil products. These trucks would deliver the oil products to local refineries. In addition, it is anticipated that one to two trucks per day would travel to and from the site daily to pick up dry fertilizer products, and one to two trucks per day would travel to and from the site to pick up liquid fertilizer products. These trucks would likely travel to and from the site via I-76, exiting at State Highway 52, then traveling to the project site along CR 41.

Once fully operational, the CWT-TCP plant would operate year-round for 24 hours per day, seven days per week. The goal is to operate the CWT-TCP facility for two years before a plant shutdown for routine maintenance and cleaning. The plant staff would include 20 to 25 full-time employees.

Given the intent of this Environmental Assessment (EA), scoping input, and preliminary impact findings, the only alternative to the Proposed Action analyzed in this EA is the No Action Alternative.

SEER's environmental management commitments are described in Section 2.4.1.

S.1.3 Organization and Content of the Environmental Assessment

This EA is organized in a manner consistent with NEPA and DOE's NEPA Implementing Regulations, including the specific guidelines for Site-Wide EAs. The EA has six Chapters:

- Summary
- Chapter 1 – Introduction
- Chapter 2 – Proposed Action and Alternatives
- Chapter 3 – Affected Environment
- Chapter 4 – Environmental Consequences and Mitigation Measures
- Chapter 5 – Bibliography and References
- Chapter 6 – List of Preparers
- Appendices

S.2 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION AND ALTERNATIVES

S.2.1 Summary of Scoping Process, Input, and Impact Issues

A scoping letter was prepared and distributed to an extensive list of agencies, organizations, and members of the public on January 9, 2004. A scoping notice was published on the DOE Golden Field Office's website on January 20, 2004. The scoping letter distribution list included a comprehensive group of parties who have expressed interest in environmental issues in the vicinity of the project site. Appendix A presents the scoping notice, scoping letter, a complete list of the scoping letter recipients, and a complete list of response letters that were received during the 30-day scoping period.

S.2.2 Environmental Issues

The scoping letter for the Proposed Action identified the following environmental topics to be addressed in the EA:

- Land Use, Planning, Socioeconomics and Public Policy;
- Traffic and Circulation;
- Air Quality and Noise;
- Visual Quality/Aesthetics;
- Water Resources;
- Soils and Geology;
- Biological Resources;

- Cultural Resources;
- Waste Management;
- Public Facilities, Services and Utilities; and
- Energy.

The following discussions summarize the relevant input received during the scoping period. The issues raised by this input are addressed in the EA.

- The potential for several listed threatened and endangered species and one candidate for listing to occur in the project area;
- The potential for water depletions to the Platte River system;
- The Proposed Action would require an approved Site Specific Development Plan and Special Review Permit, and may consider separating the ConAgra Foods, Inc. property through the Recorded Exemption Process, in accordance with Weld County Department of Planning Services requirements;
- A professional survey should be conducted to identify any cultural resources in the project area that are eligible for the National Register of Historic Places; and
- Concerns regarding the Proposed Action to generate objectionable odors. Based on information associated with the Carthage, Missouri CWT-TCP plant that was received after release of the Draft EA, sections 2.1.4 and 4.8.1 of the EA have been modified to include more current information on odor control equipment and how potential odor issues will be addressed at the Weld County CWT-TCP plant.

At this time, the Proposed Action and the No Action Alternative are the only alternatives addressed in the EA. The Proposed Action is to construct a 400 tpd (406.4 mtpd) CWT-TCP plant on the 80-acre (32.4-hectare) project site in Weld County, Colorado. The No Action Alternative would involve a DOE decision to not provide funding for the CWT-TCP plant. For NEPA compliance purposes and to create a meaningful No Action scenario and baseline conditions, it is assumed that the Weld County CWT-TCP plant would not be constructed without DOE funding.

S.2.3 Description and Comparison of Environmental Consequences

The following discussion summarizes findings of this EA and compares the impacts of the Proposed Action with those of the No Action Alternative.

Implementation of the Proposed Action would not result in significant impacts to the environment because the project site and surrounding area generally lack sensitive resources (e.g., threatened or endangered species, cultural resources, low-income or minority groups, etc.) and limited impacts from the construction and operation of the proposed CWT-TCP plant. Additionally, SEER proposes an extensive set of environmental management commitments intended to avoid, minimize, and mitigate potential impacts. SEER's environmental commitments are described in Chapter 2 and mentioned, where applicable, in Chapters 3 and 4.

The direct, indirect, secondary, and cumulative impacts of the Proposed Action are discussed throughout Chapter 4. None of these impacts is considered significant; however, some mitigation measures are recommended. These mitigation measures include the following:

- To minimize impacts to migratory birds, avoid ground-disturbing activities during sensitive periods (i.e., nesting from April to July) when and if these species are shown to be present.
- If construction is to occur during the nesting season, migratory bird surveys and nest searches should be conducted in the 30 days prior to starting construction. If nests are discovered, consultation with U.S. Fish and Wildlife Service (USFWS) should be initiated to determine if disturbance to the species present must be avoided.
- Construction areas should be fenced to limit disturbance to adjacent grassland habitat outside of the construction zone.
- If necessary, where water and maintenance requirements can be met, native shrub species should be replaced if they are removed during construction activities.
- Develop and implement a weed management plan and use best management practices to reduce the spread of noxious weeds.
- To minimize impacts associated with particulates, best management practices (BMPs) such as covering of dirt stockpiles and application of water sprays would be implemented.

S.2.4 Comparison of Proposed Action to No Action Alternative

The vast majority of impacts created by the Proposed Action would be avoided if the No Action Alternative were selected as the preferred alternative. However, none of the impacts of the Proposed Action are considered significant, and the No Action Alternative would eliminate the beneficial impacts that could be expected from the successful demonstration of the CWT-TCP process of converting agricultural residuals and other low-value streams to oil and other useful products.

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1.0 INTRODUCTION

1.1 NATIONAL ENVIRONMENTAL POLICY ACT AND RELATED PROCEDURES

In accordance with the Department of Energy (DOE) National Environmental Policy Act (NEPA) implementing regulations, DOE is required to evaluate the potential environmental impacts of DOE facilities, operations, and related funding decisions. Based on action by the U.S. Congress, DOE has funding available to support the proposed private sector project described in the following discussions and Chapter 2 of this Environmental Assessment (EA).

The Society for Energy and Environmental Research (SEER) is a not-for-profit energy and development institution that would administer the federal funds for the proposed biorefinery commercial demonstration exhibiting Changing World Technologies' Thermal Conversion Process (CWT-TCP) technology. The decision to use federal funds in support of SEER's proposed project requires DOE to address NEPA requirements and related environmental documentation and permitting requirements. In compliance with the NEPA (42 U.S.C. 4321) and DOE's NEPA implementing regulations (10 CFR section 1021.330) and procedures, this EA examines the potential environmental impacts of DOE's decision to support the CWT-TCP project in unincorporated Weld County, Colorado, including construction and operation of the plant, as well as a No Action Alternative as set forth in Chapter 2.

1.2 BACKGROUND

The proposed project site is located in unincorporated Weld County, Colorado, immediately north of County Road (CR) 24, east of CR 39 and west of CR 41, approximately 15 miles (24 kilometers) south of Greeley (see Figure 1-1). The legal description of the project site is SW ¼ Section 32 Township 3N, R65W and Parcel Number 121332000004. Regional access to the site is provided by U.S. Highway 85 located about 5 miles (8 kilometers) east of the site, U.S. Interstate 76 located about 6.5 miles (10.5 kilometers) southeast of the site, and U.S. Interstate 25 located about 15 miles (24 kilometers) west of the site. Local access to the project site is via a dirt road off of CR 24, which is also unpaved.

The project site comprises 80 acres (32.4 hectares) located on a 320-acre (130 hectare) property owned by ConAgra Foods, Inc. The property comprises primarily vacant land situated in a rural area characterized by primarily agricultural and industrial land uses. Nine leases for oil and gas development held by Patina Oil and Gas are associated with the property, and portions of the property are also leased for grazing. One residence and several buildings associated with the Mile High Turkey Hatchery, Inc. are located in the northern portion of the property. The project site is characterized by shrub and grass type vegetation, with some disturbed areas associated with oil and gas wells and dirt access roads. Nearby land uses include the Mile High Turkey Hatchery, Inc. to the north, an auto junkyard and a used tire yard to the east, agricultural fields to the south, and mostly undeveloped land with some oil and gas development to the west. Figure 1-2 presents a series of photographs that characterize the project site and surrounding area.

To facilitate development of SEER's proposed biorefinery commercial demonstration project that would exhibit CWT-TCP technology, ConAgra Foods, Inc. would lease an 80-acre (32.4-hectare) parcel in the southern portion of the property to Renewable Environmental Solutions, LLC (RES). RES is a joint venture of ConAgra Foods, Inc. and CWT and is the exclusive licensee of the CWT-TCP technology in the agricultural sector.

Figure 1-1: Regional Setting

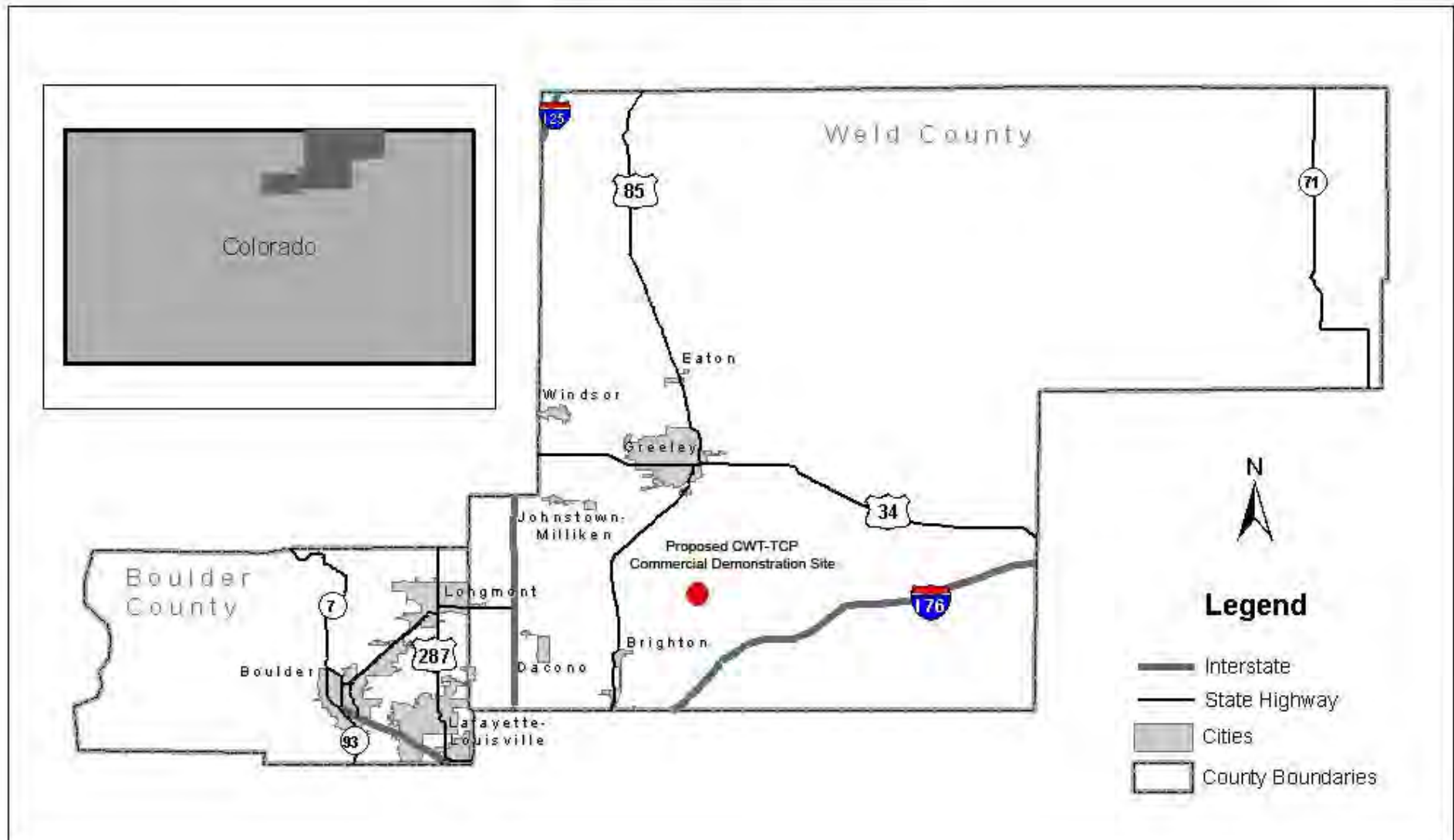


Figure 1-2. Site Photographs



A. View to North from Project Site with distant view of Rocky Mountains



B. View to Northeast from Project Site with view of Mile High Turkey Hatchery, Inc.



C. View to South of Project Site



D. View to Southeast from Project Site with view of Tire Mountain



E. Characteristic Site Vegetation

The CWT-TCP plant would be enclosed within a chain link fence. The fenced area would encompass 8.26 acres (3.34 hectares). Some of this acreage would be dedicated to a perimeter road, vehicle parking and other ancillary facilities. The footprint of the plant itself would be approximately 3.5 acres (1.4 hectares). An associated water lagoon would be constructed adjacent to this fenced area and encompass an additional 4 acres (1.6 hectares). The water from this lagoon would be used for spray irrigation (see Section 2 for additional details).

The CWT-TCP plant would use approximately 400 tpd (406.4 mtpd) of mixed agricultural residuals and low-value organic streams from various agricultural operations near the project site. These agricultural operations could include the Mile High Turkey Hatchery, Inc. located on the same property as the project site, a ConAgra Foods, Inc. beef and lamb processing plant in Greeley (located about 15 miles [24 kilometers] north of the project site), a ConAgra Foods, Inc. Longmont turkey processing facility (located about 20 miles [32 kilometers] west of the project site), as well as other nearby agricultural operations. The agricultural residuals produced by the beef-, lamb-, and turkey-processing plants are currently disposed of by land filling, land application, and/or rendering at a Denver area rendering plant.

1.3 SCOPING: PROCESS AND RESULTS

A scoping letter was prepared and distributed to an extensive list of agencies, organizations, and members of the public on January 9, 2004. A scoping notice was published on the DOE Golden Field Office's website on January 20, 2004. The scoping letter distribution list included a comprehensive group of parties who have expressed interest in environmental issues in the vicinity of the project site. Appendix A presents the scoping notice, scoping letter, a complete

list of the scoping letter recipients, and a complete list of response letters that were received during the 30-day scoping period.

1.3.1 Environmental Issues

The scoping letter for the Proposed Action identified the following environmental topics to be addressed in the EA:

- Land Use, Planning, Socioeconomics and Public Policy;
- Traffic and Circulation;
- Air Quality and Noise;
- Visual Quality/Aesthetics;
- Water Resources;
- Soils and Geology;
- Biological Resources;
- Cultural Resources;
- Waste Management;
- Public Facilities, Services and Utilities; and
- Energy.

The following discussions summarize the relevant input received during the scoping period. The issues raised by this input are addressed in the EA:

- The potential for several listed threatened and endangered species and one candidate for listing to occur in the project area;
- The potential for water depletions to the Platte River system;
- The Proposed Action would require an approved Site Specific Development Plan and Special Review Permit, and may consider separating the ConAgra Foods, Inc. property through the Recorded Exemption Process, in accordance with Weld County Department of Planning Services requirements;
- A professional survey should be conducted to identify any cultural resources in the project area that are eligible for the National Register of Historic Places; and
- Concerns regarding the Proposed Action to generate objectionable odors.

1.3.2 Alternatives

The following alternatives were defined prior to the scoping period:

- Proposed Action
- No Action Alternative

No additional alternatives were raised during the scoping period.

At this time, the Proposed Action and the No Action Alternative are the only alternatives addressed in the EA. The Proposed Action involves construction of the CWT-TCP plant as described in Chapter 2. The No Action Alternative would involve a DOE decision not to provide funding for the CWT-TCP project on the proposed site. For NEPA compliance purposes and to create a meaningful No Action scenario and baseline conditions, it has been assumed that the CWT-TCP plant would not be constructed without DOE funding. However, it is possible that the applicant could proceed without DOE funding. If the applicant proceeds without DOE or other

federal funding, the requirement for federal environmental review under NEPA would be removed. A privately funded project scenario would be identical or at least similar to the Proposed Action. This scenario is not addressed in this EA.

Other alternatives raised prior to the scoping period were considered, but were eliminated from further analysis. These alternatives and the rationales for eliminating these alternatives are:

- Other Plant Location Alternatives (i.e., not on ConAgra Foods, Inc. property): not considered feasible because of the lack of suitable sites and the added costs associated with feedstock delivery/transportation; and
- Reduced Plant Capacity Alternative: not considered feasible because it is inconsistent with the Proposed Action's purpose and need and the intent of the commercial demonstration of the technology.

1.4 PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the Proposed Action, the decision to provide federal funding for the construction of the proposed demonstration plant for the CWT-TCP technology, is to support new technology with the potential to create broad public benefits. The Proposed Action would demonstrate a large-scale technology for the conversion of agricultural residuals/low-value organic streams to energy and other valuable products.

The U.S. Congress has acknowledged the merit of this project by providing specific funding through DOE. Based on Congressional action, DOE has funding available to support SEER's participation in the proposed CWT-TCP demonstration project.

1.5 ORGANIZATION, CONTENT, AND OBJECTIVES OF THIS ENVIRONMENTAL ASSESSMENT

This EA is organized in a manner consistent with NEPA and DOE's NEPA implementation guidelines. The EA has seven primary sections. The first section is a Summary. The organization, content, and objectives of the EA's remaining six chapters are as follows:

Chapter 1 – Introduction. Presents the regulatory context and rationale for preparing this EA, provides background about the project and proposed project site, summarizes the scoping process and results, defines the purpose and need for the project, and clarifies the organization, content, and objectives of this EA.

Chapter 2 - Proposed Action and Alternatives. Presents a detailed description of the project and the characteristics of the construction and operation of the proposed CWT-TCP plant, along with a description of the No Action Alternative.

Chapter 3 - Affected Environment. Describes environmental baseline information about the project site and surrounding area.

Chapter 4 - Environmental Consequences and Mitigation Measures. Describes potential impacts of the Proposed Action and No Action alternatives, compares the impacts, presents required and recommended measures to reduce impacts, and makes "significance" findings.

Chapter 5 - Bibliography and References. Presents a listing of key documents used in the preparation of this EA and consultations that took place as part of the EA process.

Chapter 6 - List of Preparers. Identifies the individuals who prepared the EA and their roles.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 DESCRIPTION OF THE PROPOSED ACTION

2.1.1 Project Applicants

SEER has assembled a project team to develop a prototype commercial-scale demonstration project that would utilize the CWT-TCP technology in unincorporated Weld County, Colorado. This team includes RES, CWT, and Kvaerner Process Systems (KPS) (who would contribute engineering and construction oversight, and coordinate plant start-up). As described in Chapter 1, DOE may provide funding in support of this project.

2.1.2 Project Location

The project site is located immediately north of CR 24, east of CR 39 and west of CR 41, approximately 15 miles (24 kilometers) south of Greeley, Colorado in Weld County. Access to the ConAgra Foods property is via a dirt road off of CR 24, which is also unpaved. An access easement from Weld County would provide direct access from CR 24 to the project site (see Figure 2-1).

The project site was selected because of the economic and environmental benefits that would be derived from locating a 400-ton per day CWT-TCP plant in close proximity to ConAgra Foods, Inc. agricultural processing plants, as well as the many other agricultural operations in the area.

2.1.3 Plant Design, Construction, Operation and Maintenance

Plant Design

KPS, located in Calgary, Canada, would design the proposed plant. The plant design is based on a pilot project design that has been customized for the site and the objectives of the proposed commercial demonstration plant. Figure 2-1 shows the site location and general boundaries for the CWT-TCP plant and associated wastewater lagoon and spray irrigation area. The CWT-TCP plant would be located within a chain link fenced area of approximately 8 acres (3.2 hectares). A detailed footprint of the CWT-TCP plant is shown in Figure 2-2. The nine areas shown in Figure 2-2 are identified as follows:

- Area 1 – Receiving
- Area 2 – 1st Stage Processing
- Area 3 – Separation Stage and Mineral Processing
- Area 4 – Produced Water Processing
- Area 5 – 2nd Stage Processing
- Area 6 – Hydrogen Gas Processing
- Area 7 – Process and Product Storage Pumping Systems
- Area 8 – Glycol Utility Heating
- Area 9 - Utility

Figure 2-1
CWT-TCP Project Site Location

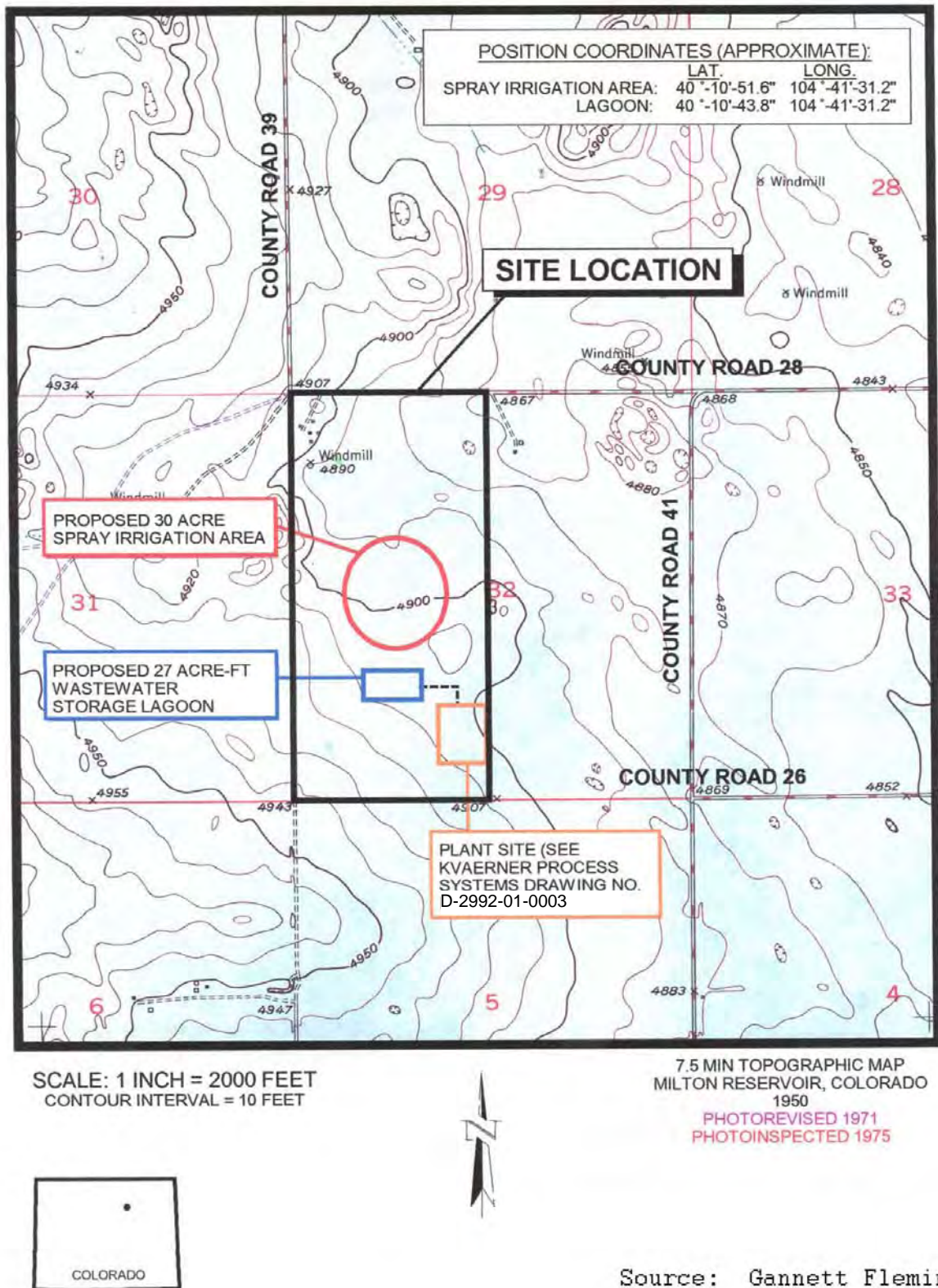


Figure 2-2. CWT-TCP Plant Footprint

The fence would be 6 feet (1.8 meters) high with two strands of barbed wire at the top of the fence. This area would feature an asphalt perimeter road encircling a cluster of several metal pre-fabricated buildings, as well as other facilities such as storage tanks, pumps, associated piping for various materials, and an uncovered truck weigh scale. Sample preparation, heat recovery, utilities, and vapor recovery of wastewater are among the process areas that would be enclosed in metal pre-fabricated buildings.

KPS would construct and ship some of the individual components of the CWT-TCP unit for on-site assembly. Fabrication of all equipment is expected to require approximately 40 weeks. The components may include product unloading, sample preparation, size reduction, grinding, 1st stage reactor, separation, 2nd stage reactor, heat recovery, heat exchangers, produced gas utilization, utilities, emergency thermal oxidizer, emergency flare, aboveground petroleum storage tanks and associated piping, and vapor recovery of wastewater. The CWT-TCP plant would also require a 4-acre (1.6-hectare) lined lagoon for excess water generated by the CWT-TCP process, with final water destined for spray irrigation as applied for in a permit application submitted to the Colorado Department of Public Health and Environment (CDPHE).

Construction Requirements and Process Trains

The CWT-TCP plant would be designed, fabricated, and installed to utilize the CWT-TCP process to produce fuel, power, and fertilizers from agricultural residuals and low-value organic streams to potentially include beef, lamb, and turkey processing residuals. The project can be divided into two phases: construction and operation.

The construction phase would entail site preparation and CWT-TCP equipment installation. Site preparation activities would include conducting a geotechnical investigation prior to finalizing exact plant location; paving of CR 24; improvements to access roads at the site to include grading, graveling, and asphaltting to reduce construction dust (supplemental dust suppression would be supplied by water tanker as necessary for any unpaved areas); extension of existing nearby utility services (water, gas, and electricity); installation of perimeter fencing; construction of a storm water and erosion control pond utilizing staked hay bales to control runoff (as part of the construction permit that would be submitted to CDPHE); equipment foundations; and tank spill containment facilities. This construction phase is expected to take approximately 12 months and is anticipated to start in fall, 2004. The construction equipment estimated for this project is two cranes, five to ten 15-ton capacity dump trucks, two backhoes, and one excavator.

Process Description

Figure 2-1 and the following discussion provide general information about the proposed CWT-TCP plant and its processes. Certain CWT-TCP process engineering details are confidential and proprietary and therefore are not provided in this public document. Confidential and proprietary details relate primarily to internal process engineering details that are not necessary for environmental impact analysis in this EA. The following information is considered sufficient for the required NEPA analysis.

Mixed agricultural residuals and low-value organic streams (e.g., feathers, grease, blood) would be transported to the CWT-TCP plant via truck from nearby agricultural processing facilities. It is expected that 20 trucks per day, each transporting about 20 tons (20.3 metric tons) per load, would transport materials to the site for conversion in the CWT-TCP process. These materials would be offloaded from the trucks into hoppers to begin the CWT-TCP process.

The CWT-TCP is a five-step process:

1. *Pulping and slurring the mixed agricultural residuals and low-value organic streams with water*
Materials are fed into a hydro-pulper, where they are homogenized and blended with water to form a slurry.
2. *Heating the slurry under pressure to the desired temperature*
The mixture is pumped under pressure through heat exchangers to a first stage reactor.
3. *Flashing the slurry into a lower pressure to separate the mixture*
Processed material enters a flash vessel, where water is vaporized. Steam exits through the top of the vessel, the solid material component is removed from the bottom and the remaining organic liquid continues through the process.
4. *Heating the slurry once again (coking) to drive off water and produce light hydrocarbons*
Organic steam/gas mixture travels through heat exchangers and passes to a coker, where it is pressurized and the temperature is increased. The organic mixture is reformed into fuel gas and light oil, and non-volatile organic compounds (carbon).
5. *Separating the products*
Fuel gas leaves the reactor, passes through a heat exchanger and then through a condenser where it is cooled. Cooled fuel gas and oil mixture separates. Fuel gases go into turbines or boilers, oil goes to an oil storage tank, and carbon goes to carbon storage bins. Process water disposal is described below.

Water used for operation of the CWT-TCP plant would come from recycled process water generated through the CWT-TCP process itself, except for the initial start-up of the plant, which would utilize water from an existing on-site well to begin the pulping and slurring process. Clean water recycling would be employed to minimize actual water use. After use in the CWT-TCP process, the water would be cooled to less than 100 degrees F (37.8 degrees C) and meet groundwater standards defined by the CDPHE for discharge before release into the 4-acre (1.6-hectare) storage lagoon, with final water destined for spray irrigation. Process water would also be used for on-site toilets, and a sanitary waste leach field would be located on site to treat this wastewater.

Water for initial process start up, as well as for potable use, boilers, and system cooling would be obtained from an existing on-site well with an estimated volume of less than 10,000 gallons per day (gpd) (37,854 liters per day [lpd]). Approximately 0 to 2,000 gpd (7,571 lpd) of water would be reused in the slurring step of the process. Drinking water for workers would be provided by bottled water.

A fire suppression system utilizing foam and chemical fire extinguishers would be installed. If water is needed for fire containment, the excess water in the storage lagoon could be utilized.

All gases generated during the CWT-TCP process would be routed to on-site boilers for combustion to produce energy/steam to help run the CWT-TCP system. Because the CWT-TCP system is contained, the only emissions produced would be from this combustion process. The emissions would be comparable to those produced by a typical small-scale industrial boiler,

and would be subject to a permit from the CDPHE in coordination with the Weld County Department of Planning Services. Based on analytical data from a CWT-TCP pilot operation in Philadelphia, which is the best available representative analytical data for the produced gas, the elemental composition of the gas consists of approximately 67 percent carbon, 19 percent oxygen, 13 percent hydrogen, and less than one percent each nitrogen and sulfur. Hydrocarbons present in the gas primarily include methane, ethylene, propylene, and ethane, as well as smaller amounts of other hydrocarbons. No volatile sulfur compounds, aliphatic hydrocarbons, benzene, toluene, ethylbenzene, or xylenes were detected in the samples. It is anticipated that gas produced under the proposed action would have a very similar composition to that described above.

It is anticipated that the proposed CWT-TCP plant would produce 800 to 1,000 barrels of oil, 10 to 20 tons (20.3 metric tons) of carbon (coke), 10 to 20 tons (10.2 to 20.3 metric tons) of dry mineral fertilizer (comprised primarily of phosphorous and calcium), 5,000 to 10,000 gallons (18,927 to 37,854 liters) of liquid fertilizer (comprised primarily of nitrogen, phosphorous, potassium, and sulfur), and 58,000 gallons (219,554 liters) of water on a daily basis, based on an input of 400 tpd (406.4 mtpd) of agricultural residuals and low-value organic streams. Remaining coke-like solids would be accumulated in a storage bin for pickup, as necessary, for off-site use either for blending as fuel, or for use as fertilizer. The project applicants base these estimated benefits on results from smaller scale plants and interim results emerging from a similar facility in Carthage, Missouri. The CWT-TCP plant would include about five days of storage for oil, and about 10 days of storage for each type of fertilizer produced; however, these products would be picked up on a regular basis (i.e., several times per week). It is anticipated that 10 liquid tanker trucks would travel to and from the site on a daily basis to remove oil products. These trucks would deliver the oil products to local refineries. In addition, it is anticipated that one to two trucks per day would travel to and from the site daily to pick up dry fertilizer products, and one to two trucks per day would travel to and from the site to pick up liquid fertilizer products. These trucks would likely travel to and from the site via I-76, exiting at State Highway 52, then travel to the project site along CR 41.

No materials would be stored outdoors except for the oil and fertilizers produced by the CWT-TCP process. These materials would be stored using state-of-the art containment measures described in details below. No hazardous materials or wastes would be used or produced in the CWT-TCP process.

Once fully operational, the CWT-TCP plant would operate year-round for 24 hours per day, seven days per week. The goal is to operate the CWT-TCP facility for two years before a plant shutdown for routine maintenance and cleaning. The plant staff would include 20 to 25 full-time employees.

The CWT-TCP process would not directly produce any wastes that would require incineration or landfilling; however, office activities associated with the CWT-TCP plant would generate low volumes of solid waste materials (e.g., food containers, packaging, etc.). It is estimated that these wastes would result in the filling of one dumpster per week, which would be picked up by a contractor and transported to a landfill.

2.1.4 Environmental Management Commitments

RES, which would operate the CWT-TCP plant, is committed to providing employees of the plant with a safe workplace while promoting programs that encourage high standards of employee health. All RES plant employees would receive approximately four to six weeks of

training that meet the American Petroleum Institute Standards prior to performing actual work activities. Employees are required to undergo technical training appropriate for their job description, as well as safety training. Training topics would include: the use of personal protective equipment (PPE); confined space entry procedures and documentation requirements; lock out/tag out procedures; hot work permit and procedures; general chemical safety; chemical storage; emergency spills and spill response; appropriate Material Safety Data Sheet information; good housekeeping; etc.

All new plant construction would be required by the Occupational Safety and Health Administration (OSHA) to undergo a hazard and operability (HAZOP) review due to production of fuel gas by thermal process. The HAZOP review personnel are composed of a mixture of design engineers, plant operators, technicians, instrumentation and control engineers, etc. that provide input from various perspectives in relation to potential problems and possible solutions. The HAZOP team reviews all process flow sheets and conducts analysis of failures of equipment and instrumentation, identifies causes of failures, describes potential consequences, proposes safeguards, and makes recommendations.

Some of the consequences of equipment/instrument failure, such as chemical spills/releases, could cause environmental impacts. Operation of the plant would include commitments involving safeguards for spills. These safeguards include level controls, high level alarms, PPE, operating procedures, inspection, preventative maintenance (PM) and design, concrete floors and/or curb containment, spill kits/response, and other measures.

Recycling practices would be used to minimize the amount of solid waste that must be landfilled (e.g., office paper, cardboard, aluminum cans, etc.), and to support beneficial reuse.

Permits and Coordination with Agencies

Construction and operation of the CWT-TCP plant in Weld County would require various permits from relevant agencies. To facilitate development, the 320-acre (125-hectare) ConAgra Foods, Inc. property would lease to RES an 80-acre (32.4-hectare) parcel encompassing approximately the southern quarter of the property for siting of the TCP plant. Future development of the property would be coordinated with the Weld County Department of Planning Services. The air permit application for the proposed plant has been filed with the CDPHE.

Water for domestic uses (e.g., sinks, toilets), boilers, and cooling systems, as well as for initial startup of the CWT-TCP plant, would be provided by an onsite well. Use of water from this well would be contracted through Mile High Turkey Hatchery, Inc., which would sell a portion of the approximately 50,000 gpd (189,271 lpd) of water rights associated with this well. Approval of sanitary waste disposal of less than 2,000 gpd (7,571 lpd) via an onsite leach field would be obtained from CDPHE and coordinated with Weld County. The domestic wastewater system would also require approval by Weld County. The CWT-TCP plant is exempted from needing a solid waste Certificate of Designation (CD) because the plant is considered an agricultural generator by Weld County.

All final product storage tanks would be located above ground with secondary containment. Tanks would have level-indicating local gages and high-level sensors connected to the plant distributed control system (DCS). Loading and unloading pads would be provided to capture potential spills during these operations. Vents from the tanks would be connected to an odor control system that has been submitted to CDPHE as part of the air quality permit. The odor control system would be a multi-loop system comprising a wet scrubber(s), biofilter, thermal

oxidizer, boiler and coker system. Odor control efforts would also include periodic monitoring for odors in nearby areas by plant workers, quick response to equipment malfunctions, and prompt response to complaints from the community. These efforts would include temporarily shutting down the plant or components of the plant until the source of the nuisance odor is identified and corrective actions are taken to control the nuisance odor. The combined odor control header rate is 50 to 200 standard cubic feet per minute (SCFM). The primary component is carbon dioxide. An analysis of the combined gas in the odor control header from the Carthage, Missouri facility is shown in Table 2.1-1.

Table 2.1-1. Combined Odor Control Header Emissions

Parameter	Combined Odor Control Header
Hydrogen	0.30%
Carbon Dioxide	98.60%
Carbon Monoxide	0.50%
Hydrocarbons	0.60 %
Hydrogen Sulfide	0.00%
Other	0.10%
Total	100.10%

The CWT-TCP process would result in the generation of approximately 58,000 gpd (219,554 lpd) of wastewater due to water present in the wastes. The excess water produced from the process would be processed through centrifuges and a vapor recompression process to generate recycled clean water. The clean water stream would be utilized for internal reuse and the remainder of excess water produced would be treated to groundwater standards (the only permitting requirement is that the nitrate concentration is no greater than 10 milligrams per liter [mg/L]) and cooled before being discharged into a storage lagoon prior to spray irrigation for agricultural crops. It is anticipated that this water would be applied via spray irrigation on a 20-acre (8.1-hectare) to 40-acre (16.2-hectare) area either within the project site or on a nearby agricultural operation that currently uses spray irrigation for agricultural processes through an agreement with the property owner. A permit for spray irrigation would be required from the CDPHE Groundwater Section.

2.2 DESCRIPTION OF THE NO ACTION ALTERNATIVE

The No Action Alternative would involve a DOE decision to not provide funding for the CWT-TCP plant. For NEPA compliance purposes and to create a meaningful No Action scenario and baseline conditions, it is assumed that the Weld County CWT-TCP plant would not be constructed without DOE funding.

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3.0 AFFECTED ENVIRONMENT

3.1 LAND USE AND TRANSPORTATION

3.1.1 Project Site and Zoning

The project site is located in the southwest area of unincorporated Weld County. The legal description of the project site is SW ¼ Section 32 Township 3N, R65W and Parcel Number 121332000004.

The project site is owned by ConAgra Foods, Inc. and comprises approximately 320 acres (130 hectares) of mostly vacant land situated in a rural area comprising primarily agricultural and industrial uses. Nine leases for oil and gas development held by Patina Oil and Gas are located throughout the property, and it is also leased for grazing. One residence and several out buildings are located throughout the property. The project site is characterized by shrub and grass type vegetation, with some disturbed areas associated with oil and gas wells and dirt access roads. Figure 1-2 presents a series of photographs that characterize the project site and surrounding area.

According to the Weld County Comprehensive Plan (2003), the project site is located within the County's A (Agriculture) Zone District. The primary goal of this zoning designation is to conserve the County's agricultural land for uses that promote the economic health and perpetuation of agriculture. Policy 1.3 of this zoning designation states:

Allow commercial and industrial uses, which are directly related to, or dependant upon agriculture, to locate within the A (Agriculture) Zone District when the impact to surrounding properties is minimal, and where adequate services and infrastructure are currently available or reasonably obtainable. Agricultural businesses and industries will be encouraged to locate in areas that minimize the removal of agricultural land from production. Agricultural businesses and industries are defined as those which are related to ranching, livestock production, farming, and agricultural uses. (Weld County, 2003)

Regarding oil and gas issues, the Comprehensive Plan's Oil and Gas policy 1.2 states, "The County should encourage cooperation, coordination and communication between the surface owner and the mineral owner/operators with respect to any developments of either the surface or the mineral estate." (Weld County, 2003)

3.1.2 Surrounding Area

Land uses surrounding the project site include the Mile High Turkey Hatchery, Inc. to the north, an auto junkyard and Tire Mountain (a used tire yard) to the east, agricultural fields to the south, and mostly undeveloped land with some oil and gas development to the west.

The nearest incorporated communities in the vicinity of the project site include the cities of Hudson, located about 7 miles (11 kilometers) to the southeast; Fort Lupton, located about 7.5 miles (12 kilometers) to the southwest; and Platteville, located about 8 miles (13 kilometers) to the northwest. The City of Greeley is located about 15 miles (24 kilometers) to the north, Denver is located about 20 miles (32 kilometers) to the south, and Longmont is located about 20 miles (32 kilometers) to the west. Another concentration of residential development in the vicinity of the project site is associated with the Beebe Draw Farms (also known as the Pelican

Lake Planned Use Development), which is located about 3 miles (5 kilometers) northeast of the project site and features upscale homes on large lots. The community is planned for 486 residential units, a school site, a fire department site, and equestrian uses, but to date only 44 residences have been built in part due to various legal issues. (Ogle, 2003)

The predominant land use within the County is agriculture; however, over the past decade urban growth within the County has been concentrated in the south and west areas, especially in the area along and between I-25 and Highway 85. This growth is primarily due to annexations by smaller towns seeking to boost their tax bases by adding potential commercial and industrial users. Residential growth is a result of people desiring affordable housing and a small town atmosphere relative to the more developed and costly areas closer to Denver and Boulder. (Ogle, 2003)

3.1.3 Transportation and Access

The project site is located immediately north of CR 24, east of CR 39 and west of CR 41, approximately 15 miles (24 kilometers) south of Greeley, Colorado in Weld County. Regional access to the site is provided by U.S. Highway 85 located about 5 miles (8 kilometers) east of the site, U.S. Interstate 76 located about 6.5 miles (10.5 kilometers) southeast of the site, and U.S. Interstate 25 located about 15 miles (24 kilometers) west of the site. Local access to the project site is via a dirt road off of CR 24, which is also unpaved (see Figure 2-1), off of CR 41. Traffic volumes on the County roads surrounding the project site are provided in Table 3.1-1. These traffic volumes and site reconnaissance indicate that there are no traffic congestion, capacity or safety problems involving the local roadway network.

Table 3.1-1. Traffic Volumes in the Vicinity of the Project Site.

Roadway Segment	Traffic Volume (trips per day) ¹
CR 32 between U.S. 85 and CR 29	1,116
CR 32 between CR 29 and CR 31	661
CR 32 between CR 31 and CR 33	999
CR 32 between CR 33 and CR 35	713
CR 39 between CR 32 and CR 38	884
CR 28 between CR 39 and CR 41	711
CR 41 between CR 10 and CR 12	389
CR 41 between CR 12 and Highway 52	448

¹ All traffic volumes are from 2002, except for those provided for CR 28, which is from 1997.
Source: Maxon, 2004.

3.2 VISUAL QUALITY / AESTHETICS

3.2.1 Visual Characteristics of the Project Site

Visual resources are the natural and manufactured features that define a particular environment's aesthetic qualities. In undeveloped areas, landforms, water features, and vegetation are the primary components that characterize the landscape. Manufactured elements such as buildings, fences, and streets are also considered.

The visual character of the project site is predominantly undeveloped and rural (Figure 1-2). Level topography covered in shrub and shortgrass vegetation is the primary landscape feature of the project site. Visual disturbances on the project site are limited to dirt access roads, and approximately nine oil and gas wells operated by Patina Oil and Gas are located throughout the

ConAgra Foods, Inc., property. Distant views of the Rocky Mountains are provided to the west of the project site.

The ConAgra Mile High Turkey Hatchery to the north of the proposed site and the auto junkyard and Tire Mountain facility to the east, as well as a few scattered residences, comprise the only development within the immediate vicinity, and represent only a small portion of the overall undeveloped landscape. The three industrial facilities include low-lying, one- to two-story structures, which offer little visual intrusion. Limited oil and gas development can be seen to the west of the project site.

3.2.2 Public Vantage Points/Site Visibility

No important public vantage points such as parks or roadside viewing areas are found along the public roads in the vicinity. Views of the project site from CR 41, the primary road in the vicinity, are obscured by Tire Mountain and the auto junkyard, which are located immediately adjacent to CR 41. The nearest communities are at least 7 miles (11.3 kilometers) from the project site.

3.3 PUBLIC SERVICES AND UTILITIES

The project site is located within the service area of the Platteville Fire Department. The Platteville Fire Department has a full-time crew of three firefighters, with an additional volunteer staff of 39, and 13 fire fighting apparatus. Emergency response to the project site would require a drive of about 11 miles (18 kilometers) from the nearest Platteville Fire Department Station. (Scott, 2004)

The Weld County Sheriff's Office provides law enforcement and police protection for the area including the project site. The project site is located in District 3 of the Weld County Sheriff's Office jurisdiction. District 3 is headquartered in Fort Lupton, about 7.5 miles (12 kilometers) southwest of the project site.

A buried natural gas line operated by the Greeley Gas Co. is located parallel to CR 28. Another buried gas line associated with Duke Energy parallels the parcel's east boundary. Buried piping associated with the Patina oil and gas wells are located throughout the site.

Existing 480-kilovolt (kV) power poles and a transformer operated by United Power are located parallel to CR 41.

An existing groundwater well currently serves the Mile High Turkey Hatchery, Inc. site located in the northern portion of the ConAgra Foods, Inc. property. Mile High Turkey Hatchery, Inc. has water rights for the use of up to 50,000 gpd (189,271 lpd) associated with this well.

3.4 NOISE

Noise is defined as unwanted or annoying sound that is typically associated with human activities and that interferes with or disrupts normal activities (DOE, 2003). Sound and noise are measured as sound pressure levels in units of decibels (dB). Response to noise varies according to its type, its perceived importance, its appropriateness in the setting and time of day, and the sensitivity of the individual receptor. Human hearing is simulated by measurements in the A-weighting (dBA) network, which de-emphasizes lower frequency sounds

to simulate the response of the human ear. Some typical sound levels from common noise sources are presented in Table 3.4-1.

Table 3.4-1. Sound Levels* of Typical Noise Sources and Noise Environments (A-Weighted Sound Levels).

Noise Source (at a given distance)	Scale of A-weighted Sound Level (dBA)	Noise Environment (equivalent)	Human Judgment of Noise Loudness (relative to a reference loudness of 70 dB*)
Commercial jet take-off (200 feet/60.6 meters)	120	--	Threshold of pain *32 times as loud
Motorcycle (25 feet/7.6 meters) Diesel truck, 40 mph (50 feet/15.2 meters)	90	Boiler room; Printing press plant	*4 times as loud
Garbage disposal (3 feet/1 meter)	80	Noisy urban daytime	*2 times as loud
Bus idling (50 feet/15.2 meters)	75	--	*1.5 times as loud
Passenger car, 65 mph (25 feet/7.6 meters) Vacuum cleaner (3 feet/1 meter)	70	--	Moderately loud *70 dB (Reference loudness)
Normal conversation (5 feet/1.5 meters)	60	Data processing center; Department store	*1/2 as loud
Light traffic (100 feet/30 meters)	50	Quiet urban daytime	*1/4 as loud
Bird calls (distant)	40	Quiet urban nighttime/rural	Quiet *1/8 as loud
Library	36	Quiet suburban nighttime	Quiet *3/32 as loud

*These values are logarithmic measurements (i.e., every 10-dBA increase is perceived by the human ear as approximately twice the previous noise level; therefore, the motorcycle is twice as loud as the garbage disposal).

Source: FHWA and Salter, 2000.

3.4.1 Sensitive Receptors

The inhabitants of residences to the north and south of the site boundary are the only sensitive receptors in the project vicinity.

3.4.2 Existing Noise Levels and Sources

The ambient noise level within the project site consists of sounds generated by vehicle traffic on adjacent roads, various industrial activities on industrial sites adjacent to the site, and natural sources. Actual noise levels in and around the site are affected by specific noise events, vegetation, and meteorological conditions, including wind speed and direction.

Although noise measurements were not taken and noise modeling was not performed, site observations indicate the acoustic environment within the boundaries of the site can be considered similar to that of a rural location.

In general, roadway noise depends upon vehicle type, speed, traffic volume, surface conditions, surface gradient, and distance to receptors. The primary source of noise affecting the project site is vehicle traffic on CR 41.

3.4.3 Regulations and Guidelines

Environmental noise regulations and guidelines for outdoor, neighborhood and/or community noise levels have been promulgated by the EPA, the Federal Highways Administration (FHWA), the State of Colorado, and local governments such as Weld County.

The EPA provides guideline noise levels for anticipated noise/human activity disturbance impacts in relation to industrial construction and operations. The levels are set to define a point at which these levels and lower levels would protect people from activity interference and annoyance. Outdoor locations “in which quiet is a basis for use” are assigned a maximum noise level of 55 dBA. Indoor locations are assigned a maximum noise level of 45 dBA (DOE, 2003).

The FHWA has created Noise Abatement Criteria for actions that involve federal roads. A noise level of 67 dBA is assigned to lands that include residences, schools, churches, hospitals, picnic areas, and recreation areas. A 24-hour average level, weighted to address the increased significance of nighttime noise, of 67 dBA is a typical threshold for considering mitigation for residential sensitive receptor exposure.

The State of Colorado Noise Statute (Code of Colorado Regulations (CCR) 25-12-101 through CCR 25-12-109) has established statewide standards for noise level limits for various time periods and areas. The most stringent permissible noise levels apply to residential zones, where the maximum permissible daytime (7:00 a.m. to 7:00 p.m.) noise level is 55 dBA measured at a distance of 25 feet (7.6 meters) from the property line. In addition, construction projects are limited to permit conditions, or 80 dBA, for the period within which the construction is to be completed, or a reasonable amount of time.

Section 22-4-70, Noise goals and policies, of the Weld County Comprehensive Plan identifies minimizing the impact of noise on County residents as a goal. County policy is that the Weld County Department of Public Health and Environment will review land use applications for compliance with federal, state, and County statutes, regulations, and ordinances, and will prescribe noise level standards for land use applications when appropriate. (Weld County, 2003)

3.5 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

Executive Order 12898, enacted by President Clinton in 1993, requires that each federal agency make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations.

3.5.1 Population

Based on 2000 Census data, Weld County has a population of 180,936; this represents an increase of 37 percent over the County's 1990 population of 131,821. The largest incorporated area within the County is the City of Greeley, located about 15 miles (24 kilometers) north of the project site, with a 2000 population of 76,930. The 2000 population of unincorporated Weld County is 41,832, an increase of 27 percent over the 1990 total. (Greeley/Weld County Economic Development, 2003)

The project site is located in the southwest portion of unincorporated Weld County. The nearest incorporated communities in the vicinity of the project site include the cities of Hudson, located about 7 miles (11.3 kilometers) to the southeast; Fort Lupton, located about 7.5 miles (12 kilometers) to the southwest; and Platteville, located about 8 miles (13 kilometers) to the northwest. Based on site visits to the project site, it appears that only three residences are located within a 1-mile radius of the project site.

3.5.2 Employment

Table 3.5-1 provides data on the distribution of jobs in Weld County by industry for 2000. The top three employment sectors in Weld County in 2000 comprised Education, Health and Social Services; Manufacturing; and Retail Trade, respectively.

Table 3.5-1. Jobs by Industry for Weld County, Colorado (2000).

Industry	Jobs (2000)	Percent
Agriculture, Forestry, Fishing, Hunting, and Mining	4,447	5.1
Construction	9,443	10.8
Manufacturing	12,003	13.7
Wholesale Trade	3,409	3.9
Retail Trade	10,213	11.7
Transportation and Warehousing, and Utilities	4,258	4.9
Information	2,324	2.7
Finance, Insurance, Real Estate, and Rental and Leasing	4,924	5.6
Professional, Scientific, Management, Administrative, and Waste Management Services	5,826	6.6
Educational, Health and Social Services	16,762	19.1
Arts, Entertainment, Recreation, Accommodation and Food Services	6,525	7.4
Other Services (except Public Administration)	3,981	4.5
Public Administration	3,511	4.0

Source: U.S. Bureau of the Census, 2000a.

3.5.3 Housing

Based on 200 Census data, Weld County has 66,194 housing units, with a vacancy rate of 4.5 percent (2,947 units). The median house value is \$140,000, while the median rent is \$564. (U.S. Bureau of the Census, 2000a)

3.5.4 Ethnicity

Table 3.5-2 provides a comparison of the ethnic composition of Weld County, the State of Colorado, and the U.S. As shown on this table, the populations of Weld County and the State of Colorado comprise a higher white population than that of the U.S. The U.S. population has a considerably higher percentage of Black compared to Colorado and Weld County, while Weld County has a considerably higher proportion of Hispanics and Latinos than either of the other two geographic areas presented here. Due to the lack of residential development in the vicinity of the project site, there are no concentrations of minorities near the project site.

Table 3.5-2. Race Composition for Weld County, State of Colorado, and U.S.

Race	Weld County	State of Colorado	U.S.
White	81.7%	82.8%	75.1%
Black	0.6%	3.8%	12.3%
American Indian	0.9%	1.0%	0.9%
Asian	0.8%	2.2%	3.6%
Pacific Islander	0.1%	0.1%	0.1%
Other Race	13.3%	7.2%	5.5%
Hispanic or Latino (of any race)	27.0%	17.1%	12.5%
Two or More Races	2.7%	2.8%	2.4%

Source: U.S. Bureau of the Census, 2000a, 2000b, and 2000c.

3.5.5 Income and Poverty

Based on 2000 Census data, residents of Weld County had a median household income of \$42,321, as compared to \$47,203 for the State of Colorado and \$41,994 for the U.S. Additionally, 12.5 percent of Weld County's population in 2000 was considered to be living below poverty level, slightly higher than that of the U.S. (12.4 percent) and 3.2 percent higher than that of the State of Colorado (9.3 percent). Due to the lack of residential development in the vicinity of the project site, there are no concentrations of people living in poverty near the project site. (U.S. Bureau of the Census, 2000a, 2000b, and 2000c)

3.6 BIOLOGICAL RESOURCES

Biological resources include plants and animals within the region and the habitats in which they occur. All organisms and habitats occurring in one location comprise the ecosystem. Complex plant associations manifest as distinct vegetation communities and are driven by characteristics of precipitation, soil, hydrology, aspect, elevation, and climate, as well as competition among plant species and herbivory. Wildlife associations are driven by plant species composition and structure of the vegetation community and abiotic factors such as soil structure, topographic relief, water availability, and temperature.

For purposes of this EA, biological resources are presented in four categories: vegetation, which includes noxious weeds; wetlands and other waters of the U.S.; wildlife; and species of concern. There are no aquatic life resources in the project site because permanent water bodies are absent from the site.

A site visit to the 80-acre (32.4-hectare) project site was conducted on May 13, 2004 to identify vegetation and wildlife species and determine whether any sensitive species or habitats may be present on the site. The site visit entailed a general survey of the project site. An SAIC biologist walked throughout the project site and recorded all plant species observed. Wildlife species observed on site, including signs of wildlife (e.g., tracks, scat), were also recorded. Photos were taken of the site showing general vegetation types that occurred. Possible occurrences of wildlife species not observed on site were determined based on vegetation types (habitat) observed on site. No formal surveys for migratory birds or threatened and endangered species were conducted.

3.6.1 Vegetation

Located at the base of the foothills of the Rocky Mountains, the project site occurs at elevations ranging from 4,890 to 4,940 feet (1,490 to 1,505 meters) above mean sea level. This coincides with the Great Plains-Palouse Dry Steppe Province (Bailey, 1995).

Within the project site the plant community most closely resembles a disturbed short-grass prairie. Typical grass species occurring in shortgrass prairie communities include buffalo grass, grama, wheatgrass, and needlegrass (Bailey, 1995). Other plant species may include sagebrush, rabbitbrush, sunflower, locoweed, blazingstar, white prickly poppy, and Russian thistle. Groundcover in this community tends to be scarce, exposing the soil. Grazing has occurred on the site in the past and natural gas wells are present. The northern portion of the project site comprises mostly native vegetation, while the southern portion is dominated by introduced species. The northern portion of the project site is comprised predominantly of sand sagebrush (*Artemisia filifolia*), sand verbena (*Abronia fragrans*), and needle-and-thread (*Stipa comata*). In the southern portion of the project site, common rye (*Secale cereale*), downy brome (*Bromus tectorum*), and tumble mustard (*Sisymbrium altissimum*) make up the majority of the vegetative community. No trees were present on the project site. Table 3.6-1 lists the species observed on the project site during the May 13, 2004 site visit. Scientific names follow Weber and Whitman (1996).

Table 3.6-1. Plant Species Observed at the Project Site, Weld County, Colorado.

Common name	Scientific name
Canada thistle ^{1, 2}	<i>Breca arvense</i>
Common rye	<i>Secale cereale</i>
Crested wheatgrass	<i>Agropyron cristatum</i>
Downy brome ¹	<i>Bromus tectorum</i>
Field milkvetch	<i>Astragalus agrestis</i>
Indian ricegrass	<i>Oryzopsis hymenoides</i>
Intermediate wheatgrass	<i>Agropyron intermedium</i>
Kochia	<i>Kochia scoparia</i>
Narrow-leaved penstemon	<i>Penstemon angustifolius</i>
Needle-and-thread	<i>Stipa comata</i>
Phlox sp.	<i>Phlox sp.</i>
Platte thistle	<i>Cirsium canescens</i>
Prairie evening primrose	<i>Oenothera albicaulis</i>
Prickly pear	<i>Opuntia sp.</i>
Russian thistle	<i>Salsola iberica</i>
Sand sagebrush	<i>Artemisia filifolia</i>
Sand verbena	<i>Abronia fragrans</i>
Scotch thistle ^{1, 2}	<i>Onopordum acanthium</i>
Sweet alyssum	<i>Lobularia maritima</i>

Common name	Scientific name
Tall wheatgrass	<i>Lophopyrum elongatum</i>
Threadleaf sedge	<i>Carex filifolia</i>
Tumble mustard	<i>Sisymbrium altissimum</i>
Western spiderwort	<i>Tradescantia occidentalis</i>
Western wheatgrass	<i>Agropyron smithii</i>
Yellow sweet-clover	<i>Melilotus officinalis</i>

¹ Species is on the Colorado Noxious Weed list

² Species is on the Weld County Noxious Weed list

Noxious weeds occur throughout the project site. Noxious weeds are invasive species that have been designated by rule (i.e., state, county, municipality, etc.) as being noxious, and meet one or more of the following criteria: (1) aggressively invades or is detrimental to economic crops or native plant communities, (2) is poisonous to livestock, (3) is a carrier of detrimental insects, diseases, or parasites, and/or (4) the direct or indirect effect of the presence of this plant is detrimental to natural ecosystems or agricultural areas (CNAP et al. 2000). In Colorado, the Colorado Weed Management Act, Title 35, Article 5.5, enables counties and municipalities to mandate noxious weed management by public and private landowners. There are 71 noxious weed species that have been identified as being the most problematic in Colorado, 17 of which have been prioritized for eradication.

Within the project site, three plant species found on the State of Colorado Noxious Weed List were identified: Canada thistle, scotch thistle and downy brome. The Colorado Noxious Weed Act (2003) classifies noxious weeds into three categories; List A, List B, and List C. Canada thistle and scotch thistle are List B noxious weed species defined as “noxious weed species with discrete statewide distributions that are subject to eradication, containment, or suppression in portions of the state designated by the commissioner in order to stop the continued spread of these species” (U.S. Department of Agriculture, 2003). Downy brome is on List C, for which the goal is to facilitate more effective integrated weed management of these species on private and public lands, and to provide additional education, research, and biological control resources to jurisdictions which choose to require management of List C species. Control is recommended for these species but not required by the state. Downy brome is a common component of disturbed grasslands and is dispersed throughout the site.

3.6.2 Wetlands and Other Waters of the U.S.

Based on a review of topographic maps, National Wetlands Inventory wetlands mapping, and the site visit, it was determined that wetlands and other waters of the U.S. do not occur on the project site. The nearest waters of the U.S. occur approximately 1 mile (1.6 kilometers) to the north and 1 mile (1.6 kilometers) to the south of the project site. Milton Reservoir is approximately 3 miles (5 kilometers) to the northeast of the project site.

3.6.3 Wildlife

Wildlife on and adjacent to the project site includes a variety of birds and mammals, and a few species of reptiles. Species commonly observed during the site visit included cottontail (*Sylvilagus audubonii* and *S. floridanus*), coyote (*Canis latrans*), western meadowlark (*Sturnella neglecta*), and mourning dove (*Zenaida macroura*). Western rattlesnake (*Crotalus viridis*) may

also occur on the project site. Small mammals that may use habitat within the project site include plains pocket gopher (*Geomys bursarius*), plains pocket mouse (*Perognathus flavescens*), and prairie vole (*Microtus ochrogaster*). These species are preyed upon by a variety of bird species including American kestrel (*Falco sparverius*), Swainson's hawk (*Buteo swainsoni*), and northern harrier (*Circus cyaneus*). Red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), and deer (*Odocoileus hemionus* and *O. virginianus*) are larger mammals likely inhabiting the project site. A coyote den was located on site and two pups were observed at the entrance to the den. Songbirds found on the project site include horned lark (*Eremophila alpestris*), western kingbird (*Tyrannus verticalis*), lark bunting (*Calamospiza melanocorys*), barn swallow (*Hirundo rustica*), and killdeer (*Charadrius vociferous*). Other bird species observed flying over, but not likely to use the project site include the double-crested cormorant (*Phalacrocorax auritus*), great blue heron (*Ardea herodias*), Canada goose (*Branta canadensis*), American white pelican (*Pelecanus erythrorhynchos*), and gulls (*Larus* sp.). These aquatic bird species are likely using Milton Reservoir or other aquatic sites nearby. The May 2004 site visit did not include specific migratory bird surveys or nest searches; however, several species of ground nesting birds including horned lark, western meadowlark, lark bunting, and killdeer were observed on site.

3.6.4 Species of Concern

The USFWS identified eleven species listed in accordance with the Endangered Species Act as threatened, endangered, or a candidate for listing, that could potentially occur within the project site (Table 3.6-2). No species occurring in the area are currently proposed for listing, and no designated critical habitat for listed species occurs on the project site (USFWS, 2004). Of the State of Colorado's species of concern, eight species may potentially occur within the project site (see Table 3.6-2). In addition, the Colorado Natural Heritage Program (CNHP, 2004) identified one natural heritage element in the vicinity of the project site. Because no open water exists within the project site, fish do not occur in the project site. Each of the species identified in Table 3.6-2 are described below with regard to their habitat requirements and their likelihood to occur within the project site.

Bald Eagle. Bald eagle nests are located in large cottonwood trees at the edge of reservoirs in the Denver area and along rivers on the Western Slope (Kingery, 1998). Bald eagles occur in a variety of habitats in Colorado including urban, riparian, and agricultural areas. Bald eagles over-winter, migrate, and summer in Colorado east of the Rocky Mountain Front Range, including Weld County. Milton Reservoir occurs approximately 3 miles (5 kilometers) from the project site and may provide habitat for bald eagles. No open water exists, no roost trees are present onsite and no prairie dog towns occur within the project site, therefore the presence of bald eagles is not likely. No bald eagles were observed within the project site during the May 2004 site visit.

Ferruginous Hawk. The ferruginous hawk inhabits grasslands and semi-desert shrublands, nesting in trees, rock outcrops, or on the ground (Andrews and Righter, 1992). Approximately 90 percent of their diet consists of medium-sized mammals (jackrabbits and cottontails west of the Continental Divide, and prairie dogs and ground squirrels east of the divide) (Kingery, 1998). Colorado's ferruginous hawks prey heavily on black-tailed prairie dogs, particularly in the winter (Kingery, 1998). No potential nest trees were present on the project site, but may occur outside the project site. Although no ferruginous hawks were observed during the May

Table 3.6-2. Threatened and Endangered Species, Candidates for Federal Listing, and State of Colorado Threatened, Endangered or Species of Concern Potentially Occurring on the Project Site.

Species	Status	Likelihood to Occur on Project Site
Birds		
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	FT, ST	Not Likely
Ferruginous Hawk (<i>Buteo regalis</i>)	SC	Possible
Interior Least Tern (<i>Sterna antillarum athalassos</i>)	FE, SE	Not Likely
Long-billed Curlew (<i>Numenius americanus</i>)	SC	Not Likely
Mexican Spotted Owl (<i>Strix occidentalis lucida</i>)	FT, ST	Not Likely
Mountain Plover (<i>Charadrius montanus</i>)	SC	Not Likely
Piping Plover (<i>Charadrius melodus</i>)	FT	Not Likely
Whooping Crane (<i>Grus americana</i>)	FE, SE	Not Likely
Mammals		
Black-footed Ferret (<i>Mustela nigripes</i>)	FE, SE	Not Likely
Black-tailed Prairie Dog (<i>Cynomys ludovicianus</i>)	FC, SC	Not Likely
Preble's Meadow Jumping Mouse (<i>Zapus hudsonius preblei</i>)	FT, ST	Not Likely
Swift Fox (<i>Vulpes velox</i>)	SC	Possible
Fish		
Pallid Sturgeon (<i>Scaphirhynchus albus</i>)	FE	Not Likely
Amphibians		
Northern Leopard Frog (<i>Rana pipiens</i>)	SC	Not Likely
Flora		
Ute Ladies' -tresses (<i>Spiranthes diluvialis</i>)	FT	Not Likely
Colorado Butterfly Plant (<i>Gaura neomexicana</i> ssp. <i>coloradensis</i>)	FT	Not Likely

Sources: USFWS 2004, CNHP 2004, CDOW 2003a

Abbreviations: FT- Federal Threatened, FE – Federal Endangered, FC – Federal Candidate for Listing, ST – State Threatened, SE – State Endangered, SC – State Species of Concern

2004 site visit, the occurrence of foraging and possibly nesting ferruginous hawks is possible due to the presence of small mammals (black-tailed jackrabbits and cottontails) and grassland habitat on the project site.

Interior Least Tern. In Colorado, the interior least tern typically nests on sparsely vegetated sandy, gravelly, or silty beaches of reservoirs and feeds exclusively on small fish (Kingery, 1998). Least terns show a preference for nesting on islands. Only casual non-breeding summer visitors of least terns have been recorded in Weld County (Andrews and Righter, 1992). The occurrence of interior least terns on the project site is not likely because ideal

breeding habitat does not exist within the project site, and no known active nest sites occur within Weld County (Andrews and Righter 1992, Kingery, 1998). No interior least terns were observed within the project site during the May 2004 site visit.

Long-billed Curlew. One elemental occurrence of long-billed curlew near the project site from 1975 was found by the Colorado Natural Heritage Program (CNHP) through a search of their Biological and Conservation Datasystem. This occurrence was within a 2-mile (3.2-kilometer) radius of the project site. Long-billed curlews nest mostly on expansive shortgrass prairies, with few scattered prickly pear cactus plants breaking up the uniformity of the landscape (Kingery, 1998). Although Colorado has vast areas of apparently suitable habitat, all known occupied long-billed curlew territories about reservoirs, possibly indicating a dependence on these water sources for feeding, bathing, or drinking (Kingery, 1998). Although most common in southeastern Colorado, long-billed curlews are known to nest in prairies bordering the South Platte River and in Pawnee National Grassland in Weld County. Due to the lack of water on the project site and the relatively small size of the project site, the occurrence of long-billed curlew within the project site is not likely. No long-billed curlews were observed within the project site during the May 2004 site visit.

Mexican Spotted Owl. Spotted owls in Colorado nest in older coniferous forests with complex vertical structure, sparsely forested canyons, and slickrock canyons in the southwest (Kingery, 1998). The Mexican spotted owl is known to nest in two locations in Colorado: Mesa Verde National Park, and the south-central mountains near the southern massif of Pikes Peak and the Wet Mountains (Kingery, 1998). Because ideal breeding habitat does not exist within the project site and this species is not known to breed or occur within Weld County (Andrews and Righter, 1992, Kingery, 1998), the occurrence of the Mexican spotted owl within the project site is not likely. No Mexican spotted owls were observed within the project site during the May 2004 site visit.

Mountain Plover. Mountain plovers nest in areas of shortgrass prairie that has typically been grazed by black-tailed prairie dogs or cattle, but are also found on overgrazed tallgrass and fallow fields (Kingery, 1998). Vegetation is typically less than 4 inches (10 centimeters) tall. Positive indicators for mountain plover habitat include level terrain, bare ground, prairie dogs, prickly pear cactus (*Opuntia* sp.), cattle, widely spaced plants, and horned larks (USFWS, 2002). Ten to twenty percent of the breeding population in the western United States is located in Pawnee National Grassland in Weld County (Kingery, 1998; Andrews and Righter, 1992). In the northern section of the project site, plants were widely spaced, cactus pad occurred, and horned larks were observed; however, vegetation tended to be greater than 4 inches (10 centimeters) in height. In the southern section of the project site, grasses were taller than 4 inches (10 centimeters) in height and densely matted. No prairie dogs or prairie dog burrows were observed on site. The presence of mountain plover in the project site is not likely due to the dense, matted vegetation typically growing more than 4 inches (10 centimeters) in height. No mountain plovers were observed within the project site during the May 2004 site visit.

Piping Plover. Piping plovers nest on broad, sandy beaches, with a preference for islands, but have been also known to nest on gravel bars, and sandstone benches between bands of cliffs (Kingery, 1998). Nesting is initiated as water levels begin to drop in reservoirs. Piping plovers are very rare migrants through Weld County (Andrews and Righter, 1992). The piping plover is not likely to occur on the project site because ideal breeding habitat does not exist within the site, and no known active nest sites occur within Weld County (Andrews and Righter, 1992, Kingery, 1998). No piping plovers were observed within the project site during the May 2004 site visit.

Whooping Crane. Whooping cranes nest in mudflats around reservoirs and in agricultural areas (Andrews and Righter, 1992). Whooping cranes are considered casual migrants on the eastern plains of Colorado. Records of these birds in Colorado since the early 1970s have been the result of transplanted whooping cranes that summer in Idaho and winter in New Mexico (Andrews and Righter 1992, NatureServe, 2004). The whooping crane is not likely to occur on the project site because ideal breeding habitat does not exist within the site, and no known active nest sites occur within Weld County (Andrews and Righter, 1992, Kingery, 1998). No whooping cranes were observed within the project site during the May 2004 site visit.

Black-Tailed Prairie Dog. The black-tailed prairie dog exists in colonies in shortgrass or mixed grass prairie. They feed primarily on annual forbs, native grasses, and roots of forbs and grasses during late fall and winter. Although appropriate habitat may exist on the project site, no prairie dogs or burrows were observed during SAIC's May 2004 site visit; therefore, prairie dogs are not likely to occur on the project site.

Preble's Meadow Jumping Mouse. The Preble's meadow jumping mouse (PMJM), a subspecies of the meadow jumping mouse (*Zapus hudsonius*), is known to occur only in portions of Colorado and Wyoming in moist lowlands with dense vegetation (USFWS, 1999). PMJM's habitat includes riparian corridors with diverse vegetation including shrubs such as willows (*Salix sp.*). Presence of the PMJM has not been confirmed within the project site. One factor that makes the presence of PMJM within the project site unlikely is the absence of permanent sources of water. No riparian areas are present on the project site; therefore, the presence of PMJM is not likely on the project site.

Swift Fox. The swift fox occupies shortgrass and midgrass prairies in the Great Plains, including eastern Colorado (Fitzgerald et al., 1994). Blue grama or buffalo grass are typically the dominant vegetation types for den sites (Fitzgerald et al., 1994). Swift fox feed primarily on lagomorphs (i.e., rabbits and hares), but will also feed on ground squirrels, prairie dogs, and ground-nesting birds. The swift fox is an animal of the grasslands, and although no swift fox or swift fox dens were observed during SAIC's site visit in 2004, it is possible that swift fox may occur in or travel through the project site.

Northern Leopard Frog. Water associated with ponds, streams, marshes, lakes, reservoirs, and beaver ponds, which have rooted vegetation, is potential habitat for the northern leopard frog. No occurrences have been documented within the project site. Presence of the northern leopard frog is not likely due to the lack of water on the site.

Ute Ladies'-Tresses. Wetlands and areas adjacent to wetlands are potential habitat for the federally threatened Ute ladies'-tresses orchid. No wetland habitat was observed on the project site, and although no surveys for Ute ladies'-tresses have been conducted, the presence of this species is not likely due to the lack of suitable habitat on the project site.

Colorado Butterfly Plant. The Colorado butterfly plant's known distribution is within Boulder, Douglas, Larimer, and Weld Counties (Spackman et al., 1997). This plant typically inhabits sub-irrigated alluvial soils of drainage bottoms surrounded by mixed-grass prairie between elevations of 5,800 feet (1,758 meters) and 6,200 feet (1,879 meters) (Spackman et al., 1997). Surveys for Colorado butterflyplant within the project site have not been conducted; however, the lack of suitable habitat and the lower elevation (4,890 to 4,940 feet [1,490 to 1,506 meters]) within the project site makes the presence of this species unlikely.

3.7 CULTURAL RESOURCES

Cultural resources are defined as any prehistoric or historic district, site, or building, structure, or object considered important to a culture, subculture, or community for scientific, traditional, religious or any other reason.

Only significant cultural resources warrant consideration with regard to adverse impacts resulting from a proposed action. To be considered significant, archaeological or architectural resources must meet one or more of the criteria (as defined in 36 CFR 60.4) for inclusion on the National Register of Historic Places (NRHP).

National Register-eligible resources are those that:

- a) are associated with events or have made a significant contribution to the broad patterns of our history;
- b) are associated with lives of persons significant in our past;
- c) embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- d) have yielded, or may be likely to yield, information important in prehistory or history.

SAIC conducted a Class III Cultural Resources Survey of the project area on May 13, 2004 using 20 meter pedestrian transects. The weather conditions were overcast with intermittent rain. Ground visibility varied from 20%-100%. In areas of low visibility, SAIC inspected loose soil around rodent and animal burrows and pulled back matted grass to survey for cultural material. No cultural resources were identified within the project area, and no historic buildings or structures were identified in the landscape surrounding the project area.

3.7.1 Historic Resources

Efforts to identify significant historic resources in the area of potential effect (APE) included a records search at the Colorado Historical Society Office of Archaeology and Historic Preservation (OAHP) in Denver and a field survey conducted May 13, 2004. No previously recorded historic resources were identified during the records search, and no significant historic resources were recorded during the field survey.

3.7.2 Archaeological Resources

Efforts to identify significant archaeological resources in the APE included a records search at the Colorado Historical Society OAHP and a field survey conducted May 13, 2004. No previously recorded archaeological resources were identified during the records search, and no significant archaeological resources were recorded during the field survey.

3.8 AIR QUALITY

3.8.1 Climate

The project site is characterized by a semiarid climate that exhibits large seasonal and short-term temperature variations typically associated with the movement of large continental air masses. The central Rocky Mountains are usually dominated by high pressure. The plains are usually dominated by low pressure. High pressure frequently governs the weather along the Front Range resulting in fair, dry conditions at the project site. Although the average daily temperatures at the site are moderate, large diurnal temperature variations result from the site's elevation and thinner atmosphere. The average temperature in nearby Greeley is 40 degrees F (4.4 degrees C) during January and 90 degrees F (32.2 degrees C) during July. Temperatures are generally above freezing from about mid-May through mid-September. The site receives on average approximately 13 inches (33 centimeters) of precipitation per year. The average seasonal snowfall is approximately 35 inches (89 centimeters). There are occasional periods of severe drought along the Front Range. (Department of Energy, 2003; Greeley, Colorado & Weld County Chamber of Commerce, 2003)

3.8.2 Air Quality Regulatory Authorities

Ambient air quality in a given location is characterized by comparing the concentration of various pollutants in the atmosphere to the standards set by federal and state agencies. The purpose of these standards is to allow an adequate margin of safety for the protection of public health and welfare from adverse effects resulting from pollutants in the ambient air. The primary pollutants of concern that federal and state ambient air quality standards have been established include criteria pollutants, hazardous air pollutants (HAPs), and other toxic air pollutants.

National Ambient Air Quality Standards (NAAQS) set the absolute upper limits for specific air pollutant concentrations in order to protect human health. These pollutants are called criteria pollutants and consist of carbon monoxide (CO), nitrogen oxides (NO_x), sulfur dioxide (SO₂), ozone, particulate matter less than 10 microns (PM₁₀), lead, and volatile organic compounds (VOCs). A geographic area that meets or exceeds the limit for a particular criteria pollutant is called a non-attainment area. Areas where pollutants are measured below the limits are called attainment areas.

Weld County is currently in attainment for all criteria pollutants. However, Weld County is currently included in a seven-county airshed that has formed an Early Action Compact with the U.S. Environmental Protection Agency (USEPA) for ozone in order to address increasing ozone levels and preclude the region from being designated a non-attainment area for ozone. The status of the region's ozone levels will be reassessed by the USEPA in 2007. A similar approach to address NO_x and VOCs may be undertaken to address increases in those criteria pollutants as well. (Brewer, 2004)

The National Emission Standards for Hazardous Air Pollutants (NESHAPs) are designed to protect human health and the environment by reducing toxic air emissions. The underlying authority for NESHAPs is Title III of the Clean Air Act Amendments of 1990 (CAAA-90), which established a listing of HAPs. Title III of the CAAA-90 specified requirements for the EPA to identify those source categories that emit, or have the potential to emit, one or more HAPs. For each source category identified, the EPA was directed to promulgate NESHAPs using standards that are modeled on the best practices and most effective emission reduction methodologies in use at the affected facilities. Threshold quantities determine application of various requirements or exemption from those requirements.

The State of Colorado has primacy to administer the Clean Air Act within the State. The Colorado Air Quality Control Commission (CAQCC) Regulation No. 3, Air Contaminant

Emissions Notices, provides the provisions for construction and operating permits. An Air Pollution Emission Notice (APEN) is required for each individual emission point in an attainment area with uncontrolled emissions of 2 tons per year (TPY) (2 metric tons per year [MTPY]) or more of any individual criteria pollutant or 100 pounds (45.4 kilograms) per year of lead.

The CDPHE Air Pollution Control Division (APCD) has established the following construction permit thresholds (a new facility in an attainment area requires a construction permit application if emissions are expected to be equal to or greater than these levels): CO – 10 TPY (10.16 MTPY); NO_x – 10 TPY (10.16 MTPY); SO₂ – 10 TPY (10.16 MTPY); PM/PM₁₀ – 5 TPY (5.08 MTPY); Total Suspended Particulates (TSP) – 10 TPY (10.16 MTPY); VOCs – 5 TPY (5.08 MTPY); Lead – 200 pounds (90.7 kilograms) per year.

Additionally, APCD has determined that modeling is warranted to quantify air quality impacts if the emission rate is anticipated to be equal to or greater than the following emissions thresholds: CO – 100 TPY (101.61 MTPY); NO_x – 40 TPY (40.64 MTPY); SO₂ – 40 TPY (40.64 MTPY); PM/PM₁₀ – 15 TPY (15.24 MTPY); Lead – 0.6 TPY (.61 MTPY).

Prevention of Significant Deterioration (PSD) regulations limit emissions of pollutants from new sources in attainment areas. To implement its policy of non-degradation, the EPA designated types of areas in which certain types of increments of additional pollution would be allowed. Class I areas include federal lands such as national parks, national wilderness areas, and national monuments. These areas are granted special air quality protections under Section 162(a) of the federal Clean Air Act. Class II areas allow additional, well-controlled growth. Under PSD regulations, a construction permit may be necessary to install a new stationary source or modification of a stationary source (any building, equipment, structure, facility, or installation or any combination, including construction activities) prior to initiation of construction activities. Construction permits are issued on the basis of production/process rates as detailed in the APEN submitted with the permit application or as requested in the application as related to emissions of criteria pollutants and HAPs. The project site is located in a Class II PSD area for criteria pollutants for which the area is in attainment. The nearest Class I area is Rocky Mountain National Park, approximately 40 miles (64 kilometers) to the west of the project site.

3.8.3 Odor Emissions Regulatory Authority

Section 25-7-109(2)(d) of the Colorado Revised Statutes (CRS) indicates that manufacturing and agricultural operations will not be cited for violations related to the emission of odorous air contaminants provided that best practical treatment, maintenance, and control currently available to maintain the lowest emission of odorous gases (CAQCC, No Date). However, if several related complaints of nuisance odors are made, CDPHE investigates to determine if a violation has occurred. CDPHE does not require the use of any specific treatment, maintenance, or control, but relies primarily on the odor producing entity to resolve the issue.

3.9 WATER RESOURCES

3.9.1 Surface Water

Surface water resources comprise lakes, rivers, and streams. Surface water quantity and quality can influence the economy, ecology, recreation, and human health of an area.

There are no perennial creeks, streams, ponds, or floodplains on the CWT-TCP project site. Intermittent storms and other seasonal precipitation events may cause water to temporarily collect in topographic lows and drainages. This surface water, when present, is not utilized for any purpose.

3.9.2 Ground Water

Groundwater comprises the subsurface hydrological resources of the physical environment and is an essential resource. The project site lies within the Denver Basin aquifer system. The aquifer system underlies an area of about 7,000 square miles (11,265 square kilometers) extending from Greeley south to near Colorado Springs, and from the Front Range east to near Limon. The Denver Basin aquifer system consists of four aquifers that are present in five geologic formations. The project site falls within the Laramie-Fox Hills aquifer formed by the Fox Hills Sandstone and other water-yielding sandstones in the lower part of the Laramie Formation. This aquifer is underlain by the nearly impermeable Pierre Shale, which forms the base of the aquifer system. The thickness of the Laramie-Fox Hills aquifer ranges from 0 to about 300 feet (91.4 meters).

The regional groundwater flow direction of the aquifer in the vicinity of the project site appears to be east to northeast towards the Milton Reservoir (USGS, 2000). Based on water level measurements taken on March 3, 2004, the groundwater surface is about 7 feet (2.1 meters) below ground surface (bgs) in the southeast corner of the property in the vicinity of the project site and about 10 feet (3.1 meters) bgs in the vicinity of the proposed storage lagoon.

Water in the Denver Basin aquifer system meets drinking water regulations established by the USEPA for public water supplies and generally has a small dissolved-solids concentration (about 2,000 mg/L in the Laramie-Fox Hills aquifer). Water in the Laramie-Fox Hills aquifer also is a sodium bicarbonate or sodium sulfate type and is soft in the center parts of the aquifer in the vicinity of the project site, and hard to very hard near the margins of the aquifer.

There is a single drinking water well located at the northwest corner of the site, which obtains its water from the Laramie-Fox Hills Aquifer. According to the construction log for this well, the depth to the static water level in the drinking water aquifer is about 190 feet (58 meters) bgs. The log also indicates that multiple impermeable layers of shale separate the drinking water aquifer from the shallow alluvial aquifer. The Mile High Turkey Hatchery, Inc. has water rights of 50,000 gpd (189,271 lpd) from this well.

3.9.3 Floodplains

The proposed CWT-TCP project site does not lie within a known floodplain. The nearest drainage lies approximately 0.75 mile to the west of the site.

3.10 GEOLOGY AND SOILS

3.10.1 Geology

Colorado is divided into three distinct physiographic provinces: The Colorado Plateau, the Rocky Mountains, and the Great Plains. The Weld County CWT-TCP project site is located within the Great Plains province, a broad expanse of flat or rolling prairies that extend from Alberta, Canada, to Texas. They rise gently from about 4,000 feet (1,200 meters) above sea

level along the Kansas state line to about 7,000 feet (2,100 meters) above sea level at the eastern foot of the Rocky Mountains (Colton et al, 1977). Topography of the 80-acre (32.4-hectare) project site is level, with elevations ranging only slightly from about 4,900 to 4,906 feet (1,494 to 1,495 meters) above sea level (Landmark Engineering, 2003).

The physical features of the Great Plains are not uniform throughout the state. The plains are generally divided into three sections: the High Plains, the Colorado Piedmont, and the Raton section. The project site falls within the Colorado Piedmont section, which consists of late mature-to-old elevated alluvial plains (Colton et al, 1977).

Bedrock in the area, in order of increasing depth bgs, consists of the Laramie Formation, Fox-Hills Sandstone, and Pierre Shale. The Laramie Formation, specifically, consists of interbedded sandstone, mudstone, and shale, with localized beds of lignite and coal. A weathered to competent mudstone bedrock in the Laramie Formation underlies the lean clays at depths ranging from 12 to 29 feet (3.7 to 8.8 meters) bgs in the southeast corner of the property in the vicinity of the proposed site (Landmark Engineering, 2003).

The project site is not located in a geologic hazard area with regard to underlying or adjacent mine workings or faulting, according to the Weld County Planning and Zoning Geo-Hazard Map (Lockman, 2004).

3.10.2 Soils

The term “soils” refers to unconsolidated materials formed from the underlying bedrock or other parent material. Soils play a critical role in both the natural and human environment. Soil drainage, texture, strength, and erodibility all determine the suitability of ground to support structures and facilities.

Surface soils at the proposed site consist of eolian (wind blown) deposits of sand and silt, ranging in thickness from 2 to 20 feet (0.6 to 6.1 meters). The deposits are underlain by a medium stiff to very stiff, lean clay with varying amounts of sand and fine gravel. (Landmark Engineering, 2003)

3.11 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

Hazardous materials are substances that pose a potential hazard to human health and/or the environment if improperly managed. Hazardous wastes are hazardous materials that are no longer needed or usable and are defined as hazardous by the Resource Conservation and Recovery Act (RCRA).

3.11.1 Hazardous Materials

The proposed 80-acre (32.4-hectare) project site consists of vacant land. No hazardous materials are currently stored or used at the project site; however, nine leases for oil and gas development held by Patina Oil and Gas are associated with the property, and portions of the property are also leased for grazing.

One residence and several buildings associated with the Mile High Turkey Hatchery, Inc. are located in the northern portion of the property. Surrounding areas comprise primarily agricultural and industrial uses.

3.11.2 Hazardous and Non-Hazardous Wastes

Research for hazardous materials and wastes potentially associated with the project site included a review of standard environmental records compiled by Environmental Data Resources, Inc. (EDR).

The purpose of the environmental records search is to identify sites within or adjacent to the study area for which it may be appropriate to obtain and review records to identify recognized environmental conditions (e.g., contamination) associated with the study area. The American Society for Standards and Materials (ASTM) Standard E 1527-00 identifies specific federal and state environmental sources and search distances for each source to be included in a Standard Environmental Record Search. Additional federal, state, and local environmental records sources may be included in the records search at the discretion of the environmental professional performing the search.

No sites with recognized environmental conditions were identified in any of the federal and state environmental databases searched by EDR. Additionally, no sites with recognized environmental conditions were identified within about 0.5 mile (0.8 km) of the project site. (EDR, 2003)

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4.0 ENVIRONMENTAL CONSEQUENCES

4.1 LAND USE AND TRANSPORTATION

4.1.1 Proposed Action

Land Use

No significant land use impacts would occur under the Proposed Action. To facilitate development, the 320-acre (130-hectare) ConAgra Foods, Inc. property would lease to SEER an 80-acre (32.4-hectare) parcel in the southeast portion of their property for siting of the CWT-TCP plant and related features. Future development of the property would be coordinated with the Weld County Department of Planning Services.

With regard to zoning, the proposed project would be consistent with the project site's zoning (Agriculture), which, in addition to promoting agricultural uses, also allows commercial and industrial uses related to and/or dependant upon agricultural uses. Given that the Proposed Action would utilize currently generated agricultural wastes from nearby agricultural operations, and also would use wastewater generated by the CWT-TCP process for agricultural uses on the project site, the Weld County Department of Planning Services has determined that the proposed action is consistent with the site's zoning designation.

The proposed action would require an approved Site Specific Development Plan and Special Review Permit from the Weld County Department of Planning Services. Additionally, the applicant may consider separating the ConAgra Foods, Inc. property through the Recorded Exemption Process, if required by Weld County Department of Planning Services.

It is not anticipated that use of the project site for the Proposed Action would result in conflicts with on-site or nearby, off-site land uses. The location for the CWT-TCP plant and associated facilities would be sited to avoid existing oil and gas wells and related infrastructure (e.g., piping) located within the property. The owners of the CWT-TCP facility would continue to coordinate with Patina Oil and Gas regarding subsurface rights, and operation of the CWT-TCP facility would not adversely affect access to subsurface minerals on the project site.

Operation of the proposed CWT-TCP facility would be consistent with the existing industrial operations including the auto junk yard and tire sites located immediately to the east of the project site. A few scattered residences are located 0.5 mile (0.8 kilometers) or more from the project site, and it is not likely that operation of the CWT-TCP facility would result in any adverse, nuisances in relation to nearby residences such as excessive traffic, noise levels, or odors (refer to the specific resource sections within this EA for detailed discussions of the potential impacts on these resources).

Transportation

Access to the CWT-TCP facility would be provided by CR 26 and an access easement from Weld County on the ConAgra Foods, Inc. property (refer to Figure 2-1). CR 26 would be paved from CR 41 west to the access easement, which would also be paved, resulting in about .75 mile of paved roadway. Traffic levels in the area would increase in the short-term due to construction (workers, equipment, and delivery of materials), and in the long-term due to daily operation of the CWT-TCP facility. Daily traffic associated with operation of the CWT-TCP

facility would include a maximum of 25 employees traveling to and from the project site, about 20 trucks traveling to and from the site delivering the mixed agricultural residuals and low-value organic streams, and five to eight trucks leaving the site with the petroleum and other products. Because the plant would operate 24 hours per day, traffic in and out of the project site would be dispersed throughout the day. Given the low traffic volumes on the roadways surrounding the project site, the proposed action would result in minimal impacts to traffic and roadway safety.

4.1.2 No Action Alternative

Under the No-Action Alternative, land use and transportation conditions would remain unchanged and no impacts would occur.

4.1.3 Mitigation Measures

No significant impacts associated with land use and traffic would occur; therefore, no mitigation measures are required or recommended.

4.2 VISUAL QUALITY/AESTHETICS

4.2.1 Proposed Action

The CWT-TCP plant would be enclosed within a 6-foot (1.8-meter) high chain link perimeter fence topped with two strands of barbed wire. The facility itself would be approximately 24 feet (7.3 meters) high and would be constructed of metal pre-fabricated materials and would be painted with muted colors (e.g., off white) to reduce glare. Processing stacks would extend an additional 6 feet (1.8 meters) vertically above the metal structures. Associated storage tanks and other equipment, as well as paved roads, parking areas, and vehicles would also be present on the property. The associated water-cooling pond would encompass an additional 2 acres (.8 hectares), and it is anticipated that 20 to 40 acres (8.1 to 16.2 hectares) would be planted in row crops.

The proposed construction would have minor impacts on local viewsheds. The addition of the CWT-TCP plant and associated features, including the storage lagoon, perimeter roads, storage tanks, and parking areas, would add to the built character of the primarily rural area. Visual impacts would be minor for travelers along the surrounding county roads and from residences in the area. Views of the project site would either be obscured by Tire Mountain and the auto junkyard or the new facility would be visible in front of these existing facilities. Overall, visual impacts would be minor and inconsequential.

4.2.2 No Action Alternative

Under the No Action Alternative, no construction would occur and existing visual conditions would remain unchanged.

4.2.3 Mitigation Measures

No significant impacts associated with visual resources/aesthetics would occur; therefore, no mitigation measures are required or recommended.

4.3 PUBLIC SERVICES AND UTILITIES

4.3.1 Proposed Action

The Platteville Fire Department Fire would provide fire protection to the project site. Based on correspondence with the Platteville Fire Department, the lack of water infrastructure and the distance to the project site are factors that would negatively affect the Platteville Fire Department's ability to respond to an emergency at the project site (Scott, 2004). However, the Proposed Action would include a fire suppression system utilizing foam and chemical fire extinguishers. In addition, water in the storage lagoon could be utilized for fire suppression. Coordination with Weld County Planning and Zoning and the Platteville Fire Department would continue to ensure that proper fire suppression features are provided for the project site.

District 3 of the Weld County Sheriff's Department would provide police protection for the project site. The plant would be enclosed with a 6-foot (1.8-meter) high chain-link fence topped with two strands of barbed wire, resulting in a relatively secure facility. It is not anticipated that the CWT-TCP plant would result in any increases in crime rates or increased demands for local police protection.

Provision of public services and utilities to the project site would incrementally add to the existing demand, but it is not anticipated that the CWT-TCP plant would require service or utility providers to exceed their current capacity for these services. Utilities needs for the Proposed Action (e.g., electricity and natural gas) would be provided to the project site via tie-ins to existing nearby utilities. Natural gas would be provided to the site through a tie-in to either of the two natural gas lines currently located near the project site, which are operated by Greeley Gas Co. and Duke Energy. Electricity would be provided via a tie-in to the existing United Power electrical system near the project site. It is anticipated that the plant would require a maximum of 4kV of electricity, and that the United Power infrastructure is capable of providing for this energy demand.

Water for domestic uses (e.g., sinks, toilets) and for initial startup of the CWT-TCP plant would be provided by the onsite well currently utilized by the Mile High Turkey Hatchery, Inc. Use of water from this well would be contracted through Mile High Turkey Hatchery, Inc., which would sell about 10,000 gpd (37,854 lpd) of its approximately 50,000 gpd (189,271 lpd) of water rights associated with this well. Water for initial process start up as well as for potable use, boilers, and system cooling would be obtained from an existing on-site well with an estimated volume of less than 10,000 gpd (37,854 lpd).

The proposed CWT-TCP would generate approximately 58,000 gpd (219,554 lpd) of water that would initially be recycled and then reused in the CWT-TCP process (approximately zero to 2,000 gpd (7,571 lpd) of water would be reused in the slurring step of the process). The excess water produced from the process would be processed through centrifuges and a vapor recompression process to generate recycled clean water. The clean water stream would be utilized for internal reuse and the remainder of excess water produced would be treated and cooled to groundwater standards before being discharged into a storage lagoon prior to spray irrigation for agricultural crops. This water would be applied to crops via spray irrigation.

Approval of sanitary waste disposal of less than 2,000 gpd (7,571 lpd) via an onsite leach field would be obtained from CDPHE and coordinated with Weld County. The domestic wastewater system would also require approval by Weld County.

Prior to excavation associated with the Proposed Action, the Notification Center of Colorado should be contacted to verify the locations of any buried piping or other utilities.

No significant impacts with regard to public services and utilities would occur under the Proposed Action.

4.3.2 No Action Alternative

Under the No Action Alternative, additional public service and utilities needs under the Proposed Action would not be required. Therefore, no impacts would occur.

4.3.3 Mitigation Measures

No significant impacts associated with public services and utilities would occur; therefore, no mitigation measures are required or recommended.

4.4 NOISE

Impacts resulting from increased noise levels are indicated by changes in the ambient noise levels as a result of specified actions. This section discusses impacts to the sensitive receptors from site preparation and construction at the project site resulting from the Proposed Action and subsequent site operations. The purpose of this analysis is to provide a qualitative assessment of construction and operational impacts to ambient noise levels resulting from the Proposed Action rather than to define precise noise levels and corresponding mitigation measures. Consequently, modeling was not performed to estimate future noise levels. Estimates of noise levels presented in this section are based on the data presented in Section 3.4.

4.4.1 Proposed Action

Construction Noise

Construction noise under the Proposed Action would be intermittent and would occur during normal working hours over a period of 12 months beginning in Fall 2004. Construction would cause temporary increases to the ambient noise level near the project site. The Proposed Action would result in construction noise from heavy equipment operation, building of foundations and structures, earthwork, and trenching and utility installation. Noise levels associated with increased vehicle traffic resulting from construction activities would be temporary and limited to the times when construction actually takes place.

Construction operations could generate temporary noise levels up to 95 dBA measured at a reference level of 50 feet (15.5 meters) from the source (Salter, 2000). Table 4.4-1 displays the reduction in noise intensity associated with a 95-dB construction-related source over increasing distances. Table 4.4-1 does not consider additional factors that contribute to the reduction of noise intensity, such as topography, weather conditions, and noise sources external to the project site.

Table 4.4-1. Reduction of Sound Level Intensity of a 95-dBA (Construction-Related) Source and 75-dBA (Bus Idling) Source as a Function of Receptor Distance.

Distance in feet (meters)	Construction-Related dBA	Bus Idling dBA
50 (15.5)	95	75
100 (30.3)	89	69
200 (60.6)	83	63
250 (75.7)	81.5	61.5
300 (90.9)	80	60
400 (121.2)	77	--
500 (151.5)	75.5	--
800 (242.4)	71	--

Given the distance to and the limited number of sensitive receptors in the vicinity of the project site, construction of the CWT-TCP plant would not result in significant noise impacts. Although property associated with Tire Mountain is located immediately east of the project site, buildings associated with this operation are several hundred feet from the adjoining property boundary. Further, noise generated by activities at Tire Mountain as well as the auto junkyard (e.g., heavy equipment operation) to the north would likely cause any noise generated at the project site to be unnoticeable much of the time. Residences to the north and south of the project site are located over 500 feet (152 meters) away. Significant noise impacts from construction at these locations are not anticipated.

Operational Noise

Noise from operation of the CWT-TCP plant would be generated by pulpers, reactors, heat exchangers, and other process related machinery, as well as vehicle traffic associated with workers and trucks delivering and picking up feedstock and finished products. The plant would operate 24 hours per day, seven days a week year-round.

The impact of operational noise generation at the project site is expected to be incidental and insignificant both within on-site buildings and at off-site receptors. Compliance with OSHA requirements for worker noise exposure, including appropriate training and PPE, would be provided to site workers, thereby eliminating related impacts. Noise generated by the pulpers in the CWT-TCP process would reach 85 dB, but the pulpers would be completely contained in a building that would considerably reduce the noise levels outside of the building and at offsite receptors. Most noise generating equipment would be confined to the interiors of buildings.

Based on experience with another large-scale, operational CWT-TCP plant located in a rural area (Carthage, Missouri), no noise complaints have been received to date, and operational noise cannot be detected at 500 feet (152 meters) from the project site (Halberstadt, 2004). Traffic generated by the Proposed Action would likely be dispersed throughout the day, and low vehicle speeds in the vicinity of the project site would reduce traffic-related noise levels. Given the distance to any sensitive receptors, it is not anticipated that operational noise would exceed any established thresholds and would not affect sensitive receptors. Additionally, project-related noise is subject to review by Weld County and CDPHE as part of the project approval process, so compliance with these requirements would preclude any noise impacts.

4.4.2 No Action Alternative

Under the No Action Alternative, noise characteristics of the project site would remain as described in Section 3.4 and no impacts would occur.

4.4.3 Mitigation Measures

There are no significant impacts associated with noise; therefore, no mitigation is necessary or recommended.

4.5 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

4.5.1 Proposed Action

Socioeconomics

The Proposed Action would not result in significant local population or economic impacts. Construction period jobs and long-term jobs (20 to 25) would be added by the new CWT-TCP facility. The amount of jobs generated by the proposed action would be negligible on a regional scale, and would not have a substantial effect on the price or availability of housing in Weld County, especially considering that most of these jobs would be filled by people already residing near the project area. The diversion of feedstock from existing destinations (i.e., rendering plants) to the CWT-TCP plant would offset beneficial socioeconomic impacts to some degree. Both positive and negative impacts would be negligible on a regional basis.

Environmental Justice

Due to several factors, the Proposed Action would not result in negative impacts associated with environmental justice. First, it is not anticipated that the Proposed Action would result in any significant environmental or socioeconomic impacts. Second, the lack of development surrounding the project site would minimize or preclude the potential for any impacts on local residents or businesses. Further, although Weld County features a high proportion of Hispanic and Latino residents relative to other geographic areas, the lack of any concentrated development or neighborhoods reduces the likelihood that any disproportionate environmental or human health impacts would occur to any minority or low-income community.

4.5.2 No Action Alternative

Under the No Action Alternative, socioeconomic conditions would remain unchanged and no impacts would occur.

4.5.3 Mitigation Measures

There are no significant impacts associated with economics or environmental justice; therefore, no impacts would occur.

4.6 BIOLOGICAL RESOURCES

4.6.1 Proposed Action

Vegetation

The process of developing the project site would result in the direct loss of habitat. A total of approximately 52 acres (21 hectares) (plant site – 8 acres [3.2 hectares]; wastewater storage lagoon – 4 acres [1.6 hectares]; spray irrigation area – 20 acres [8.1 hectares] to 40 acres [16.2 hectares]) of the 80 acres (32.4 hectares) of disturbed shortgrass prairie habitat would be impacted by the Proposed Action. The loss of this disturbed shortgrass prairie habitat would not be considered significant because there is no formal or direct protection of this habitat type and there is additional shortgrass prairie habitat in the surrounding area. However, it should be noted that the conversion of native grasslands to agricultural croplands and urban development has changed the character of and fragmented shortgrass prairie habitat (CDOW, 2003b).

Land clearing activities, excavation and construction staging areas associated with the Proposed Action would disturb site vegetation, increasing the susceptibility of these areas to noxious weed invasion. Three noxious weeds inhabit the project site: Canada thistle, scotch thistle and downy brome. The potential spread of these species into disturbed areas represent secondary impacts as a result of the Proposed Action. However, the loss of 52 acres (21 hectares) of habitat in the project site would reduce the area that noxious weeds can inhabit, and site development may provide an opportunity to control noxious weeds on the remaining undeveloped portions of the project site.

Wetlands and Other Waters of the U.S.

There would be no impacts to wetlands and other waters of the U.S. under the Proposed Action because these biological resources do not occur on the project site.

Wildlife

Potential impacts to wildlife and their habitat from the Proposed Action could occur through direct and indirect impacts of construction, operation, and maintenance of the CWT-TCP plant. Direct, permanent impacts to wildlife may occur due to ground clearing activities and associated loss of habitat during construction of the CWT-TCP plant. In addition, mortality of small and ground burrowing mammals may occur during construction. Direct, temporary impacts to wildlife resources may occur due to staging and construction activities and associated noise levels and human activity. Indirect impacts to wildlife may occur due to degradation of habitat off site.

The primary direct impact to wildlife from the Proposed Action is the loss of approximately 52 acres (21 hectares) of existing grassland habitat. Although this habitat consists primarily of disturbed vegetation, small burrowing mammals and reptiles inhabit this area and would therefore be displaced by construction of the CWT-TCP plant and wastewater storage lagoon. Loss of this grassland habitat would reduce the overall size of local hunting areas of resident mammalian and avian predators such as coyotes, fox, hawks, and owls. Ground nesting migratory birds may be directly affected by construction activities that occur during the breeding season (e.g., April to July). Nests and eggs could be destroyed, and young birds that have not fledged could be killed by the ground disturbance associated with construction.

Increased noise levels from vehicle traffic and facility operations would affect wildlife on the project site. The CWT-TCP plant would be operated year-round, 24 hours per day, seven days per week. Noise levels associated with the pulpers in the CWT-TCP process is 85 dB, but the pulpers would be completely contained in a structural building that would considerably reduce the noise levels outside of the building (see Section 4.4 for a detailed discussion of noise impacts). The incremental increases in noise associated with the Proposed Action are not expected to be significant due to the containment of the machinery noise, and resident wildlife populations are expected to habituate. The chain link fence around the CWT-TCP plant, which would be 6 feet (1.8 meters) tall with two strands of barbed wire atop, could prohibit movement of wildlife through the area. The fenced area would encompass approximately 8 acres (3.2 hectares) of the 80 total acres (32.4 total hectares) in the project site, therefore allowing movement of wildlife around the plant. The wastewater lagoon could attract birds to the site, particularly water birds that currently use Milton Reservoir. The lagoon could also result in increased numbers of insects at the project site, which would also attract bird species. Artificial light from the plant could disrupt nocturnal species and species that migrate at night. Birds migrating at night may be attracted to artificial light from the plant. Moths circling around the building lights may attract bats to the CWT-TCP plant. Although impacts from artificial light are expected to be minimal, bird and bat collisions with the CWT-TCP buildings could occur. These impacts would be considered minor.

Temporary disturbances including noise, human presence, ground clearing, and excavation would temporarily displace these and other wildlife in the immediate vicinity of construction. Some wildlife may return to the area after construction is complete. Small, less mobile mammals and reptiles in the construction area would be displaced or killed during project construction. Long-term adverse impacts to populations are not anticipated due other available habitat and the fecundity (i.e., high reproductive rate) of these species. The development of the site may provide an opportunity to control noxious weeds on site; however, there is the potential for noxious weeds to spread to areas off site as a result of the Proposed Action, indirectly impacting wildlife.

Species of Concern

Potential impacts to species of concern that could possibly occur on the project site are described in the following discussion.

Bald Eagle. No adverse direct or indirect impacts to the bald eagle are anticipated because there are no known roost sites or nests within the project site and no suitable foraging habitat for the bald eagle would be impacted. The Proposed Action is not expected to significantly contribute to the cumulative loss of habitat for this species.

Ferruginous Hawk. The Proposed Action may slightly diminish small mammal and cottontail populations in the area, which may have a minor adverse impact to the ferruginous hawk. This impact is not considered to be significant because prairie dogs are the primary food source for the ferruginous hawk east of the continental divide. Because prairie dogs do not occur on the project site, no impacts would occur to this species. The Proposed Action is not expected to significantly contribute to the cumulative loss of habitat for this species.

Swift Fox. The Proposed Action may slightly diminish small mammal and cottontail populations in the area, which may have a minor adverse impact on the swift fox. Although appropriate habitat does exist on the project site for swift fox, the presence of a coyote den in the project site may currently preclude swift fox from utilizing the project site. Coyotes are known to prey

on swift fox. The Proposed Action is not expected to significantly contribute to the cumulative loss of habitat for the swift fox.

4.6.2 No Action Alternative

Under the No Action Alternative, vegetation, wetlands, wildlife, and species of concern would remain the same and no additional impacts to biological resources would be expected to occur. However, since the project site is disturbed and noxious weeds occur on site, the distribution and abundance of these weeds would be expected to increase without active management. An increase in the distribution and abundance of noxious weeds on the project site would be expected to further degrade the site and the habitat it provides for biological resources.

4.6.3 Mitigation Measures

No significant impacts to biological resources have been identified; however, the following mitigation measures are proposed to reduce any less-than-significant, direct impacts to species and habitats on the project site. The following mitigation measures should be considered to address potential impacts of the Proposed Action:

- To minimize impacts to migratory birds, avoid ground-disturbing activities during sensitive periods (i.e., nesting from April to July) when and if these species are shown to be present.
- If construction is to occur during the nesting season, migratory bird surveys and nest searches should be conducted in the 30 days prior to starting construction. If nests are discovered, consultation with USFWS should be initiated to determine if disturbance to the species present must be avoided.
- Construction areas should be fenced to limit disturbance to adjacent grassland habitat outside of the construction zone.
- If necessary, where water and maintenance requirements can be met, native shrub species should be replaced if they are removed during construction activities.
- Develop and implement a weed management plan and use best management practices to reduce the spread of noxious weeds.

4.7 CULTURAL RESOURCES

4.7.1 Proposed Action

Historic Resources

No historic resources were identified within the APE. Therefore, the Proposed Action would not result in significant impacts with regard to historic resources. Correspondence from the Colorado Historical Society (see Appendix C) indicates that they concur with these findings.

Archaeological Resources

No archaeological resources were identified within the APE. Therefore, the Proposed Action would not result in significant impacts with regard to archaeological resources. However, if during construction buried archaeological resources are encountered, all construction should stop and a qualified archaeologist should be called in to assess the resource.

4.7.2 No Action Alternative

There are no known historic resources or archaeological resources within the project site. Therefore, no impacts are anticipated as a result of the No Action Alternative.

4.7.3 Mitigation Measures

No significant impacts to cultural resources would occur; therefore, no mitigation measures are required or recommended.

4.8 AIR QUALITY

Air quality impacts are indicated by changes in the concentrations of atmospheric pollutants as a result of specified actions and their corresponding relationship to state and federal standards. This section discusses impacts to air quality from site preparation and construction at the project site resulting from the Proposed Action, and impacts resulting from emissions associated with subsequent site operations. The purpose of the air quality analysis is to provide a qualitative assessment of construction and a quantitative assessment of operational impacts to air quality resulting from the Proposed Action. Modeling was not performed to precisely calculate future emissions.

Emissions resulting from construction activities under the Proposed Action would be intermittent, and would not be expected to exceed ambient air quality standards or substantially impact regional air quality attainment status or progress.

4.8.1 Proposed Action

Construction Impacts

During construction of the CWT-TCP plant, temporary and localized increases in atmospheric concentrations of NO_x, CO, SO₂, VOCs, and PM would result from exhaust emissions from worker's vehicles, heavy construction vehicles, and other machinery, equipment, and tools.

Vehicle emissions are addressed by Colorado regulations for licensing and are not subject to other regulatory requirements. Air quality impacts would also result from airborne particulates (fugitive dust) arising from earthwork during site preparation and construction. Under certain wind conditions, there could be incremental localized increases in particulate emissions at nearby downwind receptors.

Impacts from New Equipment and Operations

Emissions sources associated with the CWT-TCP plant would include three heaters (utility glycol, hot oil, and space heater), an odor control combustor, an emergency flare, a steam boiler, an emergency generator, three produced oil tanks, and a diesel engine for the firewater system. The project applicant has prepared and submitted to CDPHE a construction permit application in accordance with state requirements for anticipated construction permit thresholds. Emissions calculations within this permit application indicate that the Requested Allowable Emissions associated with operation of the plant would be: CO – 29.7 TPY (30.2 MTPY); NO_x – 34.5 TPY (35.1 MTPY); SO₂ – 34.7 TPY (35.3 MTPY); PM/PM₁₀ – 12.1 TPY (12.3 MTPY); Lead – De Minimus; VOCs – 7.6 TPY (7.7 MTPY) (Gannett Fleming, Inc., 2004).

These emissions totals are below those that would require modeling, and considerably lower than the 100-TPY (101.6-MTPY) potential-to-emit (PTE) threshold for Major Source designation. Actual emissions from the plant would likely be even lower than the Requested Allowable Emissions calculations. APENs have been submitted for each of the emissions sources described above, except for the steam boiler, the produced oil tanks, and the space heater, because emissions from these sources would be less than two TPY (2 MTPY); therefore, they are exempt from APEN requirements.

Due to the nature of the materials used in the CWT-TCP process, the Proposed Action does have the potential to generate noticeable odors that could be detected offsite. In order to address the potential for the generation of odors, RES would incorporate design modifications and operational experience from the Carthage, Missouri CWT-TCP demonstration facility that has been in operation for the past several months. The Proposed Action would include a multi-loop odor control system comprising a thermal oxidizer, wet scrubber(s), biofilter, boiler, and coker system. The odor control system is included in the air permit application submitted to CDPHE. Odor control efforts would also include periodic monitoring for odors in nearby areas by plant workers, quick response to equipment malfunctions, and prompt response to complaints from the community. These efforts would include temporarily shutting down the plant or components of the plant until the source of the nuisance odor is identified and corrective actions are taken to control the nuisance odor.

4.8.2 No Action Alternative

If the Proposed Action were not implemented, incremental air quality impacts of the Proposed Action would not occur.

4.8.3 Mitigation Measures

The following mitigation measure is required to minimize impacts associated with particulate emissions during construction:

- To minimize impacts associated with particulates, best management practices (BMPs), such as covering of dirt stockpiles and application of water sprays, would be implemented.

4.9 WATER RESOURCES

4.9.1 Proposed Action

Water for initial process start-up, as well as for potable use, boilers, and system cooling would be obtained from an existing on-site well. Use of water from this well would be contracted through Mile High Turkey Hatchery, Inc., which would sell a portion of the approximately 50,000 gpd (189,271 lpd) of water rights associated with this well. Approval of sanitary waste disposal of less than 2,000 gpd (7,571 lpd) via an onsite leach field would be obtained from CDPHE and coordinated with Weld County. The domestic wastewater system would also need to be approved by Weld County.

Water used for operation of the CWT-TCP plant would come from recycled process water generated through the CWT-TCP process itself, except for the initial start-up of the plant. Approximately 58,000 gpd (189,271 lpd) of water would be generated by the CWT-TCP process. Clean water recycle would be employed to minimize actual water use. After use in the

CWT-TCP process, this water would be discharged into the two-acre (0.8-hectare) lagoon and then used for agricultural irrigation either on the project site or at a nearby agricultural operation. Process water would also be used for on-site toilets, and a sanitary waste leach field would be located on site to treat this wastewater. Drinking water would be provided by bottled water.

The wastewater storage lagoon (shown in Figure 2-1) would provide temporary storage for the wastewater produced by the CWT-TCP process before it is land applied. Wastewater treatment processes inside the proposed CWT-TCP plant would treat the wastewater to meet the CDPHE 10 mg/L groundwater discharge standard for nitrate before the wastewater is discharged to the storage lagoon. The water would be cooled to less than 100 degrees F (37.8 degrees C) prior to discharge to the lagoon. The permit for land application of this treated wastewater is currently under review by CDPHE. Based on the applicant's coordination with CDPHE, the nitrate standard is the only parameter that requires pretreatment; however, monitoring for several additional parameters could be included in the permit requirements. RES will comply with final requirements established by CDPHE for the storage lagoon and spray irrigation system.

The lagoon would provide 26.7 acre-feet (32,934.2 cubic meters) (up to 150 days of storage based on a projected daily wastewater discharge volume of 58,000 gallons [189,271 liters]) and the HDPE geomembrane liner would prevent leakage. A 1-foot (0.3-meter) layer of granular soil cover on the bottom of the lagoon would protect the HDPE liner from heavy equipment traffic if sludge removal or liner repair is necessary. The storage volume would provide more than the anticipated storage requirement during the winter months when wastewater is not land applied.

Wastewater would be pumped from the storage lagoon to an on-site center-pivot irrigation system during the crop growing season (generally April through November). Center-pivot irrigation is used extensively to irrigate crops in Weld County

Pasture grass was selected as a sample crop for the purpose of sizing the land application area and the storage lagoon. A land application area of about 33 acres (13.4 hectares) was determined using published evapotranspiration, evaporation, and precipitation rates for the subject area and a documented method for calculating irrigation requirements (Tchobanoglous, 1991).

As there is no surface water of note present on or adjacent to the project site, no negative impacts to surface or groundwater are anticipated. Given the small amount of water that would be used from the existing well, it is not anticipated that this would result in a significant depletion of regional water resources. Land applied water would be utilized for crops, and some of this water would likely infiltrate and recharge local groundwater; therefore, the wastewater generated by the CWT-TCP process would have a beneficial impact.

4.9.2 No Action Alternative

Under the No Action Alternative, no construction would occur and no impacts to water resources would occur. Water rights would remain solely with the Mile High Turkey Hatchery, Inc. The benefits of using wastewater for crop irrigation would not be realized. Conditions would remain as described in Section 3.9.

4.9.3 Mitigation Measures

No significant impacts to water resources would occur; therefore, no mitigation measures are required or proposed.

4.10 GEOLOGY AND SOILS

4.10.1 Proposed Action

Geology

Under the Proposed Action, the physiography, underlying geology, and topography of the area would not change. A limited amount of grading would likely be required for building foundations, but given the project site's limited topographic variation, the change would be minimal. No geologic risks are known or anticipated.

Soils

Under the Proposed Action, the soils would be disturbed temporarily by construction activities and compacted permanently for site facilities. Under the Proposed Action, it is estimated that a total of 15 acres (6.1 hectares) of soils could be disturbed during the course of construction activities. The areas where soils would be disturbed consist of eolian (wind blown) deposits of sand and silt, ranging in thickness from 2 feet (0.6 meters) to 20 feet (6.1 meters). These areas have only been slightly disturbed by past activities (e.g., grazing). Consequently, the potential for erosion of these soils during windy periods exists. .

If soils presenting building constraints (e.g., shrink-swell potential, ponding) are encountered during construction, these soils would be removed and replaced with soils more conducive to supporting structures.

Under the Proposed Action approximately 8 acres (3.2 hectares) of land would be permanently compacted for the construction of the plant. An additional 4 acres (1.6 hectares) of land would be utilized for the construction of the holding pond.

Given the relatively small areas potentially disturbed, if BMPs are employed during construction to minimize potential wind erosion, impacts to soil resources are expected to be minimal.

4.10.2 No Action Alternative

Under the No Action Alternative, no construction would occur, leaving conditions as described in Section 3.10. No impacts to geological resources would occur.

4.10.3 Mitigation Measures

The following mitigation measure is recommended to minimize impacts associated with wind erosion:

- To minimize impacts associated with particulates, best management practices (BMPs) such as covering of dirt stockpiles and application of water sprays would be implemented.

4.11 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

4.11.1 Proposed Action

Construction Impacts

The construction phase of the Proposed Action would require the use of some hazardous materials such as paints and fuels. Standard procedures for the handling of hazardous materials such as the use of secondary containment would be used during the approximately 12-month construction phase. Additionally, during excavation the potential exists to encounter unknown, buried materials that could be considered hazardous. If this were to occur, measures would be incorporated to properly remove and dispose of these materials. No impacts are anticipated during the construction phase.

Operational Impacts

The CWT-TCP plant would use approximately 400 tpd (406.4 mtpd) of mixed agricultural residuals and low-value organic streams from various agricultural operations near the project site. The agricultural residuals produced by the beef-, lamb-, and turkey-processing plants would no longer be disposed at the Denver area rendering plant and would instead be transported to the Weld County CWT-TCP site by truck.

The Proposed Action would include the development of a CWT-TCP plant. Operations at the plant are anticipated to require that the following hazardous materials are produced or stored and used on site:

- Sulfuric acid (6,000 gallons [22,712.5 liters])
- Sodium hydroxide (500 gallons [1,892.7 liters])
- Ethylene glycol (2,000 gallons [7,570.8 liters])
- Hot oil medium (8,000 gallons [30,283.3 liters])
- Recycle thermal fluid (1,500 gallons [5,678.1 liters])
- Various maintenance oils for lubrication of equipment (330 gallons [1,249.2 liters])
- 40 weight oil from CWT-TCP process (105,000 gallons [397,468 liters])
- CWT-TCP produced fatty acids (C16 and C18) (88,000 gallons [333,116 liters])
- Liquid nitrogen (3,000 gallons 11,356.2 liters])

The Proposed Action would generate new hazardous materials including oil, carbon (coke), dry mineral fertilizer, and liquid fertilizer (ammonium sulfate/glycerol solution). These materials would be stored at the site between five to 10 days prior to pickup.

No materials would be stored outdoors except for the oil and fertilizers produced by the CWT-TCP process. These materials would be stored using state-of-the art containment measures. All final product storage tanks would be located above ground with secondary containment. Tanks would have level-indicating local gages and have high-level sensors connected to the plant DCS. Vents from the tanks would be connected to an odor control system that has been

submitted to CDPHE as part of the air quality permit. Loading and unloading pads would be provided to capture potential spills during these operations.

As described in Chapter 2, training for CWT-TCP workers would include general chemical safety, chemical storage, emergency spills, and spill response, knowledge of appropriate Material Safety Data Sheet information, good housekeeping, etc. This training would minimize the potential for accidents involving hazardous materials and wastes and, in the event that an accident does occur, would minimize the impacts.

It is anticipated that the proposed CWT-TCP plant would produce 800 to 1,000 barrels of oil, 10 to 20 tons (10.2 to 20.3 metric tons) of carbon (coke), 10 to 20 tons (10.2 to 20.3 metric tons) of dry mineral fertilizer, 5,000 to 10,000 gallons (18,927 to 37,854 liters) of liquid fertilizer (ammonium sulfate/glycerol solution), and 58,000 gallons (219,554 liters) of water on a daily basis, based on an input of 400 tpd (406.4 mtpd) of agricultural residuals and low-value organic streams. Remaining coke-like solids would be accumulated in a storage bin for pickup, as necessary, for off-site use either for blending as fuel or for use as fertilizer. The CWT-TCP plant would include about five days of storage capacity for oil, and about 10 days of storage capacity for each type of fertilizer produced; however, these products would be picked up on a regular basis (i.e., several times per week).

The CWT-TCP plant is exempted from needing a solid waste CD because the plant is considered an agricultural generator by Weld County. The CWT-TCP process would not directly produce any wastes that would require incineration or landfilling; however, office activities associated with the CWT-TCP plant would generate low volumes of solid waste materials (e.g., food containers, packaging, etc.). It is estimated that these wastes would result in the filling of one dumpster per week, which would be picked up by a contractor and transported to a landfill.

4.11.2 No Action Alternative

Under the No Action Alternative, conditions related to hazardous materials and wastes would remain as described in Section 3.11 and no impacts would occur.

4.11.3 Mitigation Measures

There are no significant impacts; therefore, no mitigation measures are required or proposed.

4.12 SUMMARY OF SECONDARY AND CUMULATIVE IMPACTS

Secondary impacts are those that are caused by a Proposed Action, but may occur later in time or farther removed in distance, relative to the primary impacts of the Proposed Action. "Cumulative impacts result from the incremental impact of the Proposed Action when added to other past, present, and reasonably foreseeable future actions" (40 CFR Section 1508.7).

This EA considers past, present, and reasonable foreseeable short-term and long-term future actions on the project site. In addition, it considers off-site factors and reasonably foreseeable off-site projects.

As discussed in Section 4.1, the project site is located in a rural area with interspersed development. Past and current uses of the predominantly undeveloped project site are oil and gas development and grazing. It is possible that Patina Oil and Gas would increase the number of oil and gas wells on the ConAgra Foods, Inc. property. The applicant would continue to coordinate with Patina Oil and Gas to ensure compatibility of the site.

A reasonable foreseeable project associated with the project site includes the possibility that the CWT-TCP site would be expanded to be up to three times its current proposed capacity (i.e., 1,200 tpd [1,219.3 mtpd]). The increased amounts of materials consumed and produced would result in increases in the amount of land developed; vehicle trips to and from the site due to additional workers, deliveries, and pick ups; air emissions; and wastewater. Such a change to the plant would require that permits and approvals with CDPHE (air and water) and Weld County (Special Review, Development Plan) would have to be amended as necessary. It is quite likely that DOE would not be involved in funding for expansion of the CWT-TCP plant in the future. If federal funding were not involved in subsequent plant expansion, NEPA review would not be required.

Concentrated development, such as that associated with the small cities of Hudson, Fort Lupton, and Platteville, are located several miles away. The nearest concentration of residential development in relation to the project site is associated with the Beebe Draw Farms, located about 3 miles (4.8 kilometers) northeast of the project site. The community is planned for a total of 486 residential units, a school site, a fire department site, and equestrian uses, but to date only 44 residences have been built in part due to various legal issues.

Past uses and development aggregated together have altered the native conditions of the project site and surrounding area. Various impacts such as degradation of habitat and habitat fragmentation and disruption have occurred incrementally on the project site and the surrounding area over time. These developments and their impacts are the subject of individual reviews and approvals by government agencies over time. Two examples of regulatory processes associated with related impacts are protections under the Endangered Species Act for sensitive species such as mountain plover and protection of wetlands under Section 404 of the Clean Water Act. Other processes are embodied in plans and policies adopted by local governments such as those associated with community plans and development regulation. These issues are discussed in Chapter 4 of this document.

Correspondence with the Weld County Department of Planning Services indicates that completion of the Beebe Draw Farms development is the only substantial reasonably foreseeable off-site project in the vicinity of the project site. Most new development in the area is occurring in the area along and between I-25 and Highway 85.

Cumulative and secondary impacts are discussed in Sections 4.1 through 4.12, as appropriate. As stated in other locations within Chapter 4, the Proposed Action's incremental contribution to these secondary and cumulative impacts would be insignificant and the No Action Alternative would not contribute to these impacts.

The most important examples of secondary and cumulative impacts associated with the Proposed Action are as follows:

- Increased traffic on county roads in the vicinity of the project site;
- Regional and local air pollutant emissions;

- Noise impacts;
- Development intensification;
- Habitat losses from vegetation removal;
- Beneficial impacts from energy production and reduction in the need for materials that need to be disposed by land filling and other means.

However, based on the limited impacts associated with the Proposed Action and the lack of development and sensitive resources in the vicinity of the project site, cumulative impacts would not be significant.

4.13 IRREVERSIBLE/IRRETRIEVABLE COMMITMENT OF RESOURCES

An irreversible commitment of resources is defined as the loss of future options. The term applies primarily to the effects of use of nonrenewable resources such as minerals or cultural resources, or to those factors such as soil productivity that are renewable only over long periods. It could also apply to the loss of an experience as an indirect effect of a "permanent" change in the nature or character of the land. An irretrievable commitment of resources is defined as the loss of production, harvest, or use of natural resources. The amount of production foregone is irretrievable, but the action is not irreversible. If the use changes, it is possible to resume production.

The Proposed Action would not have irreversible impacts because future options for using this site would remain possible. A future decommissioning process could restore the site for alternative uses, ranging from natural open space to industrial development. The location for the CWT-TCP plant and associated facilities would be sited to avoid existing oil and gas wells and related infrastructure (e.g., piping) located within the property. The owners of the CWT-TCP facility would continue to coordinate with Patina Oil and Gas regarding subsurface rights, and operation of the CWT-TCP facility would not adversely affect access to subsurface minerals on the project site. No loss of future options would occur.

The primary irretrievable impacts of the Proposed Action would involve the use of energy, labor, materials and funds, and the conversion of some lands from a relatively natural condition through the construction of buildings and facilities. Irretrievable impacts would occur as a result of construction, facility operation, and maintenance activities. Direct losses of biological productivity and the use of natural resources from these impacts would be inconsequential. The Proposed Action would likely include the dedication of up to 40 acres (16.2 hectares) of the project site for agricultural production (row crops) that would be irrigated by waste water generated in the CWT-TCP process.

4.14 THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF THE HUMAN ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

This section addresses the commitment of resources associated with the Proposed Action relative to the loss of long-term productivity associated with these commitments.

The Proposed Action would commit resources in the form of energy, labor, materials, and funds for the foreseeable future. The justification for these commitments at this time is described in Section 1.4, Purpose and Need for the Proposed Action. Long-term productivity associated with the site relates to biological value as habitat and limited grazing. The Proposed Action would involve the use of lands where these values have already been compromised by adjacent

development and operations and would preserve much of the 320-acre (130-hectare) property for these purposes. For these reasons, the incremental loss of biological and grazing values would be insignificant.

The Proposed Action would create no long-term risks to public health and safety.

4.15 UNAVOIDABLE ADVERSE IMPACTS

There would be no significant unavoidable adverse impacts of the components of the Proposed Action; however, some adverse impacts would be expected. These impacts and corresponding mitigation measures are described throughout other sections of Chapter 4 and are listed in the Summary of this EA.

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6.0 LIST OF PREPARERS

The following persons were primarily responsible for preparing this EA:

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Joyce Beck, DOE NEPA Documents Manager.

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APPENDIX A

SCOPING MATERIALS AND RESPONSES

- **Scoping Letter**
 - **Scoping Letter Attachment**
 - **Figure 1 – Regional Setting**
 - **Figure 2 – Project Site**
 - **Scoping List**
 - **Colorado Department of Local Affairs Letter**
 - **Weld County Department of Planning Services Letter**
 - **Dennis Lundin email**
-



Department of Energy

Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

January 8, 2004

TO: Distribution List Attached

SUBJECT: Environmental Assessment (EA) of a Thermal Conversion Process (TCP)
Commercial Demonstration Plant in Weld County, Colorado

The U.S. Department of Energy (DOE), in compliance with the National Environmental Policy Act of 1969 (NEPA), will be preparing an environmental assessment (EA) of a Thermal Conversion Process Commercial (TCP) Demonstration Plant in Weld County, Colorado. DOE is proposing to fund a portion of the project through the Society for Environmental and Energy Research (SEER), a non-profit organization for research, development and training related to energy markets. DOE would contribute funds toward the plant's construction. A detailed description of the site and the Proposed Action are included in the attachment to this letter. DOE is the lead agency for this EA, and other federal, state, and local agencies are invited to participate in the environmental documentation process. DOE is requesting public input on the proposed NEPA process, proposed actions and alternatives, and the environmental issues to be addressed in the EA.

DOE plans to distribute the draft EA for public review and comment by March 2004. This letter and the draft EA, when it is available, will be posted on the DOE Golden Field Office electronic public reading room at <http://www.golden.doe.gov>.

Please direct your written and oral comments to:

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*Golden ... Energy for a Brighter Tomorrow
Through exceptional service, collaboration, and innovation.*



Please provide your input on or before February 10, 2004. We look forward to hearing from you.

Sincerely,

A handwritten signature in black ink, appearing to read 'S. Blazek', with a long horizontal stroke extending to the right.

Steven P. Blazek
NEPA Compliance Officer

Enclosure

cc/w address list: Brian Kennedy
NEPA Project Manager
SAIC

Attachment

ENVIRONMENTAL ASSESSMENT (EA) OF A THERMAL CONVERSION PROCESS (TCP) COMMERCIAL DEMONSTRATION PLANT IN WELD COUNTY, COLORADO

PROPOSED ACTION

Renewable Environmental Solutions, LLC plans to construct and operate a prototype commercial-scale demonstration plant that would convert agricultural residuals and low-value organic streams into fuels, oils, gases, and carbons, with no hazardous emissions into the environment. The plant would be located in unincorporated Weld County, Colorado, in proximity to ConAgra agricultural processing plants and other agricultural operations. The U.S. Department of Energy (DOE) proposes to provide partial funding for the demonstration plant through an award to the Society for Environmental and Energy Research (SEER), a non-profit research, development, and training organization serving energy markets.

SITE BACKGROUND AND DESCRIPTION

The proposed site for the thermal conversion process (TCP) commercial demonstration plant is located north of County Road (CR) 24, east of CR 39 and west of CR 41, approximately 15 miles (24 kilometers) south of Greeley, CO. Access to the project site is via a dirt road off of CR 24, which is unpaved. The legal description of the project site is the Southwest ¼ of Section 32, Township 3 North, Range 65 West, Parcel Number 121332000004. The project site is owned by ConAgra, Inc. and involves approximately 314 acres of undeveloped land, of which about 40 acres would be needed for the proposed TCP plant and associated components.

PURPOSE AND NEED

In accordance with the Department of Energy (DOE) National Environmental Policy Act (NEPA) implementing regulations, DOE is required to evaluate the potential environmental impacts of DOE facilities, operations, and related funding decisions. Based on action by the U.S. Congress, DOE has funding available to support SEER's participation in the proposed TCP demonstration project. Congress has acknowledged the merit of this project by providing specific funding through DOE. The decision to use federal funds in support of SEER's commercial demonstration project requires DOE to address NEPA requirements and related environmental documentation and permitting requirements.

In compliance with the NEPA (42 U.S.C. 4321) and DOE's implementing regulations (10 CFR section 1021.330) and procedures, this EA examines the potential environmental impacts of DOE's decision to support the TCP project in Weld County, Colorado, including construction and operation of the plant and a No Action Alternative.

PROPOSED ACTION AND ALTERNATIVES

At this time, the Proposed Action and the No Action Alternative are the only alternatives addressed in the EA. The Proposed Action alternative involves construction of the TCP plant. The No Action Alternative would involve a DOE decision not to provide funding for the TCP project on the proposed site or anywhere else. For NEPA compliance purposes and to create a meaningful No Action scenario and baseline conditions, it has been assumed that the TCP plant

would not be constructed without DOE funding. However, it is possible that the applicant could proceed without DOE funding. If the applicant (SEER) proceeds without DOE or other federal funding, the requirement for the project to comply with NEPA would be removed. A privately funded project scenario would be identical, or at least similar to, the proposed action. This scenario is not addressed in this EA.

ENVIRONMENTAL TOPICS TO BE ADDRESSED

The proposed EA will address primary, direct, indirect, secondary and cumulative impacts of the Proposed Action and alternatives. Beneficial and adverse, on-site and off-site, construction, demolition, and operation and maintenance impacts will be discussed, as appropriate. The environmental topics to be discussed in the EA include:

- Land Use, Planning, Socioeconomics and Public Policy
- Traffic and Circulation
- Air Quality and Noise
- Visual Quality/Aesthetics
- Hazardous Wastes
- Water Resources
- Soils and Geology
- Biological Resources
- Cultural Resources
- Waste Management
- Public Facilities, Services and Utilities
- Energy

SCHEDULE

The schedule for key milestones to complete the NEPA review process is:

Close of Scoping Period	February 10, 2004
Public Distribution of the Draft EA	March 2004

This letter and the draft EA, when it is available, will be posted on the DOE Golden Field Office electronic public reading room at <http://www.golden.doe.gov>.

Please direct written and oral comments to:

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FIGURES

Figure 1 - Regional Setting
Figure 2 - Project Site

Figure 1 - Regional Setting

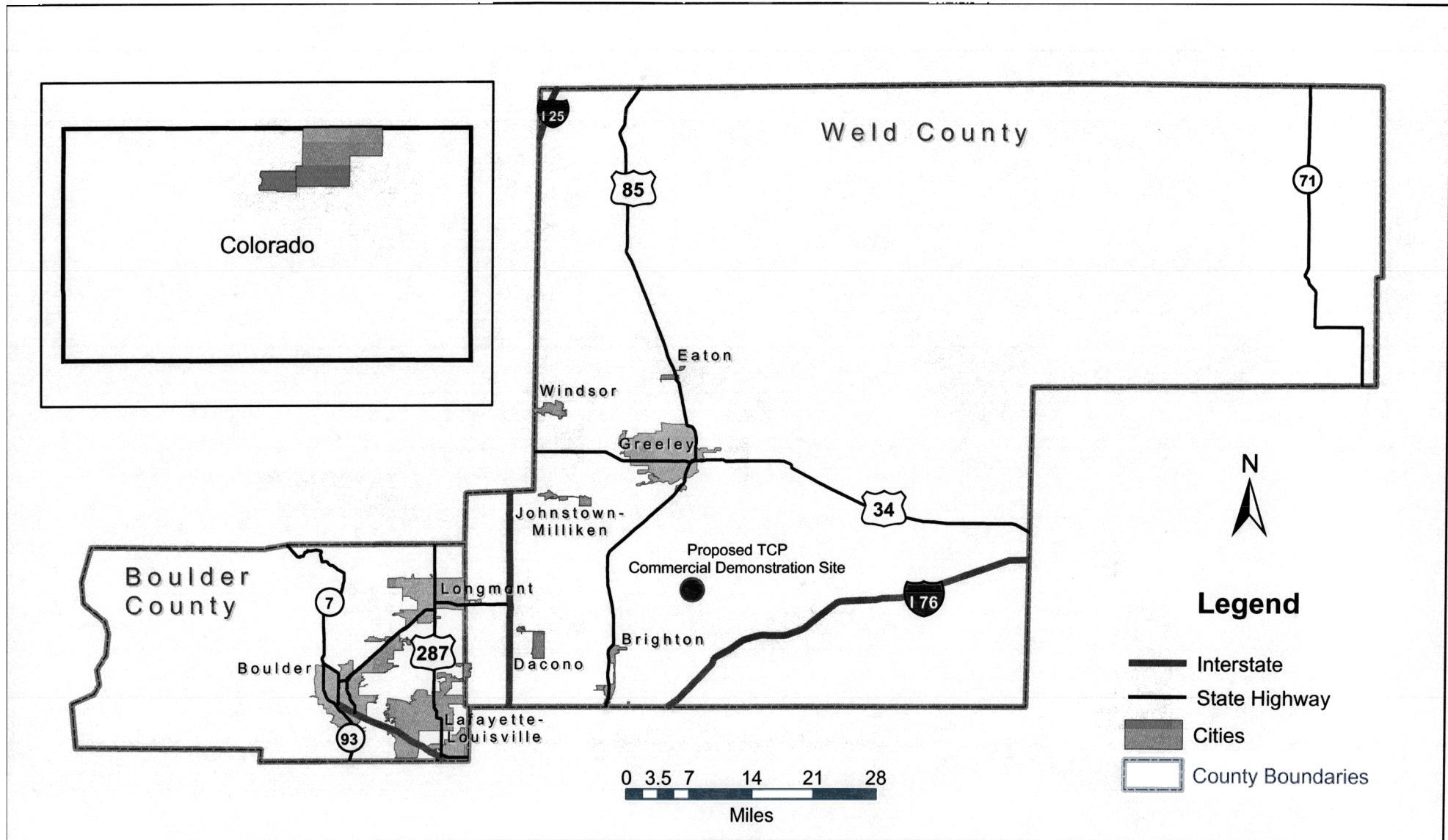
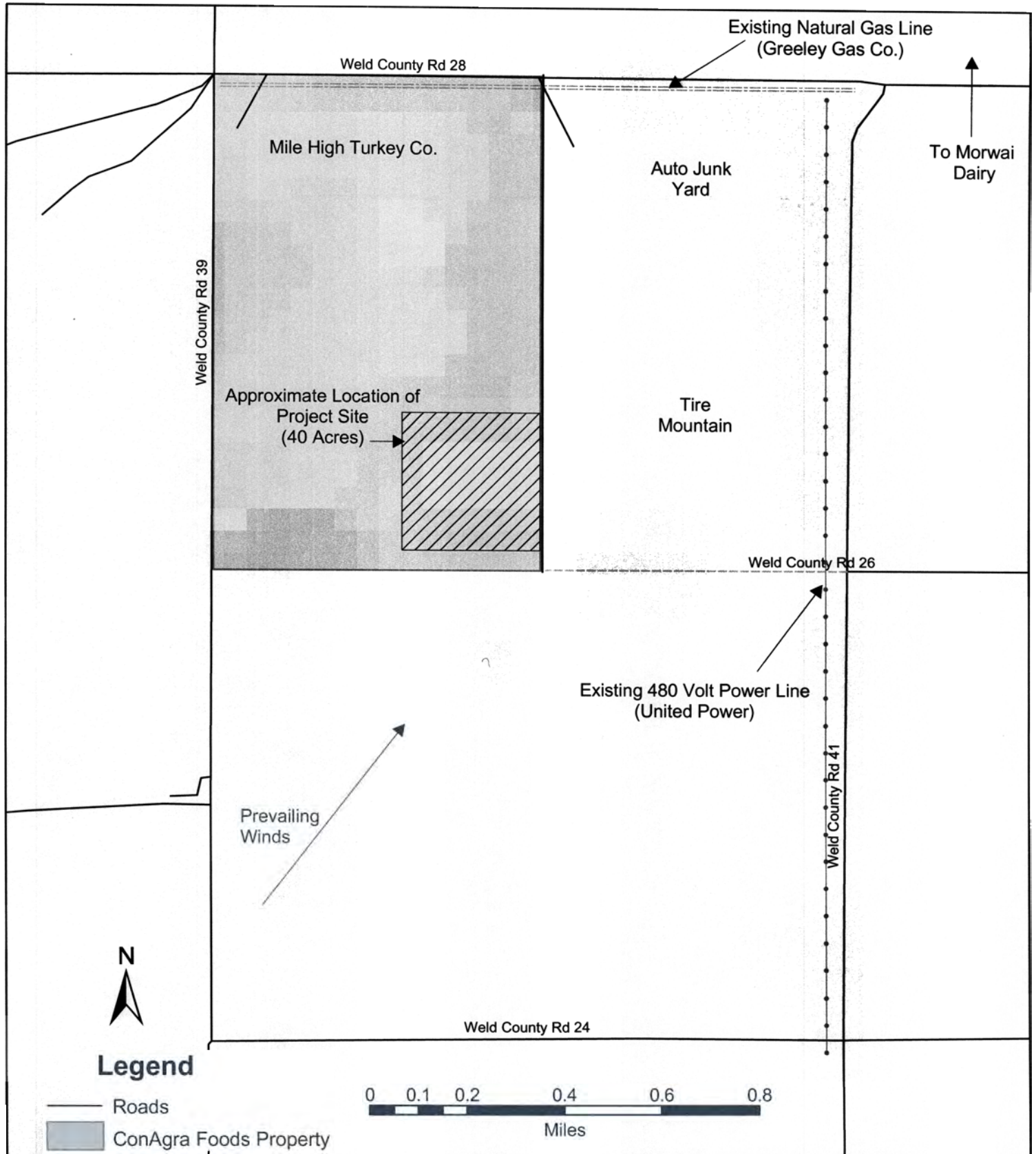


Figure 2 - Project Site



Weld County CWT-TCP EA Scoping List

CO State Board of Land Comm. 1313 Sherman Street, Rm 620 Denver, CO 80203	Mr. Mark Wallace Weld County Environmental Health Dept. 1555 N. 17 th Ave. Greeley, CO 80631	Ms. Monica Daniels-Mika Weld County Planning and Zoning 1555 N. 17 th Ave. Greeley, CO 80631
Ms. Linda Coulter Colorado Dept. of Agriculture 700 Kipling Street, Suite 4000 Lakewood, CO 80215	Mr. Hal Simpson Division of Water Resources 1313 Sherman Street, Rm. 818 Denver, CO 80203	Mr. Terry McKee Dept. of Army, Corps of Engineers Omaha District 9307 State Highway 121 Littleton, CO 80123
Ms. Carol Campbell Dir. Ecosystem Protection US EPA – Region VIII 999 18 th Street, Suite 500 Denver, CO 80202-2405	Mr. Brad Schol City of Longmont Planning Division 408 Third Ave. Longmont, CO 80501	Ms. Georgianna Contiguglia SHPO Colorado Historical Society 1300 Broadway Denver, CO 80203
Colorado Department of Public Health & Environment Attn: Bradley A. Simmons 4300 Cherry Creek Drive, South Denver, CO 80246-1530	Patina Oil & Gas Corporation c/o Logan & Firmine, Inc. 333 W. Hampden Ave., #740 Englewood, CO 80110	Mr. Steve Moreno Weld County Clerk & Recorder P.O. Box 459 Greeley, CO 80632
Mr. Perry Olson Colorado Division of Wildlife 6060 Broadway Denver, CO 80216	Duke Energy Field Services, Inc. P.O. Box 1642 Houston, TX 77251-1642	Greeley/Weld Chamber of Commerce 902 7 th Avenue Greeley, CO 80631
Mr. Curt Eckhart Region 6 Office CDOT 2000 South Holly Street Denver, CO 80222	Mile High Turkey Hatchery, Inc. c/o ConAgra, Inc. Attn: Mike Walters 1 ConAgra Dr., CC362 Omaha, NE 68102-5001	Beebe Draw Land Co., LTD 1551 Larimer, Suite 2706 Denver, CO 80202
Office of Governor Bill Owens Attn: Joe Lambert State of Colorado 136 State Capitol Denver, CO 80203 Mr. LeRoy W. Carlson US Fish and Wildlife Service Colorado Field Office P.O. Box 25486 Denver, CO 80225-0207	Tony, Dave, & Todd Finley 12750 WCR 4 Brighton, CO 80601 Richard Pachla c/o Harold Hudson 12750 County Road 4 Brighton, CO 80601	Platteville Public Library 504 Marion Ave. Platteville, CO 80651 Farr Branch Library 1939 61 st Ave. Greeley, CO 80634
Colorado Single Point of Contact Division of Local Government 1313 Sherman Street, Rm 521 Denver, CO 80203	Gerrity Oil & Gas Corp. c/o Logan & Firmine, Inc. 333 W. Hampden Ave., Suite 740 Englewood, CO 80110	Platteville Town Hall 400 Grand Ave. Platteville, CO 80651

Weld County CWT-TCP EA Scoping List (Continued)

Mr. Glen Anderson
Colorado Association of Soil
Conservation Districts
3000 Youngfield, Suite 163
Lakewood, CO 80215

John Hochmiller
P.O. Box 600
Hudson, CO 80642

Dennis Lundin and Kathy Carter
4605 E. Taylor Rd.
Denair, CA 95316-9715

City of Greeley
Planning and Zoning Division
1100 10th Street, Suite 202
Greeley, CO 80631

Jarrald & Faye Jamison
15721 County Road 10
Fort Lupton, CO 80621

U.S. Fish & Wildlife Service
Ecological Services
Attn: Bob Dach
134 Union Blvd., Suite 645
Lakewood, CO 80228

STATE OF COLORADO

DEPARTMENT OF LOCAL AFFAIRS

1313 Sherman Street, Suite 521
Denver, Colorado 80203
Phone: (303) 866-2771
FAX: (303) 866-4819
TDD: (303) 866-5300



Bill Owens
Governor

Michael L. Beasley
Executive Director

January 15, 2004

Ms. Joyce Beck
NEPA Document Manager
DOE Golden Field Office
1617 Cole Boulevard
Golden, CO 80401-3393

Reference: Environmental Assessment (EA) of a Thermal Conversion Process (TCP)
Commercial Demonstration Plant in Weld County, Colorado

Dear Ms. Beck

Please be advised that the Division of Local Government has **ceased the activities of the Colorado Intergovernmental Review System and ceased serving as the E. O. 12372 Single Point of Contact (SPOC) as of July 1, 1994.** We have joined other states that no longer participate in this federally-mandated intergovernmental review process.

I am returning to you today the documents you recently transmitted to us.

Please do not hesitate to call me at (303) 866-5545 if I can provide any further information.

Sincerely,

A handwritten signature in cursive script that reads "Margaret Dubas".

Margaret Dubas
General Professional II

enclosures



DEPARTMENT OF PLANNING SERVICES

1555 N. 17th AVENUE
GREELEY, COLORADO 80631
WEBSITE: www.co.weld.co.us
E-MAIL: jhatch@co.weld.co.us
PHONE (970) 353-6100, EXT. 3540
FAX (970) 304-6498

January 28, 2004

Joyce Beck
NEPA Document Manager
DOE Golden Field Office
1617 Cole Boulevard
Golden, CO 80401-3393

Subject: Changing World Technologies / Thermal Conversion Process Commercial
Demonstration Plant

Dear Ms. Beck,

Thank you for providing the Weld County Department of Planning Services with the opportunity to respond to the Environmental Assessment for the Thermal Conversion Process Commercial Demonstration Plant. From the information that was provided at this time and previous meetings with the applicants, staff has determined that the applicants will need to apply for and be approved for a Site Specific Development Plan and Special Review Permit. The applicant may also seek to legally separate the 314 acre parcel into two parcels through the Recorded Exemption process. The Recorded Exemption process is reviewed at staff level and would allow the applicants to create a lot no greater than 34.9 acres out of the 314 acres.

I have included the application for Site Specific Development Plan and Special Review Permit and a Recorded Exemption.

Please contact me at the above address or call (970) 353-6100 ext. 3540 if you have any questions.

Sincerely,


Jacqueline Hatch, Planner

Jallo, Carlos F.

From: Beck, Joyce [joyce.beck@go.doe.gov]
Sent: Tuesday, January 20, 2004 9:14 AM
To: Kennedy, Brian P.; Jallo, Carlos F.
Subject: FW: TCP Weld county

FYI

-----Original Message-----

From: Beck, Joyce
Sent: Tuesday, January 20, 2004 8:11 AM
To: 'Dennis Lundin'
Cc: Blazek, Steve
Subject: RE: TCP Weld county

Mr. Lundin,

I am acknowledging receipt of your message. Thank you for taking the time to express your concern. The procedure is that after the comment period which is March 2004 I will collect all the concerns. Then a group of people will review the concerns and reply to them as appropriate. So, you will not hear from us until after the comment period. However, if you have any further concerns or questions, please feel free to contact me at any time.

Joyce Beck
NEPA Documents Manager
Department of Energy
1-800-644-6735, extension 4774
1617 Cole Blvd.
Golden, CO 80401-3393
joyce.beck@go.doe.gov

-----Original Message-----

From: Dennis Lundin
Sent: Friday, January 16, 2004 7:48 PM
To: Beck, Joyce
Subject: TCP Weld county

Dear Ms. Beck,

This letter is in response to your January 15th notification of a proposed thermal plant to recycle "agricultural residuals" and "organic streams" with no hazardous emissions. While I wholeheartedly support the search for alternative fuels to free us from petroelum I do request definitions for the terms in quotes above. Further, I suspect a terrible odor would not be considered a hazardous emission by the DOE but it would by anyone down wind (see figure 2). Could you please enlighten me specifically about what will be processed and what local effects are expected. Thanks you for your time.

Sincerely
Dennis Lundin

1/22/2004

APPENDIX B

DRAFT EA DISTRIBUTION LETTER AND RESPONSES

- **Draft EA Notice of Availability**
- **Colorado Department of Local Affairs Letter**



Department of Energy

Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

August 12, 2004

SEE DISTRIBUTION LIST

SUBJECT: Notice of Availability of Draft Environmental Assessment for Changing World Technologies' Thermal Conversion Process (TCP) Commercial Demonstration Plant in Weld County, Colorado (DOE/EA 1506)

The Department of Energy's (DOE) Golden Field Office announces the availability of the Draft Environmental Assessment (EA) for the Changing World Technologies' Thermal Conversion Process (TCP) Commercial Demonstration Plant in Weld County, Colorado, for public review and comment. The Draft EA has been prepared in accordance with the National Environmental Policy Act (NEPA) and DOE's NEPA implementing regulations. DOE distributed a Notice of Scoping for this project, dated January 8, 2004, to federal, state, and local agencies, interested organizations, and individuals. Comments received in response to that request have been incorporated into the draft EA.

The U.S. Department of Energy (DOE) Proposed Action is to provide partial funding through an award to the Society for Environmental and Energy Research (SEER), a non-profit organization for research, development and training related to energy markets, to construct a prototype commercial-scale demonstration plant that would convert industrial waste and low-value streams into fuels, oils, gases, and carbons, with no hazardous emissions into the environment. The plant would be located in unincorporated Weld County, Colorado, in proximity to ConAgra beef and poultry processing plants located in Greeley and Longmont.

Consistent with NEPA implementing guidelines, it is DOE's policy to integrate community and public concerns into its decision-making processes. Therefore, the community and public are invited to comment on the Draft EA. All comments received will be considered in preparation of the final EA. Comments on the draft EA will be accepted for a period of 30 days. Please submit any comments by September 15, 2004 to:

Joyce Beck
NEPA Document Manager
DOE Golden Field Office
1617 Cole Boulevard
Golden, CO 80401-3393
303-275-4774 or
1-800-644-6735 ext. 4774
(303) 275-4790 (fax)
joyce.beck@go.doe.gov



DOE will review and consider all comments prior to making any final decision. DOE will post the draft EA on the Golden Field Office electronic reading room at <http://www.go.doe.gov>. Thank you for your interest and participation in DOE's NEPA process.

Sincerely,



John H. Kersten
Manager

STATE OF COLORADO

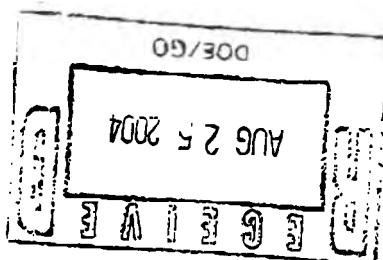
DEPARTMENT OF LOCAL AFFAIRS

1313 Sherman Street, Suite 521
Denver, Colorado 80203
Phone: (303) 866-2771
FAX: (303) 866-4819
TDD: (303) 866-5300



Bill Owens
Governor

Michael L. Beasley
Executive Director



August 24, 2004

Ms. Joyce Beck
NEPA Document Manager
DOE Golden Field Office
1617 Cole Boulevard
Golden, CO 80401-3393

Reference: Notice of Availability of Draft Environmental Assessment for Changing World Technologies' Thermal Conversion Process (TCP) Commercial Demonstration Plant in Weld County, Colorado (DOE/EA 1506)

Dear Ms. Beck:

Please be advised that the Division of Local Government has **ceased the activities of the Colorado Intergovernmental Review System and ceased serving as the E. O. 12372 Single Point of Contact (SPOC) as of July 1, 1994.** We have joined other states that no longer participate in this federally-mandated intergovernmental review process.

am returning to you today the documents you recently transmitted to us.

Please do not hesitate to call me at (303) 866-5545 if I can provide any further information

Sincerely,

Margaret Dubas

Margaret Dubas
General Professional III

enclosures

APPENDIX C

National Historic Preservation Act Section 106 Report and State Historic Preservation Officer Concurrence Letter

- **National Historic Preservation Act Section 106 Report**
 - **Colorado Historical Society Letter**
 - **State Historic Preservation Officer Concurrence
Letter**
-

September 7, 2004

Georgianna Contiguglia
State Historic Preservation Officer
Colorado Historical Society
1300 Broadway
Denver, CO 80203-2137

Dear Ms. Contiguglia:

SUBJECT: Draft Environmental Assessment (EA) for the Changing World Technologies' Thermal Conversion Process Commercial Demonstration Plant in Weld County, CO (DOE/EA 1506) (CHS#43797)

Enclosed is the environmental report under Section 106 of the National Historic Preservation Act for the Changing World Technologies' Thermal Conversion Process Commercial Demonstration Plant in Weld County, CO.

If you have any questions concerning the report, please contact me at 303-275-4723 or Joyce Beck, NEPA Documents Manager, at 303-275-4774.

Sincerely,

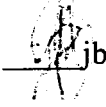
Original Signed by

Steven P. Blazek
NEPA Compliance Officer

Enclosure

cc: Brian P. Kennedy (without enclosure)
Project Manager
SAIC

Paul Haberstadt (with enclosure)
Director Environmental Engineering
ConAgra Refrigerated Prepared Foods

Concurrence: jb

File # 8.2 13

OAHP Use Only: OAHP Doc. No. _____ OAHP Project No. _____

Colorado Office of Archaeology and Historic Preservation

LIMITED-RESULTS CULTURAL RESOURCE SURVEY FORM
(Page 1 of 7)

Small scale limited results projects include block surveys under 160 acres with linear surveys under four miles. Additionally, there should be no sites and a maximum of four Isolated Finds. This form must be typed.

I. IDENTIFICATION

1. Report Title (include County): Changing World Technologies' Thermal Conversion Process Commercial Demonstration Plant, Weld County, Colorado.
2. Date of Field Work: 5/13/04
3. Form completed by: Laura Ziemke Date: August 27, 2004
4. Survey Organization/Agency: Science Applications International Corporation
Principal Investigator: Claudia Druss and Laura Ziemke
Principal Investigator's Signature: *Laura Ziemke* for Claudia Druss
Other Crew: Survey performed by Laura Ziemke
Address: 8100 Shaffer Parkway, Suite 100
5. Lead Agency / Land Owner: Department of Energy (owner - ConAgra Foods)
Contact: Steve Blazek (DOE 303-275-4723)
(Owner Contact - Paul Halberstadt, ConAgra Foods 630-476-0392)
Address: 16127 Cole Blvd, Building 17, Golden, CO 80401
6. Client: Department of Energy
7. Permit Type and Number: Private Property
8. Report / Contract Number: DE-AM04-97-AL77611
9. Comments: _____

II. DESCRIPTION OF UNDERTAKING / PROJECT

10. Type of Undertaking: ConAgra Food, Inc. proposes to build a thermal conversion process (TCP) plant. The project will include several buildings within an 8-acre footprint. The total disturbance is approximately 52 acres (8 acres for TCP facilities, 4 acres for a lagoon, and 40 acres

for spray irrigation. The facility will receive mixed agricultural residuals and low-value organic streams transported to the CWT-TCP plant via truck from nearby agricultural processing facilities. It is expected that 20 trucks per day, each transporting about 20 tons (20.3 metric tons) per load, would transport materials to the site for consumption in the CWT-TCP process. These materials would be offloaded from the trucks into hoppers to begin the CWT-TCP process. Water used for operation of the CWT-TCP plant would come from recycled process water generated through the CWT-TCP process itself, except for the initial start-up of the plant, which would utilize water from an existing on-site well to begin the pulping and slurring process. Clean water recycling would be employed to minimize actual water use. After use in the CWT-TCP process, the excess produced water would be cooled from a maximum of 100 degrees Fahrenheit (F) (37.8 degrees Celsius [C]) (the requirement for the cooling of this process water is still under review by the Colorado Department of Health and Environment [CDPHE]) and meet groundwater standards defined by the CDPHE for discharge before release into the 4-acre (1.6-hectare) storage lagoon, with final water destined for spray irrigation. Process water would also be used for on-site toilets, and a sanitary waste leach field would be located on site to treat this wastewater.

It is anticipated by the project applicants that the proposed CWT-TCP plant would produce 800-1,000 barrels of oil, 10 to 20 tons (10.2 to 20.3 metric tons) of carbon (coke), 10 to 20 tons (10.2 to 20.3 metric tons) of dry mineral fertilizer, 5,000 to 10,000 gallons (18,927 to 37,854 liters) of liquid fertilizer (ammonium sulfate/glycerol solution), and 58,000 gallons (219,554 liters) of water on a daily basis, based on an input of 400 tons per day (tpd) (406.4 metric tons per day [mtpd]) of agricultural residuals and low-value organic streams. Remaining coke-like solids would be accumulated in a storage bin for pickup, as necessary, for off-site use either for blending as fuel, or for use as fertilizer. The CWT-TCP plant would include about five days of storage for oil, and about 10 days of storage for each type of fertilizer produced; however, these products would be picked up on a regular basis (i.e., several times per week). It is anticipated that 10 liquid tanker trucks would travel to and from the site on a daily basis to remove oil products. These trucks would deliver the oil products to local refineries. In addition, it is anticipated that one to two trucks per day would travel to and from the site daily to pick up dry fertilizer products, and one to two trucks per day would travel to and from the site to pick up liquid fertilizer products. These

trucks would likely travel to and from the site via I-76, exiting at State Highway 52, then traveling to the project site along CR 41. Once fully operational, the CWT-TCP plant would operate year-round for 24 hours per day, seven days per week. The goal is to operate the CWT-TCP facility for two years before a plant shutdown for routine maintenance and cleaning. The plant staff would include 20 to 25 full-time employees.

- 1 Size of Undertaking (acres): 52 acres Size of Project (if different) 52 acres
- 12 Nature of the Anticipated Disturbance: Surface disturbance activities would include the construction of several buildings within an 8-acre footprint, a 4-acre lagoon, and use of an open area for irrigation spraying. Other disturbances may include a pipeline to run water to the irrigation field.
- 3 Comments _____

III. PROJECT LOCATION

Please attach a photocopy of USGS Quad. clearly showing the project location. The Quad. should be clearly labeled with the Prime Meridian, Township, Range, Section(s), Quad. map name, size, and date. Please do not reduce or enlarge the photocopy.

4. Description: The project area is located within Weld County, Colorado at an elevation of 4,900 feet above mean sea level and can be found on the Milton Reservoir, Colorado USGS 7 1/2 minute quadrangle. There are no developed roads leading to the proposed project area. Current access is by two-track dirt road. An access road is proposed at the junction of County Road 41 and County Road 26.

15. Legal Location: Quad. Map: Milton Reservoir, CO Date(s): 1950 Principal Meridian: 6th NM Ute

NOTE: Only generalized subdivision ("quarter quarters") within each section is needed

Township: 3N Range: 65W Sec.: 32 1/4s S1/2 SE 1/4 NW 1/4; SE 1/4 SW 1/4 NW 1/4; NE 1/4 SW 1/4; SE 1/4 SW 1/4; E 1/2 NW 1/4 SW 1/4; E 1/2 SW 1/4 SW 1/4

If section(s) is irregular, explain alignment method: N/A

- 16 Total number of acres surveyed: SAIC surveyed approximately 155 acres. This included the 52 acres of potential disturbance and the surrounding property, and 14 acres of proposed access road.
- 7 Comments: _____

IV. ENVIRONMENT

18. General Topographic Setting: Topography of the project site is level, with elevations ranging only slightly from about 4,900 to 4,906 feet (1,494 to 1,495 meters) above sea level. The project site is not located in a geologic hazard area with regard to underlying or adjacent mine workings or faulting, according to the Weld County Planning and Zoning Geo-Hazard Map. Colorado is divided into three distinct physiographic provinces: The Colorado Plateau, the Rocky Mountains, and the Great Plains. The Weld County CWT-TCP project site is located within the Great Plains province, a broad expanse of flat or rolling prairies that extend from Alberta, Canada, to Texas. They rise gently from about 4,000 feet (1,200 meters) above sea level along the Kansas state line to about 7,000 feet (2,100 meters) above sea level at the eastern foot of the Rocky Mountains.

Current Land Use: The project site is located in the southwest area of unincorporated Weld County. The legal description of the project site is SW ¼ Section 32 Township 3N, R65W and Parcel Number 121332000004. The project site is owned by ConAgra Foods, Inc. and comprises approximately 320 leased acres (130 hectares) of mostly vacant land situated in a rural area comprising primarily agricultural and industrial uses. Nine leases for oil and gas development held by Patina Oil and Gas are located throughout the property, and it is also leased for grazing. One residence and several out buildings are located throughout the property (none of the buildings are historic). The project site is characterized by shrub and grass type vegetation, with some disturbed areas associated with oil and gas wells and dirt access roads. According to the Weld County Comprehensive Plan (2003), the project site is located within the County's A (Agriculture) Zone District. The primary goal of this zoning designation is to conserve the County's agricultural land for uses that promote the economic health and perpetuation of agriculture.

19. Flora: The project site is characterized by shrub and grass type vegetation. Located at the base of the foothills of the Rocky Mountains, the project site occurs at elevations ranging from 4,900 to 4,906 feet (1,494 to 1,495 meters) above mean sea level. This coincides with the Great Plains-Palouse Dry Steppe Province. Within the project, site the plant community most closely resembles a disturbed short-grass prairie. Typical grass species occurring in shortgrass prairie communities include buffalo grass, grama, wheatgrass, and needlegrass. Other plant species may include sagebrush, rabbitbrush, sunflower, locoweed, blazingstar, white prickly poppy, and Russian thistle. Groundcover in this community tends to be scarce, exposing the soil. Grazing has occurred on the

site in the past and natural gas wells are present. The northern portion of the project site comprises mostly native vegetation, while the southern portion is dominated by introduced species. The northern portion of the project site is comprised predominantly of sand sagebrush (*Artemisia filifolia*), sand verbenia (*Abronia fragrans*), and needle-and-thread (*Stipa comata*). In the southern portion of the project site, common rye (*Secale cereale*), downy brome (*Bromus tectorum*), and tumble mustard (*Sisymbrium altissimum*) make up the majority of the vegetative community. No trees were present on the project site.

20. Soils/Geology: There are no streams or intermittent drainages within the project area. The physical features of the Great Plains are not uniform throughout the state. The plains are generally divided into three sections: the High Plains, the Colorado Piedmont, and the Raton section. The project site falls within the Colorado Piedmont section, which consists of late mature-to-old elevated alluvial plains. Bedrock in the area, in order of increasing depth bgs, consists of the Laramie Formation, Fox-Hills Sandstone, and Pierre Shale. The Laramie Formation, specifically, consists of interbedded sandstone, mudstone, and shale, with localized beds of lignite and coal. A weathered to competent mudstone bedrock in the Laramie Formation underlies the lean clays at depths ranging from 12 to 29 feet (3.7 to 8.8 meters) bgs in the southeast corner of the property in the vicinity of the proposed site.
21. Ground Visibility: Ground visibility varied between 40 and 100 percent. In areas of low visibility, the grass was pulled aside for complete visual inspection of the surface. In addition, areas around rodent holes and two-track roads were examined for cultural material.
22. Comments: _____

V. LITERATURE REVIEW

23. Location of File Search Compass and OAHP Files Date: May 2004

24. Previous Survey Activity

In the project area: No pervious surveys were identified within or directly adjacent to the project area.

In the general region: One survey in the general vicinity was identified during the records search:

1) Document ID WL.NC.R1: University of Northern Colorado Survey, Spring 1979: Preliminary

Report of the Camp Survey, Weld County, Colorado. Principal Investigator, James M. Brechtel, January 01, 1979.

25 Known Cultural Resources

In the project area: There are no known cultural resources within the project area.

In the general region (summarize): A 1979 University of Northern Colorado survey identified three prehistoric sites (5WL400, 5WL449 and 5WL450) and several isolated finds in sections 30 and 31. These sites have not been evaluated for National Register eligibility. They are listed in the database as "Needs Data".

26. Expected Results: Based on results of the 1979 survey in adjacent sections, it was anticipated that archaeological sites or isolated finds could be identified. In addition, knowing the history of the area, it was anticipated that historic properties could be found on the property. However, no archaeological or historic resources were identified during the survey. The project area is highly disturbed which likely contributes to the lack of cultural material. A portion of the project area was bulldozed in an effort to contain a fire in the adjacent tire storage facility.

VI. STATEMENT OF OBJECTIVES

27. The primary objective for this survey was to comply with regulations set forth by the State and Federal laws including Section 106 of the National Historic Preservation Act as amended. Compliance included surveying the area of potential effect. If cultural resources had been located during the survey, SAIC would have recorded and evaluated the resources using the appropriate Colorado Historical Society forms.

VII. FIELD METHODS

28. Definitions: Site A prehistoric site is defined as any locality with structures or features (e.g., stone hearth) or having five or more artifacts in apparent association with one another and occurring within a restricted area. A historic site is any structural remnant (e.g., house or outbuilding), trash concentration or scatter suggesting use of the area or a refuse dump.
- IF Prehistoric isolated finds are non-structural remains consisting of four or fewer artifacts. Historic isolated finds are individual historic artifacts or small clusters of artifacts that do not represent an established refuse dump.

-
29. Describe Survey Method: Field inventory was accomplished to 100% surface inventory standards (class III) by walking 20-meter transects over the entire survey area (identified on the attached map as the project area). Transects started in the southeast corner of the property and ran north and south moving from east to west. SAIC paid special attention to areas where surface visibility or subsurface exposure was enhanced, such as animal burrows and two-track roads.
-

VIII. RESULTS

30. List IFs if applicable. Indicate IF locations on the map completed for Part III.
No prehistoric or historic resources or isolated finds were identified during the survey. The area is highly disturbed from two track roads, construction of gas wells, grazing and bulldozing used to contain a fire on adjacent land.
31. Using your professional knowledge of the region, why are there none or very limited cultural remains in the project area? Is there subsurface potential? The area is highly disturbed. Past ground disturbing activities include development of natural gas wells, grazing, two-track roads, and bulldozing used to contain a fire on adjacent land. These activities have reduced the likelihood of finding intact cultural resources. In some cases (bulldozing), the potential remains have been removed from the site. While no sites or isolates were identified on the surface, there is potential for buried deposits. If during construction archaeological remains are uncovered, construction should stop and a qualified archaeologist brought in to determine the significance of the material.

PROPOSED
SPRAY IRRIGATION AREA

PROPOSED
WASTEWATER
STORAGE LAGOON

SURVEY BOUNDARY

PLANT SITE

**Changing World Technologies' Thermal Conversion
Process Commercial Demonstration Plant,
Weld County, Colorado**

Milton Reservoir 7.5 Quad
1950
Photo revised 1971



T65W R3N Section 32

COLORADO HISTORICAL SOCIETY

**Office of Archaeology and Historic Preservation
1300 Broadway
Denver, CO 80203**

January 12, 2004

Joyce Beck
NEPA Document Manager
DOE Golden Field Office
1617 Cole Boulevard
Golden, CO 80401-3393

Re: File Search - Thermal Conversion Process Commercial Demonstration Plant
Weld County, Sec. 32, T3N, R65W

At your request, our office has conducted a search of the Colorado Inventory of Cultural Resources for this project area.

There are NO identified sites located in the project area and NO surveys have been undertaken in the project area.

Our files contain incomplete information for this area, as most of Colorado has not yet been inventoried for cultural resources. There is the possibility that as yet unidentified cultural resources exist within the project area.

Therefore, in the event there is Federal or State involvement, we recommend that a professional survey be conducted to identify any cultural resources in the project area which are eligible to be listed on the National Register of Historic Places. We look forward to consulting with you regarding the effect of the proposed project on any eligible cultural resource in accordance with the Advisory Council on Historic Preservation Procedures for the Preservation and Protection of Historic and Cultural Resources (36 CFR 800). Please provide this office with the results of the cultural resource survey for our review of professional adequacy and compliance with regulations.

If you have any questions, please contact Jim Green with the Office of Archaeology and Historic Preservation at (303) 866-4674.

Thank you for your interest in Colorado's cultural heritage.

Susan M. Collins
Deputy State Historic Preservation Officer for Archaeology

*Information regarding significant archaeological resources is excluded from the Freedom of Information Act. Therefore, legal locations of these resources must not be included in documents for public distribution.



**COLORADO
HISTORICAL
SOCIETY**

SEP 17 REC'D

The Colorado History Museum 1300 Broadway Denver, Colorado 80203-2137

September 14, 2004

Steven P. Black
NEPA Compliance Officer
Department of Energy
1617 Cole Boulevard
Golden, CO 80401-3305

Re: Changing World Technologies' Thermal Conversion Process Commercial
Demonstration Plant in Weld County (DOE/EA 1506)

Dear Mr. Black:

This is to acknowledge receipt of your September 7, 2004 correspondence and the cultural resource report prepared for the project listed above.

Since no historic properties were identified during an adequate cultural resource survey of the area of potential effect, we will concur with the determination that no historic properties will be affected.

Should unidentified archaeological resources be discovered in the course of the project, work must be interrupted until the resources have been evaluated in terms of the National Register of Historic Places eligibility criteria (36 CFR 60.4) in consultation with our office.

Thank you for the opportunity to comment. If we may be of further assistance, please contact Jim Green at 303-866-4674.

Sincerely,

Georgianna Contiguglia
State Historic Preservation Officer

GC/WJG

APPENDIX D

AGENCY CORRESPONDENCE

- **Colorado Department of Public Health and Environment Letter**
- **U.S. Fish and Wildlife Service Letter**
- **Colorado Natural Heritage Program Letter**

STATE OF COLORADO

Bill Owens, Governor

Douglas H. Benevento, Executive Director

Dedicated to protecting and improving the health and environment of the people of Colorado

4900 Cherry Creek Dr. S.
Denver, Colorado 80244-1530

Phone (303) 892-2000

TDD Line (303) 891-7700

Located in Glendale, Colorado

<http://www.cdphhs.state.co.us>

Laboratory Services Division

8100 Lowry Blvd.

Denver, Colorado 80230-8926

(303) 892-3090



Colorado Department
of Public Health
and Environment

December 22, 2003

Mark D. Johnson

Vice President

Gannett Fleming, Inc.

6 Pleasant Street

Malden, MA 02148

Re: Renewal Environmental Solutions
Thermo-Depolymerization Process Installation
SW WLD GEN 1.1 and SW ADMIN 0.11.1

Dear Mr. Johnson:

I am responding to your December 9, 2003 letter and our telephone conversation of December 17, 2003 regarding plans to install a plant in Weld County, Colorado that would convert meat-processing offal into energy and agricultural products. Renewable Environmental Solutions (RES) in conjunction with Con Agra Foods and Changing World Technologies, Inc. plan to build a Thermo-Depolymerization (TDP) plant. The plant would accept poultry offal and agricultural waste from the local farming community for raw material to be used in the process. You have requested that the Department determine whether a recycling exemption to a Certificate of Designation (CD) is appropriate for your proposal.

The proposed plant would accept the poultry offal that currently is transported to a rendering plant into an enclosed unloading area equipped with a High Volume Air Conditioner (HVAC) and biofilter system. The raw materials would be unloaded directly into a hopper or bin from where it is directly fed into the production cycle. The materials are pulped and blended in an enclosed system and then fed into a series of pressure vessels where they are treated in two basic stages at different temperatures and pressures. Products such as commercial grade fatty acids and flammable gas are extracted from the process. The gas is to be used in powering the plant, the other products sold on the market. Ammonia that is extracted from the process is to be captured and made into fertilizer. Air and water permits are being applied for and the development of the project is to be conducted under appropriate County regulations.

In considering your request we have taken into account that the poultry offal is currently going to a rendering plant for commercial processing. The only change would be the distance that the material would be hauled and the location of the processing plant. The additional material that is to be used in

this process is agricultural waste in the form of turkey litter from a series of turkey farms in the region. The turkey litter under Colorado statute (C.R.S. 30-20-101(6)(b)) is not considered a solid waste. The offal that has been historically been sent to the rendering plant is considered to be a commercial by-product or raw material that is still in commerce and as such it is not subject to the solid waste law. If this latter material is to be directly land applied the solid waste statutes would apply, see C.R.S. 30-20-110(h). If either of these material streams were to go to a composting site for processing then the solid waste rules would apply to that site and process (see 6 CCR 1007-2, section 14).

In summation, a Certificate of Designation for the proposed Thermo-Depolymerization plant is not necessary under the current rules. Your request for an exemption under the recycling authority cited above does not apply.

If you have questions regarding this matter please contact me at 303/692-3445. On behalf of this Department I wish all success to this project.

Sincerely,


Glenn F. Mallory
Solid Waste Unit Leader
Compliance Program

Cc T. Jiricek, Weld County Health
J. Akins, APCTD
B. Simons, WQCD



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
Colorado Field Office
755 Parfet Street, Suite 361
Lakewood, Colorado 80215

IN REPLY REFER TO:
ES/CO:T&E
Mail Stop 65412

JAN 21 2004

Joyce Beck
Department of Energy Golden Field Office
1617 Cole Boulevard
Golden, CO 80401-3393

Dear Ms. Beck:

This responds to your letter dated January 8, 2004 regarding the effects of the proposed construction of a Thermal Conversion Process (TCP) Commercial Demonstration Plant in Weld County, Colorado on species Federally listed, proposed for Federal listing, and candidate species occurring in Weld County, Colorado. These comments have been prepared under the provisions of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 et. seq.). The United States Fish and Wildlife Service (Service) is concerned about the protection of threatened and endangered species, as well as species which are candidates or proposed for official listing as threatened or endangered (Federal Register, Vol. 61, No. 40, February 28, 1996).

It is our understanding that the proposed project would construct and operate a prototype commercial-scale demonstration plant that would convert agricultural residuals and low-value organic streams into fuels, oils, gases, and carbons, with no hazardous emissions into the environment. The plant would be located in Weld County, Colorado. The project site consists of approximately 314 acres of undeveloped land, of which about 40 acres would be needed for the proposed TCP plant and associated components. The Service does not have specific knowledge of the project site; however, enclosed is a list of Federal endangered, threatened, proposed, and candidate species for Weld County, Colorado. The list can be used as a basis for determining species potentially present in the project area.

Our data indicates that the following species and critical habitat may occur in the project area.

(1) Listed species [threatened (T) and endangered (E)]

bald eagle (*Haliaeetus leucocephalus*) - T
black-footed ferret (*Mustela nigripes*) - E
Colorado butterfly plant (*Gaura neomexicana* ssp. *coloradensis*) - T
interior least tern (*Sterna antillarum athalassos*) - E
Mexican spotted owl (*Strix occidentalis lucida*) - T
pallid sturgeon (*Scaphirhynchus albus*) - E
piping plover (*Charadrius melodus*) - T
Preble's meadow jumping mouse (*Zapus hudsonius preblei*) - T

Ute ladies'-tresses (*Spiranthes diluvialis*) - T
whooping crane (*Grus americana*) - E

(2) Proposed species

none

(3) Candidate species

black-tailed prairie dog (*Cynomys ludovicianus*) - C

(4) Designated critical habitat for

none

(5) Proposed critical habitat for

none

Since 1978, the Service has consistently taken the position in its section 7 consultations that Federal agency actions resulting in existing or new water depletions to the Platte River system may affect the endangered whooping crane (*Grus americana*), endangered interior least tern (*Sterna antillarum*), threatened piping plover (*Charadrius melodus*), endangered pallid sturgeon (*Scaphirhynchus albus*), threatened bald eagle (*Haliaeetus leucocephalus*), endangered Eskimo curlew (*Numenius borealis*), threatened western prairie fringed orchid (*Platanthera praeclara*), and designated critical habitat for the whooping crane and piping plover in the central Platte River in Nebraska. Depletions include evaporative losses and/or consumptive use less return flows. Project elements that could be associated with depletions to the Platte River system include, but are not limited to, ponds (detention/recreation/irrigation storage), lakes (recreation/irrigation storage/municipal storage/power generation), reservoirs (recreation/irrigation storage/municipal storage/power generation), pipelines, and water treatment facilities.

If there are depletions associated with the proposed project or if any species Federally listed, proposed for Federal listing, or a candidate for Federal listing are found at the project site, initiation of formal section 7 consultation in the form of a letter to this office should be submitted. Once the Environmental Assessment of the proposed project is complete, it is our recommendation that it be submitted for our review. If you require additional information, please contact Erik Kraft of this office at (303) 275-2359.

Sincerely,



Susan C. Linner
Colorado Field Supervisor

January 30, 2004

Madeline Terry
Biologist
Science Applications International Corporation
8100 Shaffer Parkway, Suite 100
Littleton, CO 80127

Colorado Natural Heritage Program
Colorado State University
8002 Campus Delivery
Fort Collins, Colorado 80523-8002
(970) 491-1309
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Dear Madeline:

The Colorado Natural Heritage Program (CNHP) is in receipt of your request for information regarding the Science Applications International Corporation area of interest in Weld County near Milton Reservoir. In response, I have searched our Biological and Conservation Datasystem (BCD) for natural heritage elements (occurrences of significant natural communities and rare, threatened or endangered plants and animals) documented from the vicinity of the area specified in your request, specifically within a two-mile buffer of the coordinates provided by SAIC.

The enclosed report describes natural heritage resources known from this area and gives location (by Township, Range, and Section), precision information, and the date of last observation of the element at that location. This report includes elements known to occur within the specified project site, as well as elements known from similar landscapes near the site. Please note that "precision" reflects the resolution of original data. For example, an herbarium record from "4 miles east of Colorado Springs" provides much less spatial information than a topographic map showing the exact location of the occurrence. "Precision" codes of Seconds, Minutes, and General are defined in the footer of the enclosed report.

The report also outlines the status of known elements. We have included status according to Natural Heritage Program methodology and legal status under state and federal statutes. Natural Heritage ranks are standardized across the Heritage Program network, and are assigned for global and state levels of rarity. They range from "1" for critically imperiled or extremely rare elements, to "5" for those that are demonstrably secure.

You may notice that some occurrences do not have sections listed. Those species have been designated as "sensitive" due to their rarity and threats by human activity. Peregrine falcons, for example, are susceptible to human breeders removing falcon eggs from their nests. For these species, CNHP does not normally provide location information beyond township and range. Please contact us should you require more detailed information for sensitive occurrences.

There are no CNHP designated Potential Conservation Areas located within your project area. In order to successfully protect populations or occurrences, it is necessary to delineate conservation areas. These conservation areas focus on capturing the ecological processes that are necessary to support the continued existence of a particular element of natural heritage significance. Conservation areas may include a single occurrence of a rare element or a suite of rare elements or significant features.



The goal of the process is to identify a land area that can provide the habitat and ecological processes upon which a particular element or suite of elements depends for their continued existence. The best available knowledge of each species' life history is used in conjunction with information about topographic, geomorphic, and hydrologic features, vegetative cover, as well as current and potential land uses. The proposed boundary does not automatically exclude all activity. It is hypothesized that some activities will cause degradation to the element or the process on which they depend, while others will not. Consideration of specific activities or land use changes proposed within or adjacent to the preliminary conservation planning boundary should be carefully considered and evaluated for their consequences to the element on which the conservation unit is based.

The Colorado Division of Wildlife has legal authority over wildlife in the state. CDOW would therefore be responsible for the evaluation of and final decisions regarding any potential effects a proposed project may have on wildlife. If you would like more specific information regarding these or other vertebrate species in the vicinity of the area of interest, please contact the Colorado Division of Wildlife.

The information contained herein represents the results of a search of Colorado Natural Heritage Program's (CNHP) Biological and Conservation Data System (BCD), and can be used as notice to anticipate possible impacts or identify areas of interest. Care should be taken in interpreting these data. Sensitive elements are currently known from within the proposed project area, and additional, but undocumented, elements may also exist (see enclosed report). Please note that the absence of data for a particular area, species, or habitat does not necessarily mean that these natural heritage resources do not occur on or adjacent to the project site, rather that our files do not currently contain information to document their presence. CNHP information should not replace field studies necessary for more localized planning efforts, especially if impacts to wildlife habitat are possible.

Although every attempt is made to provide the most current and precise information possible, please be aware that some of our sources provide a higher level of accuracy than others, and some interpretation may be required. CNHP's data system is constantly updated and revised. Please contact CNHP for an update or assistance with interpretation of this natural heritage information.

The data contained in the report is the product and property of the Colorado Natural Heritage Program (CNHP), a sponsored program at Colorado State University (CSU). The data contained herein are provided on an as is, as available basis without warranties of any kind, expressed or implied, including (but not limited to) warranties of merchantability, fitness for a particular purpose, and non-infringement. CNHP, CSU and the state of Colorado further expressly disclaim any warranty that the data are error free or current as of the date supplied.

Sincerely,

Michael Menefee
Environmental Review Coordinator

Enc.





Colorado Natural Heritage Program Environmental Review

Locations and Status of Rare and / or Imperiled Elements known from or likely to occur within the vicinity of the Science Applications International Corporation Area of Interest southwest of Milton Reservoir in Weld County, Colorado

Report Generated: 29 January 2004

<i>taxonomic group</i>	<i>scientific name</i>	<i>common name</i>	<i>prec</i>	<i>last obs</i>	<i>town/range</i>	<i>section</i>	<i>grank</i>	<i>srnk</i>	<i>ESA</i>	<i>fed stat</i>	<i>st stat</i>
Birds	NUMENIUS AMERICANUS	LONG-BILLED CURLEW	G	1975-05-99	002N065W	35	G5	S2B,S2N		FS/BLM	

