Environmental Assessment (EA) for the Construction of the In-Situ Instrumentation Laboratory
August 12, 1998

Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena, CA 91109

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Executive Summary

LEAD AGENCY: National Aeronautics and Space Administration (NASA)/Jet Propulsion Laboratory (JPL).

PROPOSED ACTION: Jet Propulsion Laboratory is proposing to construct a new In-Situ Instrumentation Laboratory within the JPL facility boundary. The JPL facility is located on federal land adjacent to the cities of Pasadena and La Canada/Flintridge, in Los Angeles County. The facility would occupy the existing site of Buildings 78 and 113, both of which would be demolished. The new laboratory is to be equipped with "class 100,000" clean rooms and parts storage. The structure would be approximately 1200 sq. meters (13,333 square feet) in size. Relocation of site utilities and construction of new retaining walls would be required. The structure would make use of existing capacity at the central power plant at building 303 for air conditioning and electrical services.

SUMMARY: Pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 4321, et seq.), the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions on NEPA (40 CFR Parts 1500-1508), and NASA policy and procedures (14 CFR Part 1216, Subpart 1216.3), NASA-JPL is preparing this Environmental Assessment for the proposed construction of the In-Situ Instrumentation Laboratory. JPL is committed to being the "Center of Excellence" within the area of In-Situ Instruments for planetary exploration. The Microdevices Laboratory, Building 302 is the primary laboratory for an existing NASA/JPL "Center of Excellence". The proposed In-Situ Instruments Laboratory will provide the needed integration and testing. The proposed action to build a new In-Situ Instrumentation Laboratory at JPL is considered a "Federal Action" that is not categorically excluded from NEPA.

1.0 PURPOSE AND NEED:

The purpose of the proposed facility is to provide much needed laboratory space for sensor testing, qualification, instrument integration and system testing of sensors fabricated at JPL. Currently, space sensor fabrication and development is taking place in JPL's Microdevices Laboratory (MDL) to meet NASA's need. Existing facilities at MDL cannot accommodate the required laboratory space to do flight hardware testing and integration due to the phenomenal growth JPL has experienced as a technology innovator and provider of sensors for flight instruments. The proposed In-Situ Instrumentation Laboratory would provide this needed capability. It would ultimately link the technology developments from MDL into flight instruments for In-Situ Exploration which would then be integrated into microspacecraft through a new center of excellence being planned: CISM - Center for Integrated Space Microsystems.

These three NASA centers of excellence being planned (MDL, In-Situ Instrumentation Laboratory and CISM) need to be located in close proximity to one another to optimize the close interactions which their work will entail.

2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES:

2.1 Proposed Action

This project proposes the construction of a two story building that will be equipped with "class 100,000" clean rooms and parts storage. The structure would be approximately 1,200 sq. meters (12,917 square feet) in size. The total footprint of the proposed structure would be 600 sq. meters (6,458 square feet). It would be located on the north side of Mariner Road on the site currently occupied by a parking lot and the western portions of Buildings 78 and 113 (See Appendix B). These two buildings would be demolished to provide space for the new building. None of the structures to be demolished are considered to have historical significance. Buildings 78 and 113 do not satisfy the criteria for eligibility for listing in the National Register of Historic Places (Man in Space-Study of Alternative, National Park Service, 1987). Relocation of site utilities and construction of new retaining walls would be required.

The structure would be a concrete structure on a concrete slab foundation. Vibration isolation would be provided for ultra-sensitive areas. The structure would make use of existing capacity at the central power plant at building 303 for air conditioning and electrical services. The project is expected to start February 1999 with construction completed by October 2000.

The proposed construction at JPL necessary to complete the project includes: (1) demolition of buildings 78 and 113; (2) construction of a retaining wall; (3) construction of the proposed new structure.

2.2 Other Facility Alternatives

As an alternative, the rehabilitation and addition to the current facilities was considered. In this scenario, existing as well as future programmatic needs would be met. However, this option would exacerbate maintenance and utility problems with additional costs for these services for the added square footage. Additional square footage would be required since resources which can be shared due to co-location would need to be duplicated in more than one building in order to provide equivalent functionality. Utility costs would also continue at a higher level due to the larger surface areas and lower insulation values of the cluster of circa 1950 buildings. Other work and research in progress would be disrupted to yield space to the in-situ missions. Moreover, this alternative would offer no material environmental benefit relative to the Proposed Action.

2.3 No-Action Alternative

The no action alternative would mean that JPL would not build the In-Situ Instrumentation Laboratory at the proposed location and buildings 78 and 113 would not be demolished for this project. JPL's "Center of Excellence" status would be adversely impacted due to the lack of laboratory and integration space that is needed. JPL would have to default on some of its commitments in order to fit the work of highest priority within the available facilities. It would not be an allowable option to carry out the work under substandard conditions. If new or additional facilities are not made available for these missions, it is highly unlikely that such work will be undertaken.

3.0 EXISTING ENVIRONMENT

JPL is located on the northern edge of the metropolitan Los Angeles area (see map Appendix A). The laboratory is separated from residential neighborhoods by the foothills of the San Gabriel mountains to the north and the Arroyo Seco Canyon to the east. Although some industrial activities occur on the site, JPL has a university campus appearance with modern buildings, extensive landscaping, and site use designed to be compatible with the surrounding land uses. About 150 structures and buildings currently occupy the site with several recent additions. There are no listed federally designated threatened or endangered species, or California-designated rare or endangered species known to occur in the JPL facility. A storm drain conveyance system effectively removes rain water

from the facility. Even in the heaviest of rains there are no areas in the JPL facility where water accumulates for long periods of time.

Refer to the existing Environmental Resources Document (ERD) for a detailed description of the existing environmental setting at JPL.

4.0 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION

In consideration of the proposed action, the impacts to the human environment were divided into short-term and long-term impacts. The short term impacts during the construction phase, would last 18 months. The long-term or operational impacts would last the lifetime of the building and result from the operation of the proposed project. The EA evaluated the environmental consequences of both the construction and operational phases including, but not limited to earth resources, air resources, biotic resource, hazardous waste management, water resources, natural and cultural resources, noise, and aesthetics.

4.1 Earth Resources

The proposed project area consists of buildings 113, 78 and a parking lot used by some of the occupants of the surrounding buildings. Building 113 and 78 are old and obsolete structures. Building 78 is a single story structure while building 113 is multi-level.

The construction phase of the proposed action would require regrading the area underneath building 78 and 113. Any hazardous materials encountered during excavation will be cleared and disposed of in accordance with existing Federal and State laws and the Federal Facilities Agreement (FFA). Normal construction practices of wetting dry soil and controlling surface water drainage would mitigate impacts associated with soils temporarily exposed to wind and water erosion. The In-Situ Instrumentation Laboratory would be two stories high and would represent a low exposure to earthquake hazards. However, the laboratory would be built to current earthquake standards, so the potential impact would not be significant.

The rehabilitation alternative would continue to pose no impact on earth resources. Since rehabilitation/construction activities would only occur within the existing structure there would be no threat from erosion.

The no-action alternative would have no substantial environmental impacts on earth resources.

4.2 Air Resources

The Proposed Action would temporarily increase airborne particulates from the earth moving activities. However, the adverse air quality impact would not be substantial. Also, construction equipment would generate a temporary minuscule increase in combustion emissions, such as carbon monoxide. Little if any increase in air emissions is anticipated during construction activities. Operational emissions would include small quantities of solvents and acids used for cleaning microelectronic components. All emissions would conform to existing regulatory requirements.

An annual Permit to Operate from the South Coast Air Quality Management District (AQMD) for an emergency generator would be required.

The rehabilitation alternative would pose little, if any impact on air resources. Impacts from construction activities would be limited to within the structures being modified and would be of short duration. Operational impacts would be very similar to that for the Proposed Action.

The no-action alternative would have no impacts on air resources

4.3 Water Resources

Since the site of the proposed laboratory is paved and covered with two buildings, the proposed action will not substantially alter surface drainage. During construction, the surface soils would be exposed to potential erosion and runoff if surface drainage is not properly maintained during construction. However, practicable mitigation measures will be implemented to minimize sedimentation.

Neither the rehabilitation alternative nor the no-action alternative would have any impact to water resources.

4.4 Biotic Resources

Since the proposed project location is within the developed areas of JPL, neither construction nor operational activities would substantially affect biotic resources. JPL is surrounded by a fence which prohibits most wildlife from freely entering the facility and the location of the proposed activity is in a moderate pedestrian and vehicular traffic area, away from existing wildlife areas. The proposed project site has very little landscaping since it is mostly covered with asphalt and cement. The locations east and west of the proposed site consist of an asphalt covered parking area. Construction activities will remove three large Eucalyptus

trees which are between the two aforementioned existing buildings. Operational activities will have no effect on biotic resources.

Neither the rehabilitation alternative nor the no-action alternative would have any impact to biotic resources.

4.5 Natural and Cultural Resources

Since the current site of the proposed project is occupied by two buildings and has very little landscaping, natural resources would not be impacted. Cultural resources (e.g. National Historic Landmarks) would not be impacted during demolition or construction activities (see Appendix C). Buildings 78 and 113 do not satisfy the criteria for eligibility for listing in the National Register of Historic Places (Man in Space-Study of Alternative, National Park Service, 1987). There are no facilities listed or eligible for listing in the National Register of Historic Places in the immediate vicinity of the proposed construction.

Neither the rehabilitation alternative nor the no action alternative would have any impact to natural and cultural resources.

4.6 Hazardous Waste

Currently, both buildings 78 and 113 generate little hazardous waste. Construction activities would generate mostly non-RCRA hazardous waste, such as fluorescent light tubes and lighting ballasts. A lead paint assessment of the existing buildings would need to be completed to determine the presence of lead paint. State requirements allow for the disposal of lead paint covered material if the paint is adequately bonded to the substrate. Any peeling or cracking paint requires physical removal from the substrate and subsequent management as hazardous waste. Asbestos containing materials would be removed as required in state and local regulations.

Operational activities would generate small quantities of hazardous waste. Since the facility would be an assembly facility, no substantial quantities of hazardous waste would be generated. There would be little or no net increase in the quantities of hazardous waste generated at JPL since activities from other locations would be moved to the In-Situ laboratory. Typical hazardous waste which might be generated at the In-Situ laboratory in one year would include small quantities of acid, spent solvent and solvent contaminated rags.

The impact of the rehabilitation alternative would be very similar to that for the Proposed Action. The no action alternative would have no impact to hazardous waste generation.

4.7 Noise

Construction noise would not be long term and would be within regulatory limits. Standard noise abatement equipment and practices required of all construction activities reduce noise to normally acceptable levels. Noise levels of continuing operations would be at levels comparable to those emanating from surrounding facilities.

Construction impacts from the rehabilitation alternative would be localized within the structure. Operational impacts from the rehabilitation alternative would be very similar to that for the Proposed Action.

The no action alternative would have no impact on noise.

4.8 Aesthetics

The most valuable aesthetic resource at JPL is the natural vista. The facility stands out against the natural vista but JPL design has made efforts in maintaining the natural resources of the foothills. Construction activities will present a short term affect on the natural vista. Operational impacts would improve the natural vista since the five story tower which is part of building 113 would be demolished in order to erect the modern two story ISIL.

Neither the rehabilitation alternative nor the no action alternative would have any impact on aesthetics.

4.9 Flood Plains and Wetlands

JPL is mostly paved with introduced landscaping. An effective stormwater conveyance system channels rainwater from JPL streets into the Arroyo Seco in compliance with JPL's general storm water permit. Due to the topography of the site, the natural flow is away from the facility. Consequently, there are no areas within JPL where water collects at any time even in the heaviest of rains. The Arroyo Seco is an intermittent stream which flows after heavy rains during the rainy season. However, the Arroyo Seco lies remote from the proposed project site.

JPL has assessed its vulnerability to flooding due to a 100 year and 50 year maximum rainfall. Studies by the City of Pasadena have determined that the maximum flood plain elevation is 1075 feet with the spillway gates of the Devils Gate Dam open. The Devils Gate Dam lies about one mile south of JPL in the Arroyo Seco. The 1075 foot elevation exists only at the very southern end of the West Arroyo parking area where there are no permanent facilities, either existing or planned. The proposed facility would not be considered a JPL "critical action"

facility as defined in guidance for Executive Order 11988, Flood Plain Management. The elevation of the proposed In-Situ Instrumentation laboratory is approximately 1150 feet.

Construction activities would be local and would not impact areas beyond the proposed project site. Operational activities would not release wastewater into the stormdrain system. There are no wetlands at or immediately adjacent to the proposed construction site. Thus, neither construction or operational activities at the proposed site would impact any potential wetland areas in the Arroyo Seco.

There would be no possibility of inundation by floods at the proposed project site.

The rehabilitation alternative and the no-action alternative would not be inundated by floods and would not affect any potential wetland areas in the Arroyo Seco

4.10 Environmental Justice

There would be no Environmental Justice concerns during the construction or operational phase of the project because environmental and human health effects would not be substantial and would be almost entirely confined to JPL property.

The rehabilitation alternative and the no action alternative would not cause Environmental Justice concerns.

5.0 LIST OF PERSONS CONTACTED

- Clarence Cesar, California State Historian, Department of Parks and Recreation, Office of Historic Preservation.
- Ernest Breig, JPL Project Manager

6.0 REFERENCES

Jacobs Engineering. 1994 (December). Environmental Resources Document. Prepared for the Jet Propulsion Laboratory.

Department of the Interior, National Park Service, 1987, Man In Space-Study of Alternatives.

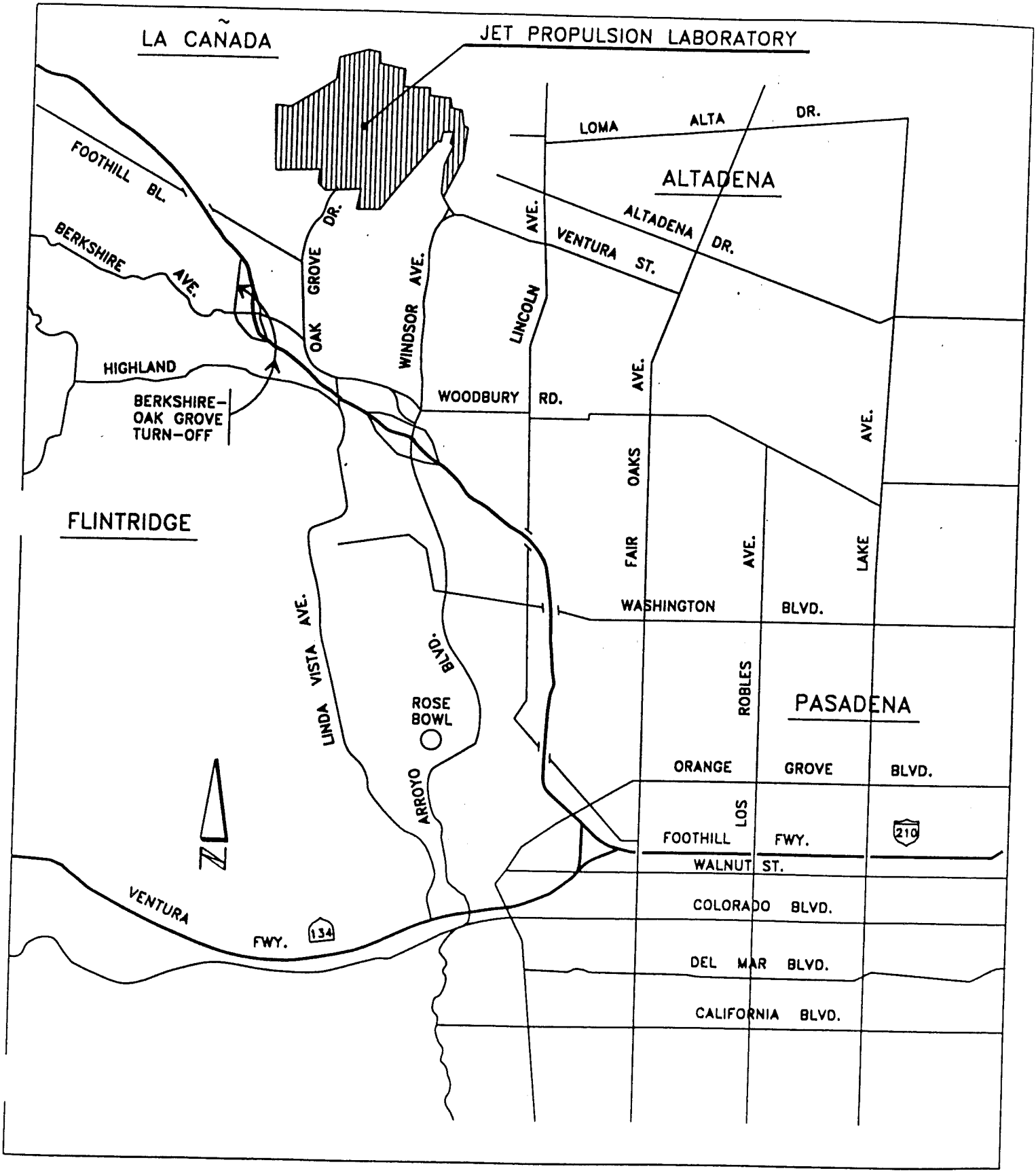
Federal Facilities Agreement (FFA). Entered into between NASA, the Environmental Protection Agency (EPA), and the California State Department of Toxics Control. 1992 (December).

Boyle Engineering. 1988 JPL Facilities Master Plan.

Cotton/Beland/Associates. 1988 (February). Devils Gate Dam Multi-Use Project Environmental Baseline Study. Prepared for the City Of Pasadena Water and Power Department.

Williams, Frank, Los Angeles County Department of Public Works Planning Division. Telephone interview by the author. 21 January 1998.

Caesar, Clarence, California State Historian, Department of Parks and Recreation, Office of Historic Preservation. Telephone interview by the author. February 5, 1998.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JET PROPULSION LABORATORY
LOMA ALTA DR.
ALTADENA
ALTADENA DR.
FOOTHILL BL.
BERKSHIRE AVE.
OAK GROVE DR.
WINDSOR AVE.
LINCOLN AVE.
VENTURA ST.
HIGHLAND
BERKSHIRE-OAK GROVE TURN-OFF
WOODBURY RD.
FLINTRIDGE
FAIR OAKS AVE.
LAKE AVE.
WASHINGTON BLVD.
LINDA VISTA AVE.
ARROYO BLVD.
ROSE BOWL
ROBLES
PASADENA
ORANGE GROVE BLVD.
LOS FOOTHILL FWY.
210
WALNUT ST.
COLORADO BLVD.
DEL MAR BLVD.
CALIFORNIA BLVD.
VENTURA FWY.
134
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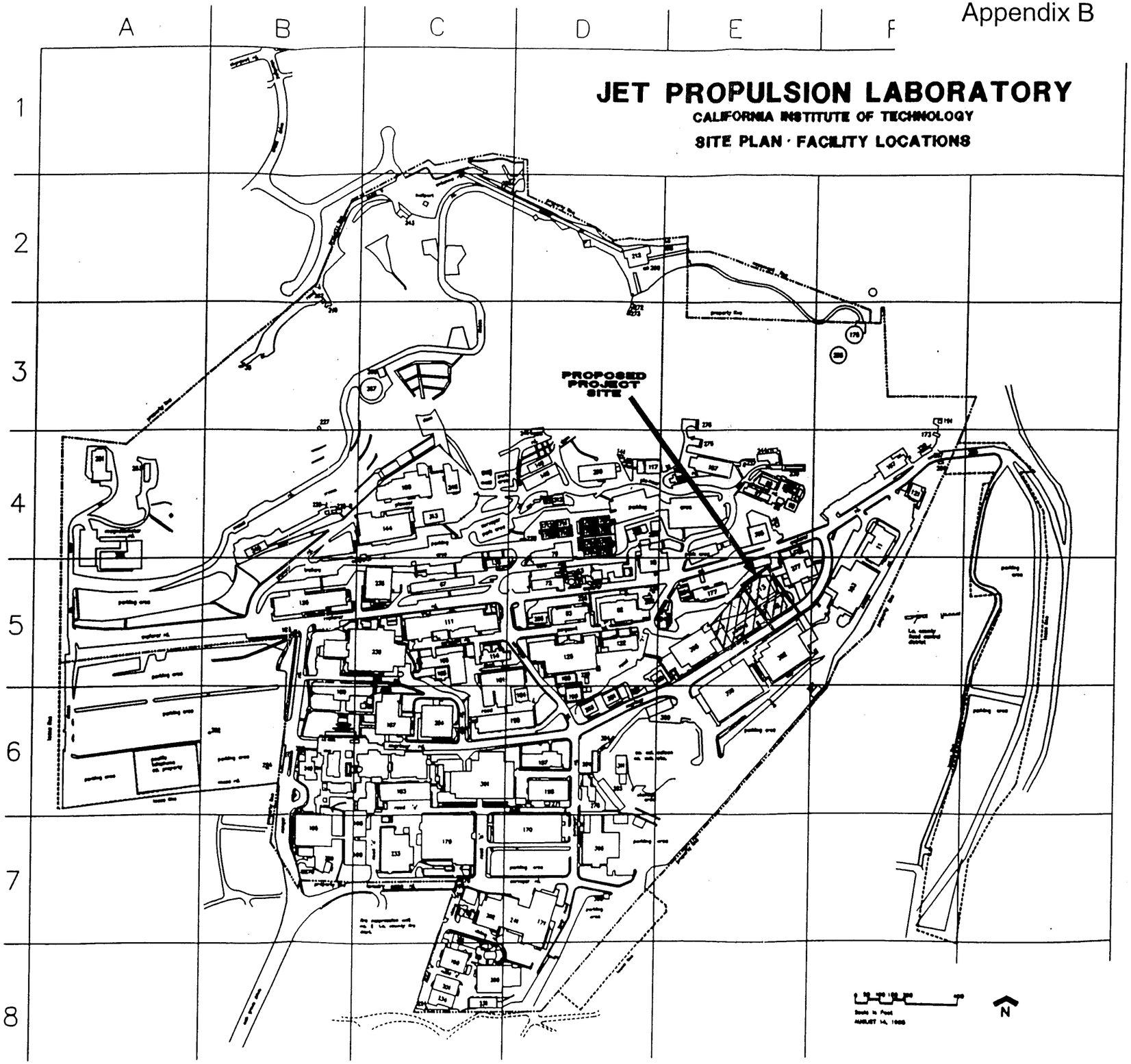
JET PROPULSION LABORATORY

CALIFORNIA INSTITUTE OF TECHNOLOGY

SITE PLAN · FACILITY LOCATIONS



STATE OF CALIFORNIA – THE RESOURCES AGENCY
OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
P O BOX 942896
SACRAMENTO 94296-0001
(916) 653 6624
FAX (916) 653-9824

PETE WILSON, Gove.

Appendix C

July 23, 1998
REPLY TO: NASA980625A

Faustino Chirino, Environmental Engineer
Jet Propulsion Laboratory
California Institute of Technology
4800 Oak Grove Avenue
PASADENA CA 91109-8099

Re: Demolition of Buildings 78 and 113, Jet Propulsion Laboratory, Pasadena, Los Angeles County.

Dear Mr. Chirino:

Thank you for submitting to our office your June 25, 1998 letter and supporting documentation regarding the proposed demolition of Buildings 78 and 113, Jet Propulsion Laboratory (JPL), Pasadena, Los Angeles County. Neither of the buildings is listed among those structures comprising the JPL National Historic Landmark ((NHL) District designated by the National Park Service in 1984. The proposed project will involve the demolition of the structures in preparation for the construction of a new In-Situ Instrumentation Laboratory. The new structure is anticipated to provide needed laboratory space for the sensor test, qualification, instrument integration, and system testing of the sensors fabricated by JPL.

You are seeking our comments on your determination of the effects the proposed project will have on historic properties associated with the JPL NHL Historic District in accordance with 36 CFR 800, regulations implementing Section 106 of the National Historic Preservation Act. Our review of the the submitted documentation leads us to concur with your determination that the proposed project, as described will not adversely effect any contributing structures to the JPL NHL Historic District.

This determination is conditioned, however, on the potential impact the design and scale of the new In-Situ Instrumentation Laboratory may have on the JPL NHL Historic District. Please keep us informed regarding any design drawings are completed for the proposed laboratory building so that we may review them for their compatibility with the historic district.

Thank you again for seeking our comments on your project. If you have any questions, please contact staff historian Clarence Caesar at (916) 653-8902.

Sincerely,

for Cherilyn Widell
State Historic Preservation Officer