FINAL ENVIRONMENTAL ASSESSMENT

FULCRUM SIERRA BIOFUELS LLC,
WASTE TO FUEL FACILITIES IN MCCARRAN,
STOREY COUNTY NEVADA

JOINTLY EXECUTED FOR:
DEPARTMENT OF DEFENSE TITLE III PROGRAM,
WRIGHT-PATTERSON AFB OH 45433
AND
USDA - RURAL DEVELOPMENT
WASHINGTON, DC 20250
DATED
AUGUST 2014
Fulcrum Sierra BioFuels, LLC

(As of August 20, 2014)
FINDINGS OF NO SIGNIFICANT IMPACT FOR
AN INTEGRATED BIOFUEL PRODUCTION FACILITY
IN STOREY COUNTY, NEVADA

August 2014

Pursuant to the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of the National Environmental Policy Act (NEPA), 40 Code of Federal Regulations (CFR) §1500-1508, Air Force’s Environmental Impact Analysis Process (EIAP) regulations codified in 32 CFR §989, and Department of Defense Directive (DoD) 6050.1, the Air Force has prepared this Environmental Assessment (EA) for determining and assessing potential natural and human environment impacts associated with developing commercial-scale Integrated Biofuel Production Enterprise (IBPE) capability in Storey County, Nevada. This EA is incorporated by reference into this finding.

Background, Purpose and Need

The Defense Production Act (DPA) (50 United States Code App. §2061 et seq.) Title III Program is managed by the Office of the Secretary of Defense and executed by the Department of Defense (DoD) Executive Agent Program Office, a component of the Manufacturing and Industrial Technologies Division of the Materials and Manufacturing Directorate, Air Force Research Laboratory (AFRL/RXM). As the Executive Agent for the DoD’s DPA Title III Program, the Air Force is responsible for executing programs that ensure domestic production capability for technology items that are essential to national defense.

In accordance with DPA Section 303(a)(5), on January 8, 2013 a Presidential Determination (PD) was signed establishing the Advanced Drop-in Biofuels Production Project (ADBPP). The PD asserted that the DoD’s reliance on “...crude oil derived fuels undermine foreign policy objectives and impact the Nation’s trade imbalance” and that “...advanced biomass-derived transportation fuels that use a domestic, renewable feedstock provide a secure alternative that reduces the risks associated with dependence on petroleum sources.”

The Air Force DPA Title III Program is therefore interested in establishing the commercial-scale manufacture and supply of drop-in replacement biofuels for aviation and marine diesel applications. The DoD has indicated that it intends to purchase drop-in replacement biofuels that meet approved specifications, meet the provisions of the Energy Independence and Security Act Section 526, are a "drop in fuel" that can utilize existing infrastructure, are delivered to DoD fully blended with conventional petroleum product counterparts JP-5, JP-8, or F-76, and are ready for use.

The U.S. Department of Agriculture-Rural Business-Cooperative Service (RBS) is participating as a co-operating agency in the preparation of this EA. Fulcrum Sierra BioFuels, LLC (Sierra BioFuels) is seeking a loan guarantee from the RBS pursuant to Section 9003 of the Food, Conservation, and Energy Act of 2008 for Project Sierra through the USDA Loan Guarantee Program. The RBS Loan would support approximately 36 percent of the expected total project cost.

The purpose of the Proposed Action is the design, construction and/or retrofit, validation, qualification and operation of a domestic commercial-scale IBPE that meets a requirement of at least 10 million gallons per year neat biofuel production capacity. The IBPE would be capable of producing drop-in liquid transportation fuels targeted for military operational use, and as such, must be approved and certified MILSPEC JP-5, JP-8, and/or F-76 equivalents by the time the IBPE becomes operational.
Description of Proposed Action

Under the Proposed Action, Sierra BioFuels, formerly awarded to Fulcrum Brighton BioFuels, LLC under Phase 1 of the ADBPP and a subsidiary of Fulcrum BioEnergy, Inc. (Fulcrum), intends to construct, own and operate a municipal solid waste (MSW) feedstock IBPE, comprised of a Biorefinery and a Feedstock Processing Facility. Located on approximately 19.4 acres in the Tahoe-Reno Industrial Center, approximately 20 miles east of Reno, Nevada, the Biorefinery would use steam reforming gasification, Fischer-Tropsch (FT) and fuel upgrading technologies ("gas-to-liquids" or "GTL") to produce a permitted maximum of 12.3 million gallons per year annually of renewable neat synthesized paraffinic kerosene (SPK) fuel from approximately 200,000 tons of MSW feedstock.

The Feedstock Processing Facility, located on approximately 14.4 acres in the industrial area near the community of Lockwood, Storey County, approximately 8 miles east of Reno, Nevada, adjacent to the Lockwood Regional Landfill and approximately 15 miles west of the Biorefinery, would utilize an innovative sorting process to convert MSW into a feedstock for use at the Biorefinery.

Feedstock would be composed of the organic component of MSW derived from the residual materials remaining after recycling operations. Feedstock includes paper and paperboard, yard trimmings, food scraps, wood, plastics, containers and packaging (such as milk cartons and plastic wrap), and durable (such as furniture) and non-durable goods (such as paper and clothing). The Feedstock Processing Facility includes a unique MSW processing system engineered to incorporate a unique combination of shredding steps that remove the smaller fractions of the MSW stream. The shredded material would be separated by density using an air classification system. The air classification process provides the separation needed to create feedstock that would be relatively free of moisture and includes mixed paper, textiles, wood and some mixed plastics. The heavy fraction materials include glass, inert materials, fines and very wet items. This unique combination of targeted shredding combined with bulk density separation would be the fundamental driver behind Sierra BioFuels’ ability to create a consistent feedstock suitable for the production of SPK fuel. The processed feedstock would be baled for storage and/or transport to the Biorefinery.

The Biorefinery is being designed to convert nearly 200,000 tons of feedstock per year into a permitted maximum of 12.3 million gallons of neat SPK fuel. The Biorefinery would be composed of several distinct process units including a single gasification train to convert the feedstock to an intermediate product, syngas. Once conditioned and further processed, the syngas would pass through a FT reactor to catalytically convert the syngas into intermediate liquid products. A hydroprocessing/fractionation upgrading unit would further process the FT liquids into the SPK fuel. Within the gasification process, excess carbon dioxide and other inert gases (such as hydrogen sulfide) would be removed to maintain the proper syngas composition. An off-gas stream of purge gas would be combusted in a utility boiler for the production of process steam for use in the Biorefinery.

The Proposed Action would site the IBPE on property that is mostly disturbed land, zoned as “I-2 Heavy Industrial” pursuant to the Storey County Zoning Ordinance and has been designed to avoid or minimize environmental impacts to the extent feasible. These design features, such as standard operating procedures and best management practices, can be found in the EA.
Findings of No Significant Impacts (FONSI)

Based upon my review of the facts and analyses contained in the attached EA, I find the Proposed Action consisting of designing, constructing, installing, operating, and future disposition of a commercial Integrated Biofuel Production Enterprise would not have a significant impact on the natural and human environment; therefore, an environmental impact statement is not required. This analysis fulfills the NEPA requirements, the President’s CEQ 40 CFR §1500-1508 and the Air Force EIAP regulations 32 CFR §989.

Command Civil Engineer
Communications, Installations and Mission Support
ENVIRONMENTAL ASSESSMENT

FOR

DEFENSE PRODUCTION ACT TITLE III
ADVANCED DROP-IN BIOFUELS PRODUCTION PROJECT
FULCRUM SIERRA BIOFUELS, LLC FOR A INTEGRATED BIOFUELS
PRODUCTION ENTERPRISE IN STOREY COUNTY, NEVADA

U.S. AF/AFMC
AFRL Wright Research Site
2310 Eight Street, Building 167
Wright-Patterson AFB, OH 45433-7801

August 2014
Executive Summary

This Executive Summary is intended to provide a brief overview of the Proposed Action, alternatives, and conclusions from the impact analyses. For the supporting documentation and detailed analyses, please see the full environmental assessment.

Project Overview and Alternatives Description

Under the Proposed Action, Fulcrum Sierra BioFuels, LLC (Sierra BioFuels), formerly awarded to Fulcrum Brighton BioFuels, LLC under Phase 1 of the Advanced Drop-in Biofuels Production Project (ADBPP) and a subsidiary of Fulcrum BioEnergy, Inc. (Fulcrum), intends to construct, own and operate a commercial scale Integrated Biofuel Production Enterprise (IBPE), comprised of a Biorefinery and a Feedstock Processing Facility, for the production of neat synthetic paraffinic kerosene (SPK) fuel from municipal solid waste (MSW) feedstock from which recyclables and non-biomass components have been removed (feedstock). The Biorefinery is being designed to use state-of-the-art, non-combustion, thermochemical conversion technology to convert the MSW feedstock into Fischer-Tropsch (FT) liquid biofuel. The FT liquids would be further hydroprocessed to neat SPK fuel. The Biorefinery would be located on approximately 19.4 acres of privately owned land within the Tahoe-Reno Industrial Center (TRI Center), near the community of McCarran, Storey County, Nevada. The Feedstock Processing Facility would be located approximately 15 roadway miles to the southwest of the Biorefinery on approximately 14.4 acres, in the industrial area near the community of Lockwood (Lockwood Landfill Industrial Area), adjacent to the Lockwood Regional Landfill in Storey County, Nevada.

Under the No Action Alternative, the government would not be providing federal funding to investigate or develop the proposed biofuel production capability on these sites. The government may make future and continuing overall project risk and viability determinations based partially on, or completely independent of, the environmental impacts or merits documented herein. It is always possible that non-federally funded development would result in similar development and environmental impacts to these sites as documented.

Affected Environment and Environmental Effects

The Biorefinery would be located within an existing industrial park located on 19.4 acres and the Feedstock Processing Facility would be located on 14.4 acres near an existing landfill. The Proposed Action project area is defined as this 33.8 acre area and its associated minor infrastructure connections. There are no state-, county-, or city-owned lands in the vicinity of the project area. There are no residences, churches, schools, cultural centers, parks, or playgrounds within 1.5 miles of either site. The Proposed Action would have no impact to prime farmland. No naturally occurring surface water features have been observed. The sites do not contain unique or significant vegetation, wildlife species, or fisheries resources. No special management areas are within the vicinity of either facility.

Impacts of emissions would not cause or contribute to an exceedence of an ambient air quality standard. The Proposed Action would not have significant adverse effects to surface water. The potential to contaminate groundwater would be negligible, and there would be no direct discharge to groundwater. Storm water and groundwater discharge permits are required. The removal of a total of 33.8 acres of sagebrush vegetation and wildlife habitat in partially disturbed areas would be planned for industrial development. Protective measures that limit habitat removal during migratory periods would be implemented. No known historic properties or cultural resources have been located at either site. If undiscovered historic properties or cultural resources are found, work would cease pending consultation with Tribes and State Historic Preservation Officer. Anticipated land use and land ownership would remain unchanged.
Introduction of visual elements would be similar to other industrial developments at the TRI Center and the Lockwood Landfill Industrial Area. There would be no potential for adverse impact to geology and soils at the sites. Introduction of noise would be similar to other industrial developments at the TRI Center and Lockwood Landfill Industrial Area. The IBPE would use existing roads, infrastructure, and utilities designed to accommodate heavy industrial facilities. Therefore, impacts to transportation routes and to the surrounding project area from construction of the IBPE are anticipated to be minimal. The IBPE would add additional employment during construction and operation (up to 74 full-time jobs), and socioeconomic benefits to the surrounding areas would likely occur. Since there are no communities in proximity to either site, there are no environmental justice population concerns present.

Noise and odors are not expected to affect surrounding landowners, as the area is zoned for heavy industrial. Additionally, Storey County Zoning Ordinances require that noise be limited at the property boundary to levels of 84 decibels. The baled feedstock would be wrapped in polyethylene film for outdoor storage, which would limit potential odors from the feedstock. Feedstock debaling would take place in an enclosure to minimize odors. To minimize effects to public health and safety, emergency response plans would be developed for the Biorefinery and the Feedstock Processing Facility. The Biorefinery’s fire suppression system would provide for fire protection with a minimum fire water flow from hydrants of 3,000 gallons per minute (gpm) for 3 hours. All activities would be carried out in compliance with OSHA requirements. Furthermore, both facilities would have protective fencing around the perimeter, employ security lighting, and control access to the facilities in order to minimize the threat from intentional destructive acts.

**Cumulative Analysis and Best Management Practices**

Development of the IBPE would remove the remaining sagebrush vegetation, understory grasses, and associated potential wildlife habitat on two parcels totaling approximately 33.8-acres in areas that are already disturbed from other construction-related activities and from grading that has already occurred on portion of both of the sites. This development would remove a small fraction of the overall cumulative vegetation and potential wildlife habitat that would result from similar developments within the TRI Center and Lockwood Landfill Industrial Area. The area currently meets ambient air quality standards. All stationary sources that have the potential to emit air pollution are required to comply with Nevada Department of Environmental Protection air permitting requirements to prevent construction and operations emissions from exceeding applicable thresholds. Therefore it is not expected that there would be significant cumulative impacts associated with the construction and operation of the IBPE. Additionally, given the unpopulated and remote nature of the TRI Center and the Lockwood Landfill Industrial Area, no significant visual cumulative effects are expected as no sensitive receptors would be affected by the change in the visual character of the area.

Best Management Practices (BMPs) would be developed to reduce project related impacts. Although site-specific BMPs would be developed once the site layout, engineering specifications, and operating procedures are finalized, BMPs have been proposed for air quality and surface water resources.
List of Acronyms

°F  degrees Fahrenheit
µg/m³  micrograms per cubic meter
ADBPP  Advanced Drop-In Biofuel Production Project
AGFD  Arizona Game and Fish Department
AIRFA  American Indian Religious Freedom Act
ARC  Architectural Review Committee
ARPA  Archaeological Resources Protection Act
ASU  Air Separation Unit
BCC  Birds of Conservation Concern
BFW  boiler feed water
BLM  Bureau of Land Management
BMP  Best Management Practice
BMS  Burner Management System
BNSF  Burlington Northern Santa Fe
BWM  Bureau of Waste Management
BWPC  Bureau of Water Pollution Control
CAA  Clean Air Act
CEQ  Council on Environmental Quality
CFR  Code of Federal Regulations
CO  carbon monoxide
CO₂  carbon dioxide
COS  carbonyl sulfide
CTC  Carbon Trim Cell
DoD  Department of Defense
DPA  Defense Production Act
EA  environmental assessment
EIAP  Environmental Impact Analysis Process
EISA  Energy Independence and Security Act
EO  Executive Order
FT  Fischer-Tropsch
ft³  cubic feet
GHG  Greenhouse gas
H₂  hydrogen
H₂S  hydrogen sulfide
HAP  hazardous air pollutant
HC  Hydrocracker
HFTL  heavy FT liquid
HMIS  Hazardous Materials Inventory Statement
hp  horsepower
HRS  heat recovery system
HRSG heat recovery steam generator
HRU Hydrogen Recovery Unit
I-80 Interstate 80
IBPE Integrated Biofuel Production Enterprise
IPCC Intergovernmental Panel on Climate Change
kV kilovolts
LFTL light FT liquid
LP low pressure
MBTA Migratory Bird Treaty Act
MFTL medium FT liquid
MOU Memorandum of Understanding
MP medium pressure
mph miles per hour
MRF Material Recovery Facility
MSW municipal solid waste
MW megawatts
$N_2$ nitrogen
NAC Nevada Administrative Code
NAGPRA Native American Graves Protection and Repatriation Act
NDEP Nevada Division of Environmental Protection
NDOW Nevada Division of Wildlife
NEPA National Environmental Policy Act
NGS National Geographic Society
NHHPA National Historic Preservation Act
NNHP Nevada Natural Heritage Program
NO$_2$ nitrogen dioxide
NOI Notice of Intent
NO$_x$ oxides of nitrogen
NPDES National Pollutant Discharge Elimination System
NPS National Park Service
NRHP National Register of Historic Places
NVE NV Energy, Inc.
NV-SP Nevada state protected
NV-SPS Nevada state protected sensitive
OSHA Occupational Safety and Health Administration
PC Heater Pulse Combustion Heaters
PD Presidential Determination
PM$_{10}$ particulate matter less than 10 microns in diameter
POx Partial Oxidation
psig pounds per square inch, gauge
RO Reverse Osmosis
ROW right-of-way
SCFD Storey County Fire Department
SCR selective catalytic reduction
SCSO  Storey County Sheriff Office
SHPO  State Historic Preservation Officer
SIP   State Implementation Plan
SO₂   sulfur dioxide
SOP   Site Operating Plan
SPK   synthetic paraffinic kerosene
SRU   Sulfur Removal Unit
SUP   Special Use Permit
SWPPP Storm Water Pollution Prevention Plan
SWReGAP Southwest Regional Gap Analysis Project
tpy   tons per year
TRI Center Tahoe-Reno Industrial Center
TRIGID TRI General Improvement District
UP    Union Pacific
USC   United States Code
USDOE U.S. Department of Energy
USEPA U.S. Environmental Protection Agency
USFWS U.S. Fish and Wildlife Service
USGS  U.S. Geological Survey
VOC   volatile organic compound
ZLD   Zero Liquid Discharge
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1.0 Introduction

1.1 Purpose, Need, and Background

The purpose of the Advanced Drop-In Biofuel Production Project (ADBPP) Environmental Assessment (EA) is to assess the environmental impact of a proposed federal action to support the design, construction and/or retrofit, validation, qualification, and operation of a domestic commercial-scale Integrated Biofuel Production Enterprise (IBPE) capability at one or more locations.

The Defense Production Act (DPA) (50 United States Code [USC] App. §2601 et al) Title III Program is managed by the Office of the Secretary of Defense and executed by the Department of Defense (DoD) Executive Agent Program Office, a component of the Manufacturing and Industrial Technologies Division of the Materials and Manufacturing Directorate, Air Force Research Laboratory (AFRL/RXM). As the Executive Agent for DoD’s DPA Title III Program, the Air Force is responsible for executing programs that ensure domestic production capability for technology items that are essential to national defense.

The U.S. Department of Agriculture-Rural Business-Cooperative Service (RBS) is participating as a co-operating agency in the preparation of this EA. Fulcrum Sierra BioFuels, LLC (Sierra BioFuels) is seeking a loan guarantee from the RBS pursuant to Section 9003 of the Food, Conservation, and Energy Act of 2008 for Project Sierra through the USDA Loan Guarantee Program for the design, construction, and/or operation of the Project Sierra.

In accordance with Section 303(a)(5) of the DPA, on January 8, 2013, a Presidential Determination (PD) was signed establishing the ADBPP. The PD asserted that the Department’s reliance on “…crude oil derived fuels undermine foreign policy objectives and impact the Nation’s trade imbalance” and that “…advanced biomass-derived transportation fuels that use a domestic, renewable feedstock provide a secure alternative that reduces the risks associated with dependence on petroleum sources.”

The ADBPP Program intends to establish commercial-scale manufacture and supply of drop-in replacement biofuels for aviation and marine diesel applications. The DoD has indicated that it intends to purchase drop-in replacement biofuels that meet approved specifications, meet the provisions of the Energy Independence and Security Act (EISA) Section 526, are a “drop in fuel” that can utilize existing infrastructure, are delivered to DoD fully blended with conventional petroleum product counterparts JP-5, JP-8, or F-76, and ready for use.

Sierra BioFuels, formerly awarded to Fulcrum Brighton BioFuels, LLC under Phase 1 of the ADBPP and a subsidiary of Fulcrum BioEnergy, Inc. (Fulcrum), intends to construct a Biorefinery and a Feedstock Processing Facility for the production of neat synthetic paraffinic kerosene (SPK) fuel from municipal solid waste (MSW) from which recyclables and non-biomass components are removed (feedstock). The Biorefinery is being designed to use steam reforming gasification, Fischer-Tropsch (FT) and fuels upgrading technologies (“gas-to-liquids” or “GTL”) to convert nearly 200,000 tons of feedstock per year into a permitted maximum of 12.3 million gallons of neat SPK fuel. The Biorefinery would be located on approximately 19.4 acres of privately owned land within the Tahoe-Reno Industrial Center (TRI Center), in McCarran, Storey County, Nevada. The Feedstock Processing Facility would be located approximately 15 roadway miles to the southwest of the Biorefinery on approximately 14.4 acres in the industrial area near the community of Lockwood (Lockwood Landfill Industrial Area), adjacent to the Lockwood Regional Landfill.

1.2 Decision to be Made

This EA evaluates the potential environmental consequences of the federal government assisting in the establishment of a commercially viable biofuel production capability at a specific location. The National Environmental Policy Act (NEPA), through its implementing regulations, requires federal agencies to
document, analyze, and review proposed actions and potential alternatives. These actions, their impacts

to resources and corresponding risks are assessed and analyzed using established Air Force guidance.

1.3 Scope of the Environmental Assessment

The NEPA requires federal agencies to consider environmental consequences in their decision-making

process. The President's Council on Environmental Quality (CEQ) has issued regulations to implement

NEPA that include provisions for both the content and procedural aspects of the required environmental

impact analysis. The Air Force Environmental Impact Analysis Process (EIAP) is accomplished through

adherence to the procedures set forth in CEQ regulations (40 Code of Federal Regulations [CFR] §1500-

1508), DoD Instruction 4715.9 Environmental Planning and Analysis, and 32 CFR §989 (Environmental

Impact Analysis Process), July 15, 1999, as amended. These federal regulations establish both the

administrative process and substantive scope of the environmental impact evaluation designed to ensure

that deciding authorities have a proper understanding of the potential environmental consequences of a

contemplated course of action.

Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations

and Low-Income Populations, was issued by the President on February 11, 1994. In the EO, the

President instructed each federal agency to 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 populations and low-income

populations.” ‘Adverse’ is defined by the Federal Interagency Working Group on Environmental Justice

as “having a deleterious effect on human health or the environment that is significant, unacceptable, or

above generally accepted norms.” This EA would determine if the proposed or alternative actions would

result in adverse effects to low-income or minority populations.

Through Intergovernmental and Interagency Coordination for Environmental Planning, requests have

been made for information on planned actions in the surrounding community. If any concurrent actions

are identified during the EA process, they would be examined only in the context of potential cumulative

impacts. A cumulative impact, as defined by the CEQ (40 CFR §1508.7), is the “impact on the

environment which results from the incremental impact of the action when added to other past, present,

and reasonably foreseeable future actions regardless of which agency (Federal or non-Federal) or

person undertakes such actions. Cumulative impacts can result from individually minor but collectively

significant actions taking place over a period of time.”

1.3.1 Resource Areas Addressed in Detail

All resource areas that could be affected by the Proposed Action or No Action Alternative shall be

reviewed and documented. Table 1-1 details all applicable areas requiring a comprehensive analysis of

potential impacts. The intent of this EA is to meet the NEPA requirements established in 32 CFR §989.

This EA addresses affected environment and impact analysis for earth, biological, cultural, and human

resources.

<table>
<thead>
<tr>
<th>Resources Area</th>
<th>Document Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Quality and Meteorology</td>
<td>Section 3.11</td>
</tr>
<tr>
<td>Water Resources</td>
<td>Section 3.5</td>
</tr>
<tr>
<td>Biological Resources</td>
<td>Sections 3.8, 3.9, 3.10</td>
</tr>
<tr>
<td>Cultural Resources</td>
<td>Section 3.12</td>
</tr>
<tr>
<td>Land Use Requirements/Restrictions</td>
<td>Section 3.2</td>
</tr>
</tbody>
</table>
Table 1-1 Resource Areas Addressed in Detail

<table>
<thead>
<tr>
<th>Resources Area</th>
<th>Document Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic and Transportation</td>
<td>Section 3.4</td>
</tr>
<tr>
<td>Geological Resources and Soils</td>
<td>Section 3.7</td>
</tr>
<tr>
<td>Noise and Odors</td>
<td>Section 3.15</td>
</tr>
<tr>
<td>Waste Management</td>
<td>Section 3.6</td>
</tr>
<tr>
<td>Infrastructure and Utilities</td>
<td>Section 3.3</td>
</tr>
<tr>
<td>Socioeconomic Impacts and Environmental Justice</td>
<td>Section 3.13</td>
</tr>
<tr>
<td>Aesthetics</td>
<td>Section 3.14</td>
</tr>
<tr>
<td>Public Health and Safety</td>
<td>Section 3.16</td>
</tr>
<tr>
<td>Area/Regional Cumulative Impacts</td>
<td>Section 4.2</td>
</tr>
<tr>
<td>Irreversible and Irretrievable Changes</td>
<td>Section 4.3</td>
</tr>
</tbody>
</table>

1.3.2 Resource Topics Eliminated from Detailed Analysis

All resource areas would be affected by the Proposed Action or Alternative Actions; therefore, no resource areas have been eliminated from further study in this document.

1.4 Public Participation, Coordination, and Regulatory Permitting Requirements

This EA is part of the EIAP for the Proposed Action and was prepared in compliance with NEPA regulations. The following paragraphs describe the laws and regulations that apply or may apply to the proposed and alternative actions.

1.4.1 Interagency and Intergovernmental Coordination

Federal, state, and local agencies with jurisdiction that could be affected by the Proposed Action or Alternative Actions have been notified and consulted. This coordination fulfills the Interagency Coordination Act and EO 12372 Intergovernmental Review of Federal Programs (July 14, 1982), which requires federal agencies to cooperate with and consider state and local views in implementing a federal proposal. EO 12372 is implemented by the Air Force in accordance with Air Force Instruction (AFI) 32-7060, Interagency and Intergovernmental Coordination for Environmental Planning (IICEP). A complete listing of the agencies consulted is found in Chapter 6.0.

1.4.2 Permits, Approvals, and Authorizations

A status of permits, approvals, and authorizations associated with the Feedstock Processing Facility and the Biorefinery are provided in Table 1-2 and Table 1-3, respectfully.
<table>
<thead>
<tr>
<th>Agency</th>
<th>Permit</th>
<th>Details</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discretionary Permits and Authorizations – Prior to Construction</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Federal:</strong> No Federal Permits Required.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>State: Nevada</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nevada Division of Environmental Protection (NDEP) – Bureau of Air Pollution Control (BAPC)</td>
<td>Class II Air Quality Operating Permit (Air Permit)</td>
<td>Typically required for facilities that emit less than 100 tons per year (tpy) of any 1 regulated pollutant, less than 10 tpy of any hazardous air pollutant (HAP) and less than 25 tpy total HAP. Nevada’s air quality control regulations provide for permitting construction and operation in a single permit.</td>
<td>Application for the Air Permit to be submitted no less than five months prior to start of construction.</td>
</tr>
<tr>
<td>NDEP - Bureau of Air Pollution Control (BAPC)</td>
<td>Surface Area Disturbance (SAD) Permit</td>
<td>Required if 5 acres or more of surface area will be disturbed, a SAD permit is required to address the control of particulate matter (PM).</td>
<td>Application for a SAD Permit to be submitted with Air Permit.</td>
</tr>
<tr>
<td>NDEP – Bureau of Waste Management (BWM)</td>
<td>Solid Waste Material Recovery Facility (MRF) Permit</td>
<td>An application for a Solid Waste MRF Permit must include: 1) design report; 2) operational plan; 3) closure plan; and 4) financial assurance. A MRF must not be constructed until the application has been approved by the NDEP-BWM.</td>
<td>Application for the Solid Waste MRF Permit to be submitted no less than three months prior to start of construction.</td>
</tr>
<tr>
<td><strong>Local</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storey County – Planning Department</td>
<td>Special Use Permit</td>
<td>The site is zoned “l-2 Heavy Industrial” under the Storey County zoning regulations. The Feedstock Processing Facility would be an “Allowed Use” in the industrial zone as it functions similar to a “Solid Waste Recycle Center” as defined under the Storey County zoning regulations.</td>
<td>Allowed Use: No Permit Required.</td>
</tr>
</tbody>
</table>
Table 1-2  Permits, Approvals, and Authorizations for Feedstock Processing Facility

<table>
<thead>
<tr>
<th>Agency</th>
<th>Permit</th>
<th>Details</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>State</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NDEP – Bureau of Water Pollution Control (BWPC)</td>
<td>NDEP General Industrial Stormwater Permit (NVR 050000)</td>
<td>An owner/operator must be included under the NPDES Storm Water Discharge general permit by giving NDEP-BWPC Notice of Intent (NOI) to commence construction and developing a Storm Water Pollution Prevention Plan (SWPPP) for construction activities.</td>
<td>NOI to be given no later than 24 hours prior to commencing construction and storm water control measures implemented in accordance with SWPPP.</td>
</tr>
<tr>
<td><strong>Local</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storey County Building Department</td>
<td>Grading Permit</td>
<td>A grading permit would be required for all facets of the grading plan to ensure sufficient local area drainage, surface mines and landscaping for the purpose of mitigating the adverse effects of erosion.</td>
<td>Application must be submitted prior to beginning grading activities.</td>
</tr>
<tr>
<td>Storey County Building Department</td>
<td>Building Permits</td>
<td>Prior to obtaining a building permit, design packages must be submitted to the Storey County Building Department for review. Once all proposed work, existing site conditions and adjoining public facilities have met the requirements of applicable Storey County building codes, an approval will be granted and the permits issued.</td>
<td>Design packages must be submitted for approval prior to commencing construction.</td>
</tr>
<tr>
<td>Storey County Fire Department (SCFD)</td>
<td>Fire and Life Safety Plan</td>
<td>All businesses applying for building permits in Storey County must be reviewed and inspected to ensure compliance with applicable Fire and Life Safety Standards.</td>
<td>Must be completed prior to commencing construction.</td>
</tr>
<tr>
<td>SCFD</td>
<td>Hazardous Materials Inventory Statement</td>
<td>Any facility storing, handling and/or using any amount of hazardous materials would be required to submit a Hazardous Materials Inventory Statement (“HMIS”). The approved HMIS serves as a Fire Department Permit.</td>
<td>To be submitted 30 days prior to the storage of hazardous materials.</td>
</tr>
<tr>
<td>SCFD</td>
<td>Fire Alarm System Detection Permit</td>
<td>Submitted with Fire and Life Safety Plan.</td>
<td>To be obtained prior to commencing construction.</td>
</tr>
</tbody>
</table>
### Table 1-2 Permits, Approvals, and Authorizations for Feedstock Processing Facility

<table>
<thead>
<tr>
<th>Agency</th>
<th>Permit</th>
<th>Details</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCFD</td>
<td>Fire Suppression System Permit</td>
<td>Submitted with Fire and Life Safety Plan.</td>
<td>To be obtained prior to commencing construction.</td>
</tr>
</tbody>
</table>
| Canyon General Improvement District (CGID)  | Water “will serve” Letter     | A facility is required to submit a written “request for potable water service” and interconnection to CGID. Upon review, CGID issues a “will serve” letter. The Biorefinery will have no discharge of process waste water to the sewer. | **Issued:** January 29, 2014 *(Appendix A)*.  
See Andreini (2014)* |
<table>
<thead>
<tr>
<th>Agency</th>
<th>Permit</th>
<th>Details</th>
<th>Status</th>
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<tr>
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<td></td>
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</tr>
<tr>
<td><strong>Federal</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>State: Nevada</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NDEP-BAPC</td>
<td>Class II Air Permit</td>
<td>Typically for facilities that emit less than 100 tpy for any 1 regulated pollutant and emit less than 25 tpy total HAP and emit less than 10 tpy of any 1 HAP. Nevada’s air quality control regulations provide for permitting construction and operation in a single permit. If a facility’s process and/or equipment does not match those specified in the permit, a modification would be required. A permit revision requires submittal of a permit modification application and a processing fee. A permit revision (and the issuance of a new or revised permit) would be required before construction of a modification may occur.</td>
<td>Final Issued: July 1, 2013. Facility Identification No. A0921. Permit No. AP 2869-3306. A revised permit was issued on June 25, 2014.</td>
</tr>
<tr>
<td>NDEP – BAPC</td>
<td>SAD Permit</td>
<td>Required if 5 acres or more of surface area will be disturbed, a SAD permit would be required to address the control of PM.</td>
<td>Application for a SAD Permit to be submitted with Air Permit.</td>
</tr>
<tr>
<td><strong>Local</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storey County Planning Commission</td>
<td>Special Use Permit (SUP)</td>
<td>SUPs are approved upon a determination that a parcel of land is suitable in terms of location, topography, adjoining land use, physical and environmental characteristics, and size and shape for the facility that is proposed.</td>
<td>Issued: March 5, 2009. SUP No. 2009-034. Extended: March 5, 2010. Extended: February 15, 2011. Vested: January 12, 2012</td>
</tr>
<tr>
<td>Agency</td>
<td>Permit</td>
<td>Details</td>
<td>Status</td>
</tr>
<tr>
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<td>--------</td>
</tr>
<tr>
<td><strong>State</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NDEP –BWPC</td>
<td>NDEP Storm Water Discharge Permit – Industrial Activity General Permit (NVR 050000)</td>
<td>An owner/operator must be included under the NPDES Storm Water Discharge general permit by giving NDEP-BWPC NOI to commence construction and developing a SWPPP for construction activities.</td>
<td>NOI to be given no later than 24 hours prior to commencing construction and storm water control measures implemented in accordance with SWPPP.</td>
</tr>
<tr>
<td>Division of Industrial Relations, Mechanical Unit</td>
<td>Pressure Vessel Permit</td>
<td>A contractor must receive a permit prior to installing a boiler or pressure vessel.</td>
<td>To be obtained prior to commencing construction.</td>
</tr>
<tr>
<td>Storey County Building Department</td>
<td>Grading Permit</td>
<td>A grading permit is required for all facets of the grading plan to ensure sufficient local area drainage, surface mines and landscaping for the purpose of mitigating the adverse effects of erosion.</td>
<td>Application must be submitted prior to beginning grading activities.</td>
</tr>
</tbody>
</table>
### Table 1-3  Permit, Approvals and Authorizations for the Biorefinery

<table>
<thead>
<tr>
<th>Agency</th>
<th>Permit</th>
<th>Details</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storey County Building Department</td>
<td>Grading Permit</td>
<td>A grading permit is required for all facets of the grading plan to ensure sufficient local area drainage, surface mines and landscaping for the purpose of mitigating the adverse effects of erosion.</td>
<td>Application must be submitted prior to beginning grading activities.</td>
</tr>
<tr>
<td>Storey County Building Department</td>
<td>Building Permits</td>
<td>Prior to obtaining a building permit, design packages are submitted to the Storey County Building Department for reviews. Once all proposed work, existing site conditions and adjoining public facilities have met the requirements of applicable Storey County building codes, an approval will be granted and the permits issued.</td>
<td>Design packages must be submitted for approval prior to commencing construction.</td>
</tr>
<tr>
<td>SCFD</td>
<td>Fire and Life Safety Plan</td>
<td>All businesses applying for building permits in Storey County must be reviewed and inspected to ensure compliance with applicable Fire and Life Safety Standards,</td>
<td>Must be completed prior to commencing construction.</td>
</tr>
<tr>
<td>SCFD</td>
<td>Hazardous Materials Inventory Statement</td>
<td>Any facility storing, handling and/or using any amount of hazardous materials would be required to submit a HMIS. The approved HMIS serves as a Fire Department Permit.</td>
<td>To be submitted 30 days prior to the storage of hazardous materials.</td>
</tr>
<tr>
<td>SCFD</td>
<td>Fire Alarm System Detection Permit</td>
<td>Submitted with Fire and Life Safety Plan.</td>
<td>To be obtained prior to commencing construction.</td>
</tr>
<tr>
<td>Agency</td>
<td>Permit</td>
<td>Details</td>
<td>Status</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>---------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>SCFD</td>
<td>Fire Suppression System Permit</td>
<td>Submitted with Fire and Life Safety Plan.</td>
<td>To be obtained prior to commencing construction.</td>
</tr>
<tr>
<td>TRI Center – Architectural Review Committee (ARC)</td>
<td>ARC Design Approval</td>
<td>ARC reviews and approves all development proposals for conformance with the TRI Center’s Declaration of Covenants, Conditions and Restrictions and Development Handbook (TRI Owners Association 2000);</td>
<td>ARC application to be submitted concurrently with Building Permit application.</td>
</tr>
<tr>
<td>TRI General Improvement District (TRIGID)</td>
<td>Water “will serve” Letter</td>
<td>Each facility would be required to submit a written request for service to TRIGID. Upon review, TRIGID would issue a “will serve” letter.</td>
<td>Issued: June 7, 2010 (Appendix A).</td>
</tr>
<tr>
<td>TRIGID</td>
<td>Sewer “will serve” Letter</td>
<td>Each facility is required to submit a written request for service to TRIGID. Upon review, TRIGID would issue a “will serve” letter.</td>
<td>Issued: June 7, 2010 (Appendix A).</td>
</tr>
</tbody>
</table>
1.4.3 Other Regulatory Requirements

The EA considers all applicable laws and regulations, including but not limited to the following:

- **Clean Air Act**, as amended (42 USC §7401 et seq.)
- **Oil Pollution Prevention Act** (40 CFR Part 112)
- **Community Environmental Response, Compliance and Liability Act** (42 USC 9601 et seq.)
- **Occupational Health and Safety Act** (29 USC 651 et seq.)
- **Emergency Planning and Community Right to Know Act** (42 USC 11000 et seq.)
- **Spill Prevention Control and Countermeasure Plan (SPCC)**, per 40 CFR 112 Subpart A (for compliance with the Occupational Safety and Health Administration (OSHA) and the Emergency Planning and Community Right-To-Know Act (EPCRA)
- **EO 11990, Protection of Wetlands** (May 24, 1977)
- **Clean Water Act** (33 USC §1251 et seq.), including Section 404 (33 USC §1344)
- Section 10 of the **Rivers and Harbors Act of 1899** (33 USC §403)
- **EO 11988, Floodplain Management** (24 May 1977)
- **Endangered Species Act** (16 USC §1531-1542)
- **Pollution Prevention Act** (42 USC §§13101-13102 et seq.)
- **Archaeological Resources Protection Act** (ARPA) (16 USC §470aa-mm)
- **National Historic Preservation Act** (NHPA) (16 USC §470 et seq.)
- **American Indian Religious Freedom Act** (AIRFA) (42 USC §1996)
- **Protection of Historic Properties** (36 CFR Part 800)
- **Native American Graves Protection and Repatriation Act of 1991** (25 USC §3001 et seq.)
- **Resource Conservation and Recovery Act** (42 USC §6901 et seq.)
- **Toxic Substance Control Act** (15 USC §2601 et seq.)
- **EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations** (February 11, 1994)

1.5 Document Organization

This EA is organized into 7 chapters.

**Chapter 1**
Contains the purpose of and need for action, the overview and background of the government’s requirement, identification of the decision to be made, a summary of the scope of the environmental review, identification of applicable regulatory requirements, and a summary of the document organization.

**Chapter 2**
Describes the history of the formulation of alternatives, identifies alternatives eliminated from further consideration, provides a detailed description of the Proposed Action, describes the alternatives and the No Action Alternative, provides a comparison matrix of environmental effects for all alternatives, and describes measures to minimize or reduce impacts.
Chapter 3  Documents the current sites’ natural, cultural, and historical resource. This chapter documents the comparison between the current resource baseline and the proposed future state through a detailed resource impact review, evaluation, analysis and assessment. In addition, this chapter addresses cumulative, irreversible and irretrievable resource development impacts. (40 CFR §1502.15 & §1502.16)

Chapter 4  Lists cumulative environmental impacts.

Chapter 5  Lists comprehensive environmental protection measures.

Chapter 6  Lists persons and agencies consulted in the EA scoping and preparation process.

Chapter 7  Lists references and source documents relevant to EA preparation.
2.0 Proposed Action and Alternatives

2.1 Introduction
Two alternatives are considered for analysis: the Proposed Action (Section 2.2) and the No Action Alternative (Section 2.3). This chapter describes both alternatives, as well as alternatives considered but eliminated from analysis (Section 2.4).

2.2 Proposed Action
The Proposed Action has been developed pursuant to the requirements of the DPA Title III Program. Under the Proposed Action, Sierra BioFuels intends to construct, own and operate a Biorefinery and a Feedstock Processing Facility for the production of a renewable biofuel in Storey County, Nevada. The Biorefinery would be designed to use steam reforming gasification, FT and fuels upgrading technologies ("gas-to-liquids" or "GTL") to produce a permitted maximum of 12.3 million gallons annually of neat SPK fuel from approximately 200,000 tons of feedstock.

Feedstock would be MSW sourced from the local geographic waste-shed of the IBPE. The sorted, post-recycled MSW feedstock would be converted into neat SPK fuel using a four-step process comprised of feedstock preparation, steam reforming gasification, FT liquids synthesis and hydroprocessing/fractionation upgrading. In the first step, feedstock preparation, MSW would be delivered to the Feedstock Processing Facility and be prepared, sorted, and baled into feedstock. In the second step, steam reforming gasification, the feedstock would be converted into a synthesis gas (syngas) that is composed primarily of hydrogen (H₂) and carbon monoxide (CO). The third step converts the syngas into FT liquids using a fixed bed conventional FT reactor system based on a cobalt catalyst. The fourth and final step, hydroprocessing/fractionation upgrading, converts the FT liquids into to SPK fuel in conformance with the specifications in ASTM D7566, Standard Specification for Aviation Turbine Fuel Containing Synthesized Hydrocarbons.

Feedstock would be composed of the organic component of MSW derived from the residual materials remaining after recycling operations. The feedstock includes paper and paperboard, yard trimmings, food scraps, textiles, wood, plastics, containers and packaging, and durable goods (such as furniture). The Feedstock Processing Facility is located in the industrial area near the community of Lockwood in Storey County, Nevada. The site is adjacent to the Lockwood Regional Landfill approximately 8 miles east of Reno Nevada, and 15 roadway miles (distance over established roadways between the sites) west of the Biorefinery. The Feedstock Processing Facility would utilize state of the art MSW processing systems to shred, sort, prepare, and bale a consistent feedstock meeting the specifications required by the Biorefinery for the production of SPK fuel. The processing system includes an air classification system which segregates the lighter fraction of the MSW from the heavier fraction (e.g., glass, metal, dirt, and very wet items) by density to create a consistent feedstock material. The processed feedstock would be baled with polyethylene film suitable for outdoor storage at the Feedstock Processing Facility and/or the Biorefinery.

The Biorefinery, would be located in the TRI Center near the community of McCarran, Storey County, Nevada approximately 20 miles east of Reno. The Biorefinery will use steam reforming gasification, FT and fuels upgrading technologies to convert prepared MSW feedstock into a permitted maximum of 12.3 million gallons annually of neat SPK fuel. The Biorefinery would be designed with a single steam reforming gasification unit for the conversion of feedstock into syngas and a heat recovery system generation (HRSG) unit. Once conditioned and further processed, the syngas would pass through a FT reactor to catalytically convert the syngas into intermediate liquid products. A hydroprocessing/fractionation upgrading unit would further process the FT liquids into the SPK fuel. Within the syngas generation process, excess carbon dioxide (CO₂) and other inert gases (such as hydrogen sulfide [H₂S])
would be removed to maintain the proper syngas composition. An off-gas stream of purge gas would be combusted in a utility boiler for the production of process steam for use in the Biorefinery.

2.2.1 Biorefinery

2.2.1.1 Facility Description

The site for the Biorefinery would be located entirely on approximately 19.4 acres of privately owned land within the TRI Center, near the community of McCarran, Storey County, Nevada. A plot plan is depicted in Figure 2-1. There are no existing facilities or utilities on the site, but the site has been partially disturbed by clearing, grading, and the use of fill material prior to Sierra BioFuels’ purchase of the property. The property is bordered by undeveloped land to the west and south, a railroad line borders the property on the north, and Peru Drive, a major TRI Center improved road, to the east. The existing rail and road systems would provide both rail and truck/car access to the site. The Biorefinery and supporting infrastructure would occupy the entire 19.4 acre parcel, which would be fenced along the perimeter.

The Biorefinery’s designed process uses steam reforming gasification, FT and GTL technologies to convert feedstock into SPK fuel. The Biorefinery would be designed to convert nearly 200,000 tons of feedstock per year into a permitted maximum of 12.3 million gallons of neat SPK fuel.

The feedstock would be converted into SPK fuel using a four-step process comprised of feedstock preparation, steam reforming gasification, FT liquids synthesis and hydroprocessing/fractionation upgrading. In the first step, feedstock preparation, MSW would be delivered to the Feedstock Processing Facility and be prepared, sorted, and baled into feedstock. The second step, steam reforming gasification, the feedstock would be converted into a syngas. In the third step, FT liquids synthesis, the syngas would be catalytically converted into FT liquid hydrocarbons using conventional fixed bed catalyst FT reactors. In the fourth and final step, hydroprocessing/fractionation upgrading, the FT liquids would then be upgraded to SPK fuel in conformance with the specifications in ASTM D7566, Standard Specification for Aviation Turbine Fuel Containing Synthesized Hydrocarbons. A portion of the purge gas would be used as fuel gas in a utility boiler to produce steam to be used in the Biorefinery, indirectly offsetting a portion of electric power requirements.

The Biorefinery would include the following components:

- **Buildings.** Four separate buildings would be constructed for administrative offices, security, maintenance and warehousing, fire protection, and the central control room.
- **Parking and Roadways.** A 30,000-square-foot parking area would be constructed near the administrative buildings on the east side of the parcel off the main access point to the Biorefinery from Peru Drive. Access roadways and staging areas also would be constructed throughout the approximate 19.4-acre site.
- **Fencing.** Except for a parking lot in front of the main administrative office, the entire parcel would be enclosed within a security fence.
- **Firewater Storage, Pumping, and Associated Fire Hydrants and Monitors.** There would be one diesel driven firewater pump.
- **Utility Boiler.** A boiler would be installed to provide process steam and be fired on both a process purge gas and natural gas. Boiler water treatment chemicals and equipment storage also would be provided.
• **Air compressors and dryers**.

• **Closed Circuit Cooling Water System**. This system would include an evaporative cooling tower and an array of fin-fan air coolers. The circulating water would be treated to prevent corrosion and biological growth. Additional water would be required to make-up for evaporation and blowdown losses.

• **Emergency Power Generation**. This system would include one diesel powered generator to provide electricity during a power outage to allow a safe and orderly shutdown of the Biorefinery.

• **Flare System**. A flare header would collect and route process vent gas streams and relief valve discharge streams to the to a refractory-lined ground flare to be safely combusted before being discharged to the atmosphere.

• **Natural Gas Distribution System**. Natural gas would be supplied to the facility’s natural gas metering station by the local natural gas utility. The natural gas would be distributed throughout the facility for use in running the process equipment and the process power boiler and for use as a pilot light in the flare.

• **Air Separation Unit (ASU)**. Oxygen (O₂) would be used in the process as part of the syngas generation. Nitrogen (N₂) would be provided for purging equipment of residual chemicals. A vacuum swing absorption ASU will provide high purity cryogenic O₂ and N₂ to the Biorefinery.

• **Product Storage and Loading**. The finished SPK fuel would be routed to one of three product tanks. Once tested and certified that the fuel meets applicable quality standards, the product would be pumped into tank trucks for shipment. An off-spec tank would be provided for storage of any off-spec product requiring reprocessing.

• **Product and Off-spec Storage Tanks**. All product and off-spec storage tanks would be blanketed with N₂ to prevent air from migrating into the tanks’ vapor space. The storage tanks and truck loading systems would reside within containment areas to protect against spills and/or leaks. Vapors from the storage tanks would pass through a carbon bed system before being vented to atmosphere.

• **Wastewater Treating**. Water that would not be internally recycled back into the process for reuse or discharged to the sewer would be treated and reused in the Biorefinery. The primary source of this water would be the blow down from the syngas scrubbing system.

• **Storm Water Retention Pond**. A retention pond would be designed and built to retain run-off water equivalent to a 25-year storm. The water would be retained and tested prior to discharge through a treatment device into the TRI Center storm water collection system which provides capacity to retain the equivalent of a 100-year storm.

### 2.2.1.2 Construction

#### Facility Construction

Conventional construction materials (e.g., steel, lumber, miscellaneous small parts, concrete, etc.) and construction equipment (e.g., graders, backhoes, cranes) would be used in constructing the Biorefinery. Construction materials and equipment would be delivered to the Biorefinery site via truck or rail. The Biorefinery would be constructed in one phase over 16 months, with additional time needed for mobilization and commissioning. Construction would be expected to commence late in the fourth quarter of 2014 and the Biorefinery would be expected to reach commercial operation early in the third quarter of 2016.

#### Construction Materials

Construction materials (e.g., metal, lumber, miscellaneous small parts, concrete, etc.) for buildings would be purchased by the local construction contractors from suppliers in the area of the Biorefinery. Deliveries to the site would be by truck using existing surface roads.
Construction Water

Construction water for use in dust control, soil compaction, etc., would be supplied from the TRI Center’s existing water supply system installed adjacent to the site in the alignment to Peru Drive. This water would be used for dust control, compaction, and temporary construction activities, (e.g., filling water lines, flushing water lines and portable toilet trailers, etc.). The construction contractor would provide the required water lines to connect to an approved backflow preventer and hydrant meter to the water supply. TRI General Improvement District (TRIGID) would read the meter and bill Sierra BioFuels for actual water consumption during construction. Although two water trucks would be used at the Biorefinery site, it is estimated that approximately 1.7 million gallons of water would be consumed over the 52-week construction period, equivalent to one 5,500-gallon water truck load each construction day. In addition, minor volumes of water (anticipated to be less than 50,000 gallons) would be used for hydrostatic testing of tanks and piping but would be re-used several times before discharge to the evaporation pond. Potable water for construction personnel would come either from the TRIGID existing potable water system in the Peru Drive alignment or from local area suppliers of bottled drinking water.

Sanitation wastewater would be discharged to the TRI Center sanitary sewer system. Construction wastewater would be contained on-site within a retention basin. Water in the retention basin would be left to evaporate or, if needed, tested and released to the TRI Center storm water system.

2.2.1.3 Transportation

Construction

The construction of the Biorefinery is planned to take place over a period of 16 months, and include a series of activities from site preparation with major earth moving equipment, through excavation, installation of concrete foundations, installation of utilities, hauling and lifting major unit equipment pieces, through cleaning, painting, and landscaping. A variety of non-road construction equipment would be used at various points of the construction, including air compressors, dozers, cranes, trucks, forklifts, pumps, and packers. A complete listing of the types of equipment and their associated emission factors, hours of operation, and total emissions can be found in Appendix B to this document.

Operation

During operation of the Biorefinery, existing roadways would provide the primary access to the Biorefinery site. Adequate transportation infrastructure (e.g., access roads, railroad links) has been constructed as part of the TRI Center development. Streets within the TRI Center are designed and constructed to carry traffic associated with the I-2 Heavy Industrial zoning and would be able to handle traffic increases resulting from the Biorefinery’s daily operations. Access to the Biorefinery site would be via U.S. Interstate 80 (I-80) and USA Parkway. USA Parkway provides access to Peru Drive, approximately 4 roadway miles off of I-80. Peru Drive provides street access directly to the site.

In addition to road access the TRI Center is served by both Union Pacific (UP) and Burlington Northern Santa Fe (BNSF) rail service providers. UP owns the main “east-west” line that traverses the State of Nevada along the I-80 corridor. BNSF has haul rights on the UP line. The Biorefinery has development rights to interconnect to the TRI Center railroad spur on the northern boundary of the site as a means to transport its SPK fuel to its market.

The SPK fuel would be shipped from the Biorefinery by tanker trucks with approximately 8,000-gallon capacity per truckload. It would be possible that rail tank cars could be used in the future, as a rail exists adjacent to the site, but there are no plans to build a rail spur for the shipment of SPK fuel at this time.

Baled feedstock would be delivered to the site by flatbed trucks with approximately 26 bales per truckload. Approximately 770 tons of feedstock would be delivered to the Biorefinery daily, 5 days per week. This equates to 20 truckloads each day. The bales would be stored outside on a concrete pad sized to accommodate 2,300 tons of baled feedstock, equal to approximately 4 days of feedstock feed to...
the Biorefinery. All unloading and movement of MSW bales would be by forklift. Feedstock would be composed of the organic component of MSW derived from the residual materials remaining after recycling operations. Feedstock includes paper and paperboard, yard trimmings, food scraps, wood, plastics, containers and packaging (such as milk cartons and plastic wrap), and durable (such as furniture) and non-durable goods (such as paper and clothing). The Feedstock would be non-hazardous and would not present a risk to human health.

Assuming the Biorefinery would be staffed using a rotating 12-hour shift rotation, up to 19 vehicles associated with about 32 full time employees employed to work at the Biorefinery at any given time would be anticipated. The Biorefinery would have one to two maintenance vehicles (such as a ¾-ton pickup truck) that would be used to pick up and deliver maintenance supplies from local suppliers. There would likely be a few commercial deliveries per day (e.g., UPS, Fed-Ex, or truck common carrier). Approximately five trucks per day also would deliver supplies to the Biorefinery (such as industrial chemicals) and would transport ash, metal, or other residuals away from the Biorefinery. Table 2-1 summarizes the estimated maximum total daily trips.

Although the Biorefinery would not usually be open to the public, it would likely attract visitors due to the state-of-the-art nature of the technology. Visitors may average one or two groups per week. All parking would be in the on-site parking lots. There would be a small parking lot outside the security fence for visitors and some employees, but most parking would be within the security fence.

### Table 2-1 Biorefinery – Estimated Maximum Total Daily Trips

<table>
<thead>
<tr>
<th>Traffic Source</th>
<th>Maximum Daily Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feedstock Deliveries</td>
<td>20</td>
</tr>
<tr>
<td>Product Shipment</td>
<td>4</td>
</tr>
<tr>
<td>Ash Disposal</td>
<td>6</td>
</tr>
<tr>
<td>Employees*</td>
<td>19</td>
</tr>
<tr>
<td>Commercial and Supply Deliveries</td>
<td>10</td>
</tr>
<tr>
<td>Other (including waste hauling, maintenance vehicles and visitors)</td>
<td>23</td>
</tr>
<tr>
<td><strong>Estimated Maximum Total Daily Trips</strong></td>
<td><strong>82</strong></td>
</tr>
<tr>
<td><strong>New Round Trips per Day</strong></td>
<td><strong>164</strong></td>
</tr>
</tbody>
</table>

* Includes two shifts per day, plus administrative staff.

During routine operations at the Biorefinery site, all vehicles would use a one-way traffic circulation pattern when accessing the Biorefinery and its internal access roads. Alternate traffic patterns may be used during maintenance turn-around at the direction of the Biorefinery’s management.

All vehicles accessing the Biorefinery’s internal access roads to offload industrial materials or load industrial waste and SPK fuel would use a one-way traffic circulation pattern in a clockwise direction. Vehicles would exit the Biorefinery to Peru Drive using the main plant entrance.

### 2.2.1.4 Operation and Maintenance

#### Process Details

This section details the process that would be employed during operation of the Biorefinery. A Site Operating Plan (SOP) would be developed prior to startup of the Biorefinery to provide operations staff with appropriate training on the equipment, processes and systems.
The Biorefinery would receive and process approximately 200,000 tons of non-hazardous baled feedstock each year from the Feedstock Processing Facility. The Biorefinery would convert the feedstock to produce a permitted maximum of 12.3 million gallons of neat SPK fuel annually. The Biorefinery would operate 24 hours a day, 365 days per year. As presently designed, the Biorefinery would have an estimated operational life of 20 to 25 years.

**Feedstock Storage and Processing**

The feedstock would be prepared offsite at the Feedstock Processing Facility located approximately 15 roadway miles from the Biorefinery, adjacent to the Lockwood Regional Landfill (see Section 2.2.2). The prepared feedstock would be packaged into approximately 1.5-ton polyethylene wrapped bales (each measuring 65 x 43 x 43 inches). The baled feedstock would be transported to the Biorefinery on flatbed trucks with approximately 26 bales per truckload. Approximately 770 tons of prepared MSW feedstock would be delivered to the Biorefinery daily, 5 days per week. This equates to 20 truckloads each day.

At the Biorefinery, the feedstock bales would be stored outside on a concrete pad sized to accommodate approximately 2,300 tons of feedstock, equal to approximately 4 days of feed to the Biorefinery. All unloading and movement of feedstock bales would be by forklift.

MSW bales would be fed to the steam reforming gasifier feeder system using a system of conveyors and shredders. The shredders are designed to shred the baled MSW to a one-cubic-inch and smaller size to meet the requirements of the gasification process. A magnet removes any ferrous metal from the feedstock as it drops into the feedstock receiving hopper. The design rate for the gasifier is 550 tons of feedstock per day.

**Renewable Biofuel Production Process**

Sierra BioFuels would deploy three technologies that, when combined with existing commercial systems, would convert MSW feedstock to SPK fuel. The prepared feedstock would be gasified in a two-stage steam reforming gasification process. This process provides an efficient method of creating a syngas, which consists mainly of H₂, CO₂, and CO. The syngas would then be catalytically converted using a proprietary catalyst, into three intermediate FT products: Heavy FT Liquids (HFTL) product, Medium FT Liquids (MFTL) product and Light FT Liquids (LFTL) product, commonly called naphtha. The naphtha would be recycled to the partial oxidation hydrocarbon reforming (POx) unit with remaining tail gas to be reformed to H₂ and CO. In the last step, hydrotreating, hydrocracking and hydroisomerization upgrading steps are used to upgrade the combined HFTL and MFTL product into SPK fuel.

The following is a general description of the major process steps within the Biorefinery process:

**Steam Reforming Gasification Process**

The shredded feedstock would be introduced into the steam reformer through four independent plug screw feeders that increase the biomass pressure/density and provide a gas tight seal. The Steam Reformer would be a fluidized bed design, utilizing superheated steam as the fluidizing medium. Proprietary pulse combustion heaters maintain the reformer bed temperature and provide the endothermic energy required for the gasification process. The pulse combustors flue gas would be sent to a utility boiler to recover the waste heat by generating high pressure steam for use in the Biorefinery.

During the gasification process the feedstock rapidly heats up upon entry into the reformer vessel and almost immediately undergoes drying and pyrolysis. The remaining char would then react with the superheated steam. The pyrolysis products would undergo water-gas reactions and, together with simultaneous steam reforming of the char, result in a syngas primarily made up of H₂ and CO, with some hydrocarbons.
The syngas from the steam reformer gasifier would be fed into a POx unit to maximize the H₂ and CO content of the syngas by converting any remaining hydrocarbons to syngas. In addition, several process streams from the FT GTL process and hydroprocessing/fractionation upgrading unit would be recycled to the POx unit for reconversion to syngas. The ash that would be produced in the gasification and POx units would be recovered and cooled, and is currently anticipated to be a salable co-product. It would contain non-leachable environmentally stable material and could possibly be used in a number of products such as construction materials or, if necessary, disposed of in accordance with applicable local, state, and federal regulations in a non-hazardous classified landfill. The syngas exiting the POx unit would be routed to a HRSG. The HRSG cools the syngas and generates high pressure steam.

**Syngas Clean-Up and Compression**

Syngas from the steam reforming gasification process would next be compressed and ducted to the syngas clean-up process to remove contaminants that can potentially damage downstream equipment and/or affect the FT synthesis catalyst performance. The syngas clean-up would be composed of several different processes. In the first process, a venturi scrubber would capture and remove any entrained particulates. The syngas would then be sent through an amine system to capture and remove sulfur and CO₂. Next the syngas enters the secondary gas clean section composed of layered guard beds to polish sulfur to ppb levels and to remove mercury, mercaptans and arsine contaminants.

Included in the syngas clean-up system would be a water gas shift reactor to adjust the syngas H₂/CO to the ratio required for the FT process and a H₂ recovery membrane unit to harvest H₂ required for the hydroprocessing/fractionating upgrading unit.

**Fischer-Tropsch Gas-to-Liquid Stage**

The syngas from the gas clean-up section would now be at the required purity and composition for the FT process. In the FT process, the H₂ and CO in the syngas reacts to form long chain paraffinic liquid hydrocarbons as it passes through the catalyst filled FT reactors. The hydroprocessing reactions include saturation of the alcohols and olefins, isomerization/hydrocracking of the alkanes and long paraffinic hydrocarbon chains. The liquid fraction from the reactor contains the HFTL product, which would be filtered and sent to the HFTL intermediate storage tank. The gaseous fraction would be further processed in series through two additional separation and condenser stages to produce MFTL product and LFTL product. The MFTL would be transferred to an intermediate product storage tanks, and the LFTL would be recycled back to the POx unit. Additionally, any syngas that would not be converted in the reactor may be used as tail gas in the pulse combustion heaters, utility boiler or recycled to the POx Unit. Steam jackets on the FT reactors provide cooling to the exothermic FT reactions by generating steam for use within the Biorefinery. The syngas supply lines and FT lines would be provided with a high pressure N₂ purge (from a dedicated N₂ generating station) for emergency shutdown procedures.

**Hydroprocessing/Fractionating Upgrading**

To upgrade the FT liquids to a finished SPK fuel, the MFTL and HFTL streams would be pumped to a FT liquids upgrading process. The upgrading process utilizes a hydrocracker unit (HCU) and fractionator to convert the FT liquids to SPK fuel. The HCU is a high temperature/high pressure catalytic process that upgrades the HFTL and MFTL streams into an SPK product. The hydroprocessing reactions include saturation of the alcohols and olefins, isomerization/hydrocracking of the alkanes and long paraffinic hydrocarbon chains. Purified hydrogen from the HRU provides the necessary hydrogen for the HCU.

HCU product would be sent to a fractionator for separation and recovery of SPK product. The fractionator light ends, naphtha, and non-condensable off-gas would be recycled back to the POx unit to be re-gasified. The fractionator heavy fraction would be recycled back to the HCU for additional processing. The fractionator SPK product would be routed to storage for final testing and distribution to
customers. The final SPK product will meet the ASTM D7566, Standard Specification for Aviation Turbine Fuel Containing Synthesized Hydrocarbons.

Sierra BioFuels’ SPK fuel can be blended into a final fuel blend product to meet a variety of renewable biofuel products as indicated in Table 2-2 below:

<table>
<thead>
<tr>
<th>Product</th>
<th>Fuel Type</th>
<th>ASTM/Specification</th>
<th>Drop-in Fuel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synthesized Paraffinic Kerosene (SPK Fuel)</td>
<td>Jet-A</td>
<td>ASTM D1655</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>JP-5</td>
<td>MIL-DTL-5624V</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>JP-8</td>
<td>MIL-DTL-83133H</td>
<td>✓</td>
</tr>
</tbody>
</table>

Operations Process Water

Potable quality water would be supplied by the TRIGID. The TRIGID has been created to own, maintain, and operate the community water system to customers in the TRI Center. TRIGID’s water resources come from groundwater approved by existing state permits and pumped from wells in the TRI Center. TRIGID constructs additional wells, tanks, and distribution lines as further development occurs in the TRI Center.

The Biorefinery would be designed for a maximum consumptive water rate of 101.3 gpm (gpm) of which, nominally 100 gpm would be utilized in the process units. The remainder of the water demand (approximately 1.3 gpm) would be used for domestic water use (e.g., sanitary services), dust suppression, and miscellaneous maintenance activities. The water supply would enter the Biorefinery site then branch off directly to the firewater system and then to a plant water main and into a 600,000-gallon capacity on-site storage water tank. Toward the end of the construction activities, the water tank would be tested for structural integrity. Clean water supplied by TRI Center would be used to fill the tank. Any water that would be drained from the water processing/cleaning system would collect in the site storm water retention basin and either evaporated or, if necessary, it would be tested and if deemed acceptable discharged.

A majority of the water has been secured through a one-time purchase of 155 acre-feet per annum of water for use on the site. The TRI Center has represented and warranted that it and TRIGID have sufficient uncommitted reserves of non-potable water and has issued a “will serve” letter to Sierra BioFuels. Sierra BioFuels and TRIGID acknowledge that to the extent possible, water needs would be met through the use of non-potable or reclaimed water if or when it becomes available if it meets the water specifications in Sierra BioFuels’ water purchase agreement. The “will serve” letter also includes an additional 8.39 acre-feet of potable water per annum, i.e., an additional 0.5 acre-feet per annum per acre of potable water that came with the purchase of the land (Griffith 2010). For domestic water use (not including fire flow and fire demand), TRIGID would provide the Biorefinery with approximately 16.7 gpm of potable water at 40 pounds per square inch (psi), with 500 gallons per day of storage, with a peaking factor of 2. TRIGID also would furnish water for fire protection with a minimum fire water flow from hydrants of 3,000 gpm for 3 hours. The “will serve” letters are provided in Appendix A.

Labor and Operations Hours

The Biorefinery would operate 24 hours per day, 7 days per week. The total number of employees and shift schedules are being developed as the design progresses and would be finalized when construction is completed. It would be anticipated that approximately 32 full time employees (scheduled on a 24/7 basis) would be required during operations. Facility operators would be on-site during each shift.
with on-site management personnel provided for all site operations associated with the facilities. The level of employment at the site would be established by the basic business volume and would be sufficient to comply with the requirements of the relevant NDEP rules and regulations. Operations personnel would attend training classes in health and safety, environmental compliance, operations, maintenance, and equipment process safety. Roles and responsibilities of the Biorefinery’s key personnel are provided in Table 2-3 below.

Table 2-3 Biorefinery – Staff Roles and Responsibilities

<table>
<thead>
<tr>
<th>Position</th>
<th>Roles and Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biorefinery Plant Manager</td>
<td>During Engineering, Procurement and Construction (EP&amp;C) Phase:</td>
</tr>
<tr>
<td></td>
<td>• Assist in development of policies and procedures for training during commissioning, start-up, and eventual operations.</td>
</tr>
<tr>
<td></td>
<td>During the Operational Phase:</td>
</tr>
<tr>
<td></td>
<td>• Responsible for the daily supervision of all Operations and Maintenance (O&amp;M) personnel.</td>
</tr>
<tr>
<td></td>
<td>• Oversight to ensure a safe, environmentally responsible, and economical operation.</td>
</tr>
<tr>
<td></td>
<td>• Responsible for annual O&amp;M Plan, budget and monitoring performance.</td>
</tr>
<tr>
<td></td>
<td>• Oversee development and upkeep of an Operating Management System.</td>
</tr>
<tr>
<td></td>
<td>• Direct preparation and revisions to O&amp;M policies and procedures, including personnel training and development.</td>
</tr>
<tr>
<td></td>
<td>• Interface with the community and government agencies as needed for the proper operation of the Biorefinery.</td>
</tr>
<tr>
<td>Operations Supervisor</td>
<td>During EP&amp;C Phase:</td>
</tr>
<tr>
<td></td>
<td>• Manage the engineering, procurement and construction effort.</td>
</tr>
<tr>
<td></td>
<td>• Oversee preparation of operating manuals.</td>
</tr>
<tr>
<td></td>
<td>• Participate in recruitment and hiring of the O&amp;M staff and manage subsequent training in preparation of commission and operation.</td>
</tr>
<tr>
<td></td>
<td>• Assist the Construction contractor with start-up activities.</td>
</tr>
<tr>
<td></td>
<td>During the Operational Phase:</td>
</tr>
<tr>
<td></td>
<td>• Manage operations personnel in providing a safe, environmentally sound and cost-efficient operation.</td>
</tr>
<tr>
<td></td>
<td>• Work with the Maintenance Manager and Technical Manager to ensure equipment is maintained in proper working order.</td>
</tr>
<tr>
<td>Plant Operators</td>
<td>During the Operational Phase:</td>
</tr>
<tr>
<td></td>
<td>• Responsible for conveying feedstock from storage in into the gasification system.</td>
</tr>
<tr>
<td></td>
<td>• Would be trained in site safety procedures, recordkeeping requirements, and to visually check for prohibited wastes.</td>
</tr>
</tbody>
</table>
Table 2-3  Biorefinery – Staff Roles and Responsibilities

<table>
<thead>
<tr>
<th>Position</th>
<th>Roles and Responsibilities</th>
</tr>
</thead>
</table>
| **Maintenance Manager**      | During the EP&C Phase:  
• Responsible for review of the design and layout of the Biorefinery equipment to ensure safe and maintainable operation.  
• Participate in recruitment and hiring of the O&M staff and manage subsequent training in preparation of commission and operation.  
• Participate in recruitment and hiring of the O&M staff and manage subsequent training in preparation of commission and operation.  
During the Operational Phase:  
• Responsible for planning and execution of maintenance.  
• Oversee preparation and upkeep of maintenance and repair manuals.  
• Responsible for maintenance and repair related quality assurance/quality control program. |
| **Sorters / Quality Control Staff** | During the EP&C Phase:  
• Resolve issues that would arise as detail design work is finalized.  
During the Operational Phase:  
• Lead the engineering, inspection, and environmental, health and safety teams.  
• Provide technical support to the operations and maintenance departments.  
• Maintain and update engineering documents and communicate changes with personnel.  
• Review and recommend process and equipment modifications. |

**Facility Security**

Public access would be controlled to minimize unauthorized vehicular traffic and public exposure to hazards associated with facility operations. There are only two locations for ingress and egress to the Biorefinery, each controlled by a gate. The main employee entrance would be equipped with an employee cardkey entry system. Only vehicles authorized by the Operation’s staff would be allowed to have access beyond the facility proper. Signage and/or on-site personnel would provide directions to the unloading and loading areas.

**Fire Protection**

The SCFD provides firefighters and emergency response personnel as first responders to an accident, emergency, and other incidents requiring medical attention in Storey County.

The Biorefinery’s SOP will include, an emergency response plan (ERP) and a Fire and Life Safety Plan to protect personnel, property, and mitigate emergencies and any environmental effect. The Fire and Life Safety Plan must be submitted to the SCFD for review prior to the issuance of building permits.

The following steps would be taken regularly at the Biorefinery by designated personnel to prevent fires:

• Operators would be alert for signs of burning waste such as smoke, steam, or heat being released from baled feedstock.
• Equipment used to move feedstock waste would be routinely cleaned through the use of high pressure water or steam cleaners. The high pressure water or steam cleaning would remove combustible and caked material that could cause equipment overheating and increase fire potential.

• Smoking would not be permitted within the facilities. Smoking would only be permitted in designated smoking areas.

The Biorefinery personnel would take the following steps if a fire is discovered:

• Contact the SCFD by calling 911. The SCFD has equipment and other assets that can respond rapidly to fires at the sites.

• Alert other facility personnel.

• Assess the extent of the fire, possibilities for the fire to spread, and alternatives for extinguishing the fire.

• If it appears that the fire can be safely fought with available firefighting equipment until arrival of the SCFD, attempts to contain or extinguish the fire should be used.

• Upon arrival of the SCFD personnel, direct them to the fire and provide assistance as appropriate.

• Do not attempt to fight the fire alone and without adequate personal protective equipment.

• Establish familiarity with the use and limitations of firefighting equipment available on-site.

Methods for fighting fires would be determined based on the type of fire discovered:

• Feedstock Fire. Firefighting methods for burning feedstock include water spray, smothering the feedstock with a backhoe bucket or separating the burning material from other feedstock. Small fires also can be controlled with hand-held extinguishers. If a fire occurs on a vehicle or piece of equipment, the equipment operator should attempt to bring the vehicle or equipment to a safe stop. If safety of personnel allows, the vehicle would be parked away from feedstock supplies and other vehicles. The engine would then be shut off and the brake engaged to prevent movement of the vehicle or piece of equipment. The feedstock storage area would be equipped with fixed fire monitors to allow rapid application of a large quantity of water in a very efficient discharge pattern to control and extinguish a fire quickly.

• Hydrocarbon Fire. Hydrocarbon fires cannot be controlled effectively with water; instead, they must be smothered with the careful application of alcohol resistant foams. An adequate supply of alcohol-resistant aqueous film forming foam and application equipment would be maintained by the SCFD at the SCFD’s Station 5 located in the TRI Center.

Fire extinguishers would be maintained on all delivery and transport vehicles entering the facilities and on operation equipment in the enclosed feedstock storage area. All fire suppression equipment would be fully charged and ready for use. Inspection and recharging would be performed following each use. The fire suppression equipment would be inspected on a regular basis. A qualified service company would perform these inspections and all extinguishers would display a current inspection tag. Records would be maintained indicating equipment inspected, date of inspection, and name of the person conducting the inspection. The intervals for inspection would be as follows:

• Portable Fire Extinguishers. Weekly visual inspection, annual inspection, and certification by an approved service company.

• Hose Stations. Weekly visual inspection, annual inspection, and certification by an approved service company.
• **Automatic Sprinkler Systems.** Annual inspection and certification by an approved agency or service provider.

• **Emergency Firewater Pump.** Weekly testing.

Training of on-site personnel in firefighting techniques, fire prevention, response, and the fire protection aspects of the SOP would be provided by established professionals as part of initial employee training and on an annual basis. Personnel would be familiar with the use and limitations of firefighting equipment available on-site. Records of this training would be included in the operating record for the facilities. When the detailed design of the Biorefinery equipment has been completed, Sierra BioFuels will review requirements under all applicable federal, state and local regulations, including those under EPCRA, and amend the Biorefinery’s SOP, as necessary.

**Industrial Materials**

Industrial materials and waste used or produced by the Biorefinery and the storage methods and quantities stored on site are shown in **Table 2-4**. Initial chemical supplies would be purchased based upon usage recommendations from the equipment suppliers. The Biorefinery would purchase and store chemicals in two size categories, specialty chemicals and bulk chemicals. The specialty chemicals would be purchased in small quantities (i.e., less than 100 pounds) and stored in their original packaging in secured cabinets. Bulk chemicals would be purchased in large quantities and stored in aboveground storage tanks, totes, or bins designed for holding such chemicals. The expected industrial chemicals at the Biorefinery include:

- **Boiler Water Treatment Chemicals.** Boiler water treatment chemicals would be purchased in special, returnable containers from the company providing the water treatment services.

- **Catalysts.** The catalyst would be purchased in drums. Spare catalysts would not typically be stored on-site since catalyst replacement would be scheduled in advance. Replacement catalysts would be ordered from the catalyst supplier as needed.

- **Lube Oil.** Lube oil would be supplied in drums and stored.

- **Oxygen and Nitrogen.** The vacuum pressure swing ASU will provide gaseous O₂ to the Biorefinery at a minimum purity of 93 mol%. The O₂ is used in the steam reforming gasification processes. High purity N₂ is generated in a separate pressure swing absorption package in the ASU at 99.5 mol%. The N₂ is distributed throughout the Biorefinery via a distribution header for use as an inert gas.

- **Diesel Fuel.** Diesel fuel would be used by the Biorefinery’s operation equipment, the emergency electric generator, and the emergency firewater pump. Up to 3.500 gallons of diesel fuel would be stored in three aboveground storage tanks at the Biorefinery.

The SPK fuel would be transported off-site by truck. The inert material and process residue also produced would be transported via truck to an appropriate disposal site. The gasifier tramp material (e.g., ferrous and non-ferrous metals) would be stored in removable on-site containers until a sufficient quantity is developed to warrant transportation to a recycler and a replacement container would be put in place.

**Table 2-4 Industrial Materials and Waste at the Biorefinery**

<table>
<thead>
<tr>
<th>Reference No.</th>
<th>Inventory Item</th>
<th>Quantity¹</th>
<th>Type of Container</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Feedstock</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Processed Feedstock</td>
<td>2,300 tons</td>
<td>Shrink Wrap Bales</td>
</tr>
</tbody>
</table>

² Processed Feedstock: 2,300 tons

¹ Quantity: 2,300 tons

² Type of Container: Shrink Wrap Bales
<table>
<thead>
<tr>
<th>Reference No.</th>
<th>Inventory Item</th>
<th>Quantity¹</th>
<th>Type of Container</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>SPK Jet Product Storage Tank</td>
<td>360,000 gallons</td>
<td>Tank</td>
</tr>
<tr>
<td>3</td>
<td>Off Spec Storage Tank</td>
<td>30,000 gallons</td>
<td>Tank</td>
</tr>
<tr>
<td>4</td>
<td>Sulfur Removal Unit (SRU) Process Solution</td>
<td>90,000 gallons</td>
<td>Process Tank</td>
</tr>
<tr>
<td>5</td>
<td>SRU Solution</td>
<td>1,000 gallons</td>
<td>Tank</td>
</tr>
<tr>
<td>6</td>
<td>SRU Potassium Hydroxide Solution</td>
<td>2,500 gallons</td>
<td>Tank</td>
</tr>
<tr>
<td>7</td>
<td>SRU Chemicals</td>
<td>3 totes</td>
<td>Totes (550 gal)</td>
</tr>
<tr>
<td>8</td>
<td>COS Guard Bed Media</td>
<td>495 ft³</td>
<td>Pressure Vessel</td>
</tr>
<tr>
<td>9</td>
<td>Mercury Guard Bed</td>
<td>375 ft³</td>
<td>Pressure Vessel</td>
</tr>
<tr>
<td>10</td>
<td>Sulphur Guard Bed</td>
<td>519 ft³</td>
<td>Pressure Vessel</td>
</tr>
<tr>
<td>11</td>
<td>Arsine Guard Bed</td>
<td>113 ft³</td>
<td>Pressure Vessel</td>
</tr>
<tr>
<td>12</td>
<td>F-T Reactor (2) Catalyst</td>
<td>2,000 ft³</td>
<td>Pressure Vessel</td>
</tr>
<tr>
<td>13</td>
<td>Particulate Guard Bed</td>
<td>760 ft³</td>
<td>Pressure Vessel</td>
</tr>
<tr>
<td>14</td>
<td>Water Gas Shift Reactor Catalyst</td>
<td>452 ft³</td>
<td>Pressure Vessel</td>
</tr>
<tr>
<td>15</td>
<td>Hydrotreater Reactor Catalyst</td>
<td>250 ft³</td>
<td>Pressure Vessel</td>
</tr>
<tr>
<td>16</td>
<td>Hydrocracking Reactor Catalyst</td>
<td>450 ft³</td>
<td>Pressure Vessel</td>
</tr>
<tr>
<td>17</td>
<td>Amine Solution</td>
<td>20,000 gallons</td>
<td>Pressure Vessels</td>
</tr>
<tr>
<td>18</td>
<td>Amine Storage</td>
<td>2 totes</td>
<td>Totes (550 gal)</td>
</tr>
<tr>
<td>19</td>
<td>Emergency Generator Diesel Fuel</td>
<td>2,000 gallons</td>
<td>Tank</td>
</tr>
<tr>
<td>20</td>
<td>Firewater Diesel Fuel</td>
<td>2,000 gallons</td>
<td>Tank</td>
</tr>
<tr>
<td>21</td>
<td>Cooling Tower Chemicals</td>
<td>6 totes</td>
<td>Totes (550 gal)</td>
</tr>
<tr>
<td>22</td>
<td>BFW Treatment Chemicals</td>
<td>10 totes</td>
<td>Totes (550 gal)</td>
</tr>
<tr>
<td>23</td>
<td>ASU VSA Molecular Sieve (4)</td>
<td>18,000 ft³</td>
<td>Pressure Vessel</td>
</tr>
<tr>
<td>24</td>
<td>N₂ PSA Molecular Sieve (2)</td>
<td>8,000 ft³</td>
<td>Pressure Vessel</td>
</tr>
<tr>
<td>25</td>
<td>Mobile Equipment Diesel Fuel</td>
<td>2,000 gallons</td>
<td>Tank</td>
</tr>
<tr>
<td>26</td>
<td>Lube Oil System</td>
<td>1000 gallons</td>
<td>Tank</td>
</tr>
<tr>
<td>27</td>
<td>Lube Oil Storage</td>
<td>10 drums</td>
<td>Drum</td>
</tr>
<tr>
<td>28</td>
<td>Hydraulic Oil System</td>
<td>2,000 gallons</td>
<td>Tank</td>
</tr>
<tr>
<td>29</td>
<td>Hydraulic Oil Storage</td>
<td>10 drums</td>
<td>Drum</td>
</tr>
<tr>
<td>30</td>
<td>Liquid N₂</td>
<td>30,000 gallons</td>
<td>Tank</td>
</tr>
<tr>
<td>31</td>
<td>Liquid Oxygen</td>
<td>80,000 gallons</td>
<td>Tank</td>
</tr>
<tr>
<td>32</td>
<td>Gasifier Bed Media</td>
<td>120 tons</td>
<td>Pressure Vessel</td>
</tr>
</tbody>
</table>
Table 2-4  Industrial Materials and Waste at the Biorefinery

<table>
<thead>
<tr>
<th>Reference No.</th>
<th>Inventory Item</th>
<th>Quantity1</th>
<th>Type of Container</th>
</tr>
</thead>
<tbody>
<tr>
<td>34</td>
<td>Bed Media Storage</td>
<td>250 tons</td>
<td>Hopper</td>
</tr>
<tr>
<td>36</td>
<td>Caustic</td>
<td>24,000</td>
<td>Tank</td>
</tr>
<tr>
<td>37</td>
<td>Anti-Foam (amine system)</td>
<td>2 totes</td>
<td>Totes (550 gal)</td>
</tr>
<tr>
<td>38</td>
<td>Selective Catalytic Reduction Catalyst</td>
<td>5,000 gallons</td>
<td>Boiler Stack</td>
</tr>
<tr>
<td>39</td>
<td>Aqueous Ammonia</td>
<td>10,000 gallons</td>
<td>Pressurized Tank</td>
</tr>
<tr>
<td>40</td>
<td>Anti-Oxidant (product spec)</td>
<td>2 totes</td>
<td>Totes (550 gal)</td>
</tr>
<tr>
<td>41</td>
<td>Conductivity Improver (product spec)</td>
<td>2 totes</td>
<td>Totes (550 gal)</td>
</tr>
<tr>
<td>42</td>
<td>Waste Water Treatment Chemicals</td>
<td>4 totes</td>
<td>Totes (550 gal)</td>
</tr>
<tr>
<td>43</td>
<td>Recovered Ferrous Metal</td>
<td>20 tons</td>
<td>Movable Container</td>
</tr>
<tr>
<td>44</td>
<td>Sulfur Cake</td>
<td>20 Tons</td>
<td>Movable Container</td>
</tr>
<tr>
<td>45</td>
<td>Fly Ash</td>
<td>40 tons</td>
<td>Movable Container</td>
</tr>
<tr>
<td>46</td>
<td>Bottom Ash</td>
<td>40 tons</td>
<td>Movable Container</td>
</tr>
<tr>
<td>47</td>
<td>Gasifier Inert Material</td>
<td>40 tons</td>
<td>Movable Container</td>
</tr>
<tr>
<td>48</td>
<td>Waste Water Treatment Solids</td>
<td>40 tons</td>
<td>Movable Container</td>
</tr>
</tbody>
</table>

1 Data represent maximum quantities. Actual stored quantities would be equal or less than these quantities.

Industrial Wastes

No disposal of waste or process residuals would take place at the Biorefinery. The Biorefinery would generate industrial wastes (see Table 2-4 above) that would be continually produced by the process and those that would occur on a periodic basis, generally resulting from a change in catalysts or periodic maintenance work. The continually produced wastes would be taken off-site for disposal in an appropriate facility, including a licensed facility, if necessary. Sierra BioFuels would evaluate the markets for potential byproducts to determine if there would be a beneficial use, such as sulfur for agricultural uses or for construction materials or roadbeds; however, such possibilities have not yet been identified. Expected industrial wastes at the facilities are discussed below, unless otherwise indicated wastes are classified as non-hazardous:

- **Ferrous Metals (continuous).** Ferrous metals may be recovered from the feedstock prior to it being feed into the steam reformer gasification system. Suitable quantities would be stored on-site until recycled.

- **Sulfur (continuous).** Sulfur would be removed from the syngas in the syngas cleaning process. The sulfur would be in the form of a wet sulfur cake. It would be packaged in movable 20-ton containers and taken to an off-site facility for disposal.

- **Filtered Particulate Matter (Ash).** The syngas processing system filter removes particulate matter from the syngas prior the sulfur removal system. This material would be dry and expected to be composed largely of inert fine particulate materials, and it may contain trace amounts of metals. Upon being tested for toxicity the material would be either: 1) if found to be non-hazardous, it would be either put to a beneficial use (e.g., construction material) or sent to a landfill for
disposal; or 2) if it is a hazardous material, it would be sent for treatment and disposal at a licensed facility operated by U.S. Ecology, in Beatty, Nevada, or Grand View, Idaho.

- **Gasifier Inert Material (continuous)**. Ferrous and non-ferrous metals would be removed from the gasification system. Suitable quantities would be stored on-site until recycled.

- **Water Treating Salts (continuous)**. Salts may be produced as a result of condensation from the Biorefinery’s water treatment system. These would be dewatered and disposed of at an appropriately licensed disposal facility.

- **Spent Adsorbents and Catalysts (periodic)**. Spent adsorbents and catalysts would generally be replaced during periodic scheduled maintenance activities and plant shutdowns. The spent materials would be stored and tested prior to disposal. Some materials may have to be disposed of as a hazardous waste depending on the vendor material characteristics, which have not yet been identified.

### Wastewater Management

#### Sanitary Wastewater

The primary source of sanitary wastewater would be the restrooms, showers, and kitchen areas of the Biorefinery. Sanitary wastewater usually contains pathogenic microorganisms that dwell in the human intestinal tract. It also contains nutrients, which can stimulate the growth of aquatic plants and organic compounds that can produce malodorous gasses. All sanitary wastewater generated at the Biorefinery would be discharged directly to the TRI Center sanitary sewage system.

#### Process Wastewater

The Biorefinery’s process wastewater would be generated primarily from two sources: 1) composed of blowdown and condensate from the syngas scrubbing system; and 2) water produced by FT synthesis. The waters from the syngas scrubbing system generally have inorganic contaminants while the water from the FT section has organic contaminants. The process wastewater would be piped to the wastewater treatment system to be treated for recycle/re-use in the Biorefinery. The Biorefinery would have an on-site Zero Liquid Discharge (ZLD) water treatment plant. All water entering the wastewater treatment plant would be treated and returned to the Biorefinery for reuse, except a small amount which would be entrained in the non-hazardous waste material that is shipped off-site for disposal. The process streams feeding water to the wastewater treatment plant are identified in **Table 2-5**.

### Table 2-5  Process Streams to Wastewater Treatment Plant

<table>
<thead>
<tr>
<th>Syngas Scrubber</th>
<th>Sulfur Removal Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Cooler</td>
<td>Compressor Knockout Drum</td>
</tr>
<tr>
<td>FT Water</td>
<td>Cooling Tower Blowdown</td>
</tr>
</tbody>
</table>

The wastewater treatment system would utilize several treatment processes to treat and remove both organic and inorganic materials from the wastewater stream to maintain the water recycle to the Biorefinery. These would include: filtration, dissolved air floatation, decarbonization, hydrocarbon adsorption, anaerobic biological treatment and aerobic biological treatment that would remove suspended solids, trace hydrocarbons and dissolved CO₂. Solids removed from the wastewater treatment system would be collected and disposed off-site.
**Storm Water**

Federal law prohibits the introduction of storm water into sanitary sewerage systems. Roof drains, yard drains, and other surface water drains that manage only precipitation runoff would be routed to the storm water drainage system managed by the TRI Center. The facilities’ storm water drainage system would be designed in accordance with a grading and drainage plan approved by the Storey County Building Department.

The Biorefinery’s storm water runoff water would be collected and routed to the storm water retention basin which would be designed to retain runoff water equivalent to a 25-year storm. Water initially enters into a smaller segregated inlet section of the storm water basin. If the quantity of runoff water exceeds the capacity of the inlet basin, the water would overflow the inlet basin overflow weir into the main retention section of the basin. If the storm water basin capacity should be reached during an event such as a major rainstorm, runoff water gravity flows from the Biorefinery to the off-site TRIC Center retention pond through a series of storm water canals and weirs. The TRI Center storm water collection system provides capacity to retain the equivalent of a 100-year storm.

Two separate submittals are required for regulation of storm water. Prior to the commencement of construction, the Sierra BioFuels would be required to submit a NOI to the NDEP – Bureau of Water Pollution Control (BWPC) for coverage under the State of Nevada’s Storm Water General Permit NVR100000 for storm water discharges associated with large construction activities. A SWPPP would be completed and maintained on-site. Prior to the commencement of operation, Sierra BioFuels also would submit a NOI to the NDEP, for coverage under the State of Nevada’s General Permit for Storm Water Discharges Associated with Industrial Activities (General Permit NVR050000). The Sierra BioFuels would be required to have a SWPPP completed and maintained on-site in order to operate the Biorefinery.

**Spill Control**

All employees would be trained to respond to spills or leaks from tanks, vehicles, and equipment. Steps to be taken when there is a spill detected would include:

- Stop processing, loading and/or unloading, and halt vehicle movement, as necessary;
- Secure the area;
- Identify the source;
- Notify the supervisor/manager;
- Properly clean up the affected area; and
- Document the incident.

Clean-up/spill response equipment would be placed in designated areas and clearly marked. Spill response equipment would include:

- Absorbent materials;
- Shovels, brooms; and
- Personal protection equipment (e.g., coveralls, gloves, glasses, etc.).

The Biorefinery would have 16 aboveground storage tanks on site. The facility storage tanks would be designed and installed with secondary containment equivalent to 110% of the capacity of the tank(s), which will prevent any releases to the environment. For aboveground tanks and SPK fuel loading, the operation’s personnel would be required to:
• Conduct regular inspections to detect leaks and spills;
• Verify sound condition of containment structures;
• Label storage tanks with product name and potential health or safety hazards;
• Use spill and overfill protection when fueling vehicles;
• Not allow unattended fueling;
• Install safe-guards to prevent vehicles’ wash water from mixing with storm water;
• Clean up leaks and spills immediately; and
• Not allow process water and storm water to mix.

Environmental Control Design and Process Features
The design and process features of the Biorefinery that would minimize environmental impacts are discussed below.

Dust Control
Primary access roads are paved and on-site roadways would be paved, considerably reducing the potential for dust generation resulting from mud and dirt being tracked onto the roadway network. The Biorefinery’s internal roadways would be swept as necessary to minimize dust generation.

Vector Control
Vectors such as rodents, flies, and mosquitoes would be controlled by proper daily facility operations and housekeeping practices such as cleaning up spills, maintaining roadways, and washing of equipment. Insect and rodent bait would be used to control populations of these vectors. If necessary, a licensed professional would apply pesticides for control of vectors to ensure that proper chemicals are used and applied.

Windblown Material Control
Windblown material at the Biorefinery would be controlled through several methods, including proper unloading of feedstock, picking up litter, perimeter fences, and landscaping. Adequate staffing would be in place to ensure that these measures are taken. Personnel would police the Biorefinery, including perimeter fences, access roads, and the entrance gate, every operating day to pick up and return any windblown material to the Biorefinery, as necessary.

During transport, the Operator would take steps to ensure that flatbed trucks delivering baled feedstock to the Biorefinery effectively secure the load in order to prevent the escape of any part of the load by blowing or spilling during transport. On days when the facilities are in operation, the Operator would be responsible for cleanup of any feedstock spilled along and within the rights-of-way (ROWs) of the public access roads serving the Biorefinery. Maintenance activities would include a once per day cleanup of spilled feedstock.

Wildlife Nuisance Control
Sierra BioFuels would work with Nevada Division of Wildlife (NDOW) on wildlife attraction nuisance issues if wildlife nuisance becomes an issue at the site of the Biorefinery. Facility personnel would monitor the grounds for wildlife mortalities during construction and operation. Any wildlife mortalities would be reported to NDOW annually.

2.2.1.5 Decommissioning
A Closure Plan would be prepared for the Biorefinery and submitted to the Storey County Planning Department. Should it be necessary to close the Biorefinery, the following steps would be taken:
• When determined that the facility would no longer be needed or ceases operations, a written notice would be filed with the Storey County Planning Department 180 days prior to the date of closure.

• Within 30 days after receiving the last load of feedstock, the Biorefinery would be cleared of all remaining feedstock, industrial materials, industrial wastes, litter, and inoperable equipment in accordance with the Closure Plan.

• The site would be secured (i.e., padlocks on the access gates and all the doors of the buildings would be locked).

• All remaining feedstock stored, and/or processed at the Biorefinery would be transferred to a landfill.

• All SPK fuel and other organic compounds would be removed from the site and transferred to an authorized material dealer.

• All industrial wastes and waste residues would be removed from the site and transferred to an authorized disposal facility and/or material dealer.

• Mobile equipment (e.g., transfer trailers, wheel loaders, forklifts, etc.) would be moved to another site, sold, scrapped, or otherwise disposed of. Building components (e.g., lights, electrical systems, doors, etc.) would be left in place for future use and to keep the building secure.

• Operating records would be transferred to the Biorefinery’s owner and properly maintained.

• General cleanup of the site and buildings would be performed.

• A closure certification would be prepared by a registered professional engineer and submitted to the Storey County Planning Department for approval that the Biorefinery has been closed in accordance with the approved Closure Plan.

Upon determination that the Biorefinery would cease operation, a notice would be filed with the Storey County Planning Department that would outline the schedule for closure of the Biorefinery. The anticipated schedule and steps to be taken to close the Biorefinery are as follows:

• No later than 180 days prior to initiation of closure activities of the Biorefinery, Sierra BioFuels would provide written notification to the Storey County Planning Department of the intent to close the Biorefinery.

• Barriers or gates would be installed at access points following the closure date to prevent unauthorized entry into the Biorefinery. Padlocks would be installed on the gates and the building doors would be locked or padlocked.

• Closure activities at the Biorefinery would be completed (as described above) within 180 days following the initiation of closure activities.

• Within 10 days after completion of closure activities, a documented certification, signed by an independent registered professional engineer, would be submitted to the Storey County Planning Department. This certification would verify that final closure has been completed in accordance with this Closure Plan. This certification would include all applicable documentation necessary for certification of closure. Once approved, this certification would be placed in the Biorefinery’s operating record.

Since all materials would be removed from the site, there would be no requirement for a post-closure period. As part of the closure certification, the Biorefinery would request Storey County Planning Department confirmation that a post-closure period would not be needed. This request would include a documented certification by an independent professional engineer verifying that post-closure care maintenance would not be necessary in view of the closure procedures (e.g., removal of all materials from the site and the other closure steps as noted above) being implemented. In any event, the
Biorefinery would retain the right of entry and maintain all ROWs for the closed facility for a period of at least 5 years after completion of closure unless the Biorefinery would be put to some other use or divested to a third-party.

2.2.1.6 Permits, Approvals, and Authorizations
A status of permits, approvals and authorizations associated with the Biorefinery is provided in Table 1-3.

2.2.2 Feedstock Processing Facility
2.2.2.1 Facility Description
The Feedstock Processing Facility is being designed to process non-hazardous, MSW into feedstock. The Feedstock Processing Facility would be located on approximately 14.4 acres, in the industrial area near the community of Lockwood, Storey County, Nevada, adjacent to the Lockwood Regional Landfill located at 2401 Canyon Way, Storey County, as shown in Figure 3-1, in Chapter 3.0.

After processing the MSW at the Feedstock Processing Facility, the following three major categories of materials will be transported offsite:

- **Baled feedstock**: The baled MSW would be transported to the Biorefinery on flatbed trucks with approximately 26 bales per truckload. Approximately 770 tons of feedstock would be delivered to the Biorefinery daily, 5 days per week. This equates to 20 truckloads each day;
- **Recoverable material**: Recovered material, including but not limited to ferrous and nonferrous metals, cardboard, plastics, paper, and other recyclable materials would be recovered from the MSW and shipped to the commodities markets; and
- **Residual material**: Residual material not used as feedstock or recovered for recycling (concrete, dirt, fines, etc.) would be transported to and disposed of at the Lockwood Regional Landfill. A truck loading conveyor would load and distribute residual material into transfer trailers for shipment to the landfill.

A Site Plan of the Feedstock Processing Facility is provided in Figure 2-2. The Feedstock Processing Facility would be broken up into several areas:

- Scale;
- Trailer Tippers & Tipping Floor Management;
- Infeed Conveyors and Presort Station;
- Shredding, Screening, Air Separation, Recyclable Recovery, and Quality Control;
- Baling of Materials: Feedstock Production, Metals, and Recyclables;
- Loading of Baled Feedstock, Recovered Material, and Residual Materials; and
- Dust Collection System-wide.
Figure 2-2  Feedstock Processing Facility – Plot Plan
All inbound MSW would be weighed in at the Lockwood Regional Landfill scale house. Inbound MSW would be unloaded using tippers outside the building to discharge MSW onto the tipping floor. The MSW would be inspected and monitored by loader operators after tipping. MSW would be pushed by loaders into in-feed conveyors for processing. The processing equipment would separate materials by using mechanical and manual sorting techniques. An initial pre-sorting station would remove large items, cardboard, and improperly disposed hazardous materials. After pre-sorting, the system would shred, screen fine materials, and air separate dry and light materials for feedstock (e.g., wood waste, paper, clothes, and plastic materials) from wet and heavy materials (e.g., concrete, asphalt, inert and wet waste) which would be shipped out as Residual Materials. In addition, Recovered Materials (e.g., ferrous and nonferrous metals) would be sorted for the materials. Quality control and sorting stations would be designed throughout the Feedstock Processing Facility to maximize diversion, ensure feedstock quality, and limit Residue Material production. Feedstock would be baled and wrapped for shipment to the Biorefinery. Recovered Material would be loaded into roll-off boxes or baled for shipment to market. The Residual Materials would be loaded into transfer trailers for shipment to the landfill.

2.2.2.2 Construction

Facility Construction

Conventional construction materials (e.g., lumber, steel, miscellaneous small parts, concrete) and construction equipment (e.g., graders, backhoes, cranes, etc.) would be used in constructing the Feedstock Processing Facility. Construction materials and equipment would be delivered to the site via truck. The Feedstock Processing Facility would be constructed in one phase over 12 months, with additional time needed for commissioning and acceptance testing of the processing equipment. Construction would be expected to commence in the first quarter of 2015 and the Feedstock Processing Facility would be expected to reach commercial operation early in the second quarter of 2016.

Construction Materials

Construction materials for buildings would be purchased by the local construction contractors from suppliers in the area of the Feedstock Processing Facility. Deliveries to the site would be by truck using existing surface roads.

Construction Water

Construction water for use in dust control, soil compaction, etc., would be supplied by the construction contractor. This water would be used for dust control, compaction, and temporary construction activities, (e.g., filling water lines, flushing water lines and portable toilet trailers, etc.). The construction contractor would provide the required water lines to connect to an approved backflow preventer and hydrant meter to the water supply. Potable water for construction personnel would come from local area suppliers of bottled drinking water.

Sanitary waste would be treated in temporary toilets. The construction contractor would provide self-contained single-occupant toilet units of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar nonabsorbent material for use by all contractors and subcontractors on the site. The number of units should be adequate to provide safe sanitary service for all on-site contractor personnel, and should meet any and all applicable code requirements.

2.2.2.3 Transportation Infrastructure

Construction

The construction of the Feedstock Processing Facility would include a series of activities from site preparation with major earth moving equipment, through excavation, installation of concrete foundations, installation of utilities, hauling and lifting major unit equipment pieces, through cleaning, painting, and site regarding and landscaping. A variety of non-road construction equipment would be used at various
points of the construction, including air compressors, dozers, cranes, trucks, forklifts, pumps, and packers. A complete listing of the types of equipment and their associated emission factors, hours of operation, and total emissions can be found in Appendix C to this document.

Operations

Access to the Feedstock Processing Facility would be from Exit 23 of I-80 to the southern Frontage Road and then to Mustang Road, which leads to the gated entrance and private road of the Lockwood Regional Landfill. All roads are existing and currently paved. On-site access to the Feedstock Processing Facility would be provided by a 30 foot wide paved all-weather main entrance. All parking lots and internal roads of the Feedstock Processing Facility would be paved. Signage would provide direction to the public to the Feedstock Processing Facility’s administration building and visitor parking. Additional signage and on-site personnel within the Feedstock Processing Facility would provide direction to the transportation vehicles as they arrive at the main gate. Operations at the inbound MSW unloading area, including providing sufficient maneuvering room and guidance from the gate attendant, would be conducted in a manner that allows the prompt and efficient unloading of MSW.

Off-road access to the site is limited by the following:

- A minimum 8-foot fence (chain-link with slats or solid) encloses the site.
- Feedstock Processing Facility personnel enter through the main ingress and egress, to the northeast of the Lockwood Landfill scale house.
- An emergency alternative access road is planned to the southwest corner of the site.

The estimate of traffic levels to and from the Feedstock Processing Site is provided in Table 2-6, based on the total mass (tons per day) of inbound and shipped materials. Table 2-6 also provides the levels of existing traffic (trucks per day) to the landfill, which is the total inbound MSW (64 truck loads per day) that would be “diverted” to the Feedstock Processing Facility site instead of traveling farther to the face landfill. The feedstock processing operations would process and separate residual material, estimated at 24 trucks per day for continued shipment to the landfill. Shipment of this residual material would be considered “existing operations” because this material would have been trucked over the remaining short distance to the landfill. Therefore existing traffic would consist of both the inbound and residual material shipments, all of which would have gone to the landfill anyway.

During normal operations (e.g., 5-day per week processing) at the Feedstock Processing Site, there would be approximately 138 total new trips (69 round trips) per day resulting from the operation of the Feedstock Processing Facility. The new traffic includes the shipment of baled feedstock to the Biorefinery, recovered materials that are shipped to other customers, and employee traffic, as shown in Table 2-6.

Table 2-6 Feedstock Processing Facility – Trips and Tons Transported per Day (5-day Week Processing)

<table>
<thead>
<tr>
<th></th>
<th>Inbound MSW</th>
<th>Baled Feedstock</th>
<th>Residual Material</th>
<th>Recovered Material</th>
<th>Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tons per Day (7-Day Week)*</td>
<td>1,100</td>
<td>550</td>
<td>428</td>
<td>122</td>
<td></td>
</tr>
<tr>
<td>Tons per Day (5-Day Week)</td>
<td>1,540</td>
<td>770</td>
<td>599</td>
<td>171</td>
<td></td>
</tr>
<tr>
<td>Load Capacity (tons/truck)</td>
<td>24</td>
<td>40</td>
<td>25</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Number of Loads (Trucks/day)</td>
<td>64</td>
<td>20</td>
<td>24</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Number of Employees(No./Day)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>42</td>
</tr>
</tbody>
</table>
Table 2-6  Feedstock Processing Facility – Trips and Tons Transported per Day (5-day Week Processing)

<table>
<thead>
<tr>
<th></th>
<th>Inbound MSW</th>
<th>Baled Feedstock</th>
<th>Residual Material</th>
<th>Recovered Material</th>
<th>Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Trips to Landfill (No/Day)</td>
<td>128</td>
<td></td>
<td>48</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Trips per Day**</td>
<td>40</td>
<td>14</td>
<td>84</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* For optional 7-day week processing, which is not planned but must be available when needed.
** Two trips per round trip

During normal operations, all vehicles, would utilize a one-way traffic circulation pattern when accessing the facility and its internal access roads. Alternate traffic patterns may be used during maintenance turn-around at the direction of Feedstock Processing Facility management.

All vehicles accessing the Feedstock Processing Facility would enter the main entrance and exit, to the east, along the south side of the site. All inbound MSW would be weighed at the Lockwood Regional Landfill scale. Identified loads for the Feedstock Processing Facility would be directed to enter the Feedstock Processing Facility to the left, instead of proceeding to the face of the landfill. All outbound feedstock, Recovered Materials, or Residual Materials would be weighed out using the Feedstock Processing Facility’s outbound scale.

Employees and visitors would enter and exit the Feedstock Processing Facility using the main gate, then access the employee and visitor parking area, exiting through the same gate.

2.2.2.4  Operation and Maintenance

Process Details

This section details the process that would be employed during operations of the Feedstock Processing Facility. A Design Report and an SOP would be developed pursuant to NDEP-BWM regulations, as part of the application for a solid waste permit. The SOP would provide operations staff with the appropriate training on the equipment, processes and systems.

The primary material processed at the Feedstock Processing Facility would be MSW to produce baled feedstock. Secondary materials would include Recovered Materials (e.g., recyclable commodities) and Residual Materials. Recovered Materials, including ferrous and nonferrous metals, and at various times corrugated cardboard and plastics, which may be sorted from the MSW to ensure the feedstock meets the specification required by the Biorefinery. Residual Materials include inert materials and fines. These materials would be stored, handled, used and disposed or recycled in accordance with all applicable local, state and federal regulations.

The Feedstock Processing Facility would typically be expected to operate 5 days per week to coincide with the operation of the Lockwood Regional Landfill, but would be permitted to operate 24 hours per day, 365 days per year, which would allow for operation of the facility 7 days per week during times of equipment maintenance and repair. The Feedstock Processing Facility would have the capacity to process approximately 400,000 tons of inbound MSW into approximately 200,000 tons of baled feedstock annually. As presently designed, the Feedstock Processing Facility has an estimated operational life of 25 to 30 years.
Inbound MSW delivered to the Feedstock Processing Facility would not contain the following materials:

- Regulated Hazardous Waste (as defined by NAC 44.843);
- Polychlorinated Biphenyl Waste;
- Bulk or Noncontainerized Liquid Waste;
- Sludges and Other Wastewater Treatment Solids;
- Radioactive Waste;
- Asbestos and asbestos-containing materials; and
- Source Separated Special Waste (used tires, medical waste, used oil and filters, batteries), except such Special Waste deemed to be “Household Waste” that has been processed by MRFs during their normal course of business that may be commingled in the feedstock and accepted.

Feedstock Processing Facility personnel would be trained to inspect vehicles and identify items that may contain prohibited wastes. Equipment operators and sorters would be trained in inspection procedures for prohibited materials. Supervisors would provide regular training (on the job basis) to operational personnel to ensure proper inspection and screening for these items. Records of employee training on prohibited materials control procedures would be maintained in the Feedstock Processing Facility operating records.

**MSW Processing System**

All MSW would be handled in such a manner that it does not constitute a fire, safety, or health hazard or provide food or harborage for animals or vectors. A process flow diagram of the feedstock processing system is provided in Figure 2-3. The MSW would be delivered by truck and a trailer tipper would be used to unload the MSW onto a “tipping floor,” located in an enclosed MSW processing building. A front-end loader would be utilized to push the MSW into an in-feed conveyor to carry material to the processing lines for shredding, screening, and separation. The tipping floor would allow storage of approximately 400 tons of inbound MSW. The MSW would be processed in general based on a first-in, first-out basis. Operations would protect worker health and safety, including the wrapping of the feedstock for handling and storage, the active cleanup of any spills, and maintenance of a clean facility. All operations would conform to requirements of OSHA and other worker protection and safety regulations.

**Floor Sort**

The loader operators would screen all MSW loads as they would be tipped from the transfer trailer onto the tipping floor. The loader operator would identify and separate any items that would be too large or difficult to resize and place them in a reject dumpster for shipment as residual to the landfill or place them in a recycling dumpster for shipment to market. Any prohibited materials would be identified and segregated for removal by the company delivering the material. Once material would be screened, the loader operators would push material onto the in-feed conveyor to the processing lines for shredding, screening, and separation.

**Presort**

The MSW processing begins with a manual sort station to remove large items from the inbound MSW. Such items include cardboard, large metal pieces, hazardous waste, and other materials to be removed from the MSW before shredding. The elevated pre-sort platform would have chutes to drop such items into bunkers below for processing.
Figure 2-3  Feedstock Processing Facility - Process Flow Diagram MSW Processing System
Manual sorting would be conducted on the presorting line to remove large items from the inbound MSW. Such items as cardboard, large metal pieces, hazardous waste, and other items would be removed from the materials before shredding.

**Shredding, Screening, and Density Separation**

The sorted MSW would be shredded to a reduced size form and screens after shredding would be used to remove the fines. Sized MSW would then be conveyed through separation equipment to separate the lighter organic materials from the heavier inert materials, which would be baled and wrapped as feedstock.

**Recovered Materials**

At various times, plastics may be subject to recovery to limit such volumes in the organic materials and would then be baled for shipment to market. Use of magnetic separators to remove ferrous metals and eddy current separators to remove the non-ferrous materials would be used to sort metals from the MSW. Metals would be shipped to market.

**Dust Control**

The MSW processing building would be equipped with a system to minimize dust and reduce housekeeping. The dust suppression system (with dust extraction pick-up at the MSW sizing, separation, and belt conveyor material transfer points) would capture dust, which would be collected for transport to the landfill.

**Baling and Wrapping**

The feedstock bales would be wrapped with a polyethylene film for storage of the feedstock. The baled feedstock, weighing approximately 3,000 pounds per bale, would then be loaded onto flatbed trailers for transport to the Biorefinery.

**Residual Material Loading and Landfilling**

Residual Material not used as feedstock or recovered for recycling (concrete, asphalt, fines, etc.) would be transported to the landfill. A truck loading conveyor would be incorporated into the design to load and distribute residual material into transfer trailers for shipment to the landfill.

**Water Supply**

Water for the Feedstock Processing Facility domestic and fire suppression supply would be supplied by the Canyon General Improvement District (CGID). The CGID has been created to provide customers in the community of Lockwood, Storey County, Nevada with water, wastewater, trash removal, television, and streets and storm drains services. CGID’s water resources come from groundwater approved by existing state permits and pumped from groundwater wells.

The Feedstock Processing Facility would not use water in the MSW processing system. The CGID has represented that it has sufficient potable water and has issued a “will serve” letter to Sierra BioFuels. Approximately 13,000 linear feet of 3-inch high-density poly polyethylene (HDPE) water line would be installed in the Storey County ROW along Canyon Road for an interconnection to the CGID potable water system. For domestic water and fire suppression use, CGID would provide the Feedstock Processing Facility with approximately 30 gpm of potable water at 158 psi, to be stored on-site in a 660,000-gallon above ground tank. A diesel fire water pump would provide the fire protection system with a minimum fire water flow to the hydrants of 3,000 gpm for 3 hours.
Labor and Operation Hours

The Feedstock Processing Facility would be designed to operate a maximum of 24 hours per day, 7 days per week, 365 days per year. The total number of employees and shift schedules are being developed as the design progresses and would be finalized when construction is completed. It is anticipated that the Feedstock Processing Facility would operate consistent with the Landfill Regional Landfill’s operating hours. Approximately 42 full time employees would be required to staff the operations. Roles and responsibilities of the Feedstock Processing Facility’s key personnel are provided in Table 2-7 below. Facility attendants would be on-site during each shift, with on-site management personnel provided for all site operations associated with the Feedstock Processing Facility. The level of employment would be established by the basic business volume and would be sufficient to comply with the requirements of the relevant NDEP rules and regulations, and any requirements established in the Feedstock Processing Facility’s NDEP-BWM Solid Waste permit. Operations personnel would attend training classes in health and safety, environmental compliance, operations, maintenance, and equipment process safety.

Table 2-7  Feedstock Processing Facility – Staff Roles and Responsibilities

<table>
<thead>
<tr>
<th>Position</th>
<th>Roles and Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Feedstock Processing Facility Manager</strong></td>
<td><strong>During EP&amp;C Phase:</strong></td>
</tr>
<tr>
<td></td>
<td>• Represent Operator in detailed technical, operation, and maintenance matters.</td>
</tr>
<tr>
<td></td>
<td>• Assist in development of policies and procedures for training during commissioning, start-up, and eventual operations.</td>
</tr>
<tr>
<td></td>
<td><strong>During the Operational Phase:</strong></td>
</tr>
<tr>
<td></td>
<td>• Responsible for the daily supervision of all O&amp;M personnel.</td>
</tr>
<tr>
<td></td>
<td>• Oversight to ensure a safe, environmentally responsible, and economical operations.</td>
</tr>
<tr>
<td></td>
<td>• Responsible for annual O&amp;M Plan, budget and monitoring performance.</td>
</tr>
<tr>
<td></td>
<td>• Oversee development and upkeep of an Operating Management System.</td>
</tr>
<tr>
<td></td>
<td>• Direct preparation and revisions to O&amp;M policies and procedures, including personnel training and development.</td>
</tr>
<tr>
<td></td>
<td>• Interface with the community and government agencies as needed for the proper operation of Project.</td>
</tr>
<tr>
<td><strong>Foreman / Processing Shift Supervisor</strong></td>
<td><strong>During EP&amp;C Phase:</strong></td>
</tr>
<tr>
<td></td>
<td>• Oversee preparation of operating manuals.</td>
</tr>
<tr>
<td></td>
<td>• Participate in recruitment and hiring of the O&amp;M staff and manage subsequent training in preparation of commission and operation.</td>
</tr>
<tr>
<td></td>
<td>• Assist the Construction contractor with start-up activities.</td>
</tr>
<tr>
<td></td>
<td><strong>During the Operational Phase:</strong></td>
</tr>
<tr>
<td></td>
<td>• Manage operations personnel in providing a safe, environmentally sound and cost-efficient operations.</td>
</tr>
<tr>
<td></td>
<td>• Work with the Feedstock Processing Facility Manager to ensure Project is maintained in proper working order.</td>
</tr>
</tbody>
</table>
Table 2-7  Feedstock Processing Facility – Staff Roles and Responsibilities

<table>
<thead>
<tr>
<th>Position</th>
<th>Roles and Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale House Operator</td>
<td>During the Operational Phase:</td>
</tr>
<tr>
<td></td>
<td>• Responsible for weighing and maintaining records of vehicles entering and leaving the facility.</td>
</tr>
<tr>
<td></td>
<td>• Would be trained in site safety procedures, recordkeeping requirements, and to visually check for prohibited wastes.</td>
</tr>
<tr>
<td></td>
<td>• Provide general directions and information to incoming vehicles.</td>
</tr>
<tr>
<td>Equipment Operators</td>
<td>During the Operational Phase:</td>
</tr>
<tr>
<td></td>
<td>• Responsible for handling, moving, loading and unloading of material throughout the facility.</td>
</tr>
<tr>
<td></td>
<td>• Would be trained in site safety procedures, recordkeeping requirements, and to visually check for prohibited wastes.</td>
</tr>
<tr>
<td></td>
<td>• Coordinate actions with supervisors and management.</td>
</tr>
<tr>
<td>Sorters / Quality Control Staff</td>
<td>During the Operational Phase:</td>
</tr>
<tr>
<td></td>
<td>• Responsible for sorting materials based on instructions and outlined procedures for each station.</td>
</tr>
<tr>
<td></td>
<td>• Would be trained in site safety procedures, recordkeeping requirements, and to visually check for prohibited wastes.</td>
</tr>
<tr>
<td></td>
<td>• Coordinate actions with supervisors and management.</td>
</tr>
</tbody>
</table>

Facility Security

Public access would be controlled to minimize unauthorized vehicular traffic and public exposure to MSW processing operations associated with the Feedstock Processing Facility. There would only be one entrance to the Lockwood Regional Landfill via a private road. The Lockwood Regional Landfill’s scalehouse is staffed and secured by plant personnel during hours of operation. The Feedstock Processing Facility would have one ingress and egress road, each controlled by a gate. All vehicles would be required to pass through the landfill gate before entrance into the Feedstock Processing Facility. Only vehicles authorized by the Operation’s staff would be allowed to have access beyond the Feedstock Processing Facility’s parking lot area servicing the administration building. Signage and/or on-site personnel would provide directions to the unloading and loading areas.

Fire Protection

The SCFD provides firefighters and emergency response personnel as first responders to an accident, emergency, and other incidents requiring medical attention.

As a condition of the Feedstock Processing Facility’s NDEP-BWM Solid Waste Operating Permit, an ERP must be submitted to the Storey County Public Works, SCFD, and NDEP-BWM for approval prior to operation of the Feedstock Processing Facility. In addition, a Fire and Life Safety Plan must be submitted to the SCFD prior to the issuance of building permits.

The ERP and Fire and Life Safety Plan would be incorporated into the SOP, to ensure the operation of the Feedstock Processing Facility includes measures to protect human life, property and minimize any environmental effect. The following steps would be taken regularly at the Feedstock Processing Facility by designated personnel to prevent fires:
• Operators would be alert for signs of burning waste such as smoke, steam, or heat being released from inbound MSW loads.

• Equipment used to move waste would be routinely cleaned through the use of a high pressure air system. The high pressure air would remove dust and loose materials that can cause equipment overheating and increase fire potential.

• Smoking would not be permitted within the Feedstock Processing Facility. Smoking would be permitted in designated smoking areas only.

Staff would take the following steps if a fire is discovered:

• Contact the SCFD by calling 911. The SCFD has the equipment and other assets that can respond rapidly to fires at the site.

• Alert other facility personnel.

• Assess extent of fire, possibilities for the fire to spread, and alternatives for extinguishing the fire.

• Attempt to contain or extinguish the fire before arrival of the SCFD if it appears that the fire can be safely fought with available firefighting devices.

• Would not attempt to fight the fire alone. Would not attempt to fight the fire without adequate personal protective equipment. Would be familiar with the use and limitations of firefighting equipment available on-site.

• Upon arrival of the SCFD personnel, direct them to the fire and provide assistance as appropriate.

Methods for fighting fires would be determined based on the type of fire discovered:

• Firefighting methods for burning MSW include smothering the MSW with a loader bucket or separating the burning material from other MSW. Small fires also can be controlled with hand-held extinguishers. If a fire occurs on a vehicle or piece of equipment, the equipment operator would attempt to bring the vehicle or equipment to a safe stop. If safety of personnel would allow, the vehicle would be parked away from MSW supplies and other vehicles. The engine would be shut off and the brake engaged to prevent movement of the vehicle or piece of equipment. The MSW processing building would be equipped with early suppression first response (ESFR) sprinkler system. The ESFR sprinkler system would be located in the ceiling structure to allow rapid discharge of a large quantity of water in very efficient discharge patterns to suppress and extinguish a fire quickly, not just control a fire in its early stages, resulting in less water damage.

The Feedstock Processing Facility would be equipped with various types of fire suppression equipment. Fire extinguishers would be maintained on all transportation vehicles entering the Feedstock Processing Facility and on operation equipment in the enclosed MSW processing building. All fire suppression equipment would be fully charged and ready for use. Inspection and recharging would be performed following each use. The fire suppression equipment would be inspected on a regular basis as detailed below. A qualified service company would inspect, update all extinguishers inspection tags, and keep records of equipment inspected (including but not limited to: equipment, date of inspection, and name of inspector). The intervals for inspection would be as follows:

• **Portable Fire Extinguishers:** Weekly visual inspection, annual inspection, and certification by an approved service company.

• **Hose Stations:** Weekly visual inspection, annual inspection, and certification by an approved service company.
• **Automatic Sprinkler Systems.** Annual inspection and certification by an approved agency or service provider.

• **Emergency Firewater Pump.** Weekly testing.

Training of on-site personnel in firefighting techniques, fire prevention, response, and the fire protection aspects of the SOP would be provided by established professionals as part of initial employee training and on an annual basis. Personnel would be familiar with the use and limitations of firefighting equipment available on-site. Records of this training would be included in the operating record for the Feedstock Processing Facility. When the detailed design of the Feedstock Processing Facility has been completed, Sierra BioFuels will review requirements under all applicable federal, state and local regulations, including those under EPCRA, and amend the Feedstock Processing Facility's SOP, as necessary.

**Industrial Materials**

Industrial materials used or produced by the Feedstock Processing Facility and the storage methods and quantities stored on site are shown in **Table 2-8** below. Initial industrial supplies would be purchased based upon usage recommendations from the equipment suppliers. The Feedstock Processing Facility would purchase and store these materials in bulk. These materials would be stored, handled and used in accordance with all applicable local, state and federal regulations. The expected industrial supplies at the facility include (collectively "**Industrial Supplies**"):

- **Lube Oil:** Lube oil would be supplied in drums and used in process equipment.
- **Neutralizing Additive:** Neutralizing additive would be stored in drums and used in the odor control systems.
- **Diesel Fuel:** Diesel fuel would be consumed by the Feedstock Processing Facility's rolling stock equipment. The diesel fuel would be stored in an above-ground storage tank.
- **Propane Tanks:** Propane would be consumed by the Feedstock Processing Facility's forklift equipment. The propane tanks would be stored in racks for exchange and refill by an outside propane contractor.

**Domestic Waste**

The Feedstock Processing Facility's domestic waste (e.g., waste from the offices, kitchen and trash cans) would be comingled with the inbound MSW on the tipping floor and processed through the feedstock processing system.

**Table 2-8 Industrial Materials at Feedstock Processing Facility**

<table>
<thead>
<tr>
<th>Reference No.</th>
<th>Inventory Item</th>
<th>Quantity¹</th>
<th>Type of Container</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Materials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>MSW</td>
<td>1,200 Tons</td>
<td>Processing Building/</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transfer Trailers</td>
</tr>
<tr>
<td>2</td>
<td>Feedstock</td>
<td>2,669</td>
<td>Bales</td>
</tr>
<tr>
<td>Secondary Materials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Recovered Material</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3-a)</td>
<td>Cardboard</td>
<td>45 Tons</td>
<td>Bales</td>
</tr>
<tr>
<td>(3-b)</td>
<td>Plastics</td>
<td>45 Tons</td>
<td>Movable Container</td>
</tr>
<tr>
<td>(3-c)</td>
<td>Ferrous Metal</td>
<td>45 Tons</td>
<td>Movable Container</td>
</tr>
</tbody>
</table>
Table 2-8  Industrial Materials at Feedstock Processing Facility

<table>
<thead>
<tr>
<th>Reference No.</th>
<th>Inventory Item</th>
<th>Quantity(^1)</th>
<th>Type of Container</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3-d)</td>
<td>Non-Ferrous Metals</td>
<td>45 Tons</td>
<td>Bales/Movable Container</td>
</tr>
<tr>
<td>4</td>
<td>Residual Materials</td>
<td>420 Tons</td>
<td>Transfer Trailers</td>
</tr>
<tr>
<td><strong>Industrial Supplies</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Lube Oil</td>
<td>10 Drum</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Diesel</td>
<td>2,500 Gallons</td>
<td>(Aboveground Tank)</td>
</tr>
<tr>
<td>7</td>
<td>Neutralizing Additive</td>
<td>110 Gallons</td>
<td>Drums</td>
</tr>
<tr>
<td>8</td>
<td>Propane Tanks</td>
<td>20 Portable Tanks</td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) Data represent maximum quantities. Actual stored quantities would be equal or less than these quantities.

Wastewater Management

Sanitary Wastewater

The primary source of sanitary wastewater would be the restrooms and kitchen areas of the Feedstock Processing Facility. Sanitary wastewater usually contains pathogenic microorganisms that dwell in the human intestinal tract. It also contains nutrients, which can stimulate the growth of aquatic plants and organic compounds that can produce malodorous gasses. All sanitary wastewater generated at the Feedstock Processing Facility would be discharged to an on-site sewage disposal system designed and installed under a permit issued by the NDEP – BWPC.

Storm Water

Federal law prohibits the introduction of storm water into sanitary sewerage systems. Roof drains, yard drains, and other surface water drains that manage only precipitation runoff would be routed to the storm water retention system designed to retain runoff water equivalent to a 100-year storm. The Feedstock Processing Facility's storm water drainage system has been designed in accordance with a grading and drainage plan approved by the Storey County Building Department.

Two separate submittals are required for the regulation of storm water. Prior to the commencement of construction, the Sierra BioFuels would be required to submit a NOI to the NDEP BWPC for coverage under the State of Nevada’s Storm Water General Permit NVR100000 for storm water discharges associated with large construction activities. A SWPPP would be completed and maintained on-site. Prior to the commencement of operation, the Sierra BioFuels also would submit a NOI to the NDEP, for coverage under the State of Nevada’s General Permit for Storm Water Discharges Associated with Industrial Activities (General Permit NVR050000). Sierra BioFuels would be required to have a SWPPP completed and maintained on-site in order to operate the Feedstock Processing Facility.

Spill Control

All employees would be trained to respond to spills or leaks from tanks, vehicles, and equipment. Steps to be taken should a spill occur would include:

- Stop processing, loading and/or unloading, and halt vehicle movement, as necessary;
- Secure the area;
- Identify the source;
- Notify the supervisor/manager;
• Properly clean up the affected area; and
• Document the incident.

Clean-up/spill response equipment would be placed in designated areas and clearly marked. Spill response equipment would include:

• Absorbent materials;
• Shovels, brooms; and
• Personal protection equipment (e.g., coveralls, gloves, glasses, etc.).

The Feedstock Processing Facility would have an aboveground storage tank that would be maintained and inspected in accordance with federal, state and local regulations. For aboveground tank, the operation’s personnel would:

• Conduct regular inspections to detect leaks and spills;
• Verify sound condition of containment structures;
• Label storage tanks with product name and potential health or safety hazards;
• Ensure that the secondary containment structure holds at least 110 percent of the largest tank’s capacity;
• Use spill and overfill protection when fueling vehicles;
• Not allow unattended fueling;
• Install safe-guards to prevent vehicles’ wash water from mixing with storm water;
• Clean up leaks and spills immediately; and
• Not allow process water and storm water to mix.

Environmental Control Design and Process Features

The design of the Feedstock Processing Facility incorporates process features that would minimize environmental impacts as discussed below.

Dust Control

Primary access roads are paved and on-site roadways would be paved, considerably reducing the potential for dust generation resulting from mud and dirt being tracked onto the roadway network. On-site roadways would be swept as necessary to minimize dust generation at the Feedstock Processing Facility.

Odor Control

The Feedstock Processing Facility would control odor so that there would be no obnoxious odors causing a nuisance to adjacent properties. The Feedstock Processing Facility would be equipped with a mist odor control system on the ceiling throughout the buildings and at ingress and egress points. Operations personnel would have the capability to adjust the type of neutralizing additive used in the system based on actual conditions and constituents that may be causing odors. Mist odor control systems, which spray a water solution of odor masking or neutralizing compounds, provide one of the most effective methods for the treatment of odors associated with MSW. Depending on the type of odor being controlled, such systems can utilize either: 1) masking agents or chemical counteractants to block odor sensing, or 2) odor absorbing agents or biological compounds that alter the decomposing process and prevent odors from being generated by increasing the population of aerobic microbes and preventing anaerobic conditions.
Vector Control

Vectors such as rodents, flies, and mosquitoes would be controlled by proper daily facility operations and housekeeping practices such as cleaning up spills, maintaining roadways, and washing of equipment. Insect and rodent bait would be used to control populations of these vectors. If necessary, a licensed professional would apply pesticides for control of vectors to ensure that proper chemicals are used and applied.

Windblown Material Control

Windblown material and litter at the Feedstock Processing Facility would be controlled through several methods, including proper unloading of the MSW, picking up litter, perimeter fences, and landscaping. Adequate staffing would be in place to ensure that these measures are taken. Personnel would police the Feedstock Processing Facility, including perimeter fences, access roads, and the entrance gate, every operating day to pick up and return any windblown material and litter to the facilities and perform other litter control measures, as necessary.

During transport, the Operator would take steps to ensure that transfer trucks delivering feedstock to the Biorefinery would be secure in order to prevent the escape of any part of the load during transport. The Operator also would take actions such as posting signs regarding covering of loads, assessing surcharges for any uncovered loads, reporting offenders to proper law enforcement officers, or similar measures. On days when the facilities would be in operation, the Operator would be responsible for cleanup of any feedstock spilled along and within the ROW of public access roads serving the Biorefinery. Maintenance activities would include a once per day cleanup of spilled feedstock materials.

Wildlife Nuisance Control

Sierra BioFuels would work with NDOW on wildlife attraction nuisance issues if wildlife nuisance becomes an issue at the site of the Feedstock Processing Facility. Feedstock Processing Facility personnel would monitor the grounds for wildlife mortalities during construction and operation. Any wildlife mortalities would be reported to NDOW annually.

2.2.2.5 Decommissioning

A Closure Plan has been prepared for the Feedstock Processing Facility pursuant to Section 4 of the NDEP - BWM's guidance document for the permitting of “Material Recovery Facilities” under NAC 444.74747. Should it be necessary to close the Feedstock Processing Facility, the following steps would be taken:

- When determined that the Feedstock Processing Facility would no longer be needed or ceases operations, a written notice would be filed with the NDEP-BWM and the Storey County Planning Department 180 days prior to the date of closure.
- Within 30 days after delivering the last load of feedstock, the site would be cleared of all remaining solid waste, processing residue, litter, recovered materials, and inoperable equipment in accordance with the Closure Plan, with the exception of putrescible waste, which shall be removed within 72 hours of receipt.
- The site would be secured (i.e., padlocks on the access gates and all the doors of the buildings would be locked).
- All remaining feedstock stored, and/or processed at the facility would be transferred to an authorized disposal facility.
- All wastes and waste residues would be removed from the site and transferred to an authorized disposal facility and/or material dealer.
• Mobile equipment (e.g., transfer trailers, wheel loaders, forklifts, etc.) would be moved to another site, sold, scrapped, or otherwise disposed of building components (e.g., lights, electrical systems, doors, etc.) would be left in place for future uses and to keep the building secure.

• Operating records would be transferred to the Feedstock Processing Facility Owner’s office and maintained consistent with NDEP regulations.

• General cleanup of the processing building, storage building, and handling system (i.e., disinfect and wash down the tipping floor, conveyors, cleanout of sumps and drains, etc.) would be performed.

• General cleanup of the site and buildings would be performed.

• A closure certification would be prepared by a registered professional engineer and submitted to the NDEP- BWM for approval that the Feedstock Processing Facility has been closed in accordance with the approved Closure Plan.

Upon determination that the Feedstock Processing Facility would cease operation, a notice would be filed with the NDEP- BWM and the Storey County Planning Department that would outline the schedule for closure of the Feedstock Processing Facility. The anticipated schedule and steps to be taken to close the Feedstock Processing Facility are as follows:

• No later than 180 days prior to initiation of closure activities of the Feedstock Processing Facility, Sierra BioFuels would provide written notification to the NDEP- BWM and the Storey County Planning Department of the intent to close the Feedstock Processing Facility.

• Barriers or gates would be installed at access points following the closure date to prevent unauthorized entry into the Feedstock Processing Facility. Padlocks would be installed on the gates and the building doors would be locked or padlocked.

• Closure activities at the Feedstock Processing Facility would be completed (as described above) within 180 days following the initiation of closure activities.

• Within 10 days after completion of closure activities, a documented certification, signed by an independent registered professional engineer, would be submitted to the NDEP and the Storey County Planning Department. This certification would verify that final closure has been completed in accordance with this Closure Plan. This certification would include all applicable documentation necessary for certification of closure. Once approved, this certification would be placed in the Feedstock Processing Facility’s operating record.

Since all materials would be removed from the site, there would be no requirement for a post-closure period. As such, consistent with the NDEP- BWM rules, as part of the closure certification, the Feedstock Processing Facility would request the NDEP- BWM confirmation that a post-closure period would not be needed. This request would include a documented certification by an independent professional engineer verifying that post-closure care maintenance would not be necessary in view of the closure procedures (e.g., removal of all materials from the site and the other closure steps as noted above) being implemented. In any event, the Feedstock Processing Facility would retain the right of entry and maintain all ROWs for the closed facility for a period of at least 5 years after completion of closure unless the Feedstock Processing Facility would be put to some other use or divested to a third-party.

2.2.2.6 Permits, Approvals, and Authorizations

A status of permitting, approvals and authorizations associated with the Feedstock Processing Facility is provided in Table 1-2.
2.3 No Action Alternative

Under the No Action Alternative, the DoD would not down-select Sierra BioFuels to continue on to Phase 2 of the ADBPP for construction of the IBPE. In this scenario, the DoD assumes, for purposes of this EA, that the IBPE would not proceed as scheduled without the Proposed Action, as the IBPE’s viability would remain uncertain. Although construction and operation of a MSW-to-renewable fuel facility might be possible at the sites near the communities of Lockwood and McCarran in Storey County, Nevada as identified in this EA with alternative means of financing, that scenario would not be analyzed because it would not provide for a meaningful No Action Alternative, as it would be identical to the Proposed Action and, as a result, it would be assumed that the IBPE would not be built or operated.

It would always be possible, and may be likely, that non-federally funded development would result in similar development and environmental impacts to the sites as documented. The TRI Center is actively seeking tenants to construct industrial or commercial facilities on its property, and will continue to do so in the event Sierra BioFuels does not construct the IBPE.

2.4 Site Selection History

Alternate sites were considered and eliminated by Sierra BioFuels as a part of the initial site selection process that occurred prior to the DoD establishing the opportunity for grant funding under the ADBPP for which this EA is being prepared. As such, a reevaluation of alternate sites was not conducted as a part of this assessment. A brief review of the history of the selection of the sites for development of the IBPE is provided below.

In 2007, Sierra BioFuels acquired the development rights to a biomass-to-ethanol project from IMS Nevada LLC who had purchased property in the TRI Center. This site was eliminated from consideration for development because it was too small to accommodate the Biorefinery equipment layout and operational criteria. In 2009, another parcel was located across the street for the development of the Biorefinery. The location of this alternate site continues to be well suited to an industrial park with existing zoning for heavy industrial use, established infrastructure, and avoidance of any known sensitive human or environmental receptors. No other industrial area in the region was available for consideration for the Biorefinery, and it was not evident that any other industrial development area could offer a location with improved (reduced) environmental or human impact.

Initially, Sierra BioFuels considered siting the Feedstock Processing Facility adjacent to the Biorefinery on a parcel located in the TRI Center, as an alternative site. After reviewing the options, locating the Feedstock Processing Facility adjacent to the Lockwood Regional Landfill was better suited to reduce regulatory, operational and logistical impacts.

Locating the Feedstock Processing Facility in the TRI Center would have required the re-routing of the 64 inbound MSW trucks per day (see Table 2-6). By locating adjacent to the landfill, the inbound MSW would be diverted from the landfill to the Feedstock Processing Facility after crossing the landfill scale. Materials that would not be suitable for feedstock would be transported to the landfill. The sorted and prepared feedstock would be baled and wrapped in plastic to avoid any losses during transfer to the Biorefinery. The location for the Feedstock Processing Facility avoids any additional environmental impact for the non-feedstock stream, and it minimizes the amount of material and haul distance to the Biorefinery, thereby minimizing any impact on the natural or human environment. No other site that is not adjacent to the landfill offers comparable or improved environmental and economic advantages to the enterprise as the proposed site.
2.5 **Summary of Environmental Impacts**

The anticipated effects of the Biorefinery and Feedstock Processing Facility are summarized in *Table 2-9*. Detail regarding the environmental effects is discussed in Chapter 3.0.

**Table 2-9 Summary of Anticipated Effects on the Environment**

<table>
<thead>
<tr>
<th>Environmental Resource</th>
<th>Anticipated Facility Effects</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Use and Special Management Areas</td>
<td>Anticipated land use and land ownership would remain unchanged. No special management areas are within the vicinity of the Biorefinery site or the Feedstock Processing site.</td>
<td>3.2</td>
</tr>
<tr>
<td>Transportation Corridors, Infrastructure, and Utilities</td>
<td>Minimal increases in vehicle trips on existing roads, railways, infrastructure, and utilities designed and upgraded to accommodate heavy industrial uses.</td>
<td>3.3, 3.4</td>
</tr>
<tr>
<td>Surface Water</td>
<td>No potential for effects to surface water. Storm water to evaporation pond, irrigation, etc.</td>
<td>3.5</td>
</tr>
<tr>
<td>Floodplains</td>
<td>The sites are not located in a flood zone or floodplain.</td>
<td>3.5</td>
</tr>
<tr>
<td>Wetlands</td>
<td>There are no federally designated wetlands located on or in the vicinity of the sites.</td>
<td>3.5</td>
</tr>
<tr>
<td>Groundwater</td>
<td>The potential to contaminate groundwater would be negligible. Storm water and groundwater discharge permits required. No direct discharge to groundwater; permit is for retention basin.</td>
<td>3.5</td>
</tr>
<tr>
<td>Geology and Soils</td>
<td>No potential for impact to geology and soils at the sites.</td>
<td>3.7</td>
</tr>
<tr>
<td>Vegetation</td>
<td>Removal of 33.8 acres of sagebrush vegetation and understory grasses in partially disturbed areas planned for industrial development.</td>
<td>3.8</td>
</tr>
<tr>
<td>Wildlife and Fisheries</td>
<td>Removal of 33.8 acres of wildlife habitat and displacement of wildlife in partially disturbed areas planned for heavy industrial development. Protective measures that limit habitat removal during migratory periods would be implemented.</td>
<td>3.9</td>
</tr>
<tr>
<td>Special Status Species</td>
<td>No impacts to federally listed endangered species. No impacts to state listed or sensitive plant species. Minimal effects to state listed mammals and bird species from removal of 33.8 acres of habitat in partially disturbed areas planned for heavy industrial development. Protective measures that limit habitat removal during migratory periods would be implemented.</td>
<td>3.10</td>
</tr>
<tr>
<td>Air Quality</td>
<td>Impacts of emissions would not cause or contribute to an exceedence of an ambient air quality standard. Air quality “Operating Permit To Construct” (Permit No. AP 2869-3306) was issued July 1, 2013 for the Biorefinery.</td>
<td>3.11</td>
</tr>
</tbody>
</table>
Table 2-9  Summary of Anticipated Effects on the Environment

<table>
<thead>
<tr>
<th>Environmental Resource</th>
<th>Anticipated Facility Effects</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural Resources</td>
<td>No adverse effect [ Previous State Historic Preservation Officer (SHPO) consultation completed on February 14, 2011 on the Biorefinery site. No known cultural resources are on the site. December 2013 Class I files search survey done on Feedstock Processing Facility site and no known cultural resources are on site. SHPO concurred with DoD’s determination of No Historic Properties Affected on January 15, 2014 for the Feedstock Processing Facility site. If undiscovered cultural resources are found during construction, work would cease pending consultation with a Tribes and SHPO. ]</td>
<td>3.12</td>
</tr>
<tr>
<td>Socioeconomics Impacts and Environmental Justice</td>
<td>Minimal effect [ No adverse effects are anticipated to existing communities or populations. The addition of up to 74 full-time jobs would benefit nearby communities. ]</td>
<td>3.13</td>
</tr>
<tr>
<td>Visual Resources</td>
<td>Minimal effect [ Introduction of visual elements would be similar to other industrial developments at the TRI Center and in adjacent industrial areas. ]</td>
<td>3.14</td>
</tr>
<tr>
<td>Noise and Odor</td>
<td>Minimal effect [ Introduction of noise would be similar to other industrial developments at the TRI Center and adjacent industrial areas. Additionally, measures would be taken to inhibit the propagation of odors within the TRI Center and adjacent industrial areas. ]</td>
<td>3.15</td>
</tr>
<tr>
<td>Public Health and Safety</td>
<td>No effect [ While a potential for spills and fire would exist at the facilities because of the nature of the operations, no effects from routine operations or accidents are anticipated from the facilities due to its remoteness from population centers and emergency preparedness measures. ]</td>
<td>3.16</td>
</tr>
</tbody>
</table>
3.0 Affected Environment and Environmental Effects

3.1 General Site Descriptions

3.1.1 Biorefinery

The Biorefinery would be located in the TRI Center, a 107,000-acre industrial park located approximately 20 miles east of Reno, Nevada, that was established in 1999. The TRI Center, a portion of the former Asamera Ranch, is private land owned by Tahoe-Reno Industrial Center, LLC (TRI Center, LLC), comprising approximately 63 percent of the land area of Storey County. The TRI Center currently consists of approximately 6,000 acres zoned for industrial use, and may expand in the future, subject to Storey County approval. The entire 107,000 acres of the TRI Center is zoned "I-2 Heavy Industrial" under the Storey County Zoning Ordinance, which allows almost all types of industrial and commercial uses. Development at the TRI Center is guided by a development agreement between the master developers and the county, which incorporates the Development Handbook (TRI Owners Association 2000) and the Storey County Zoning Ordinance.

In July 2009, Sierra BioFuels secured the an initial 16.77 acres for the Biorefinery across the street from the original location. Subsequently, Sierra BioFuels entered into a Purchase and Sale Agreement for an additional 2.6 acres (the “Additional Property”) adjacent to the site to accommodate the current layout of the Biorefinery. In 2011, approximately 16.77 acres of the parcel adjacent to Peru Drive was cleared, excavated and graded. The site also was disturbed through road and other infrastructure improvements prior to the purchase of the property. The Biorefinery site is a 19.4-acre parcel that currently contains a concrete foundation for a fire water pump. Figure 3-1 provides a location map for the Biorefinery. Photographs of the Biorefinery site are provided in Figure 3-2 and Figure 3-3.

3.1.2 Feedstock Processing Facility

The Feedstock Processing Facility would be located in an industrial area (Lockwood Landfill Industrial Area) near Lockwood, Storey County, in the northwest corner of Section 22, T19N, R22E. It is approximately 8 miles east of Reno, approximately 1.5 miles southeast of the small community of Lockwood, Nevada, and 15 roadway miles west of the Biorefinery. The route between the Feedstock Processing Facility and the Biorefinery is comprised of existing roadway constructed to carry traffic associated with I-2 Heavy Industrial zoning and interstate highway. The approximate 14.4-acre parcel is located in a mountainous area within the northern limits of the Virginia Range and approximately 1 mile south of the Truckee River. Lagomarsino Canyon and Long Valley Creek are located west of the property. The land immediately surrounding the property is owned by Refuse Inc. The site is located adjacent to the Lockwood Regional Landfill scalehouse, north of Mustang Road. Figure 3-1 provides a location map for the Feedstock Processing Facility.

The Lockwood Landfill Industrial Area consists of approximately 2,200 acres zoned “I-2 Heavy Industrial” under the Storey County Zoning Ordinance (Codes §§17.37.050 to 17.37.080), which allows almost all types of industrial and commercial uses. The Feedstock Processing Facility would be an “Allowed Use” in the “I-2 Heavy Industrial” zone as it functions similar to a “Solid Waste Recycle Center.” A photograph of the Feedstock Processing Facility site, viewed from the southwest corner of the property, across Mustang Road, is shown in Figure 3-4.
Figure 3-2 Photographs of the Biorefinery Site
**Figure 3-3  Photographs of the Biorefinery Site**
The following subsections provide a description of the IBPE, comprised of the Biorefinery and the Feedstock Processing Facility, locations and associated resources and the potential environmental effects associated with construction and operation of the IBPE. Required permits and design and process measures are identified, where necessary, that could reduce or eliminate potential adverse effects on the environment.

3.2 Land Use

3.2.1 Affected Environment

**Biorefinery**

The Biorefinery site and adjacent properties are privately owned by the TRI Center, LLC. Sierra BioFuels and the TRI Center, LLC, entered into a Purchase and Sale Agreement on December 23, 2008, for the purchase of the site and closed on the property on July 2, 2009. In February 2013, Sierra BioFuels and TRI Center, LLC entered into a Purchase and Sale Agreement for the Additional Property to accommodate the current layout of the Biorefinery. The nearest federal land is managed by the Bureau of Land Management (BLM), approximately 2 miles to the north and to the south. There are no state-, county-, or city-owned lands in the area. **Figure 3-5** depicts land ownership in the area.

*From southwest corner, across Mustang Road*
The TRI Center is a portion of the former Asamera Ranch, a 107,000-acre tract of private land owned by one of the project master developers, TRI Center, LLC. The TRI Center area comprises approximately 63 percent of the land area of Storey County, a sparsely populated rural Nevada county of 264 square miles. Storey County is the smallest county in Nevada by land area. According to the Storey County Economic Development Department (http://www.storeycounty.org/economic/demographics.asp), the county population was 4,384 in 2008. Its small population is primarily centered in the Virginia City area, 25 miles southwest of the Biorefinery site, which is not connected to the TRI Center by paved roads. The TRI Center, located in the unincorporated portion of the county, is intended to be a mixed-use, nonresidential development, consisting of a wide range of industrial, office, and commercial businesses. Since the TRI Center property was purchased for development in 1998, a bridge over the Truckee River, a diamond interchange on I-80, 10 miles of a four-lane freeway, and 100 miles of roads throughout the park have been built. The self-sufficient center has its own fiber-optic cable service, water, and high-pressure natural gas pipeline.

The TRI Center has the capacity of 100-million-square-feet of industrial space. Companies already at the TRI Center include Kal Kan Pet Foods; APL Logistics, distributors of Dell Computers; Alcoa; James Hardie; Royal Sierra Extrusions; Golden Gate Petroleum; a Wal-Mart distribution center; Trans Western Polymers; and Frank-Lin rectifiers. Three power plants also are located at the TRI Center: NV Energy, Inc. (NVE) (formerly Sierra Pacific Power); Barrick Mines; and Naniwa (a power plant that provides additional power support during peak hours). Currently, the closest developed property to the site is an auto auction facility located 0.3 mile to the west.

Development of the TRI Center is guided by a development agreement between the master developers and Storey County, which incorporates the Development Handbook (TRI Owners Association 2000) and the Storey County Zoning Ordinance (adopted July 1, 1999). The entire TRI Center property is zoned “I-2 Heavy Industrial Zone” under the Storey County Zoning Ordinance Codes §§17.37.050 to 17.37.080, which allows almost all types of industrial and commercial uses. The terms of the development agreement and the Storey County Zoning Ordinance allow maximum flexibility for land uses, but provide for a consistent, compatible development theme among the various land use possibilities in the actual facility siting.

Feedstock Processing Facility

The Feedstock Processing Facility site is located in the industrial area near the community of Lockwood in Storey County (Lockwood Landfill Industrial Area). The Feedstock Processing Facility site and adjacent properties are privately owned by Refuse, Inc. The nearest federal land is managed by the Bureau of Reclamation, approximately 1.5 miles in a direct line north of the site along the Truckee River Corridor. There are no state-, county-, or city-owned lands in the area. Figure 3-5 depicts land ownership in the area.

The Feedstock Processing Facility site is located in a mountainous area within the northern limits of the Virginia Range and approximately 1 mile south of the Truckee River. Lagomarsino Canyon and Long Valley Creek are located west of the property. The land immediately surrounding the property is owned by Refuse Inc. The site is located in a high desert environment at an elevation of approximately 4,600 feet above mean sea level south of the Truckee River Corridor. The Lockwood Landfill Industrial Area consists of approximately 2,200 acres zoned “I-2 Heavy Industrial” under the Storey County Zoning Ordinance, which allows almost all types of industrial and commercial uses. The Feedstock Processing Facility would be an “Allowed Use” in the “I-2 Heavy Industrial” zone as it functions similar to a “Solid Waste Recycle Center.” The nearest residence is in Lockwood which is approximately 1.5 miles in a direct line northwest from the planned location of the Feedstock Processing Facility.

Special Management Areas

There are no special management areas near either the Biorefinery site or the Feedstock Processing Facility site. The closest special management area is approximately 8 miles in a direct line west-
northwest of the Biorefinery site, the Pah Rah Basin Petroglyphs Area of Critical Environmental Concern located on BLM lands. The closest wilderness area is approximately 10 miles in a direct line west of the Feedstock Processing Facility site, the Mount Rose Wilderness Area, located on U.S. Forest Service lands.

3.2.2 Environmental Effects – Land Use

3.2.2.1 Proposed Action

No effects to land ownership, land use, or special management areas would be anticipated as a result of the Biorefinery or the Feedstock Processing Facility. The area would remain in private ownership and the land use associated with the two sites would be consistent with the “I-2 Heavy Industrial” Zone as defined by Storey County for the TRI Center and adjacent industrial lands. There are no special management areas in close proximity to the sites and therefore no effects would occur to these lands.

3.2.2.2 No Action Alternative

Without the IBPE, the area would remain in private ownership and the land use would continue to be consistent with the “I-2 Heavy Industrial” Zone as defined by Storey County for the TRI Center and adjacent industrial lands. Since the proposed sites are in industrial areas, it would be likely that other industrial uses would ultimately be considered for the sites.

3.3 Infrastructure and Utilities

3.3.1 Affected Environment

There are currently no utilities installed on either the Biorefinery site in the TRI Center (Phase I Environmental Site Assessment, 2013 [AECOM 2013]) or the Feedstock Processing Facility site in Lockwood, per the AECOM 2013 report and as verified by the Storey County Building Department. However, the TRI Center, as master developer of the industrial center, has installed utility infrastructure along Peru Drive that would serve the Biorefinery site; this utility infrastructure is adequate to support normal and customary service loads planned for typical industrial/commercial uses under the “I-2 Heavy Industrial” zoning classification.

Electrical Interconnection

The TRI Center is obligated to construct electrical infrastructure to support normal and customary service loads planned for typical industrial/commercial uses under the I-2 Heavy Industrial zoning classification. The electric interconnection to NVE’s existing electric distribution system would be in the Peru Drive alignment at 24.9 kV/600 amps on a utility pole located at the northeast corner of the Biorefinery site.

The Feedstock Processing Facility site is adjacent to NVE’s existing 24.9-kV electrical distribution system located in a utility easement on the southern side of Mustang Road adjacent to the Lockwood Regional Landfill scale house.

Natural Gas Interconnection

The TRI Center has installed a natural gas pipeline infrastructure to provide interconnection access to NVE’s distribution natural gas system throughout the TRI Center. The distribution system is sourced from the Tracey City Gate, operated by Tuscarora Pipeline. The Tuscarora Pipeline mainline is located approximately 4 miles north of the site, parallel to I-80. NVE’s natural gas distribution system interconnects with the mainline and operates between 90 and 235 pounds per square inch, gauge (psig). NVE has completed the installation of the natural gas distribution system in the Peru Drive alignment adjacent to the site. A marker for a natural gas pipeline is located across Peru Drive on the northern side of the railroad spur (Phase I Environmental Site Assessment, 2008 [AECOM 2008]).

The Feedstock Processing Facility would not require natural gas for the MSW processing system.
Storm Drainage

Major storm drainage improvements (i.e., flood channels and basins) are constructed by the TRI Center as development occurs at the TRI Center. The TRI Center storm drainage system has been design to contain a 100-year storm event.

Water and Sewer Service

As a private utility company, the TRIGID supplies community water and sewer service to occupants in the TRI Center. The water comes from groundwater approved by existing state permits and is pumped from wells on the TRI Center property. Additional wells, tanks, and distribution lines are constructed as development occurs. Sewage treatment is provided for TRI Center by a treatment plant within the TRI Center, and the effluent disposal system is designed for reuse in irrigation or industrial applications. The state approves all water and sewer facility designs, and Storey County has approved the TRI Center’s operating rules and regulations, including connection fees and rates.

The CGID supplies community water to customers in the community of Lockwood. The water comes from groundwater approved by existing state permits. All sanitary wastewater generated at the Feedstock Processing Facility would be discharged to an on-site sewage disposal system designed and installed under a permit issued by the NDEP-BWP.

Other Utility Services

Telephone and cable TV (as well as power) are supplied from overhead lines to individual sites. Nevada Bell provides telephone service and the TCI Center supplies cable TV. A buried fiber cable warning sign was identified along the southeast boundary of the Biorefinery site (AECOM 2008).

3.3.2 Environmental Effects – Infrastructure and Utilities

3.3.2.1 Proposed Action

The TRI Center has already put in place the natural gas, storm drainage, water and sewer service, communications, and electrical infrastructure necessary to support the Biorefinery.

Electrical Interconnection

For construction power, the TRI Center would provide access to an electric interconnection at NVE’s, existing electric distribution system in the Peru Drive alignment. During construction, a permanent interconnection would be made to the 24.9-kV distribution system. Sierra BioFuels would purchase any electricity required for the operation of the Biorefinery from NVE. To reduce interruption resulting from power outages, NVE would provide 3 levels of redundancy to the TRI Center, the looped distribution system, the substation transformer, and the mainline transmission feeder. No significant effects are anticipated as a result of Biorefinery’s connections to this existing infrastructure.

For construction of the Feedstock Processing Facility, NVE would provide temporary construction power to a pole at the southwest corner of the site. During construction, a permanent interconnection would be made to the 24.9-kV distribution system. Sierra BioFuels would purchase any electricity required for the operation of the Feedstock Processing Facility from NVE. This electrical interconnection is shown in Figure 3-6. No significant effects are anticipated as a result of Feedstock Processing Facility’s connections to this existing infrastructure.
Natural Gas Interconnection

On November 12, 2013, a preliminary natural gas interconnection feasibility study completed by NVE determined that there is adequate pressure in the existing distribution system to serve the Biorefinery. The Feedstock Processing Facility would not require natural gas for the MSW processing system. No significant effects are anticipated as a result of Biorefinery’s and Feedstock Processing Facility’s connections to this existing infrastructure.

Storm Drainage

The Biorefinery would design its storm water detention system for a 25-year storm event before releasing into the TRI Center storm water drainage system. The Feedstock Processing Facility’s storm water retention system would be designed to retain a 100-year storm event on-site. No significant storm drainage effects are anticipated as a result of storm water originating from the Biorefinery’s and Feedstock Processing Facility’s sites due to the design of the storm water system.

Water and Sewer Service

Biorefinery

Water uses during construction of the Biorefinery will include dust control, soil compaction, hydrostatic testing, along with uses for making concrete and supporting any cleaning operations. Construction water would be supplied by the TRIGID’s existing water supply system, and usage is estimated at 1.7 million gallons over the 52-week construction period. See Section 2.2.1.2. Construction wastewater would be retained in the on-site evaporation basin, or if necessary tested and released. TRIGID issued Sierra BioFuels a “will serve” letter for water and sewer service at the Biorefinery. Additionally, the CGID has represented that it has sufficient system.

Operations at the Biorefinery would be designed for a maximum consumptive water rate of 101.3 gpm, with reserve storage capacity in a 600,000 gallon water storage tank. Most of the water 100 gpm would be used for process operations, and a long-term average of 1.3 gpm would be used for domestic water use (e.g. sanitary services), dust suppression and miscellaneous maintenance activities. The TRIGID would supply up to 16.7 gpm of potable water and has issued a “will serve” letter to Sierra BioFuels for water and sewer service.

Process wastewater from the syngas scrubbing and the FT synthesis system would be piped to the wastewater treatment system to be treated for recycle and re-use within the facility. Wastewater treatment would consist of filtration, dissolved air floatation, decarbonization, hydrocarbon adsorption, anaerobic biological treatment and aerobic biological treatment. The Biorefinery would have an on-site ZLD water treatment plant. All sanitary wastewater generated at the Biorefinery would be discharged to the TRI Center sanitary sewage system. Details of the Biorefinery’s water usage and process wastewater during operations are provided in Section 2.2.1.4. No significant water and sewer service effects are anticipated as a result of the Biorefinery’s interconnection to the TRI Center water and sewer infrastructure.

Feedstock Processing Facility

Construction water for use in dust control, soil compaction, and domestic uses for the contractors would be supplied by the site construction contractor. Sanitary wastes would be removed by the contractor. See Section 2.2.2.2.

Approximately 13,000 linear feet of 3-inch HDPE water line would be installed in the Storey County ROW along Canyon Road for an interconnection to the CGID potable water system. This water line is depicted in Figure 3-6 along with other project support connections. All sanitary wastewater generated at the Feedstock Processing Facility would be discharged to an on-site sewage disposal system designed and
MATERIALS LIST

- 3.500 LF 3" HDPE (OR1)
- 1.500 LF 1 1/2" HDPE (OR2)
- 1 EA 1 1/2" WATER METER
- 1 EA 3/4" DP BACKFLOW PREVENTER
- 1 EA BOOSTER PUMP STATION
- 2 EA AIR RELEASE VALVE ASSEMBLY

DESIGN CRITERIA

- MINIMUM INLETATION PRESSURE: 7.5 psi
- MAX FLOW RATE: 30 gpm
- OUTLET DISCHARGE PRESSURE: 150 psi
- PRELIMINARY PUMP DESIGN: GRUNDfos BOOSTER (3-4)
- SINGLE-SKID 14-15
- 1 (3 HP PUMP MANIFOLD SKID w/ VFD)
- 5-GALION BLADDER TANK
- WEATHERPROOF BUILT OR BUILDING ON CONCRETE SLAB

PROPOSED METERED CONNECTION
ST.A = 126-20

PROPOSED BOOSTER PUMP STATION
ST.A = 91-50

Figure 3-6 Feedstock Processing Facility Potable Waterline and Interconnect
installed under a permit issued by the NDEP – BWPC. Details of water usage and the on-site sewage disposal system process wastewater during operations are provided in Section 2.2.2.4. No significant water and wastewater disposal effects are anticipated as a result of the Feedstock Processing Facility.

Other Utility Services

The level of service provided for telephone and cable TV would be sufficient to meet the needs of the Biorefinery and Feedstock Processing Facility. No significant effects from other utility services are anticipated as a result of the Biorefinery’s and Feedstock Processing Facility’s connections to this existing infrastructure.

3.3.2.2 No Action Alternative

Since the Biorefinery and Feedstock Processing Facility would be located in areas of Storey County zoned for heavy industrial land uses and infrastructure has previously been installed to support large industrial development, it would be expected that if the IBPE would not be built that similar uses would occur at the sites and that the effects would be the same as with the Proposed Action alternative (i.e., minimal effects since transportation corridors, railways, infrastructure, and utilities have already been upgraded to handle demand from these type of uses). There also would be no effects from public health and safety as a result of the facilities. It would be possible that another industrial use would present similar potential health and safety effects.

3.4 Traffic/Transportation

3.4.1 Affected Environment

Biorefinery

Adequate transportation infrastructure (e.g., access roads, railroad links) is in place as part of the TRI Center development. The USA Parkway interchange (formerly known as the Tracey-Clark interchange) along I-80 was recently upgraded and relocated to the east in order to be the primary entry to the TRI Center. The TRI Center is served by both UP and BNSF rail service providers. UP owns the main east-west line that traverses the State of Nevada along the I-80 corridor approximately 2.5 miles in a direction line from the Biorefinery. BNSF has haul rights on the UP line.

Primary access to the Biorefinery would be via the USA Parkway exit on I-80, approximately 2.8 roadway-miles north of the Biorefinery. The USA Parkway interchange (formerly known as the Tracey-Clark interchange) along I-80 was recently upgraded and relocated to the east in response to the predicted increase in traffic volume over the next 20 years associated with the current and planned development of the TRI Center.

Within the TRI Center, USA Parkway leads directly to Peru Drive. The main entrance to the Biorefinery would be from Peru Drive. Streets within the TRI Center are designed and constructed to carry traffic associated with the “I-2 Heavy Industrial” zoning; thus, they are sufficient to meet the traffic patterns resulting from the Biorefinery’s daily operations. All improved public streets within the TRI Center have been transferred to Storey County who maintains them (including snow removal).

Feedstock Processing Facility

Primary access to the Feedstock Processing Facility from I-80 would be via the existing Mustang Road, from approximately 2 roadway miles north of the Feedstock Processing Facility as shown in Figure 3-6.

3.4.2 Environmental Effects – Traffic/Transportation

3.4.2.1 Proposed Action

Table 2-1 and Table 2-5 provide a summary of the estimated maximum total daily vehicle trips associated with the Proposed Action. For the Biorefinery, construction would take place over a 16-month
period, and all deliveries to the site for construction would be over existing roadways, both within the TRI Center and on public access highways. During operation of the Biorefinery, increases in vehicle trips would occur with up to 19 trips per day associated with up to 32 staff, up to 5 trips per day associated with commercial service deliveries, up to approximately 20 trucks per day for feedstock deliveries, and up to 4 trips per day for SPK fuel loading and shipment. During operations, up to 164 round trip vehicle trips per day would be added to the existing transportation system. The Biorefinery would use existing roads, railways, infrastructure, and utilities designed to accommodate a heavy industrial center. Since the Biorefinery would be located in an area that was developed with the intent of housing heavy industrial uses, the demand on transportation corridors, railways, infrastructure, and utilities associated with the Biorefinery would not overload the existing upgraded systems. Therefore, impacts are anticipated to be minimal. Details of Biorefinery traffic and related operations are provided in Section 2.2.1.3.

At the Feedstock Processing Facility, construction activities would involve, site preparation, delivery of equipment and constructor contractor personnel over existing public access roadways. Operations at the Feedstock Processing facility would add approximately 138 new to support the processing operations. These trips are shown in Table 2-6. These trips would support the shipping of wrapped feedstock bales to the Biorefinery, and would include shipping of recovered materials and employee arrivals and departures. Access to the site would be from Exit 23 of I-80 to the southern frontage road and then to Mustang Road which leads to the gated entrance and private road of the Lockwood Regional Landfill. Shipments of baled feedstock also would travel this route, the USA Parkway exit of I-80 to enter the TRI Center. As discussed in Section 2.2.2.3 and displayed in Table 2-6, up to 20 trips per day of baled feedstock will be transported from the Feedstock Processing Facility for delivery to the Biorefinery. Details of the transportation requirements are provided in Section 2.2.2.3.

All roads are existing and currently paved. Therefore, impacts are anticipated to be minimal.

3.4.2.2 No Action Alternative

The Feedstock Processing Facility would be located adjacent to the Lockwood Regional Landfill. The Biorefinery would be located in an industrial park that has been developed to support a heavy industrial uses. It would be expected that if either facility would not be built that a similar use would occur at the sites and that the effects would be similar to the Proposed Action alternative (i.e., minimal effects since transportation corridors, railways, infrastructure, and utilities have already been upgraded to handle demand from this type of use).

3.5 Water Resources

3.5.1 Affected Environment

3.5.1.1 Surface Water

Biorefinery

The Biorefinery site is located south of the Truckee River within the foothills of the east-west trending Virginia Range. The regional topography slopes in a northeasterly direction toward the river with an approximate slope gradient of 5 percent. The elevation difference across the site is approximately 30 feet.

No naturally occurring surface water features have been observed at the Biorefinery site. Within the Biorefinery site, two small intermittent streams meet to form one intermittent stream in the northwest corner of the neighboring parcel to the west (Parcel 2008-13), approximately 1,000 feet northwest of the site boundary. These intermittent streams are part of a local tributary system that eventually flows north and northeast to the Truckee River, approximately 2.5 miles north. Surface water resources are shown in Figure 3-7.
Figure 3-7

Hydrography

Biorefinery Facility
Feedstock Processing Facility
Project Road
Proposed Potable Water Line
Stream
Lake/Pond
Reservoir
Swamp/Marsh

Fulcrum Sierra Biofuels, LLC
Project Sierra

Figure 3-7
Hydrography

Exported On: 6/5/2014
There are no water bodies or springs on the Biorefinery site according to the U.S. Geological Survey (USGS) National Hydrography Database High-Resolution geodatabase. The closest defined water bodies are a small reservoir approximately 2.8 miles northeast and a wetlands area approximately 3.1 miles northeast.

A gravel storm water culvert is located at the northeastern corner of the site near the intersection of Peru Drive and the existing railroad spur (AECOM 2008). There has been no evidence found on-site of historical septic systems or potable/process/monitoring water supply wells (AECOM 2008).

**Feedstock Processing Facility**

The Feedstock Processing Facility site is located south of the Truckee River within the foothills of the east-west trending Virginia Range. The regional topographic slope and elevation difference is the same as the Biorefinery site.

There are no water bodies or springs on the Feedstock Processing Facility site according to the U.S. Geological Survey (USGS) National Hydrography Database High-Resolution geodatabase. The closest defined water body near the Feedstock Processing Facility site is Long Valley Creek, approximately 1,500 feet to the southwest.

### 3.5.1.2 Floodplains

The Biorefinery site is not located in a flood zone or floodplain (FIRM No. 32029C0100D).

The Feedstock Processing Facility site is not located in a flood zone or floodplain (FIRM No. 32029C0155D).

### 3.5.1.3 Wetlands

**Biorefinery**

National Wetland Inventory information indicates that no federally designated wetlands are located on or near the Biorefinery site. No non-jurisdictional wetlands are on or near the Biorefinery site.

**Feedstock Processing Facility**

National Wetland Inventory information indicates that no federally designated wetlands are located on or near the Feedstock Processing Facility site. No non-jurisdictional wetlands are on or near the Feedstock Processing Facility site.

### 3.5.1.4 Groundwater

**Biorefinery**

According to well database records from the State of Nevada Department of Conservation, the closest water well to the Biorefinery site is located within the southeast quadrant of Section 10, which is approximately 1 mile from the site. This water well, completed in 1999, has a recorded static groundwater level of 759 feet below the existing ground surface. A water well was drilled to 800 feet within Section 10 for Tahoe-Reno Industrial Sewer and Water and groundwater was not encountered. This water well was not completed. Based on information from the topographical map of the project area of the Biorefinery site, groundwater flows north-northeast towards the Truckee River.

**Feedstock Processing Facility**

According to well database records from the State of Nevada Department of Conservation, the closest water well to the Feedstock Processing Facility site is approximately 2,600 feet to the west-southwest. It was completed in 1978 to a depth of 112 feet recorded a static water level of 35 feet. Based on
information from the topographical map of the project area of the Feedstock Processing Facility site, groundwater flows north-northwest towards the Truckee River.

### 3.5.2 Environmental Effects – Water Resources

#### 3.5.2.1 Proposed Action

**Surface Water**

**Biorefinery - Construction**

Disturbance of the Biorefinery site during construction would have the potential for erosion and sediment transport during storm events. Despite the significant distance to surface water, there is a slight potential for storm water run-off from the property. Since the Biorefinery would disturb more than 1 acre, it would be subject to the requirements of NDEP-BWPC’s *General Permit for Stormwater Discharges from Construction Activities* (General Permit No. NVR10000). Sierra BioFuels would apply for a *Construction Stormwater Discharge Permit* from NDEP-BWPC through the submittal of a NOI. In addition, the facility would develop a SWPPP that would detail the BMPs that would be implemented prior to the initiation of construction. Representative BMPs include:

- Installation of physical barriers such as silt fencing, straw bales, straw waddles (woven mesh netting), and/or riprap to minimize transport of sediment and other pollutants.
- Installation of storm water drains, culverts, and other constructed conveyances to collect storm water and direct flow in process areas to the evaporation pond and divert flow away from process areas where appropriate.
- Use of secondary containment for storage of oils and chemicals.
- Inspections of the site and BMPs once a week and after every rain event greater than 0.5 inch.
- Monitoring of construction entrances for significant sediment that could be tracked out of the construction site. The on-road sediment would be regularly cleaned up and removed.

In addition, both construction sites would have temporary and permanent storm water detention basins to maintain the hydraulic flow characteristics of storm water that were present before site development.

All storm water BMPs would be maintained until construction activities would be complete and site vegetation has returned to 70 percent of its original natural density. A Notice of Termination of the permit would then be submitted to the NDEP-BWPC.

During construction, sanitary sewage from construction workers would be collected in portable facilities and removed by a contractor to an off-site treatment facility. Temporary construction water would be obtained from the TRI Center’s existing water supply system. It is estimated that approximately 1.7 million gallons of water would be consumed over the 52-week construction period. Minor volumes of water (less than 50,000 gallons) also would be used for hydrostatic testing of tanks and pipes.

As a result of these measures and the distance from any streams and water bodies there would be no potential for effects to surface water at the Biorefinery site during the construction phase.

**Biorefinery - Operation**

Both the process water (i.e., water that is required for facility operations) and potable water that would be used by the Biorefinery would be provided by the TRI Center through supply piping connected to the existing TRI Center water system. Process water would be used primarily for cooling tower make-up, scrubber system make-up, and in small volumes for various plant uses such as washdown water and dust control. Local surface water would not be used either to supply plant operations or for potable use. Demand from the Biorefinery would not be expected to exceed the established water right owned by the TRI Center.
The Biorefinery’s process wastewater would be generated primarily from the following sources: venturi scrubber, contact cooler, compressor knock-out drums, and cooling tower blowdown (see Table 2-4). The waters from the syngas scrubbing system generally have inorganic contaminants while the water from the FT section has organic contaminants. The process wastewater would be piped to the wastewater treatment system to be treated for re-use in the Biorefinery. The wastewater treatment system would utilize several treatment processes to treat and remove both organic and inorganic materials from the wastewater stream to maximize the water recycle to the Biorefinery and eliminate discharge to the TRI Center sewer system. Solids removed from the wastewater system would be collected and disposed off-site.

Once operational, the Biorefinery would be subject to NDEP-BWPC’s Stormwater General Permit for Stormwater Associated with Industrial Activity, Permit No. NVR050000. Prior to plant start-up, the facility would apply for a storm water permit by submitting a NOI. In addition, the Biorefinery would develop a SWPPP that details the BMPs that would be implemented during plant operation to minimize the potential contamination of storm water. The Biorefinery’s storm water drainage system would be designed in accordance with a grading and drainage plan approved by the Storey County Building Department. The Biorefinery’s storm water runoff would be collected and routed to the storm water detention pond on site, designed to retain runoff from a 25-year storm. The TRI Center has installed a retention pond and a series of storm water canals and weirs, which are designed to retain the equivalent of a 100-year storm. The TRI Center storm water system would serve as a backup to the Biorefinery’s on-site detention pond. Site-specific BMPs would be developed once the site layout, engineering specifications, and operating procedures are finalized. BMPs could include treatment requirements, operating procedures, and management practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage as well as erosion and sediment controls, storm water conveyance and diversion, or treatment structures. The Biorefinery’s storm water drainage and management system would be designed in accordance with a grading and drainage plan approved by the Storey County Building Department.

The primary source of sanitary wastewater would be the restrooms, showers, and kitchen areas of the Biorefinery. Sanitary wastewater usually contains pathogenic microorganisms that dwell in the human intestinal tract. It also contains nutrients, which can stimulate the growth of aquatic plants and organic compounds that can produce malodorous gasses. All sanitary wastewater generated at the Biorefinery would be discharged directly to the TRI Center sanitary sewage system. Sierra BioFuels has received a “will serve” letter from TRIGID for receipt of the sanitary wastewater.

As a result of the design features discussed above and the distance from streams or water bodies there would be no potential for effects to surface water from the Biorefinery site during the operational phase.

**Feedstock Processing Facility - Construction**

Surface water effects associated with construction of the Feedstock Processing Facility would be similar to surface water effects for construction of the Biorefinery. Construction water used for dust control would be supplied by the construction contractor from existing water sources and trucked or provided through temporary water lines to the site during construction. Potable water for construction would be provided by local vendors of bottled drinking water.

As a result of these measures and the distance from any streams and water bodies there would be no potential for effects to surface water at the Feedstock Processing Facility site during the construction phase.

**Feedstock Processing Facility - Operation**

Surface water effects associated with the operations of the Feedstock Processing Facility would be similar to surface water effects for the operations of the Biorefinery with the exception that all of the
facility’s storm water would be retained on-site. Additionally, the Feedstock Processing Facility would operate an on-site septic system.

The processing operations of the Feedstock Processing Facility would not require a water supply. Potable water would be provided through a newly constructed water supply line interconnecting to CGID’s potable water system. Approximately 1,300 linear feet of 3-inch HDPE subsurface water line would be installed in the ROW of Canyon Road. The location of the water line is provided in Figure 3-6.

As a result of the design features discussed above and the distance from streams or water bodies there would be no potential for effects to surface water from the Feedstock Processing Facility site during the operational phase.

**Groundwater**

**Biorefinery**

Sierra BioFuels would not be pumping groundwater as a source of water supply. All plant chemicals and oils would be stored in tanks and containers in good condition and in areas equipped with secondary containment for added protection against spills and leaks. All plant areas would be inspected on a daily basis for potential spills, leaks, or operating problems.

As previously mentioned, groundwater at the Biorefinery site occurs at depths greater than 700 feet below ground surface. In the unlikely event of a spill or leak, the potential to contaminate groundwater would be negligible given the depth of the water table.

**Feedstock Processing Facility**

Groundwater effects associated with operation of the Feedstock Processing Facility site would be similar to groundwater effects for operation of the Biorefinery site. As previously mentioned, groundwater in the area of the Feedstock Processing Facility site occurs at depths greater than 112 feet below ground surface. In the unlikely event of a spill, the potential to contaminate groundwater would be negligible given the depth of the water table.

3.5.2.2 **No Action Alternative**

Without the proposed project, both sites would continue to be used for industrial activities. However, given the types of protective measures that would be required in the design of industrial facilities it would be reasonable to expect that the potential impacts would be similar to the Proposed Action (i.e., little or minimal effects on water resources).

3.6 **Waste Management**

3.6.1 **Affected Environment**

**Biorefinery**

The Biorefinery would use and produce hazardous materials and industrial wastes, which are detailed in Section 2.2.1.4, and would be operated in accordance with the OSHA standards. Section 3.16 also details the historical pattern of any waste disposal at the Biorefinery site.

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1 Occupational health and safety rights for workers both during the construction and operation phases of the facility would be protected through the federal Occupational Safety and Health Act (29 USC 651 et seq.). Under this act, Congress created the OSHA, an agency of the U.S. Department of Labor. OSHA’s mission is to assure the safety and health of America’s workers by setting and enforcing standards; providing training, outreach, and education; establishing partnerships; and encouraging continual improvement in workplace safety and health.
Feedstock Processing Facility

The Feedstock Processing Facility would use and produce industrial supplies and industrial wastes, which are detailed in Section 2.2.2.4. Residual materials from the sorting activity would be loaded into delivery trucks, and transported to the landfill. Recovered materials would be sold in the commodities markets. Section 3.16 also details the historical pattern of any waste disposal at the Feedstock Processing Facility site.

3.6.2 Environmental Effects – Waste Management

3.6.2.1 Proposed Action

Biorefinery

The Biorefinery would use and produce hazardous materials and industrial waste. Operations of the Biorefinery would include receiving both specialty chemicals in small containers, and bulk chemicals for storage in tanks, pressurized vessels, and silos. Most of the specialty chemicals would be stored in smaller totes and vessels that are easily managed and limit any environmental effect from an unexpected release. SPK fuel produced by the Biorefinery would be provided as a fuel to various end-users for use or further blending. The industrial wastes generated at the Biorefinery include inert material and process residue such as sulfur, ash, gasifier inert material (e.g. glass, ferrous and non-ferrous metals), water treatment salts, and spent adsorbents and catalysts. These industrial wastes would be transported to market if there is a beneficial use of such byproducts or to an appropriate disposal site. Sierra BioFuels has identified existing disposal sites and facilities that are available to accept and handle any amount of the industrial wastes expected to be generated. The Biorefinery’s SOP would include procedures for checking and identifying any potentially hazardous materials that were inadvertently brought on site as feedstock, or generated by the Biorefinery operations, for example during an equipment or process malfunction The SOP would include procedures to isolate or contain such waste, provide appropriate waste identifications, and transport the waste to a licensed off-site processing or disposal facility.

Industrial chemicals used by the Biorefinery would be stored, handled, and used in accordance with all applicable local, state, and federal regulations. While a potential for spills would exist at the Biorefinery because of the nature of the operations, no direct effects would be anticipated as a result of the facility since an active program to clean up spills, baled feedstock, and an adequate passive protection around all storage tanks at the facility would be developed and implemented.

Feedstock Processing Facility

The only wastes generated at the Feedstock Processing Facility would be the Residual Materials sorted from the MSW (see Section 2.2.2.1). The Residual Materials would originally be transported to the landfill prior to being tipped on the Feedstock Processing Facility’s tipping floor, therefore the only effect of this operation would be to reduce a significant portion of the MSW that would have gone to the landfill. There would be no process wastes generated at the Feedstock Processing Facility.

3.6.2.2 No Action Alternative

Under the No Action Alternative, there would be no direct effects from hazardous waste and materials as a result of the IBPE. It would be possible that another industrial use would present similar potential health and safety effects hazardous materials and waste. All the MSW that would have been transported to the landfill would continue to be handled in that manner.
3.7 Geological Resources and Soils

3.7.1 Affected Environment

Topography

Biorefinery

The Biorefinery site is situated at an elevation of approximately 4,600 feet above mean sea level and south of the Truckee River Corridor. Local topography of the site is created by geomorphic features associated with an alluvial fan near the mouth of a canyon. The regional topography slopes in a northeasterly direction with an approximate slope gradient of 5 percent. The elevation difference across the site is approximately 30 feet.

Feedstock Processing Facility

The Feedstock Processing Facility site is located south of the Truckee River within the foothills of the east-west trending Virginia Range. The site elevation is approximately 4,750 feet above mean sea level, with a slight slope (6 to 8 percent) toward the west.

Geology

Biorefinery

The Biorefinery site is generally located within the western portion of the Basin and Range province of the Great Basin. Physiographic features of the Basin and Range are typified by north-south trending mountain ranges, which are separated by alluvial valleys. The site is situated within the foothills along the northern terminus of the Virginia Range. Bedrock in the area consists of volcanic rock (Stantec Consulting Inc. [Stantec] 2008).

Geology at the site is mapped as Quaternary Alluvium by the Southwest Regional Gap Analysis Project (SWReGAP²). Geology on-site includes Quaternary stream deposits, talus, slope wash, alluvial fan, and eolian deposits. Bedrock within the hillsides adjacent to the site is mapped as Kate Peak Formation, which consists of various rocks associated with volcanic activity including basalt-type flows, flow breccia, tuff breccia, mudflow breccia, agglomerate, volcanic conglomerate and associated intrusive rocks ranging in composition from pyroxene andesite to rhyodacite (Bonham and Papke1969 as interpreted by Stantec [2008]).

Feedstock Processing Facility

The local geology of the Feedstock Processing Facility site is similar to the local geology the Biorefinery.

Soils

Biorefinery

Stantec (2008) observed the predominant native soil unit as consisting of a coarse grained alluvial fan deposit of poorly graded gravel with silt, sand, cobbles, and boulders up to approximately 3 feet in dimension. An argilllic horizon, composed of sandy fat clay with a thickness up to 1.5 feet, overlies this alluvial fan horizon.

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² SWReGAP is a multi-institutional cooperative effort coordinated by the USGS Gap Analysis Program to provide a coordinated mapping approach to create detailed, seamless GIS maps of land cover, all native terrestrial vertebrate species, land stewardship, and management status, and to analyze this information to identify those biotic elements that are underrepresented on lands managed for their long term conservation or are "gaps."
There is no prime farmland as defined pursuant to the Farmland Protection Policy Act or hydric soils on the site.

**Feedstock Processing Facility**

A geotechnical site investigation was conducted in November 2013 by Applied Soil Water Technologies, LLC (ASW, 2013), which included soil investigations to 14 feet below ground surface. Clay soils were encountered from the ground surface to 7.25 to 8.7 feet below the ground surface. Underlying the clay soils are Tertiary sediments, with non-plastic silty sands with gravels and some cobbles, to the depths explored. No groundwater was encountered during these tests.

**Seismic Hazards**

**Biorefinery**

The Biorefinery site lies near the eastern base of the Sierra Nevada Mountains, within the western extreme of the Basin and Range physiographic province. This is an area of known modern seismic activity. No mapped faults are located trending through the site. The closest mapped fault zone is the Olinghouse Fault Zone, located approximately 5 miles north of the sites. The Olinghouse Fault Zone is associated with an estimated magnitude 6.7 earthquake and associated surface rupture in 1869 (Adams and Sawyer 1999; USGS and Nevada Bureau of Mines and Geology 2006).

Seismic hazards associated with ground failure during shaking include liquefaction and landslides. Liquefaction is a loss of soil shear strength that can occur during a seismic event, as cyclic shear stresses cause excessive pore water pressure between the soil grains that can result in catastrophic settlements of large structures. Due to the presence of dense granular soils and a deep groundwater table, liquefaction potential is negligible (Stantec 2008). The site is identified by the USGS as having moderate landslide potential because of soil types present (USGS 2005); however, there is no risk of landslides at the sites due to the low relief on both sites and distance to any steep slopes.

**Feedstock Processing Facility**

The hazards associated with the Feedstock Processing Facility site are similar to the seismic hazards of the Biorefinery site.

### 3.7.2 Environmental Effects – Geological Resources and Soils

#### 3.7.2.1 Proposed Action

**Biorefinery**

There is no potential for adverse impact to geology and soils at the Biorefinery site. Design specifications as detailed in the geotechnical report (Stantec 2008) for the site regarding seismic constraints and placement of fill material would minimize the potential for damage to facility structures. Additionally, as detailed in Section 3.5.2.1, a SWPPP would be developed that would include site-specific BMPs to reduce erosion potential. The Biorefinery site also would be subject to NDEP-BWPC’s *Stormwater General Permit for Stormwater Associated with Industrial Activity*, Permit No. NVR050000. The Biorefinery’s storm water drainage and management system would be designed in accordance with a grading and drainage plan approved by the Storey County Building Department.

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3 Hydric soils are soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part, and are part of the criteria for identifying wetlands.
Feedstock Processing Facility

Seismic hazard effects for the Feedstock Processing Facility would be the same as for the Biorefinery. Design specifications as detailed in the preliminary geotechnical report (ASW 2013) for the site regarding seismic constraints and placement of fill material would minimize the potential for damage to facility structures. The Feedstock Processing Facility site also would be subject to NDEP-BWPC’s Stormwater General Permit for Stormwater Associated with Industrial Activity, Permit No. NVR050000. The facility’s storm water retention system would be designed in accordance with a grading and drainage plan approved by the Storey County Building Department.

3.7.2.2 No Action Alternative

Since the IBPE sites are in industrial areas it would be likely that should they not be constructed another, similar use of the sites would eventually take place, in which case impacts should be the same as with the Proposed Action (i.e., no or minimal impact).

3.8 Vegetation

3.8.1 Affected Environment

Biorefinery

Vegetation in the vicinity of the Biorefinery project area is shown in Figure 3-8. The project area is classified as “Inter-mountain Basins Big Sagebrush Shrubland” by SWReGAP. According to NatureServe (2008), this ecological system occurs throughout much of the western U.S., typically in broad basins between mountain ranges, plains, and foothills between 4,600 and 7,600 feet in elevation. Soils are typically deep, well-drained, and non-saline. These shrublands are dominated by Artemisia tridentata ssp. tridentata. Scattered Juniperus spp., Sarcobatus vermiculatus, and Atriplex spp. may be present in some stands. Ericameria nauseosa, Chrysothamnus viscidiflorus, Purshia tridentata, or Symphoricarpos oreophilus may codominate disturbed stands (e.g., in burned stands, these may become more predominant). Perennial herbaceous components typically contribute less than 25 percent vegetative cover. Common graminoid species can include Achnatherum hymenoides, Bouteloua gracilis, Elymus lanceolatus, Festuca idahoensis, Hesperostipa comata, Leymus cinereus, Pleuraphis jamesii, Pascopyrum smithii, Poa secunda, or Pseudoroegneria spicata. Some seminatural communities are included that often originate on abandoned agricultural land or on other disturbed sites. In these locations, Bromus tectorum or other annual bromes and invasive weeds can be abundant (NatureServe 2008).

Cheatgrass (Bromus tectorum) increases the likelihood of fire in mixed sagebrush-cheatgrass sites, but burning may produce dominance of cheatgrass and other weeds. Following a fire, sagebrush must reestablish itself from seed; growth and recovery are slow (Bunting et al. 1987). Fire favors shrubs like Ericameria nauseosus that can re-sprout after fire. Fire suppression in montane grasslands could lead to conversion to Artemisia tridentata shrublands.

Feedstock Processing Facility

Vegetation in the vicinity of the Feedstock Processing Facility site is similar as the Biorefinery site.
Figure 3-8
Landcover (SW ReGAP)
3.8.2 Environmental Effects – Vegetation

3.8.2.1 Proposed Action

**Biorefinery**

The Biorefinery would remove approximately 19.4 acres of sagebrush vegetation and understory grasses. For purposes of this analysis, it is assumed that all this area would be disturbed during construction. Approximately 16.77 acres of the Biorefinery site was cleared and graded in 2012 and construction of roadways and other infrastructure has occurred over limited areas nearby. The sagebrush vegetation and understory grasses are typical of the surrounding area and do not contain any unique or significant vegetation species.

**Feedstock Processing Facility**

The Feedstock Processing Facility would remove approximately 14.4 acres of sagebrush vegetation and understory grasses. A portion of the Feedstock Processing Facility site has been disturbed. Effects to vegetation resources would be similar to the Biorefinery.

3.8.2.2 No Action Alternative

A portion of the IBPE sites are already disturbed as a result of cleaning, grading and surface activities. Roadways and infrastructure have already been constructed adjacent to the sites. Both sites are zoned for heavy industrial uses, and removal of sagebrush vegetation and understory grasses on the remainder of the acreage would likely occur in the future under the No Action Alternative. The TRI Center is actively pursuing development at the Industrial Park and will continue to do so; and adjacent and surrounding properties are being developed on a continual basis. Therefore, it is expected that impacts under the No Action Alternative would be similar to those described under the Proposed Action.

3.9 Wildlife and Fisheries

3.9.1 Affected Environment

The following descriptions of both resident and migratory wildlife include species that have either been documented near the project area of the Biorefinery site and the Feedstock Processing Facility site or those that may occur in western Nevada based on habitat associations. Wildlife species occurring near the Site are typical of the intermountain semi-desert shrublands of the Truckee River valley. Information regarding wildlife species and habitat near the site was obtained from a review of existing published sources, U.S. Fish and Wildlife Service (USFWS), NDOW file information, and Nevada Natural Heritage Program (NNHP) database information. Consultation with the USFWS was not required due to the absence of federally listed plant or wildlife species at either site, as noted in Section 3.10. Additionally, consultation with the NDOW also was not required as a result of the limited amount of habitat affected and the industrial zoning and nature of the site. However, Sierra BioFuels submitted correspondence on May 20, 2014, with both agencies in order to obtain concurrence regarding any consultation issues. NDOW provided concurrence July 29, 2014, and copies of that correspondence, as well as all other consultation, are provided in Appendix D.

3.9.1.1 Big Game

**Biorefinery**

The Biorefinery project area does not contain any important big game habitats such as migration corridors, critical winter habitat, or calving/fawning/lambing habitats (NDOW 2008a,c). Big game use of the site is low, based on scat present, and consists mainly of mule deer (*Odocoileus hemionus*) occasionally wandering through the site. Big game population numbers in the western Nevada fluctuate slightly from year-to-year based on weather and habitat conditions. Water availability and the amount of quality habitat are the limiting factors to big game populations within the project area. Human presence,
water availability, forage quality, cover, and weather patterns typically determine the level of use and movement of big game species.

The Biorefinery site has been mapped as containing Mule Deer Limited Range (Figure 3-9) and Potential Bighorn Sheep Range (*Ovis canadensis*) (Figure 3-10).

Mountain lions (*Puma concolor*) and black bears (*Ursus Americanax* also are classified as a big game species in Nevada (NDOW 2008a,b). Both of these species are fairly common in western Nevada and typically occupy the higher elevations surrounding the site; although they may travel through the project area if prey populations are present (NDOW 2008a,b).

**Feedstock Processing Facility**

The potential for big game near the Feedstock Processing Facility site is similar to the Biorefinery, with the exception that potential bighorn sheep range is present within the Feedstock Processing Facility site (NDOW 2008a,c), but due to the industrial development in the vicinity, bighorn sheep are not likely to use the site, and there would be no effect on their habitat or population resulting from this facility.

### 3.9.1.2 Wild Horses

**Biorefinery**

Wild horses (*Equus ferus*) have been observed near the Project area. However, the Biorefinery is within an existing Herd Management Area (HMA). The nearest HMA in the Carson City BLM District is the Pine Nut Mountains HMA located to the south of State Highway 50, approximately 20 miles to the south of the site. The BLM is legally required to manage wild horses and burros only in designated HMAs where they were found in 1971. Passage of the Wild Free-Roaming Horses and Burro Act (P.L. 92-195) in 1971 required the BLM to protect, manage, and control wild free-roaming horses and burros on public lands. Through land use planning, BLM evaluates each herd area to determine if it has adequate food, water, cover and space to sustain healthy and diverse wild horse and burro populations over the long term. The areas which meet these criteria are then designated as HMAs.

**Feedstock Processing Facility**

The potential for wild horses near the Feedstock Processing Facility site is similar to the Biorefinery.

### 3.9.1.3 Small Game

**Biorefinery**

Small game species that could potentially occur near the Biorefinery site include chukar (*Alectoris chukar*), mourning dove (*Zenaida macroura*), cottontail (*Sylvilagus sp.*), and black-tailed jackrabbit (*Lepus californicus*) (NDOW 2008b). Chukar are mainly found west of the site, especially on rocky ridges and hillsides with cheatgrass (NDOW 2008b). Mourning doves are found in wide range of habitats in close proximity to water and are most likely to occur near both sites during spring, summer, and early fall. Furbearers that may occur near the Site include badger (*Taxidea taxus*), red fox (*Vulpes vulpes*), and bobcat (*Lynx rufus*) (NDOW 2008b).

Due to lack of habitat, waterfowl or shorebird concentrations are limited to ponds, springs, and wetlands located along the Truckee River approximately 4.5 miles in a direct line north of the site and are not typically found near the project area.

**Feedstock Processing Facility**

The potential for small game near the Feedstock Processing Facility site is similar to the Biorefinery site. Due to lack of habitat, waterfowl or shorebird concentrations are limited to ponds, springs, and wetlands located along the Truckee River approximately 1.0 mile in a direct line north of the site and are not typically found near the project area.
Figure 3-9
Mule Deer (Odocolleus hemionus) Habitat

- Biorefinery Facility
- Feedstock Processing Facility
- Project Road
- Proposed Potable Water Line

- Mule Deer (Odocolleus hemionus) Limited Habitat
- Mule Deer (Odocolleus hemionus) Crucial Winter Habitat
- Mule Deer (Odocolleus hemionus) Agricultural Unique Habitat

Exported On: 6/5/2014
Figure 3-10
Bighorn Sheep (Ovis canadensis) Potential Habitat

Fulcrum Sierra Biofuels, LLC
Project Sierra

Exported On: 6/5/2014
3.9.1.4 Nongame Species

**Biorefinery**

A diversity of nongame species (e.g., small mammals, passerines, raptors, and reptiles) occupy a wide range of trophic levels and habitat types within the region. Habitat found on the site (e.g., sagebrush shrubland) supports a variety of resident and seasonal nongame species. Nongame mammals include such species as deer mouse (*Peromyscus maniculatus*), western harvest mouse (*Reithrodontomys megalotis*), desert woodrat (*Neotoma lepida*), and Ord’s kangaroo rat (*Dipodomys ordii*) (Hall 1995). They provide a substantial prey base for the predators including mammals (e.g., coyote, badger, skunk); raptors (eagles, hawks, falcons, owls, vultures); and reptile species found near the site. Representative birds that occur within the region are discussed in Section 3.10, Special Status Species.

Several bat species may occur near the site, including pallid bat (*Antrozous pallidus*), big brown bat (*Eptesicus fuscus*), western pipistrelle (*Parastrellus hesperus*), Yuma myotis (*Myotis yumanensis*), California myotis (*Myotis californicus*), western small-footed myotis (*Myotis ciliolabrum*), long-legged myotis (*Myotis volans*), Brazilian free-tailed bat (*Tadarida brasiliensis*), and Townsend’s big-eared bat (*Corynorhinus townsendii*) (Bradley et al. 2006). The pallid bat and Brazilian free-tailed bat are Nevada protected species and the Townsend's big-eared bat is a Nevada sensitive species (NDOW 2008d). These species are discussed in more detail in Special Status Species (Section 3.10).

Other important nongame species that are found near the site include several species of reptiles and amphibians. These species include the Great Basin whiptail (*Aspidoscelis tigris tigris*), Great Basin rattlesnake (*Crotalus oreganus lutosus*), and Great Basin spadefoot (*Spea intermontana*) (NDOW 2008b).

**Feedstock Processing Facility**

The potential for nongame species near the Feedstock Processing Facility site is similar to the Biorefinery site.

3.9.1.5 Migratory Birds including Raptors

See Section 3.10, Special Status Species, regarding a discussion on migratory birds and Birds of Conservation Concern (BCC) protected under the Migratory Bird Treaty Act (MBTA).

3.9.1.6 Fisheries

**Biorefinery**

No fisheries resources are found near the Biorefinery project area due to a lack of perennial water sources. Facility related activities would not affect fisheries in the Truckee River, due to the river’s distance of approximately 4.5 miles in a direct line north of the site.

**Feedstock Processing Facility**

No fisheries resources are found near the Feedstock Processing Facility project area due to a lack of perennial water sources. Facility related activities would not affect fisheries in the Truckee River, due to the river’s distance of approximately 1.0 mile in a direct line north of the site.

3.9.2 Environmental Effects – Wildlife and Fisheries

3.9.2.1 Proposed Action

Potential effects include surface disturbance or alteration of habitats, increased habitat fragmentation, animal displacement, changes in species composition, increased mortality due to poaching and harassment, and the increased likelihood of animal/vehicle collisions from increased traffic in the area. The severity of these effects on terrestrial wildlife depends on factors such as the sensitivity of the
species, seasonal use patterns, type and timing of activity, and physical parameters (e.g., topography, cover, forage, and climate).

Direct effects would be the surface disturbance of approximately 33.8 acres of potential wildlife habitat. However, since both sites are zoned for heavy industrial development, this impact would probably occur regardless of the development of the IBPE.

**Big Game Species**

**Biorefinery**

Construction of the Biorefinery would result in long-term disturbance (greater than 20 years) and removal of mule deer habitat, and would further fragment the limited habitat in the area for big game. The Biorefinery also would result in increased noise levels, human presence, proliferation of weeds, and dispersion of dust during construction, which also would affect big game that may be in the area. Big game animals would likely decrease their use within 0.5 mile of surface disturbance activities (Ward et al. 1980). Big game would be displaced to adjacent habitats in the short term and to areas outside the TRI Center in the long term as more development occurs in the TRI Center and associated nearby industrial sites. Traffic between the Biorefinery and the Feedstock Processing Facility would come near to mule deer crucial winter habitat; however, this portion of the transportation route would be on I-80, where a high volume of traffic already occurs. Additionally, local transportation routes are paved and already facilitate a high volume of heavy truck traffic. Due to the current low likelihood of big game using the project area and availability of habitat outside the Biorefinery site, impacts to big game are not expected.

**Feedstock Processing Facility**

Direct effects to big game species near the Feedstock Processing Facility site would be the same as described for the Biorefinery, with the exception that Bighorn Sheep habitat would be removed, further fragmenting habitat in the area for big game, although the area is already highly disturbed and industrialized.

**Wild Horses**

**Biorefinery**

In general, impacts to wild horses would result from noise and increased human activity during construction of the Biorefinery, and vehicle operation in areas where overland vehicle travel would occur. These activities could cause wild horses to avoid the project area. Potential impacts to wild horses also would include the incremental reduction of potential forage, including 19.4 acres of habitat at the Biorefinery and 14.4 acres of habitat at the Feedstock Processing Facility, and the incremental increase of noxious and invasive weeds and habitat fragmentation from vegetation removal. However, due to the industrialized nature of the area, wild horses have already been habituated to human disturbance and are known to frequent areas near the TRI Center industrial park, therefore, no impacts would be anticipated to occur.

**Feedstock Processing Facility**

Direct effects to wild horses near the Feedstock Processing Facility site would be the same as described for the Biorefinery.

**Small Game Species**

**Biorefinery**

The Biorefinery would result in the incremental disturbance and removal of habitat for small game (upland game birds, small mammals) and increased habitat fragmentation. Direct effects to small game species could include nest or burrow abandonment or loss of eggs or young. There would be no effect on habitat or on species populations due to the availability of suitable habitat outside the project area.
Development also would discourage the presence of small game species as a result of increased noise levels and human presence, dispersal of noxious and invasive weed species, and dust effects from construction.

**Feedstock Processing Facility**

Direct effects to small game species near the Feedstock Processing Facility site would be the same as described for the Biorefinery.

**Nongame Species**

**Biorefinery**

Direct impacts to nongame species would include disturbance and removal of habitat and increased habitat fragmentation. Impacts also could result in mortalities of less mobile species (e.g., small mammals, reptiles, amphibians, and invertebrates), nest abandonment, and loss of eggs or young as a result of crushing from vehicles and heavy equipment. Nongame species also would be less likely to use the site area as a result of increased noise levels and human presence, dispersal of noxious and invasive weed species, and dust effects from construction. Impacts to nongame species populations are expected to be minimal due to the availability of habitat outside the project area. Given that the Biorefinery site is zoned for heavy industrial development, this impact would likely occur regardless of facility construction.

**Feedstock Processing Facility**

Effects to nongame species near the Feedstock Processing Facility site would be the same as described for the Biorefinery.

**Migratory Birds including Raptors**

See Section 3.10.2.1, Special Status Species, for a discussion of environmental consequences to migratory birds and BCC species protected under the MBTA.

**Fisheries**

**Biorefinery**

There would be no effects to fisheries resources from the proposed Biorefinery, due to a lack of perennial water sources near the Biorefinery site. Facility-related activities would not affect fisheries habitat in the Truckee River.

**Feedstock Processing Facility**

Effects to fisheries near the Feedstock Processing Facility site would be the same as described for the Biorefinery.

**3.9.2.2 No Action Alternative**

A portion of the IBPE sites are already disturbed as a result of filling and grading. Roadways and other infrastructure have already been constructed adjacent to the sites or nearby. Since both sites are zoned for heavy industrial development, removal of potential wildlife habitat on the remainder of the 33.8 acres would likely occur in the future under the No Action Alternative. No effects to wildlife species would be anticipated as the area is heavily industrialized and to a large extent, both sites have been previously disturbed. The TRI Center is actively seeking tenants to construct industrial or commercial facilities on its property, and will continue to do so in the event that this development does not take place. Therefore, it is expected that impacts would be similar to those described under the Proposed Action.
3.10 Special Status Species

3.10.1 Affected Environment

Federally Listed Species

Biorefinery

Special status species include species listed by the USFWS as threatened, endangered, proposed and/or candidate species under the Endangered Species Act of 1973, species identified by USFWS as BCC and wildlife species identified by State of Nevada as endangered, threatened, and sensitive (NAC 501.100-503.104). The USFWS' BCC includes birds that are protected under the MBTA of 1918. Information regarding special status species near the site was obtained from a review of existing published sources, USFWS, NDOW file information, and NNHP database information.

According to the USFWS Information, Planning, and Conservation System (USFWS 2014); greater sage-grouse (*Centrocercus urophasianus*) should be considered in this analysis based on their potential for occurrence within the general geographic region of the Project area. The greater sage-grouse is classified as a federal candidate species. On March 5, 2010, the USFWS determined that the greater sage-grouse warrants protection under the ESA; however, the USFWS concluded that proposing the species for protection is precluded by the need to take action on other species facing more immediate and severe extinction threats. Therefore, greater sage-grouse in Nevada continues to be managed by the NDOW. Conservation efforts for this species in Nevada are currently coordinated by the NDOW in cooperation with the USFWS, BLM, and regional greater sage grouse working groups in an attempt to increase population levels and avoid federal listing under the ESA. In an effort to prevent federal listing of greater sage-grouse, the BLM and NDOW have recently completed mapping of core breeding areas in Nevada.

The greater sage-grouse occurs throughout Nevada in sagebrush dominated habitats. Sagebrush is a key component of greater sage-grouse habitat throughout the year (USFWS 2007). Sagebrush provides forage and nesting, security, and thermal cover for this species. Moist areas that provide succulent herbaceous vegetation during the summer are used extensively as brood-rearing habitat. Open, often elevated areas within sagebrush habitats usually serve as breeding areas (i.e., strutting grounds or lek sites) (USFWS 2007). During winter, greater sage-grouse often occupy wind exposed areas where sagebrush is available (e.g., drainages, southern or western slopes, or exposed ridges).

A review of NDOW spatial data (2008e) indicates that there are no active lek sites near either the Biorefinery or the Feedstock Processing Facility. The nearest known active lek site, the Cottonwood Creek Lek, is located approximately 13 miles to the north-northeast of the Feedstock Processing Facility and 12 miles to the north-northwest of the Biorefinery. In addition, there is no designated greater sage-grouse nesting habitat, winter distribution, or summer distribution in Storey County, Nevada. Greater sage-grouse winter range is located over 3 miles to the north of both the Feedstock Processing Facility and the Biorefinery in Washoe County. There are no federally listed plant or wildlife species known to occur at the sites.

Feedstock Processing Facility

The affected environment for federal listed species near the Feedstock Processing Facility is the same as described for the Biorefinery.
State Listed, Protected, Sensitive, and Migratory Bird Treaty Act Species

Biorefinery

Based on evaluation of habitat requirements and/or known distribution a total of six state listed special status wildlife species were identified as having the potential to occur near the site (NDOW 2008d; USFWS 2008). These species are listed as either Nevada State Protected (NV-SP) or Nevada State Protected Sensitive (NV-SPS). These species include three mammals: the pallid bat (Antrozous pallidus), Brazilian free-tailed bat (Tadarida brasiliensis), and Townsend’s big-eared bat (Corynorhinus townsendii); and three bird species: loggerhead shrike (Lanius ludovicianus), sage thrasher (Oreoscoptes montanus), and Brewer’s sparrow (Spizella breweri). Details on each species are described in the following subsections. There are no occurrences of state listed or sensitive plant species near the site.

Seven species have been identified as BBC4 by the USFWS. Two of these also are state listed bird species, the loggerhead shrike and Brewer’s sparrow. Five other BCC species also may occur at the site: Ferruginous hawk (Buteo regalis), Burrowing owl (Athene cunicularia hypugaea), gray vireo (Vireo vicinior), Virginia’s warbler (Oreothlypis virginiae), and the sage sparrow (Artemisiospiza nevadensis).

Feedstock Processing Facility

The affected environment for state listed, protected, sensitive, and MBTA species near the Feedstock Processing Facility site is the same as described for the Biorefinery site.

Special Status Mammals

Biorefinery

The pallid bat (NV-SP) is a year-round resident in Nevada. Found primarily at low and mid elevations (1,300 to 8,400 feet), this species occupies a variety of habitats such as piñon-juniper, blackbrush, creosote, sagebrush, and salt desert scrub (Bradley et al. 2006). This species feeds primarily on large ground-dwelling arthropods (e.g., scorpions, centipedes, grasshoppers), but also feeds on large moths (Bradley et al. 2006). The pallid bat is a colonial species, roosting in groups of up to 100 individuals (Arizona Game and Fish Department, 1993 [AGFD 1993]). Roost sites consist of rock outcrops, mines, caves, hollow trees, buildings, and bridges (AGFD 1993; Bradley et al. 2006). The pallid bat is intolerant of roost sites in excess of 40 degrees Celsius (Bradley et al. 2006). This species has been documented in the region (Bradley et al. 2006). Based on its known range and suitable foraging habitat near the site, the potential for this species to occur near both sites is considered high.

The Townsend’s big-eared bat (NV-SPS) is a year-round resident found throughout Nevada from low desert to high mountain habitats (690 to 11,400 feet in elevation) (Bradley et al. 2006). The Townsend’s big-eared bat primarily occurs in piñon-juniper, mountain mahogany, white fir, blackbrush, sagebrush, salt desert scrub, agricultural lands, and urban habitats (Bradley et al. 2006). This species prefers caves, mines, and buildings that maintain stable temperatures and airflow for nursery colonies, bachelor roosts, and hibernacula (Harvey et al. 1999). It does not make major migrations and appears to be relatively sedentary, not traveling far from summer foraging grounds to winter hibernation sites (Harvey et al. 1999). Its distribution seems to be determined by suitable roost and hibernation sites, primarily caves and mines. This bat is believed to feed entirely on moths (Harvey et al. 1999) and gleans insects from foliage and other surfaces (Bradley et al. 2006). This species has been documented in the region (Bradley et al. 2006). Based on its known range and suitable foraging habitat near the site, the potential for this species to occur near the site is considered high.

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4 For MBTA, the USFWS typically places the highest priority on BCC (USFWS 2002).
The Brazilian free-tailed bat (NV-SP) is found throughout Nevada in a wide variety of habitats ranging from desert scrub to high elevation mountain habitats (680 to 8,200 feet in elevation) (Bradley et al. 2006). This species roosts in a variety of structures including cliff faces, caves, mines, buildings, bridges, and hollow trees. Some caves are used as long-term transient stopover roosts during migration (Bradley et al. 2006). The Brazilian free-tailed bat is known to travel long distances to foraging areas and often forages at high altitudes. This species has been documented in the region (Bradley et al. 2006). Based on its known range and suitable foraging habitat near the site, the potential for this species to occur near the site is considered high.

**Feedstock Processing Facility**

The affected environment for special status mammals near the Feedstock Processing Facility site is the same as described for the Biorefinery site.

**Special Status Birds**

**Biorefinery**

Birds listed as BCC in the Great Basin Region that are potential breeders near the site include ferruginous hawk, burrowing owl, loggerhead shrike, gray vireo, Virginia’s warbler, Brewer’s sparrow, and sage sparrow.

Although suitable nesting and foraging habitat is present within and near the site, the likelihood of nesting ferruginous hawks is very low due to industrial development in the vicinity. Ferruginous hawks are sensitive to disturbance and therefore typically nest away from developed areas (Schmutz 1984; White and Thurow 1985). Burrowing owls may nest near both sites, especially in areas with abandoned small mammal burrows.

Loggerhead shrike, gray vireo, Virginia’s warbler, Brewer’s sparrow, sage thrasher, and sage sparrow are neotropical migrants that may occur near the site from spring through early fall. Their breeding season is approximately April 15 through August 1.

The loggerhead shrike (NV-SPS) is a common resident throughout Nevada. This species is found in open grasslands along valley floors and foothills of the Great Basin. In Nevada, it is commonly found in scrub habitat types such as sagebrush and greasewood. Loggerhead shrikes prefer shrubs or small trees for nesting, but nesting also can occur in piñon-juniper woodlands. This species can be found perching on wire, fences, or poles (National Geographic Society [NGS] 1983). There is suitable nesting and foraging habitat near the site. The potential for this species to occur near the site is considered high.

The sage thrasher (NV-SPS), Brewer’s sparrow (NV-SPS), gray vireo (BCC), Virginia’s warbler (BCC), and sage sparrow (BCC) are found throughout southern and western Nevada in low elevation habitats such as desert scrub and sagebrush grasslands. These species occur less frequently in mountain shrub habitats. These species nests near the ground under sagebrush and other shrubs (NGS 1983). Suitable nesting and foraging habitat exists near the site. The potential for these species to occur near both sites is considered high.

**Special Status Birds**

The affected environment for special status birds near the Feedstock Processing Facility site is the same as described for the Biorefinery site.
3.10.2 Environmental Effects – Special Status Species

3.10.2.1 Proposed Action

Federally Listed Species

Biorefinery

Approximately 19.4 acres of sagebrush shrubland habitat would be disturbed as a result of construction of the Biorefinery and 14.4 acres of similar habitat would be disturbed as a result of the construction of the Feedstock Processing Facility. Additionally, approximately 16.8 acres of the Biorefinery site was cleared and graded in 2012 and construction of roadways and other infrastructure has occurred over limited areas nearby. While sage-grouse may utilize sagebrush shrublands in the general region, there have been no documented greater sage-grouse leks sites within the vicinity of either the Biorefinery or Feedstock Processing Facility sites.

Studies have shown that a majority of nesting activity occurs within 2 miles of active leks (NDOW 2004). However, the nearest known active lek site, the Cottonwood Creek Lek, is located approximately 13 miles to the north-northeast of the Feedstock Processing Facility and 12 miles to the north-northwest of the Biorefinery. In addition, there is no designated greater sage-grouse nesting habitat, winter distribution, or summer distribution in Storey County. Greater sage-grouse winter range is located over 3 miles to the north of both the Feedstock Processing Facility and the Biorefinery in Washoe County. Therefore, there are no impacts to greater sage-grouse expected to occur as a result of construction of the Biorefinery or the Feedstock Processing Facility.

Since there are no federally listed plant or wildlife species at either site, no impacts to federally listed species are anticipated.

Feedstock Processing Facility

Effects to federally listed species near the Feedstock Processing Facility site, as described above, would be the same as described for the Biorefinery.

State Listed, Protected, Sensitive, and Migratory Bird Treaty Act Species

Biorefinery

Impacts to special status wildlife species from surface disturbance would parallel those described in Section 3.9.2, resulting from the long-term removal of approximately 19.4 acres of potential habitat. These impacts would last until the facilities are decommissioned (estimated at 30 years), successful reclamation would be completed, and vegetation would be reestablished. Given that both sites are zoned for industrial development, this impact would probably occur regardless of the facilities. Further, if the facilities are decommissioned it would be likely that another industrial plant would occupy the site.

Feedstock Processing Facility

Effects to state listed, protected, sensitive, and migratory bird treaty act species at the Feedstock Processing Facility site would be the same as described for the Biorefinery. Effects would result from the long-term removal of approximately 14.4 acres of potential habitat.

Special Status Plants

Biorefinery

Since there are no state listed or sensitive plant species at the Biorefinery site, no impacts to special status plant species would be anticipated.
Feedstock Processing Facility

Effects to special status plants near the Feedstock Processing Facility site would be the same as described for the Biorefinery.

Special Status Mammals

Biorefinery

Potentially suitable foraging habitat for the three species (pallid bat, Townsend’s big-eared bat, and Brazilian free-tailed bat) exists near the site. Construction and operation of the facility could result in indirect effects to local bat species and their habitat. Indirect effects would include the long-term disturbance of foraging habitat, including approximately 19.4 acres of habitat. However, due to a lack of roosting habitat near the site, no impacts to sensitive bat species are expected. Given that both sites are zoned for industrial development, this disturbance would probably occur regardless of the facility.

Feedstock Processing Facility

Effects to special status mammals would be the same as described for the Biorefinery. Indirect effects would include the long-term disturbance of foraging habitat, including approximately 14.4 acres of habitat.

Special Status Birds

Biorefinery

As discussed in Section 3.10.1 above seven species listed as BCC are potential breeders near the Biorefinery site: ferruginous hawk, burrowing owl, loggerhead shrike, gray vireo, Virginia’s warbler, Brewer’s sparrow, and sage sparrow; one species, the sage thrasher, is a state listed special wildlife species but not a BCC.

Construction and operation of the Biorefinery would result in the long-term removal of approximately 19.4 acres of potentially suitable breeding habitat. Noise and human presence also could deter use of the area by these species. During the breeding season (March 15 through July 31), development activities also could result in the abandonment of a nest site or territory or the loss of eggs or young, resulting in the loss of productivity for the breeding season. Development also would fragment habitat as a result of increased noise levels and human presence, dispersal of noxious and invasive weed species, and dust effects from construction. However, the degree of these potential effects would depend on a number of variables including the location of the nest site, the species’ relative sensitivity, breeding phenology, and possible topographic shielding. As mentioned above in Section 3.8.1 the Biorefinery site is classified as Inter-mountain Basins Big Sagebrush Shrubland. This ecological system occurs throughout the western U.S. and there is nothing special or unique about the project area habitat, particularly in view of its already disturbed nature. Habitat for these species also exists near the Biorefinery site.

Potential impacts to breeding birds from development activities would be minimized during construction by avoiding removal of migratory bird habitat on currently undisturbed lands on the sites to the extent possible between March 15 and July 31. Should removal of habitat be required during this period, Sierra BioFuels would coordinate with the NDOW and the USFWS to determine if surveys and appropriate mitigation, such as buffer zones around occupied nests, may be needed. As a result of these measures and due to the large amount of suitable habitat in the vicinity of the sites and beyond the TRI Center, no impacts to species populations are expected. Finally given that the site is zoned for industrial development, disturbance would probably occur regardless of whether the the IBPE is constructed.
Effects to special status birds near the Feedstock Processing Facility site would be the same as described for the Biorefinery. Construction and operations of the Feedstock Processing Facility would result in the long-term removal of approximately 14.4 acres of potentially suitable breeding habitat.

3.10.2.2 No Action Alternative

A portion of the IBPE sites are already disturbed as a result of filling, clearing, grading, and other surface disturbing activities. Roadways and other infrastructure have already been constructed adjacent to the sites or nearby. No effects to special status species would be anticipated as the area is heavily industrialized and to a large extent, both sites have been previously disturbed. Additionally, since both sites are zoned for heavy industrial development, removal of potential habitat on the remainder of the 33.8 acres would likely occur in the future under the No Action Alternative. The TRI Center is actively seeking tenants to construct industrial or commercial facilities on its property, and will continue to do so in the event that this development does not take place. Therefore, it is expected that impacts would be similar to those described under the Proposed Action.

3.11 Air Quality

3.11.1 Affected Environment

The Feedstock Processing Facility site is located approximately 6 miles east-southeast of Sparks, Nevada, near the entrance to the Lockwood Regional Landfill, and the Biorefinery site is located approximately 7 miles in a direct line to the northeast of the Feedstock Processing Facility site in the TRI Center. No air quality data are collected at the TRI Center. However, there are State and Local Air Monitoring stations that includes data from Reno and Sparks Nevada. Due to the exposure to urban sources of air pollution at this monitoring site, the monitoring results from these stations would be higher than the values at the more remote sites. However, the Reno and Sparks monitoring results provide a conservative indication of air quality data at the two sites and the trends in air quality conditions in the area.

Several years of air quality monitoring data collected in Reno and Sparks, Nevada, from 2003 through 2013 (an incomplete year) are summarized in Figure 3-11, which depicts the levels of air quality that are monitored for comparison to the standards. The air quality standards and levels that are analyzed are:

- CO, second highest 1-hour and 8-hour levels;
- Nitrogen dioxide (NO₂), the annual 98th percentile level of the daily maximum 1-hour level;
- Ozone, the 3-year average of fourth-highest daily maximum 8-hour average level;
- PM_{2.5} the 98th percentile of the 24-hour levels;
- PM_{2.5} the 3-year annual average of all values; and
- PM_{10} , the 3-year average of the 98th percentile of the daily 24-hour levels.

The current air quality levels for the Reno-Sparks area are shown in Figure 3-11 for the separate pollutants listed above. The area is in attainment status (or attainment/unclassifiable) for all criteria air pollutants. Data show that the levels of CO have been dropping steadily during the 2003-2013 period, due largely to improved emissions from cars and trucks. The 1-hour standard is 40 parts per million (ppm) and the 8-hour standard is 9 ppm. Results indicate that the levels are well below those standards. The U.S. Environmental Protection Agency (USEPA) recently promulgated a 1-hour standard for NO₂ based on the 3-year average of the annual 98th percentile of the daily maximum 1-hour NO₂ level. That standard is 100 parts per billion (ppb). As shown in Figure 3-11 that level also has dropped over the
Figure 3-11  Air Quality Measured Values for Reno-Sparks
2003-2013 period, to about 50 ppb. Ozone is formed in the lower atmosphere through the interaction of nitrogen oxides, volatile organic compounds, and sunlight, as well as ambient temperature. The current ozone standard is based on the 3-year average of the 98th percentile of the daily maximum 8-hour average ozone level, and is set at 0.075 ppm. Data at Reno-Sparks indicate that the ozone levels also have continued to decrease throughout the period, and are currently well below the standard. There are two standards for fine particulate matter, or particulate matter (PM) with an aerodynamic diameter of 2.5 microns or less (PM$_{2.5}$). The annual standard is based on the 3-year average of all levels throughout the year, and the 24-hour standard is based on the 3-year average of the 98th percentile of the daily (24-hour) levels. The annual standard is 12 µg/m$^3$ and the 24-hour standard is 35 µg/m$^3$. The PM$_{2.5}$ data shown in Figure 3-11 indicate that the current levels are well within the annual standard, and the 24-hour PM$_{2.5}$ levels have decreased substantially since 2008-2010. All data show compliance with the standards at the current time.

Sulfur dioxide (SO$_2$) also has been measured at the Reno-Sparks monitoring site since 2010. The standard is based on the 3-year average of the annual 99th percentile of the daily maximum 1-hour SO$_2$ level. During that time the 99th percentile for each year has been 5 or 6 ppb, compared to a standard of 75 ppb. Data also were collected for PM$_{10}$, but collection has ceased, in view of the collection of PM$_{2.5}$ data. Data from other sites in the region, including Fernley, Fallon and Carson City (not shown here) also indicate that the ambient air quality meets the required state and federal standards.

The USEPA promulgated the federal general conformity rule (40 CFR 51 and 93) to implement Section 176(c) of the Clean Air Act (CAA), which contains requirements that apply specifically to federal agency actions, including actions receiving federal funding, to ensure they are consistent with the CAA and applicable State Implementation Plans (SIP). The purpose of a SIP is an attainment or maintenance demonstration to eliminate or reduce the severity and number of violations of National Ambient Air Quality Standards and to achieve expeditious attainment of such standards. In general, the rule ensures that all criteria air pollutant emissions and volatile organic compounds (VOC) are specifically identified, accounted for and conformed with the SIP. The provisions of the general conformity rule do not apply in attainment areas, and because the proposed IBPE is in an attainment area these provisions would not apply to the proposed IBPE.

3.11.2 Environmental Effects – Air Quality

3.11.2.1 Proposed Action

Stationary Sources

Biorefinery

A Class II Air Quality Operating Permit to Construct (Air Permit) was issued to the original developer, IMS Nevada, LLC, under the NDEP-BAPC rules for a minor source permit. The NDEP-BAPC transferred the Air Permit to Sierra BioFuels on April 21, 2008. On September 23, 2009, a Revised Air Permit (No. AP2869-2382) was issued by the NDEP-BAPC to reflect the changes in equipment design, operating efficiencies, and process improvements that Sierra BioFuels has made to the Biorefinery. A revised permit was issued on August 23, 2010. A new application was submitted in response to optimizing plant design, and a final permit was issued on July 1, 2013 (Permit No. AP2869-3306).

Sierra BioFuels submitted an application in February 2014 to modify the current permit, replacing the production of ethanol with the production of SPK fuel. NDEP-BAPC issued a revised air permit on June 25, 2014. The analysis provided in this EA is based on the air quality analyses, emission rates, and impacts associated with the proposed modification, and is consistent with the modified air permit for the Biorefinery.
Feedstock Processing Facility

A stationary source that has the potential to emit less than 100 tpy for any one regulated criteria air pollutant and emit less than 25 tpy total hazardous air pollutants (HAPs) and emit less than 10 tpy of any one HAP is required to obtain Class II Air Quality Operating Permit to Construct from the NDEP-BAPC prior to the commencement of construction. The Feedstock Processing Facility would have a dust collection system that would have the potential to emit approximately 2 tpy of PM. Sierra BioFuels is preparing an application for a Class II Air Permit and expects to submit the application in the second quarter of 2014.

Construction Related Mobile Sources

A wide range of engine sizes and equipment types comprise the typical non-road mobile sources used during the construction of an industrial facility. The emissions generated by pieces of construction equipment would be temporary and result in generally localized impacts on air quality.

EPA has developed a model for estimating emissions and/or emission factors from non-road equipment; NONROAD2008 is the latest version of this model. The model estimates VOC, CO, oxides of nitrogen (NOx), PM (including PM10 and PM2.5), SO2, and CO2. The construction emissions associated with the IBPE were estimated using the highest emission factor for each pollutant for engines from 25 to 500 horsepower (hp), using data for Tier II engines from the USEPA’s 2008 non-road emissions database (USEPA 2010). The construction of the Biorefinery would be anticipated to take place over a period of 14 months. The construction of the Feedstock Processing Facility would be anticipated to take place over a period of 12 months. Construction activities include a series of activities from site preparation with major earth moving equipment, through excavation, installation of concrete foundations, installation of utilities, hauling and lifting major unit equipment pieces, through cleaning, painting, and site regarding and landscaping. A variety of non-road construction equipment would be used at various points of the construction, including air compressors, dozers, cranes, trucks, forklifts, pumps, and packers. A complete listing of the types of equipment and their associated emission factors, hours of operation, and total emissions for the Biorefinery and the Feedstock Processing Facility can be found in Appendix B and Appendix C, respectively.

Table 3-1 summarizes the estimated emissions associated with construction of the Biorefinery and the Feedstock Processing Facility. The total emissions associated with the construction of the IBPE are very small and temporary in nature.

<table>
<thead>
<tr>
<th></th>
<th>NOx</th>
<th>SO2</th>
<th>VOC</th>
<th>PM</th>
<th>CO</th>
<th>CO2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biorefinery</td>
<td>110</td>
<td>15</td>
<td>16</td>
<td>9</td>
<td>65</td>
<td>8,340</td>
</tr>
<tr>
<td>Feedstock Processing Facility</td>
<td>22</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>13</td>
<td>1,642</td>
</tr>
</tbody>
</table>

Fugitive dust emissions also would be generated by construction by moving construction vehicles and by earth moving, handling, and stockpiling activities. These emissions would be short-term, intermittent.

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emissions that result in generally localized impacts to air quality. Sierra BioFuels would employ the following best management practices to minimize fugitive dust generation during construction:

- Water spraying during excavations and earthwork loading operations;
- Intermittent spraying of material piles;
- Haul roads would be maintained and watered;
- Trucks transporting construction materials would be covered;
- Job site speeds would be maintained at 5 miles per hour (mph) or less; and
- Excavated materials would be maintained away from active traffic lanes.

**Operations**

**Biorefinery**

The operations of the Biorefinery would require an operating permit to construct under the NDEP-BAPC air quality regulations. Given the anticipated level of the emissions, the Biorefinery would operate under a Class II Operating Permit, as a minor source. The Biorefinery would operate a number of units that emit pollutants to the atmosphere. Emission points consist of both point sources and fugitive (non-point) VOC sources. Specific emission points include the following:

- A synthesis gas gasification unit that generates the syngas;
- Four (4) pulse combustor heaters fueled by natural gas and syngas to provide heat to the gasification unit;
- A SRU, with a separate vent, that removes sulfur from the syngas stream;
- A FT reactor and production plant, including a unit that captures and removes (or vents) CO₂, a distillation column that processes syngas into an SPK biofuel product, a catalytic reactor purge stream, and other processes that clean the syngas and SPK prior to shipment;
- Various storage tanks;
- SPK product loading areas;
- A process flare;
- A “package” utility boiler that provides steam and heat for use in the Biorefinery;
- Storage silos for chemicals used to treat the product and intermediates;
- A dust collector system on the feedstock supply unloading and handling areas; and
- Emergency diesel engines that would be used for power generation or fire water pumps.

**Table 3-2** lists the total emissions of the criteria air pollutants as well as the major hazardous air pollutants that would be emitted by the operations of the Biorefinery’s emissions units as designed for the proposed permit revision. Emission rates were based on standard reference databases including USEPA’s Compendium of Emission Factors from Stationary Sources (Referred to as AP-42) and data provided by vendors. Emissions of hazardous air pollutants were based on AP-42 factors, and emissions for greenhouse gases were based on data provided in 40 CFR 98 Subpart A and on an engineering analysis of the syngas and purge gas streams. Particulate emission rates for baghouses were based on proposed design criteria related to the specification of 0.005 grains/dry standard cubic foot and on the projected baghouse vent rate for the designed units.

The table provides a total of all emissions from all sources and shows that all emissions of all individual criteria pollutants would be less than 100 tpy.
Table 3-2  Biorefinery - Facility-wide (Stationary Source) Potential to Emit

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Potential to Emit (pounds/hour)</th>
<th>Potential to Emit (tpy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total PM</td>
<td>5.39</td>
<td>8.38</td>
</tr>
<tr>
<td>Particulates as PM$_{10}$</td>
<td>5.39</td>
<td>8.38</td>
</tr>
<tr>
<td>SO$_2$</td>
<td>8.27</td>
<td>2.99</td>
</tr>
<tr>
<td>CO</td>
<td>40.51</td>
<td>44.41</td>
</tr>
<tr>
<td>NO$_X$</td>
<td>34.65</td>
<td>20.77</td>
</tr>
<tr>
<td>Volatile Organic Compounds</td>
<td>17.95</td>
<td>38.31</td>
</tr>
<tr>
<td>Lead</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Hazardous Air Pollutants (Specify Each Pollutant)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N-Hexane</td>
<td>0.249</td>
<td>1.09</td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>0.014</td>
<td>0.46</td>
</tr>
<tr>
<td>Acetaldehyde</td>
<td>0.002</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Benzene</td>
<td>0.010</td>
<td>0.002</td>
</tr>
<tr>
<td>Toluene</td>
<td>0.004</td>
<td>0.002</td>
</tr>
<tr>
<td>Naphthalene</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Xylenes</td>
<td>0.003</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Acrolein</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>H$_2$S</td>
<td>0.37</td>
<td>1.61</td>
</tr>
<tr>
<td>Other Regulated Pollutants (Specify)</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Feedstock Processing Facility

The operation of the Feedstock Processing Facility would require an operating permit to construct under the NDEP-BAPC air quality regulations. Given the anticipated level of the emissions, the Feedstock Processing Facility would operate under a Class II Operating Permit, as a minor source. The Feedstock Processing Facility operational emissions would be associated with 1 baghouse that controls the MSW handling and processing operations. Current design is for a unit with a flow rate of 10,000 actual cubic feet per minute (acfm) and a grain loading effectiveness of 0.005 grains per dry standard cubic feet (gr/dscf).

Table 3-3 lists the total emissions of the criteria air pollutants as well as the major hazardous air pollutants that would be emitted by the operations of the Feedstock Processing Facility’s dust collection system. The table shows emissions of all individual criteria pollutants would be less than 100 tpy. No Hazardous Air Pollutants would be emitted from this facility.

Table 3-3  Feedstock Processing Facility – Facility-wide (Stationary Source) Potential to Emit

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Potential to Emit (pounds/hour)</th>
<th>Potential to Emit (tpy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total PM</td>
<td>0.47</td>
<td>2.05</td>
</tr>
<tr>
<td>Particulates as PM$_{10}$</td>
<td>0.47</td>
<td>2.05</td>
</tr>
<tr>
<td>Hazardous Air Pollutants (Specify Each Pollutant)</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Other Regulated Pollutants (Specify)</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>
Ambient Air Quality Modeling

According to NDEP-BAPC classifications for operating permits, the anticipated emission rates from the Biorefinery and the Feedstock Processing Facility are each a Class II (minor source) for air emissions. NDEP-BAPC would evaluate the two applications and associated emissions and conduct a technical review to demonstrate compliance with ambient air quality standards, as part of issuing the air quality permit for the facilities.

The air quality related impacts from the Biorefinery and the Feedstock Processing Facility were evaluated using the emission rates associated with each emission unit, along with the source release characteristics. Modeling was conducted using the USEPA-approved guideline model AERMOD, and meteorological data provided by NDEP. Methodologies that were used are the standard default settings related to the vegetation/ground cover of the area, the rural settings, building profile input data, topographic elevations, and wind profiles. The modeling evaluation provides both the short-term (24-hour and less) and long-term (annual average) projected concentrations at the maximum receptor around each facility. The model results show that all impacts would be below the established ambient air quality standards under normal operations. The air permit application would include emissions modeling that addressed air quality related impacts from operating the IBPE.

Table 3-4 provides a summary of the Biorefinery’s modeled impacts of the emissions, and includes background concentrations provided by NDEP-BAPC. It lists the individual pollutants that were evaluated, along with the maximum impact at any of the modeled receptors for each pollutant and for each time period. All short-term impacts reflect the maximum concentration for the applicable time period. The results of this modeling analysis demonstrate that the Biorefinery would not cause or contribute to an exceedence of an ambient air quality standard.

Air quality impacts resulting from the operations of the Feedstock Processing Facility were modeled using the identical meteorological data that are being used for the Biorefinery. Emission rates were calculated for the only sources at the site, which are expected to be the baghouse that controls the sorting and bagging operations, using the design data provided for these operations. The maximum impacts are shown in Table 3-4 along with a comparison to the applicable standards.

A review of nearby receptors indicated that there are no sensitive receptors (schools, hospitals or care facilities, recreation areas, ecological areas, or other sensitive areas) within the impact area of emissions from the Biorefinery or the Feedstock Processing Facility. Additionally since the impacts of the regulated pollutants are within the Nevada Ambient Air Quality Standards, there are anticipated to be no effects on any sensitive populations.

Greenhouse Gases and Global Climate Change

While the scientific understanding of climate change continues to evolve, the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report has stated that warming of the Earth’s climate is unequivocal, and that warming is very likely attributable to increases in atmospheric greenhouse gases (GHGs) caused by human activities (anthropogenic) (IPCC Climate Change 2007: Synthesis Report [IPCC 2007]). The IPCC 2007 Report indicates that changes in many physical and biological systems, such as increases in global temperatures, more frequent heat waves, rising sea levels, coastal flooding, loss of wildlife habitat, spread of infectious disease, and other potential environmental impacts are linked to changes in the climate system, and that some changes may be irreversible.

Construction of the IBPE would result in minor emissions totaling 9,982 tpy of carbon dioxide equivalent (CO₂e) of GHGs emitted as a result of activities related to construction and transportation (see Appendices A and B).
Table 3-4  Biorefinery – Maximum Predicted Ambient Air Quality Impacts Compared to Ambient Air Quality Standards

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging Period</th>
<th>Maximum Predicted Impact (µg/m³) ¹</th>
<th>Nevada/National AAQS (µg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO₂ ²</td>
<td>Annual</td>
<td>19</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>1-hour</td>
<td>120</td>
<td>188</td>
</tr>
<tr>
<td>SO₂</td>
<td>1-hour</td>
<td>10</td>
<td>196</td>
</tr>
<tr>
<td></td>
<td>3-hour</td>
<td>27</td>
<td>1,300</td>
</tr>
<tr>
<td></td>
<td>24-hour</td>
<td>10</td>
<td>365</td>
</tr>
<tr>
<td></td>
<td>Annual</td>
<td>4</td>
<td>80</td>
</tr>
<tr>
<td>PM₁₀</td>
<td>24-hour</td>
<td>43</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>Annual ³</td>
<td>18</td>
<td>50</td>
</tr>
<tr>
<td>PM₂·₅</td>
<td>24-hour</td>
<td>22</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>Annual</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>CO</td>
<td>1-hour</td>
<td>529</td>
<td>40,500</td>
</tr>
<tr>
<td></td>
<td>8-hour</td>
<td>203</td>
<td>10,500</td>
</tr>
<tr>
<td>Ozone</td>
<td>1-hour ⁵,⁶</td>
<td>28</td>
<td>147</td>
</tr>
<tr>
<td>H₂S ⁷</td>
<td>1-hour</td>
<td>7.6</td>
<td>112</td>
</tr>
</tbody>
</table>

¹ Maximum predicted impact includes background concentrations for NO₂, SO₂, and PM₁₀.
² NO₂ concentration assume 100 percent conversion from NOₓ to NO₂.
³ Annual PM₁₀ is a state only standard.
⁴ No background concentration available for PM₂·₅.
⁵ Ozone concentrations predicted by Scheffe Method, as described in the NDEP regulations.
⁶ Represents the 1-hour ozone standard (in Nevada regulations). The modeled impact of 28 µg/m³ for 1-hour assured compliance with the federal ambient air quality standard of 75 ppb or 147 µg/m³ on an 8-hour fourth-highest impact.
⁷ H₂S standard is state-only.

Operation of the IBPE would result in GHG emissions. The GHG emissions from the Biorefinery would result from the combustion of both natural gas and the purge gas (syngas) product stream. The Biorefinery also removes CO₂ from the syngas through an acid gas scrubber system and a process vent to the atmosphere. A significant portion of the purge gas combustion CO₂ and the scrubber vent CO₂ would be made up of the renewable (non-fossil-based) portion of the MSW feedstock, thereby producing non-fossil or biogenic CO₂. The analysis of the feedstock and calculations from these emission units show that of the purge gas and syngas generated CO₂, approximately 79.7 percent would be biogenic. Combined with the CO₂ generated by natural gas combustion, the Biorefinery generates a total of 262,000 tpy of CO₂e, with a total of 93,000 tpy of fossil-based CO₂ and 169,000 tpy of biogenic based CO₂e.

Operations of the Feedstock Processing Facility would not result in direct GHG emissions because there would be no combustion sources at the facility.

Once operational, the Biorefinery would use sorted MSW to generate syngas to produce SPK fuel. A separate purge gas stream generated at the Biorefinery would be used as fuel in the utility boiler to generate process steam for use on in the Biorefinery. The remainder of the syngas would be converted into SPK fuel. A comparative calculation of GHG emissions, in CO₂e was made between the Biorefinery-produced biofuel to determine the annual net savings in CO₂e GHG. In ultimately combusting the SPK fuel as a replacement for fossil fuels, the total annual CO₂ emissions would be 103,000 tpy, comprised of
79.7 percent CO\(_2\) from renewable feedstock. This value is approximately 0.0015 percent of the total annual 6,526 million metric tons of GHG emissions in the U.S. in 2012, and is therefore not a significant contribution. This effectively replaces 82,000 tpy of fossil-based GHG emissions from the combustion of conventionally produced SPK fuels. This IBPE could serve as a corner-stone commercial-scale utilization of a technology that results in the reduction of GHG emissions from MSW landfills, enhances the use of renewable resources, and replaces the combustion of fossil fuels.

Federal regulations require that landfill-generated gas (including methane) at large MSW landfills be either flared or recovered for energy purposes (40 CFR 60 Subparts Cc and WWW). The use of the MSW feedstock to produce a biofuel, ultimately combusted as an energy resource, would essentially have no net effect on total global GHG emissions, because the landfill-generated carbon-based gases (CO\(_2\) and CH\(_4\) mainly) would enter the atmosphere as CO\(_2\) in either case.

The release of anthropogenic GHGs and their potential contribution to global warming are inherently cumulative phenomena. GHG emissions from the Biorefinery are relatively small compared to the 8,026 million tons (7,282 million metric tonnes) of CO\(_2\)-equivalent GHGs emitted in the U.S. in 2007 (Energy Information Administration, Report # DOE/EIA-0573 [2007]) and the 54 billion tons (49 billion metric tonnes) of CO\(_2\)e anthropogenic GHGs emitted globally in 2004 (IPCC 2007). The GHG emissions from the Biorefinery in combination with past and future emissions from all other sources would contribute incrementally to the climate change impacts described above.

The use of the MSW feedstock also would lead to a reduction in methane emissions from the decomposition of organic matter and its emission through the landfill covers, not captured by any control device. Methane is a powerful GHG (1 ton of methane has the same global warming potential as 25 tons of CO\(_2\))\(^6\) and therefore the project would lead to a substantial reduction in GHGs as measured by CO\(_2\)e.

At the present time, there is no methodology that would allow DoD to estimate the specific impacts (if any) this increment of climate change would produce in the vicinity of the IBFE or elsewhere. The process to be used would not cause an impact on food availability and price because food crops would not be a part of the feedstock.

3.11.2.2 No Action Alternative

Given that the Biorefinery and Feedstock Processing Facility sites are zoned for industrial development, emissions from existing developments would continue and new emissions would be created as other additional developments are approved. Fugitive dust would continue to occur as travel on unpaved roads and construction of other facilities nearby continues. The benefits of avoided emissions and other air pollutants by replacing fossil-fuel-fired electric generation may not occur when the developments are undertaken.

3.12 Cultural Resources

3.12.1 Affected Environment

Cultural resources include “historic properties” as defined in the NHPA of 1966, as amended, “archaeological resources” as defined in the ARPA of 1979. Additionally, cultural resources include “cultural items” as defined in the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990. Cultural resources include, but are not limited to, the following broad range of items and locations:

- Archaeological materials (i.e., artifacts) and sites that date to the prehistoric, historic, and ethnohistoric periods currently located on, or buried beneath, the ground surface;

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\(^6\) See 40 CFR 98 Subpart A.
• Standing structures that have an important technological, architectural, or local significance;
• Cultural and natural places, select natural resources, and sacred objects that have importance for Native Americans; and
• American folk life traditions and arts (USDOE 2006).

3.12.1.1 Regulatory Framework

Federal historic preservation legislation provides a legal environment for documentation, evaluation, and protection of cultural resources that may be affected by federal or private undertakings operating under federal license, with federal funding, or on federally managed lands. These include, but are not limited to, the NHPA, ARPA, and Archaeological and Historic Preservation Act of 1974. EO 11593 also provides necessary guidance on protection and enhancement of cultural resources.

The NHPA requires federal agencies to take into account the effects of their actions on properties listed on or eligible for listing on the National Register of Historic Places (NRHP). Section 106 of the NHPA establishes a four-step review process by which cultural resources are given consideration during the evaluation of proposed undertakings. The regulations require that federal agencies initiate Section 106 early in the project planning, when a broad range of alternatives can be considered (36 CFR 800.1[c]).

The effects of federal undertakings on properties of religious or cultural significance to contemporary Native Americans, including traditional cultural properties, are given consideration under the provisions of the AIRFA, NAGPRA, and recent amendments to the NHPA. As amended, the NHPA now integrates Indian tribes into the Section 106 compliance process and also strives to make the NHPA and NEPA procedurally compatible.

Section 106 of the NHPA requires that federal agencies take into account the effect of an undertaking on historic properties and provide the Advisory Council on Historic Preservation an opportunity to comment. Historic property, as defined by the regulations implementing Section 106, means “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP maintained by the NPS.” The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization that meet the NRHP criteria.

Potential impacts to historic properties are assessed using the “criteria of adverse effect” (36 CFR 800.5[a] [1]), as defined in the implementing regulations for the NHPA. “An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property’s location, design, setting, materials, craftsmanship, feeling, or association.” Adverse effects include not only the physical disturbance of a historic property, but also may include the introduction, removal, or alteration of various visual or auditory elements, which could alter the traditional setting or ambience of the property.

3.12.1.2 Eligibility Criteria for Listing Cultural Resources on the NRHP

The NRHP, maintained by the National Park Service (NPS) on behalf of the Secretary of the Interior, is the nation’s inventory of significant cultural resources. The NPS has established three main standards that a resource must meet to qualify for listing on the NRHP (age, integrity, and significance). To meet the age criteria, a resource generally must be at least 50 years old. To meet the integrity criteria, a resource must “possess integrity of location, design, setting, materials, craftsmanship, feeling, and association” (36 CFR 60.4). Finally, a resource must be significant according to one or more of the following criteria:
- Be associated with events that have made a significant contribution to the broad patterns of U.S. history (Criterion A);
- Be associated with the lives of persons significant in U.S. history (Criterion B);
- Embody the distinctive characteristics of a type, period, or method of construction or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction (Criterion C); or
- Have yielded, or may likely yield, information important in prehistory or history (Criterion D) (NPS 1995).

3.12.1.3 Cultural Overview

Traditionally, the Northern Paiute inhabited eastern California, western Nevada, and southeast Oregon. Their pre-contact lifestyle was well adapted to the harsh desert environment in which they lived. Each tribe or band occupied a specific territory, generally centered on a lake or wetland that supplied fish and waterfowl. They lived a seasonal semi-nomadic life style. In the winter, they occupied dome-shaped, mat-covered houses, while in the summer they utilized windbreaks or sun shades. Subsistence strategies included hunting, plant gathering, and fishing. Pine nuts, various seeds, roots, and berries were important plant resources. Communal hunting utilizing traps or corrals were used for large game such as antelope, deer, and desert bighorn sheep. Small game included rabbits, marmots, ground squirrels, grouse, waterfowl, and insects (e.g., grasshoppers) (Fowler and Liljeblad 1986).

Relations among the Northern Paiute bands and their Western Shoshone neighbors generally were peaceful. In fact, they were culturally similar with no clear distinction between the two. However, relations with the Washoe people, who were culturally and linguistically very different from the Northern Paiute and Western Shoshone, were not so peaceful (Bengston 2003).

Contact between the Northern Paiute and Euroamericans came in the early 1840s, although the first contact may have occurred as early as the 1820s. Although the Northern Paiute had already started using horses, their culture was otherwise unaffected by Euroamerican influences at that time. As Euroamerican settlement of the area increased, several violent confrontations occurred, including the Pyramid Lake War of 1860, Owens Valley Indian War 1861-1864, Snake War 1864-1868, and the Bannock War of 1878. These conflicts generally started as disagreements between settlers and Paiutes over property, retaliation by one group against the other, or a result of the depletion of the tribe’s traditional food base (Bengston 2003).

The Malheur Reservation was established in eastern Oregon for the Northern Paiute on September 12, 1872, with the intent of concentrating the Indians of the area on this reservation. However, the strategy failed. Due to the distance of the reservation from the traditional lands of the Paiute, and poor conditions on the reservation, many Northern Paiute refused to relocate, and those that did soon left. The Paiute held onto their traditional life styles as long as possible, but when the depletion of their traditional resources made that impossible, they took jobs on white farms and ranches, or in cities, and established small Indian colonies (Bengston 2003). Later, large reservations were created at Pyramid Lake (1874) and Duck Valley (1877), but by that time the pattern of small colonies near cities or farm districts had been established. Starting in the early 20th century, the U.S. government began granting land to these colonies, and under the Indian Reorganization Act of 1934, these colonies gained recognition as independent tribes.

The Reno-Sparks Indian Colony, which is located approximately 5 to 15 miles west of the proposed IBPE sites, is a federally recognized Indian Tribe located near Reno, Nevada (http://www.rsic.org). The Colony was established in the early 1900s and formed a more formal tribal government in 1935 under the Indian Reorganization Act. Membership consists of over 900 members from three Great Basin tribes: Paiute, Western Shoshone, and Washoe. The reservation lands consist of the original 28-acre
residential Colony located in downtown Reno and the 1,960-acre Hungry Valley Reservation located 19 miles north of the downtown Colony.

The IBPE would be located in Storey County, where, in 1859 gold was discovered, prompting a rush from the mining districts of California. Soon after, a rich gold strike (the Comstock Lode, containing 57 percent silver, 42 percent gold) was discovered in Gold Hill by “Old Virginia” H.T.P. Comstock. With the Comstock Lode, the area became known as “The Richest Place on Earth.” Storey was made a county by an act of the first territorial legislature on November 25, 1861. It was named after Captain Edward Faris Storey, one of the first residents of Virginia City and a commander in the Pyramid Lake War of 1860. Mining declined over the next several decades and has since given way to tourism as the leading factor in the county’s economy (http://www.regionaldatacenter.com/RDC/StoreyCounty/index.aspx).

3.12.1.4 Cultural Resources Investigations

Biorefinery

On November 19-20, 2008, Summit Envirosolutions, Inc. (Summit) conducted a Class I files search through the Nevada Cultural Resources Information System and Nevada State Museum (Summit 2008). The files search was conducted to identify any previously conducted cultural resource inventories or previously recorded cultural resources within a 1-mile radius of the site. Historic maps, General Land Office plats, and the Nevada Division of State Lands database also were examined for possible historic features (e.g., roads, ditches, trails, structures) in the files search study area.

No cultural resources were found on the Biorefinery site. Within 1 mile of the Biorefinery site, a cultural resources inventory was conducted that identified one archaeological site and six isolated finds. The archaeological site is a small prehistoric lithic scatter consisting of four flakes. The isolated finds include four prehistoric flakes, one historic canning lid band, and a historic cadastral marker (a metal marker used to create, mark, and define, retrace, resurvey and reestablish the boundaries and subdivisions of the public lands of the U.S.). None of these previously recorded cultural resources are eligible for the NRHP. With the exception of two unimproved two-track roads, no historic features were identified in the files search study area. The literature search and the previous survey near the Biorefinery site indicate that the potential for undiscovered significant cultural resources on and near the site is very low. The Biorefinery site is located outside the foothills of the Virginia Range, which is rich in both prehistoric and historic-period resources, and is situated in an area of desert pavement with low shrubby vegetation where the potential for intact significant cultural resources is limited. In addition, since the Biorefinery would be sited on a tract of land that already has been developed for the TRI Center, there is a low probability of any intact resources remaining at the site. The Biorefinery site has been modified through extensive grading and filling of the surface terrain; and service utilities, including roadways and rails, are already constructed to serve the Biorefinery site.

Feedstock Processing Facility

On December 16, 2013, Summit examined the National and Nevada Registers of Historic Places, General Land Office plats, historic maps, and other records to identify any previously conducted cultural resources inventories or previously recorded cultural resources within 1 mile of the proposed location of the Feedstock Processing Facility (Summit 2013). The records indicate that no previously conducted cultural resources inventories or previously recorded cultural resources were found on the Feedstock Processing Facility site. However, a total of 10 inventories and eight sites are located within a 1-mile radius. The eight sites consist of two prehistoric lithic scatters, one prehistoric quarry, one prehistoric rock art/lithic scatter, one historic telegraph line, one historic refuse scatter, the historic Southern Pacific Railroad, and a multi-component site consisting of a prehistoric lithic scatter and historic debris. Of the eight sites, three are eligible for the NRHP (prehistoric rock art/lithic scatter, Southern Pacific Railroad, telegraph line), one is unevaluated (historic refuse scatter), two are not eligible (prehistoric lithic scatter, multi-component site), and no information is available on the remaining two sites.
3.12.1.5  Tribal Consultation and Coordination

On February 10, 2014, eight letters were sent to Native American Tribes in Nevada that have an historical interest in Storey County, Nevada (see Section 6.2.3). An opportunity was extended to the Tribes to engage in government to government consultation on the proposed IBPE. A description of the Proposed Action and a map was provided with the letters. No expression of interest in consultation was received. Two separate letters in response to this request were provided, but no Tribes expressed an interest in consultation on the Proposed Action.

A second letter was sent to the Tribes on June 6, 2014, and a response was received from the Fallon Paiute Shoshone Tribe indicating that the Tribe did not have an immediate concern with the proposed project. Copies of both letters and the Fallon Paiute-Shoshone Tribe response are included in Appendix E.

3.12.2  Environmental Effects – Cultural Resources

3.12.2.1  Proposed Action

Biorefinery

Since no cultural resources have been identified at the Biorefinery site and the site has been heavily disturbed as a result of previous clearing and grading activity and nearby industrial development, no direct impacts to cultural resources are anticipated. Activities associated with constructing the Biorefinery could possibly adversely affect undiscovered cultural resources. If a cultural resource would be encountered during construction, construction would cease within the vicinity of the discovery until the Nevada SHPO and interested Tribes can evaluate the discovery. Construction would not proceed until authorized by the Nevada SHPO. Treatment of any discovered cultural material would be handled in accordance with Nevada SHPO policy.

If construction or other Sierra BioFuels personnel discover what they believe to be human remains, funerary objects, or items of cultural patrimony that appear subject to NHPA Section 106 become revealed, construction would cease within the vicinity of the discovery, the finding would be kept secure until consultation under 36 CFR §800.13. Suspected human remains also require immediate notification of local law enforcement officials. Treatment of any discovered human remains and associated funerary objects would be handled in accordance with the provisions of applicable federal, Nevada and local law. Construction will not resume until the SHPO has issued a notice to proceed.

On December 19, 2013, the Nevada SHPO was advised of a proposed construction and operation of the IBPE including the Biorefinery and that such project would have no adverse effect on historic properties (see letter at Appendix F). On January 15, 2014, the Nevada SHPO concurred with the determination (see Appendix F).

Feedstock Processing Facility

As a result of the records search, no previous conducted cultural resources inventories or previously recorded cultural resources were identified within the proposed location of the Feedstock Processing Facility. However, 10 previously conducted inventories and 8 previously recorded sites were identified within a 1-mile radius of the proposed location. Of the 8 sites, 3 are eligible for the NRHP, 1 is unevaluated, 2 are not eligible, and no information is available for the remaining 2 sites.

If construction or other Sierra BioFuels personnel discover what they believe to be human remains, funerary objects, or items of cultural patrimony that appear subject to NHPA Section 106 become revealed, construction would cease within the vicinity of the discovery, the finding would be kept secure until consultation under 36 CFR §800.13. Suspected human remains also require immediate notification of local law enforcement officials. Treatment of any discovered human remains and associated funerary
objects would be handled in accordance with the provisions of applicable federal, Nevada and local law. Construction will not resume until the SHPO has issued a notice to proceed.

Based on the records search and the location of the proposed Feedstock Processing Facility site in a heavily disturbed area, the potential for cultural resources within the proposed location is low. The Southern Pacific Railroad and adjacent telegraph line along the Truckee River are eligible for the NRHP; however, the Feedstock Processing Facility would have no visual impact to these resources. Other modern development in the area, including a large housing and industrial complex, already has affected the setting and historic feeling of the area.

On December 19, 2013 the Nevada SHPO was advised of the proposed construction and operation of the IBPE including the Feedstock Processing Facility and that such project would have no adverse effect on historic properties (see letter at Appendix F). On January 15, 2014, the Nevada SHPO concurred with the determination (see Appendix F).

3.12.2.2 No Action Alternative

Given that the IBPE sites are zoned for heavy industrial development, impacts to any possible cultural resources at or near the sites would continue from existing and new developments proposed within and adjacent to the TRI Center or the area surrounding the Lockwood industrial area.

3.13 Socioeconomic Impacts and Environmental Justice

3.13.1 Affected Environment

Socioeconomics

Biorefinery

The Biorefinery site is located in an industrial park that is isolated from other communities. The Biorefinery site is east of Sparks, Nevada, and north of the Virginia City community, which is not directly accessible from the TRI Center. Due to the isolated and unpopulated nature of the area, there is no accurate depiction of socioeconomic data for the site; however, as the majority of the work force would be expected to come from the local population centers of Reno-Sparks and Fernley, economic characteristics of these areas and their associated counties are detailed in Table 3-5. Of the potentially affected population centers, the city of Sparks recorded the highest median household income and the city of Fernley recorded the lowest percentage of persons living below the poverty level. The U.S. Census Bureau and Bureau of Labor Statistics group the Biorefinery site and TRI Center with the City of Sparks.

Feedstock Processing Facility

The Feedstock Processing Facility affected environment for socioeconomics is the same as described for the Biorefinery.

Table 3-5 Income Characteristics for the Project Area

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Nevada</th>
<th>Washoe County</th>
<th>Storey County</th>
<th>City of Reno</th>
<th>City of Sparks</th>
<th>City of Fernley</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal per capita money income, 2008-2012</td>
<td>$27,003</td>
<td>$29,024</td>
<td>$33,043</td>
<td>$26,945</td>
<td>$25,376</td>
<td>$21,770</td>
</tr>
<tr>
<td>Persons below poverty, 2008-2012</td>
<td>14.2 percent</td>
<td>14.7 percent</td>
<td>8.6 percent</td>
<td>17.7 percent</td>
<td>13.4 percent</td>
<td>9.2 percent</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau 2014.
Environmental Justice

Biorefinery

The Biorefinery site is located in industrial area that is isolated from other communities. There are no residences, churches, schools, cultural centers, parks, or playgrounds within 5 miles of the Biorefinery site. There is no foot traffic in the area. The Biorefinery site is east of Sparks, Nevada, and north of the Virginia City community, which is not directly accessible from the TRI Center. The Biorefinery site is within Storey County, which, as detailed in Table 3-6, recorded estimated 2012 minority populations that were below the state of Nevada average. The cities of Reno, Sparks, and Fernley also recorded estimated 2012 minority populations that were below the state of Nevada average. Table 3-5 notes that the city of Reno was the only local population center to have persons below the poverty level higher than the state average. Ultimately, the project would generate income within the affected communities if they supply workers and services, potentially benefitting minority communities. Moreover, because the proposed project is not located in large communities or urban areas, there is no evidence that the project would have a disproportionately high adverse effect on minority and low-income populations.

Feedstock Processing Facility

The Feedstock Processing Facility affected environment for environmental justice are similar as described for the Biorefinery. The Feedstock Processing Facility site is located in industrial area that is isolated from other communities. There are no residences, churches, schools, cultural centers, parks, or playgrounds within 1.5 miles of the site. There is no foot traffic in the area. The Feedstock Processing Facility site is east of Sparks, Nevada, and 15 roadway miles west of the Biorefinery site.

Table 3-6 Population and Racial Composition, 2012 (estimate)

<table>
<thead>
<tr>
<th></th>
<th>2012 Population Estimate</th>
<th>White (not Hispanic or Latino) (%)</th>
<th>Black (%)</th>
<th>American Indian, Alaska Native, Native Hawaiian (%)</th>
<th>Asian (%)</th>
<th>Two or More Races (%)</th>
<th>Hispanic or Latino (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nevada</td>
<td>2,754,354</td>
<td>52.9</td>
<td>8.9</td>
<td>2.3</td>
<td>7.9</td>
<td>3.8</td>
<td>27.3</td>
</tr>
<tr>
<td>Washoe County</td>
<td>429,908</td>
<td>65.1</td>
<td>2.6</td>
<td>2.8</td>
<td>5.5</td>
<td>3.2</td>
<td>23.0</td>
</tr>
<tr>
<td>Storey County</td>
<td>3,935</td>
<td>86.2</td>
<td>1.3</td>
<td>2.4</td>
<td>2.0</td>
<td>2.0</td>
<td>6.7</td>
</tr>
<tr>
<td>City of Reno</td>
<td>231,027</td>
<td>62.5</td>
<td>2.9</td>
<td>2.0</td>
<td>6.3</td>
<td>4.2</td>
<td>24.3</td>
</tr>
<tr>
<td>City of Sparks</td>
<td>92,183</td>
<td>61.4</td>
<td>2.6</td>
<td>1.8</td>
<td>5.9</td>
<td>4.0</td>
<td>26.3</td>
</tr>
<tr>
<td>City of Fernley</td>
<td>19,093</td>
<td>77.6</td>
<td>1.0</td>
<td>2.2</td>
<td>2.0</td>
<td>4.6</td>
<td>14.4</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau 2014.

3.13.2 Environmental Effects – Socioeconomic Impacts

3.13.2.1 Proposed Action

Socioeconomics

Biorefinery

The Biorefinery would add additional employment during construction and operation (up to 32 full-time jobs), and socioeconomic benefits to the surrounding areas would likely occur. Businesses and work forces in the nearby communities of Sparks and Reno, Nevada, would be the likely beneficiaries. Due to the unpopulated and remote nature of the TRI Center and surrounding industrial area, no other socioeconomic effects would occur that would affect existing communities or populations.
Feedstock Processing Facility

Socioeconomic effects from the Feedstock Processing Facility would include 42 additional full-time jobs at this site as part of operations, and impacts would be the same as described for the Biorefinery.

Environmental Justice

Biorefinery

Since there are no communities in proximity to the Biorefinery site, there are no environmental justice population concerns present.

Feedstock Processing Facility

Environmental Justice effects from the Feedstock Processing Facility would be the same as described for the Biorefinery.

3.13.2.2 No Action Alternative

Socioeconomics

Without the IBPE, socioeconomic benefits as a result of the IBPE would not occur; however, employment may be added as a result of other proposed developments at the TRI Center.

Environmental Justice

In view of the isolated nature of the IBPE there would not be any environmental justice concerns if the IBPE would not be built, or if the sites are used for other industrial purposes.

3.14 Aesthetics

3.14.1 Affected Environment

Biorefinery

The designed visual character of the Biorefinery has been highly modified from the natural state. Modifications to the natural setting include roads, rail spurs, utility infrastructure, and industrial developments. In addition to the substantial human modifications the overall existing scenic quality of the landscape also is considered low because it lacks a variety and contrast in natural features, landforms, and vegetation. Given that the site is located on the interior of an industrial center or adjacent to a landfill, sensitive visual receptors are limited to other industrial developments at the TRI Center and the Lockwood Regional Landfill. There are no residences within the viewshed.

Feedstock Processing Facility

The presence of the nearby landfill has already modified the aesthetics of the site for the Feedstock Processing Facility. A nearby highway would be used to deliver MSW to the landfill, and those operations would not change as a result of locating the Feedstock Processing Facility at this site. The surrounding topography in the vicinity of the site would shield the Feedstock Processing Facility from observation from I-80 and nearby residences in the community of Lockwood.

3.14.2 Environmental Effects – Aesthetics

3.14.2.1 Proposed Action

Aesthetics/Visual

Biorefinery

Visual effects resulting from the development of the Biorefinery would introduce new elements into the visual landscape, and would alter the form, line, color, and texture that characterize the existing
landscape. The proposed facilities would result in the introduction of structural elements that are visually similar to existing conditions and landscape character (i.e., a modified landscape with varying levels of industrial infrastructure). As such, the visual contrast associated with the Biorefinery compared to the surrounding area would be low and would not attract the attention of the casual observer.

The Storey County Zoning Ordinance §17.37.080 specifies that buildings within the I-2 Heavy Industrial Zone should not have a height greater than 75 feet and a special use permit would be required if the facility exceeds these limits. The Biorefinery design does not include any buildings that would exceed the zoning ordinance building height limitations, however, the Storey County Planning Commission authorized an exception to allow a building up to 90 feet tall, if needed. Travelers on I-80 and other areas outside the project area would see other industrial developments that are closer to the interstate, but would not see the Biorefinery as it would be shielded from viewers by surrounding topography. Since the Biorefinery would be located in an industrial park with low scenic quality, visual impacts of a building in excess of 75 feet would be minimal.

Feedstock Processing Facility

Given that the Feedstock Processing Facility site is impacted by the existing landfill operations, the addition of one building and nearby infrastructure would not lead to an effect on the visual character of the site. Impacts to the affected environment on aesthetics is similar as described for the Biorefinery.

3.14.2.2 No Action Alternative

Given that IBPE sites are zoned for heavy industrial development, changes to the visual character of the landscape that alter the form, line, color, and texture would likely occur regardless of the facilities as a result of existing and new developments proposed within the TRI Center industrial park and adjacent industrial lands.

3.15 Noise and Odors

3.15.1 Affected Environment

Biorefinery

Noise is often defined as “unwanted sound.” Sounds are described as noise if they interfere with an activity or disturb the person hearing them. Sound levels fluctuate with time depending on the sound source audible at a specific location. Additionally, the degree of annoyance associated with certain sounds can vary by time of day, depending on other sound sources affecting a receiver and the activities of the receiver. For example, the interruption of sleep can be very annoying.

The Biorefinery would be located within an existing industrial park, with the main sources of noise associated with industrial operations, construction of new buildings, and road traffic. Table 3-7 details noise levels of the different types of construction equipment at various distances. There are no sensitive noise receptors near the site, since the closest residence is approximately 6 miles in a direct line northwest in the community of Lockwood.

The Storey County Zoning Ordinance §17.12.100 specifies that within I-2 Heavy Industrial zones “noise, smoke, odor, gases, or other noxious nuisances shall be controlled so as not to become objectionable, or adversely affect the properties in the vicinity, and shall not be detrimental to the public health, safety and welfare.”
Table 3-7  Noise Levels at Various Distances from Typical Construction Equipment

<table>
<thead>
<tr>
<th>Construction Equipment</th>
<th>50 feet</th>
<th>100 feet</th>
<th>200 feet</th>
<th>400 feet</th>
<th>800 feet</th>
<th>1,600 feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulldozer</td>
<td>85</td>
<td>79</td>
<td>73</td>
<td>67</td>
<td>61</td>
<td>55</td>
</tr>
<tr>
<td>Concrete Mixer</td>
<td>85</td>
<td>79</td>
<td>73</td>
<td>67</td>
<td>61</td>
<td>55</td>
</tr>
<tr>
<td>Concrete Pump</td>
<td>82</td>
<td>76</td>
<td>70</td>
<td>64</td>
<td>58</td>
<td>52</td>
</tr>
<tr>
<td>Crane, Derrick</td>
<td>88</td>
<td>82</td>
<td>76</td>
<td>70</td>
<td>64</td>
<td>58</td>
</tr>
<tr>
<td>Crane, Mobile</td>
<td>83</td>
<td>77</td>
<td>71</td>
<td>65</td>
<td>59</td>
<td>53</td>
</tr>
<tr>
<td>Front-end Loader</td>
<td>85</td>
<td>79</td>
<td>73</td>
<td>67</td>
<td>61</td>
<td>55</td>
</tr>
<tr>
<td>Generator</td>
<td>81</td>
<td>75</td>
<td>69</td>
<td>63</td>
<td>57</td>
<td>51</td>
</tr>
<tr>
<td>Grader</td>
<td>85</td>
<td>79</td>
<td>73</td>
<td>67</td>
<td>61</td>
<td>55</td>
</tr>
<tr>
<td>Shovel</td>
<td>82</td>
<td>76</td>
<td>70</td>
<td>64</td>
<td>58</td>
<td>52</td>
</tr>
<tr>
<td>Truck</td>
<td>88</td>
<td>82</td>
<td>76</td>
<td>70</td>
<td>64</td>
<td>58</td>
</tr>
</tbody>
</table>

1 The equivalent steady-state sound level that contains the same varying sound level during a 1-hour period.

Source: HMMH 2006.

Feedstock Processing Facility

The Feedstock Processing Facility affected environment for noise and odors is similar as described for the Biorefinery. The Feedstock Processing Facility would be located near adjacent to a landfill, with the main sources of noise associated with industrial operations and road traffic. There are no sensitive noise receptors near the site, since the closest residence is approximately 1.5 miles in a direct line northwest in the community of Lockwood.

3.15.2 Environmental Effects – Noise and Odors

3.15.2.1 Proposed Action

Biorefinery

Noise and odors are not anticipated to be an issue for surrounding landowners, as surrounding land-use in the area also is heavy industrial. As required in the Special Use Permit and by Storey County Code Chapter 8.04.020, the noise must be limited to property boundary noise levels of 84 decibels for an octave range of 500 to 1,800 cycles per second. As detailed in Table 3-7, most construction noise is less than 84 decibels at 50 feet from construction activities. Sierra BioFuels is required under its Special Use Permit to submit a test, confirming the level of noise during operations that meets with stipulated requirement.

The baled feedstock would be wrapped with polyethylene film suitable for outdoor storage so there would be no exposure of potential odors from the feedstock. The feedstock debaling operations would take place in an enclosure to minimize any exposure to ambient air. H2S would be emitted by the Biorefinery in trace amounts, but given the distance to nearby receptors no impacts from odors would be expected.

Feedstock Processing Facility

The noise and odor effects from the Feedstock Processing Facility are similar as described for the Biorefinery’s feedstock storage and handing process. The feedstock processing operations would be performed in an enclosed building at the Feedstock Processing Facility, which would inhibit the propagation of noise and odors from the process operations.
3.15.2.2 No Action Alternative

Given that the IBPE sites are zoned for heavy industrial development, industrial noise would likely occur regardless of the IBPE as a result of existing and new developments proposed within the TRI Center and the area surrounding the Lockwood industrial area.

3.16 Public Health and Safety

3.16.1 Affected Environment

Biorefinery

A Phase I Environmental Site Assessment (AECOM 2008 and 2013) completed for the Biorefinery site revealed no evidence of recognized environmental conditions in connection with the Biorefinery site. The site was not identified on any database listings within the American Society for Testing and Materials-specified database report by Environmental Data Resources, Inc. The nearest property identified on the database report was located approximately 0.75 mile northeast and topographically down gradient of the Biorefinery site.

Law enforcement is provided by the Storey County Sheriff's Office (SCSO). The SCSO's responsibilities include prevention of crime, protection of property, medical emergencies, emergency response, animal control, as well as patrol and investigations. The SCSO maintains a substation in the community of Lockwood, adjacent to the project area. Fire protection is provided by the SCFD. The SCFD provides fire protection and emergency response capabilities though its 5 stations located throughout the county. SCFD Station 5 is located in the TRI Center on Peru Drive and is equipped with 1 engine, 1 ambulance, 1 squad vehicle, 1 patrol vehicle, 1 foam trailer, and 1 utility vehicle. Additionally, SCFD Station 4 is located in the community of Lockwood and is equipped with 1 engine, 1 ambulance, 1 water tender, 1 utility vehicle and 1 command vehicle. The nearest medical services are located in Reno-Sparks.

Feedstock Processing Facility

A Phase I Environmental Site Assessment (AECOM 2014) completed for the Feedstock Processing Facility site revealed no evidence of recognized environmental conditions in connection with the proposed site. The site was not identified on any database listings within the American Society for Testing and Materials-specified database report by Environmental Data Resources, Inc. The nearest property identified on the database report was the Lockwood Regional Landfill (2401 Canyon Way and including 1 Caramella Way) located approximately 1,500 feet from the southeast corner of the Feedstock Processing Facility site. According to Permit Number SW214R01 this site is a “compacted cell area fill municipal solid waste landfill covering approximately 856 acres with a waste volume of approximately 302 million cubic yards.” The legacy disposal area is constructed without a liner or leachate collection system, the remaining area is a fully lined facility with leachate collection, groundwater, and methane monitoring which will be conducted for the operational and post-closure period of the landfill. Upon reaching capacity, a final cover will be constructed, and the Permittee will be responsible for 30 years of post-closure care. The landfill accepts waste predominantly from the local community and adjacent counties.

Law enforcement, fire protection, and medical services for the Feedstock Processing Facility are similar to the Biorefinery.
3.16.2 Environmental Effects – Public Health and Safety

3.16.2.1 Proposed Action

**Fire Protection**

**Biorefinery**

Routine operation and maintenance of the Biorefinery would require the use of several materials that require special handling. Operations of the Biorefinery would be performed in accordance with the SOP, (including the ERP and Fire and Life Safety Plan), which requires accident reporting, electrical safety, fire protection, and the use of personal protective equipment. These plans would be expected to minimize impacts to workers’ health and safety during operation. In addition, all operation activities would be carried out in compliance with OSHA requirements that would include personal protective equipment (e.g., masks, protective clothing) and standard operating procedures to reduce potential accidents.

Details of the fire protection and facility security that would be in place at the Biorefinery are provided in Section 2.2.1.4, and include the full range of necessary requirements, specifically the development of a Fire and Life Safety Plan, installation of fire suppression systems, fire extinguishers and extinguisher equipment, designated personnel training, firefighting procedures, an alert system, and active monitoring or sensors to detect fires at the earliest stage. Facility security activities include controlled access and potential support from law enforcement personnel.

There would be a potential for fire associated with operations of the Biorefinery. The TRIGID would furnish water for fire protection with a minimum fire water flow from hydrants of 3,000 gpm for 3 hours. The Biorefinery also would have a 600,000-gallon water storage tank on-site. These measures are designed to reduce the potential for fire associated with facility operations. Further, there would be no buildings or structures that would impede fire-fighting activities, and there would be no off-site abutting or nearby structures that would be directly affected by fires at the facilities. Finally, the nearest residence is approximately 15 miles from the Biorefinery and the nearest industrial/commercial structure is 0.3 mile away, which effectively eliminates the possibility of fire spreading beyond the Biorefinery.

Given the importance of an effective fire and hazard protection operation at the Biorefinery, the coordination with the Biorefinery’s SOP (including the ERP and Fire and Life Safety Plan), the close proximity of the SCFD, and an active program to limit access to the facility by outside parties, there would be no substantial likelihood of an impact on public health and safety from fires or accidents associated with the operation of the Biorefinery.

**Feedstock Processing Facility**

The components of fire protection at the Feedstock Processing facility are similar to those at the Biorefinery. Routine operation and maintenance of the Feedstock Processing Facility also would require the use of several materials that require special handling. Operations of the Feedstock Processing Facility would be performed in accordance with the SOP (including the ERP and Fire and Life Safety Plan). These plans are expected to minimize impacts to workers’ health and safety during operation. In addition, all operation activities would be carried out in compliance with OSHA requirements that would include personal protective equipment (e.g., masks, protective clothing) and standard operating procedures to reduce potential accidents (see plan details in Section 2.2.2.4).

There would be a potential for fire associated with operation of the Feedstock Processing Facility. However a 660,000-gallon above ground water tank would be constructed on-site. A diesel fire water pump would provide the fire protection system with a minimum fire water flow to the hydrants of 3,000 gpm for 3 hours. These measures are designed to reduce the potential for fire associated with facility operations, and additionally the close proximity of the SCSO, would eliminate any substantial impact from fires at the Feedstock Processing Facility.
Intentional Destructive Acts

Biorefinery

The Biorefinery would present an unlikely target for intentionally destructive acts (terrorism or sabotage) and would have an extremely low probability of being attacked. Protective fencing would be constructed around the perimeter of the Biorefinery site within which all proposed activities would be confined. Public access to the site would be restricted to a gated single main entrance, which would be continuously monitored. Nighttime security lighting would be used, which also would benefit the safety of the workers and public in the operation of the Biorefinery. The Biorefinery would be continuously operated and under worker surveillance 24 hours a day, 7 days a week. All areas of the Biorefinery's buildings would be access controlled. All authorized personnel (employees and contractors) would be issued access key fobs to regulate entry into each closed facility building, including office and processing areas. Storage and use of hazardous materials would comply with federal, state, and local regulatory requirements. Additionally, the close proximity of the SCSO to the Biorefinery would aid in deterrent and a timely law enforcement response. Nevertheless, if destructive acts were somehow to occur, the consequences would not exceed those set forth in the fire risk scenarios presented above. Given the low likelihood of intentional destructive acts at the Biorefinery and the absence of any nearby population or receptors (other than other industrial facilities), the potential for impacts from intentionally destructive acts is considered to be very low.

Feedstock Processing Facility

The effects on the Feedstock Processing Facility from intentional destructive acts are similar as described for the Biorefinery; but any impacts would be even further reduced because there would be no process chemicals or fuels generated or stored at the Feedstock Processing Facility that would lead to an effect on nearby populations.

3.16.2.2 No Action Alternative

Since the IBPE would be located on sites located in an industrial area near a regional landfill and an industrial park that has been zoned and developed to support a large heavy industrial uses, it would be expected that if the Biorefinery and Feedstock Processing Facility would not be built that a similar use would occur at the sites and that the effects would be the same as with the Proposed Action alternative (i.e., minimal effects since transportation corridors, railways, infrastructure, and utilities have already been upgraded to handle demand from this type of heavy industrial use). There also would be no direct effects from public health and safety as a result of the IBPE. It would be possible that another industrial use would present similar potential health and safety effects.