



**INTERIM LAND USE CONTROL IMPLEMENTATION PLAN**



**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
KENNEDY SPACE CENTER  
BREVARD COUNTY, FLORIDA**

**FACILITY:** Launch Equipment Shop  
Potential Release Location 051  
**CONTAMINANTS:** Polynuclear Aromatic Hydrocarbons and Total Recoverable Petroleum  
Hydrocarbons in Groundwater  
**CONTROL:** Prohibit Groundwater Use

**PURPOSE OF LAND USE CONTROL  
IMPLEMENTATION PLAN**

This Interim Land Use Control Implementation Plan (LUCIP) has been prepared to inform current and potential future users of the Launch Equipment Shop (LES) of institutional controls that have been implemented at the site<sup>1</sup>. Although there are no current unacceptable risks to human health or the environment associated with LES, certain land use controls (LUCs) are necessary to prevent the potential for future risks at the site. Controls will include periodic inspection, condition certification, and agency notification.

**WHY LAND USE CONTROLS ARE  
NEEDED**

The Site Assessment Report and Addenda determined that contaminants of concern (COCs) with concentrations exceeding Florida Department of Environmental Protection (FDEP) and United States Environmental Protection Agency (EPA) cleanup target levels include polynuclear aromatic hydrocarbons (PAHs) and total

recoverable petroleum hydrocarbons (TRPH) in groundwater.

**SITE DESCRIPTION**

Potential Release Location (PRL) 051 includes a manufacturing shop for shuttle ground support and facilities. Individual shops within the building include a machine shop, electrical shop, sheet metal shop, and welding shop. The LES building also contains offices for planning and scheduling. The Site Assessment began with the removal of a 4,000-gallon diesel underground storage tank and was limited to the northeastern corner of the facility. Initial tank closure activities conducted in 1996 confirmed the presence of soil and groundwater contamination. Approximately 178 tons of petroleum-contaminated soil were removed and properly disposed of during two source removals in 1996 and 2000. Petroleum-contaminated soils with concentrations greater than SCTLs were left in place to avoid disturbance of underground utilities and to a trailer and shed located at the southern edge of the excavation. A pilot-scale study was conducted between June 2007 and

<sup>1</sup> This Interim LUCIP summarizes institutional controls regarding the NASA LES site. For detailed information on the site, consult the LES administrative file, which is available for review by contacting the KSC Environmental Assurance Branch at telephone number (321) 867-8402.

February 2009 to evaluate oxidation of hydrocarbon contamination in soil and groundwater via injection of RegenOx™. A subsequent test was conducted to determine the effectiveness of ozone injections. Based on favorable results, the ozone oxidation system was reconfigured, and operation began in October 2010. Operation will continue until TRPH groundwater concentrations are less than FDEP Groundwater Cleanup Target Levels (GCTLs).

### **SITE LOCATION**

LES includes a parking area and grassy area located southwest of the Vehicle Assembly Building (VAB) area, on the southern side of Saturn Causeway (Figure 1). LES is located in Section 18, Township 22S, Range 37E, as shown on the 7.5-minute Orsino topographic quadrangle map. The groundwater use control area covered by the Interim LUCIP is shown on Figure 2. Coordinates of the corners of the LUC area are provided on Figure 2 in the State Plane Coordinate System, North American Datum (NAD) of 1983, Florida East, meters.

### **SITE CONTAMINATION AND CONTROL**

Concentrations of COCs in groundwater at the site are greater than FDEP GCTLs. The past, current, and projected future land use of LES is industrial in nature. LUCs are therefore required to prohibit the use of groundwater at the site until cleanup levels are achieved. The current and projected land use of LES does not include the use of site groundwater; therefore, there is no current or projected future exposure risk.

### **DECISION DOCUMENT**

The Kennedy Space Center (KSC) Remediation Team determined that interim institutional controls should be implemented at LES. The interim institutional controls are temporary while investigation, interim measures, and corrective measures are in progress.

### **IMPLEMENTATION**

Institutional controls will be implemented by the KSC Environmental Assurance Branch in accordance with their Resource Conservation and Recovery Act (RCRA) permit and a Land Use Control Assurance Plan included in a Memorandum of Agreement (MOA)<sup>2</sup> between NASA, FDEP, and EPA, effective February 23, 2001. Property transfer (if

<sup>2</sup> By separate MOA effective February 23, 2001, with the EPA and FDEP, KSC, on behalf of NASA, agreed to implement Center-wide, certain periodic site inspections, condition certification, and agency notification procedures designed to ensure the maintenance by Center personnel of any site-specific LUCs deemed necessary for future protection of human health and the environment. A fundamental premise underlying execution of that agreement was that through the Center's substantial good faith compliance with the procedures called for herein, reasonable assurances would be provided to EPA and FDEP as to the permanency of those remedies which included the use of specific LUCs.

*Although the terms and conditions of the MOA are not specifically incorporated or made enforceable herein by reference, it is understood and agreed by NASA KSC, EPA and FDEP that the contemplated permanence of the remedy reflected herein shall be dependent upon the Center's substantial good faith compliance with the specific LUC maintenance commitments reflected herein. Should such compliance not occur or should the MOA be terminated, it is understood that the protectiveness of the remedy concurred in may be reconsidered and that additional measures may need to be taken to adequately ensure necessary future protection of human health and the environment.*

implemented in the future) will be conducted in accordance with Section X of the MOA.

KSC's Environmental Assurance Branch will provide KSC's Master Planning Office with survey coordinates of the LUC areas.

Restrictions will specify limitations on development and reuse for the area for as long as LUCs are necessary to protect human health and the environment.

### **MONITORING**

Quarterly inspections to monitor that the LUCs specified herein are in place and operating and will be conducted by KSC's Environmental Assurance Branch. The inspections will verify that no groundwater use is occurring.

### **REPORTING**

KSC's Environmental Assurance Branch will submit annual reports to FDEP certifying retention of the implemented LUCs.

### **ENFORCEMENT**

KSC's Environmental Assurance Branch will be responsible for stopping any activities at KSC that are not compliant with this Interim LUCIP.

### **MAINTENANCE**

The Interim LUCIP shall remain in place until a land use change is implemented and the concerns managed by the Interim LUCIP are mitigated, or until there is a discovery, based on analytical evidence, that scenarios managed by the Interim LUCIP are no longer a concern.

FIGURE 1 LOCATION OF KENNEDY SPACE CENTER AND PRL 051  
PRL 051 - LAUNCH EQUIPMENT SHOP, KENNEDY SPACE CENTER, FLORIDA

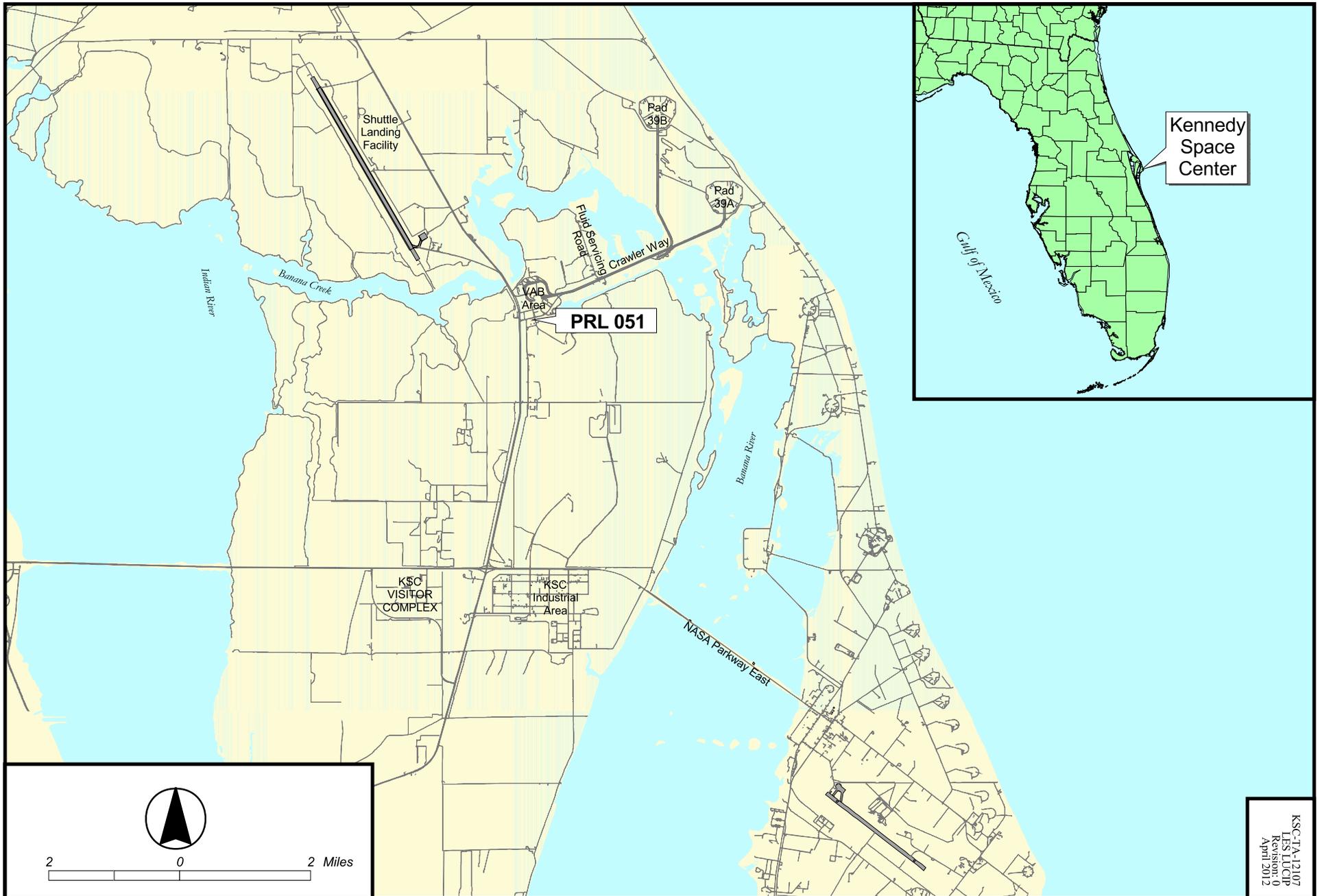
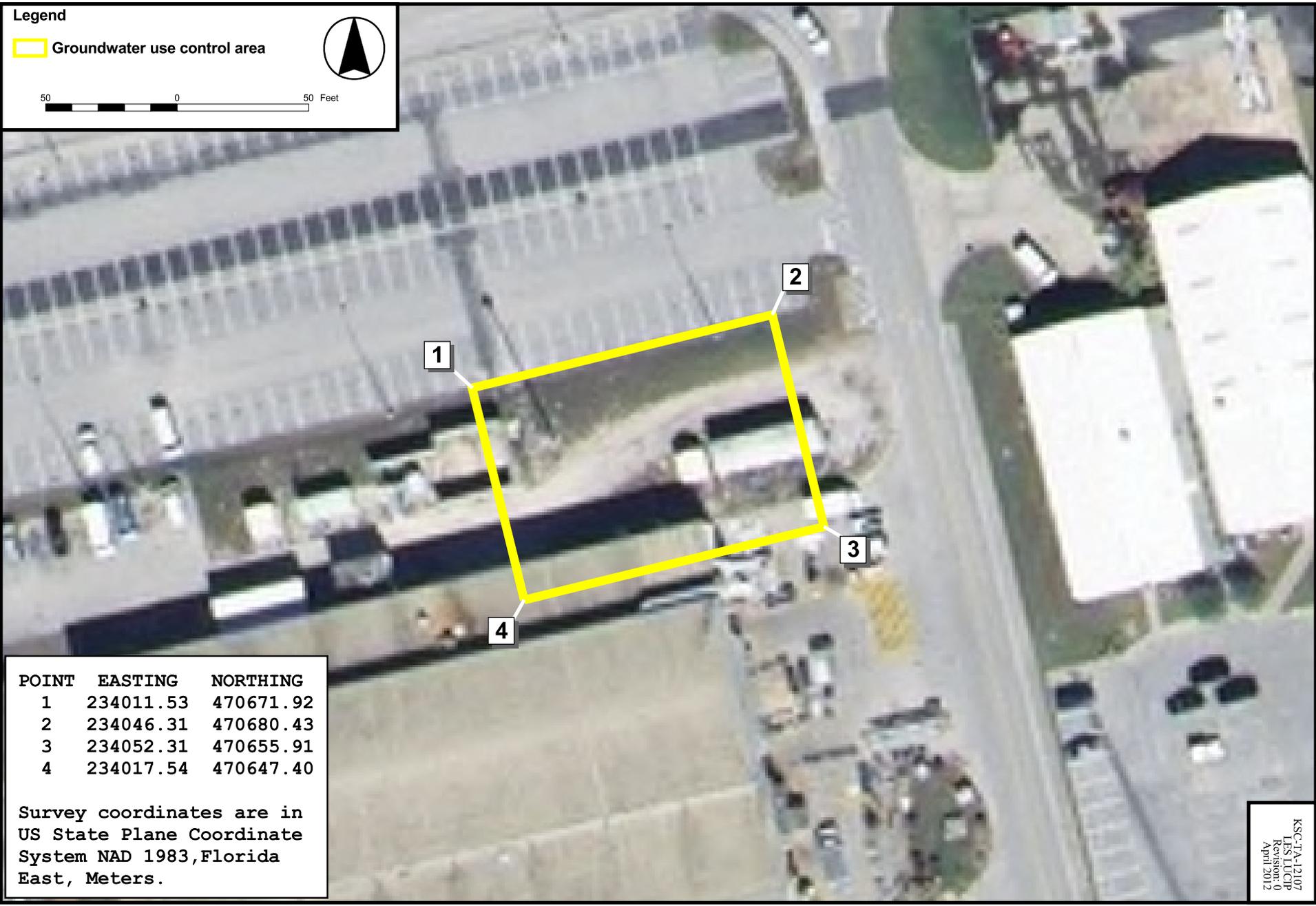


FIGURE 2 LAND USE CONTROL AREA  
 PRL 051 - LAUNCH EQUIPMENT SHOP, KENNEDY SPACE CENTER, FLORIDA



**Legend**

Groundwater use control area



50 0 50 Feet

POINT	EASTING	NORTHING
1	234011.53	470671.92
2	234046.31	470680.43
3	234052.31	470655.91
4	234017.54	470647.40

Survey coordinates are in US State Plane Coordinate System NAD 1983, Florida East, Meters.

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 LES LUCIP  
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