STATEMENT OF BASIS

FIREX WATER TANK SWMU 69
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 clean up contamination at the Firex Water Tank (FWT) [1]. A Kennedy Space Center (KSC) Remediation Team consisting of National Aeronautics and Space Administration (NASA), United States Environmental Protection Agency (EPA), and Florida Department of Environmental Protection (FDEP) 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 KSC Remediation Team 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 KSC Remediation Team 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) indicated that arsenic and several polynuclear aromatic hydrocarbons (PAHs) listed on Table 1 are present in soil/dry sediment, which could potentially be harmful to human health.

HOW DO YOU PARTICIPATE?

The KSC Remediation Team solicits public review and comment on this SB before implementing the proposed remedy. The remedy for the FWT site will eventually be incorporated into the Hazardous and Solid Waste Amendments (HSWA) Permit for Kennedy Space Center (KSC).

The Cleanup Remedy

The proposed cleanup remedy for FWT site includes the following components:

- Implementation of institutional controls to prohibit residential exposure to soils/dry sediment, and to ensure the swales at the site meet the alternative soil cleanup target level assumptions.

The public comment period for this SB and proposed remedy will begin on the date of publication for notice of availability of the SB in major local newspapers of general circulation and end 45 days thereafter. If requested during the comment period, the KSC Remediation Team will hold a public meeting to respond to any oral comments or questions regarding the proposed remedy. To request a hearing or provide comments, contact the following person in writing within the 45-day comment period:

1. In accordance with RCRA §7004(b), this Statement of Basis summarizes the proposed remedy for the NASA Firex Water Tank (FWT) site. For detailed information on the site, consult the FWT RFI Report, which is available for review at the information repository located at the NASA Document Library, Merritt Island Public Library, 1195 N. Courtenay Pkwy, Merritt Island FL 32953, Telephone: (321) 455-1369.

Mr. John R. Armstrong, P.G.
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2600 Blair Stone Road, MS 4535
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The HSWA Permit, SB, and associated administrative file, including the RFI Report, will be available to the public for viewing and copying at:

NASA Document Library
Merritt Island Public Library
1195 N. Courtenay Pkwy
Merritt Island, FL 32953
Telephone: (321) 455-1369

To request further information, you may contact one of the following people:

Mr. Harold Williams
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Mail Code: TA-C3
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FACILITY DESCRIPTION

NASA established the 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. FL6800014585) issued by the FDEP and/or EPA, KSC was required to perform an investigation to determine the nature and extent of contamination from Solid Waste Management Unit (SWMU) No. 69, the Firex Water Tank (Figure 1).

SITE DESCRIPTION AND HISTORY

The FWT site is a NASA-operated facility that includes a one-million gallon capacity steel and concrete tank, pump station including several back-up diesel generators, a 15,000 gallon diesel above ground storage tank (AST), and a 1,000-gallon waste oil underground storage tank (UST). The FWT was constructed in 1964 and moved to its current location in 1986. The pump station and other appurtenant structures were constructed in 1986. The FWT site is used to support fire suppression systems in the KSC Industrial Area.

- 1992-1993: During this time, investigations at the FWT site were focused on the soil and groundwater adjacent to an oil/water separator. The oil/water separator was abandoned in place in 1992.

- 1995: A soil sample was collected from an area of stained soil adjacent to the vent pipe for the UST. The soil sample contained petroleum hydrocarbons above regulatory criteria.

- 1996: SWMU Site Assessment activities were conducted to evaluate impacts to site soils and groundwater. Soil and groundwater samples were collected and various metals, volatile organic compounds (VOCs), and petroleum hydrocarbons were identified in site media above regulatory criteria.

- 1999: RCRA Confirmation sampling was conducted to validate previous results. Groundwater samples were collected and various metals and VOCs were identified in groundwater above regulatory criteria.

- 2000: A RCRA Facility Investigation was conducted. Samples of soil/sediment and groundwater were collected and analyzed. Results of these analyses were used to

evaluate potential risks to human health and ecological receptors. The Preliminary Risk Evaluation (PRE) for human health indicated that groundwater containing VOCs, would result in an unacceptable human health risk if the groundwater was used as a source of drinking water. The ecological risk assessment (ERA) indicated that no unacceptable risk exists at the site for ecological receptors.

- 2003: No Further Action for groundwater was approved based on long-term monitoring results. Monitoring well FWT-IW3S was incorporated into the Hypergol Maintenance Facility (SWMU #70) Corrective Measures Study to address iron.

- 2004: Based on the Hypergol Payload/Test Area Groundwater Iron Evaluation iron was removed as a chemical of concern at Hypergol Maintenance Facility (SWMU #70) and the Firex Water Tank (SWMU #69)

SUMMARY OF SITE RISK

As part of the RFI activities, risk assessments were completed in accordance with KSC's Remediation Team Risk Assessment Decision Process Document (DPD). The ecological risk assessment (ERA) was performed in accordance with the eight-step process described in the EPA's "Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments", dated 1997.

Chemicals of Concern (COCs) identified for human health during the RFI included VOCs and metals in groundwater and PAHs and arsenic in soil/dry sediment (based on residential and industrial cleanup target levels). However, the groundwater received a No Further Action based on long-term monitoring results in 2003. For a complete list of COCs in soil/dry sediment see Table 1. No COCs were identified for soil/dry sediment based on the PRE using alternate soil cleanup target levels developed for a groundskeeper.The ERA did not identify any unacceptable ecological risks.

WHAT ARE THE REMEDY OBJECTIVES AND LEVELS?

The remedial action objective (RAO) is to limit the site to industrial uses. Table 1 lists the COCs present in soil/dry sediment at the FWT site. The first column lists the chemical name, the second column lists the range of concentrations in soil/dry sediment detected at the FWT site during the RFI, and the last column presents the FDEP/EPA cleanup target level to be achieved at the site. Cleanup target levels are shown for residential, industrial, and alternative (groundskeeper) scenarios.

Table 1 Soil/Dry Sediment

Site-Related Chemicals of Concern (COCs)	Range of Detections (mg/kg)	Residential SCTL[1]	Industrial SCTL[1]	Alternative SCTL[2]
Arsenic	0.42 – 4	2.1	12	29
Benzo(a)pyrene	0.022 - 1.24	0.1	0.5	8
Dibenzo(a,h)anthracene	0.385	0.1	0.5	16

[1] Cleanup levels are SCTLs from Florida Administrative Code 62-777
[2] Alternative Cleanup Target Level based on groundskeeper scenario presented in the RFI Report

REMEDIAL ALTERNATIVES FOR THE FWT

Because of the industrial nature at the FWT site only one remedy was considered for the FWT site.

Land Use Controls: Under this alternative, institutional controls will be implemented for site soil/ sediment. The institutional controls will maintain the site use so that the groundskeeper scenario developed in the PRE remains NASA, EPA and FDEP have entered into a Memorandum of Agreement (MOA), which outlines how institutional controls will be managed at NASA.[2] The MOA requires periodic inspections, condition certification, and agency notification. The area of the site that

will be under institutional control is shown on Figure 2.

EVALUATION OF REMEDY

The selected remedy was evaluated to determine if it will comply with EPA's four threshold criteria 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.

Land Use Controls meet each of the threshold criteria and was determined by the KSC Remediation Team to be the best overall approach.

WHAT IMPACTS WOULD THE REMEDY HAVE ON THE LOCAL COMMUNITY?

The LUCs described previously will limit the site use so that the groundskeeper scenario remains applicable and exposure to site soils is limited.

WHY DOES THE KSC REMEDIATION TEAM RECOMMEND THIS REMEDY?

The team recommends the proposed remedy because the institutional controls will prevent exposure to contaminants prior to the cleanup levels being achieved. The proposed remedy meets the four general standards for corrective measures and was determined to be the best overall approach.

NEXT STEPS

The KSC Remediation Team 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 long term monitoring program will be initiated, and a Land Use Control Implementation Plan will be developed to incorporate the institutional controls at this site.

2. 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.

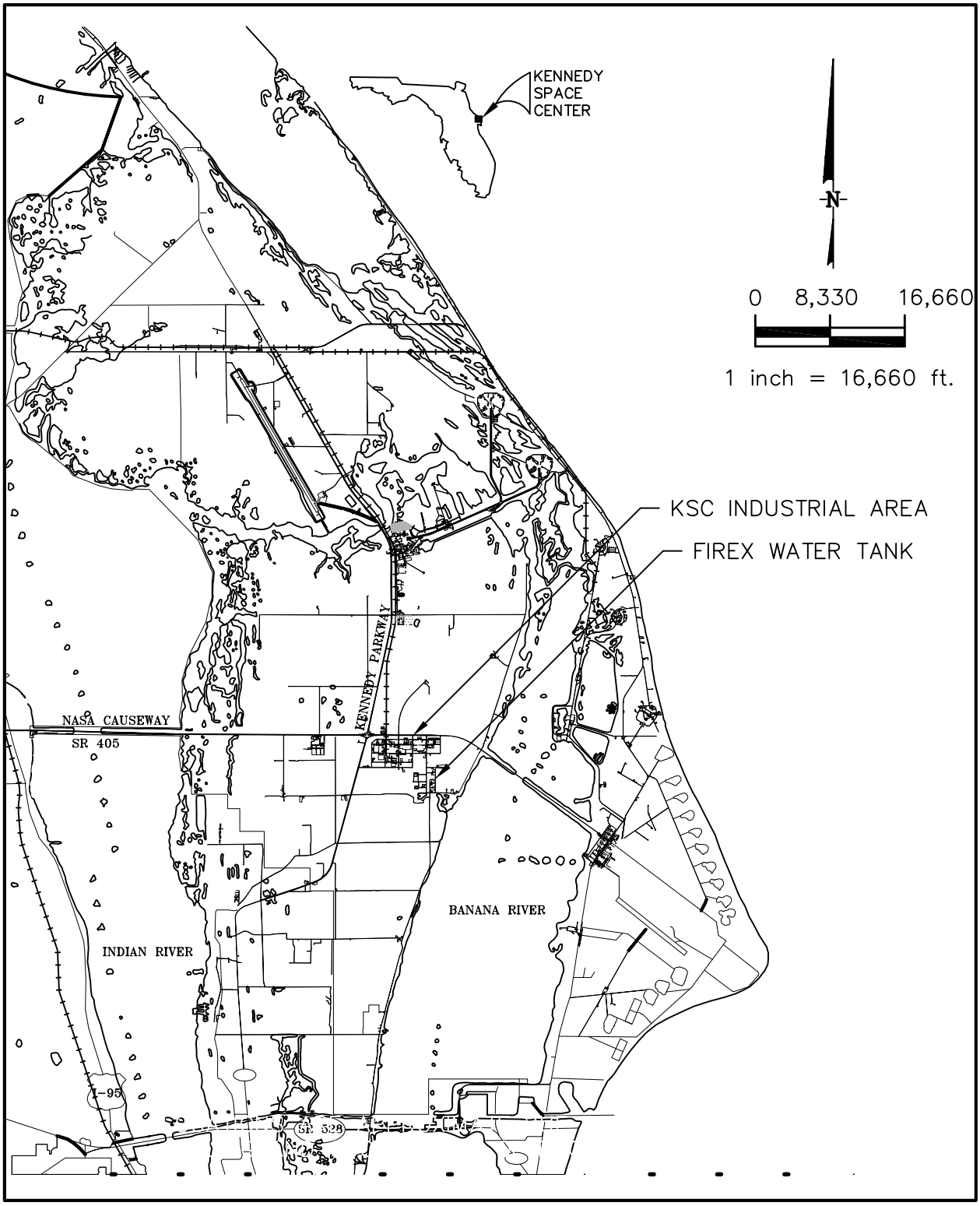
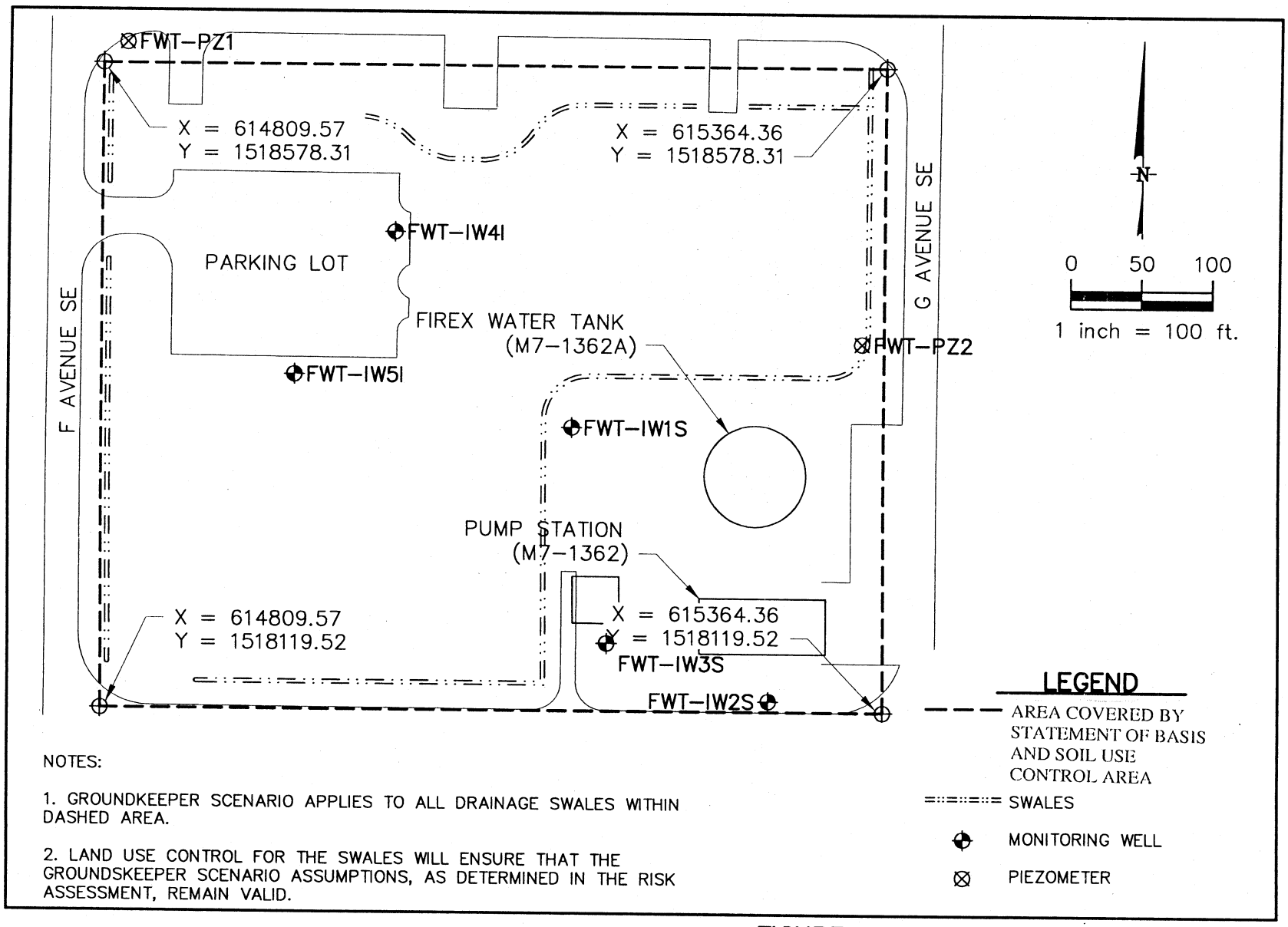


FIGURE 1

KENNEDY SPACE CENTER
FIREX WATER TANK SITE LOCATION MAP

178F01.DWG

178F02.DWG



NOTES:

1. GROUNDKEEPER SCENARIO APPLIES TO ALL DRAINAGE SWALES WITHIN DASHED AREA.

2. LAND USE CONTROL FOR THE SWALES WILL ENSURE THAT THE GROUNDSKEEPER SCENARIO ASSUMPTIONS, AS DETERMINED IN THE RISK ASSESSMENT, REMAIN VALID.

FIGURE 2
SITE MAP
FIREX WATER TANK