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Formerly Utilized Sites Remedial Action Program (FUSRAP)

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# ADMINISTRATIVE RECORD

for the Maywood Site, New Jersey

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**US Army Corps  
of Engineers®**



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M-770

**Department of Energy**

Field Office, Oak Ridge

P.O. Box 2001

Oak Ridge, Tennessee 37831— 8723

August 28, 1992

Mr. Jeff Gratz  
Federal Facilities Section  
U.S. Environmental Protection Agency, Region II  
Jacob K. Javitz Federal Building  
26 Federal Plaza  
New York, NY 10278

**ADDENDUM TO THE MAYWOOD SITE FIELD SAMPLING PLAN FOR WESTERLY BROOK/SADDLE RIVER**

Dear Mr. Gratz:

In your letter dated July 28, 1992, you stated that the EPA has determined that additional sampling is necessary to determine the extent of contamination emanating from the Maywood Interim Storage Site and to support a Baseline Risk Assessment. In response to your letter, DOE has developed a plan for sampling of the Westerly Brook and Saddle River areas to characterize radiological and possible chemical contaminants at the Maywood site. This plan has been prepared as an addendum to the Maywood Field Sampling Plan and incorporates the sampling and analysis procedures specified in that plan by reference. (Please note that an additional addendum will be developed to address groundwater investigations and will be transmitted to you by September 30, 1992.)

A copy of this addendum to the Maywood Field Sampling Plan is enclosed for your review. If you have any questions, please contact me at (615) 576-5724.

Sincerely,

Susan Cange, Site Manager  
Former Sites Restoration Division

ADDENDUM TO MAYWOOD SITE  
FIELD SAMPLING PLAN FOR WESTERLY BROOK/SADDLE RIVER

### **Purpose and Scope**

In response to EPA's request for additional data dated July 28, 1992, an addendum to the Maywood Site Field Sampling Plan has been developed in order to provide rationale and sampling strategy for additional fieldwork. The scope of the additional fieldwork is to collect soil/sediment samples along Westerly Brook and in the immediate area of its confluence with the Saddle River. The purpose of this sampling is to determine if contaminants that are DOE's responsibility as FUSRAP wastes under the Maywood Site FFA exist in the subject area.

Following the identification of likely areas of contaminant deposition, near surface and core samples shall be collected and analyzed for radiological and chemical parameters.

### **Site Description**

Westerly Brook drains an area of approximately 1 km<sup>2</sup> (0.4 mi<sup>2</sup>) in Maywood and Rochelle Park (Figure 1). The area contains mainly residential properties and some industrial sites. The brook begins as a natural channel and flows southward for 975 m (3200 ft) as an open channel (upstream of the Maywood Site) before it enters a culvert in which it flows for 585 m (1920 ft) beneath Maywood Interim Storage Site (MISS). The brook resurfaces and flows another 183 m (600 ft) before its confluence with the Saddle River (downstream of the Maywood Site).

Downstream from MISS, the natural channel of Westerly Brook is approximately 4.6 m (15 ft) wide and has a flow depth of 0.3 m (1 ft) or less. The channel slope is less than 1 percent, so flow velocities are low. The banks are well defined, with a bank-full depth of approximately 3.7 m (12 ft).

### **Summary of Existing Data and Data Gaps**

Quarterly surface water and sediment samples have been collected at three locations in Westerly Brook and one location along Lodi Brook since 1986 (Figure 1). The samples have been routinely analyzed for radioactivity (total uranium, Ra-226, Th-232), indicator parameters (total organic carbon, total organic halide, pH, specific conductance) and, during recent sampling in conjunction

with the RI, for an additional broad suite of analytes including metals, lithium, rare earth elements, and volatile and semivolatile organics. The results of these analyses were discussed in the Remedial Investigation Report of the Maywood Site (Draft dated 1991) and are briefly summarized here.

Downstream (locations 1 and 2, Figure 1) surface water sample concentrations of radiological contaminants and metals were similar to those concentrations found at the upstream sampling location (location 3). The only metal that exhibited concentrations above the upstream location sample was lithium. Volatile organic contaminant concentrations above those at the upstream location were reported for carbon tetrachloride, 1,2-dichloroethene, trichloroethene, and tetrachloroethene. Although none of these chemicals have been directly associated with thorium processes, these compounds have been detected in offsite groundwater monitoring wells downgradient from MISS. It is suspected that the above-mentioned chemical contaminants are migrating from MISS or being introduced into surface water via groundwater infiltration. If these contaminants originate at MISS, then DOE is responsible for addressing these contaminants as FUSRAP waste, as identified in the Maywood Site FFA.

The results of sediment sampling on Westerly Brook have yielded similar concentrations of contaminants, whether radionuclides or metals, in samples collected from the upstream sampling location and the two downstream locations.

The nature and extent of historical contaminant migration and deposition in the Westerly Brook and Saddle River floodplain have not been addressed to date. Analogy between the distribution of radiologically contaminated sediments along Lodi Brook (Figure 1) and the particle-reactive nature of the likely contaminants from MISS (e.g., thorium, uranium) suggests that, if depositional areas existed along the route of Westerly Brook during operations of the Maywood Chemical Works, than radiologically contaminated sediments may have been similarly distributed.

Additional sampling is required to establish the presence or absence of thorium related contamination in likely historical depositional zones. This additional sampling will be performed in accordance with the Quality Assurance Project Plan for the Remedial Investigation/Feasibility Study - Environmental Impact Statement for the Maywood Site (dated June 1990). Technical specifications regarding sample collection, spoils, decontamination, and backfilling of coreholes are outlined in the Field Sampling Plan for the Remedial Investigation/Feasibility Study - Environmental Impact Statement for the Maywood Site (dated June 1990). Data from the analyzed samples will provide information for determining the likelihood that historical deposition areas

exist and have received and retained contaminants. If contamination is found, further investigation may be required to determine the extent of contamination. Further samples would then be taken with locations determined in the field. If contamination is determined to be significant, another sampling addendum will be written.

### Objectives

- 1) Identify historically-active depositional zones adjacent to the open reaches of Westerly Brook and in the immediate area of its confluence with the Saddle River. Perform field screening for radioactivity along three to five vertical transects of the Westerly Brook channel bank.
- 2) Locate accessible sampling points within identified areas and obtain soil/sediment samples for analysis for both Westerly Brook and Saddle River.

### Objective 1

After a recent visual inspection of accessible portions of Westerly Brook and Saddle River and examination of aerial photographs and topographic and floodplain maps of the area (Figures 2 and 3), historical sediment depositional zones have been identified along the Saddle River near its confluence with Westerly Brook (Figure 2). The locations have been ranked according to the likelihood that historical deposits from Westerly Brook exist at each site, are accessible, have not been altered by construction activities, and may be sampled (Figure 3). Location 1 is on an elevated floodplain just downstream of the confluence with Westerly Brook. Locations 2 and 3 are further downstream in areas that, according to older topographic maps, were depositional zones in Saddle River meander bends. The major drawback to locations 2 and 3 are that they are near Interstate 80 highway and have been more directly impacted by construction and fill activities. Though final field sampling locations will be chosen in the field, investigative results thus far indicate that sampling in the Saddle River flood zones will probably take place only in the area around location 1.

No floodplain areas were identified for sampling along the open reaches of Westerly Brook. The deeply incised nature of the stream channel suggested that flooding of adjacent areas may be infrequent (Figure 2). However, rising water levels within the channel may carry significant amounts of particle-bound contamination downstream. Based on radiological survey results from another DOE facility (Paducah Gaseous Diffusion Plant, Paducah, Kentucky), it is possible that

particle-bound contaminants may be filtered out of the waning stream flow as stream water recharges local groundwater through bank storage. The result may include a "bathtub ring" of above background radioactivity in the stream banks. The methodology to identify the presence of a ring of contaminants involves field screening for radioactivity along three to five vertical transects of the Westerly Brook channel bank (selected by the field team leader from reaches of the channel that are relatively undisturbed) by both FIDLER and SPA-3 hand-held radiological detectors.

## Objective 2

To determine if contamination related to thorium processes is present at any of the proposed Saddle River sampling locations, at least three soil/sediment cores will be collected by using Shelby Tubes hand driven to refusal at each sampling location. Samples will be logged with particular attention directed to identifying distinctive depositional features (e.g., color banding, grain size changes). The core samples will be screened for radioactivity with both FIDLER and SPA-3 hand held radiological detectors. Readings will be recorded for each 6 in. interval. Samples of the core will be selected for laboratory analysis based primarily on (1) radioactivity reading 2X background detected with field instrumentation and (2) distinctive depositional features. If no radioactivity readings meet the criteria, then a portion of the core judged as representative of the location by the field geologist will be collected for laboratory analyses. If necessary, additional core samples will be collected in the immediate area to provide sufficient volume for a composite sample for laboratory analyses.

Based on the results of field screening, samples of near surface Westerly Brook bank soil will be collected from the horizon with the highest radioactivity reading above background. Stainless-steel spoons or garden trowels shall be used to collect the samples.

Radiological analyses of all samples will include Th-232, Ra-226, and U-238, and will be performed by TMA/Eberline. Chemical analyses will include Target Compound List compounds, Target Analyte List compounds, and lanthanides and will be performed by Roy F. Weston Analytical Laboratories. Data will be provided to EPA after QA/QC review. An addendum to the draft RI report for the Maywood Site will be prepared to include interpretation of results. Further actions will depend on the results generated by the report.

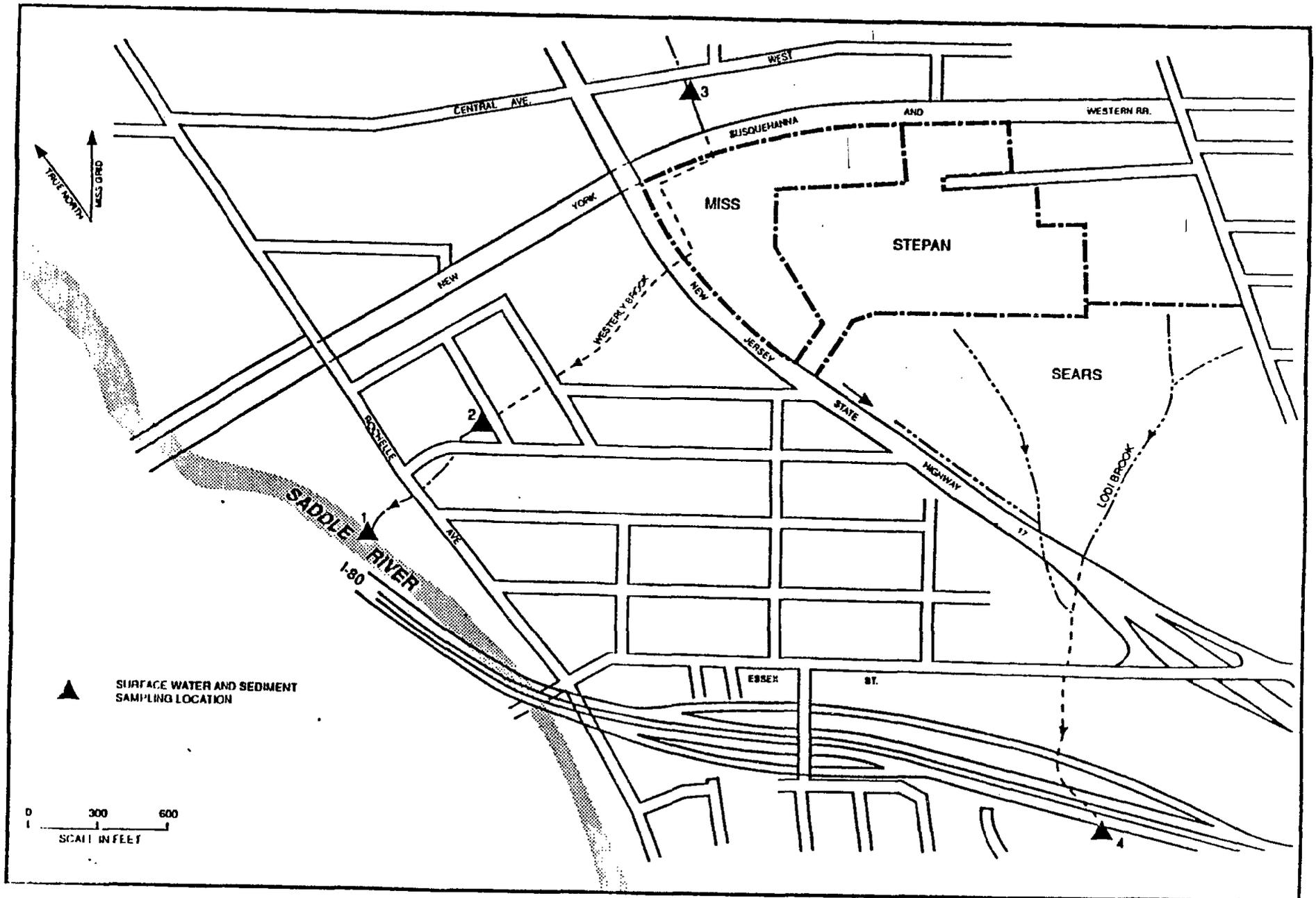


Figure 1. Offsite Surface Water and Sediment Sampling Locations for MISS

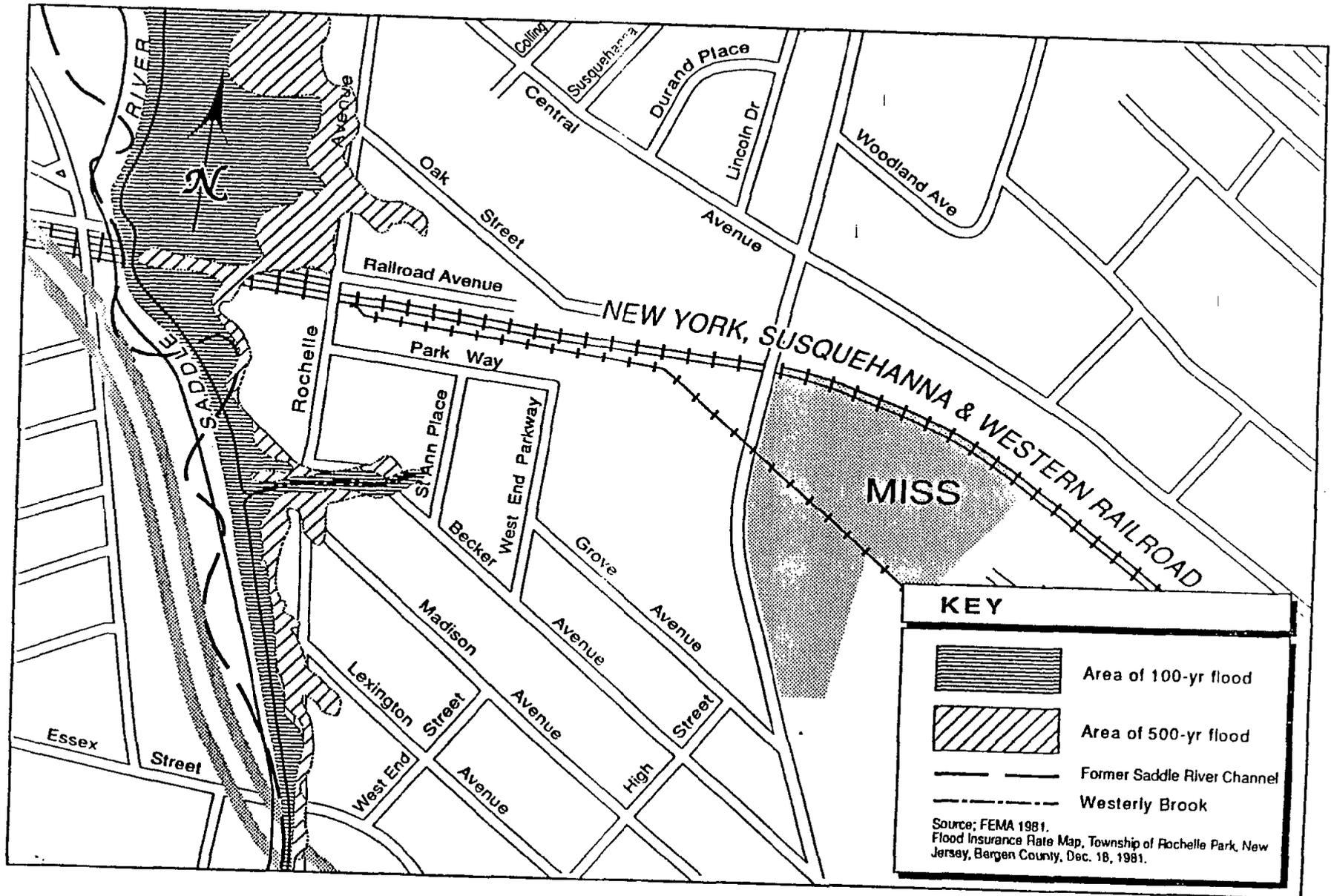


Figure 2. 100-yr and 500-yr Floodplains Associated with Westerly Brook and Saddle River

