



## STATEMENT OF BASIS

### MISSION SUPPORT BUILDING AREA (SWMU 108) NATIONAL AERONAUTICS AND SPACE ADMINISTRATION KENNEDY SPACE CENTER BREVARD COUNTY, FLORIDA

#### PURPOSE OF STATEMENT OF BASIS

This Statement of Basis (SB) has been developed to inform and give the public an opportunity to comment on a proposed remedy to address contamination at the Mission Support Building Area (MSBA; the Site). The MSBA is located in the Vehicle Assembly Building (VAB) Area of the Kennedy Space Center (KSC) as shown on [Figure 1](#). The facility is bordered by Saturn Causeway to the north, numerous buildings collectively known as the Press Site to the east, wooded areas to the south, and Utility Road to the east ([Figure 2](#)). The MSBA is located in Section 18, Township 23S, and Range 37E in the Orsino Quadrangle. The KSC Remediation Team (KSCRT), consisting of National Aeronautics and Space Administration (NASA) and Florida Department of Environmental Protection (FDEP) personnel, has determined that the proposed remedy is cost effective and protective of human health and the environment. However, prior to implementation of the proposed remedy, the KSCRT would like to give an opportunity for the public to comment on the proposed remedy. At any time during the public comment period, the public may comment as explained in the “How Do You Participate” section of this SB. After the end of the public comment period, the KSCRT will review all comments and issues raised in the comments and determine if there is a need to modify the proposed remedy prior to implementation.

#### WHY IS A REMEDY NEEDED?

The results of the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Progress Report indicated that vinyl chloride (listed in Table 1) is present in groundwater above regulatory criteria, which could be potentially harmful to human health if this water is used.

#### HOW DO YOU PARTICIPATE?

The KSCRT solicits public review and comment on this SB before implementing the proposed remedy. The remedy for the MSBA will be incorporated into the next update of the Hazardous and Solid Waste Amendments (HSWA) Permit for KSC.

##### The Cleanup Remedy

The proposed cleanup remedy for the MSBA includes the following components:

- Attenuation of vinyl chloride in groundwater through naturally occurring processes.
- Monitoring of groundwater to document natural attenuation of vinyl chloride.
- Implementation of institutional controls to prohibit use of groundwater.

The public comment period for the SB will coincide with the date of publication for notice of availability of the HSWA Permit in major local newspapers of general circulation and will end 45 days thereafter.

If requested during the comment period, the KSCRT will hold a public meeting to respond to any oral comments or questions regarding the proposed remedy.

To request a hearing or to provide comments, contact the following persons in writing within the 45-day comment period:

Ms. Rosaly Santos-Ebaugh, P.E.  
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Mr. John R. Armstrong, P.G.  
FDEP - Bureau of Waste Cleanup  
Federal Facilities Section  
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Telephone: (850) 245-8981  
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## **FACILITY DESCRIPTION**

NASA established KSC as the primary launch site for the space program. These operations have involved the use of toxic and hazardous materials. Under the RCRA and applicable HSWA permit (Permit No. 0026028-HO-005) issued by the FDEP, KSC was required to perform an investigation to determine the nature and extent of contamination from Solid Waste Management Unit (SWMU) 108, the MSBA.

## **SITE DESCRIPTION AND HISTORY**

The MSBA is located in the VAB area and encompasses approximately 68 acres.

Historically, trailers have been staged in this area during two phases to support KSC operations. The VAB “Trailer City” occupied the Site from the late 1970’s through the early 1980’s and was utilized for support of the demolition of the former Launch Umbilical Towers (LUT) located adjacent to the VAB; to support the construction of the launch pads and current LUT structures at Space Launch Complex (SLC) 39A and SLC 39B; and to support the first space shuttle flight of Columbia in 1981. The Mission Support Building (MSB) was constructed in the mid-1980s and was utilized for communications. From 1982 through 2005, the area was restructured with an Interim Housing Area containing 19 structures that were utilized to support the Space Shuttle Program. The Interim Housing was removed in 2005 and was replaced by the existing Operations Support Building II (OSBII; K6-1249) in 2006. One trailer existed to the south of the OSBII on the east side of the south parking area (TR6-0104). Interviews indicated this building was utilized by operation support personnel from 1997 through 2010 when it was removed from the Site.

Parking areas are located to the north, west, and south of the OSBII. The Site is bordered by Saturn Causeway to the north, numerous buildings collectively known as the Press Site to the east, wooded property to the south, and Fire Station #2 (K6-1198), Back-Up Generator Building (K6-1248), and Utility Road to the west. as shown on [Figure 1](#).

The Site contains two structures, the OSBII (K6-1249) and the MSB (K6-1298), as shown on [Figure 2](#).

Six investigations have been conducted at the Site.

**Paint Spill (1994)**

On September 21, 1994, a spill of diathon paint was documented on the roof of the MSB. The quantity was not indicated and no cleanup activities were reported. No further action was taken because of the spill.

**Routine Transformer Sampling (1995)**

An oil sample collected from transformer K6-1200C contained 1 part per million of polychlorinated biphenyls (PCBs). No action was taken based on the sampling.

**SWMU Assessment Report and Confirmatory Sampling Work Plan (2007)**

The SWMU Assessment was conducted to identify potential environmental activities related to operations in the MSBA. Three Locations of Concern (LOC) were identified:

- LOC 1—Former/Existing Transformers and Switches;
- LOC 2—Former Ammonia Storage Shed; and
- LOC 3—MSB Waste Storage Area.

The Confirmatory Sampling Work Plan recommended collecting 53 soil samples in LOC 1 for total recoverable petroleum hydrocarbons and PCBs, eleven groundwater samples for ammonia in LOC 2, and one soil and one groundwater sample for TRPH and PCBs.

**Confirmatory Sampling (CS) Report (2010)**

Confirmatory samples were collected from March 2008 through June 2010. The results indicated that no constituents exceeded the FDEP Soil Cleanup Target Levels (SCTLs)

or Groundwater Cleanup Target Levels (GCTLs) and a No Further Action (NFA) for soil and groundwater was recommended and approved for LOC 1 and LOC 3 in May 2008. Ammonia in groundwater exceeded the FDEP GCTL and further samples were collected to delineate the extent of impacts. Five monitoring wells were installed to assess ammonia concentrations in groundwater and long-term monitoring (LTM) was recommended and approved by the KSCRT in December 2009.

During CS activities, the KSCRT recommended site-wide groundwater be assessed for volatile organic compounds (VOCs) based on studies completed at other KSC sites. The groundwater sampling results indicated that vinyl chloride was present at the Site at concentrations above the FDEP GCTL and further investigation was recommended under a RCRA Facility Investigation (RFI).

**2010 Annual Industrial Area LTM Report (2011)**

The MSBA was included in the Industrial Area LTM program in 2010 for ammonia. Two monitoring wells were sampled for ammonia during two events conducted in May and November. Groundwater flow in the wells was determined to be to the east. Ammonia exceeded the FDEP GCTL but was below the applicable KSC Background concentration. Ammonia in groundwater at the Site was recommended and approved for NFA in February 2011.

**RCRA Facility Investigation Progress Report (2012)**

The Site-wide groundwater sampling and re-assessment of the adjacent Press Site historical data indicated that vinyl chloride was detected above the FDEP GCTL. Based upon the existence of a VAB Area LTM

Program in this vicinity, the Site was recommended for inclusion in the existing program.

**WHAT ARE THE REMEDY OBJECTIVES AND LEVELS?**

The remedial action objective (RAO) is to protect humans from exposure to groundwater that exceeds FDEP cleanup target levels by prohibiting use of site groundwater. Table 1 lists the COC present in groundwater. The first column lists the chemical name, the second column lists the range of concentrations detected in groundwater samples, and the last column presents the site specific cleanup target level.

**Table 1**

Site-Related COC	Range of Detections (µg/L)	GCTL <sup>1</sup> (µg/L)
Vinyl Chloride	0.71 to 28.4	1

<sup>1</sup> Cleanup level established by Chapter 62-777 FAC.

**REMEDIAL ALTERNATIVES FOR THE MSBA**

Remedial alternatives are different combinations of plans or technologies to restrict access, and to contain or treat contamination to protect human health and the environment.

Land Use Controls and Natural Attenuation with Long-Term Monitoring:

Because of the low levels of vinyl chloride present at the Site and the existence of an LTM program in this area, only one remedy was considered for groundwater at the Site, monitored natural attenuation. Under this alternative, material processes such as biological degradation, dispersion, advection, and adsorption will reduce COC concentrations to cleanup levels over time.

Groundwater will be regularly sampled and analyzed to monitor and document the decrease in COC concentrations. In the long-term this alternative will meet the RAO. Ongoing evaluation of the alternative will be conducted to determine whether the remedy is working and to provide an opportunity for change if necessary.

In addition, institutional controls will be implemented to prohibit the use of groundwater. NASA and the FDEP have entered into a Memorandum of Agreement (MOA) that outlines how institutional controls will be managed at NASA<sup>2</sup>. Controls will include periodic inspection, condition certification, and agency notification. The area of the Site that will be under institutional control is shown on [Figure 3](#).

**EVALUATION OF REMEDY**

The selected remedy was evaluated to determine if it will comply with the four

<sup>2</sup> By separate MOA effective February 23, 2001, with the FDEP and 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 the 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, 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.

threshold criteria and five balancing criteria established for corrective measures.

The four threshold criteria for corrective measures are:

- Overall protection of human health and the environment;
- Attain media cleanup standards;
- Control the sources of releases; and
- Comply with standards for management of wastes.

The following are the five balancing criteria considered for corrective measures:

- Long-term reliability and effectiveness;
- Short-term effectiveness;
- Reduction in the toxicity, mobility, and volume of wastes;
- Implementability; and
- Cost.

Land Use Controls and natural attenuation with LTM meet the threshold criteria and were determined to be the most appropriate approach with respect to consideration of the balancing criteria.

### **WHAT IMPACTS WOULD THE REMEDY HAVE ON THE LOCAL COMMUNITY?**

There would be no impacts to the local community because administrative actions to

limit access to the Site are consistent with current operating procedures, and the projected future land use of the MSBA is industrial in nature.

### **WHY DOES THE KSCRT RECOMMEND THIS REMEDY?**

The KSCRT recommends the proposed remedy because the naturally occurring processes observed at the Site are sufficient for the reduction of vinyl chloride concentrations in groundwater to RAOs. LTM will be used to monitor and document reduction in the COC concentrations to the cleanup target levels.

The institutional controls will also prevent exposure to contaminants prior to the cleanup levels being achieved. The proposed remedy meets the four threshold standards for corrective measures and was determined to be the best overall approach with respect to the balancing criteria.

### **NEXT STEPS**

The KSCRT will review all comments on this SB to determine if the proposed remedy needs modification prior to implementation and prior to incorporating the proposed remedy into KSC's HSWA permit. If the proposed remedy is determined to be appropriate for implementation, then a LTM program will be initiated, and a Land Use Control Implementation Plan will be developed to incorporate the institutional controls at this Site.



Notes:  
 KSC - Kennedy Space Center  
 MSBA - Mission Support Building Area  
 NASA - National Aeronautics and Space Administration  
 SB - Statement of Basis  
 SWMU - Solid Waste Management Unit  
 VAB - Vehicle Assembly Building

### Site Location Map - SWMU 108 Statement of Basis

Mission Support Building Area  
 NASA Kennedy Space Center, Florida

Project Number: TL014017.0001

Figure 1



**Legend**

- + Monitoring Well Screened 2 to 12 ft bls
- x Fence
- SWMU Boundary

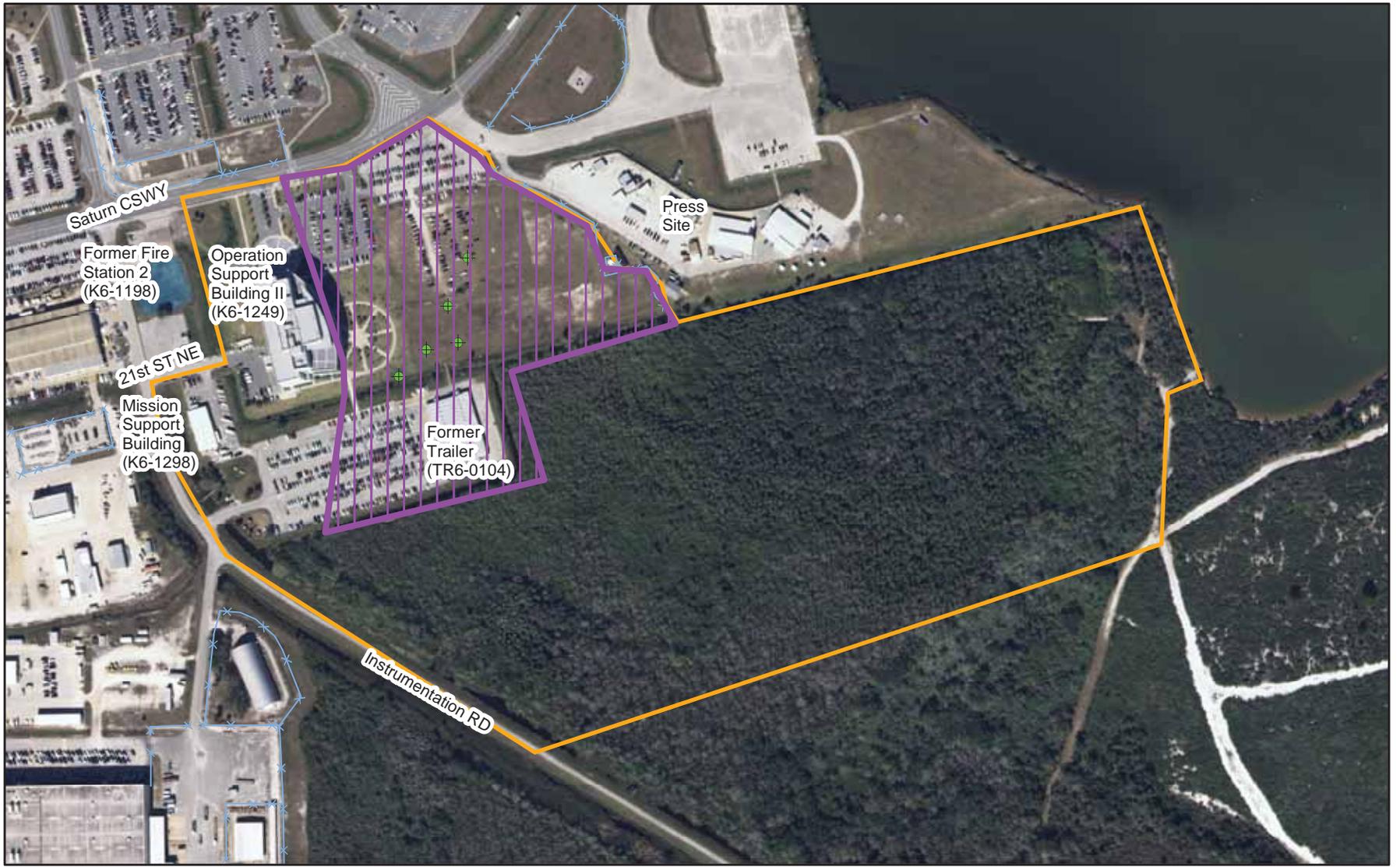
**Notes:**

- ft bls - feet below land surface
- MSBA - Mission Support Building Area
- NASA - National Aeronautics and Space Administration
- SB - Statement of Basis
- SWMU - Solid Waste Management Unit



**Site Plan - SWMU 108**  
**Statement of Basis**

Mission Support Building Area  
 NASA Kennedy Space Center, Florida



**Legend**

- Monitoring Well Screened 2 to 12 ft bls
- Fence
- SWMU Boundary
- LUC Area

**Notes:**

Coordinates are shown in Florida State Plane East, meters  
 LUC - Land Use Control  
 MSBA - Mission Support Building Area  
 NASA - National Aeronautics and Space Administration  
 SB - Statement of Basis  
 SWMU - Solid Waste Management Unit



**Area Under Institutional Controls - SWMU 108  
 Statement of Basis**

Mission Support Building Area  
 NASA Kennedy Space Center, Florida