UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

June 3, 2010

Milford Wayne Donaldson, FAIA – State Historic Preservation Officer
California Department of Parks and Recreation
Office of Historic Preservation
1414 9th Street, Room 1442
P.O. Box 942896
Sacramento, CA 94296-0001

RE: Santa Susana Field Laboratory Proposed Action

Dear Mr. Donaldson:

The United States (US) Environmental Protection Agency (EPA) has identified a proposed undertaking on the Boeing-owned property of Santa Susana Field Laboratory (SSFL) Area IV, Ventura County, California and is initiating this correspondence in compliance with Section 106 of the NHPA.

The proposed undertaking is to conduct a radiological characterization survey of Area IV of the SSFL. The Area of Potential Effect (APE) is 290 acres within Area IV of the SSFL (Figure 1.). A complete description of the project is detailed in the attached document titled *Cultural Resources Assessment Santa Susana Field Laboratory Area IV Radiological Study, Ventura County, California.*

Section 106 of the National Historic Preservation Act (NHPA) (36 CFR Part 800) requires federal agencies to take into account the effects of their undertakings on historic properties. In accordance with 36 CFR 800.2(c), the EPA requests consultation and concurrence with the California SHPO regarding the proposed undertaking.

EPA's SSFL Cultural Resource Specialist (CRS) has reviewed the proposed undertaking and he has determined that the proposed project would have no adverse effects on historic properties within the APE. A survey and assessment of potential historic structures was conducted in 2009 by Post/Hazeltine Associates. The results of this survey and assessment (attached) determined that there were no historic structures within the APE that are eligible for inclusion in either the National Register of Historic Places (NRHP) or the California Register of Historic Places (Post/Hazeltine 2009:95).

Also in preparation for this project a separate record search of the surrounding area was conducted with the South Central Coastal Information Center at the California State University, Fullerton. Archaeological surveys that include all or part of the APE were conducted in 1999, 2001, 2007 and 2009, survey #s VN-1818, VN-2480, VN-2611, VN-2797, respectively. A total of five (5) archaeological sites have been identified and recorded within the APE for this undertaking. At least four of the five archaeological sites within the APE have been deemed ineligible for inclusion in the National Register of Historic Places (NRHP) by the archaeologists who originally recorded and evaluated the sites. However, since formal concurrence of ineligibility has not been sought from nor been given by SHPO, all archaeological sites within the APE are considered eligible for inclusion in the NRHP and considered historic properties for the purposes of this undertaking.

This undertaking proposes a no adverse effect on historic properties through a "flag and avoid approach". The specifics of the methodology are detailed in the document titled, *Cultural Resources Protection Measures* (attached). These measures have been derived from the draft *Cultural Resources Management Plan* prepared for the SSFL site by National Aeronautics and Space Administration (NASA) in February 2010; the draft *Cultural Resources Clearance Survey* prepared by the Department of Energy (DOE) in November 2009; and from formal consultations with Native American representatives conducted by the DOE and EPA on December 3, 2009. Documentation of Tribal consultation is attached.

In accordance with applicable regulations and policies, the EPA requests concurrence from the California SHPO that no adverse effect occurs to historical properties with the proposed undertaking following a "flag and avoid" approach and provided the mitigation measures detailed in the *Cultural Resources Protection Measures* are employed.

We would also take this opportunity to inform SHPO that a parallel EPA undertaking is planned for an 182 acre parcel of land immediately adjacent to the north of Area IV in the near future (Figure 2). Although a complete pedestrian survey of this parcel referred to as the Northern Boundary Zone (NBZ) has recently been conducted, the report of the results of this survey is not yet available for review. We will prepare and submit a subsequent consultation proposal to SHPO regarding the NBZ after the cultural resources survey report is available we have assessed the potential effects on any historic properties in the NBZ.

If you have any questions regarding this request for consultation and concurrence, please call Ray Corbett, Ph.D. at 805-682-4711 ext 141. If you would like to contact me, I can be reached at (415) 947-4148.

Sincerely,

Craig Cooper

Craig Cooper
Project Manager
Superfund Division

CULTURAL RESOURCES PROTECTION MEASURES IN RESPONSE TO NATIVE AMERICAN CONSULTATION

JUNE, 2010

Field activities associated with the U.S. Environmental Protection Agency's (EPA) proposed action at the Santa Susana Field Laboratory (SSFL) site that disturb the ground surface may potentially have an adverse effect on known and unknown cultural resources. Cultural resources include archaeological deposits (soils that contain material evidence of human activity including the remains of houses, hearths, cemeteries, and other features), artifacts (objects made by people such as whole or broken grinding stones, bowls and tools of various kinds), and rock paintings and carvings that are tied to the landscape, all of which provide information about the culture of the people who made and used them. Cultural resources also include sacred sites (natural features of the landscape that are recognized in local traditions and places with religious significance).

To mitigate the potential for disturbing cultural resources within Area IV of the SSFL a record search was conducted to identify all archaeological sites that have been recorded through previous surveys. Field work has been designed so as to avoid all known and previously identified cultural resources. The measures that will be taken by EPA to protect cultural resources during execution of the proposed action were derived from the draft *Cultural Resources Management Plan* prepared for the SSFL site by the National Aeronautics and Space Administration (NASA) in February 2010; the draft *Cultural Resources Clearance Survey* prepared by the Department of Energy (DOE) in November 2009; and from consultations held between EPA, State Historic Preservation Office and Tribal Representatives on December 2 and 3, 2009. The DOE is conducting additional surveys within the Northern Boundary Zone of the SSFL in the Spring of 2010. If any additional archaeological sites or cultural resources are identified in these or subsequent surveys, these areas will be integrated into the Cultural Resources Protection Measures, which are outlined herein.

Applicable Federal and State Laws

The following regulations were evaluated for their potential applicability to EPA's proposed action:

- National Historic Preservation Act
- National Environmental Policy Act
- American Indian Religious Freedom Act
- Archaeological Resources Protection Act

Field protocols will be implemented to meet the substantive requirements of these regulations. No ground disturbing activity including vegetation clearing, mechanical gamma scanning, or soil sampling will be conducted within 50 feet of identified archaeological sites. Hand-held gamma scanning (non ground disturbing activity) will be allowed at identified archaeological sites if the Cultural Resource Monitor and Native American Monitor are present. Field crew members will

be trained to identify potential cultural objects, and will not disturb, remove, or collect any artifacts. A Cultural Resources Monitor has been retained to monitor all ground disturbing activity and to provide archaeological monitoring support as necessary during the execution of the field work. If any previously unknown or unrecorded cultural resources are encountered or discovered through the field work, the Cultural Resources Monitor will be notified and consulted immediately. The Cultural Resource Monitor operates under the supervision of the Cultural Resource Specialist, and has the authority to redirect work as necessary in order to evaluate and protect newly discovered cultural resources.

The Cultural Resources Monitor is a qualified archaeologist and specialist in southern California Native American artifacts and culture. As part of this work activity, the Cultural Resources Monitor will identify and flag all archaeological sites, areas, or artifacts, and oversee the execution of avoidance and protection measures as necessary throughout the field effort.

Field Protocols

Identification, avoidance, and protection measures will be taken during the execution of field activities at the SSFL site to protect Cultural Resources in accordance with all applicable laws, regulations, and policies as follows:

- HydroGeoLogic, Inc. (HGL) and subcontractor field personnel will receive training for identifying cultural features, archaeological sites, and artifacts. This training will be jointly conducted by the Cultural Resource Specialist and a local (Southern California) Tribal Representative before work begins.
- Cultural resources protection measures will be applied during all ground disturbing field activities. All known cultural resources, as identified through previous surveys, as well as all archeological sites and artifacts discovered through the course of this undertaking will be avoided. If potential artifacts are identified, the field crew will leave them in place and notify the Cultural Resources Monitor immediately.
- A Cultural Resources Monitor will be present to oversee all field work that:
  a) May uncover or expose cultural resources (e.g. vegetation cutting and removal).
  b) Involves ground disturbance (e.g. mechanical gamma scanning and soil sampling).
- Previously undiscovered cultural resources that are encountered during any portion of the Undertaking shall be fully documented and recorded by the JMA Cultural Resource Specialist. Site Record forms for these sites will be submitted to the South Central Coastal Information Center at the California State University Fullerton and thus be recorded in the California Historical Resources Information System (CHRIS) inventory.
- In the event that temporally diagnostic artifacts or other isolated artifacts that are vulnerable to damage and/or unauthorized collection are encountered, the archaeological monitor shall obtain a GPS position of the artifact's exact location and then collect them. They will either be returned to their original locations after the project has concluded, or deposited in a public curation facility as appropriate.

In addition, the Cultural Resource Specialist will provide periodic oversight of the gamma scanning fieled activities. This level of monitoring is appropriate in order to oversee the implementation of the cultural resource avoidance and protection measures described herein, identify previously unrecorded archaeological sites or artifacts, and to ensure that previously unrecorded cultural resources are avoided and protected when encountered.

- The Cultural Resources Monitor has the authority to redirect work if there are archaeological concerns associated with vegetation clearing, gamma scanning, and/or sampling activities.
- The Cultural Resources Specialist and the Cultural Resource Monitor will consult with EPA during the execution of field activities as necessary to protect cultural resources.

CULTURAL RESOURCES ASSESSMENT
SANTA SUSANA FIELD LABORATORY
Area IV Radiological Study
Ventura County, California

Prepared by:

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Contact Person
Steven Vaughn, Project Manager

June, 2010

INTRODUCTION

JMA (John Minch and Associates, Inc.) has been retained to provide consulting services for cultural resources at the Santa Susana Field Laboratory (SSFL) in Simi Valley, CA. The purpose of this summary is to provide a description of the U.S. Environmental Protection Agency's (EPA's) proposed Santa Susana Field Laboratory (SSFL) Area IV Radiological Characterization Survey in sufficient detail to determine to what extent the proposed undertaking may affect any of the known, and potentially undiscovered cultural resources that exist within the Area of Potential Effect (APE). JMA's Cultural Resource Specialist (CRS) has reviewed the previous archaeological investigations conducted on the property, performed an independent records search at the South Central Coastal Information Center at California State University, Fullerton, and is reviewing all available previous correspondence between stakeholders, the Native American Heritage Commission, Native American Tribal Representatives, and the California State Historic Preservation Officer (SHPO). This summary is prepared in accordance with legal requirements set forth under regulations implementing Section 106 of the National Historic Preservation Act of 1966, (NHPA) 36 CFR Part 800.

DESCRIPTION OF THE PROPOSED UNDERTAKING

The Agency and Applicant proposing the undertaking are the same, namely, EPA. The Undertaking is to be administered by EPA pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). The EPA is undertaking the project in accordance with federal legislative mandate, HR 2764, the Consolidated Appropriations Act of 2008. Funding for the proposed Undertaking originates from the American Recovery and Reinvestment Act of 2009.

The proposed Undertaking is the radiological characterization of a portion of SSFL, consisting of administrative Area IV, and an adjacent undeveloped area to the north referred to as the Northern Buffer Zone, or NBZ. Area IV consists of 290 acres owned by The Boeing Company (Boeing), where upon the United States Department of Energy (DOE) and its contractors once operated several nuclear reactors and associated fuel facilities and laboratories. The NBZ consists of 182 acres, where industrial activities have never occurred, but a lawsuit settlement stipulated purchase of this area by Boeing from the adjoining American Jewish University's Brandeis-Bardin

Campus.

The purpose and need for the Undertaking is to determine the presence of potential radioactive contamination in surface soils, and subsurface soils, groundwater, surface water, and sediment within SSFL Area IV and the NBZ.

Environmental Setting

Area IV of the SSFL was developed within Burro Flat, a plateau near the crest of the Simi Hills at approximately 550 meters in elevation. Structures, facilities, and roads are concentrated within the relatively flat area of the site. Of the 272 structures that once existed in Area IV, only 23 structures remain standing today. The surrounding undeveloped area of Area IV consists of naturally vegetated flat terrain, hills and rock outcrops. The NBZ is adjacent to the northern boundaries of Areas II, III and IV. The NBZ is undeveloped and distinguished by very steep north-facing slopes and numerous large sandstone rock outcrops.

PREVIOUSLY IDENTIFIED CULTURAL RESOURCES

A Class III Inventory/Phase I archaeological survey was conducted for Area IV of the SSFL by Whitley and Simon Consultants, (W & S) in 2001. W&S conducted the 2001 investigation in advance of the Environmental Assessment being prepared by the DOE for the proposed closure and remediation of Area IV. The results of the pedestrian survey included the identification and recordation of four archaeological sites located in the project boundaries. Three of the sites identified by W&S are characterized as small rockshelters. CA-VEN-1772 is a small rockshelter featuring a single pink painting of a burro. Age of the painting and cultural origin are unknown. CA-VEN-1773 is a small rockshelter that contained a small amount of lithic debitage and a fire-blackened ceiling. CA-VEN-1775 is a small rockshelter that contained a midden deposit, but may lack integrity due to looting and disturbance (W&S Consultants, 2001). CA-VEN-1774 is a single bedrock mortar. An additional Southern California Edison Fiber Optic survey, conducted in August, 2009, resulted in the identification of CA-VEN-1302, a surface lithic scatter which yielded several chipped-stone secondary flakes (Toren and Romani, 2009). At the time they issued their survey report, W&S deemed the four sites they recorded not eligible for inclusion to the National Register of Historic Places. However, since concurrence of ineligibility has not been sought from or granted by SHPO, all archaeological sites within Area IV are considered eligible and treated accordingly for the purposes of this undertaking. In addition, the presence of the

known archaeological sites in Area IV indicates the potential for elements of the project activities involving ground disturbance and clearing of vegetation to impact previously undiscovered cultural resources. Such activities were not considered in the proposed action addressed in the 2001 investigation conducted by W&S.

The Project Area

An area map, showing the location of the entire SSFL site, including the Area of Potential Effects (APE) in relation to the surrounding areas is provided on **Figure 1**. Also included on Figure 1 are the locations of the known archaeological sites previously referenced. The vicinity map shown on the United States Geologic Survey Calabasas 7.5-minute topographic quadrangle map is shown on **Figure 2**. The latter map more clearly identifies the project area in relation to the entire SSFL.

Figure 1 Locations of the recorded archaeological sites in Area IV.

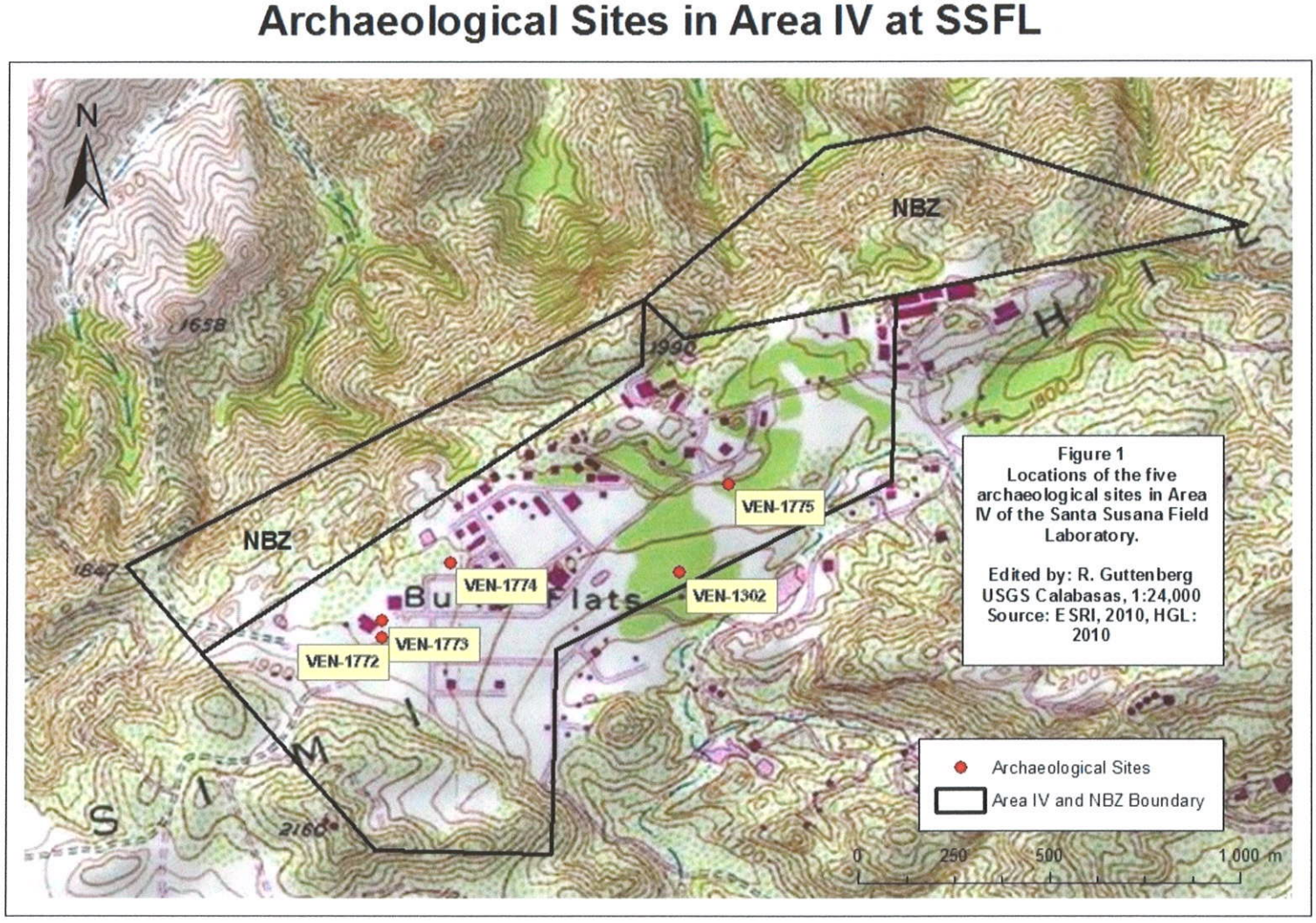
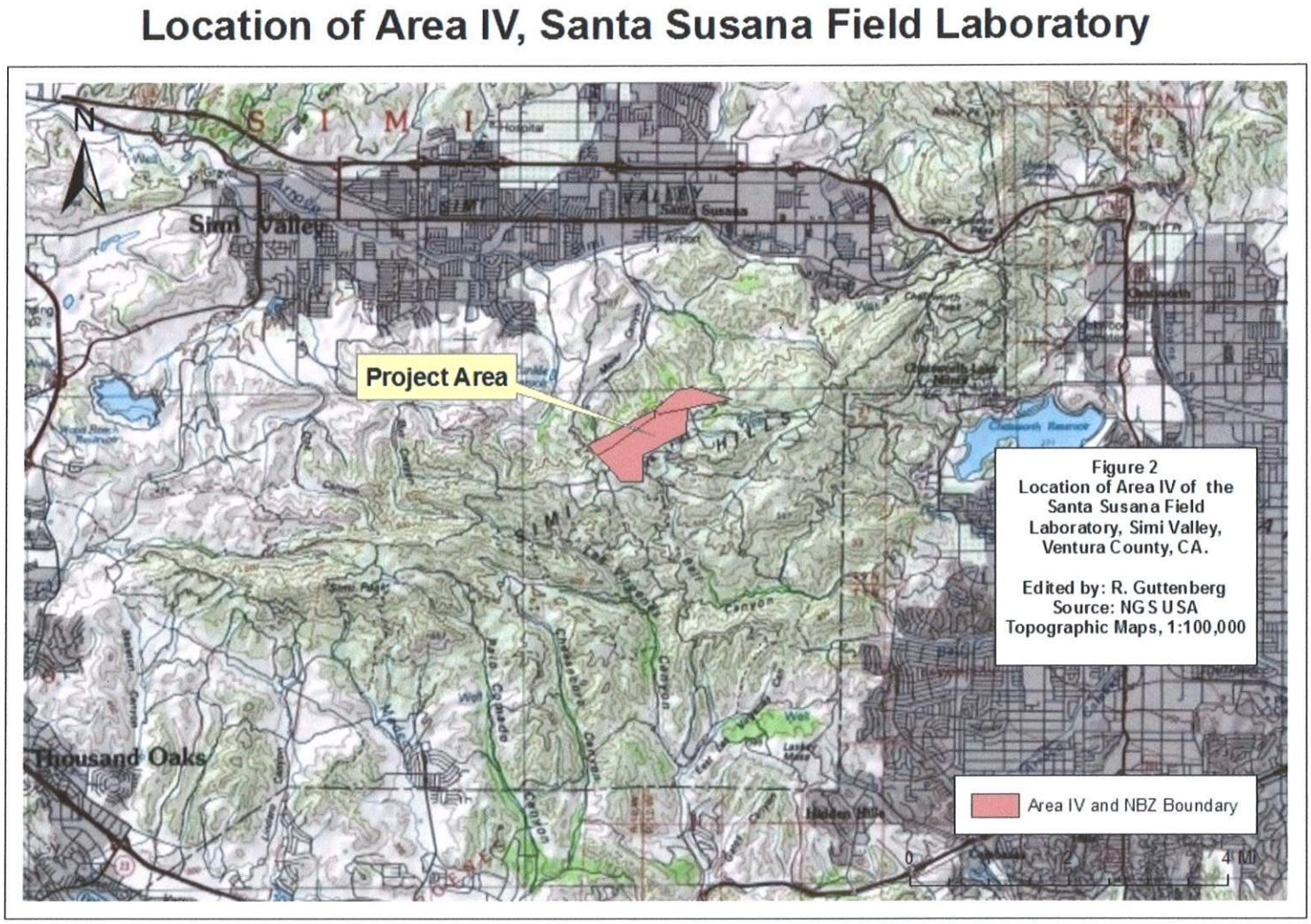


Figure 2 Vicinity Map of Santa Susana Field Laboratory



JMA

The Proposed Undertaking

General Description of Activities

The Undertaking involves several activities that are not anticipated to have any adverse affect on cultural resources in the project area, and is proposed to begin in June 2010 and be completed by September 2011. The separate components of the Undertaking include Vegetation Clearing, Gamma Scanning, Geophysical Survey, Surface and Subsurface Soil Sampling, Groundwater Monitoring Well Sampling, Surface Water and Sediment Sampling, and Support Activities. A discussion of each component of the Undertaking is provided below, as well as a description of general avoidance measures that will be implemented to avoid adverse impacts to cultural resources.

Vegetation Clearing

To provide access for project related vehicles/equipment and allow operation of gamma scanning equipment at optimum levels of sensitivity, vegetation within the APE will be cut or trimmed to a height of approximately six to 18 inches. Vegetation cutting in previously undisturbed areas will be conducted using a combination of hand held mechanical equipment and hand tools. In addition, heavy equipment such as tracked or wheel-driven mowers (i.e. a tractor with a mower attachment) can only be operated in previously disturbed areas in Area IV. As discussed in the Avoidance Measures below, known archaeological sites will be delineated with a 50 ft. buffer around site boundaries and flagged for avoidance by either JMA's CRS or the Cultural Resource Monitor.

Vegetation Clearing Avoidance Measures

The following measures have been identified to avoid the adverse effects associated with vegetation clearing activities:

VC-1 Before initiation of vegetation clearing activities, JMA's CRS will identify the locations of previously recorded archaeological sites in the APE, and establish a 50 ft. exclusion zone around the site boundaries. The 50 ft. buffer will be delineated with colored flagging tape and will be avoided from vegetation clearing and removal. In addition, all vegetation clearing activities in areas deemed sensitive by the CRS (e.g., previously undisturbed areas) will be

performed under the supervision of the Cultural Resources Monitor.

Gamma Scanning

EPA will characterize surface soil for gamma activity over 100 percent of the accessible areas of Area IV and the NBZ to identify and characterize elevated areas of gamma radiation. Scanning will be conducted at a rate of one to three feet per second and will normally require only one pass over each area being scanned. Gamma scanning will be completed using a combination of hand-held, stroller-mounted, mule-mounted, and off-road, forklift mounted systems. The stroller-mounted, mule-mounted and forklift mounted systems will be custom-built systems that are capable of detecting low levels of gamma radiation. The potential ground disturbance that may result from the use of each scanning system is provided below:

- Hand-held – foot traffic and vegetation alteration. No expected ground disturbance.
- Wheel mounted – foot traffic, light vehicle traffic and vegetation alteration. Minimal potential for ground disturbance.
- Mule mounted - foot traffic, mule traffic, and vegetation alteration. Minimal potential for ground disturbance.
- Forklift mounted - foot traffic, vehicle traffic and vegetation alteration. Heavy equipment operation has a potential for ground disturbance.

Gamma Scanning Avoidance Measures

The following measures have been identified to avoid and minimize the effects associated with gamma scanning activities:

GS-1 Before initiation of gamma scanning activities, JMA's CRS will identify the locations of previously recorded archaeological sites in the APE, and establish a 50 ft. exclusion zone around the site boundaries. The 50 ft. buffer will be delineated with colored flagging tape and scanning within the exclusion zone will be limited to hand-held equipment and performed under the supervision of the Cultural Resources Monitor. In addition, all gamma scanning in areas deemed sensitive by the CRS will be performed under the supervision of the Cultural Resources Monitor.

Geophysical Survey

EPA will conduct a geophysical survey to determine areas of potential subsurface disturbance that may be indicative of waste burial areas. The sub-surface geophysical survey will be conducted using ground-penetrating radar (GPR) (or other appropriate technology) and either electromagnetometer (EM) or magnetometer in locations suggested by the EPA's Historical Site Assessment (HSA) report. It is assumed that the EM and magnetometer survey will be completed at target locations in search of potential buried materials covering as much as approximately 10 acres. The GPR survey will be conducted over approximately 2 acres, based on the results of the EM and magnetometer surveys. The impacts associated with each type of geophysical survey are foot traffic and light vehicle traffic. The presence of personnel and equipment during the geophysical surveys (regardless of the type of equipment used) may impact cultural resources.

Geophysical Survey Avoidance Measures

The following measures have been identified to avoid and minimize the effects associated with geophysical survey activities:

GP-1 Before initiation of the geophysical survey, JMA's CRS will identify the locations of previously recorded archaeological sites in the APE, and establish a 50 ft. exclusion zone around the site boundaries. The 50 ft. buffer will be delineated with colored flagging tape and will be avoided from geophysical survey activities. In addition, all activities in areas deemed sensitive by the JMA CRS will be performed under the supervision of the Cultural Resources Monitor.

Soil Sampling

EPA will collect surface and subsurface soil samples to characterize the representative concentration of each radionuclide of concern in surface and subsurface soil within the Area IV Study Area. Biased and random sampling techniques will be used to identify surface and subsurface soil sampling locations. Should a sample location be identified within an area of known archaeological sensitivity then that location will be relocated nearby so impacts will be totally avoided. EPA anticipates that up to approximately 3,500 surface and 3,500 subsurface soil samples will be initially collected. The surface and subsurface samples will be co-located; thus minimizing the surface disturbance during drilling. As explained below, from two to four closely spaced boreholes will be needed at each sample location to conduct the gamma logging, define

the subsurface sample interval and collect the requisite soil volume for sample analysis.

Borehole gamma logging will be performed to identify depth intervals for subsurface soil samples. Boreholes will be made using a mechanized direct push technology (DPT) rig and 3.25 inch tooling. Each borehole will be advanced to a depth of approximately 10 feet deep below ground surface or until refusal is reached if less than 10 feet. Continuous cores will be collected in each borehole, the lithology will be logged, and the soil classification will be documented for each sample.

Downhole gamma logging will be completed after the lithologic logging effort or concurrently with the lithologic logging effort. A 2-inch inner diameter polyvinyl chloride (PVC) pipe will be inserted into the open borehole. A probe attached to a Ludlum 2221 ratemeter will be lowered down the PVC piping at 6-inch intervals to document total gamma radiation counts. After the lithologic and gamma logging efforts have been completed at the borehole, the sample interval will be selected based on the previously described parameters.

Soil sample collection will then begin at a location offset by approximately 6 to 12 inches from the initial borehole. Surface soil samples will be collected from zero to six inches below the ground surface using stainless steel trowels, stainless steel shovels and/or spoons to collect enough soil to fill the appropriately sized sampling container. Subsurface soil sample intervals will be selected based on subsurface gamma scanning results and material noted during the lithologic logging effort. The DPT rig will then off-set to the surface sample location and advance the desired depth to collect the subsurface soil sample. Additional off-set boreholes may be necessary to meet sample volume requirements. Additional off-set boreholes, if needed, will also be 6 to 12 inches from the previous borehole. EPA does not anticipate more than four boreholes per location: one for lithologic and gamma logging and one to three for soil sample collection.

After the logging and sampling efforts are completed, each borehole will be backfilled with any unused soil volume from the same borehole and high solids bentonite. The impact of each activity is listed below:

- Surface soil sampling – foot traffic, light vehicle traffic and vegetation alteration, ground disturbance.

- Subsurface soil sampling – foot traffic, light vehicle traffic, heavy vehicle traffic, vegetation alteration, ground disturbance.
- Subsurface gamma scanning – foot traffic, light vehicle traffic, heavy vehicle traffic and vegetation alteration, ground disturbance.

Soil Sampling Avoidance Measures

The following measures have been identified to avoid the effects associated with soil sampling activities:

SS-1 Before initiation of soil sampling activities, JMA's CRS will identify the locations of previously recorded archaeological sites in the APE, and establish a 50 ft. exclusion zone around the site boundaries. The 50 ft. buffer will be delineated with colored flagging tape and avoided from all soil sampling activities. In addition, all soil sampling in areas deemed sensitive by the CRS will be performed under the supervision of the Cultural Resources Monitor.

Monitoring Well Sampling

EPA will evaluate existing radiological conditions in groundwater at on- and off-site locations. Groundwater sampling will be conducted at existing on-site and off-site wells. Approximately 70 existing on-site monitoring wells will be sampled during one event in 2010 and approximately 20 existing off-site wells will be sampled during one event in 2011. The impacts resulting from this sampling activity is expected to be foot traffic and light vehicle traffic.

Monitoring Well Sampling Avoidance Measures

JMA has determined that there is no potential for the Monitoring Well Sampling to have any adverse affects on known or unknown cultural resources.

Surface Water and Sediment Sampling

EPA will collect surface water and sediment samples to determine radionuclide concentrations in on-site and off-site surface water and seeps. The surface water sampling will be conducted in two phases. Phase 1 will focus on identifying the general extent of contamination and identification of key radionuclides. Phase 2 will involve conducting a detailed evaluation of the radionuclides that were detected during Phase 1. Phase 2 may include a more extensive sediment sampling

effort in areas of sediment contamination identified during Phase 1, and a targeted radionuclide suite. The collection of surface water samples will be focused on drainage pathways with specific sample locations being determined during the site reconnaissance. Approximately 30 surface water sample locations and 40 sediment sample locations are anticipated. Surface water sampling will target major drainage ways downstream of potential radiological source areas. Sediment sampling will target the fine-grained sediment located within the stream and associated stream bank. Environmental impacts are expected to consist of foot traffic and light vehicle traffic.

Surface Water and Sediment Sampling Avoidance Measures

The following measures have been identified to avoid and minimize the effects associated with surface water and sediment sampling activities:

SWSS-1 In the event that surface water and sediment sampling activities are located within or adjacent to areas of known archaeological sensitivity the sampling crew shall coordinate with JMA's CRS to identify a means of access that avoids impacts to cultural resources. If surface water samples are to be collected from areas of known archaeological sensitivity, all sampling is to be conducted under the supervision of a JMA Cultural Resources Monitor.

Support Activities

The support activities may consist of a variety of actions including use office and equipment storage space at EPA field office area located at Building 204 in SSFL Area II, use of a animal (e.g.. mule) stable located within the EPA field office area, mobilization/staging, equipment/Investigation Derived Waste (IDW) stock piling, IDW management, access/on-site travel, access improvement, vegetation alteration and vegetation/soil removal.

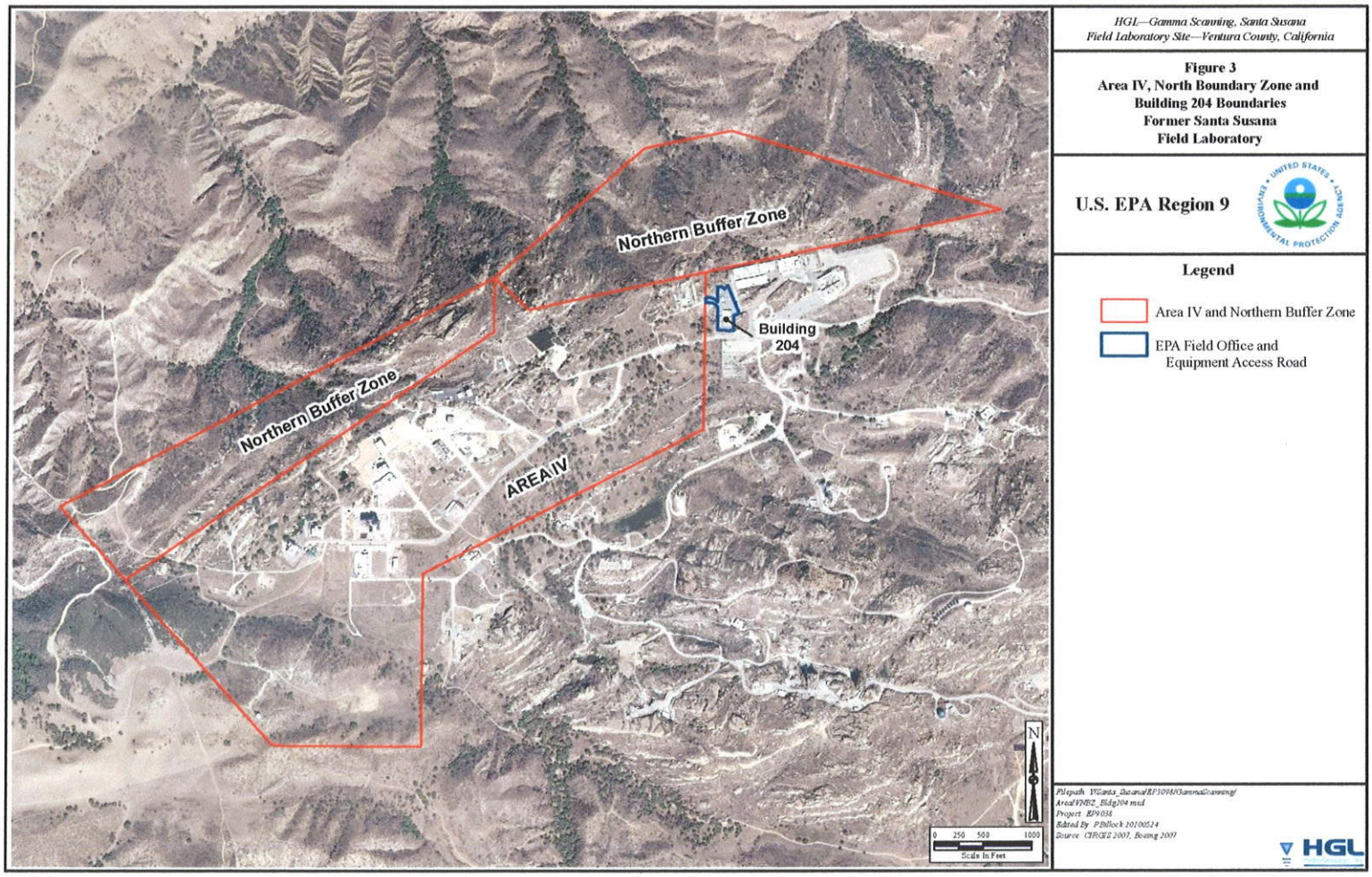
As indicated in **Figure 3**, EPA's field office area is located approximately 300 feet from Area IV and consists of Building 204, nearby outbuildings and adjacent paved areas. The animal (e.g. mule) stable is located within the EPA field office area and the entire field office area is fenced and locked outside normal working hours. Gamma scanning equipment will move to and from the field office and Area IV via an existing dirt/gravel road that transverses a small portion of Area III. Support vehicles will access the field office area via existing paved roads.

IDW associated with the site activities will consist of purge water, decontamination water and soil cuttings.

- Purge water will be generated during monitoring well sampling activities.
- Decontamination water will be associated with every sampling activity.
- Soil cuttings will be collected during soil logging activities.

The IDW generated during field activities will be placed in leak tight vessels (55 gallon drums or similar containers) and transported to a temporary staging area near the on-site office for subsequent removal by a disposal contractor.

Figure 3 Location of SSFL Field Office, Area II



Support Activities Avoidance Measures

Avoidance, documentation and minimization measures for support activities are provided below:

SA-1 Before initiation of any support activities, JMA's CRS will identify the locations of previously recorded archaeological sites in the APE, and establish a 50 ft. exclusion zone around the site boundaries. The 50 ft. buffer will be delineated with colored flagging tape and the exclusion area will be avoided. In addition, all support activities in areas deemed sensitive by the CRS will be performed under the supervision of the Cultural Resources Monitor.

SA-2 Additionally, any previously undiscovered cultural resources that are encountered during any portion of the Undertaking shall be fully documented and recorded by JMA's CRS. Site Record forms for these sites will be submitted to the South Central Coastal Information Center at the California State University Fullerton and thus be recorded in the California Historical Resources Information System (CHRIS) inventory.

SA-3 In the event that temporally diagnostic artifacts or other isolated artifacts that are vulnerable to damage and/or unauthorized collection are encountered, the Cultural Resources Monitor shall obtain a GPS position of the artifact's exact location and then collect them. They will either be returned to their original locations after the project has concluded, or deposited in a public curation facility as appropriate.

References Cited

Toren, George and Gwen Romani

2009 *Archaeological Survey Report: Southern California Edison Proposed Fiber Optic Moorpark East Copper Cable Replacement Project, Los Angles and Ventura Counties, California*. California archeological survey. Submitted to Southern California Edison, (IO 304272).

Whitley and Simon Consultants

2001 *Class III Inventory/Phase I Archaeological Survey of the Santa Susana Field Laboratory Area 4, Ventura County, California*. California archaeological survey. Submitted to United States Department of Energy.

Native American Contact
Ventura County
April 6, 2009

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This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Clean-Up of Tooxic Waste and Protection of Native American Cultural Resources at the Santa Susana Field Laboratory near the Santa Susana Pass in Ventura County, California for which a Native American Contacts list were requested.

Native American Contact
Ventura County
April 6, 2009

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P.O. Box 6612 Chumash
Oxnard , CA 93031
(805) 340-3134 (Cell)
(805) 488-0481 (Home)

Melissa M. Para-Hernandez
119 North Balsam Street Chumash
Oxnard , CA 93030
805-988-9171

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Clean-Up of Tooxic Waste and Protection of Native American Cultural Resources at the Santa Susana Field Laboratory near the Santa Susana Pass in Ventura County, California for which a Native American Contacts list were requested.

Native American Contact
Ventura County
April 6, 2009

Frank Arredondo
PO Box 161 Chumash
Santa Barbara , Ca 93102
802-617-6884

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Clean-Up of Tooxic Waste and Protection of Native American Cultural Resources at the Santa Susana Field Laboratory near the Santa Susana Pass in Ventura County, California for which a Native American Contacts list were requested.

Response Summary to Suggestions Made during the December 2, 2009 Cultural Resource Meeting at Santa Susana Field Laboratory

Suggestion	Response via Email from Stephie Jennings dated April 26, 2010	Supplemental Response by EPA
1. People removing debris should be alert to artifacts and leave them in place if/when found	This suggestion has been provided to EPA for its consideration during brush removal. DOE will incorporate this consideration as a mitigation measure in the EIS.	EPA's Cultural Resources Protection Measures requires that EPA's prime contractor, HydroGeoLogic, Inc. (HGL), and subcontractor field personnel receive training for identifying cultural features, archaeological sites, and artifacts. This training will be jointly conducted by the archaeological monitor and a local (Southern California) Tribal representative before work begins. In the event that temporally diagnostic artifacts or other isolated artifacts that are vulnerable to damage and/or unauthorized collection are encountered, the Cultural Resource Monitor shall obtain a GPS position of the artifacts exact location and then collect them. They will either be returned to their original locations after the project has concluded, or deposited in a public curation facility as appropriate.
2. Consideration should be given to subsurface deposits that could contain archaeological remains. Operations should be shut down immediately if remains are found and monitoring should be included in the workplan, particularly for sampling below ground surface.	This consideration has been provided to EPA. The consideration will be incorporated into the EIS as a mitigation measure.	Pursuant to EPA's Cultural Resources Protection Measures, the Cultural Resources Monitor has the authority to redirect work if there are archeological concerns associated with vegetation clearing, gamma scanning, and/or sampling activities including subsurface sampling activities.
3. Known resources (like the Burro Flats complex) should be fenced for protection	This suggestion has been provided to NASA and GSA. DOE does not control access to the Burro Flats complex	Although the Burro Flats complex is not within EPA's project area, EPA is undertaking a "flag and avoid" approach for all identified cultural resources within its project area.
4. All equipment should be operated properly to avoid starting a wildfire	During discussions with EPA regarding its radiological survey, EPA has identified equipment-initiated wildfires as a primary safety matter.	EPA has developed protocols in our field operation plans to avoid fire creation and how to respond if a fire is inadvertently started.
5. It would be nice if there could be coordination across the Administrative Areas (Areas I, II, III, and IV) and areas of responsibility (DOE, EPA,	Coordination amongst the federal agencies and Boeing is ongoing.	EPA's Cultural Resources Protection Measures were informally coordinated with DOE, NASA, and Boeing, and will be employed in the NBZ administrative area in the future.

Response Summary to Suggestions Made during the December 3, 2009 Cultural Resource Meeting at Santa Susana Field Laboratory

Suggestion	Response via Email from Stephie Jennings dated April 26, 2010	Supplemental Response and Follow-up by EPA
1. Make sure the field director/crew chief working on the radiological survey is well trained. This individual should be trained by a local (Southern California) Tribal representative before work begins.	This suggestion has been provided to EPA for its consideration.	EPA's Cultural Resources Protection Measures requires that EPA's prime contractor, HydroGeoLogic, Inc. (HGL), and subcontractor field personnel will receive training for identifying cultural features, archaeological sites, and artifacts. This training will be jointly conducted by the Cultural Resources Specialist and a local (Southern California) Tribal representative before work begins.
2. Local Native Americans should be consulted officially rather than invited to attend public participation events.	EPA agrees, this is one reason that the December 3 meeting only involved Native American representatives	EPA is in the process of scheduling a follow-up consultation with local Native Americans concerning the status of EPA's project and our recommended Cultural Resources Protection Measures. Make it clear that any meetings, contacts, or correspondence are all part of the process of formal consultation.
3. Provide funding for Native American monitoring during all stages of the work.	EPA is considering contracting a Native American monitor for its survey work. The requirement for a Native American monitor during remedial activities will be discussed in the EIS.	EPA will provide for Native American monitoring during all soil disturbing activities of this project. This includes vegetation clearing, and soil sampling. EPA will also provide for Native American monitoring during hand-held gamma scanning within 50 feet of archaeologically sensitive areas, even though this activity is not considered ground disturbing.
4. The Most Likely Descendent should be identified. This group would like to be involved in the determination of who that individual is. We don't want to be surprised by who the state identifies.	EPA plans additional meetings with the Native American community during which this issue will be discussed.	The State of California Native American Heritage Commission (NAHC) maintains the list of Most Likely Descendents by local areas, and designates the MLD by project. Individuals or groups do not have a say in who is designated by the Commission.
5. The information that results from the cultural survey should be shared in a manner that would allow it to be used for other purposes – for example, to help ensure protection in the future. For example, it should be used to assure protection during wildfire suppression. The integrity of the sites should not be compromised.	EPA plans to share all results of cultural surveys with Native American representatives. During subsequent meetings with those representatives, EPA will discuss mechanisms to retain integrity of identified sites.	Distribute reports and materials related to this project or otherwise make this material accessible to Native Americans representatives on the contact list. Additionally, any previously undiscovered cultural resources that are encountered during any portion of the Undertaking shall be fully documented and recorded by the JMA archaeologist. Site Record forms for these sites will be submitted to the South Central Coastal Information Center at the California State University Fullerton and thus be recorded in the California Historical Resources Information System (CRIS) inventory.
6. Provide Native American	EPA is considering contracting a	EPA will provide for Native American monitoring during all soil

monitoring during any activities that would result in soil disturbance and subsurface disturbance	Native American monitor for its survey work. The requirement for a Native American monitor during remedial activities will be discussed in the EIS.	disturbing activities of this project. This includes vegetation clearing, and soil sampling. EPA will also provide for Native American monitoring during hand-held gamma scanning within 50 feet of archaeologically sensitive areas, even though this activity is not considered ground disturbing.
7. Consider the formation of a formal mechanism to provide Native American consultation to DOE, NASA, and Boeing. The entire site is significant to Native American people. It has cultural and spiritual meaning for us.	EPA will discuss this issue with Native American representatives during subsequent meetings on this subject.	EPA is in the process of scheduling a follow-up consultation with local Native Americans concerning the status of EPA's project and our recommended Cultural Resources Protection Measures. Make it clear that any meetings, contacts, or correspondence are all part of the process of formal consultation.
8. Our interest will continue through the decision of what will happen next with this property. We want it to be protected once DOE and Boeing are done.	EPA will discuss this issue with Native American representatives during subsequent meetings on this subject.	Distribute reports and materials related to this project or otherwise make this material accessible to Native Americans representatives on the contact list. Additionally, any previously undiscovered cultural resources that are encountered during any portion of the Undertaking shall be fully documented and recorded by the JMA archaeologist. Site Record forms for these sites will be submitted to the South Central Coastal Information Center at the California State University Fullerton and thus be recorded in the California Historical Resources Information System (CRIS) inventory.
9. We would like to have the results of the prior survey (that identified four sites within Area IV) provided to us.	The prior survey report has been provided to the attendees separately from this comment response document.	Distribute reports and materials related to this project or otherwise make this material accessible to Native Americans representatives on the contact list.
10. DOE should conduct additional work to determine the "significance" of the sites that have been identified. We are not confident that the four sites are truly not significant.	EPA agrees and will be conducting a re-evaluation of the significance determination for these sites.	All sites within this project's Area of Potential Effects are considered significant and treated accordingly for this undertaking.
11. The most significant site is the Burro Flats cave. It is a very special place, a sacred place. Petroglyphs are located there. It is particularly important as it is a location that is used at Winter Solstice and Summer Solstice. Winter Solstice is very important to Chumash people.	EPA understands the underlining concerns and meanings for the Burro Flats site.	Reiterate and clarify that the Burro Flats site complex and pictograph cave is not within the boundaries of this project area and the project is designed to avoid any impacts to this and all other archaeological sites.

12. Summer Solstice is also very important to all Native Americans	EPA understands the importance.	Reiterate and clarify that the Burro Flats site complex and pictograph cave is not within the boundaries of this project area and the project is designed to avoid any impacts to this and all other archaeological sites.
13. Who will determine whether there should be additional testing? We would like to be involved in decisions about whether testing occurs.	DOE will be making determination of additional testing of sites that would be impacted by DOE cleanup activities. DOE will engage the Native American community in deciding on what testing is necessary.	No additional testing for this project is being considered or planned. Any subsequent testing would be considered under a separate Undertaking and consultations regarding that undertaking would be conducted accordingly.
14. We should also be involved in determining if and how any removals should occur after the investigations have been completed. (The survey will be a non-removal survey. It may be determined appropriate to remove significant remains from the site.)	EPA will engage the Native American community should determinations be made regarding the necessity of removal of any artifacts or features.	In the event that temporally diagnostic artifacts or other isolated artifacts that are vulnerable to damage and/or unauthorized collection are encountered, the Cultural Resource Monitor shall obtain a GPS position of the artifacts exact location and then collect them. They will either be returned to their original locations after the project has concluded, or deposited in a public curation facility as appropriate.
15. Any activity that requires brush removal would necessitate Native American monitoring as it could result in soil disturbance and/or exposure of cultural materials.	This suggestion has been provided to EPA.	EPA will provide for Native American monitoring during all soil disturbing activities of this project. This includes vegetation clearing, and soil sampling. EPA will also provide for Native American monitoring during hand-held gamma scanning within 50 feet of archaeologically sensitive areas, even though this activity is not considered ground disturbing.
16. A Native American monitor should be employed for all investigations (not just those resulting in soil disturbances) in the vicinity of all identified sites, including the four sites identified in the prior survey plus any sites identified as a result of the upcoming cultural resource survey.	EPA is considering contracting a Native American monitor for its survey work. The requirement for a Native American monitor during remedial activities will be discussed in the EIS.	EPA will provide for Native American monitoring during all soil disturbing activities of this project. This includes vegetation clearing, and soil sampling. EPA will also provide for Native American monitoring during hand-held gamma scanning within 50 feet of archaeologically sensitive areas, even though this activity is not considered ground disturbing.
17. There needs to be good rapport between the Native American monitor and all contractors conducting	DOE agrees and will do what it can to ensure that good rapport is maintained.	Notify Native American consultants that selection of a Cultural Resource firm has been made. Inform consultants who was selected and provide their qualifications and extensive experience with local archaeology.

investigations.		
18. All archaeologists working on this project (during the survey and all subsequent work) should have Southern California experience. This group would like to have the opportunity to provide recommendations of who to use and who not to use.	Unfortunately, federal procurement regulations do not allow third party recommendations for contractors. All archaeologists working on this project will have Southern California experience.	Notify Native American consultants that selection of a Cultural Resource firm has been made. Inform consultants who was selected and provide their qualifications and extensive experience with local archaeology.
19. We would like to have the opportunity to approve the selection of any archaeologists working on this project.	Unfortunately, federal procurement regulations do not allow third party approvals for contractors.	Notify Native American consultants that selection of a Cultural Resource firm has been made. Inform consultants who was selected and provide their qualifications and extensive experience with local archaeology.

Area IV Santa Susana Field Laboratory Cultural Resources Tour
December 3, 2009

Background

On December 3, 2009, the US Department of Energy hosted a tour and workshop focused on cultural and natural resources found within Area IV and the Northern Undeveloped Area at Santa Susana Field Laboratory. The agenda for the session included a brief tour focused on Area IV and the Northern Developed Area; presentations by Craig Cooper of the US Environmental Protection Agency (plans for the EPA radiological survey) and Lorraine Gross of SAIC (plans for the Cultural Resources Survey); an opportunity to ask questions of the presenters; and a facilitated opportunity for tour participants to offer suggestions for how to proceed with the Cultural Resources Survey.

This document summarizes information conveyed on the tour and during the prestentations and includes all suggestions made by the participants for the upcoming cultural resources survey.

Participants

Invited guests included: Charles Cooke (Chumash, Fernandeño, Tataviam, Kitanemuk), Nicole A. Johnson (Fernandeño Tataviam Band of Mission Indians), Austin Martin (Chumash, Tataviam, Fernandeño), Rudy Ortega (Fernandeño Tataviam Band of Mission Indians), Steve Ortega (Fernandeño Tataviam Band of Mission Indians), Charles S. Parra (Chumash), Freddie Romero (SYBCI Elders Council, Chumash), Susie Ruiz-Parra (Chumash), Alan Salazar (Chumash, Tataviam, Fernandeño), Beverly Salazar Folkes (Chumash, Tataviam, Fernandeño), Patrick Tumamait (Chumash), and Gilbert Unzueta (Chumash).

Other participants included Ravnesh Amar (The Boeing Company), Bill Backous (US Department of Energy), Stephen Bryne (SAIC), Craig Cooper (U.S. Environmental Protection Agency), Paul Costa (The Boeing Company), Merrilee Fellows (National Aeronautics and Space Administration), Lorraine Gross (SAIC), Donna Holland (National Aeronautics and Space Administration), Stephanie Jennings (US Department of Energy), and Stewart Williford (Hydrogeologic, Inc.).

Wendy Lowe (P2 Solutions) served as the facilitator for the discussions that occurred after the tour.

Tour

DOE's invited quests were taken on a bus tour of the areas at Santa Susana Field Laboratory that will be the focus of upcoming radiological surveys and a cultural resources survey. (See the attached fact sheet, which was provided to all tour participants.) Paul Costa provided an overall orientation to SSFL and Stephanie Jennings explained that the US Department of Energy is planning to prepare an Environmental Impact Statement to support decisions about completing cleanup for DOE-owned facilities that remain at the site. The bus stopped at one location to allow tour participants a view of the Northern Undeveloped Area.

Plans for the Environmental Protection Agency's Radiological Survey

Craig Cooper introduced himself as the project manager who will oversee the US EPA's radiological survey which will determine the nature and extent of radiological contamination at

SSFL. The radiological survey will include Area IV and the Northern Undeveloped Area. The work will entail a historical site assessment; gamma scan survey; soil and water sampling and analysis; and data evaluation and reporting. Mr. Cooper presented a poster illustrating the various methods that will be employed for conducting the gamma scan (see attached). Once EPA has developed a full understanding of the nature and extent of radiological contamination associated with Area IV, DOE will move forward with preparing the EIS to support decision-making about how best to clean up that contamination.

Plan for the Cultural Resources Survey

Lorraine Gross introduced herself as the Principle Investigator and Stephen Bryne as the field archaeologist who will conduct a cultural resources survey before EPA begins the radiological survey in order to help ensure that the radiological survey does not result in damage to any on-site cultural resources. She explained that Area IV has already been surveyed and four cultural sites were found. Documentation related to those four sites has been submitted to the State Historical Preservation Office. The SHPO has yet to issue a determination regarding the significance of the four sites.

The scope of work for the Cultural Resources Survey will include confirmation of the eligibility of identified sites within Area IV and surveying of the Northern Undeveloped Lands for cultural resources. The survey will be conducted through walking of closely-spaced transects and careful examination of all outcrops and exposures, caves and rock shelters. All work will be conducted in full compliance with California state standards.

Copies of Lorraine Gross's two handouts are attached. Lorraine invited suggestions from the tour participants for the cultural resources survey and noted that her contact information is included on her handouts.

Suggestions for the Cultural Resources Survey

Following the presentations, DOE invited their guests to make suggestions related to how the Cultural Resources survey should be conducted. The following suggestions were recorded on flip chart paper during the session :

- Make sure the field director/crew chief working on the radiological survey is well trained. This individual should be trained by a local (Southern California) Tribal representative before work begins.
- Local Native Americans should be consulted officially rather than invited to attend public participation events.
- Provide funding for Native American monitoring during all stages of the work.
- The Most Likely Descendent should be identified. This group would like to be involved in the determination of who that individual is. We don't want to be surprised by who the state identifies.
- The information that results from the cultural survey should be shared in a manner that would allow it to be used for other purposes – for example, to help ensure protection in the future. For example, it should be used to assure protection during wildfire suppression. The integrity of the sites should not be compromised.
- Provide Native American monitoring during any activities that would result in soil disturbance and subsurface disturbance

- Consider the formation of a formal mechanism to provide Native American consultation to DOE, NASA, and Boeing. The entire site is significant to Native American people. It has cultural and spiritual meaning for us.
- Our interest will continue through the decision of what will happen next with this property. We want it to be protected once DOE and Boeing are done.
- We would like to have the results of the prior survey (that identified four sites within Area IV) provided to us.
- DOE should conduct additional work to determine the "significance" of the sites that have been identified. We are not confident that the four sites are truly not significant.
- The most significant site is the Burro Flats cave. It is a very special place, a sacred place. Petroglyphs are located there. It is particularly important as it is a location that is used at Winter Solstice and Summer Solstice. Winter Solstice is very important to Chumash people.
- Summer Solstice is also very important to all Native Americans.
- Who will determine whether there should be additional testing? We would like to be involved in decisions about whether testing occurs.
- We should also be involved in determining if and how any removals should occur after the investigations have been completed. (The survey will be a non-removal survey. It may be determined appropriate to remove significant remains from the site.)
- Any activity that requires brush removal would necessitate Native American monitoring as it could result in soil disturbance and/or exposure of cultural materials.
- A Native American monitor should be employed for all investigations (not just those resulting in soil disturbances) in the vicinity of all identified sites, including the four sites identified in the prior survey plus any sites identified as a result of the upcoming cultural resource survey.
- There needs to be good rapport between the Native American monitor and all contractors conducting investigations.
- All archaeologists working on this project (during the survey and all subsequent work) should have Southern California experience. This group would like to have the opportunity to provide recommendations of who to use and who not to use.
- We would like to have the opportunity to approve the selection of any archaeologists working on this project.

Appreciation was expressed for being invited to attend the tour and participate in the discussion.

Later in the day of the meeting, Alan Salazar sent a note to Wendy Lowe clarifying something he had said earlier. He said, "After I left the meeting and thought about my comments I don't think I was clear about consulting. When I said we need to consult, I meant we need to be paid consultants to review the results of the survey to be completed in January. Also, one of us should be a monitor/consultant with Lorraine when she does anymore work."

Next Steps

The following next steps were recorded:

- Another meeting will be hosted to share the results of Cultural Resources Survey

- DOE will find out if the results of the previous survey can be provided to the participants who attended this meeting.
- Wendy Lowe will provide the contact information for all participants to the EPA, NASA, and Boeing
- Wendy Lowe will prepare and distribute a group memory for the session
- All will provide suggestions related to the Draft Cultural Resources Survey to Lorraine Gross by December 31, 2009.

December 3, 2009 Cultural Resources Tour

Attended?	First Name	Last Name		Title	Affiliation	Address	City	State	Zip	Telephone	Telephone 2	Email Address
	Ron	Andrade	Mr. Andrade	Director	Los Angeles City/County Native American Indian Commission	3175 West 6th Street	Los Angeles	CA	90200	213 351-5308		randrade@css.lacounty.gov
	Frank	Arredondo	Mr. Arredondo		Chumash	PO Box 161	Santa Barbara	CA	93102	805 617-6884		ksen?sku_mu@yahoo.com
	Charles	Cooke	Mr. Cooke		Chumash, Fernandeno, Tataviam, Kitanemuk	32835 Santiago Road	Acton	CA	93510	661 733-1812 cell		
	Randy	Guzman-Folkes	Mr. Guzman-Folkes		Chumash, Fernandeno, Tataviam, Shoshone Paiute, Yaqui	4577 Alamo Street, Unit C	Simi Valley	CA	93063	805 905-1675 cell		ngnrandy@gmail.com
	Luhu	Ifha				1591 Spinnaker Drive, Suite 203	Ventura	CA	93001	805 658-1120	805 794-1248	matiwaiya@wishtoyo.org
	Nicole A.	Johnson	Ms. Johnson	Director of Public Affairs	Fernandeno Tataviam Band of Mission Indians	601 South Brand Boulevard, Suite 102	San Fernando	CA	91304	818 837-0794		njohnson@tataviam-nsn.us
	Austin	Martin	Mr. Martin							909 677-9313		ndnaustinmartin@yahoo.com
	Rudy	Ortega	Mr. Ortega	Tribal Administrator	Fernandeno Tataviam Band of Mission Indians	601 South Brand Boulevard, Suite 102	San Fernando	CA	91304	818 837-0794		rortega@tataviam.us
	Steve	Ortega	Mr. Ortega	Tribal Historic & Cultural Preservation Committee	Fernandeno Tataviam Band of Mission Indians	601 South Brand Boulevard, Suite 102	San Fernando	CA	91304	818 837-0794		sortega@tataviam.us
	Charles S.	Parra	Mr. Parra		Chumash	P.O. Box 6612	Oxnard	CA	93031	805 340-3134 cell	805 488-0481 home	susieruiz@msn.com
	Carol A.	Pulido	Ms. Pulido		Chumash	165 Mountainview Street	Oak View	CA	93022	805 649-2743		carol_pulido@yahoo.com
	Freddie	Romero	Mr. Romero	Cultural Preservation Consultant	SYBCI Elders Council, Chumash	100 Via Juana Road	Santa Ynez	CA	93460	805 688-7997 x37	805 403-2783 cell	freddyromero1959@yahoo.com
	JohnTommy	Rosas			Tongva Ancestral Territorial Tribal Nation					310 570-6567		tattnlaw@gmail.com
	Susie	Ruiz-Parra	Ms. Ruiz-Parra		Chumash	P.O. Box 6612	Oxnard	CA	93031	805 443-8599 cell	805 488-0481 home	susieruiz@msn.com
	Alan	Salazar	Mr. Salazar		c/o Beverly Salazar Folkes	1931 Shadybrook Drive	Thousand Oaks	CA	91362	661 242-1325	805 423-0091	chumashstories@gmail.com
	Beverly	Salazar Folkes	Ms. Salazar Folkes		Chumash, Tataviam, Fernandeno	1931 Shadybrook Drive	Thousand Oaks	CA	91362	805 492-7255	805 558-1154 cell	folkes9@msn.com
	Julie Lynn	Tumamait	Ms. Tumamait		Chumash	365 North Poli Ave	Ojai	CA	93023	805 646-6214		jtumamait@sbcglobal.net
	Patrick	Tumamait	Mr. Tumamait		Chumash	992 El Camino Corto	Ojai	CA	93023	805 640-0481	805 216-1253 cell	no email address - hard copy mail only
	Mati	Waiya	Mr. Waiya	Executive Director	Wishtoyo Foundation	1591 Spinnaker Drive, Suite 203	Ventura	CA	93001	805 658-1120	805 794-1248	matiwaiya@wishtoyo.org

Please make corrections as needed so that we can stay in touch. Thank you for attending this tour!

Area IV Santa Susana Field Laboratory Cultural and Natural Resources Tour December 2, 2009

Background

On December 2, 2009, the US Department of Energy hosted a tour and workshop focused on cultural and natural resources found within Area IV and the Northern Undeveloped Area at Santa Susana Field Laboratory. The agenda for the session included a brief tour focused on Area IV and the Northern Developed Area; presentations by Craig Cooper of the US Environmental Protection Agency (plans for the EPA radiological survey), Lorraine Gross of SAIC (plans for the Cultural Resources Survey), and Tom Mulroy of SAIC (the Natural Resources Survey); an opportunity to ask questions of the presenters; and a facilitated opportunity for tour participants to offer suggestions for how to proceed with the Cultural Resources Survey.

This document summarizes information conveyed on the tour and during the presentations and includes all suggestions made by the participants for the upcoming cultural resources survey.

Participants

Invited guests include included: Reid Bogert (Santa Susana Mountain Park Association), Bill Bowling (Cleanuprocketdyne.org and Aerospace Cancer Museum of Education), Diana Dixon-Davis (Santa Susana Mountain Park Association and Chatsworth Neighborhood Council), Snowdy Dodson (California Native Plant Society), Thomas Eisenhauer (Renewable Resources Group), Carla Henry (Santa Susana Mountain Park Association), Albert Knight (Topanga Anthropological Associates and Santa Barbara Museum of Natural History), Dan Larson (Compass Rose), John Luker (Santa Susana Mountain Park Association), Robert McMorran (U.S. Fish & Wildlife Service), Gwen Romani (Compass Rose), Chris Rowe (West Hills Neighborhood Council, Adam Salkin, Barry Seybert (West Hills Neighborhood Council), Warren Stone (Santa Susana Mountain Park Association), Teena Takata (Santa Susana Mountain Park Association), Barbara Tejada (California Department of Parks and Recreation, Angeles District), Jack Unger (Santa Susana Mountain Park Association), and Christina Walsh (Cleanuprocketdyne.org and Aerospace Cancer Museum of Education).

Other participants included: Ravnesh Amar (The Boeing Company), Bill Backous (US Department of Energy), Stephen Bryne (SAIC), Craig Cooper (U.S. Environmental Protection Agency), David Cooper (U.S. Environmental Protection Agency), Paul Costa (The Boeing Company), Merrilee Fellows (National Aeronautics and Space Administration), Lorraine Gross (SAIC), Donna Holland (National Aeronautics and Space Administration), Stephanie Jennings (US Department of Energy), Tom Mulroy (SAIC), Bob Overfelt (Hydrogeologic, Inc.), Kamara Sams (The Boeing Company), Stewart Williford (Hydrogeologic, Inc.), and John Wondolleck (CDM).

Wendy Lowe (P2 Solutions) served as the facilitator for the discussions that occurred after the tour.

Tour

DOE's invited quests were taken on a bus tour of the areas at Santa Susana Field Laboratory that will be the focus of upcoming radiological surveys and a cultural resources survey. Paul Costa provided an overall orientation to SSFL and Stephanie Jennings explained that the US

Department of Energy is planning to prepare an Environmental Impact Statement to support decisions about completing cleanup for DOE-owned facilities that remain at the site. The bus stopped at one location to allow tour participants a view of the Northern Undeveloped Area.

Plans for the Environmental Protection Agency's Radiological Survey

Craig Cooper introduced himself as the project manager who will oversee the US EPA's radiological survey, which will determine the nature and extent of radiological contamination at SSFL. The radiological survey will include Area IV and the Northern Undeveloped Area. The work will entail a historical site assessment; gamma scan survey; soil and water sampling and analysis; and data evaluation and reporting. Mr. Cooper presented a poster illustrating the various methods that will be employed for conducting the gamma scan (see attached). Once EPA has developed a full understanding of the nature and extent of radiological contamination associated with Area IV, DOE will move forward with preparing the EIS to support decision-making about how best to clean up that contamination.

Plan for the Cultural Resources Survey

Lorraine Gross introduced herself as the Principal Investigator and Stephen Bryne as the field archaeologist who will conduct a cultural resources survey before EPA begins the radiological survey in order to help ensure that the radiological survey does not result in damage to any on-site cultural resources. She explained that Area IV has already been surveyed and four cultural sites were found. Documentation related to those four sites has been submitted to the State Historical Preservation Office. The SHPO has yet to issue a determination regarding the significance of the four sites.

The scope of work for the Cultural Resources Survey will include confirmation of the eligibility of identified sites within Area IV and surveying of the Northern Undeveloped Lands for cultural resources. The survey will be conducted through walking of closely-spaced transects and careful examination of all outcrops and exposures, caves and rock shelters. All work will be conducted in full compliance with California state standards.

Copies of Lorraine Gross's two handouts are attached. Lorraine invited suggestions from the tour participants for the cultural resources survey and noted that her contact information is included on her handouts.

Status of the Biological Resources Survey

Tom Mulroy introduced himself as the Principal Investigator for the Biological Resources Survey, which is also being conducted to support the EPA's radiological survey. The study will entail several surveys, at different times of the year. The Fall survey has been completed. Additional surveys will be conducted in the Spring and Summer to identify those species that are not evident in the Fall. Copies of the maps discussed by Tom Mulroy are attached. The maps depict the locations of Santa Susan tarplant, Braunton's milk-vetch, and Southern California black walnut identified in the Fall survey and show the vegetation cover on the site. These draft maps will be supplemented or revised as appropriate following additional survey work.

Suggestions for the Cultural Resources Survey

Suggestions made by participants and recorded on flip chart paper during the session included:

- People removing debris should be alert to artifacts and leave them in place if/when found

- For the EPA – Consideration should be given to subsurface deposits that could contain archaeological remains. Operations should be shut down immediately if remains are found and monitoring should be included in the workplan, particularly for sampling below ground surface.
- Known resources (like the Burro Flats complex) should be fenced for protection
- All equipment should be operated properly to avoid starting a wildfire
- It would be nice if there could be coordination across the Administrative Areas (Areas I, II, III, and IV) and areas of responsibility (DOE, EPA, NASA, and Boeing).

In addition, appreciation was expressed for the opportunity to tour the site and learn more about how the cultural resource survey will be conducted.

Next Steps

The following next steps were recorded:

- Another meeting will be hosted to share the results of Cultural Resources Survey
- Wendy Lowe will provide the contact information for all participants to the EPA, NASA, and Boeing
- Wendy Lowe will prepare and distribute a group memory for the session
- All will provide suggestions related to the Draft Cultural Resources Survey to Lorraine Gross by December 31, 2009.

STATE OF CALIFORNIA Arnold Schwarzenegger, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
Fax (916) 657-5390

November 3, 2009

Stephanie Jennings, NEPA Document Manager
U.S. DEPARTMENT OF ENERGY
P.O. Box 10300
Canoga Park, CA 91309

VIA FAX: 818-466-8730
# of Pages: 2

RE: SB 18 Tribal Consultation; Area IV Santa Susana Field Laboratory EIS; Ventura County.

Dear Ms. Jennings:

Government Code §65352.3 requires local governments to cNonsult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose of protecting, and/or mitigating impacts to cultural places. Attached is a consultation list of tribes with traditional lands or cultural places located within the requested plan amendment boundaries.

As a part of consultation, the NAHC recommends that local governments conduct record searches through the NAHC and California Historic Resources Information System (CHRIS) to determine if any cultural places are located within the area(s) affected by the proposed action. NAHC Sacred Lands File requests must be made in writing. All requests must include county, USGS quad map name, township, range and section. Local governments should be aware, however, that records maintained by the NAHC and CHRIS are not exhaustive, and a negative response to these searches does not preclude the existence of a cultural place. A tribe may be the only source of information regarding the existence of a cultural place.

If you receive notification of change of addresses and phone numbers from Tribes, please notify me. With your assistance we are able to assure that our consultation list contains current information.

If you have any questions, please contact me at (916) 653-4040.

Sincerely,

Katy Sanchez
Program Analyst

Attachment

Native American Tribal Consultation List
County of Ventura
November 2, 2009

Santa Ynez Band of Mission Indians
Vincent Armenta, Chairperson
P.O. Box 517 Chumash
Santa Ynez , CA 93460
varmenta@santaynezchumash.org
(805) 688-7997

Coastal Band of the Chumash Nation
Janet Garcia,Chairperson
P.O. Box 4464 Chumash
Santa Barbara CA 93140
805-964-3447

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable only for consultation with Native American tribes under Government Code Section 65352.3.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUN 4 2009

OFFICE OF
ADMINISTRATION
AND RESOURCES
MANAGEMENT

Thomas Johnson
Department of Energy
PO Box 10300
Canoga Park, CA 91309

EPA Reference: RW-89-92299001-0
DOE Reference: DE-AI30-08CC60036/004

Dear Mr. Johnson:

I am forwarding you one fully executed copy of an Interagency Agreement entitled "Radiological Characterization of Area IV at Santa Susana Field Laboratory.'' This official copy should be retained by your agency. Please reference the EPA interagency agreement number in future correspondence on this agreement.

We are pleased to cooperate with you on this matter. If you have any questions regarding the administrative management of this agreement, please contact Leon Smith on 202-564-5301.

Sincerely,

Sandra Waugh-Williams

Sandra L. Waugh-Williams, Chief
Fellowship, IA & SEE Branch
Grants and IA Management Division

Enclosure

cc: Evelyn Michael, CFC
Craig Cooper, Region 9 (MC-SFD-8-1)

United States Environmental Protection Agency
Washington, DC 20460

Interagency Agreement

Amendment

Part 1 - General Information

	1. EPA IAG Identification Number: RW-89-92299001 - 0	4. Funding Location by Region: EPA HQ
	2. Other Agency IAG ID Number: DE-AI30-08CC60036/004	5. Program Office Abbreviation: Region 9
	3. Type of Action: New	

6. Name and Address of EPA Organization
US Environmental Protection Agency
REG,09,SFD
75 Hawthorne Street
San Francisco, CA 94105
DUNS: 029128894 BETC: COLL

7. Name and Address of Other Agency
Department of Energy-EMCBC
250 E 5th Street, Suite 500
Cincinnati, OH 45202
DUNS: 132019105 BETC: DISB

8. Project Title and Description
Radiological Characterization of Area IV At Santa Susana Field Laboratory
To conduct a radiation survey, a historical site assessment to evaluate past radiological activities at SSFL, 100% surface scan, evaluating the data and providing a data report for Area IV by September 30,2011.

9. EPA Project Officer (Name, Address, Phone Number)
Craig Cooper
75 Hawthorne Street (MC-SFD-8-1)
San Francisco, CA 94105
415-947-4148

10. Other Agency Project Officer (Name, Address, Phone Number)
Thomas Johnson
PO Box 10300
Canoga Park, CA 91309
818-466-8959

11. Project Period
05/29/2009 to 09/30/2010

12. Budget Period
05/29/2009 to 09/30/2010

13. Scope of Work
See attached Scope of Work

Treaury Symbol: TRS 689/08195

This IA is to complete the remaining work to be performed under EPA IA RW-89-95577601-0

EPA IA Specialist for this IA is Leon Smith 202-564-5301

14. Statutory Authority for Both Transfer of Funds and Project Activities
CERCLA: Secs. 105(a)(4) & 115; Executive Order 12580 as amended; Public Law 110-161; 121 Stat. 1959; Consolidated Appropriations Act; 2008

15. Other Agency Type
Federal Agency

Funds	Previous Amount	Amount This Action	Amended Total
16. EPA Amount			$0
17. EPA In-Kind Amount			$0
18. Other Agency Amount		$38,300,000	$38,300,000
19. Other Agency In-Kind Amt.			$0
20. Total Project Cost		$38,300,000	$38,300,000

21. Fiscal

Site Name	DCN	FY	Approp.	Budget Org.	PRC	Object	Site/Project	Cost Org.	Obligation
		0910	TRS	09K0XQL	302DD2C		09QLRI00		38,300,000
									38,300,000

Part II - Approved Budget		EPA IAG Identification Number RW-89-92299001 - 0
22. Budget Categories	Itemization of This Action	Itemization of Total Project Estimated Cost to Date
(a) Personnel	$2,278,170	$2,278,170
(b) Fringe Benefits	$253,130	$253,130
(c) Travel	$268,700	$268,700
(d) Equipment		$0
(e) Supplies		$0
(f) Procurement / Assistance	$35,500,000	$35,500,000
(g) Construction		$0
(h) Other		$0
(i) Total Direct Charges	$38,300,000	$38,300,000
(j) Indirect Costs: Rate % Base $	$0	$0
(k) Total (EPA Share 0.00 %) (Other Agency Share 100.00 %)	$38,300,000	$38,300,000

23. Is equipment authorized to be furnished by EPA or leased, purchased, or rented with EPA funds? ☐ Yes ☒ No

(Identify all equipment costing $1,000 or more)

24. Are any of these funds being used on extramural agreements? (See Item 22f.) ☒ Yes ☐ No

Type of Extramural Agreement ☐ Grant ☐ Cooperative Agreement ☒ Procurement

Contractor/Recipient Name (if known)	Total Extramural Amount Under This Project	Percent Funded by EPA (if known)
TBD	35500000 Total $ 35,500,000.00	0

Part III - Funding Methods and Billing Instructions

(Note: EPA Agency Location Code (ALC) - 68010727)

25.

☐ Disbursement Agreement — Request for repayment of actual costs must be itemized on SF 1080 and submitted to the Financial Management Office, Cincinnati, OH 45268-7002:

☐ Repayment ☐ Monthly ☐ Quarterly ☐ Upon Completion of Work

☐ Advance — Only available for use by Federal agencies on working capital fund or with appropriate justification of need for this type of payment method. Unexpended funds at completion of work will be returned to EPA. Quarterly cost reports will be forwarded to the Financial Management Center, EPA, Cincinnati, OH 45268-7002.

☐ Allocation Transfer-Out — Used to transfer obligational authority or transfer of function between Federal agencies. Must receive prior approval by the Office of Comptroller, Budget Division, Budget Formulation and Control Branch, EPA Hdqtrs. Forward appropriate reports to the Financial Reports and Analysis Branch, Financial Management Division, PM-226F, EPA, Washington, DC 20460.

26.

☒ Reimbursement Agreement

☐ Repayment

☒ Advance

☐ Allocation Transfer-In

Funding Agency's Treasury Symbol ☐ One-Year ☒ Two-Year ☐ No-Year

Other Agency's IAG Identification Number	EPA Program Office Allowance Holder/Resp. Center No.
DE-AI30-08CC60036/004	
Other Agency's Billing Address (include ALC or Station Symbol Number) 89-000-001	**Other Agency's Billing Instructions and Frequency** TAS - 89 0335:TAS Recovery Billing Instructions: Submit 1 IPAC Payment for $38,3000,000 referencing the following account information: Fund: 05949 Appr Year: 2009 Allottee: 33

Part IV - Acceptance Conditions

EPA Identification Number: RW-89-92299001 - 0

27. General Conditions

The other agency covenants and agrees that it will expeditiously initiate and complete the project for which funds have been awarded under this agreement.

28. Special Conditions *(Attach additional sheets if needed)*

PLEASE SEE ATTACHED

Part V - Offer and Acceptance

Note: 1) For Disbursement actions, the agreement/amendment must be signed by the other agency official in duplicate and one original returned to the Grants Administration Division for Headquarters agreements or to the appropriate EPA Regional IAG administration office within 3 calendar weeks after receipt or within any extension of time as may be granted by EPA. The agreement/amendment must be forwarded to the address cited in item 29 after acceptance signature.

Receipt of a written refusal or failure to return the properly executed document within the prescribed time may result in the withdrawal of offer by EPA. Any change to the agreement/amendment by the other agency subsequent to the document being signed by the EPA Action Official, which the Action Official determines to materially alter the agreement/amendment, shall void the agreement/amendment.

2) For Reimbursement actions, the other agency will initiate the action and forward two original agreements/amendments to the appropriate EPA program office for signature. The agreements/amendments will then be forwarded to the appropriate EPA IAG administration office for acceptance signature on behalf of the EPA. One original copy will be returned to the other agency after acceptance.

EPA IAG Administration Office (for administrative assistance)	EPA Program Office (for technical assistance)
29. Organization/Address Environmental Protection Agency OGD, FISB, GIAMD 1200 Pennsylvania Avenue, NW (3903R) Washington, DC 20460	30. Organization/Address US Environmental Protection Agency Region 9 75 Hawthorne Street San Francisco, CA 94105

Certification

All signers certify that the statements made on this form and all attachments thereto are true, accurate, and complete. Signers acknowledge that any knowingly false or misleading statements may be punishable by fine or imprisonment or both under applicable law.

Decision Official on Behalf of the Environment Protection Agency Program Office

31. Signature	Typed Name and Title	Date
SEE ATTACHED SIGNATURE	Nancy Lindsay	05/28/2009

Action on Behalf of the Environment Protection Agency

32. Signature	Typed Name and Title	Date
Sandra Waugh-Williams	Sandra L. Waugh-Williams, Chief Fellowships, IAGs and SEEs Branch Grants and IAG Management Division	6/4/09

Authorizing Official on Behalf of the Other Agency

33. Signature	Typed Name and Title	Date
SEE ATTACHED DOE AGREEMENT	Derrick Franklin	05/18/2009

Section K: Signatures/Certifications

PROJECT OFFICER:

As the Project Officer, I certify that the information in this decision memorandum is complete and correct. I am requesting that the subject Interagency Agreement be awarded.

Signature: _____ Date: 5/19/2009
Print Name: CRAIG COPER

RECOMMENDING OFFICIAL (e.g., Unit Manager):

As the Recommending Official, I certify that I have reviewed this decision memorandum and its attachments. I am recommending that the subject Interagency Agreement be awarded.

Signature: _____ Date: 5/19/2009
Print Name: Michael Montgomery

APPROVAL OFFICIAL (e.g., Office Director):

As the Approval Official, I have reviewed this decision memorandum and its attachments. I have determined that resources are available and authorized for the above objectives. I hereby approve award of the subject Interagency Agreement.

Signature: _____ Date: 5/20/09
Print Name: Daniel A Meer for Keith Takata

SENIOR RESOURCE OFFICIAL (e.g., Assistant Regional Administrator): - **Required if IA total project amount is over $1 million** *(EPA Order 1130.2A 11/06/1995).*

As the Senior Resource Official, I have reviewed this decision memorandum and its attachment. I hereby approve and support award of the subject Interagency Agreement.

Signature: _____ Date: 6/2/09
Print Name: _____

Section L: Attachments

* Scope of Work

INTERAGENCY AGREEMENT	1. IAA NO. DE-AI30-08CC60036/004	PAGE 1 OF 11
2. ORDER NO. RW-89-92299001-0	3. REQUISITION NO. 09EM000672	4. SOLICITATION NO.

5. EFFECTIVE DATE	6. AWARD DATE	7. PERIOD OF PERFORMANCE
See Block 26c	05/18/2009	07/23/2008 TO 09/30/2014

8. SERVICING AGENCY
ENVIRONMENTAL PROTECTION AGENCY
ALC: 68010727
DUNS: 024083469 +4:
US EPA Las Vegas Fnce Ctr
Las Vegas NV 89119

POC NA
TELEPHONE NO.

9. DELIVER TO
EMCBC
US Department of Energy
EM Consolidated Business Center
250 E. 5th Street, Suite 500
Cincinnati OH 45202
Cincinnati OH 45202

10. REQUESTING AGENCY
Environmental Management Consolidated Business C
ALC: 89000001
DUNS: +4:
250 S. 5th St. Suite 500
Cincinnati OH 45202

POC
TELEPHONE NO.

11. INVOICE OFFICE
OR for EMCBC
U.S. Department of Energy
Oak Ridge Financial Service Center
P.O. Box 5777
Oak Ridge TN 37831

12. ISSUING OFFICE
EMCBC
U.S. Department of Energy
EM Consolidated Business Center
250 E. 5th Street, Suite 500
Cincinnati OH 45202

13. LEGISLATIVE AUTHORITY
31 U.S.C. 1535 - The Economy Act

14. PROJECT ID

15. PROJECT TITLE
RADIOLOGICAL CHARACTERIZATION OF AREA IV AT SSFL

16. ACCOUNTING DATA

17. ITEM NO.	18. SUPPLIES/SERVICES	19. QUANTITY	20. UNIT	21. UNIT PRICE	22. AMOUNT
	TAS::89 0335::TAS Recovery In accordance with the Interagency Agreement (IAG) Terms and Conditions, "Modification", the purpose of this supplemental amendment to the IAG between the Department of Energy (DOE) and the Environmental Protection Agency (EPA) is to incorporate changes associated with the American Recovery Reinvestment Act (ARRA) Funding (see page 4, American Recovery and Reinvestment Act of 2009 Requirements for Interagency Agreement Continued ...				

23. PAYMENT PROVISIONS	24. TOTAL AMOUNT
Intra-Governmental Payment and Collection	$41,500,000.00

25a. SIGNATURE OF GOVERNMENT REPRESENTATIVE (SERVICING)	26a. SIGNATURE OF GOVERNMENT REPRESENTATIVE (REQUESTING)
Sandra Waugh-Williams	
25b. NAME AND TITLE	**25c. DATE**
Sandra L. Waugh-Williams, Chief GIAMB, FISB	6/4/09
26b. CONTRACTING OFFICER	**26c. DATE**
Derrick J. Franklin	6/4/09

IAA NO	ORDER NO	PAGE	OF
DE-AI30-08CC60036/004		2	11

	DE-AI30-08CC60036 For Radiological Characterization of Area IV at Santa Susana Field Laboratory"). ARRA funding: $38,300,000.00 Total IAG value: $41,500,000.00 The following documents are hereby incorporated into the Interagency Agreement between the DOE and EPA as follows: Attachment 1: Interagency Agreement Between DOE and EPA, Radiological Characterization of Area IV at SSFL (6 pages) Attachment 2: SSFL Onsite Schedule (2 pages) Attachment 3: Figure 2, Location and Topography of SSFL Areas and Buffer Zones, SSFL, Ventura California (1 page) Except as provided herein, all other terms and conditions of the Interagency Agreement remain unchanged and in full force and effect. TAS::89 0335::TAS Recovery NEW ACCOUNTING CODE ADDED: Account code: Fund 05949 Appr Year 2009 Allottee 33 Reporting Entity 490813 Object Class 25200 Program 1111357 Project 2002020 WFO 0000000 Local Use 0000000 TAS Agency: 89 TAS Account: 0335 Amount: $38,300,000 Change Item 00001 to read as follows(amount shown is the total amount): RADIOLOGICAL CHARACTERIZATION OF AREA IV AT SANTA Continued ...				
00001					3,200,000.00

IAA NO	ORDER NO	PAGE	OF
DE-AI30-08CC60036/004		3	11

	SUSANA FIELD LABORATORY (SSFL) INTERAGENCY AGREEMENT WITH ENVIRONMENTAL PROTECTION AGENCY (EPA) SUPERFUND DIVISION IN SAN FRANCISCO CA Line item value is:$3,200,000.00 Incrementally Funded Amount: $3,200,000.00 Amount: $777,995.00 Amount: $922,005.00 Amount: $1,500,000.00 Add Item 00002 as follows: TAS::89 0335::TAS Recovery				
00002	TAS::89 0335::TAS Recovery 38,300,000.00 RECOVERY ACT COMPLETION OF THE RADIOLOGICAL CHARACTERIZATION OF AREA IV AND THE NORTHERN UNDEVELOPED LAND AT THE SSFL The American Recovery and Reinvestment Act of 2009, P.L. 111-5 (Recovery Act) limits DOE to using "0.5 percent...for the expenses of management and oversight." Id. at Section 403. Section 4.3 of the Office of Management and Budget (OMB) Initial Implementing Guidance states, "When an agency receives a supplemental appropriation of Recovery Act funds for a program, project, or activity for which Congress provided appropriations for in a prior Act, the agency should not use Recovery Act funds to pay fixed, administrative support costs." OMB M-09-10 (Feb. 18, 2009). Sections 4.8 and 4.9 of the OMB Updated Implementing Guidance echo this prohibition and provide more detail. See OMB M-09-15 (Apr. 3, 2009). Section 4.9 requires DOE to ensure compliance with the Recovery Act cap on funds for management and administrative costs. Id. at 4.9. Therefore, use of Recovery Act funds transferred hereunder is NOT authorized for management and administrative expenses.				

INTERAGENCY AGREEMENT BETWEEN DOE AND EPA

RADIOLOGICAL CHARACTERIZATION OF AREA IV AT SANTA SUSANA FIELD LABORATORY

PURPOSE

This amended Interagency Agreement (IAG) provides Department of Energy (DOE) funds to Environmental Protection Agency (EPA) so that EPA can: 1) conduct a background study to determine site specific background values for radiological contaminants at the Santa Susana Field Laboratory (SSFL), 2) develop a scope of work, schedule and cost estimate for the first phase of a radiological survey of SSFL Area IV and buffer zone areas adjacent to Area IV, 3) initiate a historical site assessment evaluating past radiological activities at SSFL, 4) initiate development of a workplan for a radiological study of SSFL Area IV and buffer zone areas adjacent to Area IV.

BACKGROUND

DOE historically conducted activities in a portion of Area IV of the SSFL facility known as the Energy Technology Engineering Center (ETEC). DOE is currently conducting surveillance, maintenance, and environmental monitoring, including soil and groundwater characterization required under the Resource Conservation Recovery Act (RCRA) and the California Health and Safety Code, section 25187 in Area IV.

DOE has conducted a Data Gap Analysis to evaluate the usability and acceptability of existing data and to identify any additional data that may support the preparation of an Environmental Impact Statement (EIS) in accordance with the *National Environmental Policy Act of 1969* for Area IV. Preparation of this EIS is required by an Order of the U.S. District Court for the Northern District of California in Case No. C-04-04448-SC.

DOE has also entered into a Consent Order for Corrective Action with the California Department of Toxic Substances Control (DTSC) in August 2007, pursuant to DTSC's authority over the cleanup of hazardous wastes under RCRA. DOE is in the process of preparing RCRA Field Investigation Reports for Area IV of SSFL as required by the August 2007 Consent Order schedule.

In Pub. L. No. 110-161, DOE was appropriated $13 million for "environmental remediation activities associated with" ETEC. Pub.L. No. 110-161 also provided additional direction that DOE must use a portion of this $13 million to "enter into an interagency agreement with the Environmental Protection Agency to conduct a joint comprehensive radioactive characterization of Area IV of the SSFL."

AUTHORITIES

This IAG is entered into consistent with applicable federal law, including but not limited to:

For EPA: the Consolidated Appropriations Act for FY 2008, Pub. L. No. 110-161 at 121 Stat. 1959; applicable provisions of *the Comprehensive Environmental Response, Compensation and Liability Act*, as amended, 42 U.S.C. Section 9601 et seq., and the CERCLA National Contingency Plan, 40 C.F.R. Part 300.

For DOE: the Consolidated Appropriations Act for FY 2008, Pub. L. No. 110-161 at 121 Stat. 1959; *Atomic Energy Act* (AEA), 42 U.S.C. Section 2011, et seq.; and applicable provisions of *the Comprehensive Environmental Response, Compensation and Liability Act*, as amended, 42 U.S.C. Section 9601 et seq.

AGREEMENT

DOE agrees to fund EPA's performance of those portions of the radiological survey set forth in Attachment A.

Attachment A (also referred to as "the Work") describes the scope of activities anticipated by this IAG. EPA will be the Lead Agency for conducting this Work that is summarized and defined in Attachment A to this IAG.

AGENCY ROLES AND RESPONSIBILITIES

EPA will be the Lead Agency for the Work conducted by EPA and funded by DOE under this IAG. With respect to the Work conducted by EPA, the term "Lead Agency" shall have the meaning established in relevant portions of the CERCLA National Contingency Plan, 40 C.F.R. Part 300. DOE and EPA personnel will discuss the progress of the Work on a regular basis, but no less than quarterly.

PROGRAMMING, BUDGETING AND FUNDING

DOE provided $1,500,000 to EPA in FY 08 and is by this IAG amendment providing an additional $1,700,000 to EPA in FY 09 to allow EPA to begin the EPA Work described in Attachment A. A portion of the funds (up to $500,000) may be used to fund EPA staff and travel expenses related to the EPA Work. Any additional funds needed by EPA to complete the Work as described in Attachment A will be transferred to EPA by means of an amendment to this IAG. Funds transferred to EPA under this IAG shall be deposited in the EPA Santa Susana Field Laboratory Site Special Account within the EPA Hazardous Substance Superfund Account to be retained and used solely to conduct or finance the work in this IAG at the Santa Susana Field Laboratory Site.

Any requirement for the payment or obligation of funds established by the terms of this IAG shall be subject to the availability of appropriated funds. EPA will perform the

Work in this IAG on the condition that DOE provides all of the funding necessary for that Work. No provision herein shall be interpreted to require obligation or payment of funds in violation of the *Anti-Deficiency Act*, 31 U.S.C. Section 1341. In cases where payment or obligation of funds would constitute a violation of the *Anti-Deficiency Act*, the dates established requiring the payment or obligation of such funds shall be appropriately adjusted.

DISPUTE RESOLUTION

DOE and EPA will use their best efforts to resolve any disputes regarding this IAG through informal dispute resolution. Informal dispute resolution should begin at the Project Manager level with appropriate involvement of DOE and EPA legal counsel. If informal dispute resolution is not successful, the dispute shall be forwarded to the EPA Region 9 Director, Superfund Division and the DOE Deputy Chief Operating Officer, Office of Environmental Management. However, the EPA Region 9 Regional Administrator will have sole and final authority to resolve any dispute concerning a matter of scientific, policy or technical judgment regarding the scope, conduct or analysis of the EPA Work.

EXECUTION AND TERMINATION

This IAG shall be terminated 180 days following the completion of the EPA Work as described in Attachment A, unless the term of this IAG is extended by mutual agreement. Should DOE be unable to fulfill its obligation to transfer the $1.7 million discussed above or be unable to comply with a subsequent request by EPA for additional funds to complete the Work, EPA may terminate this IAG thirty days after delivery to DOE of a notice to terminate this IAG.

MODIFICATION

This IAG may be modified by mutual agreement of the parties in order to facilitate the continuation and completion of the radiological characterization of SSFL Area IV and adjacent portions of the buffer zone areas.

RESERVATION OF RIGHTS

This IAG is to be used solely for DOE's and EPA's internal management purposes. This IAG does not extend to any other person or entity nor does it create any right or cause of action. DOE and EPA, respectively, reserve any and all rights or authorities including but not limited to legal, equitable or administrative rights. In particular, EPA reserves all rights and authorities established by and provided under CERCLA and the NCP as delegated by the President to EPA. Further, DOE reserves all rights and authorities established and provided under Atomic Energy Act and Executive Order 12580.

ATTACHMENT A:
DESCRIPTION OF EPA WORK TO BE PERFORMED

Complete Background Study to Determine Site-Specific Background Values for Radiological Constituents:

1. Develop Scope of Work for a study to determine site specific background values for radiological contaminants of concern at for Area IV at SSFL.

2. Share Scope of Work with State of CA, DOE and stakeholders for input

3. Develop Field Sampling Plan

    - Study will include radiological scanning and soil sampling
    - Areas that are geologically similar to Area IV but not impacted by activities at SSFL will be chosen for sampling
    - Collect and analyze statistically appropriate number of samples to determine background values for the relevant radionuclides

4. Conduct field work

5. Prepare Report of Findings
    - Circulate Report for DOE, State and Stakeholder input

6. Prepare Final Report

7. EPA will provide to DOE a quarterly summary status report on dollars spent and progress to date.

II. Develop Detailed Scope of Work for Conducting the Initial Phase of Radiological Study of Area IV and the Adjacent Buffer Zone:

Initial Phase of Study will include:

1. 100% Surface Scan of accessible areas using MARSSIM principles
2. Surface Soil Sampling and Analysis for radionuclides
3. Cost Estimate for All Work

III. Conduct a Historical Site Assessment (HSA) Evaluating Past Radiological Activities at SSFL

Deliverables:

Draft HSA
Final HSA

This effort would be conducted in general accordance with the U.S. EPA, Scoping Document for Development of Radiation Survey of a Background Reference Area and Area IV/Buffer Zone Santa Susana Field Laboratory dated December 2008.

IV. Develop a Workplan for a Radiological Study of SSFL Area IV and Buffer Zone Areas Adjacent to Area IV ("Workplan")

Deliverables:

Draft Workplan
Draft – Final Workplan
Final Workplan

This effort would be conducted in general accordance with the U.S. EPA, Scoping Document for Development of Radiation Survey of a Background Reference Area and Area IV/Buffer Zone Santa Susana Field Laboratory dated December 2008.

DEPARTMENT OF ENERGY AGENCY	ENVIRONMENTAL PROTECTION
Cynthia V. Anderson 2/17/2009 (Date)	Keith Takata 2/19/2009 (Date)
Cynthia V. Anderson Deputy Chief Operating Officer Office of Environmental Management	Keith Takata Director Superfund Division

AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009
REQUIREMENTS FOR INTERAGENCY AGREEMENT DE-AI30-08CC60036
FOR RADICOLOGICAL CHARACTERIZATION
OF AREA IV AT SANTA SUSANA FIELD LABORATORY
AMENDMENT 4 TO INTERAGENCY AGREEMENT DE-AI30-08CC60036
April 2009

In July 2008, the Department of Energy (DOE) and the Environmental Protection Agency (EPA) entered an Interagency Agreement (IAG) for radiological characterization work to be conducted at the Santa Susana Field Laboratory (SSFL). In February 2009, the IAG was amended to provide funds so that EPA could: 1) conduct a background study to determine site specific background values for radiological contaminants at SSFL; 2) develop a scope of work, schedule and cost estimate for the first phase of a radiological survey of SSFL Area IV and the Northern undeveloped land at the SSFL (*see* attached figure); 3) initiate a historical site assessment evaluating past radiological activities at SSFL; and 4) develop a work plan for a radiological study of SSFL Area IV and the Northern undeveloped land. The IAG, as amended, the February 2009 Agreement, (Attachment 1), together with this second amendment, are hereby merged and referenced as "the Radiological Characterization of Area IV at the SSFL."

Under this amendment to Interagency Agreement (IAG) DE-AI30-08CC60036, the Department of Energy (DOE) (also referred herein as the "Ordering Agency") provides funding in the amount of $38,300,000.00 appropriated under the American Recovery and Reinvestment Act of 2009, Pub. L. 1115 (Recovery Act or the Act) to the Environmental Protection Agency (EPA) (also referred herein as the "Lead Agency or Performing Agency") to accelerate and complete the remaining work to be performed under the IAG scope of work. A portion of the funds (up to $3,400,000) may be used to fund EPA staff expenses and travel related to the EPA Work.

RECOVERY ACT STATEMENT OF ACCELERATED WORK FOR THE RADIOLOGICAL CHARACTERIZATION OF AREA IV AT SSFL

The EPA shall, in accordance with the terms of this IAG, act as Lead Agency for conducting the work that is summarized and defined in the Statement of Work (SOW) for IAG DE-AI30-08CC60036. This amendment establishes a new Line Item and revises the IAG SOW to accelerate the remaining work necessary to complete the Radiological Characterization of Area IV and the Northern undeveloped land at the SSFL *(see* attached figure*)*. Line Item 002 is hereby established to track the work that will be financed by Recovery Act funds and associated funding:

Line Item 002	DESCRIPTION	DOLLARS
	Recovery Act Funds provided to complete Radiological Characterization of Area IV at SSFL	$38,300,000.00

- *Work effort to complete: Radiation Survey (surface soil and groundwater/seep sampling and analyses); QA/QC Monitoring Requirements; and Radiation Survey (subsurface soil sampling and analyses) 100% gamma surface scan, historical site assessment, and complete data evaluation and report for Area IV and the Northern undeveloped land at SSFL on or before September 30, 2011.*

See Attachment 2, SSFL ONSITE SCHEDULE. This is the schedule of tasks to be performed for completion of the onsite survey for Area IV and the Northern undeveloped land at the SSFL.

AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009 TERMS AND CONDITIONS

Work performed under this Interagency Agreement will be funded under the American Recovery and Reinvestment Act of 2009, Pub. L. 111-5, (Recovery Act or Act). Special Recovery Act certification and reporting requirements apply to both the ordering and performing Federal agencies, the agency contractors and first-tier subcontractors. Therefore, the following terms and conditions are hereby appended to the IAG:

RECOVERY ACT CERTIFICATION

The IAG is modified to add the following, which shall flow down to all contracts and first tier subcontracts and is applicable only to the Recovery Act work:

Certification -

In order for the Contracting Officer to accept any products or services funded by the Recovery Act, the Contractor shall certify that the items were delivered and/or work was performed for a purpose authorized under the Recovery Act.

RECOVERY ACT PERIOD OF PERFORMANCE

The period of performance for the Recovery Act work specified in IAG DE-AI30-08CC60036 shall be for the period beginning the date this amendment is executed by DOE and EPA through December 31, 2011. The date of completion of the work funded by Recovery Act is not expected to exceed September 30, 2011. The period of performance shall conform to the accelerated schedule. *See* Attachment 2, SSFL ONSITE SCHEDULE, for the schedule.

FINANCING

As identified in the IAG signed July 24, 2008, DOE's preferred method for transferring funds to the EPA is via the Intergovernmental Payment and Collection System (IPAC). For the Recovery Act funds transferred, EPA should make IPAC charges with reference to DOE's IAG Number cited in block 1, of the Cover Page. All IPAC charges must be supported with the appropriate documents/required reports.

The following invoice procedure will apply to the submission of invoices for Recovery Act work specified in the Statement of Work. The Contractor may invoice costs for both Recovery Act work and other work in the same invoice. However, the Contractor shall separately identify costs in its invoices that pertain to the Recovery Act work. Other existing provisions applicable to invoice submission are applicable to Recovery Act invoices. A copy of all invoices relating to Recovery Act funding shall be provided to the DOE. Recovery Act costs shall also be segregated in the invoice so as to identify those costs associated with each applicable appropriation at the 1, 7, and 8 levels of the following accounting and appropriations data:

Accounting and Appropriations Data

Level	1	2	3	4	5	6	7	8	9	10
Numerical Characters	Xxx	xxxxx	xxxx	Xx	xxxxxx	xxxxx	xxxxxxx	xxxxxxx	xxxxxxx	xxxxxxx
Level Name	Appropriation Code	Fund	Appropriation Year	Allottee	Reporting Entity	Object Class	Program	Project	WFO	Local Use

The Performing Agency shall certify in the appropriate supporting document/report accompanying the IPAC charge that the costs included in the charge for Recovery Act work were incurred only to accomplish the Recovery Act work in accordance with the Statement of Work. A copy of all charges with supporting documents/reports relating to Recovery Act funding shall be provided to the DOE.

RECOVERY ACT PURCHASE OF PERFORMING AGENCY CONTRACTOR ACQUIRED PROPERTY

The Performing Agency shall be accountable for all property purchased with Recovery Act funding under this IAG. Sensitive property is property for which additional physical security, protection, control, and accountability is required (e.g. radios, laptop and computers, cameras, etc.) to prevent the theft, loss or misplacement

The title of all Recovery Act purchased property considered accountable (greater than $5,000) or sensitive shall vest in the DOE, and shall be returned at completion of the effort, unless an alternative agreement is made. Inventory and records for any accountable or sensitive property shall be maintained by the Performing Agency and provided to the DOE Contracting Officer on a quarterly basis. Equipment; accountable (i.e. gamma scanning detection system) and sensitive shall be identified and marked as U.S. Government - DOE property.

The Performing Agency shall develop and maintain a list of those items of personal property that are considered sensitive, as determined by the Ordering Agency Organizational Property Management Office OPMO and/or Contracting Officer. This list shall consist of:

(a) items, regardless of value, that require special control and accountability because of susceptibility to unusual rates of loss, theft, or misuse or due to national security and export control considerations.

(b) other items that the OPMO and/or Contracting Officer determines to need special control and accountability.

RECOVERY ACT SPECIAL PROVISIONS

"Ordering Agency" is defined in Section 130.9 of OMB Circular A-11 and means the DOE in IAG DE-AI30-08CC60036.

"Performing Agency" is defined in Section 130.9 of OMB Circular A-11 and means the EPA in IAG DE-AI30-08CC60036.

DOE Contract Clause H.999 Special provisions relating to work funded under American Recovery and Reinvestment Act of 2009 (Feb 2009)

Preamble:

Work performed under Interagency Agreement (IAG) DE-AI30-08CC60036 will be funded, in whole or in part, with funds appropriated by the American Recovery and Reinvestment Act of 2009, Pub. L. 111-5, (Recovery Act or Act). The Recovery Act's purposes are to stimulate the economy and to create and retain jobs. The Act gives preference to activities that can be started and completed expeditiously, including a goal of using at least 50 percent of the funds made available by it for activities that can be initiated not later than June 17, 2009.

The Performing Agency should begin planning activities for its contractors and first tier subcontractors, including obtaining a DUNS number (or updating the existing DUNS record), and registering with the Central Contractor Registration (CCR).

Be advised that Recovery Act funds can be used in conjunction with other funding as necessary to complete projects, but tracking and reporting must be separate to meet the Act's reporting requirements. For projects funded by sources other than the Recovery Act, the Performing Agency should plan to keep separate records for Recovery Act funds and to ensure those records comply with the requirements of the Act.

The Government has not fully developed the implementing instructions of the Recovery Act, particularly concerning the how and where for the new reporting requirements. The Performing Agency will be provided these details as they become available. The Performing Agency must comply with all requirements of the Act. If the Performing Agency believes there is any inconsistency between Recovery Act requirements and current IAG requirements, the issues shall be referred to the DOE for reconciliation.

Be advised that special provisions may apply to projects funded by the Act relating to:

- Reporting, tracking and segregation of incurred costs;
- Reporting on job creation and preservation;
- Publication of information on the Internet;
- Protecting whistleblowers; and
- Requiring prompt referral of evidence of a false claim to the Inspector General.

Definitions:

For purposes of this clause;

"Covered Funds" means funds expended or obligated from appropriations under the American Recovery and Reinvestment Act of 2009, Pub. L. 111-5. Covered Funds will have special accounting codes and will be identified as Recovery Act funds in the contract and/or modification using Recovery Act funds. Covered Funds must be reimbursed by September 30, 2015.

"First-tier subcontract" means a subcontract awarded directly by a Federal Government prime contractor whose contract is funded by the Recovery Act.

"Non-Federal employer" means any employer with respect to Covered Funds – the contractor or subcontractor, as the case may be, if the contractor or subcontractor is an employer; and any professional membership organization, certification of other professional body, any agent or licensee of the Federal government, or any person acting directly or indirectly in the interest of an employer receiving Covered Funds; or with respect to Covered Funds received by a State or local government, the State or local government receiving the funds and any contractor or subcontractor receiving the funds and any contractor or subcontractor of the State or local government; and does not mean any department, agency, or other entity of the federal government.

A. Flow Down Provision

Contract clause H.999 must be included in every contract and first-tier subcontract.

B. Segregation and Payment of Costs

This clause shall be included in every contract and first-tier subcontract.

Obligations and expenditures related to funding under the Recovery Act must be segregated. Financial and accounting systems should be revised as necessary to segregate, track and maintain these funds apart and separate from other revenue streams. No part of the funds from the Recovery Act shall be commingled with any other funds or used for a purpose other than that of making payments for costs allowable for Recovery Act projects. Where Recovery Act funds are authorized to be used in conjunction with other funding to complete projects, tracking and reporting must be separate from the original funding source to meet the reporting requirements of the Recovery Act and OMB Guidance.

Invoices must clearly indicate the portion of the requested payment that is for work funded by the Recovery Act.

C. Prohibition on Use of Funds

None of the funds provided under this agreement and derived from the American Recovery and Reinvestment Act of 2009, Pub. L. 111-5, may be used for any casino or other gambling establishment, aquarium, zoo, golf course, or swimming pool or any projects similar to these.

D. Wage Rates

All laborers and mechanics employed by contractors and subcontractors on projects funded directly by or assisted in whole or in part by and through the Federal Government pursuant to the American Recovery and Reinvestment Act of 2009, Pub. L. 111-5, shall be paid wages at rates not less than those prevailing on projects of a character similar in the locality, as determined by the Secretary of Labor in accordance with subchapter IV of chapter 31 of title 40, United States Code. With respect to the labor standards specified in this section, the Secretary of Labor shall have the authority and functions set forth in Reorganization Plan numbered 14 of 1950 (64 Stat. 1267, 5 U.S.C. App.) and section 3145 of title 40 United States Code. See http://www.dol.gov/esa/whd/contracts/dbra.htm .

E. Publication

Information about this agreement will be published on the Internet and linked to the website www.recovery.gov, maintained by the Accountability and Transparency Board. The Board may exclude posting contractual or other information on the website on a case-by-case basis when necessary to protect national security or to protect information that is not subject to disclosure under sections 552 and 552a of title 5, United States Code.

F. Registration requirements

The Performing Agency shall ensure that all contractors and first-tier subcontractors have a DUNS number and are registered in the Central Contractor Registration (CCR) no later than the date the first report is due under FAR 52.204-11 "American Recovery and Reinvestment Act – Reporting Requirements (MAR 2009)" below.

G. Utilization of Small Business

The Performing Agency shall, to the maximum extent practicable, give a preference to small business in the award of contracts for projects funded by Recovery Act dollars.

H. American Recovery and Reinvestment Act-Reporting Requirements

The Performing Agency will provide to the Ordering Agency copies of all data and reports generated under the Federal Acquisition Regulation Clauses listed below.

The following FAR clauses are hereby incorporated into this Interagency Agreement by reference and shall flow down to all first-tier subcontracts.

(a) 52.243-6 Change Order Accounting (APR 1984)

(b) 52.203-15 Whistleblower Protections Under the American Recovery and Reinvestment Act of 2009 (MAR 2009)

(c) 52.204-11 American Recovery and Reinvestment Act – Reporting Requirements (MAR 2009)

(d) 52.215-2 Audit and Records – Negotiation Alt I (MAR 2009)

I. Buy American

The Performing Agency will insert and enforce all applicable Buy American Act and Trade Agreements Act provisions required by the Recovery Act to be used in contracts and first-tier subcontracts.

J. This Interagency Agreement (IAG) is a written understanding, negotiated between the DOE and the EPA that (1) contains provisions applying to future contracts between EPA and its contractors and first-tier subcontractors during the term of this IAG and (2) contemplates that future contracts will incorporate by reference or attachment the required and applicable provisions contained in this IAG. This Agreement, which is itself not a contract, may be changed only by written bilateral modification of the IAG itself and not by a contract incorporating the provisions included in this Agreement.

The IAG may be reviewed and revised as necessary to ensure it contains provisions required by statute, executive order, Federal regulation and agency acquisition regulations that the parties agree to include as applicable and may be repeatedly modified to incorporate mandatory Recovery Act statutory or regulatory requirements. Discontinuing or modifying this Agreement shall not affect any prior contract incorporating the provisions of the IAG.

DEPARTMENT OF ENERGY

Cynthia V. Anderson 4/23/09
(Date)

Cynthia V. Anderson
Deputy Chief Operating Officer
Office of Environmental Management

ENVIRONMENTAL PROTECTION AGENCY

Keith Takata 4-23-09
(Date)

Keith Takata
Director
Superfund Division

Department of Energy
Washington, DC 20585

April 20, 2009

Larry Myers, Executive Secretary
Native American Heritage Commission
915 Capitol Mall, Room 364
Sacramento, CA 95814

RE: Santa Susana Field Laboratory Proposed Action

Dear Mr. Myers:

The Department of Energy (DOE) proposes clean-up operations for the remediation of the 290 acre Area IV at the Santa Susana Field Laboratory (SSFL) (Figures 1 and 2). Within Area IV, the Energy Technology Engineering Center (ETEC) is located on 90 acres, and is where nuclear research was conducted until 1988. DOE is preparing an Environmental Impact Statement (EIS), which will be developed in accordance with the National Environmental Protection Act (NEPA) of 1969 (42 United States Code (U.S.C.) 4321-4347) and will focus on environmental restoration activities for Area IV, including soil and groundwater remediation and the decontamination and decommissioning or dismantlement of government buildings and structures on the site.

The DOE and the US Environmental Protection Agency (EPA) have signed an Interagency Agreement for EPA to conduct a radiological background study at locations outside of the boundaries of SSFL. In addition, EPA will conduct a radiological characterization survey of SSFL Area IV of the Northern undeveloped land.

In accordance with California State laws and regulations, and also in compliance with Section 106 of the National Historic Preservation Act (NHPA) (36 CFR Part 800) and NEPA, federal agencies must consult with federally recognized Native American tribes as well as interested parties regarding the effects of their undertakings. Accordingly, DOE requests that the Native American Heritage Commission provide information on Sacred Lands and Native American Contacts, both federally recognized and other Native American groups who might have interests in the area.

The attached forms provide details on the location of the SSFL, along with a map of the project area. Please contact me via telephone, at (818) 466-8162, or by email at Stephanie.jennings@emcbc.doe.gov with the requested information, or if you have any questions or comments.

Sincerely,

Stephanie G. Jennings
U.S. Department of Energy
NEPA Document Manager

Enclosure

cc: Craig Cooper - EPA
Nicole Moutoux - EPA
Norman Riley - DTSC
Allen Elliott - NASA
Thomas Johnson - DOE/OAK
Richard Schassburger - DOE/OAK
Simon Lipstein - DOE/CBC
Patricia Berry - DOE/OAK
Ravnesh Amar - Boeing
Sandra Enyeart - Administrative Record

TRIBAL CONSULTATION LIST REQUEST
NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
(916) 657-5390 - Fax
E-mail – nahc@pacbell.net

Project Title: Area IV Santa Susana Field Laboratory EIS

Local Government: Ventura County

Contact Person: Stephanie Jennings, NEPA Document Manager
U.S. Department of Energy
P.O. Box 10300
Canoga Park, CA 91309
(818) 466-8162

Project Location:

County: Ventura City/Community: Canoga Park

Local Action Type:

___ General Plan ___ General Plan Element ___ Specific Plan

___ General Plan Amendment ___ Specific Plan Amendment

XX Pre-Planning Outreach Activity

Project Description:

The Department of Energy (DOE) has issued a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) that will examine cleanup options for the remediation of the 290-acre Area IV of the Santa Susana Field Laboratory (SSFL). The Energy Technology Engineering Center (ETEC), located on 90 acres within SSFL Area IV, is where nuclear research was conducted until 1988.

The EIS will be developed in accordance with the National Environmental Policy Act and will focus on environmental restoration activities for Area IV, including soil and groundwater remediation and the decontamination and decommissioning or dismantlement of Government buildings and structures on the site. DOE will evaluate alternatives in the EIS for the disposition of radiological facilities and support buildings, chemical contaminants, remediation of the impacted environment, and disposal of all resulting waste at approved sites; with the goal of protecting human health and the environment.

For information on the proposed project, please contact the NEPA Document Manager, Stephanie Jennings, at: (818) 466-8162 or email: **stephanie.jennings@emcbc.doe.gov**

NAHC Use Only

Date Received: _____

Date Completed _____

Native American Tribal Consultation lists are only applicable for consulting with California Native American tribes per Government Code Section 65352.3.

LOCAL GOVERNMENT TRIBAL CONSULTATION LIST REQUEST

NATIVE AMERICAN HERITAGE COMMISSION

915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
(916) 657-5390 - Fax

Project Title: Area IV Santa Susana Field Laboratory EIS

Local Government/Lead Agency: U.S. Department of Energy (DOE)

Contact Person: Stephanie Jennings, NEPA Document Manager

Street Address: P.O. Box 10300

City: Canoga Park, CA 91309

Phone: (818) 466-8162, or Stephanie.jennings@emcbc.doe.gov **Fax**: (818) 466-8730

Specific Area Subject to Proposed Action

County: Ventura

City/Community: Near Canoga Park. Santa Susana Field Laboratory (SSFL)

Local Action Type:

___ General Plan ___ General Plan Element ___ General Plan Amendment

___ Specific Plan ___ Specific Plan Amendment

XX Pre-planning Outreach Activity

Project Description:

The Department of Energy (DOE) has issued a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) that will examine cleanup options for the remediation of the 290-acre Area IV of the Santa Susana Field Laboratory (SSFL). The Energy Technology Engineering Center (ETEC), located on 90 acres within SSFL Area IV, is where nuclear research was conducted until 1988.

The EIS will be developed in accordance with the National Environmental Policy Act and will focus on environmental restoration activities for Area IV, including soil and groundwater remediation and the decontamination and decommissioning or dismantlement of Government buildings and structures on the site. DOE will evaluate alternatives in the EIS for the disposition of radiological facilities and support buildings, chemical contaminants, remediation of the impacted environment, and disposal of all resulting waste at approved sites; with the goal of protecting human health and the environment.

For information on the proposed project, please contact the NEPA Document Manager, Stephanie Jennings, at: (818) 466-8162 or email: **stephanie.jennings@emcbc.doe.gov**

XX Sacred Lands File Search and Native American Contacts List Request
Information Below is Required for a Sacred Lands File Search

USGS Quadrangle Name: Calabasas, California

Township _____ **Range** _____ **Section(s)** _____

The project area is in the Land Grant, Civil Colonies area of the PLSS: **Simi**

DOE requests information on both federally recognized and non-federally recognized tribes who may have interests or concerns regarding the SSFL.

NAHC Use Only

Date Received: _____
Date Completed _____

Native American Tribal Consultation lists are only applicable for consulting with California Native American tribes per Government Code Section 65352.3.

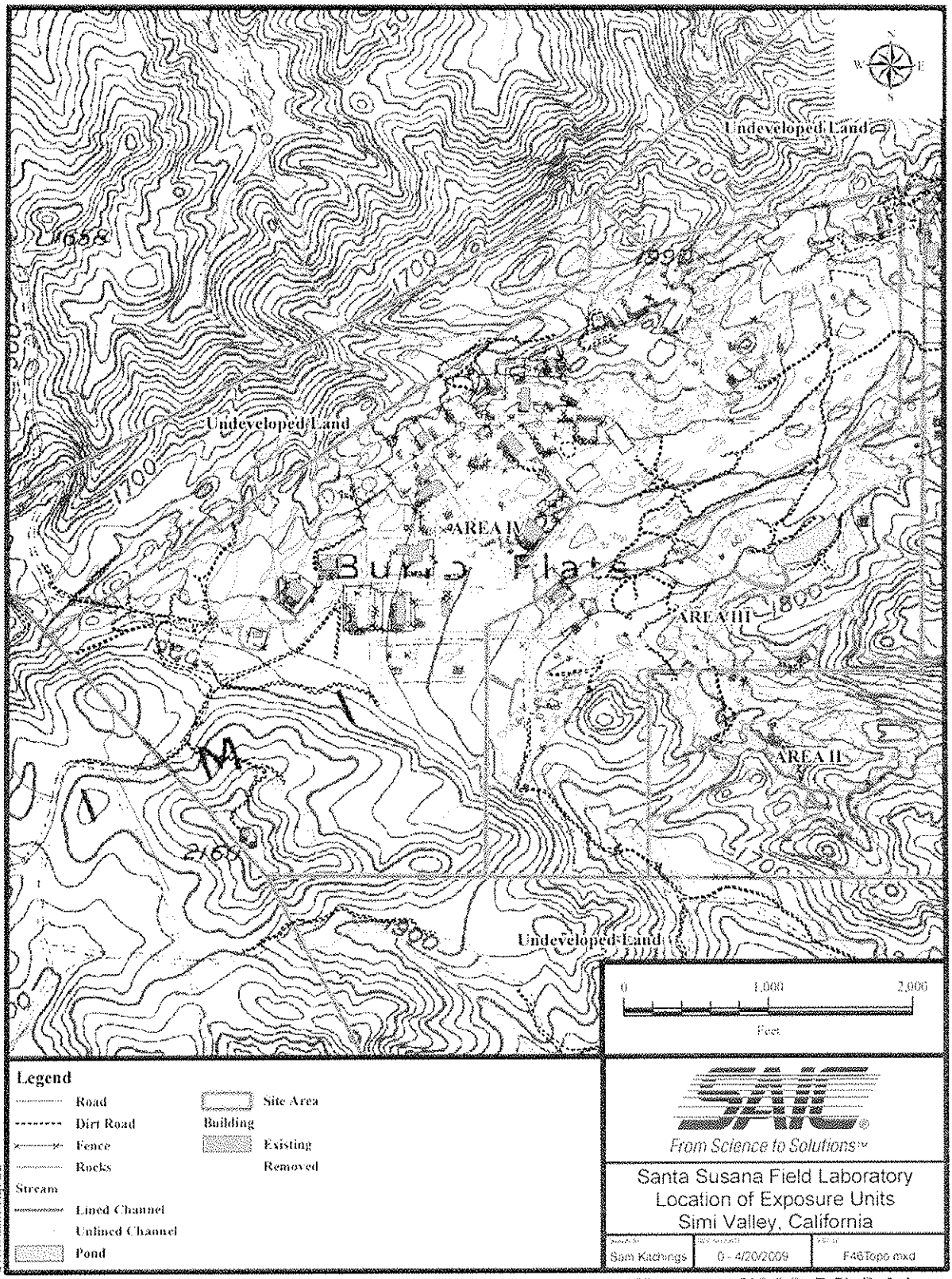

Figure 1. Santa Susana Field Laboratory Area IV Boundaries Shown on USGS 7.5' Calabasas Quadrangle; and is in Land Grant, Civil Colonies Area of the Public Land Survey System (PLSS)

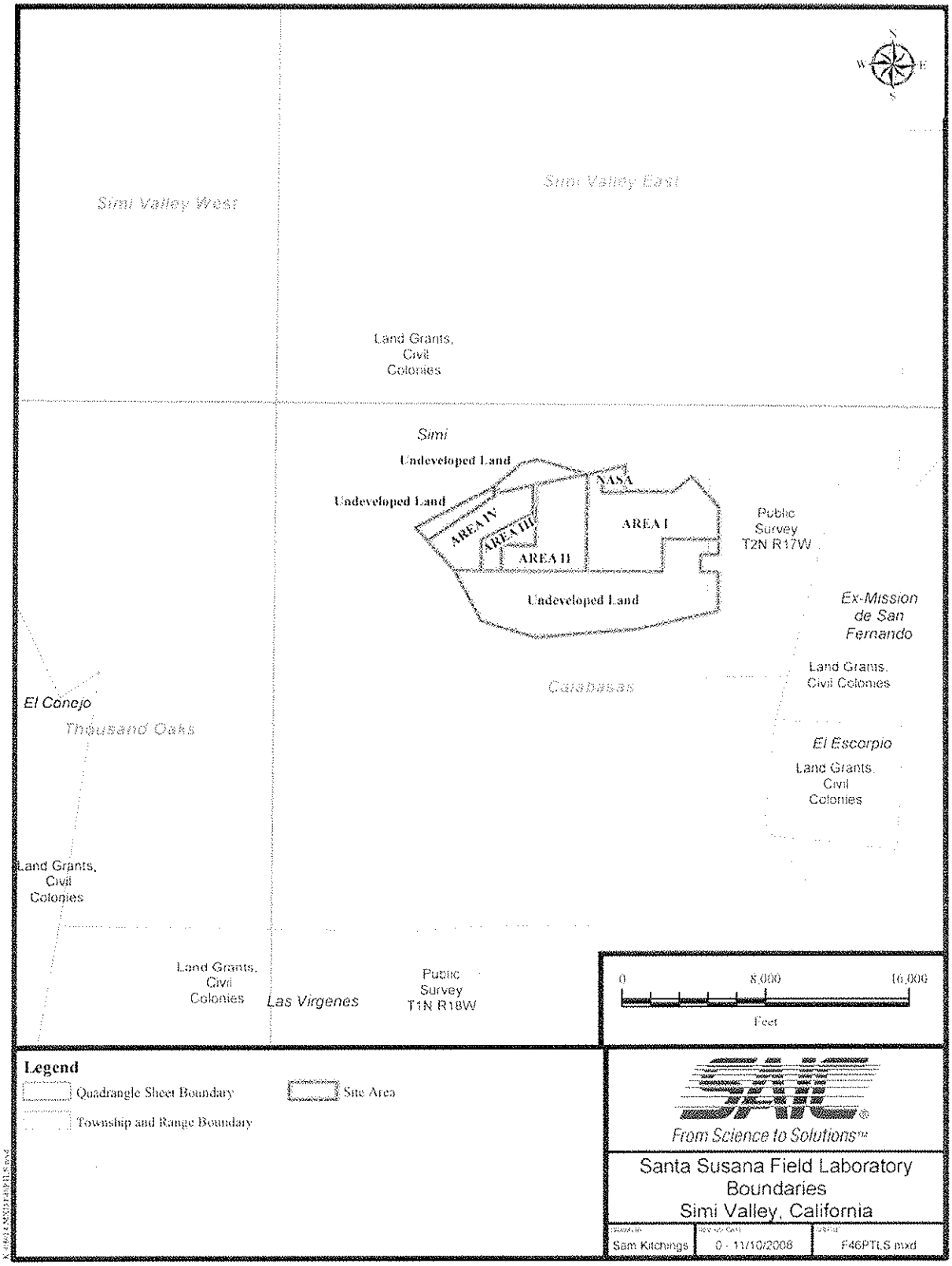

Figure 2. Santa Susana Field Laboratory Boundaries

Department of Energy
Washington, DC 20585

April 20, 2009

Milford Wayne Donaldson, FAIA - State Historic Preservation Officer
California Department of Parks and Recreation
Office of Historic Preservation
1416 9th Street, Room 1442
P.O. Box 942896
Sacramento, CA 94296-0001

RE: Santa Susana Field Laboratory Proposed Action

Dear Mr. Donaldson:

The United States (US) Department of Energy (DOE) proposes an undertaking that could affect historic properties at the Santa Susana Field Laboratory (SSFL). The proposed action concerns clean-up options for the remediation of the 290 acre Area IV at the SSFL (Figures 1 and 2).

The Energy Technology Engineering Center (ETEC) is located on 90 acres within Area IV, and is where various nuclear programs including nuclear engineering, nuclear research and development, and nuclear manufacturing operations were conducted until 1988.

The DOE and the US Environmental Protection Agency (EPA) have signed an Interagency Agreement for EPA to conduct a radiological background study at locations outside of the boundaries of SSFL. In addition, EPA will conduct a radiological characterization survey of SSFL Area IV of the Northern undeveloped land.

Section 106 of the National Historic Preservation Act (NHPA) (36 CFR Part 800) requires federal agencies to take into account the effects of their undertakings on historic properties. In accordance with 36 CFR 800.2(c), DOE requests initiation of additional consultation with the California SHPO.

In addition to Section 106 of NHPA, this consultation is in compliance with the National Environmental Protection Act (NEPA) of 1969 (42 United States Code (U.S.C.) 4321-4347) and the Council on Environmental Quality (CEQ) NEPA regulations (40 CFR Parts 1500-1508).

In proceeding with the planning of this undertaking, coordination of NHPA Section 106 consultation will occur with the development of an Environmental Impact Statement (EIS) to meet our NEPA requirements pursuant to 36 CFR 800.8. The DOE is preparing the EIS, which will be developed in accordance with NEPA and will focus on environmental restoration activities for Area IV, including soil and groundwater remediation and the decontamination and

decommissioning or dismantlement of government buildings and structures on the site. Our plan to involve the public will follow our established procedures for completing the NEPA process as well as fulfill our responsibilities under 36 CFR 800.3(e).

Please provide any concerns you have regarding this approach so that we many incorporate them into our process. Shortly after sending this letter, we will be initiating consultation with federally recognized Indian tribes affiliated with SSFL lands. Similarly, we will also be notifying non-federally recognized Indian tribes subject to 36 CFR 800.3(f). The purpose, pursuant to 36 CFR 800.3(f)(2), is to determine if the Tribes have any religious or cultural interest in the Area of Potential Effect. Please provide any comments you have regarding our efforts to identify all potential consulting parties and gather information as outlined in 36 CFR 800.3(f) and 800.4(a)(4).

At this time DOE is still collecting information regarding the extent and methodology of the inventory of Area IV, and the NRHP eligibility of the resources located there. Therefore, we would like to begin our consultation with the SHPO as early as possible in this process, to discuss the undertaking, and hear about any areas of specific concern, questions or other input. Please feel free to contact me via telephone at (818) 466-8162, or by email at Stephanie.jennings@emcbc.doe.gov.

Sincerely,

Stephanie G. Jennings
U.S. Department of Energy
NEPA Document Manager

Enclosure

cc: Craig Cooper - EPA
Nicole Moutoux - EPA
Norman Riley - DTSC
Allen Elliott - NASA
Thomas Johnson - DOE/OAK
Richard Schassburger - DOE/OAK
Simon Lipstein - DOE/CBC
Patricia Berry - DOE/OAK
Ravnesh Amar - Boeing
Sandra Enyeart – Administrative Record

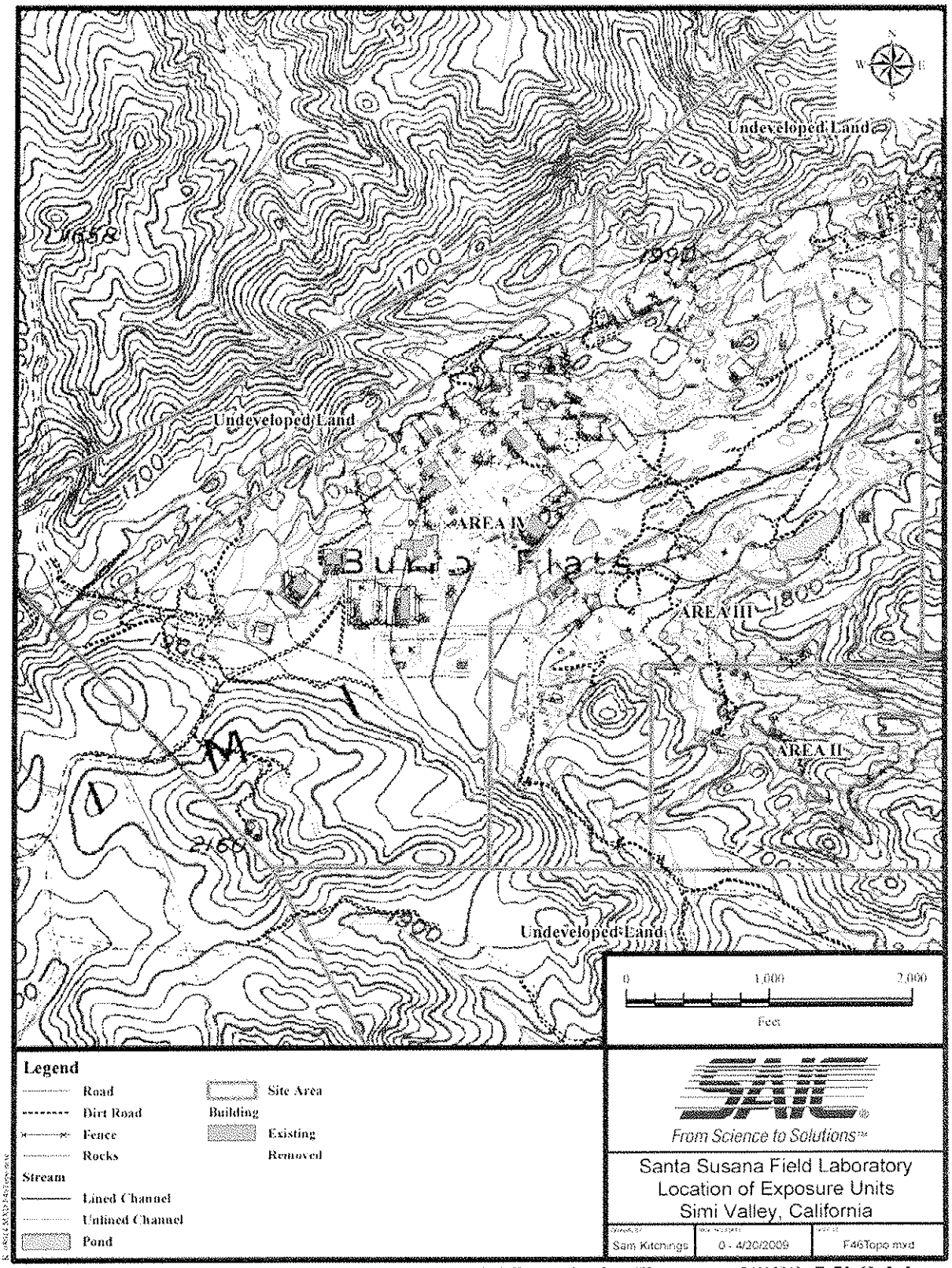

Figure 1. Santa Susana Field Laboratory Area IV Boundaries Shown on USGS 7.5' Calabasas Quadrangle; and is in Land Grant, Civil Colonies Area of the Public Land Survey System (PLSS)

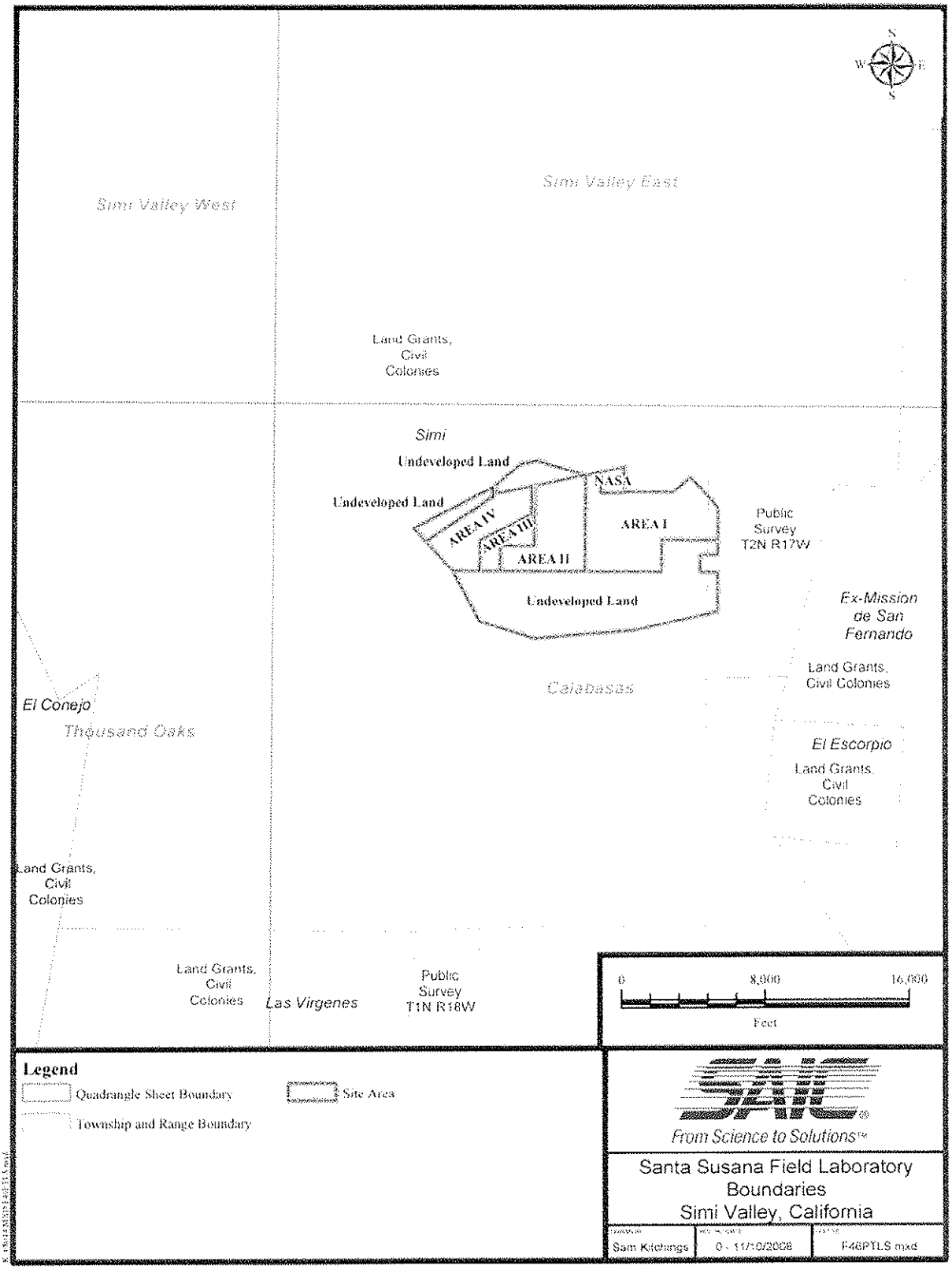

Figure 2. Santa Susana Field Laboratory Boundaries

HISTORIC STRUCTURES/SITES REPORT

for

Area IV of the Santa Susana Field Laboratory

Prepared for

Boeing Company
5800 Woolsey Canyon Road
Canoga Park, CA 91304-1148

by

Post/Hazeltine Associates
Architectural Historians
2607 Orella Street
Santa Barbara, CA 93105
(805) 682-5751
e-mail: posthazeltine@cox.net

April 9, 2009

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1.0 INTRODUCTION

An environmental investigation and remediation program, undertaken by the Boeing Company, the United States Department of Energy (DOE), and the National Aeronautics and Space Administration (NASA), is currently being undertaken at the Santa Susana Field Laboratory (SSFL). As part of this program, an Environmental Impact Statement (EIS) is being prepared for Area IV of SSFL to evaluate the potential impact of the DOE funded ETEC Closure program on the environment. The California Department of Toxic Substances Control (DTSC) is overseeing the broader RCRA environmental investigation, monitoring, and cleanup of chemical contamination at SSFL. Since the federal government has oversight in this project it is subject to review under the National Environmental Protection Act (NEPA), as outlined in the regulations published by the Council on Environmental Quality (40 CFR 1500 et seq.): 4) *Approval of specific projects, such as construction or management activities located in a defined geographic area* (40 CFR 1508.18).

As part of the environmental studies, the potential historic significance of Area IV of the Santa Susana Field Laboratory must be evaluated. This Historic Structures/Sites Report (HSR) follows Federal guidelines for Historic Cultural Resource Studies. The methodology for determining whether the property meets the eligibility requirements for listing as a historic resource under Federal eligibility criteria is based on archival research to determine the historic context of the resources within the project area and an on-site evaluation of the physical and visual integrity of the project site, including an evaluation of individual buildings, structures, and features.
The HSR includes the following components:

1) Documentation of the historic context and physical appearance of the resources within the project site, including individual buildings, structures, and features on these parcels;
2) Evaluation of the integrity of Area IV of SSFL and its individual components;
3) Identification of potential historic, architectural, and cultural resources within the project site;
4) Evaluation of the potential eligibility of historic resources for listing at the Federal level;
5) Evaluation of the potential eligibility of historic resources for listing at the State level;

Pamela Post, Ph.D., principal investigator, Ron Nye Ph.D., and Timothy Hazeltine prepared this report.

The remediation program requires consultation with several Federal and State agencies, including the following:
a. Department of Energy (DOE)
b. California State Historic Preservation Office (SHPO)
c. California Department of Toxic Substances Control (DTSC)

2.0 EXECUTIVE SUMMARY

The intent of the ongoing decommissioning and demolition program is to remove existing improvements including remaining buildings, structures and features associated with the operation of Area IV of the Santa Susana Field Laboratory. This study finds that Area IV of the Santa Susana Field Laboratory lacks sufficient integrity to convey its association with the

significant historic themes outlined in Section 6.0 of this report, consequently the resource as a whole is not eligible for listing as a historic resource at the state or national level. Therefore, implementation of the remediation program would not impact resources eligible for listing in the National Register of Historic Places or the California Register of Historic Resources.

3.0 PROJECT DESCRIPTION

The project area is located in an unincorporated area of Ventura County, California, within a 2,849-acre property owned by the Boeing Company and NASA that is historically known as the Santa Susana Field Laboratory (SSFL) (Appendix A). Divided into four sections (Areas I, II, III, and IV), Boeing property includes Area IV, which is the focus of this study (Appendix A). The goal of the remediation and cleanup program being undertaken by Boeing and the DOE in SSFL Area IV includes the following: 1) provide sufficient cleanup to allow appropriate future use of the property; and 2) meet the conditions of the RCRA permits; and 3) maintain groundwater protection (http: //www.etec.energy.gov). As part of this program existing buildings, structures, and infrastructure in Area IV, including RMHF, would be removed and contamination in soils and groundwater would be addressed. Finally, controls would be established to limit the movement of contaminants. After completion of the remediation and cleanup program the current plan is to return the property to open space.

4.0 SITE HISTORY

This section of the report presents an historical overview of the project area (see Appendices A and B for historic maps and aerial photographs depicting the development of the site).

4.1 Burro Flats (1782-1947)

Before European contact the project area was inhabited by the Chumash an indigenous people who populated the area between San Luis Obispo County and the Santa Monica Mountains. The recorded history of the area begins in 1782 with the foundation of Mission San Buenaventura. Thirteen years later in 1795, the Spanish government granted 113,000 acres, including the future location of the project area, to Miguel, Francisco, and Patricio Pico. Known as *Rancho Simi*, the land grant was one of only two land grants in the Ventura area that were allotted by the Spanish Government (Triem 1985: 34). In 1822 California passed to Mexico, which retained control of the territory until it was ceded to the United States as a result of the 1846-1848 Mexican-American War. Subsequently, the Pico family subdivided and sold off its rancho. The former rancho lands were bought and sold a number of times. By the early twentieth century the future location of the Santa Susana Field Laboratory had been acquired by the Dundas family and the Silvernail family (Sapere, 2005). During this period the land primarily was used for the grazing of cattle; later, in the 1920s and 1930s, Hollywood film studios shot a number of westerns there.

4.2 North American Aviation and Creation of the Santa Susana Field Laboratory (1947-1956)

The following provides a summary of the history of North American Aviation and its operations at Area IV of the Santa Susana Field Laboratory (Appendix A and B). More detailed overviews of individual facilities in Area IV are found in Section 5.0 of this report.

After the end of World War II, in 1945, the United States embarked on two separate programs of rocket development and nuclear research, both for civilian and defense related applications. These programs grew in importance with increasing tensions between the United States and the Soviet Union and in particular, the Russians' endeavor to become a nuclear power. In California, aviation and engineering companies who had expanded their research and development facilities during the war continued during the postwar period to vigorously pursue research and development contracts with the Federal government. One of these firms was North American Aviation Inc. (NAA), headquartered at the time at the Los Angeles Municipal Airport in Inglewood. Founded in 1928 by Clement Melville Keys, the company was initially centered in Dundalk, Maryland, but soon moved to Inglewood, California, in 1934 after receiving a contract from the Army Air Corps to build 267 trainer planes (Kraemer 2006: 15-17). Following America's entry into the war, NAA substantially increased its production and by the end of the war in 1945, had built almost 43,000 planes, most notably the P-51 Mustang.

By 1945, NAA had established itself as one of the nation's leading aviation companies with over 90,000 employees. However, initially, like many other aviation firms in the immediate postwar period, NAA saw a dramatic reduction in its government contracts and a consequent reduction in the workforce. Foreseeing the important role that rocket technology would play in the postwar period, the company's principals, Chairman of the Board, James Kindelberger, and president, Lee Atwood, initiated a new division that would be charged with developing defense-related rocket technology (Kraemer 2007: 21-22). Under the leadership of Bill Bollay, NAA initially carried out rocket research and development at its Inglewood facility. However, it soon became clear that the company would not only need a larger facility, but one which would provide sufficient security and safety for its research and testing.

In early 1947 NAA obtained funds from the Army Air Force to establish a testing site in Southern California (Kraemer 2007: 29). In March of that year NAA signed a long-term lease with the Dundas family for a 620-acre portion of their San Fernando Valley ranch. The leased acreage would become the nucleus of the Santa Susana Field Laboratory (SSFL). Subsequently, NAA would purchase the 620-acre site and additional acreage from the Dundas family. Located on an elevated plateau at the northwest end of the San Fernando Valley, and partially surrounded by large rocky outcroppings, the site's topography provided security and controlled access to the facility, as well as sufficient space for research, development, and large scale testing of liquid rocket engines.

The liquid rocket engine testing program was part of a 2.3 million dollar contract with the Army Air Force to help develop a surface-to-surface guided missile program. Early on a decision was made to incorporate missile technology developed by the Germans during World War II. At the close of the war, the United States, in a race to head off the Russians, captured much of the

hardware and a significant contingent of German engineers and scientists. Among those scientists who surrendered to the Americans was Warner Von Braun, who helped develop the German V1/V2 rocket program. Just five years after the war, in 1950, material salvaged from a German test site was brought to the United States, parts of which were used to build the first test stand (Vertical Test Stand #1) at the Santa Susana facility. In 1954 expansion of the Santa Susana site occurred when what is now Area I was purchased by NAA from the Dundas family, and Areas II, III and IV (totaling some 840 acres) were acquired from the Silvernail family (Sapere, 2005). In 1956, the year after NAA formed its Rocketdyne division, three new test stands were built to test SSFL-built missile engines for the newly created Atlas program. By the late 1950s over 18 test stands had been constructed in SSFL's Area I, II and III. By this time the facility was in 24-hour round-the-clock operation in Areas I, II, and III. Concurrently with the development of the rocket testing program at SSFL, NAA had begun to develop facilities for its Atomic Energy Research Division, which was created in 1948.

4.3 Santa Susana Field Laboratory, Area IV, Nuclear Research and Non-Nuclear Development Programs (1948-2008)

4.3.1 Historical Summary (1948-2008)

In 1948, a year after acquiring SSFL, the Atomic Energy Research Division (AERD), a division of NAA, was established at the Downey Facility (eight miles southeast of downtown Los Angeles) to carry out nuclear research and development for both the Federal government and commercial clients. Several years later, in 1953, NAA created Area IV at their SSFL facility as a center for research and development for AERD programs. By 1954, two experimental reactor programs, one for the development of sodium-cooled graphite-moderated reactors (the Sodium Reactor Experiment or SRE) and the other for low power homogeneous water boiler-type (KEWB) reactors were in the planning stages. In late 1955 NAA established Rocketdyne as a separate division for rocket development and Atomics International (AI) as a separate division for nuclear development. The charter of AI was to focus on nuclear research and development and was headquartered at a 55-acre complex located at the intersection of Vanowen Avenue and Canoga Avenue in Canoga Park. The AI headquarters later moved to a new facility on De Soto Avenue in Canoga Park in late 1959. The majority of AI's nuclear reactor testing operations, however, were conducted in Area IV of SSFL. In 1966, two new contracts with the Atomic Energy Commission (AEC) were initiated, resulting in two new sub-divisions being formed within AI. The Liquid Metal Engineering Center (LMEC) was to perform research and development on non-nuclear, liquid metal (sodium and NaK) systems and components in support of the AEC's Liquid Metal Fast-Breeder Reactor Program. ETEC operations in Area IV included seven liquid metal research programs, including the Sodium Pump Test Facility (1974-2001), the Small Component Test Loop (SCTL) (1958-1988), the Liquid Metal Development Lab 1 (LMDL-1) (1958-1982), Liquid Metal Development Lab 2 (LMDL-2) (1958-1992), Large Leak Test Rig (LLTR) (circa 1978-1982), Sodium Component Test Installation (SCTI) (1964-1995), and the Hydraulic Test Facility (HTF) (circa 1961- 1985). These facilities tested various components of sodium systems for the fast breeder reactor program, including sodium cold traps, steam generators designed by Atomics International, flow meters and sodium pumps designed by Atomics International and Japan. (http://etec.energy.gov/History/Sodium/Sodium-index.html).

The liquid metals research and development program operated by ETEC employed about 1,700 people at the height of its operations. The SPTF facility in Area IV was closed in 2001.

The Liquid Metal Information Center (LMIC) was to be the library/repository for all liquid metal data and documentation on research performed anywhere within the United States. The LMIC also supported the AEC's Liquid Metal Fast-Breeder Reactor Program. Both LMEC and LMIC were headquartered in a defined area within Area IV of SSFL. Within the LMEC area buildings were owned by the Federal government, while the property continued to be owned by NAA. In 1972, funding for the LMIC was terminated, and the organization ceased to exist. Recordkeeping continued under the management of LMEC, but was limited to that research conducted at LMEC only. In 1978, LMEC's name was changed once again, to the Energy Technology Engineering Center (ETEC). Work carried out at ETEC continued to remain focused on the development and testing of systems and components using liquid sodium but was also expanded to include other energy research including solar and fossil fuels and seismic systems (www.etec.energy.gov/ETEC-Background/About-ETEC.html).

The greatest period of activity at Area IV was between 1953 and the late 1960s (see Appendix A). It was during this period that employment at SSFL reached its peak of over 3,000 people. Employees worked around the clock in three shifts. In 1967, NAA and its Rocketdyne and AI Divisions merged with the Rockwell Corporation to form North American Rockwell, later renamed Rockwell International. After 1970, the number of projects undertaken in Area IV decreased. By the mid-1970s the decommissioning and dismantling of several of the experimental reactors had begun; research and development for the ETEC program also began to decline. As research programs were closed down, redundant facilities in Area IV were either re-adapted for other uses or demolished. As part of this process, radiological surveys were conducted as buildings, structures, and features were slated for decommissioning, demolition or re-use (documentation of these surveys can be found in the historic report prepared by Sapere in 2005 and at http://www.etec.energy.gov/Reading-Room/DDTable.html). In 1984, AI was merged into Rocketdyne to form a single division. Twelve years later, in 1996, the Boeing Company acquired Rocketdyne when it purchased the aerospace units of Rockwell International (formerly North American Rockwell). In 2006, the Boeing Company sold its Rocketdyne Division to Pratt-Whitney. The sale did not include the Santa Susana Field Laboratory. Today, decontamination and decommissioning continues at the Santa Susana Field Laboratory.

4.3.2 Civilian Reactor Programs at SSFL

Developing and Testing of Nuclear Reactors (1954-1980)

The overall goal of the civilian reactor program was to develop a reliable, efficient reactor for civilian applications under the aegis of the Atomic Energy Commission (AEC) and later the Department of Energy (DOE). The first reactors operated in Area IV were the Kinetics Experiment Water Boiler (KEWB) and L-85 reactor followed shortly by the Sodium Reactor Experiment (SRE).

1) Sodium Reactor Experiment (SRE) (1954-1964)

Construction of the SRE reactor complex began in 1954 and was completed in 1957 when the reactor became operational (Figure 8). The purpose of the reactor was to test the feasibility of generating power using high temperature sodium cooled, graphite-moderated reactors. Located in Area IV, SRE was composed of a cluster of buildings and structures surrounding the experimental reactor located in Building 4143. Building and structures at SRE were primarily built of prefabricated elements, with steel frames and metal siding and roofs, with concrete used for the construction of vaults and floor slabs. The reactor itself and other radioactive systems were located underground within thick steel pressure vessels and within thick reinforced concrete shielding walls. The SRE first became critical on April 25, 1957. On November 12, 1957, electricity generated by SRE was fed into the Moorpark city power grid. This was the first time in the United States that a nuclear reactor powered a civilian power grid. This was considered such a notable event that Edward R. Murrow's "See It Now" television program broadcast the one-hour experiment two weeks later to 20 million viewers in the United States.

"In July 1959 an accident occurred at the SRE involving flow blockage of the sodium in some of the reactor coolant channels. This resulted in the partial cladding melting of 13 of 43 reactor fuel assemblies and the release of some fission products that contaminated the primary reactor cooling system and some of the inside rooms of the facility. Reactor safety systems functioned properly, and the reactor was safely shut down. The primary pressure vessel, containing the reactor core and sodium coolant, remained intact. Under the oversight of the Atomic Energy Commission (AEC), contamination within the building was cleaned up, and the damaged reactor fuel assemblies removed. A second fuel loading was inserted, and operations continued in September 1960 until the reactor was shut down in February 1964 due to termination of the project.

A major portion of the radioactivity released from the fuel as a result of the cladding melting was contained in the sodium coolant, but some radioactive gases were collected in a hold-up tank. Over a period of two months these gases (28 curies of xenon-133 and krypton-85) were vented to the atmosphere with the approval and oversight of the AEC. The releases were well below those permitted by regulations in existence in 1959 and also by current regulations. Releases resulted in negligible off-site exposures. Additional detail on the SRE accident may be found at http://www.etec.energy.gov/History/Major-Operations/SRE-Accident.html"

2) Homogeneous Water Boiler-type Reactors (1956-1967)

At the same time that the SRE was initiated, work began on the construction of an experimental low-energy reactor whose primary function was training reactor operators and for conducting safety tests (Sapere 2005: 2-3). Housed in Building 4073, the Kinetics Experiment Water Boiler (KEWB) reactor was operated from 1956 to 1966. In 1956 Building 4093 was constructed to house the Water Boiler Neutron Source (WBNS), a low level reactor (the reactor was named AE-6) (Sapere 2005: 2-3).

The reactor's designation, which was later changed to L-85, operated until 1980. Both reactors used a water solution of enriched uranyl sulfate for fuel. The low power reactors were housed in pre-fabricated metal frame buildings surrounded by ancillary buildings and structures.

3) Organic Moderated Reactor (OMR) Critical Facility (1958-1967)

Located in Building 4009, the OMR facility was built as a low-power critical experiment facility to test reactors moderated and cooled by organic liquids. It supported the development and construction of the Piqua Nuclear Power Facility.

4) Sodium Graphite Reactor (SGR) Critical Facility (1958-1967)

This was a low-power experiment facility used to evaluate the operating characteristics of reactors with cores cooled by sodium and moderated with graphite. Located in Building 4009, it supported the development and construction of the Hallam Nuclear Power Facility.

5) Advanced Epithermal Thorium Reactor (1960-1974)

Located in Building 4100, this reactor was built to study and test reactor core configurations of thorium and uranium fueled reactors. The program supported the development of reactors for the Southwest Atomic Power Association; after 14 years of operation the program was terminated in 1974.

4.3.3 Non-Civilian Nuclear Reactor Research

The following section of the report summarizes the history of the Systems for Nuclear Power program at SSFL.

Systems for Nuclear Auxiliary Power (SNAP)

The Systems for Nuclear Auxiliary Power (SNAP) program originated in the postwar Cold War era when an intense rivalry for superiority in nuclear weapons and space technology developed between the United States and the Soviet Union. In an effort to discover the other nation's technological advances, the United States and the Soviet Union placed a high priority on the development of surveillance satellites for space. The SNAP program began in 1955 when the Atomic Energy Commission (AEC), at the request of the Department of Defense (DOD), agreed to study and develop a small nuclear power system capable of powering a satellite in space. The technical work on the program proceeded in an atmosphere of heightened tension and probably greater urgency after the Soviet Union launched its first two Sputnik satellites in 1957. Largely in response to the Russians' success, the United States established, in 1958, the National Aeronautics and Space Administration (NASA) to oversee all civilian aeronautical and space research programs (Planning and Human Systems Inc. 1987: 1-11).

The AEC divided the SNAP program into two research tracks involving differing nuclear technologies, the radioisotope thermoelectric generator (RTG) and the nuclear reactor. The

Martin Company was contracted to work on the RTG technology and the AI Division of NAA retained to develop nuclear reactor systems. The series of power plant devices developed under the RTG track were given odd numbers, while those developed under the nuclear reactor track were assigned even numbers. Martin Company's RTG technology was developed first and used initially, in 1961, to power the Navy's SNAP 3A navigational satellite, as well as several subsequent earth-orbiting satellites. The compact and durable power units developed by Martin Company proved more technically feasible and were used for the unmanned space program in the 1960s and 1970s, when they were used in the Apollo Lunar experiments, the Viking Mars Lander and the Pioneer and Voyager space probes to Jupiter and Saturn and beyond (Hyder 2000: 242-243). The only nuclear reactor power system produced by AI that was launched into space was the SNAP 10A in 1965 aboard an Agena spacecraft. The reactor was permanently shut down after 43 days of successful operation in orbit as a result of an electrical fault in the Agena spacecraft.

Between 1956 and 1971, the NAA's AI Division conducted research and tests on atomic electric devices suitable for use in space as part of the SNAP program at SSFL's Area IV. The reactors were uranium-zirconium hydride reactors using fully enriched uranium dispersed in fuel rods containing zirconium hydride. Seven SNAP uranium-zirconium hydride reactors using fully enriched uranium dispersed in fuel rods were developed and tested in Area IV between 1956 and 1971.

1. SNAP 2 Experimental Reactor (SER) operated in Bldg. 4010, 1959-1960.
2. SNAP 2 Development Reactor (S2DR) operated in Bldg. 4024, 1961-1962.
3. Shield Test Reactor (STR) operated in Bldg. 4028, 1961-1964.
4. Shield Test Reactor and Irradiation Reactor (STIR) operated in Bldg. 4028, 1964-1972.
5. SNAP 8 Experimental Reactor, operated in Bldg. 4010, 1963-1965.
6. SNAP 8 Development Reactor, operated in Bldg. 4059, 1968-1969.
7. SNAP 10A Flight System Reactor (S10FS3) operated in Bldg. 4024, 1965-1966.

Area IV also was the location of three SNAP development test facilities:

1. SNAP Critical Test Facilities, Bldg. 4373, 1957-1963, and Bldg. 4012, 1962-1968. Bldg. 4012 also housed critical assembly for the Heavy Metal Reflected Fast Spectrum Reactor, 1970-1972.
2. SNAP Flight System Critical Facility, Bldg. 4019, 1964-1965.
3. SNAP Transient Test Facility, Bldg. 4024, 1971.

4.3.4 Nuclear Support Operations in Area IV (1956-1988)

Management and operation of the various nuclear reactor programs in Area IV required a number of support facilities that were in operation primarily between 1956 and 1988. These support facilities included the following, the Radioactive Materials Handling Facility, the Fuel Storage Facility, Hot Laboratory, and the Nuclear Materials Development Facility. A summary of the history and activities in each of these areas is given below.

4.3.5 Radioactive Materials Handling Facility (RMHF) (1959- 2008)

The history of the facility has been presented in a document prepared in 2005, titled "*Historical Site Assessment of Area IV, Santa Susana Field Laboratory, Ventura County, California*" (Sapere, 2005), a subsequent radiological survey prepared in 2007 "*Combined Summary Report: Radioactive Materials Handling Facility Building Surveys*" (Cabrera Services, 2007) and in a document prepared by the United States Department of Energy: http://www.etec.energy.gov/History/Major-Operations. Construction of the facility began in 1959, when the Radioactive Materials Disposal Facility (RMDF) was established for the decontamination, receipt, and shipment of nuclear fuel and radioactive waste material used or generated by nuclear-related research and development in SSLF's Area IV. RMDF was subsequently renamed the Radioactive Materials Handling Facility (RMHF). As noted in the Cabrera report, the facility was not used for the disposal of radioactive waste, but instead, its function was the decontamination or temporary storage of radioactive material prior to its shipment offsite for disposal (Cabrera 2007: 2). Between 1959 and 1971, 13 buildings, structures and features were constructed at RMDF. Like almost all of the buildings in Area IV, the buildings at the RMHF facility are constructed of prefabricated metal with concrete slab foundations. Buildings used to store radioactive material featured reinforced concrete substructures (See Section 6.1 for a detailed description of the facility and its buildings, structures, and features). Today, the facility is used for packaging radioactive and mixed-waste for shipment offsite.

4.3.6 Fuel Storage Facility (1958-mid-1980s)

The Fuel Storage Facility was located in Building 4064. It was built in 1958 as a secure facility for the storage of non-irradiated fissionable fuel, primarily enriched uranium and plutonium generated or used by the experimental reactors and radiological research and development programs in Area IV (Sapere 2005: Vol. I, 2-10). The facility was decommissioned in the 1980s, and its contents were removed in 1993. Following decontamination, the building was demolished in 1997.

4.3.7 Hot Laboratory (1959-1988)

The Hot Laboratory was constructed in 1958 to remotely examine experimental reactors' fuel assemblies (Sapere 2005). Located in Building 4020, the Hot Laboratory was a 16,000-square-foot building with hot cells shielded with concrete. While it was primarily used to service the approximately 17 experimental reactors (including the SNAP reactors) in Area IV, the Hot Laboratory was also used to process and examine radioactive fuel from other DOE reactors located at other DOE facilities in the United States. The building has been demolished.

4.3.8 Nuclear Materials Development Facility (NMDF) (1967-1979)

Located in Building 4055, this facility was built in 1967 for development work involving plutonium and supported several research programs (Sapere Vol. 1: 2-10). The facility was decommissioned in 1987.

4.3.9 Non-Nuclear Energy Research and Development (1966-1998)

In 1966, the AEC established the Liquid Metal Engineering Center (LMEC) for the research and development of non-nuclear liquid metal components and systems. This program supported nuclear reactor research and development. Later renamed the Energy Technology Engineering Center (ETEC), this facility performed most of the non-nuclear R&D activities that supported AEC's effort to design and construct the Fast Flux Test Facility at Hanford, Washington (1966-1978). In addition, the facility supported efforts to design and develop the first full-size breeder reactor at Clinch River, Tennessee (1978-1984), as well as other DOE energy development programs, including molten-salt technology; Research and Development support for the operation of a 6 Megawatt thermal atmospheric fluidized bed combustion facility located at the thermodynamics laboratory in El Segundo; the operation of a solar concentrator facility; and the development and testing of the Kalina Cycle Power Plant (1984-1998).

5.0 DESCRIPTION OF RESOURCES IN THE SANTA SUSANA FIELD LABORATORY AREA IV

As noted above, SSFL is divided into four areas, Areas I, II, and III, and IV. Prior to deactivation of the Santa Susana Field Laboratory, Areas I through III were devoted to administration and rocket testing, carried out by NAA's Rocketdyne Division, while Area IV was dedicated to nuclear-related research and development. Delineated on the east by its boundary with Area III, on the north by a series of rocky outcroppings that overlook Simi Valley to the north and on the south and west by a series of hills, Area IV, unlike most of the SSFL site, comprised a fairly large area of level ground. Access to Area IV was via two paved roads that linked the facility with Areas I through III to the east. Another road, extending west from Area IV, provided emergency access to and from the facility. The placement of reactors, support facilities, and laboratories within Area IV was predicated by operational needs rather than a master plan for the site's development. In order to provide consistency between previous reports and studies of Area IV, the organizational framework found in the Historical Site Assessment prepared by Sapere Consulting Inc. and Boeing in 2005, which divided Area IV into 32 areas, will be followed (see Appendix C for location maps and images). Resources surveyed and evaluated for this survey are listed in Table 1.

(see Table 1, next page)

Table 1: SSFL, Area I: Surveyed Resources				
Building/Site	Original Name	Area (from Sapere 2005)	Primary Association	Demolished/Removed
4003	Engineering Test Building	G	Sodium Reactor Experiment (SRE) program	Yes (1998)
4005	Uranium Carbide Fuel Pilot Plan	O	Organic Moderated Reactor Experiment (OMRE) and Piqua programs	Yes (1996)
4006	Molten Salt Test Facility	O	OMRE and Piqua programs	No
4007	Sodium Storage Building	Q	Support facility	Yes (1996)
4008	Flammable Material Storage Building	Q	Support facility	Yes (1996)
4009	Organic Moderated Reactor & Sodium Graphite Reactor Building	CC	OMR and Sodium Graphite Reactor Experiment (SGR) reactors	No
4010	Systems for Nuclear Auxiliary Power (SNAP 8) Building	L	SNAP program	Yes (1978)
4011	Warehouse Support Building	R	Support facility	No
4012	SNAP Critical Test Facility #2	L	SNAP program	Yes (1978)
4013	Thermal Transient Test Facility	L	SNAP program	Yes (2003)
4014	Sodium Storage Building	E	LMEC program	Yes (2003)
4015	Construction Staging Storage	W	Support facility	Yes (2004)
4019	SNAP Program Critical Acceptance Test Building	L	SNAP program	No
4020	Rockwell International Hot Laboratory	AA	SRE, SGR, Piqua, and SNAP programs	Yes (1996)
4021	RMHF Waste Decontamination & Packaging	I	RMHF facility	No
4022	RMHF Radioactive Vault Storage	I	RMHF facility	No
4023	Corrosion Test Loop	J	SNAP program	Yes (1999)
4024	Development Test Laboratory	J	SNAP program	No
4025	Sodium Component Test Installation Maintenance & Storage	J	SNAP program	Yes (1999)
4026	Large Component Test Loop Control Building	P	SRE program	Yes (1999)
4027	SNAP Engineering Development Laboratory 2	J	SNAP program	Yes (2003)
4028	Shield Test Irradiation Reactor (STIR) Test Facility	K	STIR program	Yes (1989 & 1998)
4029	Radioactive Measurement Facility	E	Support facility	No
4030	AE-6, Counting Room & Workshop	E	SNAP program	Yes (1999)
4032	Space Environmental Test Facility	J	SNAP program	Yes (2003)
4033	Skid Shack	E	Support facility	Yes (late-1970s)
4034	RMHF Office Building	I	RMHF facility	No
4035	Office Annex	E	AE-6 Reactor program	Yes (1999)
4036	SNAP Office Building	J	SNAP program	Yes (1999)
4037	SNAP Office Building	J	SNAP program	Yes (1999)
4038	SNAP Office Building #2	V	SNAP program	No
4039	SNAP Administration Building	V	SNAP program	Yes (2003)
4040	Protective Services Control Center	D	Support facility	Yes (1997)
4041	SRE Component Storage	G	SRE program	Yes (1998)
4042	SNAP Shield Casting Facility and Liquid Metal Fast Breeder Reactor	J	SNAP and Liquid Metal Fast Breeder Reactor (LMFBR)	Yes (2003)
4043	Skid Shack	E	Support facility	Yes (late-1970s)
4044	RMDF Clean Shop	I	RMHF facility	No
4046	Material Office Annex	E	Support facility	Yes (c. 1981)

Table 1: SSFL, Area IV: Surveyed Resources
continued:

4048	Organic Moderated Reactor	N	OMRE program	Yes (mid-1990s)
4049	PDU Instrumentation Unit	N	OMRE program	Yes (mid-1990s)
4053	Fire Department Service Building	E	Support facility	Yes (late 1970s)
4055	Nuclear Materials Development Facility	X	Nuclear Materials Development Facility (NMDF)Fast Flux Test Facility	No
4056	Landfill	V	Support facility	No
4057	Launch Handling & Mobile Equipment Development Building	V	LMEC	No
4059	SNAP 8 Development Reactor Building	M	SNAP program	Yes (2004)
4062	Energy Technology Center Instrumentation	U	SNAP and ETEC program	Yes (1999)
4063	Electronics Workshop	F	Support facility	Yes (early 1970s)
4064	Fuel Storage Facility	E	SNAP program	Yes (1997)
4065	SNAP Thermoelectric Converter Building	U	SNAP program	Yes (1999)
4066	Instrument Repair & Calibration Building	U	SNAP program	Yes (1999)
4073	Reactor Experiment Kinetics Test Building	H	Kinetics Experiment Water Boiler (KEWB)	Yes (1975)
4074	Storage Building	H	KEWB program	Yes (1980)
4075	Contaminated Equipment Storage Building	I	RMHF facility	No
4083	Reactor Kinetics Control Building	H	KEWB reactor program	Yes (1980)
4093	AE-6 Reactor	H	AE-6 reactor program	Yes (1995)
4100	Advanced Epithermal Thorium Reactor	BB	AETR reactor program	No
4103	Reactor Kinetics Lab and Storage	H	KEWB reactor program	Yes (1980)
4113	Guard Shack	A	Support facility	Yes (before 2005)
4114	Decontamination Trailer	A	Support facility	Yes (c. 1992)
4123	KEWB Waste Storage Building	H	KEWB Reactor	Yes (1975)
4133	Hazardous Water Treatment Facility	G	Support facility	No
4143	Sodium Reactor Experiment Reactor Building	G	SRE program	Yes (1999)
4153	Sodium Service Building	G	SRE program	Yes (before 1977)
4155	Control Center, Guard Shack	X	NMDF: Fast Flux program	No
4163	Site Service Building	G	SRE program	Yes (1999)
4171	X-Ray Building	R	Support facility	Yes (2000)
4172	X-Ray Building	R	Support facility	Yes (2000)
4173	Sodium Storage Pad/gammagraph building	Y	Support facility	No
4183	Fire Pump Building	G	SRE program	Yes (1999)
4184	SRE Battery Room & Diesel Generator Canopy	G	SRE program	Yes (before 1975)
4185	Steam Generator Building	G	SRE program	Yes (early 1970s and 1998)
4226	SCTL Motor Generator Building	P	SCTL program	Yes (1998-99)
4228	Electrical Substation	L	SCTL program	Yes (2003)
4273	Protective Clothing Storage Building	F	Support facility	Yes (1976)
4283	Protective Clothing Storage Building	F	Support facility	Yes (1976)
4293	Construction Shack/Time Clock	P	Support facility	Yes (1977)
4310	Portable Change Room	P & L	(Large Component Test Loop (LCTL) (LMEC)	Yes (c. 1973)

Table 1: SSFL, Area IV: Surveyed Resources
continued:

4313	Conservation Shack	A	Support facility	Yes (after 2005)
4314	Large Leak Injector Devise	DD	nuclear-related programs	Yes (late 1970s)
4316	Maintenance Skid Shack	F	Support facility	Yes (1976)
4317	Pistol Range Canopy	DD	Support facility	Yes (date unknown)
4318	Pistol Range Canopy	DD	Support facility	Yes (date unknown)
4320	Fuel Oil Control Building	C	SCTI program	Yes (1999)
4323	Guard Building	AA	SRE, SGR, Piqua and SNAP programs	Yes (1996)
4333	Time Clock	E	SRE	Yes (before 2005)
4334	Kalina Control Room	P	Kalina facility	Yes (2003)
4335	Kalina Turbine Generator Room	P	Kalina facility	Yes (2003)
4343	Time Clock	W	Support facility	Yes (1974)
4353	Organics Reactor Development Building	Z	OMRE program	Yes (late 1970s & 2001)
4354	Central Element Test Structure	P	Fast Breeder Reactor program	Yes (mid-1980s)
4355	Sodium Component Test Installation Control Center	P	Sodium Component Test Installation (SCTI)	Yes (2003)
4356	Sodium Component Test Installation	P	SCTI program	Yes (2002)
4357	Heat Transfer Loop Control Building	P	Later part of LMEC program	Yes (2002)
4358	Organics Reactor Development Building	P	Organic Reactor program	Yes (2003)
4359	Compressor Building	P	SCTI facility	Yes (2002)
4360	Chemical Storage Building	P	SCTI facility	Yes (1999)
4361	SCTI Hazardous Material Storage	P	SCTI facility	Yes (2003)
4362	Water Sampling Enclosure	P	SCTI facility	Yes (2003)
4363	Mechanical Component Development & Counting Building	Y	SRE program	Yes (2001)
4373	SNAP Critical Facility	W	SNAP program	Yes (1999)
4374	Test Loop Enclosure	W	SNAP program	Yes (1996)
4375	Control Shelter Building	Y	SNAP program	Yes (1999)
4383	Instrumentation Building	S	LMEC program	Yes (early 1980s)
4392	SCTI Electrical Equipment Building	P	SCTI and Kalina programs	Yes (c. 2005)
4393	Cooling Tower	S	LMEC program	Yes (date unknown)
4402	MHD Experiment Building	O	MHD Experiment	Yes (date unknown)
4403	Traffic Dispatch	R	Support facility	No
4413	Uninterruptible Power Supply	L	SNAP program	Yes (2003)
4425	Solar Concentrator Facility	DD	Solar energy program	No
4426	SCTL Motor Generator Building	P	SRE	Yes (1999)
4453	AE-6 Fuel Handling Building	H	AE-6 Reactor	Yes (1980 and 1995)
4457	Pump Bearing Test Structure	P	SCTI Facility	Yes (superstructure early 1990s & foundation 1999)
4459	Uninterruptible Power Supply	M	SNAP and ETEC programs	Yes (2003)
4461	SPTF Motor Generator Building	T	SPTF program	Yes
4462	SPTF Building	T	SPTF program	No
4463	Sodium Cleaning & Handling Facility	T	SPTF program	Partially demolished in 2007
4468	Holdup Tank	AA	SRE, SGR, Piqua and SNAP programs	Yes (1997)
4473	Hydraulic Test Instrumentation Building	Y	Hydraulic Test Facility	Yes (2003)
4478	CDHC Office Support Trailer	P	SCTI program	Yes (c. 2005)
4482	Government Project Office	S	Support facility	Relocated offsite in 2000

Table 1: SSFL, Area IV: Surveyed Resources continued:				
4483	LMEC Office Trailers	S	LMEC program	Relocated offsite in 2000
4484	Restroom Trailer	S	LMEC program	Relocated offsite in 2000
4485	LMEC Office Trailer	S	LMEC program	Relocated offsite in 2000
4486	LMEC Office Trailer	S	LMEC program	Relocated offsite in 2000
4487	ETEC Engineering Building	S	ETEC program	Yes (2004)
4500	Gas Bottle Dock	R	Support facility	Partially demolished by 1998
4501	Parking Lot	Q	Support facility	No
4502	Parking Lot	P	OMR & Piqua programs	Yes (c. 2005)
4504	Classified Scrap & Salvageable Steel Material Storage Area	K	STIR program	No
4505	Storage Area	G	Support facility (SRE)	Yes (before 1980)
4506	Parking Lot	O	OMR and Piqua experiment	No
4509	Parking Lot	CC	OMR and SGR programs	No
4510	Parking Lot	BB	AETR reactor program	Yes (after 1986)
4511	Parking Lot	A	Support facility	Yes (date unknown)
4513	Parking Lot	E	Support facility	No
4514	Sodium-Water Reaction Test Center	DD	Various nuclear-related programs	Yes (late 1970s)
4520	Parking Lot	AA	SRE, SGR, Piqua and SNAP programs	Yes (1996)
4521	Parking Lot	R	Non-nuclear programs	Yes (mid-1960s
4523	Parking Lot	H	KEWB facility	Yes (date unknown)
4524	Parking Lot	J	SNAP program	Yes (mid-1960s)
4535	Parking Lot	E	Support facility	No
4536	Parking Lot	J	SNAP program	No
4537	Parking Lot	J	SNAP program	No
4538	Parking Lot	S	LMEC program	Yes (2000)
4540	Parking Lot	D	Support facility	No
4553	Parking Lot	Z	OMRE program	No
4563	Storage Yard	I	RMHF facility	No
4573	Parking Lot	W	Support facility	Yes (1974)
4575	Parking Lot	Y	SNAP program	Yes (2003)
4583	New Salvage Yard/Old ESG Storage Yard	B &/C	Support facility	No
4606	Sodium Laboratory Instrument Building A	O	OMRE and Piqua programs	Yes (date unknown)
4607	Sodium Laboratory Instrument Building B	O	OMRE and Piqua programs	Yes (date unknown)
4611	Paint Spray Canopy	R	Support facility	Yes (between 1981 and 2005)
4612	Maintenance Building	R	Support facility	Yes (c. 2000)
4614	Drainage Sump	I	RMHF facility	No
4615	Combustion Test Facility	O	LMEC	Yes (c. 2005)
4616	Cooling Tower	O	MORE and Piqua programs	No
4621	RMHF Equipment Storage	I	RMHF facility	No
4622	RMHF Counting Building	I	RMHF facility	Yes (c. 1976)
4623	Guard Shack	A	Support facility	Yes (before 2005)
4624	Fire Truck Canopy	D	Support facility	Yes (1997)
4625	Non-Nuclear Component Storage Building	J	SNAP program	Yes (2003)
4626	Equipment Storage Building	V	SNAP program	Yes (2003-2004)
4633	Reactor Cooling Water Pad	H	KEWB program	Yes (late 1980s)

Table 1: SSFL, Area IV: Surveyed Resources continued:				
4636	Parking Area, Time Clock & Guard Shack	J	SNAP program	Yes (unknown)
4641	Shipping & Receiving Building	E	Support facility	Yes (2004)
4643	KEWB Exhaust Building	H	KEWB program	Yes (1975)
4653	Interim Radioactive Storage Vault	G	SRE program	Yes (before 1978)
4654	Interim Storage Facility	G	SRE program	Yes (1985)
4656	SCTI Cooling Stacks	P	SCTI program	Yes (2002)
4657	Guard Shack	P	OMRE and Piqua programs	Yes (unknown)
4658	RMHF Guard Shack	I	RMHF facility	No
4662	Small Parts Cleaning Pad	T	SPTF program	Yes
4663	RMHF Storage Area	I	RMHF facility	Yes (early 1980s)
4664	RMHF Low Level Waste Processing	I	RMHF facility	Yes (early 1980s)
4665	RMHF Oxidation Facility	I	RMHF facility	No
4683	Electrical substation	G	SRE program	Yes (1999)
4684	Steam Generator Pad	G	SRE program	Yes (late 1970s)
4686	Temporary Hot Waste Storage Facility	G	SRE program	Yes (late 1970s)
4687	Loading Dock	G	SRE program	Yes (1998)
4688	RMHF Auxiliary Skid Shack	I	RMHF facility	No
4689	Interim Storage of Contaminated Items	G	SRE facility	Yes (late 1970s)
4693	Electrical Substation	G	SRE program	Yes (1999)
4695	SRE Cold Trap Vault	G	SRE program	Yes (late 1970s)
4701	Water Tank	FF	Support facility	No
4702	Water Tank	FF	Support facility	No
4703	Water Tower	G	SRE program	Yes (destroyed by fire in 1978)
4704	Main Electrical Building	O	Support facility	Yes (2004)
4705	Electrical Substation	O	Organic Moderated Reactor Experiment (OMRE) and Piqua programs	Yes (1996)
4706	Electrical Substation	O	Organic Moderated Reactor Experiment (OMRE) and Piqua programs	No
4707	Electrical Substation	W	Support Facility	Yes (2003)
4708	Electrical Substation	L	SCTI Co-Generation program	Yes (2003)
4709	Electrical Substation	CC	OMR and SGR reactor programs	No
4710	SCTI Power Pak Cooling Tower	L & CC	SCTI Co-Generation program	Yes (2003)
4711	Electrical Substation	R	Support Facility	Yes
4713	Electrical Substation	L	SNAP program	Yes (2003)
4714	Research & Development Workshop	G & O	SRE program	Yes (mid-1970s)
4719	Electrical Substation	L	SNAP program	No
4720	Electrical Substation	AA	SRE, SGR, Piqua, SNAP programs	Yes (1996)
4733	Sodium Cleaning Pad	G	SRE program	Yes (early 1980s)
4735	Fuel Tank	R	SCTI program	Yes (1999)
4724	Hot Oil Sodium Cleaning Facility	G	SRE program and SCTI Co-Generation program	Superstructure moved (pre-1978), foundation demolished 1998
4725	Electrical Substation	J	SNAP and SRE programs	Yes (after 2005)
4726	Electrical Substation	P	SRE program	Yes (1998)
4727	Electrical Substation	J	SNAP program	Yes (2003)
4730	Isotope System Test Devise Control	DD	Various nuclear-programs	Yes (mid-1970s)

Table 1: SSFL, Area IV: Surveyed Resources continued:				
4731	Fuel Oil Storage Tank	C	Support facility	Yes (1999)
4732	Fuel Oil Storage Tank	C	Support facility	Yes (1999)
4733	Sodium Cleaning Pad	G	SRE program	Yes (early 1980s)
4735	Fuel Tank	R	SCTI program	Yes (1999)
4742	Electrical Substation	J	SNAP and LMFBR programs	Yes (1999)
4743	Tetralin in Heat Exchanger	G	SRE program	Yes (mid-1970s)
4753	Primary Fill Tank Vault	G	SRE program	Yes (late 1980s)
4755	Electrical Substation	X	NMDF: Fast Flux Test Facility	No
4756	Electrical Substation	P	SCTI program	Yes (2002)
4757	Electrical Substation	V	SNAP program	No
4759	Electrical Substation	M	Energy Technology Engineering Center (ETEC) program	Yes (2004)
4760	Electrical Substation	T	SPTF program	No
4762	Electrical Substation	U	SNAP and ETEC programs	Yes (1999)
4763	Electrical Substation	F	See Building 4063	Yes (c. 1976)
4773	Drainage Control Drain & Retention Pond	G	SRE program	Yes (after 2005)
4780	Electrical Substation	T	SPTF program	No
4783	Electrical Substation	E	LMEC program	Yes (2003)
4784	Restroom Building	S	See Buildings 4482 -4486	Yes (2000)
4793	KEWB Electrical Building	H & N	KEWB reactor program	Yes (1975)
4800	Electrical Substation	BB	AETR program	Yes (1983)
4805	Time Clock	P	SRE	Yes (1999)
4806	Time Clock	P & U	SNAP, OMRE and Piqua programs	Yes (unknown)
4807	Electrical Equipment Pad	L	SCTI Co-Generation program	Yes (2003)
4808	Electrical Equipment Pad	L	SCTI Co-Generation program	Yes (2003)
4809	Air Blast Heat Exchanger Pad	L	SCTI Co-Generation program	Yes (2003)
4811	Electrical and Equipment Pad	K	Shield Test Irradiation Reactor (STIR) program	Yes (1989 & 1998)
4814	Large Leak Injector Device Building	DD	Various nuclear-related programs	Yes (late 1970s)
4816	Hydrogen Recombiner Test Building	O	OMRE and Piqua programs	Yes (date unknown)
4820	Isotope System Impact Test Device	DD	Various nuclear related programs	Yes (mid-1970s)
4823	Time Clock	L & Q	SNAP program	Yes (c. 2003)
4826	SCTL Test Facility	P	SCTL Test Facility	Yes (1998)
4836	Time Clock	J	SNAP program	Yes (before 2005)
4848	Concrete Pad	W	SNAP program	Yes (1999)
4853	Concrete Pad	Z	OMR program	Yes (2001)
4854	Radiation Fuel Gauge Test Structure	Z	Various reactor test programs	Yes (late 1990s)
4863	Hydraulic Test Loop	Y	Hydraulic Test Facility	Yes (2003)
4864	Mechanical Equipment Slab	E	SRE	Yes (1997)
4865	Sodium Storage Pad	Y	Support facility	Yes
4873	Fuel Rod Test Tower & Pad	Y	Hydraulic Test Facility	Yes (2003)
4874	Control Rod Test Tower & Pad	Y	SNAP and Piqua programs	Yes (late 1970s)
4875	Pad & Creep Loop Tower	Y	SNAP and Piqua OMR programs	Yes (early 1970s)
4883	Electrical Substation	S	LMEC programs	Yes (1980s)
4885	Pistol Range	EE	Support facility	Yes (early 1980s)

Table 1: SSFL, Area IV: Surveyed Resources continued:				
4886	Sodium Burn Pit	EE	SRE, SGR, Piqua and SNAP programs	Yes (1997)
4893	Concrete Pad	H	AE-6 reactor program	Yes (1999)
4894	Concrete Pad	G	SRE program	Yes (1999)
4895	Concrete Pad	G	SRE program	Yes (1999)
4896	Concrete Pad	G	SRE program	Yes (1999)
4897	Concrete Pad	G	SRE program	Yes (1999)
4898	Concrete Pad	G	SRE program	Yes (1999)
4924	Electrical Substation	J	SNAP program	Yes (1999)
4925	Mechanical Equipment Slab	J	SNAP program	Yes (1999)
4926	SRE Mock-up Equipment Area	J	SRE program	Yes (1999)
4927	Nitrogen Storage Tank	J	SNAP program	Yes (1970s)
4928	Cooling Tower	J	SNAP program	Yes
Unnumbered Facilities				
Old Conservation Yard	Storage	A	Support facility	Yes (date unknown)
17th Street Drainage	Drainage channel and holding pond	Q	Support facility	No

5.1 Group A (Old Conservation Yard)

5.1.2 Historical Overview

Group A was composed of a number of support facilities, including a parking lot, guard building, and the Decontamination Trailer, all of which were part of the Old Conservation Yard located at the intersection of 3rd Street and East Street. All buildings, structures, and features associated with Area A have since been dismantled. Composed of an unfenced three-acre tract, the Old Conservation Yard was used to store barrels of salvageable material from nuclear related facilities at SSFL (Sapere 2005: A-7). The facility was in operation between the late 1960s and circa-1977. After 1977 the Old Conservation Yard was cleaned and converted to a material storage yard and later transformed into a parking area. The Decontamination Trailer, which was installed in 1981 to house a radiological decontamination station, was never used for its intended purpose and subsequently was demolished in circa-1992. The asphalt-paved parking area was used by personnel working in the Old Conservation Yard. Two small guard shacks (Building 4113 and Building 4623) were located on the south side of E Street.

5.1.3 Buildings, Structures and Features

Building 4114 (Decontamination Trailer)

Building 4114 was a trailer located on the south side of E Street across the road from Parking Lot 4511. It was installed in circa-1981 and was demolished in 1992 (Sapere 2005: 37). The trailer was used a decontamination station. It does not appear to have been used for its stated purpose.

Site 4511 (Parking Lot), Guard Shacks (Building 4113 & Building 4623)

Located on the north side and south sides of E Street, the paved parking lot was used by personnel working in the Old Conservation Yard (Sapere 2005: 39). Constructed sometime before 1962 the parking lot is no longer in use. The guard shacks were removed sometime before 2005.

Table 2: Group A					
Building Number	**Original Name**	**Use**	**Construction Date**	**Extant or Demolished**	**Notes**
4114	Decontamination Trailer	Decontamination Facility	1981	Demolished (c. 1992)	
4511	Parking lot	Parking Area for Old Conservation Yard	c.1960s	Demolished	Included Building 4113 (guard shack) and Building 4623 (guard shack).
No Number	Old Conservation Yard	Barrel Storage Yard	c. 1960s	Dismantled in circa-1977	Included Building 4313 (guard shack)

5.2 Group B, Site 4583 (New Salvage Yard)

5.2.1 Historical Overview

The New Salvage Yard was opened in 1977 to replace the Old Conservation Yard, which was closed in 1977. The fenced half-acre site was located south of the intersection of E Street and 3rd Street. Site 4583 was used only for the storage of non-radioactive material (Sapere 2005: B-1). The facility is no longer in use.

5.2.2 Buildings, Structures and Features

Site 4583 (New Salvage Yard)

A fenced half-acre area used to store non-radioactive material. It is no longer in use.

Table 3: Group B New Salvage Yard					
Building Site Number	**Original Name**	**Use**	**Construction Date**	**Extant or Demolished**	**Notes**
Site 4583	New Salvage Yard	Storage yard	1977	No longer in use	

5.3 Group C (Old ESG Storage Yard)

5.3.1 Historical Overview

Located adjacent to the northeast corner of Area IV and North C Street, the Old ESG Storage Yard was a three-acre site used to store materials originating from nuclear-related projects from the early 1950s until circa-1977. Subsequent to its closure, the facility was cleaned and re-used as the Fuel Oil Control Property. A number of buildings and structures, including the Fuel Oil Control Building (Building 4320), a one-million gallon Fuel Oil Storage Tank (Building 4731), and a second one-million gallon Fuel Oil Storage Tank (Building 4732), were constructed when the former ESG facility was converted into a fuel storage facility. The fuel tanks and other facilities were demolished in 1999 (Sapere 2005: C-3).

5.3.2 Buildings, Structures and Features

Site 4583 (ESG Storage Yard)

A fenced area constructed in the early 1950s for storage of nuclear-related material from Area IV. It was removed in 1999.

Building 4320 (Fuel Oil Control Building)

This small facility houses four fuel pumps; it does not appear to have been enclosed. Constructed as part of the fuel storage facility in 1977, it was demolished in 1999.

Building 4731 (Fuel Oil Storage Tank)

This cylindrical, above-ground metal tank, which had a capacity of 1.5 million gallons, was constructed in 1977 to store fuel oil (Sapere 2005: 63 and ETEC Document GEN-SP-00051, "Removal of Fuel Oil Storage and Distribution System," November 2, 1998). It was demolished in 1999.

Building 4732 (Fuel Oil Storage Tank)

This cylindrical, above-ground tank was constructed in 1977 to store fuel. It was demolished in 1999.

(see Table 4, next page)

Table 4, Group C Old ESG Storage Yard					
Building Site Number	**Original Name**	**Use**	**Construction Date**	**Extant or Demolished**	**Notes**
Site 4583	Old ESG Storage Yard	Store material from nuclear-related projects in Area IV	Early 1950s	Demolished (1999)	Converted into Fuel Oil Control Property
Building 4320	Fuel Oil Control Building	Housed four fuel pumps	1977	Demolished (1999)	
Building 4731	Fuel Oil Storage Tank	Stored 1.5 million gallons of fuel	1977	Demolished (1999)	
Building 4732	Fuel Oil Storage Tank	Stored 86,000 gallons of fuel	1982	Demolished (1999)	

5.4 Group D (Protective Services Control Center)

5.4.1 Historical Overview

Group D was comprised of an office/laboratory building (Building 4040), free-standing steel canopy (Building 4624) and a parking lot (Site 4540). Use of the facility was terminated in the early 1980s. The laboratory was demolished in 1997.

5.4.2 Buildings, Structures and Features

Building 4040 (Protective Services Control Center)

Constructed in 1960, Building 4040 was a prefabricated metal building with a concrete slab foundation located on G Street. The building housed a health physics counting laboratory that used sealed check sources and a low-background alpha-beta counting system to analyze air and wipe samples for radiological contamination (Sapere 2005: D-1). Over the years Building 4040 was used for a number of functions, including Facilities and Industrial Engineering, Office Supply Storage, and ETEC Equipment Storage. The building was demolished in 1997.

Building 4624 (Fire Truck Canopy)

A steel canopy (Building 4624) attached to the north end of Building 4040 was constructed by 1962 when it appears on an industrial planning map (Sapere 2005: D-1). While the building is identified as a fire truck canopy there is no information that it functioned as such. It was demolished sometime in the late 1960s.

Site 4540 (Parking Lot)

Located adjacent to Building 4040, this parking area was constructed in circa-1960. It is no longer in use.

(see Table 5, next page)

Table 5: Group D					
Building Site Number	**Original Name**	**Use**	**Construction Date**	**Extant or Demolished**	**Notes**
Building 4040	Protective Services Control Center	Laboratory	1960	Demolished (1997)	
Building 4624	Fire Truck Canopy	Vehicle canopy	c. 1962	Demolished (1997)	
Site 4540	Parking lot	Employee parking	c. 1960	No longer in use	

5.5 Group E

Group E was composed of thirteen buildings, a parking lot, and two storage areas located between E Street and G Street; all of the buildings were constructed between 1958 and 1978. The majority of the buildings were associated with the storage/use of radioactive source materials and metallic sodium from the Sodium Reactor Experiment program. Building 4030 housed an accelerator associated with the SNAP program. With the exception of Building 4029, the buildings, structures, and features in Group E have been either demolished or removed.

Table 6: Group E					
Building Site Number	**Original Name**	**Use**	**Construction Date**	**Extant or Demolished**	**Notes**
Building 4014	Sodium Storage Building	Storage facility for metallic sodium	c. 1978	Demolished (2003)	Includes Building 478, Electrical Substation
Building 4029	Radioactive Measurement Facility	Storage facility for radioactive source materials for calibration instruments	1959	Extant	Below grade concrete structures removed in 1988
Building 4030	AE-6, Counting Room and Workshop	Research of small accelerator neutron sources	1958	Demolished (1999)	Includes Building 4035, office
Building 4046	Material Office Annex	Offices	1977	Demolished (circa-1981)	
Building 4053	Fire Department Service Building	Service building for fire department	Before 1962	Demolished (late 1970s)	
Building 4064	Fuel Storage Facility	Store non-irradiated fissionable nuclear material	1958 and 1963	Demolished (1997)	
Site 4513	Parking Lot	Parking area for Building 4641	c.1967	Extant	
Site 4535	Parking Lot	Parking area for Building 4641 and Building 4030	c.1967	Extant	Currently used for storage
4641	Shipping and Receiving building	Shipping and receiving of material, including radioactive material	1964	Demolished (2004)	

5.5.1 Buildings, Structures and Features

Building 4014 (Sodium Storage Facility) and Building 4783 (Electrical Substation)

Located east of the intersection of 10th and E streets, Building 4014 was a 2,100-square-foot, prefabricated metal building set on a concrete foundation. Constructed in crirca-1978, the building was used to store metallic sodium. An electrical substation (Building 4783) that serviced Building 4014 was constructed in circa-1978. Both buildings were demolished in 2003.

Building 4029 (Radioactive Measurement Facility)

Building 4029 is an 800-square-foot, prefabricated metal building located at the south end of 10th Street. Constructed in 1959, the building is surrounded by asphalt paving and a chain-link fence. The steel frame building is capped by a moderately pitched side gable roof, and its walls and roof are sheathed in metal siding; the west elevation, which faces towards 10th Street, is its primary façade. At the south end of the elevation sliding bay doors are lit with a six-light metal frame window. The bay door is flanked on the north by a set of double doors sheathed in corrugated metal. The south elevation has a single entrance door, flanked by two multi-light metal frame windows. The interior of the building is a single bay with a concrete floor. A series of three below-grade wells, used to store radioactive calibration sources, were set in the floor. The largest well was a 10-foot-deep, concrete-sheathed enclosure that contained three separate galvanized pipe casings for source storage; a second 10-foot-deep well, encased in concrete and lead, was used for instrument calibration, and a smaller three-foot by two-foot deep concrete pit was used for source storage (Sapere 2005: E-5). Building 4029 was constructed in 1959 to store radioactive source material used for instrument calibration. In 1974 radioactive source materials were removed from the building. In 1988 the building's storage wells (enclosures) were removed. Subsequently, the building was used as a hazardous waste management facility.

Building 4030 (AE-6 Count Room and Workshop) and Building 4035 (Office Annex)

Located west of the intersection of E and 10th streets, the original wing (then Building 4035) of this prefabricated metal building was constructed in 1958 as a research facility for a small accelerator neutron source (Sapere 2005: E-9). In 1960 the building was enlarged, and concrete walls shielding the north and south elevations were added so the building could house a Van De Graf accelerator that was part of the SNAP program (Sapere 2005: E-9). The accelerator was removed in 1966, and the building was later used as a storage and warehouse facility. A small building used as an office was located adjacent to Building 4030. Both buildings were demolished in 1999.

Building 4046 (Material Office Annex)

Located just south of Building 4030, Building 4046 was a prefabricated metal building set on a concrete foundation. Constructed in circa-1977, the building, which housed offices, was demolished in 1981 (Sapere 2005: E-15).

Building 4053 (Fire Department Service Building)

Located southeast of the intersection of E and 10th streets, this small building housed the fire station. It was demolished in the late 1970s (Sapere 2005: E-17).

Building 4064 (Fuel Storage Facility)

Located northwest of the intersection of G and 8th streets, the Fuel Storage facility was initially constructed in 1958 with a wing added in 1963. The purpose of the facility was to provide secure storage for non-irradiated fissionable nuclear material in concrete vaults (Sapere 2005: E-19). Use of the facility ended in 1993; four years later, in 1997, the building was demolished (Sapere 2005: E-19).

Site 4513 (Parking Lot) and Time Clock (Building 4333)

Located between Building 4064 and Building 4030, the parking lot was constructed in circa-1967, for use of personnel working in Buildings 4064, 4641 and 4030 (Sapere 2005: E-25). The parking lot is still in place.

Site 4535 (Parking Lot)

Located east of 10th Street, the parking lot was constructed in circa-1967, for use of personnel working in Buildings 4030 and 4641 (Sapere 2005: E-25). The parking lot is still in place.

Building 4641 (Shipping and Receiving)

Located north of the intersection of 10th and G streets, this prefabricated metal building, which functioned as the main shipping and receiving facility for Area IV, was constructed in 1964. It was demolished in 2004.

5.6 Group F

5.6.1 Historical Overview

Group F was comprised of five building that performed support functions for SRE, ETB, and RMDF. These buildings included the following: 1) Building 4063 was constructed circa-1962 as an electronics workshop; by 1967 it was used as a maintenance service building for non-radiological equipment. Sometime in the early 1970s the building was converted into a storage facility; 2) Building 4273 was constructed in circa-1962 as a radioactive laundry building; the building was used to package contaminated protective clothing for treatment offsite; 3) Building 4283 was constructed in circa-1962 as a radioactive laundry building; like Building 4273, Building 4283 also was used to package contaminated protective clothing for treatment offsite; 4) Building 4316 was possibly constructed in the early 1960s as the Maintenance Skid Shack; its function was unknown; 5) Building 4763 was constructed possibly in the early 1960s as an electrical substation. All buildings, structures, and features associated with Group F have been demolished or removed.

Building 4063 (Electronics Workshop)

Constructed in circa-1962, Building 4063 initially housed an electronics workshop; by 1967 it was used as a maintenance facility for non-radiological equipment (Sapere 2005: F-1). The building was used as a general storage building before its demolition in the early 1970s (Sapere 2005: F-1).

Building 4273 (Protective Clothing Storage Building) Building 4316 (Maintenance Skid Shack)

Building 4273 was a prefabricated metal building set on a concrete foundation constructed in circa-1962. The building was used to store contaminated protective clothing from the SRE, ETB and RMHF facilities (Sapere 2005: F-3). Use of the facility ceased in 1971, and the building, with the exception of its concrete slab foundation, was demolished in 1976. Building 4316 abutted the east elevation of Building 4273. It was removed in 1976 when the Protective Clothing Storage Building was demolished.

Building 4283 (Protective Clothing Storage)

Building 4283 was a small building located north of the intersection of D and 10th streets that was used to store contaminated clothing for eventual shipment offsite between 1962 and 1971 (Sapere 2005: F-7). The building was demolished in 1976.

Building 4763 (Electrical Substation)

The electrical substation was located south of Building 4283. It provided power to Building 4283 and Building 4063.

Table 7: Group F

Building or Site Number	Original Name	Use	Construction Date	Extant or Demolished	Notes
Building 4063	Electronics Workshop	Electronics shop	c. 1962	Demolished (Early 1970s)	Later used as a storage building
Building 4273	Protective Clothing Storage Building	Store contaminated protective clothing	c. 1962	Demolished (1976)	Includes Building 4316, Maintenance Skid Shop
Building 4283	Protective Clothing Storage	Store contaminated clothing	c. 1962	Demolished (1976)	
Building 4763	Electrical Substation	Unknown	Early 1960s?	Demolished (c. 1976?)	Associated with Building 4063

5.7 Group G (Sodium Reactor Experiment)

5.7.1 Historical Overview

The Sodium Reactor Experiment (SRE) was initiated in 1954 by Atomics International under contract with the AEC. The goal of SRE was to test the feasibility of high-temperature, sodium-cooled, graphite-moderated reactors for civilian power generation. Designed as an experimental facility the Sodium Reactor was not a pilot plant, although it did incorporate many features that would be found in a nuclear power plant of its type (Pickard 1957: 264). Approximately $3,500,000 was allotted for the construction of the reactor and a further $5,000,000 for buildings and facilities (Pickard 1957: 264). Construction of the facility began in 1956-1957, with the construction of the 20,000-square-foot SRE reactor building (Building 4143) and other facilities, including the Drainage Control Dam and Retention Pond, constructed in 1956. The reactor complex included five concrete pads (originally numbered #4894, #4895, #4896, #4897, and #4898). Eventually, the facility was composed of 23 buildings and seven related sites associated with the SRE reactor, housed in Building 4143 (see Table 1). The following description of the SRE reactor is derived from a description written in 1957:

> *The SRE is designed for the production of nominally 20,000 kilowatts of heat. No provision is being made in the initial installation for a steam cycle and the production of electric power. Steps are being taken which will permit such an addition at a later date. The reactor is cooled by sodium, which circulates in a primary system and becomes radioactive. This primary sodium transfers its heat to a secondary, non-radioactive sodium system. In the SRE experimental facility the reactor was cooled by sodium which circulated in a primary system. The sodium transferred its radioactive-generated heat to a secondary non-radioactive sodium system in intermediate heat exchangers. The secondary sodium rejects its heat to the atmosphere in air-cooled heat exchangers. The primary system and secondary system each have two separate circulating loops; a main loop capable of the transfer of 20,000 kilowatts of heat, and an auxiliary loop capable of the transfer of 1,000 kilowatts of heat* (Pickard 1957: 264-265).
>
> *The reactor is located below grade, with the upper surface of its top shield at floor level in the reactor room. The two primary loops are also below floor level and are installed in separate concrete-walled galleries. Motors for the mechanical sodium pumps and for the control-rod drives are located above floor level for easy maintenance. The secondary sodium line extends from the intermediate heat exchangers to locations above ground level and outside the reactor building to where the air-cooled heat exchangers are located. A 75-ton handling bridge crane is designed to move within the reactor room and be capable of supporting lead-shielding coffins used for the removal of radioactive elements from the reactor core. At one end of the reactor room special facilities are installed below floor level for cleaning and storing of these elements. A hot cell is installed below grade with access holes to receive elements from the handling coffin. Here the fuel elements will be disassembled and inspected and certain measurements made* (Pickard 1957: 264-265).

The reactor core is described as follows:

> *The entire core is contained in a stainless-steel vessel 19 ft deep and 11 ft in diameter. The graphite moderator is supported and located on a stainless-steel grid plate near the bottom of this core tank. The graphite is in the form of cell-sized hexagonal prisms, placed on a triangular lattice. Each prism is 10 ft in height and is clad with thin zirconium sheet. The 10-ft height includes 6 ft for the moderator and an additional 2 ft at the bottom and at the top for reflector. The graphite assemblies making up the core region contain an axial zirconium tube in which fuel elements are suspended* (Pickard 1957: 265-267).
> *Surrounding the core tank is steel thermal shield 51/2 in. thick. Immediately outside of the thermal shield is the outer tank intended as an emergency means of containing sodium in the event a leak should develop in the core tank* (Pickard 1957: 260).

As noted above, construction of the facility, which began in 1954, was mostly completed by late 1957 when the reactor became operational. On November 12, 1957, the first large-scale use of nuclear energy to power a civilian electrical grid was initiated when power generated from the SRE was fed for two hours into the power grid of the nearby community of Moorpark. The event was televised nationwide on the Edward R. Morrow show in December of 1957. The program displayed the scientific advances made at SRE and confidently predicted that nuclear power would soon become an important component of the nation's power grid.

In July 1959, an incident occurred when the reactor's coolant lines became blocked and overheated the reactor core. This incident partially melted 13 of the reactor core's 43 fuel elements and resulted in the release of 5,000 to 10,000 curies of mixed fission product into the primary sodium system and approximately 28 curies of Kr-85 and Xe-133 into the environment (Sapere 2005: G-16). Over a period of 15 months, damaged fuel was removed from the reactor vessel and a new core installed. In 1960 the SRE recommenced operation and continued to produce power until 1964 when the program was terminated. Following final shutdown, nuclear fuel was removed, inspected at the Hot Lab and shipped off-site to other AEC facilities. In 1974, decommissioning of the SRE facility began a process that continued until its completion in 1983. Decommissioning included dismantling of the reactor and much of its associated equipment including most of the ancillary buildings. Following independent surveys and sampling by Argonne National Laboratory, the DOE released the facility and surrounding land for unrestricted use in September 1985. The SRE was subsequently used for storage of non-radiological surplus equipment. Finally, in 1999, demolition of the remaining SRE buildings began. This process included the demolition of remaining structures including concrete foundations and substructures (Sapere 2005: G-16).

5.7.2 Buildings, Structures and Features

Building 4003 (Engineering Test Building)

Located northwest of the intersection of E and 10th streets, Building 4003 was an approximately 15,000-square-foot, prefabricated metal and concrete building constructed in 1958. The

building, which featured a concrete subsurface "hot cave," was used to load fuel pellets into metal tubes for use in the SRE reactor (Sapere 2005: G-1). After the close of the SRE program in 1964, the building was used to analyze fuel burn-up samples and irradiation experiments for the SNAP program. In 1975, two years after the close of the SNAP program, dismantling and decommissioning of the building was initiated. The building was demolished in 1999.

Building 4041 (SRE Component Storage)

Constructed in 1958, Building 4041 was a prefabricated metal building with a concrete slab foundation located north of the intersection of E and 11th streets. The building housed a storage area for contaminated equipment and packaged radioactive material for the SRE facility between 1958 and 1964 (Sapere 2005: G-7). During the decommissioning of the SRE facility, the building was used as a temporary storage facility for radioactive waste. The building was demolished in 1998.

Building 4133 (Hazardous Waste Treatment Facility)

Originally Building 4133 was located at the northeast end of the SRE facility (at that time it was Building 4724, the Contaminated Sodium Facility). In 1977 the building was moved to its current location at the west end of the former SRE facility for use as a treatment facility for sodium contaminated equipment. Building 4133 is a single-story metal frame building with a concrete slab foundation. It is capped by a shallow-pitched side-gable roof, and its walls and roof are sheathed in metal panels. A metal chain-link fence surrounds the facility. A bay door placed on the south elevation provides access to the interior. A steel stack, located at the northwest corner of the building, discharged water vapor from the scrubber system. A crane rail, located off the building's south elevation, was used to move size-reduced sections of equipment and machinery into the treatment room. After treatment the sodium was transformed into sodium hydroxide, which was temporarily stored in a storage tank located at the northeast corner of the fenced yard surrounding Building 4133. The building, which is a permitted hazardous waste treatment facility, regulated by the California Department of Toxic Substances Control (DTSC), is pending closure (Sapere 2005: G-1).

Building 4143 (SRE Reactor Building) (includes Sites 4413 and 4894 – 4898)

Located northeast of the intersection of 11th and E streets, the SRE Reactor Building was constructed in 1957. The 20,000-square-foot metal and concrete building encompassed a high bay housing the reactor and offices on the ground and mezzanine levels (Sapere 2005: G-15). After the closure the SRE program in 1964, the building was deactivated. Decommissioning of the facility began in 1974 and was completed in 1983; the building was demolished in 1999 (Sapere 2005: G-15).

Building 4153 (SRE Sodium Service Building)

Building 4153, which was located north of the SRE Reactor Building, was constructed sometime during the late 1950s or early 1960s (Sapere 2005: G-23). The building consisted of a small flat-

roofed metal structure set on a concrete foundation that housed the sodium service system for the SRE reactor. It was demolished sometime before 1977.

Building 4163 (Site Service Building)

Building 4163, which was constructed in 1958, was located just southeast of the SRE reactor building. The prefabricated metal building housed a repair facility for contaminated equipment for the SRE facility and a machine shop (Sapere 2005: G-27). The building was demolished in 1999.

Building 4183 (Fire Pump Building)

Building 4183, which was located northeast of the SRE reactor building, was a prefabricated metal building set on a concrete foundation. Constructed sometime in the late 1950s, the small building housed the fire pump for the SRE facility; it was demolished in 1999 (Sapere 2005: G-33).

Building 4184 (SRE Battery Room and Diesel Generator Canopy)

Building 4184, which housed the SRE Battery Room, was located just west of the Fire Pump Building. The prefabricated metal building was demolished sometime before 1975 (Sapere 2005: G-37).

Building 4185 (Steam Generator Control Building)

Building 4185 was located northeast of the SRE reactor building. It was constructed sometime in the late 1950s as the control building for the SRE steam generator (Sapere 2005: G-39). The prefabricated metal building was demolished sometime during the early 1970s.

Building 4505 (Storage Area)

Located just south of Building 4714, Building 4505 was a small prefabricated metal structure with a concrete slab foundation. The building's superstructure was demolished sometime before 1980 and the concrete slab foundation was removed in circa-1999.

Building 4653 (Interim Radioactive Storage Vault)

Building 4653 consisted of four underground tanks, a number of concrete vaults and auxiliary vaults used to store radioactive liquid and gaseous waste from the SRE facility (Sapere 2005: G-47). The facility was located on the hillside just north of the SRE reactor building. The facility, which was constructed in the late 1950s, was demolished before 1978.

Building 4654 (Interim Storage Facility)

Building 4654 consisted of eight subsurface storage tubes anchored to a concrete structure located west of the intersection of E and 11th streets. The structure was used to store fuel

elements and other material generated by the SRE, OMR and SNAP programs prior to shipment offsite (Sapere 2005: G-51). The structure was demolished in 1985.

Building 4684 (Steam Generator Pad)

Building 4684 was a small electrical substation set on a concrete slab foundation (Sapere 2005; g-57). It was constructed in the late 1950s and demolished during the late 1970s.

Building 4686 (Temporary Hot Water Storage)

This structure, located at the north end of 11th Street, was built in the late 1950s as a storage facility for irradiated core components from the SRE facility. It was demolished in the late 1970s.

Site 4687 (Loading Dock)

The loading dock abutted the northwest corner of Building 4041. It was demolished in 1998.

Building 4689 (Interim Storage of Contaminated Items)

Building 4689 was a small, prefabricated metal building with a concrete slab foundation used to store potentially contaminated material from the SRE complex (Sapere 2995: G-67). The building was constructed in the late 1950s and demolished in the mid-1970s.

Building 4695 (SRE Cold Trap Vault)

Constructed in the late 1950s or early 1960s, Building 4695 was a subsurface vault located northeast of the SRE reactor building (Sapere 2005: G-69). The vault, which was used to store impurities from the SRE sodium system, was removed in the late 1970s (Sapere 2005: G-69).

Building 4703 (Water Tower)

Located to the north of the SRE facility the water tower was built sometime during the late 1950s as an emergency water supply for the SRE steam generators. It was destroyed by a brush fire sometime before 1978 (Sapere 2005: G-71).

Building 4714 (Research and Development (R&D) Shop Work Area)

Building 4714 was an outdoor workshop area located east of the SRE reactor building. It was in use between the late 1950s and was demolished sometime during the mid-1970s (Sapere 2005: G-73).

Site 4723 (Sodium Cleaning Pad)

Site 4723 was a concrete pad located east of the SRE complex. Built in the late 1960s, it was used to clean equipment and materials from the SRE complex. The slab was removed in 1998.

Building 4724 (Hot Oil Sodium Cleaning Facility)

Located east of the main SRE complex, Building 4724 was a small, prefabricated metal building use to clean large components of the secondary loop of the SRE reactor (Sapere 2005: G-77). Built in the late 1950s or early 1960s, the building's superstructure was moved to the west end of the SRE complex in circa-1978 and renamed Building 4133.

Site 4733 (Sodium Cleaning Pad)

Site 4733 was a concrete pad located north of the SRE reactor building. The pad was used to clean sodium from equipment and material from the SRE complex (Sapere 2005: G-81). It was demolished sometime in the early 1980s.

Building 4743 (Tetralin Heat Exchanger)

This small, prefabricated metal building was located just north of the SRE Reactor Building. The building, which housed a tetralin Heat Exchanger, was constructed sometime during the late 1950s or early 1960s; the building was demolished during the mid-1970s (Sapere 2005: G-83).

Building 4753 (SRE Primary Fill Tank Vault)

Building 4753 was a subsurface tank located just north of the main reactor building that was constructed sometime during the late 1950s or early 1960s. It was demolished sometime during the late 1980s.

Building 4773 (SRE Drainage Control Dam and Retention Pond)

Built in 1956, this structure was a dam and retention pond used to contain runoff from the SRE complex. It was removed sometime after 2005.

(see Table 8, next page)

Table 8: Group G SRE Complex					
Building Number	**Original Name**	**Use**	**Construction Date**	**Extant or Demolished**	**Notes**
4003	Engineering Test Building		c. 1958-1964	Demolished (1998)	
4041	SRE Component Storage	Storage of contaminated equipment and packaging of contaminated material	c. 1958-1964	Demolished (1998)	
4133 (originally Bldg. 4724)	Hazardous Waste Management Facility	Used to process radioactive waste for shipment offsite	c. 1958-1964	Moved to current location in 1977	See Building 4724 for use history before 1977
4143	Sodium Reactor	Experimental reactor	1957-1964	Demolished (1999)	
4153	Sodium Service Building	Originally functioned as the SRE sodium service building	Late 1950s-early 1960s	Demolished (before 1977)	
4163	Site Service Building	Repair radioactive contaminated equipment	1958	Demolished (1999)	
4183	Fire Pump Building	Sheltered SRE's fire pump	c. 1958-1964	Demolished (1999)	
4184	SRE Battery Room and Diesel Canopy	Battery Room	c. 1958-1964	Demolished (before 1975)	
4185	Steam Generator Building	Steam generator control Building for SRE	c. 1958-1964	Demolished (in early 1970s)	
4505	Storage Area	Possibly used to store radioactive equipment	Before 1958	Demolished (building before 1980, concrete pad in late 1990s)	
4653	Interim Radioactive Storage Vault	Contained radioactive liquid and gaseous waste generated by SRE	Late 1950s	Demolished (before 1978)	
4654	Interim Storage Facility	Below grade concrete structure with 8 storage tubes	1958	Demolished (1985)	Adjacent to Building 4654 was a fenced area with a concrete pad used as an above grade storage area
4684	Steam Generator Pad	Electrical substation	Late 1950s	Demolished (in 1970s)	
4686	Temporary Hot Waste Storage Facility	Store irradiated core components and dummy fuel elements	Late 1950s	Demolished (in late 1970s)	
4687	Loading Dock	Loading dock for Building 4041	Late 1950s or early 1960s	Demolished (1998)	Associated with Building 4041
4695	SRE Cold Trap Vault	Trapped & store impurities from SRE sodium systems	Late 1950s or early 1960s	Demolished (late 1970s)	

Table 8: Group G SRE Complex continued:					
Building Number	**Original Name**	**Use**	**Construction Date**	**Extant or Demolished**	**Notes**
4703	Water Tower	Stored water for SRE sodium system	Late 1950s or early 1960s	Destroyed by fire before 1978	
4714	Research & Development workshop	Outdoor workshop	Late 1950s or early 1960s	Demolished (mid-1970s)	
4723	Sodium Cleaning Pad	Concrete pad located outdoors, used to clean equipment	Late 1950s or early 1960s	Demolished (1998)	
4724	Hot Oil Sodium Cleaning Facility	Used to clean contaminated equipment from SRE	Late 1950s or early 1960s	Upper part of building relocated (now Building 4133)	See Building 4133
4733	Sodium Cleaning Pad	Concrete pad used to clean equipment from SRE	Late 1950s or early 1960s	Demolished (early 1980s)	
4743	Tetralin Heat Exchanger	Device transferred heat from one medium to another.	Late 1950s or early 1960s	Demolished (late 1980s)	
4753	Primary Fill Tank Vault		Late 1950s or early 1960s	Demolished (late 1980s)	
4773	Drainage control drain & retention pond	Stored water drained from SRE	Late 1950s or early 1960s	Demolished (after 2005)	

5.8 Group H (Kinetics Experiment Water Boiler Reactor and the AE-6 Reactor Site)

5.8.1 Historical Overview

Group H was the site of the Kinetics Experiment Water Boiler (KEWB) reactor and the Water Boiler Neutron Source (WBNS) reactor. A total of nine buildings, a parking lot, and a site were associated with the KEWB reactor facility. The KEWB program was initiated in the early 1950s by Atomics International, under contract with the AEC. The goal of KEWB was to test the feasibility of a graphite-encased reactor that used a water solution of uranyl sulfate as fuel. The reactor had a capacity of producing 50 kWt or less of power (Sapere 2005: H-1). Construction of the reactor building (Building 4073) began in the early 1950s and consisted of an above ground wood and metal workroom and a below grade 15-foot by 26-foot by 10-foot tall reactor room connected to three underground storage tanks and the adjacent ventilation system located in Building 4643 (Sapere 2005: H-1). Other buildings and features associated with KEWB included a storage/film processing building (Building 4074), a Reactor Kinetics Control Building (Building 4083), an office and laboratory building (Building 4103), and a neutron Radiography Building (Building 4093). An exhaust system, built in the early 1950s for the KEWB reactor, was housed in Building 4643. Heating and air conditioning systems for the KEWB reactor were located in Building 4793 (KEWB Electric Building). A radioactive waste storage building for the KEWB reactor (Building 4123) was constructed in the early 1950s. During its lifetime the reactor had two cores. The "A" core, which was a spherical unit, "went critical" on July 13,

1959 and was removed in August of that year (Sapere 2005: H-1). The "B" core, which was a cylindrical unit "went critical" in March of 1960 (Sapere 2005: H-1). In 1966 experimental use of the KEWB reactor was terminated; two years later, in 1968, the reactor's fuel was drained, and decontamination of the building was initiated (Sapere 2005: H-1).

Another reactor, the Water Boiler Neutron Source (WBNS) reactor was housed in Building 4093. Originally constructed in Downey, California, in 1952, the reactor was dismantled and moved to Area IV in 1958; where it was renamed the AE-6 Reactor. At Santa Susana the reactor was housed in a steel and wood frame building with a 12-foot by 31-foot control room and a 31-foot by 38-foot-high-bay (Sapere 2005: H-13). A fuel handling building for the AE-6 reactor was housed in Building 4453 (constructed in 1958); a parking lot for the reactor personal (Site 4523) was located adjacent to the reactor building. A reactor cooling water pad (Site 4633) for the AE-6 reactor was located to the northwest of the reactor building. The Atomic Energy Commission transferred ownership of the AE-6 reactor to Rockwell International in 1972; at that time it was renamed L-85 (Sapere 2005: H-13). Rockwell continued operation of the L-85 reactor until February 1980. Demolition of the reactor began in 1982 and was completed in 1999. Demolition of support buildings and facilities began in the mid-1970s and was completed by 2003.

5.8.2 Buildings, Structures and Features

Building 4073 (Reactor Kinetics Test Building)

Construction of the reactor building began in the early 1950s. The building consisted of an above-ground wood and metal workroom and a below-grade, 15-foot by 26-foot by 10-foot tall reactor room connected to three underground storage tanks and the adjacent ventilation system located in Building 4643 (Sapere 2005: H-1). In 1966 the KEWB program ended; two years later the reactor's fuel was drained, and decontamination of the building was initiated. Demolition of the building was completed in 1975.

Building 4074 (Storage Building)

Located near the northeast corner of the KEWB complex, this prefabricated metal building was constructed in 1958 to serve as a film processing facility for the KEWB complex (Sapere 2005: H-5). It later served as a storage facility. The building's superstructure was demolished in 1980.

Building 4083 (Reactor Kinetics Control Building)

This wood frame and metal-sheathed-building was located north of the KEWB reactor building. It was built in 1958 to house the control center for the KEWB reactor (Sapere 2005: H-9). The building, which was later used for storage, was demolished in 1995.

Building 4093 (Reactor AE-6, WBNS Reactor)

The prefabricated metal building was set on a concrete foundation. It was constructed in 1958 to house the Water Boiler Neutron Source Reactor. The reactor, which was originally located in

Downey, California, was moved to SSFL, Area IV in 1958 and at that time its name was changed to A-E6 (Sapere 2005: H-13). The reactor was transferred from the AEC to Rockwell in 1972; at that time the reactor was renamed the L-85 (Sapere 2005: H-13)]. The facility ceased operation in 1980, and after decontamination was demolished in 1995.

Building 4123 (KEWB Waste Storage Building)

Located near the west end of the KEWB facility, Building 4123 was a concrete block structure with two subsurface concrete wells used for temporary storage of radioactive waste from the KEWB facility (Sapere 2005: H-19). The structure, which was built in the early 1950s, was demolished in 1975.

Building 4453 (AE-6 Fuel Handling Building)

Building 4453, a small prefabricated metal building located north of 11th Street, was constructed to house fuel used in the KEWB reactor building (Sapere 2005: H-21). It was demolished in 1980 (superstructure) and 1995 (foundation).

Site 4523 (Parking Lot)

The parking lot, which was located west of the KEWB reactor building, was used by personnel working in the KEWB reactor building and nearby facilities (Sapere 2005: H-25). Constructed sometime during the late 1950s, the parking area was removed sometime before 2005.

Building 4643 (KEWB Ventilation Building)

Building 4643 was a small metal-sheathed-building with a 60-foot exhaust stack located north of the reactor building (Sapere 2005: H-29). Constructed in the late 1950s, the building provided ventilation to the KEWB reactor building. It was demolished in 1975.

Building 4793 (KEWB Electrical Building)

Building 4793 was a small metal and wood building that housed the heating and air conditioning systems for the KEWB reactor building (Sapere 2005: H-33). The building was constructed in the early 1950s and demolished in 1975.

(see Table 9, next page)

Table 9: Group H KEWB and AE-6 Reactors					
Building Number	**Original Name**	**Use**	**Construction Date**	**Extant or Demolished**	**Notes**
Building 4073	Reactor Kinetics Test Building	Experimental reactor	c. 1951	Demolished 1975	
Building 4074	Storage Building	Storage and film processing bldg.	1958	Demolished 1980	
Building 4083	Reactor Kinetics Control Building	Housed controls for reactor building (Bldg. 4073)	1958	Demolished in 1980	Includes Building 4103, Reactor Kinetics Lab and Storage Building
Building 4093	Neutron Radiography Building (WBNS reactor)	Housed AE-6 reactor	1958	Demolished in 1995	
Building 4123	KEWB Waste Storage Building	Used for temporary storage of radiological waste material	Early 1950s	Demolished in 1975	
Building 4453	AE-6 Fuel Handling Building	Processing of fuel (uranyl sulfate) for AE-6 reactor	1958	Demolished in 1980	
Site 4523	Parking lot	For KEWB and AE-6 personnel	c. 1958	Demolished in circa-1958	
Site 4633	Reactor Cooling Water Pad	Concrete pad for cooling unit	Before 1962	Demolished in late 1980s	
Building 4643	KEWB Exhaust Building	Housed ventilation system for the KEWB reactor (Building 4073)	Early 1950s	Demolished in 1975	Associated with Building. 4073
Building 4793	KEWB Electrical Building	Housed heating/ cooling systems for reactor	c. 1958	Demolished in 1975	Associated with Building 4073

5.9 Group I (Radioactive Materials Handling Facility)

5.9.1 Historical Overview

As noted above, Area IV was divided into two areas, one under the jurisdiction of the Atomics International Division and the other under the jurisdiction of the ETEC program. The Radioactive Materials Handling Facility (RMHF) is within the ETEC area of Area IV. The RMHF facility was composed of 13 buildings, structures and features, three of which have been demolished. Access to the facility is via a paved road that extends south from the main gate of the RMHF facility to G Street. Located on a rise, RMHF overlooks Simi Valley to the north and Burro Flats to the south. On its east side, the boundary of the facility is defined by an outcropping of sandstone. The entire facility is surrounded by a metal security fence, with the main gate located south of Building 4022. Unlike most other facilities in Area IV, which were decommissioned as nuclear and non-nuclear research and development programs were shut down, RMHF, which is a designated Resource Conservation and Recovery Act (RCRA)

permitted facility, has continued to operate during the ongoing decommissioning and decontamination operations at SSFL. The following descriptions are derived from an onsite survey. Historical information for RMHF and its buildings, structures and features is partially derived from a Historical Site Assessment of Area IV completed in 2005 (Sapere 2005) and a radiological survey completed in 2007 (Cabrera Services 2007).

5.9.2 Buildings, Structures and Features

Building 4021

Building 4021 was constructed in 1959. The prefabricated building was originally used to process mixed fission products and fuels. Subsequently, it was used to process waste materials from the ongoing decommissioning of the SRE, SEFOR, EBR, and SNAP programs (Sapere 2005 I-1). Building 4021 is a 3000-square-foot, prefabricated metal building with a concrete slab foundation. The interior of the building is divided into a decontamination room, packaging room, hot and cold change rooms, and an office (Sapere 2005: I-1). The building shares a high efficiency particulate air filtered exhaust system (HEPA) with Building 4022. A sump located to the west of the building was connected to Building 4021's internal drainage system. A leach field associated with the building once was located to the north of the facility's boundary fence (the leach field has been removed).

Alterations and Modifications to Building 4021

A number of minor modifications and alterations have been made to the building since its construction in 1959. These primarily were related to replacing or removing equipment and the installation of a HEPA air filtration system.

Building 4022

Building 4022 was the first large building constructed at RMHF. Constructed in 1959, the prefabricated metal building is set on a concrete foundation. Its interior consists of a 3,900-square-foot, single high bay that shelters a bridge crane and subsurface vaults used to store radioactive waste and radioactive fuel elements. Varying in size, the below-grade vaults are accessed via a steel bridge crane that runs along tracks set in the concrete pavement. Among the activities carried out in Building 4022 were waste characterization, limited treatment, packaging and the temporary storage of radioactive waste and mixed waste. Waste characterization consisted of the classification of radioactive material/mixed waste for treatment and eventual disposal. During its use a limited amount of treatment activities occurred at the facility. Packaging of waste materials for shipment and disposal offsite also occurred at the facility. Finally, temporary storage of radioactive and mixed waste took place at the facility. Waste material was stored both in the subsurface vaults, adjacent buildings and in steel drums located above grade and adjacent to Building 4022.

Alterations and Modifications to Building 4022

A number of minor modifications and alterations have been made to the building since its construction in 1959. These primarily were related to the replacement or removal of equipment and did not involve significant alterations to the exterior of the building.

Building 4563 (covered storage area, neighboring Building 4075)

Located adjacent to Building 4563, the building is a small, single-story 1,130-square-foot storage area covered with a low-pitched, gable roof supported by steel posts. The building was constructed in 1958 for the short term storage of radioactive waste prior to its shipment offsite.

Alterations and Modifications to Building 4563

The exterior of this structure appears to have originally been sheathed in metal panels. Sometime after its construction the panels were removed. The building is currently not in use.

Building 4621

Building 4621 is a prefabricated metal building with a steel frame and metal-sheathed walls and roof, located to the southwest of Building 4021. Constructed in the mid-1960s, the building features a moderately pitched, front gable roof and concrete slab foundation. The primary entrance to the facility is via a large bay door located on the building's west elevation. Originally, the building was used to store radioactive-contaminated materials and equipment. Later, radioactive waste products from various facilities in Area IV were stored in the building.

Alterations and Modifications to Building 4621

A number of minor modifications and alterations have been made to the building since its construction in the mid-1960s. These primarily were related to the replacement or removal of equipment and did not involve significant alterations to the exterior.

Building 4665

Built in the mid 1960s, Building 4665 is a 480-square-foot, prefabricated metal building located north of Building 4022. Capped by a moderately pitched roof and set on a concrete slab foundation, the building was constructed to house an oxidization facility. Sliding bay doors are located on the building's south and east elevations. Most recently, the building was used to store non-radioactive material (Cabrera Services 2007: 6). The building is currently not in use.

Alterations and Modifications to Building 4665

A number of minor modifications and alterations have been made to the building since its construction in the mid-1960s. These primarily were related to the replacement or removal of equipment.

Building 4688

Located east of Building 4022, Building 4688 is a canopy structure supported by metal posts and capped by a shallow-pitched, side gable roof. The building was constructed in circa-1962 to house sodium cleaning activities (Cabrera Services 2007: 7). The structure is currently not in use.

Alterations and Modifications to Building 4688

No alterations are documented for this building.

Building 4075

Located just to the west of Building 4563, Building 4075 is a 2,160-square-foot, prefabricated metal building constructed in 1971 to store radioactive waste prior to shipment offsite (Cabrera Services 2007: 3). Set on a concrete slab foundation, the steel frame building is capped by a moderately pitched, side gable roof and is clad in metal panels. Pairs of sliding bay doors, located on the south elevation, provide access to the interior.

Alterations and Modifications to Building 4075

No alterations are documented for this building.

Building 4658

Building 4658 is located adjacent to the entrance gate at the southeast corner of the RMHF facility. This small, 180-square-foot, prefabricated building was constructed in the early 1980s to control and monitor access to the facility. It is capped by a shed roof and has fixed bullet-proof glazing. Use of the guard building ceased in the late 1980s.

Alterations and Modifications to Building 4658

No alterations are documented for this building.

Building 4034

This small, rectangular, prefabricated metal building was constructed in 1961 to house offices for the RMHF facility. Set on a concrete slab foundation, the building has a shallow-pitched, side gable roof and metal sheathed walls. It houses offices and restrooms.

Alterations and Modifications to Building 4034

No alterations are documented for this building.

Building 4044

Constructed in the mid-1960s, Building 4044 is a prefabricated metal building located just east of Building 4022. Set on a concrete foundation, the building has a metal frame, exterior walls sheathed in metal panels, and a shallow-pitched, side gable roof sheathed in metal panels. The building originally housed a clean shop, health physics laboratory, and break room (Sapere 2005: I-13). The health physics laboratory was used as a counting area for removable contamination measurements and to use and store calibration sources (Sapere 2005: I-13).

Alterations and Modifications to Building 4044

No alterations are documented for this building.

Site 4614 (Drainage Sump)

Site 4614 was a drainage sump/holdup pond surrounded by a chain-link fence, located northwest of the RMHF facility. It was constructed in the early 1960s to impound surface runoff from the RMHF facility. The banks and bottom of the sump were lined with asphalt. In 2006 the sump and drain were replaced with a plastic tank and pipe.

Alterations and Modifications to Site 4614

The drainage sump appears to have undergone relatively few alterations since its construction.

Demolished Buildings, Structures and Features

The following buildings, structures and features associated with the RMHF have been removed:

- Building 4663, a small prefabricated structure located just east of Building 4658. Constructed in the late 1950s or early 1960s, Building 4663 was demolished in the early 1970s. The building's concrete slab remains in place (Sapere 2005: I-39).
- Building 4664 was a small, 1,200-square-foot, prefabricated metal building located near the northern boundary of the RMHF facility (Sapere 2005: 1-41). It was built in the mid-1960s to house low level waste processing operations. The building was demolished in the early 1980s.
- A sanitary leach field (no number) was located to the north of the fence that delineates the northern boundary of the RMHF facility. This feature was removed in the late 1960s.

(see Table 10, next page)

Table 10: Group I Radioactive Materials Handling Facility (RMHF)					
Building Number	**Original Name**	**Use**	**Construction Date**	**Extant or Demolished**	**Notes**
Building 4021	RMDF Waste Decontamination and Packaging	Processed waste materials from SRE, Southwest Experimental Fast Oxide Reactor (SEFOR),Experimental Breeder Reactor, (EBR), Fermi Reactor, Systems and SNAP programs	1959	Extant	
Building 4022	RMDF Radioactive Vault Storage	Store fuel and EBR-II blanket assemblies	1959	Extant	
Building 4034	RMDF office building	Office building	1961	Extant	
Building 4044	RMDF Clean Shop	Labs, offices, break room	mid-1960s	Extant	
Building 4075	Contaminated Equipment Storage Building	Temporary storage area radioactive waste	1971	Extant	
Site 4563	Storage yard	Covered area for temporary storage of radioactive waste	1958	Extant	
Site 4614	Drainage sump	Holdup pond for RMHF facility	mid-1960s	Extant	
Building 4621	RMDF Equipment storage	Used to store contaminated equipment and materials for RMDF	mid-1960s	Extant	
Building 4622	RMDF Counting Building	Health physics samples of radioactive waste from RMDF were counted for radioactivity	before 1962	Demolished (c. 1976)	
Building 4658	RMDF Guard Shack	Control point for access to RMDF/RMHF	c. 1980	Extant	
Building 4663	RMDF Storage Area	May have been used to store radioactive materials	c. 1958	Demolished (early 1970s)	Concrete pad remains
Building 4664	RMDF Low Level Waste Processing	Process low level radioactive waste	mid-1960s	Demolished (early 1980s)	
Building 4665	RMDF Oxidation Facility	Radioactive waste may have been processed in the building	mid-1960s	Extant	
Building 4688	RMDF Auxiliary Skid Shack	Sodium cleaning	c. 1962	Moved #4688 in mid-1960s	

5.10 Group J

5.10.1 Historical Overview

Group J was the location of buildings, structures and features associated with the Systems for Auxiliary Nuclear Power (SNAP) program, SRE program, and Liquid Metals Test Programs. Among the facilities in this area was a small sodium loop test facility in Building 4023, a facility for testing SNAP reactors in a simulated operation environment in Building 4024, and a shock

and vibration test facility for the SNAP program in Building 4027. After the closure of the SNAP program in the early 1970s, some of the buildings in Group J were used to support the Liquid Metals Development laboratory which was in operation between 1978 ad 1983.

5.10.2 Buildings, Structures and Features

Building 4023 (Corrosion Test Loop) (includes Building 4742)

Building 4023 is a single story, prefabricated metal building set on a concrete slab foundation. It was built in two stages, with the first wing of the building completed in 1962; the second wing was built in 1976 (Sapere 2005: J-1). The original wing of the building housed a small sodium loop that was in operation until 1982. The building, which also housed offices and an analytical chemistry laboratory, was demolished in 1999.

Building 4024 (SNAP Environmental Test Facility (SETF) (also includes Building 4928, a cooling tower and Building 4725, an electrical substation)

Building 4024 is composed of a prefabricated metal superstructure set on a concrete foundation, below-grade-level cell complex with shielded concrete walls and a below-grade radioactive waste storage facility consisting of three, 40-foot-long gas hold-up tanks and eight storage vaults (Sapere 2005: J-7). The building was constructed in 1960 to test SNAP reactors in simulated operational conditions. A total of four SNAP reactor configurations, the prototype SNAP (S2DR) (1961-1962), prototype SNAP 10 Flight System (SNAPTRAN-1) (1965-1966), the SNAP Critical Assembly 4B and the SNAP Transient Test (SNAPTRAN-1) support reactor (1971), were tested at the facility between 1961 and 1971 (Sapere 2005: J-7). A cooling tower (Building 4928) and an electrical substation (Building 4725) are associated with this facility. The building is still standing.

Building 4025 (Remote Handling and Mock-up Facility)

Building 4025 was a prefabricated metal building with three bays set on a concrete slab foundation. The building was constructed in 1959 to serve as a nuclear materials remote handling facility and to view mock-ups in support of the SNAP 2/10a and SNAP 8 test programs (Sapere 2005: J-13). After the closure of the SNAP program in the early 1970s, the building was used as a storage facility and warehouse. The building was demolished in 1999.

Building 4027 (SNAP Shock and Vibration Test Facility)

Located south of the RMHF facility, the prefabricated metal building with a high bay and office space was constructed in 1961 to house a shock and vibration test facility for the SNAP program (Sapere 2005: J-17). After the closure of the SNAP program in the early 1970s, the building was used as a storage facility. The building was demolished in 2003.

Building 4032 (Space Environmental Test Facility) (includes Building 4727, an electrical substation)

The Space Environmental Test Facility, which was constructed in 1962 to house a thermal vacuum system associated with the SNAP program, was a prefabricated metal building set on a concrete foundation (Sapere 2005: J-19). After the closure of the SNAP program in the early 1970s, the building housed the Liquid Metal Development Lab (LMDL), a sodium component and instrumentation test facility (Sapere 2005: J-19). The building was demolished in 2003.

Building 4036/4037 (SNAP Office Building)

Building 4036/4037 consisted of two prefabricated metal buildings set on concrete slab foundations that were built in 1962 to house offices for the SNAP program. The building was demolished in 1999.

Building 4042 (SNAP Shield Casting Facility) (includes Building 4742, an electrical substation)

Constructed in 1963, the prefabricated metal building housed the SNAP Shield Casting Facility, which was a general test and lithium hybrid shield fabrication facility. After the closure of the SNAP program in the early 1970s, the building housed a development testing facility for the Liquid Metals Fast Breeder Reactor (LMFBR) program (Sapere 2005: J-25). The building was demolished in 2003. An electrical substation (Building 4742) was associated with this building.

Site 4524 (Parking Lot)

Built sometime before 1962, the parking lot was used by personnel working in the SNAP program (Sapere 2005: J-29). The parking lot was demolished during the mid-1960s.

Site 4536 (Parking Lot) (includes a Time Clock (Building 4836) and a Guard Shack (Building 4636)

Built sometime before 1962, the parking lot was used by personnel working in the SNAP program (Sapere 2005: J-29). The parking lot is still in place, but the time clock and guard shack have been removed.

Site 4537 (Parking Lot)

Built sometime before 1962, the parking lot was used by personnel working in the SNAP program (Sapere 2005: J-29). The parking lot is still in place but not in use.

Building 4625 (Non-Nuclear Component Storage Building)

Building 4625 was a small, prefabricated metal building that abutted the northwest corner of Building 4027. It was built in circa 1961 as a freestanding building; in 1964, an addition made to Building 4027 joined the two buildings into a single structure (Sapere 2005: J-37). The building,

which was constructed as a SNAP program storage facility for non-nuclear components, was demolished in 2003.

Building 4927 (Nitrogen Storage Tank)

This tank, which was associated with the SNAP program, was installed sometime before 1962 to serve Building 4025. It was removed sometime in the 1970s (Sapere 2005: J-41).

Table 11: Group J

Building Number	Original Name	Use	Construction Date	Extant or Demolished	Notes
Building 4023	Liquid Metals Component Test Building	Contained sodium loop used to test radioactive contamination transport	1962, addition constructed in 1976	Demolished (1999)	
Building 4024	Development Test Laboratory	Test SNAP reactors in simulated operational environment	1960	Extant	Later housed SNAP environmental test facility
Building 4025	Remote Handling and Mock-Up facility. Later the Sodium Component Test Installation (SCTI) Maintenance and Storage building	Used for nuclear reactor remote handling and viewing mock-up work in support of SNAP 2/10A and SNAP 8	1959	Demolished (1999)	Includes Building 4924 (Electrical Substation); Building 4925 (Mechanical Equipment Slab); Building 4926 (SRE mockup equipment area) and Building 4725 (Electrical Substation)
Building 4027	SNAP Engineering Development Laboratory 2	Vibration and shock test facility for SNAP program	1961	Demolished (2003)	Includes Building 4727 (Electrical Substation)
Building 4032	Space Environmental Test Facility; later the Liquid Metal Development Lab (LMDL)	Space environmental test facility for thermal vacuum system	1962	Demolished (2003)	Includes Building 4727 (Electrical Substation)
Building 4036/4037	SNAP Office Building	Non-nuclear office building	c. 1962	Demolished (1999)	Associated with Building 4727 (Electrical Substation)
Building 4042	Liquid Metal Fast Breeder Reactor (LMFR) development testing	SNAP General test and lithium hybrid shield fabrication building	1963	Demolished (2003)	Associated with Building 4727 (Electrical Substation)
Site 4524	Parking lot	Parking for SNAP personnel	before 1962	Demolished (mid-1960s)	
Site 4536	Parking lot, time clock and guard shack	For SNAP personnel	before 1962	Parking lot extant. Guard shack, time clock removed	Used as a storage area
Site 4537	Parking Lot	For SNAP personnel	before 1962	Extant	Used for non-radiological storage
Building 4625/4027	Non-nuclear component storage building	Building 4027 used for vibration and shock test facility	Buildings 4625 4027 were constructed in 1961. A 1964 addition joined the buildings into one structure	Demolished (2003)	

5.11 Group K (SNAP Test Reactor)

5.11.1 Historical Overview

Group K was the location of a test reactor associated with the Systems for Nuclear Auxiliary Power program between 1960 and 1972 and the Liquid Metal Fast Breeder Reactor (LMFBR) between 1977 and 1981. A scrap storage area was located nearby.

5.11.2 Buildings, Structures and Features

Building 4028 (Shield Test Irradiation Reactor Facility)

Constructed in circa 1960, the Shield Test Irradiation Reactor was a 50kW "swimming pool" reactor that was in operation between 1961 and 1964; in 1964 it was modified to become a Shield Test Irradiation Reactor (STIR) (Sapere 2005: K-1). After the cessation of the SNAP program, the facility was used for testing various aspects of the Liquid Metal Fast Breeder Reactor (LMFBR) Program, which was operational in Building 4028 from 1977 until 1981. In 1988 decommissioning and demolition of the facility began. Above-ground structures were removed in 1989 with the building's substructures removed in 1998 (Sapere 2005: K-1).

Building 4504 (Classified Scrap and Salvageable Steel Material Storage Area)

Building 4504 was a fenced area used to store classified scrap metal from the STIR program. The facility is no longer in use.

Table 12: Group K

Building Number	Original Name	Use	Construction Date	Extant or Demolished	Notes
Building 4028	Shield Test Irradiation Reactor Facility	Test space reactor shields	1960	Demolished (1989 and 1998)	Housed the Shield Test Reactor
Building 4504	Classified Scrap and Salvageable Steel Material Storage Area	Store classified scrap from STIR facility	Before 1964	Demolished	Fenced open-air storage area

5.12 Group L

5.12.1 Historical Overview

Group L was composed of five buildings and nine structures associated with electrical substations and power and four structures associated with Atomics International's operation of the SNAP reactor program. Construction of the facility began in 1959 for research and development of nuclear reactors for use in space. Named the "Systems for Nuclear Auxiliary Power" or SNAP, the goal of the program was the development of small nuclear reactors for space vehicles. SNAP 2, an experimental reactor, was located in Building 4010, which was constructed in 1959. Several structures, including two electrical equipment pads and an Air Blast Heat Exchanger Pad, were associated with the reactor building. Testing of the SNAP 2 reactor was completed in November of 1960; at that time, the SNAP 2 reactor was removed. In

1961 Building 4010 was modified to house the SNAP 8 Experimental Reactor (S8ER). Research and development of the S8ER reactor continued until April of 1965 when the program was halted. Later, in 1974, the building was declared surplus; three years later, in 1977, radioactive materials, including the reactor, were removed from the building. Building 4010 was demolished in 1978. After demolition, the building was replaced with a paved parking lot (Sapere 2005: L-5).

5.12.2 Buildings, Structures and Features

The following buildings, structures and features associated with Group L have been demolished.

Building 4010 (SNAP) 8 Experimental Reactor (S8ER)

Built in 1959 Building 4010 was a 60-foot by 24-foot, prefabricated steel-frame building with metal siding and roof. The building's high bay sheltered a below-grade concrete structure containing three steel-reinforced, steel-lined concrete vaults (Sapere 2005: L-1). The vaults contained a steel pressure vessel embedded in concrete ranging from 18 to 27 inches in thickness. The main reactor vault was of high carbon steel accessed via removable shield covers set in the top of the vault. In 1959 the SNAP 2, a 50 kWt reactor, was installed in the building's subsurface vault. In 1960 the SNAP 2 reactor was removed, and the vaults were modified to house the S8ER experimental reactor. The S8ER reactor was in operation until April 1965 when the reactor and its associated equipment were removed (Sapere 2005: L-1). Subsequently, the building was declared "excess" to the government's needs, and three years later, in 1977, removal of radioactive materials began. Decommissioning and demolition included the removal of the reactor containment vessel. After completion of decontamination in 1978, the building was demolished.

Building 4012 (SNAP Critical Test Facility Number 2)

Building 4012 was a 1,292-square-foot, prefabricated metal building with a concrete vault consisting of two rooms housing a fuel storage/equipment room and a critical cell room with four-foot-thick walls lined with steel and a metal vault-type door (Sapere 2005: L-7). Initially, the building housed the SNAP Critical Test Facility Number 2. In 1969 the building was altered to house the Heavy Metal Reflected Fast Spectrum Reactor Critical Test Facility. In 1979 the concrete vaults were modified for use as an x-ray and source radiography facility, a use that continued until 1992. The building was partially demolished in 1992, with the subsurface portion of the building remaining in place. In 2003 the remainder of the building was demolished. Electrical power was supplied to Building 4012 by Building 4713, an electrical substation.

Building 4013 (Thermal Transient Test Facility)

Building 4013 was a prefabricated metal, "Butler style" building with a concrete slab foundation. Its roof rose in height from 15 feet to 33 feet. A five-ton bridge crane, located off the building's south elevation, allowed large equipment to be moved into and out of the building. The building was initially used to assemble non-nuclear SNAP 2 and SNAP 10A ground test and flight test

systems. Later, it was used for thermal transient and seismic testing. Buildings associated with Building 4013 included an electrical substation (Building 4713), a time clock (Building 4823) and an uninterruptible power supply (Building 4413). Building 4013 was demolished in 2003.

Building 4019 (SNAP Flight System Critical Facility)

Building 4019 was a prefabricated metal building with a concrete slab foundation. The building's interior was divided into a 60-foot by 28-foot low bay section that housed offices, conference and restrooms and an equipment room. The 60-foot by 45-foot tall bay included a cinder-block storage room and a subsurface vacuum concrete vault (Sapere 2005: L-15). Building 4019 was used to perform critical acceptance tests for three SNAP reactors (FS-1, FS-4 and FS-5) between 1964 and 1965. After the closure of the SNAP program the building housed the ETEC Construction Staging and Computer Facility during the 1970s and 1980s. An electrical substation, Building 4719, was associated with Building 4019.

Building 4228 (Power Pak)

Building 4228 was a "power pak" facility constructed in 1988 to harness steam generated by SCTI sodium experiments for electrical power generation. Power generated by the facility was sold to Southern California Edison. The facility consisted of the main "power pak" building, two electrical equipment pads (Site 4807 and Site 4808), an Air Blast Heat Exchanger Pad (Site 4809) and a cooling tower (Building 4710). The co-generation building was in operation from 1988 to 1993. In 2003 the building and its associated features were demolished.

Table 13: Group L

Building Number	Original Name	Use	Construction Date	Extant or Demolished	Notes
Building 4010	Systems for Nuclear Auxiliary Power (SNAP) 8 Experimental Reactor (S8ER)	Housed experimental reactors for SNAP program	1959	Demolished (1978)	Housed SNAP 2 and SNAP 8 reactors.
Building 4012	SNAP Critical Test Facility Number 2	Housed critical assembly machine	before 1962	Partially demolished in 1992; rest demolished in 2003	Later used for Heavy Metal Reflected Fast Spectrum Reactor project
Building 4013	Thermal Transient Test Facility	Used to assemble non-nuclear SNAP 2 and SNAP 10 ground test and flight test systems	1962	Partially demolished in 1993, rest demolished in 2003	Associated buildings include Building 4713, Building 4823 and Building 4413
Building 4019	SNAP Flight System Critical Facility				
Building 4228	Power Pak facility	Harness steam from SCTI facility	1988	Demolished (2003)	
Site 4708	Electrical substation	Electrical	c. 1961	Demolished (unknown)	Associated with Building 4228
Site 4807	Electrical Equipment Pad	Electrical	c. 1961	Demolished (unknown)	
Site 4808	Electrical Equipment Pad	Electrical	c. 1961	Demolished (unknown)	
Site 4809	Air Blast Heat Exchanger Pad	Electrical	c. 1961	Demolished (unknown)	

5.13 Group M

5.13.1 Historical Overview

Group M consisted of two buildings, including an electrical substation associated with Systems for Nuclear Auxiliary Power (SNAP) 8 development reactor. Initiated in 1955, the goal of the Systems for Nuclear Auxiliary Power (SNAP) program was to develop small nuclear power sources for use in space. Research and development for the program were primarily carried out by NAA (even-numbered test reactors) and other companies (odd-numbered radioisotope thermal generators (RTGs) (http://www.etec.energy.gov/history/major-operations/SNAP.html). At the Santa Susana facility, Atomics International was in charge of the program, which was located in Buildings 4010, 4012, 4019, 4024, 4059 and 4373 in Area IV. The SNAP 8 (S8DR) reactor was housed in Building 4010, a prefabricated metal, 10,764-square-foot "Butler style" building constructed between 1961 and 1963. The S8DR testing program, in Building 4059, was in operation between 1968 and 1969 and was intended to test the reactor in an environment mimicking the vacuum conditions of space. Testing of the S8DR reactor in vacuum conditions revealed a flaw in its design that caused the reactor to leak hydrogen and fission products within the core (http://etec.gov/history/major-operations/SNAP.html). The accident appears to have led to a decision to cease work on the SNAP 8 program, which was terminated in 1969 (Sapere 2005: M-2). After the termination of the SNAP program the south test cell of Building 4059 housed the Large Leak Test Rig (LLTR), which was used to evaluate the effect of sodium/water reaction events in Liquid Metal Reactor steam generators (http://www.etec.energy.gov/library/D&D_page/EID-08640_NEW_(4059).pdf: Building 4059, Decontamination and Decommissioning Final Report, May 5, 2005). The LLTR operated between the mid-1970s and 1982.

5.13.2 Buildings, Structures and Features

Building 4059 (SNAP 8 Development Reactor)

Building 4059 was a prefabricated metal and concrete building built between 1961 and 1963 to house the SNAP 8 Development Reactor. Below the building's concrete slab foundation was a 28-foot by 32-foot subsurface test vault that was 32 feet deep. The vault contained two test cells located at the west end of the vault (Sapere 2005: M-1). The building was modified in 1963 to simulate the vacuum conditions of outer space for testing of the SNAP 8 reactor (Sapere 2005: M-1). Testing of the S8DR reactor began in 1968 and continued until the program was halted in 1969. Subsequent to the end of the S8DR program the reactor core and its equipment was removed, and the reactor cell pit was sealed (Sapere 2005: M-1). Building 4059 was then used to house the Large Lead Test Rig (LLTR), which tested the effect of sodium water reactors in steam generation. Decontamination and decommissioning began in 1978 to remove equipment associated with the SNAP 8 reactor. Further decontamination and decommissioning work took place between 1987 and 1989 when the subsurface vaults, was decontaminated. In 2004, the entire building, including its above-ground structures and subsurface vaults, was demolished. Following decommissioning and decontamination, the building was demolished in 2004. An electrical substation (Building 4759) was associated with the experimental reactor building. In 2004 Building 4059 was demolished.

Building 4459 (Uninterruptible Power Supply)

Building 4459, a prefabricated Butler-style building, was associated with the reactor building. Built in 1963, the small 800-square-foot steel frame building housed an uninterruptible Power Supply (UPS) designed to provide an emergency power supply (via a diesel generator) for the adjacent building housing the SNAP 8 reactor (Building 4059). Following the cessation of the SNAP 8 program, Building 4459 was used for storing non-radiological materials for the Energy Technology Engineering Center (ETEC). Following radiological surveys, Building 4459 was demolished in 2003 (Sapere 2005: M-9).

Table 14: Group M

Building Number	Original Name	Use	Construction Date	Extant or Demolished	Notes
Building 4059	SNAP 8 Development Reactor	Housed experimental reactor for SNAP program	1961-1963	Demolished (2004)	Later housed the LLTR facility
Building 4459	Uninterruptible Power Supply	emergency power supply	1963	Demolished (2003)	

5.14 Group N (Organic Moderated Reactor, Piqua Prototype Experiment)

5.14.1 Historical Overview

Group N consisted of two small buildings, one of which housed an experimental Organic Moderated Reactor (Building 4049) and the other, the Plant Development Unit (PDU) Instrumentation facility (Building 4048). Building 4049 was built in 1959 to house the hydraulic test facility control center for the SNAP program. An exterior test stand used for testing organic, aluminum cladding, sodium-water reaction tests and other test programs was located adjacent to Building 4049. Beginning in 1969 the building was used as a control center for the Piqua Test Loops. In 1978, the building was used as a control and test center for the PDU coal gasification project. By 1987 the building was no longer in use. Built in 1978 to house the instrumentation unit for the coal gasification project, Building 4048 was a small pre-fabricated metal building located southeast of Building 4005. It was demolished in the mid-1990s.

5.14.2 Buildings, Structures and Features

Building 4048

Building 4048 was a small prefabricated metal building with a moderately pitched gable roof. Located within the fenced area surrounding Building 4005, the building housed the PDU Instrumentation Unit for the coal gasification project. Constructed in 1978, the building was demolished in the mid-1990s.

Building 4049

Building 4049 was an 800-square-foot building, constructed in 1959. The building had concrete walls, a slab foundation, and a built-up tar and gravel roof supported by steel girders (Sapere

2005: N-3). An exterior test stand used for organic, aluminum cladding, sodium-water reaction tests and other test programs was located adjacent to Building 4049. Built in circa-1969, the building was demolished in the mid-1990s.

Table 15: Group N					
Building Number	**Original Name**	**Use**	**Construction Date**	**Extant or Demolished**	**Notes**
Building 4048	Organic Moderated Reactor (OMG)	Housed experimental reactor	1959	Demolished (mid-1990s)	Later used for Experimental Piqua Test Loops
Building 4049	PDU Instrumentation Unit	Built for the coal gasification project	Circa-1978	Demolished (mid-1990s)	

5.15 Group O (Uranium Carbide Fuel Pilot Test Program)

5.15.1 Historical Overview

Group O consisted of 11 buildings, including an experimental plant for the Uranium Carbide Fuel Pilot Plant program (Building 4005), a non-nuclear Sodium Laboratory (Building 4006), a building housing the MHD Experiment program (Building 4402), a laboratory housing the Hydrogen Recombiner (Building 4606), Sodium Lab Instrument Building B (Building 4607), a Combustion Test Facility (Building 4615), two electrical transformers (Buildings 4705 and 4706), and a parking lot (Site 4506). The first buildings in Group O, including Buildings 4005 and 4006, were constructed as part of the Organic Moderated Reactor Experiment (OMR) and Piqua reactors during the late 1950s. The goal of the OMR experiment was to develop organic moderated reactors. The OMR program ended in 1967. Subsequently, in the mid-1960s, buildings in Group O housed various aspects of the Uranium Carbide Fuel Pilot program. The goal of this program was to test the efficiency of fuel assemblies powered by uranium carbide (this program was active between 1966 and 1967). Subsequently, between 1972 and the late 1970s, the Molten Salt Test Bed program was housed in Building 4005. By the late 1970s, the facility was no longer in use, and the process of decontamination and decommissioning had begun. Demolition of the facility was completed in 1996 (Sapere 2005: O-1).

5.15.2 Buildings, Structures and Features

Building 4005 (Uranium Carbide Fuel Pilot Plant)

Built in 1958, Building 4005 was an 80-foot by 60-foot, tilt-up concrete building clad in aluminum siding. The building sheltered laboratories, office space, changing rooms, and a high bay used for testing coolants for the OMR experimental reactor. Several concrete pads, located to the south of the building, supported equipment for the Molten Salt Oxidation project and filter plenums (Sapere 2005: O-1). After the closure of the OMR program in 1967, Building 4005 was remodeled to serve as a support facility for the manufacture of uranium carbide reactor fuel assemblies using depleted uranium and enriched uranium (Sapere 2005: O-1). This program was in operation for nine months in 1966-1967 (Sapere 2005: O-1). Subsequently, the building housed the Molten Salt Test facility between 1972 and circa 1977. Decontamination of the building began in 1978 with the removal of exterior subsurface holding tanks (Sapere 2005: O-

1). Later, in 1978, the building's drain lines were removed; decontamination of the building was completed in 1993 (Sapere 2005: O-1). Demolition of the building was completed in 1996.

Building 4006 (Sodium Laboratory), Building 4616 and Building 4706

Constructed in circa-1958, Building 4006 is a prefabricated, 13,284-square-foot metal building with a cooling tower (Building 4616) and an electrical substation (Building 4706). Building 4006 housed offices and laboratory space for the non-nuclear Sodium Laboratory (Sapere 2005: O-5). Alterations, including the removal of the cooling tower and the installation of a "power pak" substation, were made to the building during the early 1980s. Use of the building ceased in 1999 (Sapere 2005: O-5). A free-standing steel canopy, located to the south of Building 4006, was demolished sometime after 2005.

Building 4402 (Magneto-Hydro Dynamic Experiment)

Building 4402 was a small, prefabricated metal building located to the south of Building 4006. Built sometime after 1962, but before 1967, the building was a non-radiological facility, associated with the Magneto-Hydro Dynamic Experiment (MHD) (Sapere 2005: O-9). The building was demolished sometime before 2005.

Building 4606 (Sodium Laboratory Instrument Building A) and Building 4816 (Test Canopy)

Built in the early 1960s, Building 4006 was used for testing the Hydrogen Recombiner developed by Atomics International to mix hydrogen and oxygen to create water. The recombiner was designed for emergency use if a reactor produced excess hydrogen (Sapere 2005: O-13). The recombiner and test canopy were housed in a small structure located to the southeast of Building 4006. Building 4606 appears to have been demolished sometime before 2005.

Building 4607 (Sodium Laboratory Instrument Building B)

Built sometime between circa-1958 and 1962, Building 4607 was used for non-radiological storage. Located to the southeast of Building 4006, the small building was demolished sometime during the early 1970s (Sapere 2005: O-15).

Building 4615 (Combustion Test Facility)

Abutting the northern end of Building 4006, Building 4615 was constructed in the early 1980s to house a non-radiological combustion test facility. The building was demolished sometime before 2005.

Building 4704 (Inbound Transformer)

Built between circa-1958 and 1962, the Inbound Transformer (Building 4704) was a small structure surrounded by a chain-link fence. Located at the corner of 17th Street and F Street, and

adjacent to an electrical station, the building was owned by Southern California Edison (Sapere 2005: O-19). Building 4704 was demolished in 2004.

Site 4506 (Parking Lot)

Built during the early to mid-1960s, the parking lot is located south of B Street, between Building 4005 and 4006. The parking lot was used by personnel working in Buildings 4005, 4006, 4024, 4025, and other nearby facilities (Sapere 2005: O-11).

Table 16: Group O

Building Number	Original Name	Use	Construction Date	Extant or Demolished	Notes
Building 4005	Uranium Carbide Fuel Pilot Plan	Non-nuclear testing of coolant for the OMR Experiment and Piqua reactors	1958	Demolished (1996)	Later housed the Molten Salt Test Facility. Associated with Building 4705
Building 4006	Sodium Laboratory	Non-nuclear sodium laboratory	c. 1958	Extant	Building 4616, a cooling tower, and an electrical substation (Building 4706) were associated with this building
Building 4402	MHD Experiment	Non-radiological facility	c. 1962 and 1967	Demolished (date unknown)	Building 4816, a test canopy, was associated with this building
Building 4606	Sodium Laboratory Instrument Building A	Housed Hydrogen Recombiner	c.1962-1965	Demolished (date unknown)	Building 4816, a test canopy, was associated with this building
Building 4607	Sodium Laboratory Instrument Building B	Non-radiological storage	c. 1958-1962	Demolished (early 1970s)	Later used as a storage facility
Building 4615	Combustion Test Facility	Non-radiological research	c. 1980-1985	Demolished (by 2005)	
Building 4704	Main Electrical	Inbound transformer	c. 1958 and 1962	Demolished (2004)	
Site 4506	Parking Lot	For facility personnel	c.1958-1965		Associated with Buildings 4005 and 4006

5.16 Group P (Component Testing Facility for Sodium Cooled Graphite Moderated Reactors)

5.16.1 Historical Overview

Part of the Energy Technology Center (ETEC) Group P is composed of 28 buildings, structures and features associated with research and development for the Sodium-Cooled Graphite Moderated Reactor program. Later research, development and testing for LMEC and ETEC were carried out at Group P. Programs included SCTL, which tested reactor components and

instruments in a sodium environment (Sapere 2005: P-29). After the SCTL program ended in the late 1950s, some of the buildings in Group P were used for other DOE programs, including SCTI and Kalina. Construction of the SCTI program began in 1959. In operation between 1964 and 1996, it was devoted to the development and testing of components, including steam generators in conditions that simulated the operating conditions of a sodium cooled nuclear reactor for the Liquid Metal Reactor (LMR) (Sapere 2005: P-25 and P-29). Buildings, structures and features in Group P were constructed between 1958 and 1992.

5.16.2 Buildings, Structures and Features

Building 4026 (Large Component Test Loop) (LCTL), Building 4726 (Electrical Substation), Building 4805 (Time Clock), and Building 4426 (Uninterruptible Power Supply)

Building 4026 was a 10,340-square-foot prefabricated metal building built in 1957 for testing components of sodium-cooled, graphite moderated reactors under conditions that simulated the conditions of an operating reactor (Sapere 2005: P-1). The building housed laboratories, a test area, control buildings, and two above-grade and one below-grade sodium tanks (Sapere 2005: P-1). In circa-1972 the building was renamed the Small Component Test Loop (SCTL). Later, in 1987, the building was renamed the Sodium Component Test Laboratory. In 1999, the building was demolished. A small structure, housing a time clock (Building 4805), an electrical substation (Building 4726) and an Uninterruptible Power Supply (Building 4426), was associated with Building 4026. The precise construction dates for these three buildings are unknown, although they all appear to have been in place by the mid-1960s. The complex of buildings, structures and features was demolished in 1999.

Building 4226 (Small Sodium Test Loop Motor Generator)

Building 4226 was a small, prefabricated metal structure constructed in the early 1980s to store non-radiological hazardous materials, including liquid sodium generated by the Small Sodium Test Loop program (Sapere 2005: P-5). The building was demolished in 1998-1999.

Building 4293 (Time Clock)

Located near the intersection of C Street and 20th Street, Building 4293 was a small structure built in circa-1971. The structure housed a time clock. It was demolished in circa-1977 (Sapere 2005: P-7).

Building 4310 (Portable Changing Room)

Building 4310 was a small, portable structure located to the southeast of Building 4358, between circa-1967 and 1973 (Sapere 2005: P-9). It was demolished (or moved) in circa-1973.

Building 4334 (Kalina Control Room)

Constructed in the early 1990s, Building 4334 was a small, prefabricated metal building located at the southeast corner of the Kalina Facility (Building 4026). The building housed the control room for the Kalina Facility and was demolished in 2003.

Building 4335 (Control Element Test Structure)

Located to the southwest of Building 4006, Building 4335 was built in 1957 to test the mechanical system used to move control rods for the Fast Breeder Reactor Building. Constructed of prefabricated metal, the 800-square-foot building was demolished in the mid-1980s (Sapere 2005: P-15).

Building 4354 (Control Element Test Structure)

Built in 1957, Building 4354 was an 800-square-foot prefabricated building located to the south of Building 4006. Built to test mechanical systems used to move control rods in the Fast Breeder Reactor, the building was demolished in the 1980s.

Building 4355 (Sodium Component Test Installation Control Center) and Building 4756 (Electrical Substation)

Built in 1958, Building 4355 was a 4,369-square-foot prefabricated metal building set on a concrete slab foundation (Sapere 2005: P-19). Built to house the Control Center for the Sodium Component Test Installation, the building abutted the east elevation of Building 4356 and was serviced by an electrical substation (Building 4756). In 2002, both Building 4355 and Building 4756 were demolished.

Building 4356 (Sodium Component Test Installation (SCTI) and Building 4656 (Cooling Stacks)

Building 4356 was a prefabricated metal building set on a concrete slab foundation. It was built in 1958 to house a generator that produced steam from a sodium heat source (Sapere 2005: P-21). The facility's cooling stacks (Building 4656) were located southwest of the building. Both the building and cooling stacks were demolished in 2002.

Building 4357 (Heat Transfer Loop Control Building)

Constructed in 1958, Building 4357 was an 840- square-foot, prefabricated metal building. Set on a concrete slab foundation, it was located to the northwest of Building 4006. Built to house a Heat Transfer Loop Control, it was later used as a Pump Bearing Test Facility for LMEC and ETEC (Sapere 2005: P-25). During the late 1980s the building was used as a storage facility for the SCTI program; it was demolished in 2002.

Building 4358 (Organics Reactor Development Building)

Originally located near the northwest end of Building 4656, Building 4358 was a 1,120-square-foot, prefabricated metal building set on a concrete slab foundation. Built in 1966, it was used to store chemicals for the SCTL program. In 1978 the building was moved to a location to the south of Building 4026 (Sapere 2005: P-29). Later, the building became a storage building for the SCTI and Kalina programs; it was demolished in 2004.

Building 4359 (Compressor Building)

Constructed in the 1970s, Building 4359 was an 860-square-foot, prefabricated metal building located west of Building 4026 (Sapere 2005: P-33). Built to house a steam generator for the SCTI facility, the building was demolished in 2002.

Building 4360 (Chemical Storage Building)

Building 4360 was a small, prefabricated metal building set on a concrete foundation. The building stored chemicals for the SCTI, a DOE development test facility. Located at the north end of C Street, the building was demolished in 1999.

Building 4362 (Water Sampling Enclosure)

Building 4362 was a 200-square-foot, prefabricated metal structure located to the northwest of Building 4356. The building was used to test the purity of water used in the SCTI facility (Sapere 2005: p-39). The building appears to have been built in the 1970s; it was demolished in 2003.

Building 4392 (SCTI Electrical Equipment)

Building 4392, a small, prefabricated metal building, was constructed in circa-1992 to house electrical equipment used for the SCTI and Kalina programs. The building was demolished by 2005.

Building 4457 (Pump Bearing Test Structure)

Building 4457 was constructed in circa-1972 for the performance testing of sodium lubricated bearings used in sodium pumps for the SCTI program. The prefabricated metal building was two stories in height with a subsurface sodium tank located outside of the building (Sapere 2005: P-43). In 1977 an accident contaminated the sodium system. After the accident, the building was gutted and used for storing waste oil from non-radiological facilities in Area IV.

Building 4478 (CDHC Office Support Trailer)

Originally located east of Building 4020, the CDHC Office Support Trailer was a dual 8-foot by 30-foot trailer used for office space. Sometime between 1967 and 1971 the trailer was moved

northwest of Building 4656; during the 1970s the trailer later was used for the SCTI program. The building was demolished sometime before 2005.

Building 4826 (SCTL Test Facility) and Building 4726 (Electrical Substation)

Building 4826 was an enclosed drain tank, surrounded by an enclosure that was associated with Building 4026; the drain tank was removed in 1998 (Sapere 2005: P-51). Power for the drain tank was provided by Building 4726, an electrical substation.

Site 4502 (Parking Lot), Building 4806 (Time Clock), and Building 4657 (Guard Shack)

Located near the corner of 20th Street and F Street, the parking lot was built between 1957 and 1962 as a parking lot for personnel working in Building 4006 and surrounding facilities. At the northwest end of the parking lot was a small guard shack (Building 4657). Located across 20th Street from Site 4502 was a time clock (Building 4806) that abutted the east elevation of Building 4066 (Sapere 2005: P-49). The parking lot and guard shack were demolished in circa-2003. The time clock was demolished in circa-1975.

Table 17: Group P

Building Number	Original Name	Original Use	Construction Date	Extant or Demolished	Notes
Building 4026	Large Component Test Loop Control Building	Test components of graphite moderated reactors. Later housed the Sodium Test Laboratory.	1958	Demolished (1999)	Associated with Building 4026: Building 4726 (Electrical Substation), Building 4805 (Time Clock Building), and Building 4426 (Uninterruptible Power Supply).
Building 4226	SCTL Motor Generator Building	Store non-radioactive hazardous materials	early 1980s	Demolished (1999)	
Building 4293	Construction Shack/Time Clock	Housed time clock	c.1971	Demolished (circa 1977)	
Building 4310	Portable Change Room	Changing room for personnel working in Building 4010	early 1960s	Demolished (circa 1973)	Moved in circa 1971 to a location adjacent to Building 4026
Building 4334	Kalina Control Room	Control room for Kalina Facility	c.1990	Demolished (2003)	
Building 4335	Kalina Turbine Generator Room	Housed generator	c.1988-1991	Demolished (2003)	
Building 4354	Central Element Test Structure	Test site for control rod mechanical systems	1957	Demolished (mid-1980s)	Part of SCTI facility
Building 4355	Sodium Component Test Installation (SCTI) Control Center	Monitor and control center for Building 4356 (SCTI test installation)	1958	Demolished (2003)	Part of SCTI facility. Included Building 4756, Electrical Substation
Building 4356	Sodium Component Test Installation	Research and Development for steam generated from a sodium heat source	1958	Demolished (2002)	Building 4656 Cooling stacks for steam generation
Building 4357	Heat Transfer Loop Control Building	Control center	1958	Demolished (2002)	Later housed the Pump Bearing Test Facility for the LMEC program

Table 17: Group P continued:					
Building 4358	Organics Reactor Development Building	Chemical storage building	1966	Demolished (2003)	Later uses included housing a time clock and operating as a storage building for SCTL, SCTI and Kalina programs
Building 4359	Compressor Building	Housed air compressor for SCTI facility	1970s	Demolished (2002)	Part of SCTI facility
Building 4360	Chemical Storage Building	Chemical storage for SCTI	c. 1987	Demolished (1999)	Part of SCTI facility
Building 4361	SCTI Hazardous Material Storage	Store hazardous materials	c. 1992	Demolished (2003)	Part of SCTI facility
Building 4362	Water Sampling Enclosure	Water purity test facility	1970s	Demolished (2003)	Part of SCTI facility
Building 4392	SCTI Electrical Equipment Building	Housed electrical equipment	1992	Demolished (by 2005)	Part of SCTI facility
Building 4457	Pump Bearing Test Structure	Proof and performance testing of sodium pump components	c. 1972	Demolished (early 1990s)	Part of SCTI facility
Building 4478	CDHC Office Support Trailer	Office space	before 1967	Demolished (before 2005)	Moved between 1967 and 1971
Building 4826	SCTL Test Facility	Drain tank and enclosure abutting Building 4826	1958	Demolished (1998)	Part of SCTI facility
Site 4502	Parking Lot	Parking for personnel in Building 4006 and other nearby facilities	before 1962	Demolished (before 2005)	Building 4606 (Time Clock building) and Building 4657 (Guard Shack) were associated with this building

5.17 Group Q

5.17.1 Historical Overview

Group Q encompassed three buildings and a drainage feature located near the intersection of 17th Street and G Street. The buildings and feature in Group Q were built in the early 1960s and used primarily for the storage of hazardous materials.

5.17.2 Buildings, Structure and Features

Building 4007 (Sodium Storage Building)

Built in 1958, Building 4007 was a 1,700-square-foot, concrete-walled building capped by a side gable, steel roof located south of the intersection of F Street and 17th Street. The building was a storage facility for non-radiological hazardous materials (primarily sodium) (Sapere 2005 Q-1). The building was demolished in 1996.

Building 4008 (Flammable Material Storage Building)

Building 4008 was a 1,500-square-foot, concrete walled building capped by a side gable, steel roof. The building was constructed in 1958 to store non-radiological flammable materials (Sapere 2005: Q-3). The building was demolished in 1996.

Site 4501 (Parking Lot) and Building 4823 (Time Clock Building)

Built sometime between 1957 and 1962, Site 4501 is located at the corner of G Street and 17th Street. After circa-1987 the site was used as a storage yard (Sapere 2005: Q-5). Building 4823 (Time Clock Building) was located at the southwest corner of the parking lot; it was demolished sometime before 2005 (Sapere 2005: Q-5).

17th Street Drainage (no number)

In 1962 a natural channel located south of 17th Street was altered to form a 30-foot by 30-foot holding pond to impound water draining from the surrounding area. The impound pond was surrounded by earthen berms (Sapere 2005: Q-7). In 1998 the pond was dredged to remove silt and vegetation (Sapere 2005: Q-7).

Table 18: Group Q

Building Number	Original Name	Use	Construction Date	Extant or Demolished	Notes
Building 4007	Sodium Storage Building	Stored non-radioactive hazardous waste	1958	Demolished (1996)	
Building 4008	Flammable Materials Storage Building	Stored non-radioactive flammable materials	1958	Demolished (1996)	
Building 4823	Time Clock	Time clock	c. 1958-1962	Demolished (circa-1996)	Associated with Site 4501
Site 4501	Parking Lot	For facility personnel	c.1958-1962	Extant	

5.18 Group R

5.18.1 Historical Overview

Built between 1958 and 1977, the buildings in Group R consisted of support facilities including a warehouse, fuel tank and x-ray storage building.

5.18.2 Buildings, Structures and Features

Building 4011 (Warehouse Support)

Constructed in 1958, Building 4011 was a 15,120-square-foot, prefabricated metal building located to the north of G and 20th streets. A Traffic Dispatch building (Building 4403) abutted the southeast corner of the building. Another small structure (Building 4611) housing an electrical substation abutted the southwest corner of Building 4011. Various support facilities

were housed in Building 4011 between 1958 and 1984; these included a warehouse, administrative offices, and a manufacturing support shop. Between 1984 and 1996 the northern half of the building housed a calibration and repair center for radiation instrumentation (Sapere 2005: R-1). During this period the south half of the building housed a property Inventory and Control Department (Sapere 2005: R-1). Currently the building is used to store communications equipment.

Building 4171 (X-Ray Building)

Built in the mid-1960s, Building 4171 was a small building located to the north of the intersection of G Street and 20th Street. Initially used for storage of electronic equipment, the building was demolished in 2000.

Building 4172 (X-Ray Building)

Constructed in the early 1970s, Building 4172 was a small, flat-roofed, concrete-walled building abutting the west side of Building 4011. The building housed an X-ray room and stored radioactive source material. The building was demolished in 2000.

Building 4500 (Gas Bottle Dock)

Constructed in the mid-1960s, Building 4500 was a free-standing building with a raised concrete loading dock located to the northeast of Building 4011. The loading dock was a drop-off and pick-up center for portable gas canisters used throughout Area IV (Sapere 2005: R-11). Sometime before 1998 the building was partially demolished, leaving the loading dock in place (Sapere 2005: R-11).

Building 4611 (Paint Spray Canopy)

Built sometime between circa-1957 and 1962, Building 4611 appears from photographic sources to have been an open canopy-style structure that abutted the southwest corner of Building 4011. The building was demolished sometime between 1981 and 2005.

Building 4612 (Maintenance and Storage Building)

Building 4612 was constructed sometime between 1957 and 1962. It abutted the northeast side of Building 4171. The building appears to have been demolished at the same time that Building 4171 was demolished.

Building 4735 (Fuel Tank) (includes Building 4320)

Located to the north of F Street, Building 4735 was an 86,000-gallon circular tank that was 26 feet in diameter and 24 feet tall (Sapere 2005: R-19). It was erected in 1977 to store fuel for the Sodium Component Test Installation (SCTI) (Sapere 2005: R-19). Buildings associated with Building 4735 included the Fuel Oil Pump Building (Building 4320), which was demolished in 1999.

Site 4521 (Parking Lot)

Located on the northeast side of Building 4011, the parking lot was constructed sometime between circa-1957 and 1962 as a paved parking area for personnel working in Building 4011.

Table 19: Group R

Building Number	Original Name	Use	Construction Date	Extant or Demolished	Notes
Building 4011	Warehouse Support Building	Warehouse, offices, machine shop	1958	Extant	A traffic dispatch building (Building 4403) and an electrical substation (Building 4711) were associated with Building 4011
Building 4171	X-Ray Building	Electronic equipment storage	mid-1960s	Demolished (2000)	
Building 4172	X-Ray Building	x-ray room and storage facility for sealed radioactive sources	early 1970s	Demolished (2000)	
Building 4500	Gas Bottle Dock	Storage and distribution building for gas containers	mid-1960s	Partially demolished by 1998	
Building 4611	Paint Spray Canopy	Spray painting facility	c. 1958-1962	Demolished between 1981 and 2005	
Building 4612	Maintenance Building	Maintenance	c.1958-1962	Demolished (circa-2000)	
Site 4521	Parking Lot	For personnel in Building 4011	c. 1958-1962	Demolished (mid-1960s)	
Fuel Tank 4735	Fuel Tank	Housed fuel for SCTI program	1977	Demolished (1999)	

5.19 Group S

5.19.1 Historical Overview

Facilities in Group S, located at the intersection of G and 20th streets, were primarily composed of prefabricated buildings housing offices for the LMEC program. The portable buildings were removed from the site in 2000.

5.19.2 Buildings, Structures and Features

Building 4383 (Instrumentation Building)

Building 4383 was a 3,691-square-foot, prefabricated metal building set on a concrete slab foundation. Constructed sometime between 1958 and 1962, the building initially housed an instrumentation facility for the LMEC program (Sapere 2005 S-1). By 1967 the building housed the LMEC assembly and test center. Sometime between 1967 and 1971 the building was renamed the LMEC Construction Building. Two related structures, including a tower (Building 4393) and an electrical substation (Building 4883), were associated with Building 4383. All three buildings were demolished in the early 1980s.

Building 4482 (Government Project Office)

Building 4482 was a 3,130-square-foot trailer attached to a concrete slab foundation. The trailer was moved onto the property in 1968 to house offices for the LMEC program. In 2000 the building was moved off site (Sapere 2005: S-3).

Building 4483 (LMEC Office Trailers)

Building 4483 was a 6,000-square-foot trailer attached to a concrete slab foundation. The trailer was moved onto the property in 1968 to house offices for the LMEC program. In 2000 the building was removed (Sapere 2005: S-5).

Building 4484 (Test Engineering Office Trailer)

Building 4484 was a prefabricated, steel-framed trailer clad in wood siding and set on a concrete foundation. The building housed offices for the test engineering group. It was relocated offsite in 2000 (Sapere 2005: S-7).

Building 4485 (LMEC Office Trailer)

Building 4485 was a 3,000-square-foot trailer with a steel frame and wood siding; the trailer was attached to a concrete slab foundation. The trailer, which was moved onto the property in 1968 to house offices for the LMEC program, was removed in 2000 (Sapere 2005: S-11).

Building 4486 (LMEC Office Trailer)

Building 4486 was a 6,000 square-foot, prefabricated, steel-framed trailer clad in wood siding and set on a concrete foundation. The building housed restrooms for the surrounding office trailers. It was relocated offsite in 2000 (Sapere 2005: S-13).

Building 4487 (Energy Technology Engineering Center (ETEC) Engineering Building)

Built in 1981, Building 4487 was a wood-frame, stucco-sided building used for office space. It was demolished in 2004 (Sapere 2005: S-15).

Site 4538 (Parking Lot)

Located on the northwest corner of G Street and 20th Street, Site 4538 was a parking lot used by personnel working in the ETEC Engineering Building and the surrounding office trailers (Sapere 2005: S-17). Presumably, the parking lot was built in the late 1960s at the time most of the office trailers were moved to Group S. The parking lot was removed in 2000 (Sapere 2005: S-17).

Table 20, Group S					
Building Number	**Original Name**	**Use**	**Construction Date**	**Extant or Demolished**	**Notes**
Building 4383	LMEC Office Trailers	Offices	1968	Relocated offsite (2000)	
Building 4482	Government Project Office	Portable office building	1968	Relocated offsite (2000)	
Building 4483	Instrumentation Building	Part of the LMEC facility	c. 1958-1962	Demolished (early 1980s)	Later housed the LMEC assembly and test facility
Building 4484	Test Engineering Office Trailer	Restrooms	1969	Relocated offsite (2000)	
Building 4485	LMEC Office Trailer	Offices	1968	Relocated offsite (2000)	
Building 4486	LMEC Office Trailer	Offices	1968	Relocated offsite (2000)	
Building 4487	ETEC Engineering Building	Offices	1981	Demolished (2004)	
Site 4538	Parking Lot	Parking for personnel	c. 1981	Demolished (2000)	

5.20 Group T

5.20.1 Historical Overview

Located on the northwest intersection of 22nd Street and G Street, Group T was composed of three prefabricated metal buildings, an electrical substation and a concrete slab associated with the Sodium Pump Test Facility (SPTF). The SPTF facility supported research and development of sodium pumps for nuclear power applications. The facility was in operation from the mid-1970s until 2001.

5.20.2 Buildings, Structures and Features

Building 4461 (Sodium Pump Test Facility, Motor Generator Building)

Constructed in 1977, Building 4461 was a 3,600-square-foot, prefabricated metal building. The building housed electrical motors that provided power to the SPTF building (Building 4462). The building was demolished sometime between 2005 and 2007.

Building 4462 (Sodium Pump Test Facility)

This large, prefabricated metal building was constructed in 1974 to house the SPTF facility. Rising to a height of approximately 140 feet, the building housed test facilities and laboratories. A small, freestanding electrical substation (Building 4760) was located to the south of Building 4462.

Building 4463 (Sodium Cleaning and Handling Facility) and Building 4780 (Electrical Substation)

Building 4463 was a 70-foot-tall 6,635-square-foot, prefabricated metal building constructed in 1974. The most notable feature of the building was its large exterior crane. Within the building were two bridge cranes. The large exterior crane, which has a 100-ton capacity, is still in place. The building was used to assemble, clean and disassemble sodium pumps and other equipment for the SPTF (Sapere 2005: T-5). Parts of the building have been demolished.

Site 4662 (Small Parts Cleaning Pad) and Building 4760 (Electrical Substation)

Built in circa 1981, Site 4662 was a concrete pad located west of Building 4462 used as an outdoor facility for cleaning equipment and parts from SPTF (Sapere 2005: S-17).

Table 21: Group T

Building Number	Original Name	Use	Construction Date	Extant or Demolished	Notes
Building 4461	SPTF Motor Generator Building	Housed electrical equipment for SPTF motors	1977	Extant	
Building 4462	SPTF Building	Test facility for experimental sodium pumps	1974	Demolished (2005-2006)	Building 4760 (electrical substation) was associated with this building
Building 4463	Sodium Cleaning and Handling Facility	Used to assemble, disassemble and clean sodium pumps	1974	Partially Demolished (2007)	Building 4780 (electrical substation) was associated with this building
Site 4662	Small Parts Cleaning Pad	Outdoor concrete pad used to clean sodium off parts	1981	Extant	

5.21 Group U

5.21.1 Historical Overview

Group U was composed of three main buildings, two electrical stations and a time clock built in 1963 as part of the SNAP program. Later the facility housed the Liquid Metal Engineering Center Chemical Laboratory. All buildings in Group U were demolished in 2001.

5.21.2 Buildings, Structures and Features

Building 4062 (Energy Technology Engineering Center (ETEC) Instrumentation) and Building 4762 (Electrical Substation)

Constructed in 1963, Building 4062 was a prefabricated metal building set on a concrete foundation. Its interior was divided into high and low bays (Sapere 2005: U-1). The building

was used as an instrument calibration storage facility for the ETEC program. A small electrical substation was located southwest of Building 4062. The building was demolished in 1999.

Building 4065 (Systems for Nuclear Auxiliary Power Thermoelectric Converter Test Building)

Building 4065 was a 6,300-square-foot, prefabricated metal building set on a concrete slab foundation. Built in 1963, the building first served as a vacuum test facility for the SNAP program; it was subsequently transformed into a non-nuclear, sodium research chemical laboratory (Sapere 2005: U-3). The building was demolished in 1999.

Building 4066 (Instrumentation Repair and Calibration Building), Building 4762 (Electrical Substation) and Building 4806 (Time Clock)

Constructed in 1963, Building 4066 was a 4,800-square-foot, prefabricated metal building with a concrete slab foundation; its interior encompassed 3,524 square feet of laboratory space (Sapere 2005: U-7). An electrical substation, located west of Building 4066, was associated with this facility; to the east of the building was a small structure housing a time clock (Sapere 2005: U-7). Building 4066, Building 4762, and Building 4806 were demolished in 1999.

Table 22: Group U

Building Number	Original Name	Use	Construction Date	Extant or Demolished	Notes
Building 4062	ETEC Instrumentation Operations	Storage of calibration equipment	1963	Demolished (1999)	Building 4762 (electrical substation) was associated with this building
Building 4065	SNAP Thermoelectric Converter Test Building	Vacuum test facility. Later served as a non-nuclear chemical laboratory	1963	Demolished (1999)	Later housed the LMEC chemical laboratory. Building 4762 (electrical substation) was associated with this facility
Building 4066	Instrument Repair and Calibration Building	Calibration & testing facility for non-radiological equipment	1963	Demolished (1999)	

5.22 Group V

5.22.1 Historical Overview

Group V was composed of four buildings built between 1961 and 1964 to house offices, storage space and research facilities for the SNAP program. Later the buildings housed various functions of the LMEC and ETEC program, most notably the experimental sodium pumps in Building 4057.

5.22.2 Buildings, Structures and Features

Building 4038 (SNAP Office Building No. 2)

Constructed in 1962, Building 4038 was a 5,297-square-foot, prefabricated metal building set on a concrete slab foundation (Sapere 2005: V-1). Throughout its history the building has served as office space, initially for the SNAP program and later for the LMEC program, ETEC administration building and the Department of Energy site office (Sapere 2005: V-1).

Building 4039 (SNAP Administration Building)

Built in 1964, Building 4039 was a prefabricated metal building with a concrete slab foundation. Initially, the building housed offices. Later, in 2000, the building was transformed into a health physics counting laboratory to analyze air and wipe samples (Sapere 2005: V-3). The building was demolished in 2003.

Building 4057 (Launch Handling & Mobile Equipment Development)

Built in 1961, Building 4057 was a prefabricated metal building set on a concrete foundation. The building housed two sodium test rigs that reached a temperature of 1,300 degrees when in use and two large cranes with a 5-ton and 20-ton capacity (Sapere 2005: V-7). In subsequent years, the building housed the LMEC laboratory, the Static Sodium Test Facility, and the ETEC General Test facility. In 1998, after the laboratory was decommissioned, the building was used for record storage.

Building 4626 (Equipment Storage Building)

Constructed in 1963, Building 4626 was a prefabricated metal building set on a concrete foundation that featured a 2-ton bridge crane (Sapere 2005: V-11). Between 1963 and the 1990s, the building served as a storage facility for the LMEC, ETEC, and SNAP programs. The building was demolished sometime between 2003 and 2004.

Table 23: Group V

Building Number	Original Name	Use	Construction Date	Extant or Demolished	Notes
Building 4038	SNAP Office Building No. 2	Office building	1962	Extant	Building 4757 (electrical substation) was associated with this building
Building 4039	SNAP Administration Building	Offices	1964	Demolished (2003)	Later housed offices for the LMEC program
Building 4057	Launch Handling & Mobile Equipment Development	Housed sodium test rigs	1961	Extant	Later used by the ETEC and LMEC programs
Building 4626	Equipment Storage Building	Storage for SNAP program	1963	Demolished (2003-2004)	Later used as a storage facility for LMEC and ETEC

5.23 Group W

5.23.1 Historical Overview

Group W was composed of three buildings, a parking lot and time clock located at the south end of 22nd Street. While the parking lot (Site 4573), Building 4373 and Building 4374 were built in 1956 to house a solid propellant mixing and casting facility, it appears the facility was never used for this purpose (Sapere 2005: W-3). Instead, in 1957, it was transferred from Rocketdyne to Atomics International to serve as a research and development facility for the SNAP program. After the termination of the SNAP program, buildings in Group W were used for a variety of purposes, including a Nak test loop in Building 4373. In 1974 a storage facility (Building 4015) was constructed (Sapere 2005: W-1). All buildings and features within Group W, with the exception of the parking lot and Building 4015, were demolished between 1999 and 2004.

5.23.2 Buildings, Structures and Features

Building 4015 (Construction Staging and Storage)

Building 4015 was a prefabricated metal building located on the east side of 22nd Street. It was built in 1974 to house a construction staging and storage facility.

Building 4373 (SNAP Critical Facility) and Site 4848 (Concrete Pad)

Building 4373 was built in 1956 to house a solid propellant mixing and casting facility for Rocketdyne. The building was composed of three concrete bays with 12-inch-thick walls and two metal frame bays (Sapere 2005: W-3). In 1957, ownership of the building was transferred to Atomics International, which carried out a number of revisions to the property, including reinforcing of the concrete bays for use in the SNAP program; further modifications were made in 1962 to house a Nak test loop for the Snap program (Figure 2005: W-3). After the termination of the SNAP program in the late 1960s the building was used for storage. A small concrete equipment pad (Building 4848) abutted the north side of Building 4373. The building was demolished in 1999.

Building 4374 (Test Loop Enclosure)

Building 4374 was a 600-square-foot, prefabricated "Butler style" building constructed in 1956 to house non-nuclear liquid metal heat transfer loops for the SNAP program (Sapere 2005: W-7). The building was demolished in 1996.

Site 4573 (Parking Lot) and Building 4343 (Time Clock)

Site 4573 was a paved parking lot constructed in 1956 for personnel working on the SNAP program in Building 4373 and Building 4055. A time clock (Building 4343) was located at the south end of the parking lot. In 1974, both the parking lot and the time clock were demolished and replaced with Building 4015.

Table 24: Group W					
Building Number	**Original Name**	**Use**	**Construction Date**	**Extant or Demolished**	**Notes**
Building 4015	Construction Staging Storage	Warehouse	1974	Demolished (2004)	Building 4707 (electrical substation) was associated with this building
Building 4343	Time Clock	Time clock	c. 1956	Removed (1974)	
Building 4373	SNAP Critical Facility	Designed as a solid propellant mixing & casting facility but not used for this purpose	1956	Demolished (1999)	Later housed SNAP Critical Research facility. A concrete pad, Building 4373, was associated with this facility
Building 4374	Test Loop Enclosure	Tested non-nuclear liquid metal heat transfer loops	1956	Demolished (1996)	
Building 4573	Parking Lot	Parking	1956	Partially removed	

5.24 Group X

5.24.1 Historical Overview

Group X is composed of a single building and its associated electrical substation and guard shack. The complex was constructed in 1967 to house a research facility for recycling uranium-plutonium pellets for the Fast Flux Test Facility in Hanford, Washington. The complex operated for a seven-month period in 1970 before being deactivated. In 1974, Building 4055 was reactivated to serve as a research/laboratory facility for the Liquid Metals Fast Breeder Reactor, Advanced Fuel Systems program. Use of the facility ended sometime between 1978 and 1979. After the facility was decontaminated it was used for non-radiological research.

5.24.2 Buildings, Structures and Features

Building 4055 (Nuclear Materials Development Facility (NMDF)

Constructed in 1967, Building 4055 was a tilt-up concrete building 200 feet long by 60 feet wide, with 6-inch thick walls and a concrete roof. The building was constructed to house a research facility for the recycling of uranium-plutonium pellets (Sapere 2007: X-1). The facility was in operation for a seven month period in 1970 when it was used to fabricate mixed uranium-plutonium pellets. Subsequently, in 1974, the building was reactivated to serve as a facility for the Liquid Metal Fast Breeder Reactor, Advanced Fuel Systems program (Sapere 2007: X-1). Deactivation and decontamination of the facility began in 1979, with the building being released for unrestricted use in 1987 (Sapere 2005: X-2). A guard shack (Building 4155) and an electrical substation (Building 4755) were associated with the facility; the guard shack was demolished sometime before 2005.

Table 25: Group X					
Building Number	**Original Name**	**Use**	**Construction Date**	**Extant or Demolished**	**Notes**
Building 4055	Nuclear Materials Development Facility	Process and fabricate uranium-plutonium pellets	1974	Extant	Later housed the Advanced Fuel Systems Program. Building 4155 (guard shack) and Building 4755 (electrical substation) are associated with this building.

5.25 Group Y

5.25.1 Historical Overview

Group Y was composed of a cluster of buildings at the southeast corner of J Street and 24th Street. One structure, a concrete pad used to store sodium, was located at the south end of J Street. Most of the buildings in Group Y were constructed between circa-1958 and 1962 to house support facilities for the SRE, SNAP, OMR and the Hydraulic Test Facility. The Hydraulic Test Facility tested piping, pumps and other components of loops in the SRE, SNAP and OMR programs (Sapere 2005: Y-21). The buildings, structures and features in Group Y were demolished between the early 1970s and 2003.

5.25.2 Buildings, Structures and Features

Building 4173(Sodium Storage Pad)

Constructed sometime between circa-1956 and 1962, Building 4173 was an exposed concrete pad used as a storage facility for sodium (originally, it was called Building 4865). Sometime between 1962 and 1967 it was transformed into a Gammagraph X-ray facility with a gamma emitting source and uranium collimator (Sapere 2005: Y-1). There is no documentation that a permanent building was located at this site. It is unclear as to when the structure was deactivated.

Building 4363 (Mechanical Component Development and Counting Building)

Constructed sometime between the early 1950s and circa-1956, Building 4363 was a 1,400-square-foot concrete building housing four work bays, utility rooms and a restroom built to support the SRE program (Sapere 2005: Y-3). In 1957 Rocketdyne transferred the building to Atomics International. In 1959, an accident in SRE Core I experimental reactor in Building 4143 contaminated equipment and components of the test reactor. Later, some of these components were processed in Building 4363, which resulted in contamination of a portion of the building (Sapere 2005: Y-3). With the termination of the SRE program in 1963, the building was transformed into a storage facility. After decontamination, the building was demolished in 2001.

Building 4375 (Control Shelter Building)

Building 4375 was a 400-square-foot, prefabricated metal building constructed sometime between 1958 and 1959 as a test shelter for the SNAP program (Sapere 2005: Y-9). It was used as a control center for testing SNAP control rod assemblies at an outdoor test tower at Site 4874

and Site 4875; after the termination of the SNAP program, the area surrounding Building 4375 was used for storage (Sapere 2005: Y-9). The building was demolished in1999.

Building 4473 (Hydraulic Test Instrumentation Building)

Building 4473 was a small, prefabricated metal structure located northwest of Building 4363 that was part of the Hydraulic Test Facility (Sapere 2005: Y-13). Constructed in circa-1961, the structure was originally used as a control center for the hydraulic test loop housed in Building 4863. The building was demolished in 2003.

Building 4863 (Hydraulic Test Loop)

Built in circa-1961, Building 4863 was a 400-square-foot, prefabricated metal building with a concrete slab foundation. The building was used to perform preliminary tests on sodium loop components such as pumps and piping used in the SRE experimental reactors (Sapere 2005: Y-19). The building was demolished in 2003.

Building 4873 (Fuel Rod Test Tower and Pad)

While this structure is labeled a fuel rod test tower and pad on the 1967 Planning Map, there is no documentation that it was used for this purpose (Sapere 2005: Y-21). As noted in the Sapere report, it is most likely that Building 4873 was a concrete slab located north of Building 4363 (Sapere 2005: Y-21). The pad was removed in 2003, when the rest of the facility was demolished.

Site 4575 (Parking Lot)

Site 4575 was a parking lot located at the southeast corner of 24th Street and J Street. Constructed sometime in the late 1950s or early 1960s, the parking lot was for personnel working in the SNAP program (Sapere 2005: Y-15). Sometime before 2005 the parking lot was removed.

Site 4874 (Control Rod Test Tower and Pad)

Abutting Building 4375 and Building 4875, Site 4874 was an outdoor test tower used to test control rods for the SNAP and Piqua Organic Moderated Reactor programs between the late 1950s and 1968 (Sapere 2005: Y-23). Constructed in the late 1950s, the structure was demolished in the early 1970s.

Site 4875 (Pad and Creep Loop Tower)

Abutting the west side of Building 4375, Site 4875 was a concrete pad topped by a steel tower. Constructed in the late 1950s, the tower was used to test control rod assemblies for the SNAP program (Sapere 200: Y-27). Site 4874 and other elements of the control rod test facility were demolished in the early 1970s.

Table 26: Group Y					
Building Number	**Original Name**	**Original Use**	**Construction Date**	**Extant or Demolished**	**Notes**
Building 4173 (formerly Bldg. 4865)	Sodium Storage Pad	Sodium storage.	c.-1962	Extant	Later used as the Gammagraph Building (this was a metal stand rather than a permanent structure)
Building 4363	Mechanical Component Development and Counting Building	Supported the SRE program	c. 1950-1956	Demolished (2001)	May have housed a radioactivity counting room
Building 4375	Control Shelter Building	Control Center for outdoor test towers	c.1958-1959	Demolished (1999)	
Building 4473	Hydraulic Test Instrumentation Building	Preliminary testing of sodium loop components	c.-1961	Demolished (2003)	
Building 4863	Hydraulic Test Loop	Test sodium loop components	c.-1961	Demolished (2003)	
Building 4873	Fuel Rod Test Tower and Pad	Part of the Hydraulic Test Facility	c. -1961	Demolished (2003)	Does not appear to have functioned as Fuel Rod Test Tower
Site 4874	Control Rod Test Tower & Pad	Test area for control rods for the SNAP and OMR programs	late 1950s	Demolished (late 1970s)	
Site 4875	Pad & Creep Loop Tower	Non-nuclear testing of SNAP and OMR control rods assemblies	late 1950s	Demolished (early 1970s)	
Site 4575	Parking Lot	For facility personnel	c.-1961	Demolished (2003)	

5.26 Group Z (Supported OMR Reactor Program)

5.26.1 Historical Overview

Group Z is composed of two buildings and a parking lot, located on the north side of L Street. The buildings housed research and development facilities for the Organic Moderated Reactor Program (Sapere 2005: Z-1). Construction of the facility began in the mid-1950s. By the 1970s the facility was no longer in use; it was demolished in the late 1970s.

5.26.2 Buildings, Structures and Features

Building 4353 (Organics Reactor Development Building)

Building 4353 was a 2,041-square-foot, prefabricated steel building. Set on a concrete slab foundation, it was built in 1956 to house the Research and Development laboratory for the Organic Moderated Reactor Program. A concrete pad (Building 4853) abuts the north side of the building. By the mid-1960s the building was serving as a general storage building. The building was demolished in the late 1970s and the concrete pad removed in 2001.

Building 4854 (Radiation Fuel Gauge Test Structure)

Building 4854 was a small building located east of Building 4353. Built sometime between 1964 and 1967 as a testing facility for radiation fuel gauges, the building appears to have been constructed of prefabricated metal set on a concrete slab foundation; it was demolished in the late 1990s (Sapere 2005: Z-5).

Site 4553 (Parking Lot)

This parking lot was built sometime before 1962 for personnel working in Building 4353 and surrounding facilities (Sapere 2005: Z-3). The parking lot still exists but is no longer in use.

Table 27: Group Z

Building Number	Original Name	Original Use	Construction Date	Extant or Demolished	Notes
Building 4353	Organics Reactor Development Building	Laboratory	1956	Demolished (2001)	Later used as a storage facility
Building 4854	Radiation Fuel Gauge Test Structure	Tested radiation fuel gauges	1964-1967	Demolished (late 1990s)	
Site 4553	Parking Lot	For personnel	1962	extant	

5.27 Group AA (Hot Laboratory for SNAP Program)

5.27.1 Historical Overview

Group AA was composed of Building 4020 (hot laboratory), Building 4468 (holdup tank), Building 4323 (guard shack), and Building 4720 (electrical substation). All of the buildings were constructed in 1959. The facility processed irradiated nuclear fuel assemblies from SNAP and other experimental reactors at SSFL from 1959 until 1976. From 1976 to 1986 the facility processed plutonium bearing fuels from outside reactors. The Group AA facility was demolished in 1996.

5.27.2 Buildings, Structures and Features

Building 4020 (Rockwell International Hot Laboratory), Building 4323 (Guard Building), and Building 4720 (Electrical Substation)

Building 4020 was a 16,000-square-foot, prefabricated metal building located at the southwest intersection of 24th Street and G Street. Constructed in 1959 to house a hot laboratory, the building's interior was comprised of four concrete-walled, radioactive handling cells, decontamination rooms, and other rooms set on a concrete basement (these rooms contained three subsurface fission tanks); drainage from the building was contained in a hold-up tank located in Building 4323 (Sapere 2005 AA-2).

The building was used as a remote handling facility for radioactive materials, including a hot lab used to process irradiated nuclear fuel assemblies for the SNAP experimental reactors. Between

1976 and 1986 the building was used to process plutonium bearing fuels from offsite nuclear reactors (Sapere 2005: AA-1). In 1986, the Department of Energy began the decommissioning and demolition process for Building 4020. The building was demolished in 1996. A guard shack (Building 4323), located southeast of Building 4020 and electrical substation, located north of Building 4020, were demolished in circa-1996.

Building 4468 (Holdup Tank)

Building 4468 was a 220-square-foot cinderblock building sheltering a 3,000-gallon, subsurface concrete tank (Sapere 2005: AA-9). Located east of Building 4020 and set slightly below grade, Building 4468 was constructed in 1959 to serve as a holding tank for the effluent from Building 4020. Use of the building ended in 1986, and in 1997 it was demolished.

Site 4520 (Parking Lot)

Built in 1959, Site 4520 was a paved parking lot located south of Building 4020 (Sapere 2005: AA-13). The parking lot was used by personnel working in Building 4020. It was demolished in 1996.

Table 28: Group AA

Building Number	Original Name	Original Use	Construction Date	Extant or Demolished	Notes
Building 4020	Rockwell International Hot Laboratory	Process irradiated fuel assemblies	1959	Demolished (1996)	Building 4323 (guard shack) and Building 4720 (electrical substation) were associated with this facility
Building 4468	Holdup Tank	Store effluent from Building 4020	1959	Demolished (1997)	
Site 4520	Parking Lot	For personnel	1959	Demolished (1996)	

5.28 Group BB (AETR and FCEL Experimental Reactor)

5.28.1 Historical Overview

Built in 1960, Group BB was composed of a facility for testing experimental reactor cores (Building 4100), an associated electrical substation (Building 4710/4800), and a parking lot (Site 4520). The facility was constructed by the Southwest Power Association in order to test experimental reactor core configurations for the Advanced Epithermal Thorium Reactor (AETR) program, which used thorium or uranium fueled reactor cores. Later, the facility was used to test reactor configurations for the Fast Critical Experimental Laboratory (FCEL) program, which used high-energy neutrons as a power source (Sapere 2005: BB-1). With the termination of the FCEL program in 1974, the facility was decontaminated for reuse as a sodium fire suppression test facility. Later, in the early 1980s, a Computer Aided Tomography unit was installed in the high bay to scan Space Shuttle engines for potential flaws. The building continues to be used.

5.28.2 Buildings, Structures and Features

Building 4100 (Advanced Epithermal Thorium Reactor) (AETR), Site 4100 (Trench), and Building 4800/4710 (Electrical Substation)

Building 4100 is an approximately 7,056-square-foot building comprised of a concrete-walled high bay, surrounded on its east and south sides by one-story prefabricated metal wings. A high bay of prefabricated metal abuts the north side of the concrete high bay wing. The building's interior was divided into a shielded critical assembly room, fuel fabrication, control, office, laboratories, and other support areas. The building was constructed in 1960 by the Southwest Atomic Power Association as a test facility for experimental nuclear reactor core configurations. Between 1960 and 1974, 20 reactor configurations were tested at the facility (the facility was later renamed the Fast Critical Experiment Laboratory) (Sapere 2005: BB-1). After the termination of the program and the decontamination and decommissioning of the facility, the building's high bay was used for sodium fire suppression experiments (Sapere 2005: BB-1). Later, in the early 1980s, a high energy Computer Aided Tomography (CAT) unit was housed in the high bay. The CAT, which is the largest of its kind in the world, was used to scan space shuttle engine assemblies for potential weld flaws. A trench (Site 4100), located just south of Building 4100, was used to incinerate construction debris.

Site 4510 (Parking Lot)

Located west of Building 4510, the parking lot was constructed in circa-1960 to serve as a parking area for personnel from Building 4100 (Sapere 2005: BB-7). The parking area was removed sometime after 1974 and is now an open field.

Table 29: Group BB

Building Number	Original Name	Original Use	Construction Date	Extant or Demolished	Notes
Building 4100	Advanced Epithermal Thorium Reactor	Test experimental reactor configurations	1960	Extant	Site 4100 (trench) and Building 4710/4800 (electrical substation) were associated with this facility
Site 4510	Parking Lot	For personnel	c.-1960	Removed after 1986	

5.29 Group CC (OMR and SGR Experimental Reactors)

5.29.1 Historical Overview

Group CC is composed of an experimental reactor building (Building 4009) and its associated electrical substation and parking lot. Built in 1958, the complex housed two experimental reactors that were in operation between 1958 and 1967. Later, the complex housed an in-service inspection program and a High-Energy Forging Rate facility. Since the late 1990s, it has been used as a storage facility.

5.29.2 Buildings, Structures and Features

Building 4009 (Organic Moderated Reactor (OMR) & Sodium Graphite Reactor (SGR) and Building 4709 (Electrical Substation)

Located north of H Street, Building 4009 is surrounded by a metal security fence. It is composed of two concrete-walled high bays, flanked on its southeast side by one-story low bays of prefabricated metal construction. Constructed in 1958, the building's high bays housed the Organic Moderated Reactor and the Sodium Graphite Reactors until the termination of the program in 1967. After termination of the program the reactors were dismantled and removed. Beginning in the early 1960s, the building was transformed into a storage testing facility for Atomic International's in-service inspection program (Sapere 2005: CC-1). During the late 1980s, one of the high bays housed a High-Energy Rate Forging (HERF) unit for processing high-enriched uranium; as part of this program depleted uranium was stored in the facility (the depleted uranium was removed in the early 1990s) (Sapere 2005: CC-1). An electrical substation (Building 4709), located to the southeast of Building 4009, was associated with this facility.

Site 4509 (Parking Lot)

Located to the northeast of the fenced area surrounding Building 4009, the paved parking lot was built in circa-1958 for personnel working in Building 4009 and surrounding facilities.

Table 30: Group CC

Building Number	Original Name	Original Use	Construction Date	Extant or Demolished	Notes
Building 4009	Organic Moderated Reactor (OMR) & Sodium Graphite Reactor (SGR)	House experimental reactors	1958	Extant	
Site 4509	Parking Lot	For personnel	Circa-1960	Extant	

5.30 Group DD (Various Support Facilities)

5.30.1 Historical Overview

Group DD is composed of eight buildings, located at the west end of H Street. The buildings and structures in Group DD were associated with a diverse range of programs and activities including a pistol range, experimental solar facility, a control building for the Isotope Impact System Test Device, a facility to analyze steam and water density, and a structure used to impact test fuel. The Isotope System Impact Test Device (Building 4820) and the Impact Control Building (Building 4730), which were constructed in the late 1960s, were the first facilities constructed in Group DD. Later, in the late 1970s, canopies for a pistol range (Building 4317 and Building 4318) and the experimental solar facility (Building 4425) were built in this area. With the exception of the solar facility, all buildings, features and structures in Group DD have been demolished.

5.30.2 Buildings, Structures and Features

Building 4317 (Canopy for Pistol Range)

Building 4317 was a freestanding metal canopy that sheltered a sidearm practice range (Sapere 2005: DD-1). The canopy was associated with an adjacent canopy (Building 4318). The early history of the building is unclear, although it appears to have been built sometime in the late 1970s. The canopy has since been demolished.

Building 4318 (Canopy for Pistol Range)

Building 4318 was a freestanding canopy used to shelter individuals using the sidearm practice range. The canopy was associated with an adjacent canopy (Building 4317). The early history of the canopy is unclear, although it appears to have been constructed sometime in the late 1970s. The canopy has since been demolished.

Building 4425 (Solar Concentrator Facility)

Located just south of H Street, Building 4425 was a 25 kWt parabolic dish-engine generator constructed in the mid-1980s as part of an experimental program to generate solar energy (Sapere 2005: DD-5). When the program was terminated in late 1980s, the generator was decommissioned.

Building 4730 (Impact Control Building)

Located near the western corner of Area IV, this structure was constructed in the late 1960s as a control center for the Isotope Impact System Test Device located in Building 4820 (Sapere 2005: DD-7). Located at the approximate location of the pistol range, the building was demolished sometime in the mid-to-late 1970s.

Building 4814 (Large Leak Injector Device)

Building 4814 was a small structure located west of Building 4515 built in circa-1975 to analyze water and steam density in ruptured pipes (Sapere 2005: DD-9). The building, which was part of the Sodium-Water Reaction Test Center, was demolished in the late 1970s.

Building 4820 (Isotope System Impact Test Device)

Building 4820 was located in the approximate location of the pistol range. Constructed in the late 1960s, the facility was a small structure (it is not clear if the structure was enclosed) used for impact testing of ZrH Fuel (the testing involved firing a small amount of fuel into a granite block).

Table 31: Group DD					
Building Number	**Original Name**	**Original Use**	**Construction Date**	**Extant or Demolished**	**Notes**
Building 4317	Pistol Range Canopy	Part of sidearm test range	Late 1970s	Demolished (date unknown)	
Building 4318	Pistol Ranch Canopy	Part of sidearm test range	Late 1970s	Demolished (date unknown)	
Building 4425	Solar Concentrator Facility	Experimental solar generation facility	Mid-1980s	Extant	
Building 4730	Impact Control Building	Control center	Late-1960s	Demolished (mid-to-late 1970s)	Associated with Sodium-Water Reaction Test Center
Building 4814	Large Leak Injector Device	Analyzed water and steam density (in pipes)	Circa-1975	Demolished (late 1970s)	
Building 4820	Isotope System Impact Test Device	Impact testing of radioactive fuel	Late 1960s	Demolished (mid-1970s)	

5.31 Group EE (Pistol Range and Sodium Burn Pit)

5.31.1 Historical Overview

Group EE comprised a pistol range (Building 4885) and the Sodium Burn Pit (Building 4886), located to the north of the west end of H Street. The burn pit was created in the early-to-mid-1950s to dispose of non-nuclear waste and to clean scrap equipment. The pistol range, built sometime in the late 1950s, or later, was located to the northeast of the burn pit. Both the pistol range and the burn pit have been removed.

5.31.2 Buildings, Structures and Features

Building 4885 (Pistol Range)

Located to the northeast of the west end of H Street, Building 4885 was a pistol range comprised of a number of canopied shooting stations, set on a concrete pad (Sapere 2005: EE-1). At the end of the range an earthen berm prevented shots from exiting the range. The shooting range was probably constructed sometime between the late 1950s and 1962, when it first appears on an industrial planning map. The facility was removed sometime in the early 1980s.

Building 4886 (Sodium Burn Pit)

This facility was composed of a rectangular, water-filled pit surrounded by a concrete slab, shallow unlined basins, a small structure, and a lance cleaning unit constructed in the early-to-mid 1950s to remove non-radioactive metallic sodium and NaK from scrap equipment (Sapere 20056: EE-3). Non-radioactive liquid wastes, such as petroleum products were disposed of through incineration in the open burn pit. While the facility was not intended for the disposal of radioactive waste, testing in 1988 revealed that the facility had been contaminated (Sapere 2005:

EE-4). Subsequently, soil in the area of the pits was excavated to bedrock and removed. In 1997, after completion of the remediation program, the area was backfilled and re-vegetated (Sapere 2005: EE-5).

Table 32: Group EE

Building Number	Original Name	Original Use	Construction Date	Extant or Demolished	Notes
Building 4885	Pistol Range	Sidearm test range	Late 1950s?	Demolished (early 1980s)	
Building 4886	Sodium Burn Pit	Disposal of non-radioactive liquids and the cleaning of scrap material	Mid to late 1950s	Demolished (1997)	

5.32 Group FF (Water Tanks)

5.32.1 Historical Overview

Group FF is composed of two large metal water tanks located on a ridge on the south boundary of Area IV. Constructed sometime between 1962 and 1967, the tanks were built to store water for Area IV. They are accessed via an unpaved road that extends from the west end of H Street, up the ridge to the water storage tanks. The tanks are still in place.

5.32.2 Buildings, Structures and Features

Building 4701 (Water Tank)

Building 4701 is a large circular water tank used to store water for use in Area IV. A precise construction date could not be determined; however, the structure appears to have been built sometime between 1962 and 1967.

Building 4702 (Water Tank)

Building 4702 is a large circular water tank used to store water for use in Area IV. A precise construction date could not be determined; however, the structure appears to have been built sometime between 1962 and 1967.

Table 33: Group FF

Building Number	Original Name	Original Use	Construction Date	Extant or Demolished	Notes
Building 4701	Water Tank	Store water	Circa-1962-1967	Extant	
Building 4702	Water Tank	Store water	Circa-1962-1967	Extant	

6.0 IDENTIFICATION OF HISTORICAL RESOURCES

6.1 National Register of Historic Places Criteria

The National Register of Historic Places (National Register) is the nation's master inventory of known historic resources and includes listings of buildings, structures, sites, objects, and districts that possess historic, architectural, engineering, archaeological, or cultural significance at the national, state, or local level. Four criteria provide the basis under which a structure, site, building, district, or object can be considered significant for listing on the National Register. A potential resource needs to meet only one of the four criteria to achieve significance. The criteria include resources that:

(A) Are associated with events that have made a significant contribution to the broad patterns of our history; or
(B) Are associated with the lives of persons significant in our past; or
(C) Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
(D) Have yielded, or may be likely to yield, information important in prehistory or history.

In addition, as noted in NPS Bulletin 22, the following Criteria Considerations should be evaluated when considering a property's eligibility for listing in the National Register of Historic Resources:

Ordinarily cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, properties that have achieved significance within the past 50 years *shall not be considered eligible for the National Register. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:*
(a) A religious property deriving primary significance from architectural or artistic distinction or historical importance; or
(b) A building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or
(c) A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life.
(d) A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or
(e) A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or
(f) A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or

(g) A property achieving significance within the past 50 years if it is of exceptional importance. This exception is described further in NPS "How to Evaluate and Nominate Potential National Register Properties That Have Achieved Significance Within the Last 50 Years" which is available from the National Register of Historic Places Division, National Park Service, United States Department of the Interior, Washington, D.C. 20240 (NPS, Bulletin 22: 1998).

6.1.1 Historic Context

Once a potential resource is determined to have met one of the four criteria, its significance should be evaluated within its historic context or historical pattern relevant to a particular geographic area. Historic contexts are found at a variety of geographical levels or scales, specifically the local, state, or national level. The geographic scale selected may relate to a pattern of historical development, a political division, or a cultural area.

6.1.2 Period of Historic Significance

According to National Register Bulletin 16A, the "period of significance" is defined as "the length of time when a property was associated with important events, activities, or persons, or attained the characteristics that qualify it for National Register listing. Period of significance usually begins with the date when significant activities or events began giving the property its historic significance; this is often a date of construction." There are different guidelines to establish the period of significance for the four criteria of historical significance, as follows:

- *Criterion A: For the site of an important event, such as a pivotal five-month labor strike, the period of significance is the time when the event occurred. For properties associated with historic trends, such as commercial development, the period of significance is the span of time when the property actively contributed to the trend.*
- *Criterion B: The period of significance for a property significant for Criterion B is usually the length of time the property was associated with the important person.*
- *Criterion C: For architecturally significant properties, the period of significance is the date of construction and/or the dates of any significant alterations and additions.*
- *Criterion D: The period of significance for an archeological site is the estimated time when it was occupied or used for reasons related to its importance, for example, 3000-2500 B.C.*

As noted in the guidelines, resources that are less than 50 years of age at the time of evaluation are generally not eligible for listing in the National Register (www.nps.gov/history/nr/bulletins/nrb22). In order to be eligible for listing a resource must possess "exceptional importance" at the national, state, or local level (NPS, Bulletin 22: n.p.). Criteria Consideration G is applicable to the Santa Susana Field Laboratory because of the resource's association with the post World War II development of the United States aerospace program and the association of Area IV with nuclear power research and development in the United States during this same period. Criterion A also is applicable to Area IV. Other facilities in Area IV were associated with various experimental nuclear reactors programs, including the Sodium Reactor Experiment, the Systems for Auxiliary Nuclear Power (SNAP) and the Liquid Metals Engineering Center (LMEC). The period of significance for Santa Susana Field Laboratory's Area IV (1953 to 1974) spans the period when Area IV played a leading role in the

research and development of nuclear reactor technology, most notably in regard to the Sodium Reactor Experiment (SRE) and SNAP programs. The SRE, which tested the feasibility of sodium reactor technology, also was historically notable because it was one of the first instances when nuclear generated power was supplied to a civilian power grid.

6.1.3 Integrity

For a structure, building, or property to be eligible for listing in the National Register of Historic Resources it must meet at least one of the significance criteria, be (in most cases) at least 50 years of age or older, and retain its visual and physical integrity. As defined in the National Register of Historic Places Bulletin 15, integrity is: "the ability of a property to convey its significance." Integrity involves several aspects, including location, design, setting, materials, workmanship, feeling, and association. The seven aspects of integrity are defined below.

- *Location: Location is the place where the historic property was constructed or the place where the historic event occurred.*
- *Design: Design is the combination of elements that create the form, plan, space, structure, and style of a property.*
- *Setting: Setting is the physical environment of an historic property, constituting topographic features, vegetation, manmade features, and relationships between buildings or open space.*
- *Materials: Materials are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form an historic property.*
- *Workmanship: Workmanship is the physical evidence of the crafts of a particular culture, people, or artisan during any given period in history or pre-history.*
- *Feeling: Feeling is a property's expression of the aesthetic or historical sense of a particular period of time.*
- *Association: Association is the direct link between an important historic event or person and an historic property.*

National Register Bulletin 15, Section VIII provides further information regarding the application of the integrity criteria to a property:

> *Historic properties either retain integrity (this is, convey their significance) or they do not. Within the concept of integrity, the National Register criteria recognizes the seven aspects or qualities listed above that, in various combinations, define integrity. To retain historic integrity a property will always possess several, and usually most, of the aspects. The retention of specific aspects of integrity is paramount for a property to convey its significance. Determining which of these aspects are most important to a particular property requires knowing why, where, and when the property is significant* (National Register Bulletin 15, 1999).

Historic integrity is threatened by major changes, such as demolition or subsequent development that alter the features that characterized a property during its period of historic significance. Integrity may also be lost due to the cumulative effect of relocated and lost historic buildings and

structures or the disappearance of other features, such as roadways and landscape that helped to define the historic use of a property.

The following changes, when occurring **after** the periods of significance, may reduce the historic integrity of a resource:

- Changes in land use and management that alter the setting of a historic resource.
- Deterioration, abandonment, relocation, or demolition of historic buildings and structures that are contributors to a historic resource.
- Substantial alteration of buildings and structures (through remodeling or additions) that diminish the resource's ability to convey its historic character or significance.
- Replacement or removal of features such as roads, fences that contribute to the setting of a historic resource.

The final decision regarding integrity is based on the condition of the overall resource and its ability to convey significance. The level of historic significance and the nature, extent, and impact of changes to the resource since its period of significance are important factors to consider when assessing integrity.

6.1.4 Application of Integrity Criteria

For a building, structure, feature, or property to be eligible for the National Register of Historic Places it must meet at least one of the five National Register criteria, be (in most cases) at least 50 years of age or older, and retain its visual and physical integrity. As defined by the National Register criteria, integrity is:

The authenticity of a property's historic identity, evidenced by the survival of physical characteristics that existed during the property's prehistoric or historic period. A property must resemble its historic appearance as well as retain materials, design features, and construction details dating from its period of significance. It must convey an overall sense of time and place. If a property retains the physical characteristics it possessed in the past then it has the capacity to convey association with historical patterns or persons, architectural or engineering design and technology, or information about a culture or people (National Register Bulletin 15, 1999).

6.1.4.1 Identification of Historical Resources under the National Register Criteria

Criterion A. *Are associated with events that have made a significant contribution to the broad patterns of our history.*

Evaluation of SSFL, Area IV, under Criterion A

Area IV of the Santa Susana Field Laboratory has a direct association with two important historic episodes, namely America's, and specifically, California's, nuclear power research and development in the post World War II period and the post World War II economic and

population development of Southern California. The eligibility of Area IV for listing under each of these associations is evaluated below:

Association with the Historical Development of Nuclear Power in the United States and California

The Santa Susana Field Laboratory opened in 1947 as a field laboratory for testing rocket engines. In 1953 its mission was expanded to include nuclear-related research and development, including experimental reactors and liquid metal research headquartered within Area IV. A diverse range of experimental reactor configurations were tested in the ETEC portion of Area IV, including the Sodium Reactor Experiment (SRE) active between 1954 and 1964; the Kinetics Experiment Water Boiler Facility (KEWB) active between 1954 and 1966; the AE-6/L-85 Reactor Facility active between 1955 and 1980; and the Organic Moderated Reactor (OMR) active between 1955 and 1967.

The most historically notable of these experimental programs was the Sodium Reactor Experiment (SRE), which tested graphite moderated sodium reactor configurations. Two historically significant events occurred during the period that the SRE program was active; the first occurred on November 12, 1957, when power from the SRE reactor was channeled for two hours into the power grid of the nearby town of Moorpark, marking the first time in American history that a nuclear reactor was used to generate energy for a city's power grid. In conjunction with the SRE and SNAP nuclear programs was the operation at the Radioactive Materials Handling Facility (RMHF). RMHF prepared radioactive waste for decontamination and shipment offsite from experimental reactor sites and facilities associated with Area IVs nuclear reactor and nuclear-related programs, such as the SRE, Liquid Metals, and SNAP programs. While RMHF did not play a central role in nuclear research and development, it functioned as a support facility and has a potentially significant association with Santa Susana Field Laboratory's Area IV's nuclear-related programs.

Association with the Post World War II Transformation of Southern California

North American Aviation and its Santa Susana Field Laboratory (SSFL) has a direct association with the development of California's post World War II economy, an economy dominated by the defense and aerospace industries from the late 1940s through the early 1990s. Beginning in the postwar period, the Federal government began funding a massive program of defense-related research and development to contain the spread of Soviet influence; during this period Southern California played a leading role in its buildup. The state's already sizeable number of aerospace firms (largely developed during World War II) and concentration of academic and scientific institutions, such as the California Institute of Technology, the University of California, Berkeley, and Stanford University, were important components in helping defense-related programs move forward quickly (Rice, William and Orsi 2002: 497-499). By the 1960s, defense firms, such as Douglas, Litton Industries, Lockheed, and North American Aviation (including its Atomics International and Rocketdyne subdivisions) were employing tens-of-thousands of workers, accounting for 60 percent of the manufacturing workforce in Los Angeles and Orange Counties (Rice, William and Orsi 2002: 498-499). The subsequent creation of the National Aeronautics and Space Administration (NASA), whose West Coast headquarters was at the Jet

Propulsion Laboratory in Pasadena, greatly increased the ability of California to obtain government contracts resulting in an enormous boon to the state's economy. Significant scientific advances in programs undertaken by these institutions and companies allowed the development of sophisticated weaponry systems, including rockets, missiles, jets, and space-based electronic modules.

Attracting large numbers of well-paid factory workers, engineers, technicians, and scientists, the defense and aerospace industry helped to account for a dramatic increase in the state's population, and an unprecedented suburbanization of California's landscape, exemplified by areas such as the San Fernando Valley. Comprised largely of farm and ranching land as late as the early 1940s, the San Fernando Valley began to demographically transform in the postwar period from rural environment to an area of middle class residential housing tracts and commercial strip malls. To address California's rapid influx in population, a large number of whom were attracted by jobs in the aerospace and defense-related industries, the state launched the greatest build-up of its public infrastructure in its history, constructing new schools, universities, libraries, and parks, and building hundreds of miles of roads, highways, and freeways. North American Aviation, as one of the largest defense-related contractors, played a significant role in this post World War II transformation of California from a prewar economy, based largely on agriculture and extractive industries, to one dominated by the defense and aerospace industry, beginning in the postwar period. Therefore, as part of this defense-related industry the Santa Susana Field Laboratory, including Area IV, has a significant association with this historic episode, namely the transformation of California's economy in the post World War II period.

Evaluation under Criterion B

Criterion B. *Are associated with the lives of persons significant in our past.*

Area IV of SSFL has a direct association with the various nuclear research and development programs, including the SRE, OMR, and AETR experimental reactor programs, as well as the SNAP and the LMEC programs, all of which were located within Area IV from the late 1940s until the mid-1980s. The most significant of these were the SRE and SNAP programs. However, while many scientists and technicians worked at SSFL during this period, none of them appear to have made individual contributions of such note that Area IV, or any of its individual components, has a potentially significant association with Criterion B.

Evaluation under Criterion C

Criterion C. *Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.*

Functional in design, the buildings, structures and features in Area IV were constructed primarily of concrete and/or prefabricated metal. Ingenious design was confined to the experimental reactors, which often featured innovative configurations and components. However, as noted in Section 5 of this report, all of the experimental reactors have been dismantled and removed, and

the reactor buildings and support facilities have been demolished, with the exception of the AETR reactor building (Group BB) and the OMR & SGR reactor building (Group CC). The most notable loss was the demolition of the SRE complex (Group G), which was associated with the early history of civilian nuclear power research and development and the first large-scale use of nuclear energy to power civilian power grid. Of the 33 groups of buildings, structures and features in Area IV, only six retain sufficient integrity to be considered as potential contributors to the historic themes outlined above. Since the remaining buildings, structures and features represent only a fragment of the original complex, they no longer represent a significant and distinguishable entity. Therefore, Area IV of the Santa Susana Field Laboratory is not potentially eligible for listing under Criterion C.

Evaluation under Criterion D

Criterion D. *Have yielded, or may be likely to yield, information important in prehistory or history.*

The application of this criterion to potential archaeological deposits was evaluated in an archaeological resources report prepared by W & S Consulting.

6.1.5 Assessment of Integrity of Resources within the Project Area

Area IV is evaluated below for each of the seven aspects of integrity listed in Section 6.1.3 to determine if any retain sufficient integrity to be considered eligible for listing as a historic resource at State and National level.

1) Location: *Location is the place where the historic property was constructed or the place where the historic event occurred.*

Remaining buildings, structures and features have, for the most part, remained at their original location since construction commenced in Area IV in the late 1940s. Since then Area IV has undergone a continuous series of modifications and alterations. During its period of active operation (1948 to circa-1990), these changes involved the construction of new facilities, supporting the various nuclear-related research and development projects undertaken in Area IV, as well as the repurposing of existing facilities for new uses. In some cases a few buildings and structures have been relocated from their original location. With the termination of most programs, beginning in the early through mid-1980s, activity in Area IV transitioned from research and development to decommissioning and demolition activities, including decontamination, equipment removal, and demolition of existing facilities.

It should be noted that more than 75% of those buildings, structures and features associated with Area IV during its period of significance have been demolished. While many of them have been removed, the surrounding setting of Area IV, including Areas I, II and III of the Santa Susana Field Laboratory, as well as surrounding properties, have retained qualities that characterized Area IV during the resource's period of significance. As noted in National Register Bulletin 15, the location of a resource complemented by its setting is important in maintaining the connection between the events and the potential historic resource. Therefore, not withstanding the loss of

many of its buildings, structures and features, Area IV has retained its overall Integrity of Location.

2) Design: *Design is the combination of elements that create the form, plan, space, structure, and style of a property.*

As noted above, in the discussion of integrity of location, Area IV has not, with the exception of a single facility (RMHF, Group I), retained the majority of buildings, structures and features dating to its period of significance (1953-1974), the period when nuclear-related research was ongoing at the facility. Demolition of most of the facility's improvements, including experimental reactors, laboratories, offices, and test facilities since the mid-1980s, has diminished the ability of the facility to effectively convey its appearance during its period of significance. Not only have buildings, structures and features been removed or demolished, but those buildings that are still extant from the period of significance, including the AETR reactor in Group BB and the OMR and SGR experimental reactors in Group CC, have undergone significant alterations as part of the decommissioning and decontamination process. This has resulted in the loss of virtually all of the components of the experimental reactors, leaving only the buildings in place. This has occurred as a result of the decommissioning and decontamination activities required by the Department of Energy. The loss of most of the buildings, structures and features from the resource's period of significance has significantly diminished the ability of Area IV to convey its historic appearance. Therefore, Area IV, as a whole, has not retained its Integrity of Design.

3) Setting: *Setting is the physical environment of an historic property, constituting topographic features, vegetation, manmade features, and relationships between buildings or open space.* Guidelines in National Register Bulletin 15, Section VIII for evaluating integrity of setting also state: "*setting refers to the character of the place in which the property played its historic role.*" Bulletin 15 further states: "*the physical features that constitute the setting of a historic property can be either natural or manmade, including .... Relationships between buildings and other features or open space.*"

Because of its isolated location in a semi-rural area, subsequent development on surrounding properties has not significantly impacted SSFL. Within Area IV, however, the decommissioning and demolition process that has been ongoing since the mid-1970s has significantly impacted the setting of Area IV by removing buildings, structures and features that once characterized the property during its period of significance. Among the most significant of these changes was the demolition of the SRI facility, located to the northeast of RMHF, the demolition of part of the OMR facility, located just southwest of RMHF, and the removal of most of the buildings, structures and features associated with the LMEC and SNAP programs. Demolition of these and other facilities, which most notably included the majority of the experimental reactor buildings, significantly diminished the ability of Area IV to convey its association with nuclear reactor development in the United States between the early 1950s and the early 1970s. Moreover, the loss of so many buildings, structures and features in Area IV has significantly altered the integrity of surviving components of the complex, which now can only be viewed as isolated features, rather than as components of larger complexes that made up each of the site's individual test complexes and support facilities. The scope and scale of the alterations carried

out since Area IV's period of significance have been such that it no longer retains its Integrity of Setting.

4) Materials: *Materials are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form an historic property.*

While the remaining buildings that date to the period of significance (1953-1974) have retained, for the most part, their exterior integrity of materials, almost all have undergone alterations, most notably the removal of the experimental reactors and test equipment. This is considered significant since Area IV is historically important primarily because of the role it played as a research facility for nuclear reactor technology and nuclear-related research from the late 1940s through early 1980s. The loss of the reactors and test equipment has significantly diminished the resource's ability to convey its integrity of materials. Therefore, Area IV has not retained its integrity of materials.

5) Workmanship: *Workmanship is the physical evidence of the crafts of a particular culture, people, or artisan during any given period in history or pre-history*

The surviving buildings, structures and features that comprise Area IV have retained most of their original construction materials, including steel frames, metal sheathing concrete walls and concrete slab foundations. However, the demolition of most of the buildings, structures and features that dated to Area IV's period of significance has significantly diminished the ability of the resource to convey the character of its original workmanship. Moreover, the loss of most of the original buildings, including most of the experimental reactors, the SNAP program facilities and various laboratories, offices and support facilities, means the resource no longer retains its integrity of workmanship.

6) Feeling: *Feeling is a property's expression of the aesthetic or historical sense of a particular period of time.*

As detailed in Section 5 of this report, most of the buildings, structures and features dating to the period of significance (1953-1974) have been demolished. The loss of these features has significantly diminished the ability of the resource to convey both its historic appearance and association with the development of nuclear-related research in the United States that initially began in the post-World War II period. Because of the loss of these facilities, which were integral to the function and purpose of Area IV, the resource has not retained it integrity of feeling.

7) Association: *Association is the direct link between an important historic event or person and an historic property.*

As noted in Section 6.1.4.1 of this report, Area IV of the Santa Susana Field Laboratory was associated with the following significant historic themes: 1) *Association with the Historical Development of Nuclear Power in the United States and California*; and 2) *Association with the Post World War II Transformation of Southern California*. The two most significant historic

events that took place in Area IV occurred at SRE on November 12, 1957, when power generated by the SRE reactor was channeled into the power grid of the nearby community of Moorpark and a subsequent accident that occurred at the SRE reactor in July 1959. However, as noted above, the ability of Area IV or its individual components, such as the former SRE complex, to convey these historical associations has been significantly diminished by the demolition of most of the buildings, structures and features that comprised this portion of the Santa Susana Field Laboratory. Therefore, the resource has not retained its integrity of association.

Classification of Contributing and Noncontributing Resources

The National Register states that buildings, structures, objects, and sites are classified as contributing or noncontributing based on their historic integrity and association with a period and area of significance. Those not present during the historic period, not part of the property's documented significance, or no longer reflecting their historic character, are noncontributing.

The following section of the report summarizes alterations and modifications to Area IV and its immediate setting that are germane to the evaluation of integrity and provide a conclusion regarding whether or not the building, structure or feature retains integrity. Those that retain integrity are considered to be contributors; those that do not retain integrity are considered to be non-contributors.

Summary of Integrity Status

Table 34 (following page) provides a summary of the integrity status for resources within the project site. Those resources that retain integrity are considered potential contributors to the historic themes outlined above, and those that do not retain integrity are considered non-contributors to these themes. As detailed in Section 5 and summarized in Table 34, of the 33 groups of buildings, only six retain sufficient integrity to contribute to a potential nomination.

(see Table 34, next page)

Table 34: Integrity and Contributor Status for Resources within Area IV of the Santa Susana Field Laboratory

Group	Original Function	Does/Does not Retain Integrity	Potential Contributor
A	SRE support facility	No, all buildings demolished	No
B	Engineering facility	Yes	Yes
C	Storage/Fuel Yard	All buildings and structures demolished	No
D	Fire control	All buildings and structures demolished	No
E	Support facilities	1 building remains	No
F	Support facilities	All buildings demolished	No
G	SRE facility	24 of 25 buildings demolished	No
H	KEWB and AE6 reactors	Demolished	No
I	RMHF	2 of 14 buildings demolished	Yes
J	Support facilities for SNAP, SRE & LMEC programs	All buildings and structures demolished	No
K	Shield Test Reactor	All buildings and structures demolished	No
L	SNAP program	All buildings and structures demolished	No
M	SNAP 8 facility	All buildings and structures demolished	No
N	OMR Reactor	All buildings and structures demolished	No
O	OMR support facility	7 of 18 buildings demolished	No
P	SGMR Facility	All buildings and structures demolished	No
Q	Storage facilities	All buildings and structures, with the exception of a parking lot, have been demolished	No
R	Support facilities	7 of 8 buildings demolished	No
S	Support facilities for LMEC	All buildings and structures demolished	No
T	Sodium Pump Test facility	1 of 4 buildings demolished, main building partially demolished	No
Group U	LMEC facilities	All buildings and structures demolished	No
Group V	SNAP and LMEC programs	3 of 4 buildings demolished	No
Group W	SNAP facility	All buildings and structures demolished	No
Group X	Uranium pellet processing facility	Extant	Yes
Group Y	Housed facilities for SRE, SNAP and OMR programs	8 of 9 buildings demolished	No
Group Z	Organic Reactor support facilities	All buildings and structures, with the exception of a parking lot, have been demolished	No
Group AA	Rocketdyne Hot Lab	Demolished	No
Group BB	AETR Rector complex	1 of 2 buildings demolished (reactor building remains)	Yes
Group CC	OMR & SGR reactor complex	All buildings extant	Yes
Group DD	Support facilities & Solar Unit and shooting range	1 structure (solar unit) of 6 remain	No
Group EE	Sodium Burn Pit & Shooting range	Demolished	No
Group FF	Water Tanks	Extant	Yes

Overall Integrity:

The final decision about integrity is based on the condition of the overall property and its ability to convey significance. The strength of historic characteristics, as well as the nature, extent and impact of changes since the periods of significance, are important factors to consider.

While some buildings, structures and features have retained their integrity, the ability of Area IV to convey its association with the theme of nuclear-related research and development and its association with the post World War II history of California has been significantly diminished. This is primarily due to alterations that have occurred since Area IV's period of significance (1953-1974). While these changes were incremental in nature, the cumulative impact of these alterations has been to diminish the ability of Area IV to convey its historic appearance. The most significant of these alterations are listed below:

- Demolition and removal of the experimental SRE, KEWB, OMR, and SGR nuclear reactor facilities.
- Demolition of support facilities, including the Fuel Storage Facility and the Hot Laboratory.
- Removal of roads, parking areas and other improvements.
- Partial demolition of other facilities in Area I, most notably, Vertical Test Stand 1, which was the first test stand built at SSFL. While these facilities were not directly associated with Area IV, they did provide visual and historical context for the entire Santa Susana Field Laboratory.

The loss of all but two of the experimental reactor facilities is considered to be especially significant since Area IV's strongest historical associations are with the research and development of nuclear power. This is considered to be especially significant in regard to the fact that SRE was the locus of two important historical events, the first use of nuclear-generated electricity to power a civilian community (1957) and a core damage accident (1959). Moreover, the loss of most of Area IVs facilities, including office, labs, reactors, and support facilities, has diminished the ability of Area IV to convey the role it played in the urbanization of the San Fernando Valley and the creation of Southern California's post World War II economy, an economy largely driven by the aerospace industry and government-paid research and development. If Area IV still retained its integrity, it could more effectively convey the role it played in the postwar development of the San Fernando Valley and Southern California. For these reasons, Area IV can no longer effectively convey its historic associations with nuclear reactor research and the development of Southern California in the post World War II period.

6.1.6 Evaluation of Eligibility of Area IV for Listing as a National Register Historic District

National Register Bulletin 15, How to Apply the National Register Criteria for Evaluation, Chapter VII, How to Evaluate the Integrity of a Property, provides the following information regarding the evaluation of potential historic districts:

> *For a district to retain integrity as a whole, the majority of the components that make up the district's historic character must possess integrity even if they are individually undistinguished. In addition, the relationships among the*

district's components must be substantially unchanged since the period of significance. When evaluating the impact of intrusions upon the district's integrity, take into consideration the relative number, size, scale, design, and location of the components that do not contribute to the significance.

A district is not eligible if it contains so many alterations or new intrusions that it no longer conveys the sense of a historic environment.
As noted in Bulletin 15 a component of a district cannot contribute to the significance if:

- it *has been substantially altered since the period of the district's significance or*
- *it does not share the historic associations of the district.*

As discussed in Section 5.0, Area IV does not embody sufficient significance to be eligible for listing. As noted above many elements of Area IV, including such historically notable components as the SRE facility, have been demolished. Demolition has so altered Area IV that it can no longer convey its historic appearance. These alterations include the demolition of almost all of the experimental reactor complexes, as well as the removal of buildings, structures and features that supported other research activities in Area IV, including laboratories, offices and roads. While elements of the facility have survived, the integrity of Area IV, as a whole, has been significantly diminished. Therefore, based upon the findings of this survey, Area IV, of the Santa Susana Field Laboratory, is not eligible for listing as a historic district.

6.1.7 Statement of Eligibility for Listing in the National Register of Historic Places under Criteria A

As a component of North American Aviation's Rocketdyne and Atomics International Divisions, Santa Susana Field Laboratory, Area IV, has associations with significant historic themes. If Area IV had retained sufficient integrity to convey its historic appearance, as noted in Section 7.1.5 of this report, it potentially could have been eligible for listing in the National Register of Historic Places. However, as a result of the decommissioning and demolition process carried out since the mid-1980s, the majority of the resource's buildings, structures and features have been demolished and/or removed, thus significantly diminishing the ability of Area IV to effectively convey its historic associations. Therefore, Area IV is not eligible for listing in the National Register of Historic Places under Criterion A.

6.2 California Register of Historic Places Criteria for Evaluation

The California Register of Historical Resources (California Register) is the authoritative guide to the state's significant historical and archeological resources. It serves to identify, evaluate, register and protect California's historical resources. The California Register program encourages public recognition and protection of resources of architectural, historical, archeological and cultural significance, identifies historical resources for state and local planning purposes, determines eligibility for historic preservation grant funding, and affords certain protections under the California Environmental Quality Act (CEQA). All resources listed on or

formally determined eligible for the National Register are automatically listed in the California Register. In addition, properties designated under municipal or county ordinances are also eligible for listing in the California Register.

The California Register criteria are modeled on the National Register criteria discussed above. Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architecturally, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code SS5024.1, Title 14 CCR, Section 4852) including the following:

1) *Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;*
2) *Is associated with the lives of persons important in our past;*
3) *Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or*
4). *Has yielded, or may be likely to yield, information important in prehistory or history.*

The California Register automatically includes the following:

- California properties listed or formally determined eligible for listing in the National Register of Historic Places;
- California Registered Historical Landmarks from #0770 onward; and
- California Points of Historical Interest that have been evaluated by the Office of Historical Preservation (OHP) and have been recommended to the State Historical Resources Commission for inclusion in the California Register.

Other resources may be nominated for listing in the California Register based on the criteria stated above.

6.2.1 Identification of Historic Resources under the California Register of Historical Resources Criteria

As discussed above, the California Register criteria are modeled after the National Register criteria identified in Section 6.1, National Register of Historic Places Criteria. Area IV of SSFL was evaluated above under the National Register criteria in Section 6.1.4, Evaluation under National Register Criteria. Therefore, this section will briefly summarize the eligibility of the resources under each criterion.

Evaluation of Area IV of the Santa Susana Field Laboratory under Criterion 1

Criterion 1) *Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.*

Area IV of the Santa Susana Field Laboratory has a direct association with two important historic events, namely nuclear power research and development during the post World War II period and the post World War II economic and population development of Southern California. The eligibility of Area IV for listing under each of these associations is evaluated below:

Association with the Historical Development of Nuclear Power in the United States and California

The Santa Susana Field Laboratory opened in 1948 as a field laboratory for testing rocket engines. In 1954 its mission was expanded to include nuclear-related research and development, including experimental reactors and liquid metal research headquartered within Area IV. A diverse range of experimental reactor configurations were tested in the ETEC portion of Area IV, including the Sodium Reactor Experiment (SRE) active between 1954 and 1964; the Kinetics Experiment Water Boiler Facility (KEWBF) active between 1954 and 1966; the AE-6/L-85 Reactor Facility active between 1955 and 1980; the Organic Moderated Reactor (OMR) active between 1955 and 1967; and the SNAP program between 1956 and 1981.

The most historically notable of these experimental programs was the Sodium Reactor Experiment (SRE), which tested graphite moderated sodium reactor configurations. Two historically significant events occurred during the period that the SRE program was active; the first occurred on November 12, 1957, when power from the SRE reactor was channeled for two hours into the power grid of the nearby town of Moorpark. This marked the first time in American history that a nuclear reactor was used to generate energy for a city's power grid. Less than two years later, in July 1959, a malfunction in the SRE's coolant system resulted in damage to the core's fuel rods, releasing a small amount of radioactivity into the atmosphere.

Association with the Post World War II Transformation of Southern California

North American Aviation and its Santa Susana Field Laboratory have a direct association with the development of California's post World War II economy, which was dominated by the defense and aerospace industries from the late 1940s through the early 1990s. Beginning in the postwar period, the Federal government began funding a massive program of defense-related research and development to contain the spread of Soviet influence; during this period Southern California played a leading role in its buildup. The state's already sizeable number of aerospace firms (largely developed during World War II) and concentration of academic and scientific institutions, such as the California Institute of Technology, the University of California, Berkeley, and Stanford University, were important components in helping defense-related programs go forward quickly (Rice, William and Orsi 2002: 497-499). By the 1960s, defense firms such as Douglas, Litton Industries, Lockheed, and North American Aviation (including its Atomics International and Rocketdyne subdivisions) were employing tens-of-thousands of workers, accounting for 60 percent of the manufacturing workforce in Los Angeles and Orange

counties (Rice, William and Orsi 2002: 498-499). The subsequent creation of the National Aeronautics and Space Administration (NASA), whose West Coast headquarters was at the Jet Propulsion Laboratory in Pasadena, greatly increased the ability of California to obtain government contracts resulting in an enormous boon to the state's economy. Significant scientific advances in programs undertaken by these institutions and companies allowed the development of sophisticated weaponry systems, including rockets, missiles, jets and space-based electronic modules.

Attracting large numbers of well-paid factory workers, engineers, technicians and scientists, the defense and aerospace industry helped to account for a dramatic increase in the state's population and an unprecedented suburbanization of California's landscape, exemplified by areas such as the San Fernando Valley. Comprised largely of farm and ranching land as late as the early 1940s, San Fernando Valley began to demographically transform in the postwar period from rural environment to an area of middle class residential housing tracts and commercial strip malls. To address California's rapid influx in population, a large number of whom were attracted by jobs in the aerospace and defense-related industries, the state launched the greatest build-up of its public infrastructure in its history, constructing new schools, universities, libraries, and parks, and building hundreds of miles of roads, highways and freeways. North American Aviation, as one of the largest defense-related contractors, played a significant role in this post World War II transformation of California from a prewar economy based largely on agriculture and extractive industries, to one dominated by the defense and aerospace industry. Therefore, the Santa Susana Field Laboratory, including Area IV, has a significant association with this historic episode, namely the transformation of California's economy in the post World War II period.

Eligibility of Area IV of the Santa Susana Field Laboratory for listing under Criteria 1

As a component of North American Aviation's Rocketdyne and Atomics International Divisions, field laboratory in Area IV of the Santa Susana Field Laboratory (SSFL) has potentially significant historic associations. As noted in Section 6.1.5 of this report, Area IV supported a range of experimental projects either directly or indirectly associated with nuclear-related research and development. These included the SRE, OMR and AETR reactor programs whose focus was the development of reliable and effective reactors for power generation and the SNAP program whose goal was the development of small nuclear reactors for powering space vehicles.

However, while Area IV of SSFL does have a significant association with important national and regional historic themes, namely the post World War II economic transformation of California and the notable scientific events that took place at SSFL, its ability to convey these associations has been significantly compromised by the demolition of most of the original research facilities within Area IV. Because of the loss of these structures, the ability of the resource to convey its historic associations and significance has been significantly diminished. Consequently, Area IV is not eligible for listing in the California Register of Historical Resources under a district nomination.

Evaluation of Area IV of the Santa Susana Field Laboratory for listing under Criteria 2

Criterion 2) *Is associated with the lives of persons important in our past*;

While the collective work of many scientists and engineers were associated with the Santa Susana Field Laboratory during its operation, these individuals do not appear to rise to the level of significance, on an individual level, that would make Area IV eligible for listing because of its association with them. Therefore, Area IV of the Santa Susana Field Laboratory is not eligible for listing in the California Register of Historical Resources under Criterion 2.

Evaluation of Area IV, SSFL under Criteria 3

Criteria 3) *Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.*

As noted above in the discussion of integrity of location, Area IV has not, with the exception of a single facility (RMHF, Group I), retained the buildings, structures and features dating to its period of significance, which is defined as 1953-1974, the period when nuclear-related research was ongoing at the facility. Demolition of most of the facility's improvements, including experimental reactors, laboratories, offices and test facilities since the mid-1980s has diminished the ability of the facility to effectively convey its appearance during the period of significance. Not only have buildings, structures and features been removed or demolished, but surviving buildings from the period of significance, including the AETR reactor in Group BB and the OMR and SGR experimental reactors in Group CC, have undergone significant alterations as part of the decommissioning and decontamination process that have resulted in the loss of virtually all of the components of the experimental reactors (leaving only the building in place). The loss of most of the buildings, structures and features from the period of significance has significantly diminished the ability of Area IV to convey its historic appearance. Therefore, Area IV of the Santa Susana Field Laboratory is not eligible for listing in the California Register of Historical Resources under Criterion 3.

Evaluation of Area IV, SSFL under Criterion 4

Criteria 4) Has yielded, or may be likely to yield, information important in prehistory or history.

The application of this criterion is beyond the purview of this report.

Summary of Eligibility for Listing in the California Register of Historical Resources

To summarize, Area IV of the Santa Susana Field Laboratory is not eligible for listing in the California Register of Historical Resources as a historic district. Nor are individual buildings, structures or features eligible for listing. However, the site may be eligible for listing because of its historic associations. This listing would be commemorative in nature and would not be directly tied to surviving buildings, structures or features at the facility.

Table 35: National Register Status Codes for Resources within Area IV of the Santa Susana Field Laboratory

Group	Original Function	Does/Does not Retain Integrity	National Register Code	CHR status code
A	SRE support facility	No, all buildings demolished	6Z	6Z
B	Engineering facility	Yes	6Z	6Z
C	Storage/Fuel Yard	All buildings and structures demolished	6Z	6Z
D	Fire control	All buildings and structures demolished	6Z	6Z
E	Support facilities	1 building remains	6Z	6Z
F	Support facilities	All buildings demolished	6Z	6Z
G	SRE facility	24 of 25 buildings demolished	6Z	6Z
H	KEWB and AE6 reactors	Demolished	6Z	6Z
I	RMHF	2 of 14 buildings demolished	6Z	6Z
J	Support facilities for SNAP, SRE & LMEC programs	All buildings and structures demolished	6Z	6Z
K	Shield Test Reactor	All buildings and structures demolished	6Z	6Z
L	SNAP program	All buildings and structures demolished	6Z	6Z
M	SNAP 8 facility	All buildings and structures demolished	6Z	6Z
N	OMR Reactor	All buildings and structures demolished	6Z	6Z
O	OMR support facility	7 of 18 buildings demolished	6Z	6Z
P	SGMR Facility	All buildings and structures demolished	6Z	6Z
Q	Storage facilities	All buildings and structures, with the exception of a parking lot, have been demolished	6Z	6Z
R	Support facilities	7 of 8 buildings demolished	6Z	6Z
S	Support facilities for LMEC	All buildings and structures demolished	6Z	6Z
T	Sodium Pump Test facility	1 of 4 buildings demolished, main building partially demolished	6Z	6Z
Group U	LMEC facilities	All buildings and structures demolished	6Z	6Z
Group V	SNAP and LMEC programs	3 of 4 buildings demolished	6Z	6Z
Group W	SNAP facility	All buildings and structures demolished	6Z	6Z
Group X	Uranium pellet processing facility	Extant	6Z	6Z
Group Y	Housed facilities for SRE, SNAP and OMR programs	8 of 9 buildings demolished	6Z	6Z
Group Z	Organic Reactor support facilities	All buildings and structures, with the exception of a parking lot, have been demolished	6Z	6Z
Group AA	Rocketdyne Hot Lab	Demolished	6Z	6Z
Group BB	AETR Rector complex	1 of 2 buildings demolished (reactor building remains)	6Z	6Z
Group CC	OMR & SGR reactor complex	all building extant	6Z	6Z
Group DD	Support facilities & Solar Unit and shooting range	1 structure (solar unit) of 6 remains	6Z	6Z
Group EE	Sodium Burn Pit & Shooting range	Demolished	6Z	6Z
Group FF	Water Tanks	Extant	6Z	6Z

7.0 SUMMARY AND CONCLUSIONS

Area IV of the Santa Susana Field Laboratory is not eligible for listing in the National Register of Historic Places or the California Register of Historical Resources as a historic district, primarily because it lacks sufficient integrity to convey its historic appearance or association with the history of nuclear power research and development in the United States and the post World War II transformation of California. None of the buildings, structures or features within Area IV is individually eligible for listing in the National Register of Historic Places or the California Register of Historic Places. Therefore, the implementation of the proposed remediation program will not impact resources eligible for listing in the National Register of Historic Places or the California Register of Historic Places.

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MAPS AND FIGURES