Operation of the SzIBR project will not use, disturb, or produce any Polychlorinated Biphenyls (PCBs), pesticides, radioactive waste, or radioactive mixed waste. The SzIBR project will not generate any radiation exposure, nor will it involve underground extraction or injection of hazardous substances, or use of any underground storage tanks.

2.3 Material Balance

A detailed material balance for the SzIBR project will be available for in-person review.

2.4 Visual Representation

A visual representation of the process flow diagrams for the SzIBR project will be available for in-person review.

2.5 Process Description

SzIBR will integrate the following operations:

- Fermentation: The algae will be grown heterotrophically, from an inoculum, in industrial fermentation vessels with conditions and media formulation optimized to promote rapid cell division, oil production and oil accumulation. This unit operation will use fermentation tanks currently installed in the process building on Parcel 2.
- EX 4 The EX 4 will be EX 4 using equipment standard in the industry. This unit operation will be accomplished by commercially available equipment purchased and installed on Parcel 2.
- EX 4 The oil in the algal biomass will be extracted and then EX 4 to EX 4 . This unit operation will be accomplished by commercially available equipment purchased and installed on Parcel 2.
- REDACTED EXEMPTION 4

The input to the SzIBR project will be EX 4 he primary output will be EX 4 . Purified algal oil will be transported to existing industrial oil refineries to be processed into fuel products by transesterification or hydrotreatment.

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2.6 Major Plant Components

2.6.1 Algae Fermentation

Existing industrial fermentation vessels and ancillary equipment will be used to grow algae heterophically. The fermentation vessels and ancillary equipment are already installed within the process building on Parcel 2.

Data collection systems include REDACTED EXEMPTION 4 n-site laboratory and analytical support capabilities include freezers, drying ovens, laminar flow hoods, centrifuges, autoclaves, incubators, microscopes, pH meters, a spectrophotometer for optical density analysis, a mass spectrometer for continuous off-gas analysis, and other miscellaneous analytical and laboratory equipment

2.6.2 Algae REDACTED EXEMPTION 4

The SzIBR includes a prior to . A will be located REDACTED EXEMPTION 4 discharged to GPSD waste water treatment facility via sewer. At commercial scale, the condensate will be recycled to media prep for the fermentation. The ılgae cake will be discharged to the drying system.

2.6.3 Algae Drying REDACTED EXEMPTION 4

A will be used to .REDACTED EXEMPTION 4 before further processing. The key requirements for this process are

Essentially no biomass is lost in this operation, as into the process stream. A REDACTED EXEMPTION 4

2.6.4 Oil Extraction

Solazyme has adapted an extraction process that does not require . After the oil is extracted, the oil is REDACTED EXEMPTION 4

2.6.5 Oil Purification

REDACTED EXEMPTION 4

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REDACTED
EXEMPTION 4

2.7 Logistics

Because the SzIBR project will leverage existing infrastructure from across the country, transportation of materials and products will be required. Table 2.7-1 outlines the transportation plan for the SzIBR. The SzIBR project will utilize a relatively small number of truck and rail trips and no significant impacts on traffic or road infrastructure are anticipated. No construction of transportation infrastructure is required to support the SzIBR project.

TABLE 2.7-1

Solazyme SzIBR Project
Project Logistics

Product	Source Location	Facility Destination	Quantity	Method	Frequency
Inputs					
REDACTED EXEMPTION 4		Illinois	8 rail car tankers	Rail	1 trip per month
	Nebraska		~ 0.5 ton / 4 barrels	Over the Road Truck	1 trip per project
		Illinois	1 tanker truck (~ 2.5 to 3 tons)	Over the Road Truck	1 trip per project
	California	California	~ 1 ton / 5 barrels	Over the Road Truck	1 trip per project
		Illinois	1 tanker truck (~2.5 – 3 tons)	Over the Road Truck	2 trips per project
Outputs					
Algal Oil	Illinois	Texas	1 rail car tanker	Rail	1 trip per 12 months
		Iowa	1 rail car tanker or 1 tanker truck	Rail or Over the Road Truck	Up to 1 trip per month for rail or 3 trips per month by truck

The solid waste stream from the algal oil process at the SzIBR project is estimated to be algal biomass, REDACTED byproduct, and of based on EXEMPTION 4 . No permits or modifications will be required for waste streams associated with the SzIBR. Additionally, Solazyme

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EX4 to determine the feasibility of use of EX4 lgal biomass EX4 , which will further reduce the waste generated by the project.

2.8 Environmental Considerations

The SzIBR project will not involve any of the following:

- Clearing or excavation activities (except for the installation of the dryer and associated equipment, as described in Section 2.1);
- Dredge and/or fill activities, which would potentially require U.S. Corps of Engineers Section 401 and 404 permits;
- Production or disturbance of asbestos;
- Location within or near any Class I Air Quality Control Regions;
- Location in or interference with any navigable air space;
- Location within or near any special designation areas including National Forests, National Parks, or trail systems;
- Disturbance of any prime, unique, or important farmland;
- Impact of known archeological or cultural resources;
- Modification of any structures listed on the National Register of Historic Places;
- Impact to threatened/endangered species, critical habitat, or other protected species (e.g., migratory birds);
- Impact to floodplains, special sources of groundwater (e.g., a sole source aquifer), or wetlands; and
- Underground extraction/injection.

2.9 Alternatives to Proposed Action

Due to the highly proprietary nature of the SzIBR project, alternatives have not been proposed by Solazyme. Solazyme has designed the SzIBR project in such a way, however, that any of the sub-contractors can be easily replaced. Additionally, Solazyme will compare the results of this pilot SzIBR project on fair metrics with competing renewable energy approaches that have been proposed or currently commercialized. These include use of autotrophic algae, vegetable oil diesel, and ethanol/alcohols.

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Solazyme proposes to create SzIBR on Parcel 2 in Peoria, Illinois. To the extent feasible, Solazyme will use existing support infrastructure (such as utility hookups and interior workspace) available in Parcel 2. Other equipment (identified and described above) will be installed within the existing building or immediately outside the building on existing attached concrete pads. Because the SzIBR project will be developed on an existing, industrial site, minimal environmental impacts will occur as a result of the project.

Under a no-action alternative, the SzIBR project will not be constructed and any environmental impacts described in this document will not occur. Under the no-action alternative, however, the objectives of the SzIBR project will not be met and the United States will continue to rely on diminishing traditional sources of transportation fossil fuels. Considering the minimal to non-existent environmental impact of construction and operation of the proposed SzIBR project and the plausible reduction in new oil drilling projects domestically resulting from a successful commercial deployment of the SzIBR project, the no-action alternative may create more significant environmental impacts than the proposed project.

3.0 BASELINE CONDITIONS

3.1 Location

As described above, the SzIBR will utilize existing laboratory, industrial, and manufacturing facilities as well as commercially available equipment to demonstrate the feasibility of an integrated biorefinery. The majority of project activities will occur at the Solazyme laboratory facilities in South San Francisco, California and on Parcel 2 in Peoria, Illinois. The following is a complete listing of facility locations and a description of the activities to be completed at each location.

Solazyme, Inc. (Solazyme)
225 Gateway Boulevard, South San Francisco, CA 94080

This is existing office and laboratory space that the company has been using. No modifications to these facilities will be required to implement the proposed SzIBR project. Activities to occur at the facility, as part of this project, will involve growth of algae in small flasks and 7L vessels and will be identical in nature to activities carried out in the past. An aerial photograph depicting the location of the Solazyme laboratory facility is included in Appendix A.

PMP Fermentation Products, Inc. (PMP), Parcel 2, being acquired by Solazyme.
900 North East Adams Street, Peoria, Illinois, 61603

Parcel 2 is an existing commercial, manufacturing facility. Activities to occur at Parcel 2 comprise assembly and start-up of the SzIBR including installation of new equipment into and adjacent to an existing building. An aerial photograph showing the location of Parcel 2 as well as a facility map depicting the building to be used by the SzIBR project is provided in Appendix A.

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Abengoa Bioenergy New Technology Inc - York (Abengoa)
1414 Road O, York, NE 68467

This is an existing pilot plant facility that will produce fermentable sugars from biomass for use in the production of lipid oils from algae. No modifications to this facility will be required to support the SzIBR project. An aerial photograph of the Abengoa facility is included in Appendix A.

BlueFire Renewables Inc. (BlueFire)
31 Musick, Irvine, CA 92618

REDACTED
EXEMPTION 4

Renewable Energy Group (REG)
3426 East 28th St. N, Newton, IA 50208

This is an existing refinery facility. The SzIBR project will not require additional equipment to be installed at this facility nor will modifications to existing permits be required to support this work. REG produces and markets REG - 9000TM biodiesel, which exceeds ASTM quality specifications, and is utilized by on-highway fleets, municipalities, power generators, mining, military, home heating, and agriculture applications. REG network production facilities consist of state-of-the-art, proprietary multiple feedstock technology. An aerial photograph of the REG refinery facility is included in Appendix A.

UOP, LLC (UOP)
5200 Underwood Rd., Pasadena, TX 77507

This is an existing refinery facility used by UOP. The SzIBR project will not require additional equipment to be installed at this facility, nor will modifications to existing permits be required to support this work. UOP is a leading international supplier and licensor of process technology, catalysts, adsorbents, process plants, and consulting services to the petroleum refining, petrochemical, and gas processing industries. UOP is developing and commercializing

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technology to produce transportation fuels and chemicals from biological feedstocks. An aerial photograph of the UOP facility is included in Appendix A.

Although the SzIBR project activities are being conducted at all of the previously mentioned facilities, the potential for environmental impacts is limited to Parcel 2. As a result, this NEPA document focuses on the impacts to the environment from operations at Parcel 2. All other facilities associated with the SzIBR project will utilize existing buildings and infrastructure. Because no ground disturbing activities will occur at these other facilities, impacts from these facilities are not described further in this document.

3.2 General Physical Characteristics

Parcel 2 at the PMP site is located in an industrial area along the Illinois River in the city of Peoria, which is approximately 130 miles southwest of Chicago. Peoria is within Peoria County in east central Illinois with a population of approximately 114,000 people. Peoria was settled in the late seventeenth century, incorporated as a village in 1835, and incorporated as a city in 1845. Today, it has a total incorporated area of approximately 46.6 square miles. Common industries in the city include: trade, manufacturing, transportation, and utilities; government; education and health services; and professional and business services. Well known businesses operating within the city include Ameren Illinois (utility), Archer Daniel Midlands (ADM) Caterpillar, Inc., Komatsu America Corporation, and RLI Corporation.

Parcel 2 at the PMP site is located at the intersection of the Bloomington Ridge Plain, Galesburg Plain, and Ancient Illinois Floodplain Subsections of the Till Plains Section of the Central Lowland Province. Topographically, the province is characterized by rolling hills and narrow valleys created from glaciers during the last Ice Age. Common features with the Central Lowlands include areas of glacial till, outwash plains, glacial lake plains, and ridges formed by moraines. Surface features are underlain by bedrock dating from the Paleozoic era.

Although Parcel 2 of the PMP site is located within the floodplain of the Illinois River, the SzIBR project will not involve ground disturbing activities or installation of new facilities which would affect the floodplain.

3.3 Air Quality and Meteorology

Air emissions from the SzIBR project are regulated under the federal Clean Air Act (CAA) and state laws administered by the IEPA. The United States Environmental Protection Agency (US EPA) has promulgated ambient air quality standards to protect the public health and welfare. The National Ambient Air Quality Standards (NAAQS) are set at levels the US EPA believes are necessary to protect public health (primary standards) and public welfare (secondary standards). NAAQS exist for the following seven criteria pollutants: particulate matter with a nominal aerodynamic diameter of less than or equal to 10 microns (PM_{10}); particulate matter with a nominal aerodynamic diameter of less than or equal to 2.5 microns ($PM_{2.5}$); sulfur dioxide (SO_2); nitrogen dioxide (NO_2); carbon monoxide (CO); ozone (O_3); and lead (Pb). The NAAQS and Illinois ambient air quality standards (IL AAQS) for these pollutants are summarized in Table 3.3-1.

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TABLE 3.3-1

Solazyme SzIBR Project
Ambient Air Quality – Peoria County, IL

Air Pollutant	Averaging Period	Background Level [a] ($\mu g/m^3$)	NAAQS [b] ($\mu g/m^3$)	IL AAQS ($\mu g/m^3$)
Sulfur Dioxide	1-Hour	0.058 ppm (2H)	0.075 ppm	---
	3-Hour	0.046 ppm (2H)	1,300 (0.5 ppm)	0.5 ppm
	24-Hour	0.025 ppm (2H)	0.14 ppm	0.14 ppm
	Annual	0.002 ppm (1H)	0.03 ppm	0.03 ppm
Carbon Monoxide	1-Hour	3.2 ppm (2H)	35 ppm	35 ppm
	8-Hour	2.1 ppm (2H)	9 ppm	9 ppm
Nitrogen Dioxide	1-Hour	ND	0.100 ppm	---
	Annual	ND	100	100
Ozone	1-Hour	0.075 ppm (2H)	---	0.12 ppm
	8-Hour	0.067 ppm (4H)	0.075 ppm	---
PM_{10}	24-Hour	40 (2H)	150	150
	Annual	16 (Mean)	---	50
$PM_{2.5}$	24-Hour	27.0 (98Pt)	35	---
	Annual	11.19 (Mean)	15	---
Lead (Pb)	Rolling 3-Month Average	ND	0.15	---
	Quarterly Average	ND	1.5	1.5

[a] Background level data are based on values in the EPA Airdata system for 2008. PM2.5 and PM10 data are from Site ID 171430037 at 613 NE Jefferson, Peoria, IL. Ozone data from Site ID 171431001 – 508 Glen Avenue E., Peoria Heights, IL. Carbon monoxide data from Site ID 171430036 – 1005 N. University, Peoria, IL. SO2 data from Site ID 171430024 at Hurlburt and Macarthur, Peoria, IL.

[b] National Ambient Air Quality Standards (NAAQS) values presented in micrograms per cubic meter unless otherwise stated. Background concentrations are based on the average reported concentration most applicable to the NAAQS compliance method.

PM_{10} = Particulate matter having an aerodynamic diameter less than or equal to 10 microns.
$PM_{2.5}$ = Particulate matter having an aerodynamic diameter less than or equal to 2.5 microns.
ppm - parts per million
ND = No Data Available
2H = 2nd High Values for 2008
4H = 4th High Value for 2008
98Pt = 98th Percentile
Mean = Annual arithmetic mean for 2008

Title V of the CAA created the federal operating permit program. These permitting requirements are codified in 40 CFR Part 70. The operating permits required under these rules are referred to as a "CAAPP" permit in Illinois. In general, these permits are required for major sources with a potential to emit (PTE) (considering federally enforceable limitations) equal to or greater than 100 tons per year (tpy) for any criteria pollutant, 25 tpy for all Hazardous Air Pollutants (HAPs) in aggregate, or 10 tpy of any single HAP. Under Title V, EPA requires aggregation of emissions

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when nearby facilities have common ownership, belong to the same standard industrial classification code, and are located on adjacent or contiguous property.

The PMP facility is currently operating under a CAAPP Permit. However, preliminary discussions with IEPA have confirmed that the construction and initial operation of the proposed SzIBR project will be authorized through a separate state air quality construction and operating permit rather than a modification to the existing PMP CAAPP Permit. This is because the SzIBR will be a source separate from the PMP facility. This is not a PSD permitting process; therefore, it will take 2 to 6 months, once a complete application is submitted to the IEPA. Solazyme has estimated the potential air emissions that will be generated from the pilot-scale SzIBR. The SzIBR project would have the potential to emit a relatively small amount of air emissions. The estimated emissions are summarized in table 3.3-2 below.

TABLE 3.3-2

Solazyme SzIBR Project
Estimated Potential Emissions (tons/year)

Pollutant	Emissions (tons/year)
PM	3.61
$PM_{2.5}$	3.61
PM_{10}	3.61
SO_2	0.02
VOC	1.68
NO_x	2.97
CO	2.45
NH_3	0.01
Combustion HAPs	0.06

The table above provides the estimated potential emissions from the SzIBR based on a combination of EPA emission estimation methods, manufacturer specifications, and engineering test data for a EX 4 The emissions from the entire process would not present a significant environmental impact because the project will not result in a significant air emission increase. No new air permits or modifications of existing air permits will be required to operate the refining units at the existing REG and UOP commercial facilities.

The specific characterization of the local weather in the SzIBR project area, which is located in central Illinois, was obtained from a weather station at the Greater Peoria Regional Airport. These data indicate an average annual temperature of 50.8 degrees Fahrenheit, an average annual maximum temperature of 60.7 degrees Fahrenheit, an average annual minimum temperature of 40.9 degrees Fahrenheit, and an average annual precipitation of 36 inches.

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Peoria County is currently designated attainment or unclassifiable with respect to all criteria pollutants. The existing air quality of the air is evidenced by the background values listed in table 3.3-1 above.

3.4 Geology and Soils

Ground disturbing activities associated with the SzIBR project will be limited to a developed, industrial site; therefore, no sensitive soils (including prime farmland or hydric soils) or extractable mineral resources will be impacted.

Based on historical seismic activity in the project area, the U.S. Geological Survey estimates a 10 percent probability of an earthquake exceeding peak ground acceleration of approximately 2 to 3 percent force of gravity (g) over a period of 50 years. Based on this information, the PMP facility is located in an area that represents a low seismic hazard risk. A map depicting the seismic risk (in percent force of gravity) in relation to the project is shown in Appendix B. These conditions are already taken into account in Solazyme's construction specifications.

3.5 Biological Resources

Based on desktop review, development of the SzIBR project will not involve any activities that could potentially impact biological resources. Although the U.S. Fish & Wildlife Service (FWS) has identified three sensitive species known to occur in Peoria County (i.e., Indiana bat, Decurrent false aster, and Eastern prairie fringed orchid), the project area does not contain habitat suitable for any of these species. The Indiana bat occupies caves, mines, small stream corridors with well developed riparian woods, and upland forests; Decurrent false aster is found on disturbed alluvial soils; and the Eastern prairie fringed orchid occupies mesic to wet prairies. None of these habitat types is present in the project area, which consists of a developed, industrial site. Additionally, no structures or overhead transmission lines, which could lead to impacts on migratory birds, will be built in association with the project. Lastly, the project will not be located within any wetland areas.

3.6 Water Resources

Parcel 2 at the PMP site is located along the Illinois River in Peoria County. The river meanders about 273 miles from its source at the confluence of the Des Plaines and Kankakee Rivers near Joliet, to its confluence with the Mississippi River about 25 miles northwest of St. Louis. In Peoria near the site of the project, the river broadens from a width of about 900 feet to a lake-like area (called Peoria Lake) measuring about 6,300 feet across. Peoria Lake is an important tourist attraction for the city for a variety of water sports.

As discussed in Section 2.2, even though the PMP facility has significant capacity under its current water use permit, Parcel 2 will be under separate ownership and operation and therefore will obtain a separate municipal water use permit.

Similarly, with respect to the industrial waste water discharge permit, the existing PMP facility is contracted with GPSD for industrial waste water. Parcel 2 will be under separate ownership and

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operation and therefore will execute a separate contract to discharge its waste water to the GPSD.

The Illinois River in the vicinity of Peoria is currently listed on the EPA's 303(d) impaired waterbodies list for polychlorinated biphenyl (PCB), mercury, fecal coliform, atrazine, manganese, and total dissolved solids; however, Total Maximum Daily Load (TMDL) limits have not been established for discharges of any of these contaminants. Regardless, the SzIBR project will not produce or discharge any of the listed contaminants to the river.

Parcel 2 at the PMP site is located above the Sankoty Aquifer. Although the project will not involve installation of groundwater wells, the SzIBR will draw water from the three existing wells it is acquiring from PMP.

3.7 Waste Management

The solid waste stream from the SzIBR algal oil process is estimated to be REDACTED EXEMPTION 4 algal biomass, byproduct, and , based on . No permits will be required for waste streams associated with the SzIBR because the material will not be hazardous. Additionally, Solazyme is conducting trials to determine the feasibility of use of delipidated algal biomass as an animal feed, which will further reduce the waste generated by the project.

3.8 Infrastructure

One of Solazyme's main purposes is to demonstrate that the SzIBR process, using current industrial biomanufacturing technology, can produce inexpensive, high-quality renewable oil usable by the existing petroleum refining, distribution, and retail infrastructure grid. In order to demonstrate this concept, Solazyme will be utilizing multiple facilities for the feedstock, bench-scale fermentation optimization, processing of algae biomass into algal oil, and refining of algal oil into diesel fuels.

To the extent feasible, the SzIBR project will use existing support infrastructure such as utility hookups and interior workspace available at Parcel 2. Construction of the SzIBR project will involve installation of equipment to implement Solazyme's heterotrophic algal oil manufacturing process as described in Section 2.0 above.

3.9 Cultural Resources

Based on desktop review, development of the SzIBR project will not affect known cultural resource sites. Solazyme reviewed the National Register of Historic Places (NRHP) and found that the planned facility modifications and equipment installation will not occur in a structure that is listed in the NRHP. Solazyme also reviewed the Historic Architectural and Archaeology Resources Geographic Information System (HAARGIS) maintained by the Illinois Historic Preservation Agency, and similarly found that the project will not occur in any recorded site. Further, there is limited potential for the project to affect unrecorded archaeological sites

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because the only ground disturbing activities that will occur are in a previously disturbed area (i.e., within a developed, industrial site).

3.10 Land Use

Parcel 2 at the PMP site is located along the Illinois River in a highly industrialized and commercialized area. No changes in designated land use classes will occur as a result of the SzIBR project. No ground disturbing activities that could potentially disturb sensitive resources will occur. All existing facilities are currently zoned for industrial, manufacturing, or laboratory uses and no changes to local or county zoning designations will be required to construct the project. Additionally, construction and operation of the project will occur within an existing structure or on the existing site, and therefore, no changes or negative impacts on aesthetics of the surrounding areas will occur.

3.11 Noise

Noise above ambient conditions could be generated from the installation of process equipment at Parcel 2. Operation of the fermenters and oil recovery/purification equipment at Parcel 2 will generate noise levels that necessitate the use of hearing protection within the factory, but will not significantly increase ambient noise levels outside the immediate factory area as most SzIBR equipment is enclosed with the EN building structure. Noise will also be generated by the dryer operation but is not expected to increase noise beyond the property line of the PMP site. Further, the noise levels will be below the limits identified in Peoria's building code (measured as allowable octave band sounds emitted to the surrounding area). Because construction noise will be short term and minimal, and noise during operations will be consistent with city code, no permits, consultations, additional mitigation measures, or approvals associated with noise will be required for construction and operation of the SzIBR project.

3.12 Depletion of a non-Renewable Resource

Non-renewable resources that will be used in association with the SzIBR project include diesel fuel used to transport the feedstocks and algal oil product. Other non-renewable resources for the SzIBR project include natural gas used to operate the EX 4 at Parcel 2.

3.13 Socioeconomics

The majority of the SzIBR project work will occur within the City of Peoria in Peoria County, Illinois. As noted above, the current population of Peoria is about 114,000. The population of the county is about 182,000, while the population of the Peoria Metropolitan Statistical Area, which encompasses five counties, is about 372,000.

According to data from the U.S. Bureau of Labor Statistics, the state unemployment rate for both Illinois and the Peoria metropolitan area was 9.3 percent as of December 2010. The primary employment categories in the metropolitan area are trade, transportation, and utilities; government; education and health services; and professional and business services

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Although the number of [redacted] may vary during construction activities, Solazyme anticipates approximately [redacted] will be required to construct the SzIBR project. [redacted] will consist of [redacted] After construction is complete, Solazyme will maintain a permanent workforce of 20 to [redacted] people at Parcel 2. Solazyme will attempt to hire temporary construction staff and permanent operations staff from the local population, if the local population offers skilled workers in fields related to biorefinery construction and operations. Other positions will be filled by temporary construction workers and permanent staff who relocate to the area. Hiring associated with the project will result in the beneficial impacts of lowering the county unemployment rate and, depending upon the employment position obtained, may increase the average county per capita income.

3.14 Transportation

Because the SzIBR project will leverage existing infrastructure from across the country, transportation of materials and products will be required and will utilize a small number of truck and rail trips during the project. However, no significant impacts on traffic or road infrastructure are anticipated. Table 3.14-1 shows the estimated miles and frequency of trips for the project.

TABLE 3.14-1

Solazyme SzIBR Project
Project Transportation

Product	Source Location	Facility Destination	Quantity	Estimated Miles	Method	Frequency
Inputs						
[redacted]	[redacted]	Illinois	8 rail car tankers	840 – 1,120	Rail	1 trip per month
	Nebraska	California	~ 0.5 ton / 4 barrels	1,591	Over the Road Truck	1 trip per project
		Illinois	1 tanker truck (~ 2.5 to 3 tons)	515	Over the Road Truck	1 trip per project
		California	~ 1 ton / 5 barrels	403	Over the Road Truck	1 trip per project
		Illinois	1 tanker truck (~2.5 – 3 tons)	2,074	Over the Road Truck	2 trips per project
Outputs						
Algal Oil	Illinois	Texas	1 rail car tanker	1,030	Rail	1 trip per 12 months
		Iowa	1 rail car tanker or 1 tanker truck	234	Rail or Over the Road Truck	Up to 1 trip per month by rail or 3 trips per month by truck

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(End of notice).

3.15 Odor

The drying process at Parcel 2 of the PMP facility is expected to generate some localized odors within the factory and in close proximity to the building in which the equipment will be located. Odors generated from the project are expected to be minimal and at levels that should not be considered a nuisance either within or outside the facility boundaries.

3.16 Pre-existing Contamination

Based on desktop review, no known contaminated sites will be affected by the SzIBR project. Solazyme reviewed the EPA's Enviromapper database to identify contaminated media sites (e.g., brownfield properties and Superfund sites) in the vicinity of the project area. No sites were identified on or within 1 mile of the SzIBR project area.

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(End of notice).

Appendix A Facility Locations

0 200 400 600

Feet

1:6,000

NATURAL RESOURCE GROUP

Solazyme SzlBR Project

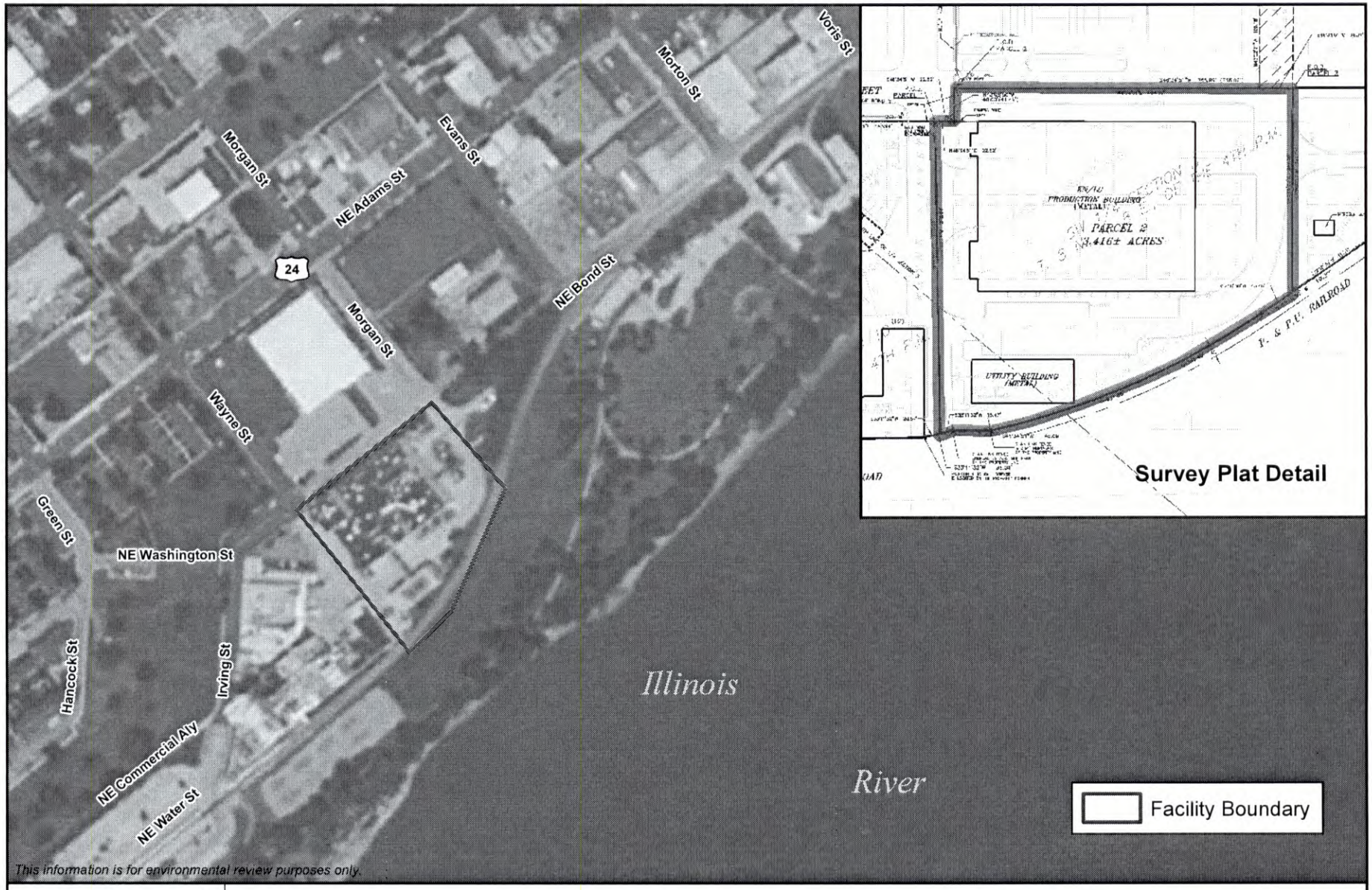
Solazyme Offices and Laboratory Facility

225 Gateway Blvd.

South San Francisco, CA

Appendix A

M:\Clients\S-U\SZM\SzlBR_ArcGIS\2010\02\Cherokee_Facility_SZM_SZL_Solazyme_Lab.mxd | DATE: 03/04/10 | REVISED: 03/04/10 | DRAWN BY: RSMcGREGOR



0 200 400
Feet
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NATURAL RESOURCE GROUP

Solazyme SzIBR Project
Facility Location
Appendix C

M:\Clients\S-U\SZM\SzIBR_ArcGIS\2011\02\Peoria_SZM_SZP_Peoria.mxd | DATE: 2/11/2011 | REVISED: 2/11/2011 | DRAWN BY: RSMcGREGOR

0 400 800 1,200

Feet

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NATURAL RESOURCE GROUP

N

Solazyme SzIBR Project

Ex4

Appendix A

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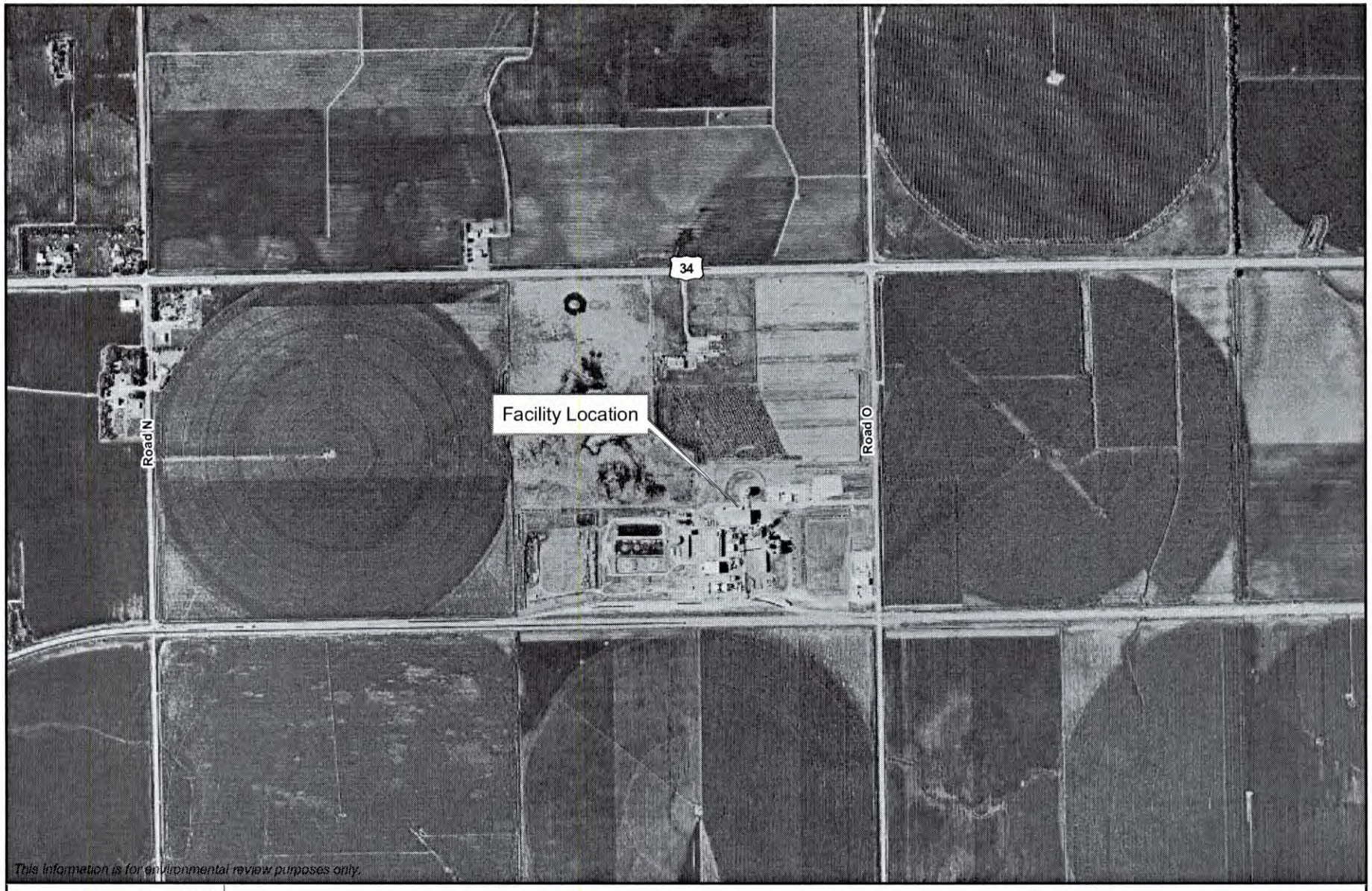
DATE: 03/19/10 | REVISED: 03/19/10 | DRAWN BY: RSMcGREGOR



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NATURAL RESOURCE GROUP

Solazyme SzIBR Project

Abengoa Bioenergy Facility

Appendix A

York County, NE

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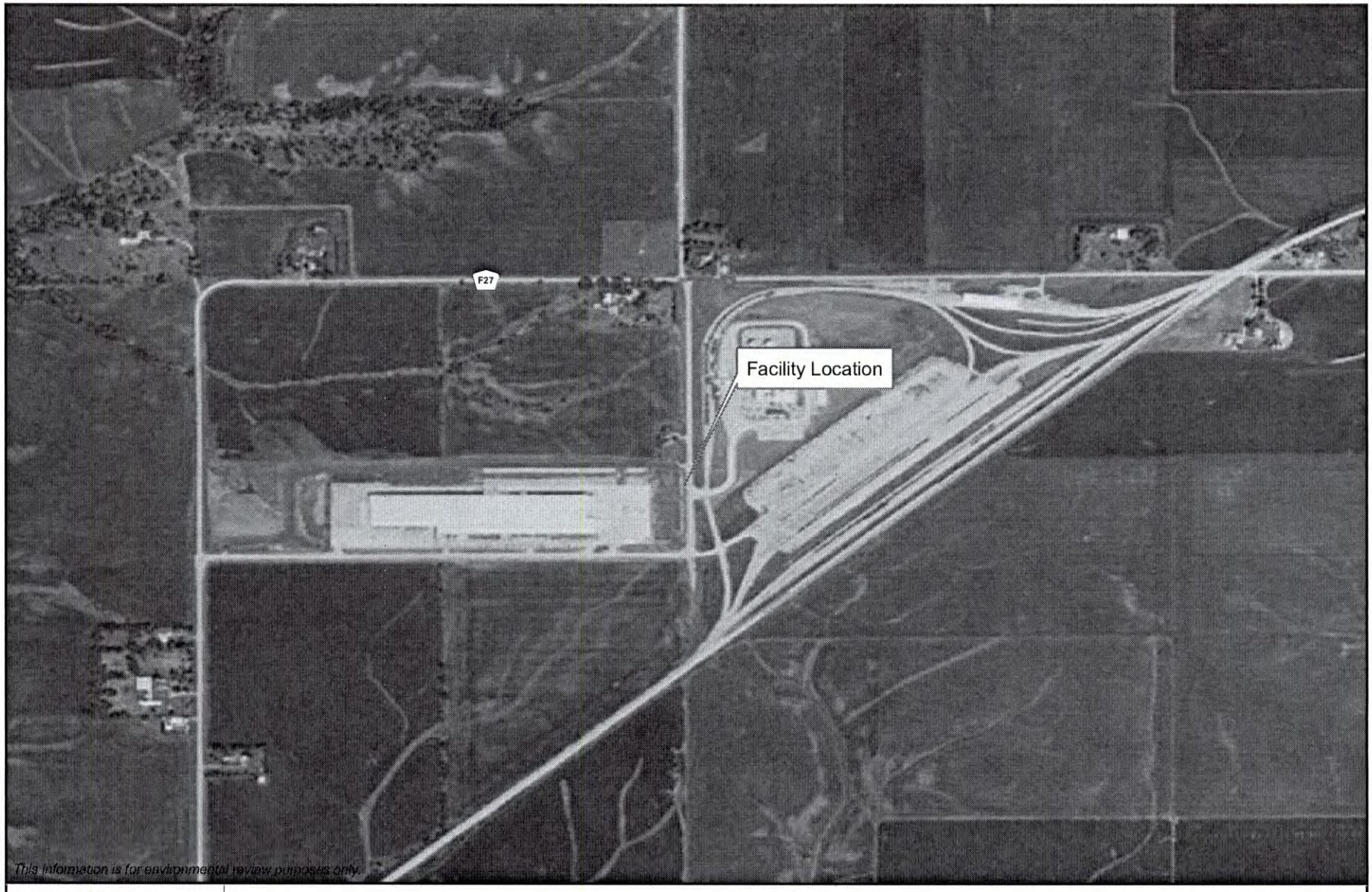

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Feet

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NATURAL RESOURCE GROUP

Solazyme SzIBR Project

Renewable Energy Group

Appendix A

M:\Clients\S-U\SZM\SzIBR_ArcGIS\2010\02\Cherokee_Facility_SZM_SZL_RNG.mxd | DATE: 03/19/10 | REVISED: 03/19/10 | DRAWN BY: RSMcGREGOR

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NATURAL RESOURCE GROUP

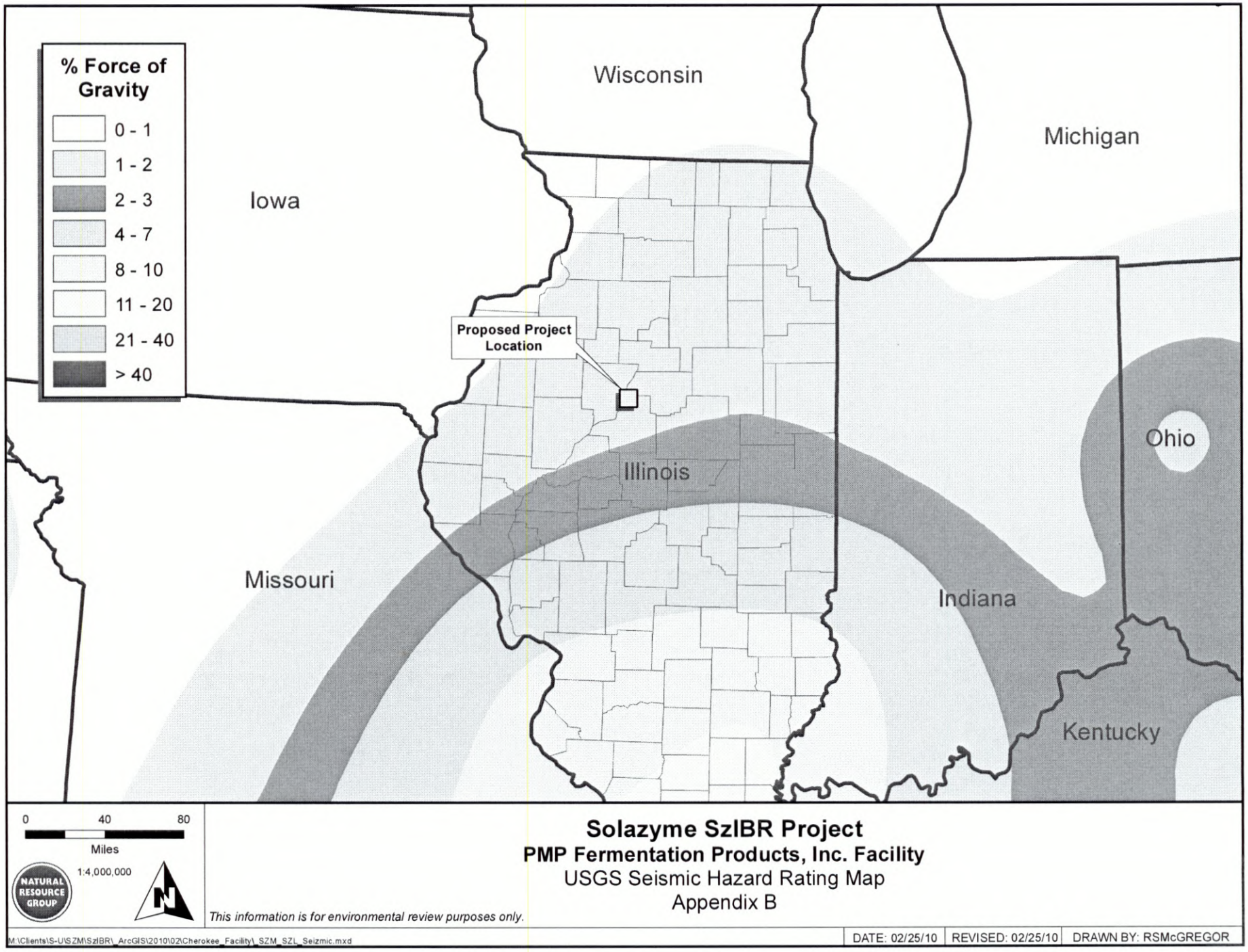
Solazyme SzIBR Project

UOP, LLC

Appendix A

M:\Clients\S-U\SZM\SzIBR_ArcGIS\2010\02\Cherokee_Facility_SZM_SZL_UOP.mxd | DATE: 03/19/10 | REVISED: 03/19/10 | DRAWN BY: RSMcGREGOR

Appendix B Seismic Risk (in percent force of gravity) in Project Area



Solazyme SzlBR Project

PMP Fermentation Products, Inc. Facility

USGS Seismic Hazard Rating Map

Appendix B

M:\Clients\S-U\SZM\SzlBR_ArcGIS\2010\02\Cherokee_Facility_SZM_SZL_Seizmic.mxd | DATE: 02/25/10 | REVISED: 02/25/10 | DRAWN BY: RSMcGREGOR

PMC-EF2a

(2.04.02)

U.S. DEPARTMENT OF ENERGY
EERE PROJECT MANAGEMENT CENTER
NEPA DETERMINATION

RECIPIENT: Solazyme, Inc **STATE:** IL

PROJECT TITLE : Solazyme Integrated Biorefinery (SzIBR): Diesel Fuels from Heterotrophic Algae

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-EE0000096	EE0002877	GFO-0002877-002	EE2877

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), I have made the following determination:

CX, EA, EIS APPENDIX AND NUMBER:

Description:

B3.6 Siting, construction (or modification), operation, and decommissioning of facilities for indoor bench-scale research projects and conventional laboratory operations (for example, preparation of chemical standards and sample analysis); small-scale research and development projects; and small-scale pilot projects (generally less than two years) conducted to verify a concept before demonstration actions. Construction (or modification) will be within or contiguous to an already developed area (where active utilities and currently used roads are readily accessible).

A9 Information gathering (including, but not limited to, literature surveys, inventories, audits), data analysis (including computer modeling), document preparation (such as conceptual design or feasibility studies, analytical energy supply and demand studies), and dissemination (including, but not limited to, document mailings, publication, and distribution; and classroom training and informational programs), but not including site characterization or environmental monitoring.

Rational for determination:

DOE is proposing to provide federal funding to Solazyme to build, operate and optimize a pilot-scale Solazyme Integrated Biorefinery (SzIBR). DOE completed the NEPA review for this project (CXA A9 and B3.6) for the originally proposed site. At this time, Solazyme is proposing to complete their project at an alternate location. This NEPA determination applies to the newly proposed site.

Solazyme proposes to construct the SzIBR on Parcel 2 of the existing PMP Fermentation Products, Inc. (PMP) site in Peoria, Illinois. Most equipment will be installed within the existing building with the exception of the dryer, which will be installed immediately outside the building on existing attached concrete pads. No new soil will be disturbed during installation of SzIBR.

There would be no or negligible impacts to odor, traffic, hazardous waste, solid waste, biological resources, cultural resources, wetlands, or other sensitive resources. There will be no land use impacts, as the existing facilities are currently zoned for industrial, manufacturing, or laboratory uses and no changes to local or county zoning designations will be required to construct the project. Additionally, construction and operation of the project will occur within an existing structure or on the existing site, and therefore, no changes or negative impacts on aesthetics of the surrounding areas will occur.

A National Pollution Discharge Elimination System (NPDES) discharge permit for surface water runoff and non-contact cooling water will be obtained for the facilities associated with the SzIBR project. A state air quality construction and operating permit from the Illinois Environmental Protection Agency will be required for emissions generated from the new equipment associated with the SzIBR.

CX A9 and B3.6 apply to this project as it includes information gathering, data analysis, conceptual design, laboratory- and pilot- scale research and development activities. All construction and modification of existing facilities will occur within or contiguous to an already developed area where active utilities and currently used roads are readily accessible.

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

Note to Specialist :

None Given.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Kristin Kerwin Date: 4/12/2011
NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

☐ Field Office Manager review required

NCO REQUESTS THE FIELD OFFICE MANAGER REVIEW FOR THE FOLLOWING REASON:

☐ Proposed action fits within a categorical exclusion but involves a high profile or controversial issue that warrants Field Office Manager's attention.
☐ Proposed action falls within an EA or EIS category and therefore requires Field Office Manager's review and determination.

BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :

Field Office Manager's Signature: _____ Date: _____
Field Office Manager

RECIPIENT:Solazyme, IncSTATE:IL

PROJECT TITLE :Solazyme Integrated Biorefinery (SzIBR): Diesel Fuels from Heterotrophic Algae

Funding Opportunity Announcement NumberProcurement Instrument NumberNEPA Control NumberCID Number
DE-EE0000096EE0002877GFO-0002877-002EE2877

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), I have made the following determination:

CX, EA, EIS APPENDIX AND NUMBER:
Description:

B3.6 Siting, construction (or modification), operation, and decommissioning of facilities for indoor bench-scale research projects and conventional laboratory operations (for example, preparation of chemical standards and sample analysis); small-scale research and development projects; and small-scale pilot projects (generally less than two years) conducted to verify a concept before demonstration actions. Construction (or modification) will be within or contiguous to an already developed area (where active utilities and currently used roads are readily accessible).
A9 Information gathering (including, but not limited to, literature surveys, inventories, audits), data analysis (including computer modeling), document preparation (such as conceptual design or feasibility studies, analytical energy supply and demand studies), and dissemination (including, but not limited to, document mailings, publication, and distribution; and classroom training and informational programs), but not including site characterization or environmental monitoring.

Rational for determination:
DOE is proposing to provide federal funding to Solazyme to build, operate and optimize a pilot-scale Solazyme Integrated Biorefinery (SzIBR). DOE completed the NEPA review for this project (CXA A9 and B3.6) for the originally proposed site. At this time, Solazyme is proposing to complete their project at an alternate location. This NEPA determination applies to the newly proposed site.

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of the surrounding areas will occur.

A National Pollution Discharge Elimination System (NPDES) discharge permit for surface water runoff and non-contact cooling water will be obtained for the facilities associated with the SzIBR project. A state air quality construction and operating permit from the Illinois Environmental Protection Agency will be required for emissions generated from the new equipment associated with the SzIBR.

CX A9 and B3.6 apply to this project as it includes information gathering, data analysis, conceptual design, laboratory- and pilot- scale research and development activities. All construction and modification of existing facilities will occur within or contiguous to an already developed area where active utilities and currently used roads are readily accessible.

NEPA PROVISION

DOE has made a final NEPA determination for this award
Insert the following language in the award:

Note to Specialist :
None Given.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Kristin Kerwin Date:4/12/2011
NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

Field Office Manager review required

NCO REQUESTS THE FIELD OFFICE MANAGER REVIEW FOR THE FOLLOWING REASON:

Proposed action fits within a categorical exclusion but involves a high profile or controversial issue that warrants Field Office Manager's attention.
Proposed action falls within an EA or EIS category and therefore requires Field Office Manager's review and determination.

BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :

Field Office Manager's Signature: Date:
Field Office Manager

R&D Laboratory
Environmental Impact Questions

In order to receive Federal financial assistance, proposed projects must be reviewed under the National Environmental Policy Act (NEPA) for potential environmental impacts. For research and development activities, the following questions must be sufficiently answered before the review can be completed. Please add as much detail as possible.

Solazyme is proposing to build, operate and optimize a pilot-scale **S**ola**z**yme **I**ntegrated **Bio**refinery (SzIBR). The scope of the proposed project encompasses (i) building, operating and optimizing a pilot-scale integrated biorefinery, (ii) growing oil-producing algae in fermentation vessels on sugars derived from a range of feedstocks, (iii) extracting and purifying oil from the algae, (iv) refining the algal oil to standard liquid transportation fuels including biodiesel and renewable diesel, (v) optimizing parameters at both laboratory and pilot scale, and (vi) gathering data to assist in the design of subsequent demonstration and commercial facilities.

The SzIBR project will use existing laboratories, industrial, and manufacturing facilities to demonstrate the feasibility of an integrated biorefinery. Pilot-scale fermentation and downstream processing to algal oil will occur at the Solazyme Manufacturing I, LLC (Solazyme - Peoria) biomanufacturing facility in Peoria, Illinois, previously owned by PMP Fermentation Products, Inc. During set up of the pilot-scale equipment, Solazyme will optimize fermentation processes at their preexisting and fully permitted laboratory facilities in South San Francisco, California (Solazyme-SSF). During the later phases of the pilot-scale project, EX 4 will be generated by an existing and fully permitted facility in York, Nebraska and an existing and fully permitted pilot manufacturing facility located in EX 4 and owned and operated by EX 4 The SzIBR project will utilize existing refining facilities for conversion of the algal oil produced at Solazyme-Peoria to biodiesel and renewable diesel.

The majority of the project activities will occur at the Solazyme-SSF laboratory facility in South San Francisco, California and the Solazyme-Peoria facility in Peoria, Illinois. In addition, new equipment will be installed at the EX 4 facility. The following R&D Laboratory Environmental Impact Questions addresses these three facilities.

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(End of notice).

1. Please provide and describe the location of the facility or facilities where lab work will take place.

Laboratory activities will occur at the **Solazyme-SSF facility** located at 225 Gateway Blvd, South San Francisco, California, 94080. Solazyme will utilize feedstock supplies delivered to its preexisting and fully permitted laboratory facility in South San Francisco, California to optimize fermentation processes. Work at this laboratory facility will only include ordinary, on-going laboratory activities and no algal oil to fuel refining will occur at this location. This is an existing industrial area.

Fermentation and algal oil extraction and purification activities will occur at the **Solazyme-Peoria facility**, which is located on Parcel 2 at 900 N.E. Adams Street, Peoria, Illinois 61603. This is an existing fermentation products manufacturing facility located within the City of Peoria. No algal oil to fuel refining will occur at this location.

Project partner EX4 will be installing pilot scale equipment at its existing facility in order to provide EX4 for algal growth. The facility is located at . The facility is located in an industrial area. No algal oil to fuel refining will occur at this location.

2. What type of safety protocols are in place in the areas where work will take place? Who monitors these? Internally and externally? Are the safety protocols subject to OSHA or other standards? Please describe all safety and environmental protocols and standards related to this project.

Solazyme-SSF

Solazyme-SSF has a fully developed safety and environmental program and is committed to protecting employee health and the environment as well as complying with all applicable laws and regulations. Solazyme-SSF accomplishes this commitment through the implementation of OSHA compliant safety policies and procedures. These protocols include: a Hazardous Materials Business Plan compliant with the California Health and Safety Code, an Injury and Illness Prevention Program, a Laboratory Chemical Hygiene Plan as well as a Radiation Safety Program and License. These programs are monitored internally by Solazyme and externally by the California Department of Health. These programs include provisions to identify and prevent safety and health hazards, inspection protocols, safety training, communication and record keeping protocols, emergency action planning, fire prevention and planning, personal protective equipment use, and hazardous substance handling procedures. Environmental practices relate to adhering to existing environmental permits including waste handling procedures for the facility.

Solazyme-Peoria

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Solzyme-Peoria is committed to protecting employee health, following safety protocols, and complying with all applicable safety and environmental laws and regulations. This shall be accomplished through the implementation of OSHA and EPA-compliant policies and procedures. These policies and procedures shall include (but shall not be limited to): Hazardous Work Permits, Hazard Communication, Safety Incident Reporting and Investigation, Safety Shower/Eyewash Stations, Biosafety, Portable and Fixed Ladders, Scaffolds, Job Safety Assessments, Internal Safety Assessments (Audits), Contractor Safety Management, Personal Protective Equipment, Laboratory Spill Response, Fork Lift Trucks, Hearing Protection, Respiratory Protection, Process Safety Management, Fall Protection, Lockout Tag-out, and Emergency Evacuation. All affected employees shall be trained on the requirements of these procedures prior to starting work at the facility and again when changes are made and/or per the site's training schedule. Solazyme-Peroia shall have an environmental team that will monitor the work at the facility to ensure compliance with its environmental permits and regulations. The Solazyme-Peoria facility, an existing manufacturing facility previously operated by PMP Fermentation Products, Inc, has environmental permits for ground water withdrawal, storm and contact/non-contact water discharge, contracted wastewater discharge with Greater Peoria Sanitary District (GPSD), hazardous materials storage, solid waste handling, and air emissions as well as other required permits, all of which will be modified as necessary during the course of ownership transfer of the facility to Solazyme.

EX 4 has an established safety program and is committed to protecting employee health, following established safety protocols, and complying with all applicable laws and regulations. This is accomplished through the implementation of OSHA compliant safety policies and procedures. EX 4 has a staff of research chemists for laboratory analysis, as well as production personnel for pilot plant equipment operation. All personnel are trained in Standard Industry Practices (SIP), modified as necessary by specific manufacturers' instructions along with California OSHA safe operating practices. EX 4 internally monitors compliance with SIP and is periodically audited. Safety protocols applicable to the proposed project will include MSDS handling of dusty and chemical materials, Operation of Equipment - EX 4

Environmental practices relate to adhering to existing air permits, dust and vapor emissions per Conditional Use Permit (CUP) requirements and EPA Identification of Hazardous wastes along with California Integrated Waste Management Board Title 22 identification and solid waste disposal criteria.

3. How are the gases, chemicals, heavy metals, etc., handled, stored and disposed?

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(End of notice).

Solazyme-SSF

Solazyme utilizes protocols outlined in its Laboratory Chemical Hygiene Plan and Hazardous Materials Business Plan to properly handle, store, and dispose of gases, chemicals, and heavy metals. Specific protocols include monitoring use and disposal of chemicals used in the lab, conducting audits, correcting deficiencies, and maintain appropriate documentation of chemical use and disposal, identifying adequate protective measures, and conducting training for lab employees. Chemical flume hoods are used when working with volatile substances and fire extinguishers are available throughout the laboratory. Emergency eye wash stations and safety showers are available within a 10 second walk of any area of expected exposure. Solazyme has a stringent set of administrative and safety controls for the procurement, distribution, and storage of chemicals which are outlined in the Laboratory Chemical Hygiene Plan.

Solazyme-Peoria

Solazyme-Peoria shall establish procedures to handle, store, and dispose of manufacturing waste. The facility shall also establish procedures to review every raw material, product, and/or byproduct used prior to it entering the site including gases, chemicals, and raw materials. As an operating facility, Solazyme-Peoria shall also conduct a detailed environmental review of new processes prior to implementation. These processes are used to adequately plan for the handling and storage of gases and chemicals that might be generated from the process. Part of this review shall be to characterize (for disposal) any wastes and/or byproducts that will be generated by the process. Prior to disposal, a contracted laboratory shall be used to perform any testing requested by the disposal facility or authority.

EX 4 has specific protocols in place to properly handle, store, and dispose of gases, chemicals, and heavy metals. Industrial gases used on site such as hydrogen or welding gases are stored in an area approved by the Fire Department in approved metal cylinders. No gases are anticipated to be used by EX 4 as part of the SzIBR. Bulk, dry or wet chemicals are categorized, visually labeled and stored in an area approved and inspected by the Fire Department. Chemicals to be used by EX 4 in the SzIBR include Powdered metals are sometimes used in very small quantities for catalyst development or remediation calibration. Metals are also dissolved from equipment during processing. All metal wastes are formed into hydroxides during neutralization and disposed of by the appropriate methods prescribed by leaching test limits. Metal wastes have historically demonstrated sufficiently low gypsum content to be acceptable for agricultural disposal. EX 4 anticipates landfilling all metal wastes, which is only required for wastes with higher gypsum content.

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(End of notice).

4. What type of safety equipment is in place for the facilities (i.e. fume hoods, alarms, scrubbers, etc...)?

Solazyme-SSF

Solazyme-SSF follows a safety protocol that outlines the necessary safety equipment to be used at the facility. Solazyme-SSF is committed to providing a safe working environment for its employees by employing various safety mechanisms. Chemical flume hoods are used when working with volatile substances and fire extinguishers are available throughout the laboratory. Emergency eye wash stations and safety showers are available within a 10 second walk of any area of expected exposure. Personal protective equipment available at the laboratory includes safety glasses, protective gloves, safety shoes, and respiratory equipment. Other safety equipment on-site includes fire alarms, telephones for emergency use, respiratory protection and ventilation, and first-aid kits.

Solazyme-Peoria

Solazyme is committed to providing a safe working environment for its employees by employing various safety mechanisms. Solazyme-Peoria shall provide personal protective equipment to all employees, including but not limited to, safety glasses, steel-toed shoes, face shields, respiratory protection, hearing protection, and chemical resistant gloves and aprons. Protective equipment requirements shall be determined by the site safety department when new chemicals are brought on-site. Portable fire extinguishers and safety eyewash / showers shall be provided throughout the facility and all employees shall be trained on their use. Additionally, the site is equipped with automatic sprinkler protection and a fire alarm system. All fire protection systems shall be inspected and maintained per National Fire Protection Association (NFPA) and state Fire Marshall (FM) recommendations.

EX 4 is committed to providing a safe working environment for its employees by employing various safety mechanisms. Fume hoods and ventilation through approved scrubbers are used when working with volatile chemicals. No volatile chemicals are anticipated to be used by EX 4 in the SzIBR. Emergency medical equipment, including eye wash, safety showers and cardiac units, are on-site and personnel are trained to use it.

5. What permits are <u>in place</u> for the facility for this type of work? Please list.

Solazyme-SSF

The Solazyme-SSF laboratory facility operates under a Hazardous Materials Business Plan compliant with the California Health and Safety Code as well as a Radioactive Materials License from the California Department of Health.

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(End of notice).

Solazyme-Peoria

The Solazyme-Peoria facility, an existing manufacturing facility previously operated by PMP Fermentation Products, Inc, has environmental permits for ground water withdrawal, water discharge, hazardous and chemical materials storage, and air emissions. Modification of the existing permits will be required when ownership of this facility is transferred to Solazyme. A Clean Air Act Permitting Process (CAAPP) permit for a minor emission source is required for implementation of the SzIBR at Solazyme-Peoria. Notifications for the type of wastewater effluent discharges will be required as outlined in the existing permit and governmental authorities.

EX 4

The facility is permitted for the chemical production and R&D proposed under the CUP permit noted in question number two, and is located in an area zoned Heavy Industrial. Air permits for fume hoods and operating permits for boilers, pressurized air tanks, and a compressor are permitted through the State of California. The Fire Department regulates and inspects the facility regularly for adherence to State-required chemical storage requirements, handling, containment and disposal procedures.

6. What permits <u>are needed or will be acquired</u> for this type of work? Please list.

The Solazyme-Peoria facility is currently operating under a Title V Operating Permit for its air emissions. The construction and initial operation of the proposed SzIBR project at Solazyme-Peoria will require a new construction and operation permit for a minor source under the Clean Air Act Permitting Process (CAAPP), from the Illinois Environmental Protection Agency (IEPA). In addition, Solazyme-Peoria will apply for its own stormwater and non-contact cooling water discharge permit under NPDES. No additional permits will be required to conduct the SzIBR project.

7. How is liquid effluent handled and discharged?

Solazyme-SSF

Project activities at the Solazyme laboratory facility will generate less than of liquid effluent each EX4 This liquid effluent will be disposed of in the public treatment system.

Solazyme-Peoria

The project will produce approximately EX 4 of post processing waste water at the Solazyme-Peoria facility . The liquid effluent will be a byproduct of the biomass recovery process and will be discharged to the Greater Peoria Sanitary District (GPSD) waste water treatment plant. Stormwater and non-contact cooling water will be discharged under a NDPES discharge permit. The wastewater discharges associated with this project are well below the current discharge levels from the facility EX 4 and are inconsequential with regard to the capacity of the GPSD waste water treatment plant EX 4

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(End of notice).

Applied Power Concepts
Liquid effluent will be contained, neutralized and tested prior to disposal in the city sewer per existing service agreement.

8. How is toxic waste handled, stored, and disposed?

Solazyme-SSF
Toxic waste handling is managed through the site's Hazardous Materials Business Plan, which is required by the California Health and Safety Code. Additionally, training on chemical hazards and proper handling is provided during periodic hazard communication and process specifics training.

The laboratory facility uses a contractor, All Chemical Disposal, Inc. to properly dispose of hazardous and toxic waste materials at a permitted and regulated hazardous waste facility.

Solazyme-Peoria
Toxic waste handling shall be managed through the site's Hazard Communication and Biosafety program. This program shall require that every material be reviewed by the site safety department prior to use. The site shall implement procedures to review every raw material, product, and/or byproduct used prior to it entering the site. Solazyme-Peoria shall also conduct a detailed environmental review of new processes prior to implementation. Part of this review shall be to characterize (for disposal) any wastes and/or byproducts that will be generated by the process. Prior to disposal, a contracted laboratory shall be utilized to perform any testing requested by the disposal facility.

EX 4
Toxic waste handling is managed through the site's Hazard program, which is required by the California Health and Safety Code. No toxic waste is expected to be generated by EX 4 in the SzIBR. Solid wastes consisting of pH neutral lignin and gypsum cakes will be disposed of at the EX 4 Class III landfills. Note that these solid wastes are qualified for Class IV disposal as non-hazardous, non-putrefying gypsum or wood residues.

9. Will the work being done create any air pollutants? If so please explain how these are regulated, handled, disposed, or mitigated.

Solazyme-SSF
Fermentation optimization activities at the Solazyme laboratory facilities will not create any air pollutants.

Solazyme-Peoria

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These protected data were produced under Agreement No. DE-EE0002877 with the U.S. Department of Energy and may not be published, disseminated, or disclosed to others outside the Government until and unless express written authorization is obtained from the recipient, Solazyme, Inc. Upon expiration of the period of protection set forth in this Notice, the Government shall have unlimited rights in this data. This Notice shall be marked on any reproduction of this data, in whole or in part.

(End of notice).

The SzIBR will emit a relatively small amount of air emissions from natural gas combustion as well as small amounts of volatile organic compound (VOC) and particulate emissions from the process operations. The Solazyme-Peoria facility is currently operating under a Title V Major Source Air Permit. However, a new (CAAPP) permit for a minor emission source from the IEPA will be sought for the facility as part of the SzIBR project. This new permit will replace the Title V permit.

Ex 4

A small amount of steam will be generated to process Ex 4 Ex 4 . Small amounts of organic vapors generated are collected and scrubbed prior to atmospheric disposal per city site permits; no site source limits are exceeded or anticipated to be exceeded in pilot plant operation. The natural gas fired boilers are permitted for the anticipated emissions.

10. Are Genetically Modified Organisms (GMOs) being used? If so please describe how these will be transported, stored, handled and disposed? How are these classified by the USDA Animal and Plant Health Inspection Service (APHIS)?

The algae used for the SzIBR will be genetically modified organisms. They will be transported, stored, handled and disposed of in accordance with federal, state, and local laws. The organism will be transported from Solazyme-SSF to Solazyme-Peoria contained within biological grade vials on dry ice. Genetically modified organisms used for the SzIBR project are classified as Biosafety Level 1 (no or negligible risk).

11. Will prototypes be tested in a separate location, if so, please describe the location and answer questions #1-9?

No prototypes will be tested in a location separate from those described above.

12. Are subcontractors being used for some of the work? If so please answer Questions #1-11 for work being completed by subcontractors.

No subcontractors will be used for any additional R & D lab work.

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U.S. DEPARTMENT OF ENERGY
EERE PROJECT MANAGEMENT CENTER
NEPA DETERMINATION

RECIPIENT: Solazyme, Inc **STATE:** CA

PROJECT TITLE : Solazyme Intergrated Biorefinery Project

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000096	DE-EE0002877	GFO-10-378	GO2877

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), I have made the following determination:

CX, EA, EIS APPENDIX AND NUMBER:

Description:

B3.6 Siting, construction (or modification), operation, and decommissioning of facilities for indoor bench-scale research projects and conventional laboratory operations (for example, preparation of chemical standards and sample analysis); small-scale research and development projects; and small-scale pilot projects (generally less than two years) conducted to verify a concept before demonstration actions. Construction (or modification) will be within or contiguous to an already developed area (where active utilities and currently used roads are readily accessible).

Rational for determination:

DOE is proposing to provide federal funds to Solazme to build, operate and optimize a pilot-scale integrated biorefinery. The proposed project will be located at the Cherokee Pharmaceuticals, LLC existing commercial biomanufacturing facility in Riverside, Pennsylvania. It will use existing fermentation capacity, as well as supporting infrastructure such as utility hookups and water treatment facilities available at the site. All modifications will be within an already developed area where active utilities and currently used roads are readily accessible. The new 6-inch diameter natural gas pipeline will be installed through a previously disturbed area (graded parking lot) and will be buried at the DOT mandated depth of 4 ft from ground surface. The lot will be graded again after installation. No modifications will be required at any of the other facilities involved in the proposed project. The organisms used for this project are exempted under TSCA.

There would be no or negligible impacts to odor, traffic, hazardous waste, solid waste, bio resources, cultural resources, wetlands, or other sensitive resources. There will be no land use impacts, as the project will be located in an area already producing fermented products. An air quality plan or air permit exemption is required from the Pennsylvania Department of Environmental Protection, Bureau of Air Quality

CX B3.6 applies to the Budget Period 2.

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

Note to Specialist :

Solazyme is in the process of obtaining either an air quality plan approval or air permit exemption from the Pennsylvania Department of Environmental Protection, Bureau of Air Quality. Until this process is complete, Solazyme shall not begin construction or operate the facility.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Kristin Kerwin Date: 5/5/2010

NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

June 8, 2010

Ms. Sarah Larkin McQuaid, Ph.D., P.M.P.,
Associate Director Program Management
Solazyme, Inc.
561 Eccles Ave.
South San Francisco, CA 94080-1906

Dear Dr. McQuaid:

SUBJECT: Clarification of Terms in the Requirements for Contingency Funds for Integrated Biorefinery Projects under Award No. DE-EE0002877, "Recovery Act – Solazyme Integrated Biorefinery (SZIBR): Diesel Fuels from Heterotrophic Algae"

This letter is to clarify the meaning of the term "dedicated," as used in the Appendix to Special Terms and Conditions, Paragraph 34, Requirements for Contingency Funds for Integrated Biorefinery Projects (hereafter "Appendix"), as applied to the Solazyme, Inc. Biorefinery Project. Specifically, the Appendix states that "Contingency Funds must be: a) liquid, b) immediately available, and c) unrestricted funds that are dedicated to the project."

DOE intends that the term "dedicated," as used above in clause c) and elsewhere in Paragraph 34 of the Special Terms and Conditions means that the "Contingency Funds" are "available for use in" the project. The term "dedicated" is not intended to mean a strict segregation or restriction of the Contingency Funds from Recipient's other cash and investment balances. Instead, the term is intended to convey that, should cost overruns materialize in Budget Period 2, the Recipient has agreed that contingency funds are available to cover a minimum of 25% of total Budget Period 2 costs. The requirement that liquid, immediately available, and unrestricted Contingency Funds be "dedicated" to the project may be met so long as the Recipient's unencumbered cash and investment balances, as evidenced by account statements and certification by an executive officer pursuant to Appendix paragraph C.3.a., are sufficient and available to cover the required contingency for the project.

In addition, as provided in the Appendix, where Recipient demonstrates that it has adequately controlled for project performance risk, opportunities, and uncertainties, DOE, at Recipient's reasonable request, will assess the reduced risk profile and, if appropriate, reduce the effective Contingency Funds requirement.

Should you have additional questions or concerns, please contact Christy Sterner, Project Officer, at (303) 275-4720 or christy.sterner@go.doe.gov or Molly Hames, Grants and Agreements Specialist, at (303) 275-4864 or molly.hames@go.doe.gov.

Sincerely,

Melissa Wise
Contracting Officer

Department of Energy
Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

June 8, 2010

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Associate Director Program Management
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Sincerely,

Melissa Wise
Contracting Officer